



COST OF CAPITAL STUDY

**YIELD CAPITALIZATION
2023 ASSESSMENT YEAR**

APPENDIX C

TELECOMMUNICATIONS

EQUITY RATE						9.00%	
CAPITAL ASSET PRICING MODEL							PAGE
	CAPM Ex Ante		9.2%				6
DIVIDEND GROWTH MODELS							
	Value Line, based on Dividends Growth		8.00%				7
	Value Line, based on Earnings Growth		8.00%				8
	Value Line, based on Return on Equity		8.00%				10
				RANGE	8-9.2%		
DEBT RATE						5.75%	11
SECURED DEBT (LEASE) RATE						4.75%	11
MARKET CAPITAL STRUCTURE							
	Equity	55%	x	9.00%	=	4.95%	3
	Debt	45%	x	5.75%	=	2.59%	3
	Marginal Tax Rate	24%	=	(1-.024)	x	2.59%	
						<u>1.97%</u>	

WEIGHTED AVERAGE COST OF CAPITAL **6.9%**

rounded

SUPPORT FOR GUIDELINE COMPANIES

WASHINGTON STATE DEPARTMENT OF REVENUE

2023 ASSESSMENT YEAR

TELECOMMUNICATIONS

Capital Structure at Book Value

Company	Ticker	Beta	Fin'l Strength	Price Stability	Growth Persist	Earnings Predict	P/E Ratio	Div'd Yield	Common Stock	%	Preferred Stock	%	Long Term Debt	%	Total Debt & Equity
AT&T Inc	t	nmf	B++	nmf	nmf	nmf	7.2	5.80%	92,302,420,000	40.6%	-	0.0%	135,024,000,000	59.4%	227,326,420,000
Alice USA, Inc	atus	1.15	B	20	25	30	8.9	nil	nmf	nmf	nmf	nmf	nmf	nmf	nmf
BCE Inc	bce	0.90	B++	100	15	100	17.8	6.50%	13,542,353,550	38.5%	3,162,000,000	9.0%	18,508,862,629	52.6%	35,213,216,179
Cable One	cabo	0.95	B++	65	70	85	19.2	1.60%	1,761,414,022	31.4%	-	0.0%	3,848,748,000	68.6%	5,610,162,022
Charter Communication	chtr	0.95	B++	70	80	20	12.2	nil	9,119,394,457	8.5%	-	0.0%	97,603,000,000	91.5%	106,722,394,457
Comcast Corp	cmcsa	0.85	A+	95	65	90	10.2	3.10%	80,941,518,000	46.1%	-	0.0%	94,800,000,000	53.9%	175,741,518,000
Lumen Technologies In	lumn	1.00	B	45	5	75	nmf	14.37%	10,437,200,031	33.7%	-	0.0%	20,572,000,000	66.3%	31,009,200,031
Shenandoah Telecom	shen	nmf	B+	nmf	nmf	nmf	nmf	0.50%	637,900,300	89.4%	-	0.0%	75,648,000	10.6%	713,548,300
Telus Corp	tu	0.70	B++	100	60	85	23.4	5.40%	12,238,537,666	39.8%	-	0.0%	18,491,137,371	60.2%	30,729,675,037
Verizon Communication	vz	0.60	A++	100	20	100	7.5	6.80%	92,481,422,273	38.0%	-	0.0%	150,639,000,000	62.0%	243,120,422,273
Mean		0.89	B++	74	43	73	13.3	5.51%	34,829,184,478	40.7%		1.0%	59,951,377,333	58.3%	
Weighted Mean									313,462,660,298	36.6%	3,162,000,000	0.4%	539,562,396,000	63.0%	856,187,056,298
Median		0.93		83	43	85	11	5.60%		38.5%		0.0%		60.2%	
Trimmed Mean		0.89		79	43	78	13	4.87%		38.3%		0.0%		60.4%	
Max		1.15		100	80	100	23	14.37%		89.4%		9.0%		91.5%	
Min		0.60		20	5	20	7	0.50%		8.5%		0.0%		10.6%	
Say		0.90								40%		0.0%		60%	100%

**SUPPORT FOR CAPITAL STRUCTURE
MARKET VALUE**

WASHINGTON STATE DEPARTMENT OF REVENUE
2023 ASSESSMENT YEAR
TELECOMMUNICATIONS

Capital Structure at Market Value

Company	Ticker	Stock Close	Common Shares	Common Stock	%	Preferred Stock	%	Long Term Debt (FV)	%	Total Debt & Equity
AT&T Inc	t	18.15	7,127,600,000	129,351,278,527	50.8%	-	0.0%	125,207,000,000	49.2%	254,558,278,527
Altice USA, Inc	atus	4.60	456,200,000	2,098,520,000	8.6%	-	0.0%	22,263,443,000	91.4%	24,361,963,000
BCE Inc	bce	43.95	911,943,000	40,079,895,762	66.5%	3,162,000,000	5.2%	17,005,908,419	28.2%	60,247,804,181
Cable One	cabo	711.86	5,809,413	4,135,488,651	54.5%	-	0.0%	3,455,268,000	45.5%	7,590,756,651
Charter Communications Inc	chtr	339.10	152,651,397	51,764,089,639	38.5%	-	0.0%	82,798,000,000	61.5%	134,562,089,639
Comcast Corp	cmcsa	34.70	4,220,100,000	146,437,474,220	62.8%	-	0.0%	86,900,000,000	37.2%	233,337,474,220
Lumen Technologies Inc	lumn	5.22	1,007,500,003	5,259,150,016	23.0%	-	0.0%	17,626,000,000	77.0%	22,885,150,016
Shenandoah Telecom	shen	15.88	50,110,000	795,746,800	91.3%	-	0.0%	75,648,000	8.7%	871,394,800
Telus Corp	tu	19.31	1,431,000,000	27,632,608,569	61.6%	-	0.0%	17,237,813,885	38.4%	44,870,422,454
Verizon Communications	vz	38.79	4,199,882,937	162,914,231,905	53.6%	-	0.0%	140,773,000,000	46.4%	303,687,231,905
			Mean		51.1%		0.5%		48.4%	
			Weighted Mean	570,468,484,088	52.5%	3,162,000,000	0.29%	513,342,081,304	47.2%	1,086,972,565,392
			Median		54.1%		0.00%		45.9%	
			Trimmed Mean		51.4%		0.0%		47.9%	
			Max		91.3%		5.2%		91.4%	
			Min		8.6%		0.0%		8.7%	
			Say		55%		0%		45%	100%

Source: Yahoo
Stock Price: Yahoo
Market Value Debt: Fair Value 10k

SUPPORT FOR MARKET MULTIPLES

WASHINGTON STATE DEPARTMENT OF REVENUE

2023 ASSESSMENT YEAR

TELECOMMUNICATIONS

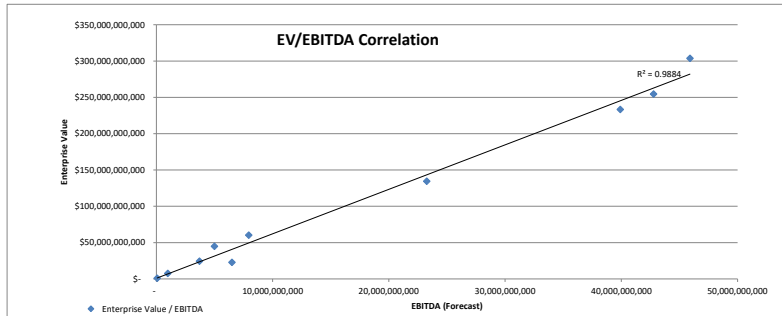
Company	Ticker	Stock Close	Revenues	Multiple	Cash Flow	Multiple	Earnings	Multiple	Divds Decld	Multiple	Captl Spend	Multiple	Book Value	Multiple
AT&T Inc	t	18.15	16.94	1.1	5.28	3.4	2.64	6.9	1.35	13.4	2.75	6.6	12.95	1.4
Altice USA, Inc	atus	4.60	21.15	0.2	4.31	1.1	0.43	10.7	nil		4.16	1.1	(1.04)	nmf
BCE Inc	bce	43.95	19.60	2.2	6.30	7.0	2.48	17.7	2.79	15.8	4.25	10.3	14.85	3.0
Cable One	cabo	711.86	294.14	2.4	100.79	7.1	38.06	18.7	11.20	63.6	71.38	10.0	303.20	2.3
Charter Communications	chtr	339.10	353.89	1.0	91.44	3.7	30.74	11.0	nil		61.42	5.5	59.74	5.7
Comcast Corp	cmcsa	34.70	28.77	1.2	6.58	5.3	3.64	9.5	1.06	32.7	2.60	13.3	19.18	1.8
Lumen Technologies Inc	lumn	5.22	17.36	0.3	1.68	3.1	(1.58)	nmf	0.75	7.0	3.00	1.7	10.36	0.5
Shenandoah Telecom	shen	15.88	5.34	3.0	1.27	12.5	(0.11)	nmf	0.08	198.5	3.78	4.2	12.73	1.2
Telus Corp	tu	19.31	9.51	2.0	2.61	7.4	0.85	22.7	0.98	19.7	1.88	10.3	8.55	2.3
Verizon Communications	vz	38.79	32.58	1.2	9.15	4.2	5.18	7.5	2.56	15.2	5.00	7.8	22.02	1.8
				1.5		5.5		13.1		45.7		7.1		2.2
				1.2		4.8		10.9		17.7		7.2		1.8
				1.4		5.1		12.5		26.7		7.0		2.0
				3.0		12.5		22.7		198.5		13.3		5.7
				0.2		1.1		6.9		7.0		1.1		0.5
				0.9		3.2		5.8		64.2		4.0		1.5
				0.6		0.6		0.4		1.4		0.6		0.7
				0.8		3.6		11.1		17.8		3.9		1.5
				1.0		3.5		9.0		14.7		4.5		1.4
				2.2		7.0		18.0		40.4		10.2		2.3
				1.30		4.75		11.00		18.00		7.00		1.75

ENTERPRISE VALUE MULTIPLES

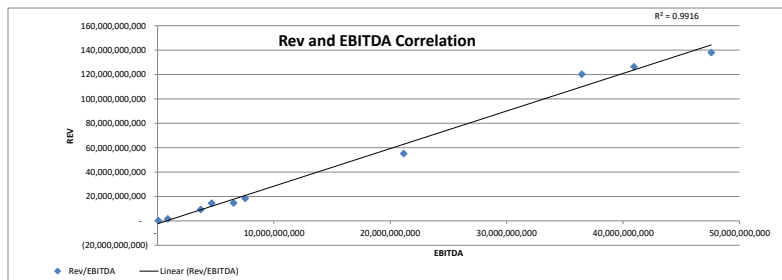
WASHINGTON STATE DEPARTMENT OF REVENUE
2023 ASSESSMENT YEAR
TELECOMMUNICATIONS

Guideline Companies	Ticker	EV	EBITDA	EBITDA	EV / EBITDA	EV / EBITDA	Annual Change Rate	EBITDA	EV / EBITDA	Sales (Revenue)	EV / Sales	CF	Debt Service	EV / CF
			historic	historic M*	historic	historic M*	CF	forecast	forecast	forecast		forecast		
AT&T Inc	t	\$ 254,558,278,527	40,932,000,000	13,434,000,000	6.22	18.95	4.50%	42,773,940,000	5.95	126,360,000,000	2.01	42,120,000,000	7,199,402,500	5.16
Alice USA, Inc	atus	\$ 24,361,963,000	3,786,532,000	3,866,537,000	6.37	6.30		3,706,552,000	6.57	9,297,400,000	2.62	2,015,200,000	1,380,147,973	7.39
BCE Inc	bce	\$ 60,247,804,181	7,532,496,307	7,532,496,307	8.00	8.00	5.50%	7,946,783,604	7.58	18,483,000,000	3.26	5,947,500,000	977,839,734	8.70
Cable One	cabo	\$ 7,590,756,651	884,817,000	911,851,000	8.58	8.32	10.50%	977,722,785	7.76	1,710,150,000	4.44	715,000,000	198,677,910	8.31
Charter Communications Inc	chtr	\$ 134,562,089,639	21,146,000,000	21,616,000,000	6.28	6.21	10.00%	23,269,600,000	5.78	55,202,000,000	2.44	14,229,000,000	4,160,885,000	7.05
Comcast Corp	comca	\$ 233,337,974,220	36,445,000,000	36,459,000,000	6.40	6.40	9.50%	39,907,275,000	5.85	120,315,000,000	1.94	27,105,000,000	4,996,750,000	7.27
Lumen Technologies Inc	lumn	\$ 22,885,150,016	6,532,000,000	6,703,000,000	3.50	3.41	-0.50%	6,499,340,000	3.52	14,670,000,000	1.56	3,645,000,000	1,013,495,000	4.91
Shenandoah Telecom	shen	\$ 871,394,800	67,433,000	75,961,000	12.92	11.47	7.00%	72,153,310	12.08	285,000,000	3.06	70,000,000	4,249,760	11.72
Telus Corp	tu	\$ 44,870,422,454	4,646,971,935	4,906,203,840	9.66	9.15	7.50%	4,995,494,830	8.98	14,538,634,659	3.09	4,169,167,292	991,174,298	8.70
Verizon Communications	vz	\$ 303,687,231,905	47,566,000,000	47,870,000,000	6.38	6.34	3.50%	45,901,190,000	6.62	137,987,500,000	2.20	37,350,000,000	8,094,447,500	6.68
Mean					7.46	8.46	5.61%	7.07	2.66			2.59		
Median					6.49	7.20	7.00%	6.59	2.53			2.53		
Trimmed Mean					7.27	7.78	6.21%	6.89	2.58			2.58		
Max					12.92	18.95	10.50%	12.08	4.44			11.72		
Min					3.50	3.41	-3.50%	3.52	1.56			1.56		
Std Dev					2.53	4.26	0.05	2.28	0.83			0.83		
Coefficient of Variation					0.34	0.50	0.86	0.32	0.31			0.31		
Harmonic Mean					6.71	7.04	#NUM!	6.43	2.45			2.45		
Sav					7.00	7.00	6.00%	6.75	2.50			2.50		7.25

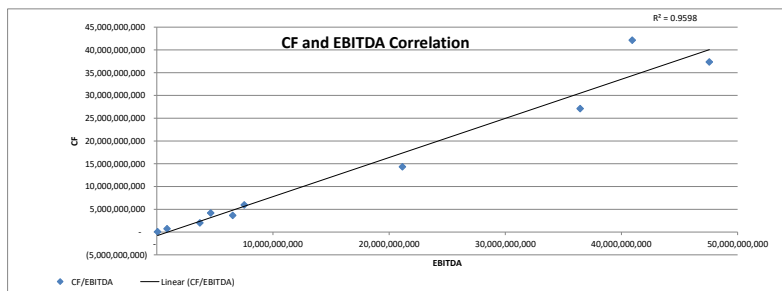
EBITDA from Morningstar
Morningstar-data page



Guideline Companies	EV/EBITDA
Lumen Technologies Inc	5.95
Comcast Corp	5.85
Charter Communications Inc	5.78
AT&T Inc	5.95
Alice USA, Inc	6.57
Verizon Communications	6.62
BCE Inc	7.58
Cable One	7.76
Lumen Technologies Inc	6.62
Shenandoah Telecom	8.98
Shenandoah Telecom	12.08
Low Average	5.54
Low Median	5.85
Sav	5.75
High Average	8.60
High Median	7.76
Sav	8.25



Guideline Companies	EV/Sales
Lumen Technologies Inc	1.56
Comcast Corp	1.94
AT&T Inc	2.01
Verizon Communications	2.20
Charter Communications Inc	2.44
Alice USA, Inc	2.62
Shenandoah Telecom	3.06
Telus Corp	3.09
BCE Inc	3.26
Cable One	4.44
Low Average	2.03
Low Median	2.01
Sav	2.00
High Average	3.29
High Median	3.09
Sav	3.25



Guideline Companies	EV/CF
Lumen Technologies Inc	4.91
AT&T Inc	5.16
Verizon Communications	6.68
Charter Communications Inc	7.05
Comcast Corp	7.27
Alice USA, Inc	7.39
Cable One	8.31
Telus Corp	8.70
BCE Inc	8.70
Shenandoah Telecom	11.72
Low Average	6.21
Low Median	6.68
Sav	6.95
High Average	8.96
High Median	8.70
Sav	8.75

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT CAPITAL ASSET PRICING MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE

2023 ASSESSMENT YEAR

TELECOMMUNICATIONS

$$\text{Ex Ante} \\ \text{Ke} = \text{Rf} + \text{B} (\text{Rp})$$

Ke = Cost of Equity **9.2%**

to page 1

Rm =	rate of return	9.82%
Rf =	risk free rate	3.97%
Rp =	risk premium	5.85%
B =	Beta	0.90

page 2

Rp = Risk Premium **5.85%**

to above

Shannon Pratt and Roger Grabowski	3.5 - 6%	
Cost of Capital, Applications and Examples, Third Edition, 2008, Page 113		
Dr. Aswath Damodaran	5.94%	chart page 15
http://pages.stern.nyu.edu/~adamodar/2022 Implied Premium	5.85%	adjusted for Rf

Rf = Risk Free Rate **3.97%**

to above

Value Line Investment Survey, Selected Yields January 6, 2023, page 1465
as of 12-27-22

US Treasury Securities year end data	
5 year	3.94%
10 year	3.84%
30 year	3.93%
30 year Zero	3.81%

Federal Reserve Statistical Release (<http://www.federalreserve.gov/Releases/H15/Current/>)

As of 12-30-22

Treasury Constant Maturities		
5 year	3.99%	
10 year	3.88%	
20 year	4.14%	
30 year	3.97%	
20 year TIPS	<u>1.62%</u>	2.52%
30 year TIPS	<u>1.67%</u>	2.30%
		TIPS inflation indication

Inflation **2.30%**

to appraisal template

The Livingston Survey December 16, 2022, page 4, 8

Inflation median (measured by the Consumer Price Index) over next 10 years	2.50%
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Gross Domestic Product (GDP) Nominal **4.10%**

real GDP + inflation est

Federal Reserve Projected Long Run Real GDP Growth

Median Projection Value From Dec 14, 2022 Report	1.80%
https://www.federalreserve.gov/monetarypolicy/files/fomcprojtbl20221214.pdf	

Congressional Budget Office Real GDP Economic Projections

The Budget and Economic Outlook 2023-2033	Table 2.3, pg 49
Average Percentage Change Year To Year	2023-2027 1.80%
https://www.cbo.gov/system/files/2023-02/58848-Outlook.pdf	2028-2033 1.80%

Federal Reserve Bank of Philadelphia

The Livingston Survey, December 16, 2022, page 8	
Average Real GDP Growth Rate for Next 10 Years	1.97%
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
2023 ASSESSMENT YEAR
TELECOMMUNICATIONS

Based on Dividend Growth

$$K_e = (D1 / P_0) + G$$

Ke = Cost of Equity

D1 = Expected Dividends

Po = Current Price

G = Sustainable Growth

Adj G assumption: Sustainable g can not exceed inflation plus real GDP. Minimum g inflation

Company	Ticker	Stock Price (Po)	Expected Dividend (D1)	Dividend Yield (D1/Po)	Dividend Growth (G)	Ke	Sustainable Dividend Growth	Ke (Sus)
AT&T Inc	t	18.15	1.11	6.12%	-4.50%	nmf	2.30%	8.42%
Altice USA, Inc	atus	4.60	nil					
BCE Inc	bce	43.95	2.90	6.60%	4.00%	10.60%		10.60%
Cable One	cabo	711.86	11.50	1.62%	5.50%	7.12%	4.10%	5.72%
Charter Communications Inc	chtr	339.10	nil					
Comcast Corp	cmcsa	34.70	1.14	3.29%	7.50%	10.79%	4.10%	7.39%
Lumen Technologies Inc	lumn	5.22	nil					
Shenandoah Telecom	shen	15.88	0.09	0.57%	-1.50%	nmf	2.30%	2.87%
Telus Corp	tu	19.31	1.07	5.56%	6.50%	12.06%	4.10%	9.66%
Verizon Communications	vz	38.79	2.64	6.81%	2.50%	9.31%		9.31%
						9.97%	Mean	7.71%
						10.60%	Median	8.42%
						10.23%	Trimmed Mean	8.10%
						12.06%	Max	10.60%
						7.12%	Min	2.87%
Source: Value Line Projections 20-22 to 26-28						10.00%		8.00%
						Say		

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

WASHINGTON STATE DEPARTMENT OF REVENUE
2023 ASSESSMENT YEAR
TELECOMMUNICATIONS

Based on Earnings Growth

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

Ke = Cost of Equity
D1 = Expected Dividends
Po = Current Price
G = Sustainable Growth
Adj G assumption: Sustainable g can not exceed inflation plus real GDP. Minimum g inflation

Company	Ticker	Stock Price (Po)	Expected Dividend (D1)	Dividend Yield (D1/Po)	Earnings Growth (G)	Ke	Sustainable Earnings Growth	Ke (Sus)
AT&T Inc	t	18.15	1.11	6.12%	1.00%	7.12%	2.30%	8.42%
Altice USA, Inc	atus	4.60	nil					
BCE Inc	bce	43.95	2.90	6.60%	3.50%	10.10%		10.10%
Cable One	cabo	711.86	11.50	1.62%	7.00%	8.62%	4.10%	5.72%
Charter Communications Inc	chtr	339.10	nil					
Comcast Corp	cmcsa	34.70	1.14	3.29%	8.50%	11.79%	4.10%	7.39%
Lumen Technologies Inc	lumn	5.22	nil					
Shenandoah Telecom	shen	15.88	0.09	0.57%	44.00%	44.57%	4.10%	4.67%
Telus Corp	tu	19.31	1.07	5.56%	16.00%	21.56%	4.10%	9.66%
Verizon Communications	vz	38.79	2.64	6.81%	2.50%	9.31%		9.31%
						16.15%	Mean	7.89%
						10.10%	Median	8.42%
						12.27%	Trimmed Mean	8.10%
						44.57%	Max	10.10%
						7.12%	Min	4.67%

Source: Value Line Projections 20-22 to 26-28

11.00%
Say **8.00%** **8.00%**

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE
2023 ASSESSMENT YEAR
TELECOMMUNICATIONS

Based on Earnings Growth

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

K_e = Cost of Equity
 D_1 = Expected Dividends
 P_0 = Current Price
 G = Sustainable Growth
 Adj G assumption: Sustainable g can not exceed inflation plus real GDP. Minimum g inflation

Company	Ticker	Stock Price (Po)	Expected Dividend (D1)	Dividend Yield (D1/Po)	Earnings Growth (G)	Ke	Sustainable Earnings Growth	Ke (Sus)
AT&T Inc	t	18.15	1.11	6.12%	0.76%	6.88%	2.30%	8.42%
Altice USA, Inc	atus	4.60	nil					
BCE Inc	bce	43.95	2.90	6.60%	4.06%	10.66%		10.66%
Cable One	cabo	711.86	11.50	1.62%	10.00%	11.62%	4.10%	5.72%
Charter Communications Inc	chtr	339.10	nil					
Comcast Corp	cmcsa	34.70	1.14	3.29%	7.00%	10.29%	4.10%	7.39%
Lumen Technologies Inc	lumn	5.22	nil		-16.75%			
Shenandoah Telecom	shen	15.88	0.09	0.57%	24.40%	24.97%	4.10%	4.67%
Telus Corp	tu	19.31	1.07	5.56%	9.88%	15.44%	4.10%	9.66%
Verizon Communications	vz	38.79	2.64	6.81%	0.82%	7.63%	2.30%	9.11%
						12.49%	Mean	7.94%
						10.66%	Median	8.42%
						11.12%	Trimmed Mean	8.06%
						24.97%	Max	10.66%
						6.88%	Min	4.67%

Source: Yahoo Finance 5 year growth est

11.00%
Say **8.00%** **8.00%**

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

WASHINGTON STATE DEPARTMENT OF REVENUE
2023 ASSESSMENT YEAR
TELECOMMUNICATIONS

Based on Return on Equity

$$K_e = (D1 / P_o) + G$$

Ke = Cost of Equity
D1 = Expected Dividends
E1 = Expected Earnings
Po = Current Price
G = Sustainable Growth
b = Retained Earnings % (plowback) (1 - payout ratio)
ROE = Return on Equity
Adj G assumption: Sustainable g can not exceed inflation plus real GDP. Minimum g inflation

Company	Ticker	Stock Price (Po)	Expected Dividend (D1)	Dividend Yield (D1/Po)	b (1-payout ratio)	ROE book	Proj Earnings (E1)	=ROE market	mk:bk	=ROE market	Growth (b*ROE)	Growth (b*ROE)	Growth (b*ROE) book	Ke	Sustainable Reinvestment Growth	Ke (Sus)
AT&T Inc	t	18.15	1.11	6.12%	50.0%	13.00%	2.40	13.22%	1.40	9.28%	6.61%	4.6%	6.50%	12.73%	4.10%	10.22%
Alice USA, Inc	atus	4.60	nil			nmf	0.45	9.78%	(4.42)	nmf						
BCE Inc	bce	43.95	2.90	6.60%		18.00%	2.35	5.35%	2.96	6.08%						
Cable One	cabo	711.86	11.50	1.62%	71.0%	19.00%	52.50	7.38%	2.35	8.09%	5.24%	5.7%	13.49%	6.85%	4.10%	5.72%
Charter Communications Inc	chtr	339.10	nil			56.00%	35.10	10.35%	5.68	9.87%						
Comcast Corp	cmcsa	34.70	1.14	3.29%	71.0%	19.50%	3.70	10.66%	1.81	10.78%	7.57%	7.7%	13.85%	10.86%	4.10%	7.39%
Lumen Technologies Inc	lumn	5.22	nil		47.0%	5.00%	0.60	11.49%	0.50	9.92%	5.40%	4.7%	2.35%			
Shenandoah Telecom	shen	15.88	0.09	0.57%		nmf	nil		1.25							
Telus Corp	tu	19.31	1.07	5.56%	26.0%	11.50%	0.98	5.05%	2.26	5.09%	1.31%	1.3%	2.99%	6.87%	2.30%	7.86%
Verizon Communications	vz	38.79	2.64	6.81%	51.0%	35.00%	4.80	12.37%	1.76	19.87%	6.31%	10.1%	17.85%	13.12%	4.10%	10.91%
														10.08%	Mean	8.42%
														10.86%	Median	7.86%
														10.15%	Trimmed Mean	8.49%
														13.12%	Max	10.91%
														6.85%	Min	5.72%
														10.25%	Sav	8.00%

SUPPORT FOR DEBT RATING AND DEBT YIELD RATE

WASHINGTON STATE DEPARTMENT OF REVENUE

2023 ASSESSMENT YEAR

TELECOMMUNICATIONS

Company	Ticker	Mergent's Ratings	S&P Ratings	WAYTM
AT&T Inc	t		BBB	5.82%
Altice USA, Inc	atus		B+	11.10%
BCE Inc	bce	Baa1	BBB+	5.53%
Cable One	cabo		BB	
Charter Communications Inc	chtr		BB+	7.11%
Comcast Corp	cmcsa	A3	A-	5.33%
Lumen Technologies Inc	lumn		B+	16.48%
Shenandoah Telecom	shen			
Telus Corp	tu		BBB	5.43%
Verizon Communications	vz	Baa1	BBB+	5.59%
Overall Average Debt Rating		Baa1	BBB-	5.80%

bond analysis, A-BBB- bonds

All issues 20+ year maturities

Guideline Companies, All Ratings	5.98%	5.75%
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bond analysis page 12

Mergent's Bond Record January 2023, page 81

Corporate	Aaa	Aa	A	Baa
October	5.10%	5.40%	5.74%	6.26%
November	4.90%	5.23%	5.58%	6.07%
December	4.43%	4.77%	5.12%	5.59%
4th Qtr Average	4.81%	5.13%	5.48%	5.97%
2022 Average	4.09%	4.33%	4.62%	5.08%
Public Utilities	Aaa	Aa	A	Baa
October		5.68%	5.88%	6.18%
November		5.54%	5.75%	6.05%
December		5.06%	5.28%	5.57%
4th Qtr Average		5.43%	5.64%	5.93%
2022 Average		4.53%	4.72%	5.03%
Industrials	Aaa	Aa	A	Baa
October	5.10%	5.11%	5.59%	6.33%
November	4.90%	4.92%	5.40%	6.08%
December	4.43%	4.48%	4.94%	5.61%
4th Qtr Average	4.81%	4.84%	5.31%	6.01%
2022 Average	4.07%	4.10%	4.49%	5.11%

Debt Yield Rate	5.75%
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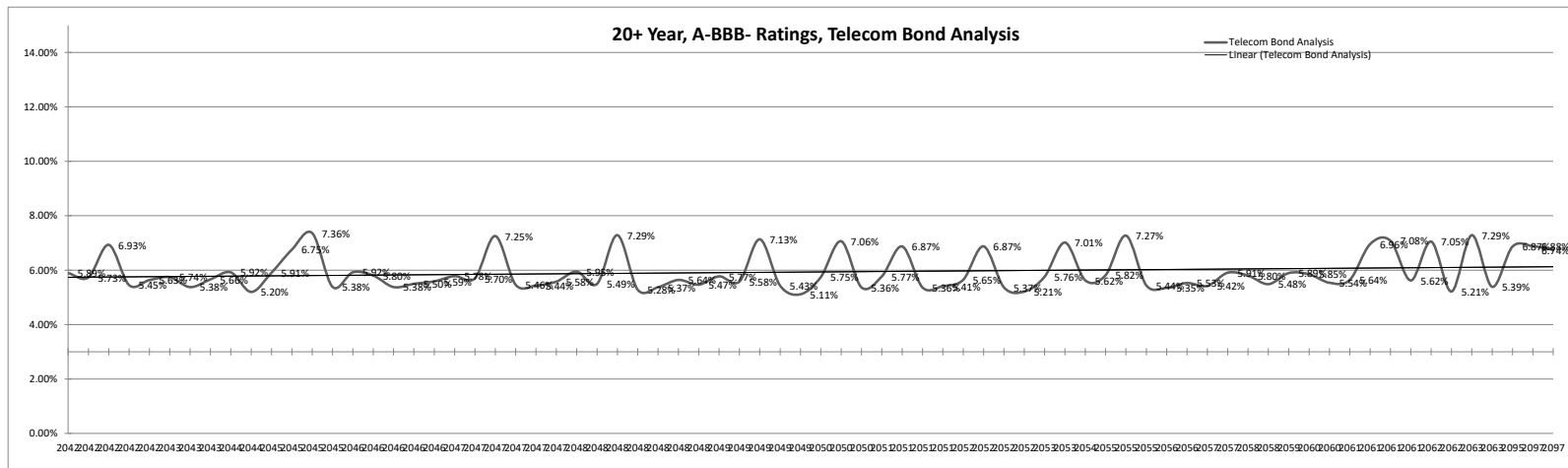
Secured Debt (Lease) Rate	based on Aa rate 4.75%
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to page 1

Telus	Sr unsecured note	4,600	2048	86.37 \$	750,000,000	5.33%	5.64%	0.02%	Baa1	\$	647,775,000	86.37%	\$	34,500,000	0.000160968	0.03383909	5.06
Telus	Sr unsecured note	4,300	2049	88.56 \$	500,000,000	4.86%	5.11%	0.01%	Baa1	\$	442,800,000	88.56%	\$	21,500,000	0.000097284	0.02045129	5.09
	2 Book Value	200	sum	174.93 \$	1,250,000,000	Percent of book	87.47%	0.03%		\$	1,090,575,000	87.25%	4.48%	56,000,000		5.429%	
Verizon Communications	Sr unsec note	2,987	2056	62.05 \$	4,498,814,000	4.81%	5.53%	0.09%	BBB+	\$	2,791,514,087	62.05%		134,379,574	0.000946113	0.003425807	5.46
Verizon Communications	Sr unsec note	3,700	2061	70.24 \$	3,500,000,000	5.27%	5.62%	0.07%	BBB+	\$	2,458,400,000	70.24%		120,500,000	0.000748455	0.002710103	5.59
Verizon Communications	Sr unsec note	3,000	2060	60.6 \$	2,000,000,000	4.95%	5.54%	0.04%	BBB+	\$	1,212,000,000	60.60%		60,000,000	0.000421346	0.001525664	5.48
Verizon Communications	fx rt Notes	4,672	2055	88.57 \$	5,500,000,000	5.27%	5.44%	0.11%	BBB+	\$	4,871,350,000	88.57%		256,960,000	0.001138196	0.004121328	5.43
Verizon Communications	fx rt Notes	5,012	2054	91.19 \$	5,500,000,000	5.50%	5.62%	0.12%	BBB+	\$	5,015,450,000	91.19%		276,660,000	0.001176786	0.004261059	5.61
Verizon Communications	sr rt	4,522	2048	87.42 \$	5,000,000,000	5.17%	5.47%	0.10%	BBB+	\$	4,371,000,000	87.42%		226,100,000	0.001040012	0.003765809	5.44
Verizon Communications	fx rt Notes	5,500	2047	99 \$	1,500,000,000	5.56%	5.58%	0.03%	BBB+	\$	1,465,000,000	99.00%		82,500,000	0.000318370	0.001152796	5.57
Verizon Communications	nt	4,862	2046	91.91 \$	4,500,000,000	5.29%	5.50%	0.09%	BBB+	\$	4,135,850,000	91.91%		218,790,000	0.000941395	0.003408726	5.48
Verizon Communications	fx rt Notes	4,125	2046	81.53 \$	1,500,000,000	5.06%	5.59%	0.03%	BBB+	\$	1,222,950,000	81.53%		61,875,000	0.000318934	0.001154837	5.54
Verizon Communications	Notes	6,560	2043	110.35 \$	15,000,000,000	5.94%	5.66%	0.32%	BBB+	\$	16,552,500,000	110.35%		982,500,000	0.003230865	0.011688733	5.70
Verizon Communications	Notes	3,950	2042	79.82 \$	1,250,000,000	4.82%	5.63%	0.05%	BBB+	\$	997,750,000	79.82%		48,125,000	0.000388012	0.000970453	5.54
Verizon Communications	fixed rate notes	4,750	2041	93.14 \$	750,000,000	5.10%	5.36%	0.02%	BBB+	\$	698,550,000	93.14%		35,625,000	0.000153097	0.000554352	5.33
Verizon Communications	fixed rate notes	6,000	2041	96.32 \$	1,000,000,000	6.23%	6.35%	0.02%	BBB+	\$	963,200,000	96.32%		60,000,000	0.000241817	0.000875603	6.34
Verizon Communications	fixed rate notes	2,850	2041	69.58 \$	1,000,000,000	4.10%	5.63%	0.02%	BBB+	\$	695,800,000	69.58%		26,500,000	0.000214145	0.000775405	5.47
Verizon Communications	fixed rate notes	3,400	2041	75.98 \$	3,750,000,000	4.47%	5.59%	0.08%	BBB+	\$	2,849,250,000	75.98%		127,500,000	0.000977193	0.002866580	5.5
Verizon Communications	fixed rate notes	2,650	2040	67.25 \$	3,000,000,000	3.94%	5.78%	0.07%	BBB+	\$	2,017,500,000	67.25%		79,500,000	0.000660216	0.002390596	5.56
Verizon Communications	Notes	7,350	2039	115.98 \$	1,000,000,000	6.94%	5.76%	0.02%	BBB+	\$	1,159,800,000	115.98%		73,500,000	0.000219321	0.000794145	5.82
Verizon Communications	Sr unsec note	4,912	2039	89.19 \$	1,706,297,000	5.16%	5.49%	0.04%	BBB+	\$	1,600,098,174	83.19%		82,107,012	0.000355513	0.001297288	5.45
Verizon Communications	Notes	6,400	2038	105.86 \$	1,750,000,000	6.05%	5.79%	0.04%	BBB+	\$	1,892,550,000	105.86%		112,000,000	0.000385706	0.001396616	5.81
Verizon Communications	Notes	6,900	2038	108.36 \$	1,250,000,000	6.37%	6.02%	0.03%	BBB+	\$	1,354,500,000	108.36%		86,250,000	0.000286340	0.001036818	6.05
Verizon Communications	Notes	6,250	2037	101.88 \$	750,000,000	6.13%	6.04%	0.02%	BBB+	\$	754,100,000	101.88%		46,875,000	0.000172456	0.000624450	6.05
Verizon Communications	fx rt Notes	2,250	2037	99.9 \$	3,000,000,000	5.26%	5.26%	0.06%	BBB+	\$	2,987,000,000	99.90%		157,500,000	0.000600567	0.002174609	5.26
Verizon Communications	fx rt Notes	4,272	2036	90.39 \$	2,867,000,000	4.73%	5.36%	0.06%	BBB+	\$	2,591,481,300	90.39%		122,478,240	0.000832324	0.002111849	5.3
Verizon Global Funding	Notes	2,100	2035	101.98 \$	1,000,000,000	5.74%	5.61%	1.54%	BBB+	\$	1,019,800,000	101.98%		59,500,000	0.000213553	0.000773259	5.63
	24 Book Val	2400	sum	2142.49 \$	72,572,111,000	Percent of book	89.27%			\$	65,667,493,561	90.49%	4.89%	3,546,724,826		5.588%	
	Total			\$	262,778,465,001				Total	\$	219,921,418,852.50	83.69%	4.64%	12,198,493,158	5.98%	7.799%	6.189

Source: FINRA, February 2023, 2022 Yr End Prices

Embedded debt rate	6.421%
Weighted average yield to maturity	5.9832%
Debt service / Market value	5.5468%



DATA INPUT

WASHINGTON STATE DEPARTMENT OF REVENUE

2023 ASSESSMENT YEAR

TELECOMMUNICATIONS

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

Guideline Companies		Stock Price	Revenues	Cash Flow	Earnings	Dividends	Capital Spending	Bk Value	Common	Calculated Debt
Name	Ticker	(YE Adj Close)	Per Share	Per Share	Per Share	Per Share	per share	Stock	Shares	mk to bk
AT&T Inc	t	18.15	16.94	5.28	2.64	1.35	2.75	12.95	7,127,600,000	82.44%
Altice USA, Inc	atus	4.60	21.15	4.31	0.43	nil	4.16	(1.04)	456,200,000	67.03%
BCE Inc	bce	43.95	19.60	6.30	2.48	2.79	4.25	14.85	911,943,000	84.75%
Cable One	cabo	711.86	294.14	100.79	38.06	11.20	71.38	303.20	5,809,413	89.78%
Charter Communications Inc	chtr	339.10	353.89	91.44	30.74	nil	61.42	59.74	152,651,397	79.60%
Comcast Corp	cmcsa	34.70	28.77	6.58	3.64	1.06	2.60	19.18	4,220,100,000	81.67%
Lumen Technologies Inc	lumn	5.22	17.36	1.68	(1.58)	0.75	3.00	10.36	1,007,500,003	55.74%
Shenandoah Telecom	shen	15.88	5.34	1.27	(0.11)	0.08	3.78	12.73	50,110,000	100.00%
Telus Corp	tu	19.31	9.51	2.61	0.85	0.98	1.88	8.55	1,431,000,000	87.25%
Verizon Communications	vz	38.79	32.58	9.15	5.18	2.56	5.00	22.02	4,199,882,937	90.49%

Value Line March 10, 2023

Yahoo

Value Line

Value Line

Value Line

Value Line

Value Line

Value Line

Value Line

Bond analysis
81.87%
83.69%
83.69%
78.62%

										2023 Forecast				
Wtd Avg YTM	Payout Ratio	Payout Ratio	ROE	Timeliness	Safety	Technical	Income Tax Rate	Return on Total Capital	CF growth	Revenues	CF	Earnings	Dividends	Common
	calculated	V L	V L	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	Shares
5.82%	51%	50%	20.3%		3		20.0%	10.10%	-0.5%	17.55	5.85	2.40	1.11	7,200,000,000
11.10%		nil	nmf	5	3	2	nmf	3.50%	4.0%	20.30	4.40	0.45	nil	458,000,000
5.53%	113%	nmf	17.5%	4	2	4	25.0%	8.00%	2.5%	20.20	6.50	2.35	2.90	915,000,000
	29%	29%	13.5%	4	3	3	13.7%	5.50%	3.5%	263.10	110.00	52.50	11.50	6,500,000
7.11%		nil	55.4%	4	3	3	21.6%	7.00%	11.0%	394.30	102.35	35.10	nil	140,000,000
5.33%	29%	29%	19.9%	3	1	3	25.3%	10.10%	8.0%	30.85	6.95	3.70	1.14	3,900,000,000
16.48%	-47%	53%	17.2%	3	3	1	24.6%	7.10%	-1.5%	16.30	4.05	0.60	nil	900,000,000
	-73%	nmf	nmf		4		nmf	nmf	10.5%	5.70	1.40	nil	0.09	50,000,000
5.43%	116%	74%	9.7%	4	2	4	26.0%	4.90%	9.5%	10.20	2.93	0.98	1.07	1,425,000,000
5.59%	49%	49%	37.0%	4	1	4	23.1%	12.50%	0.5%	33.25	9.00	4.80	2.64	4,150,000,000
Bond analysis	calculated	Value Line	Value Line	4	3	3	22%	7.63%	4.75%					
								7.10%	3.75%					
	33%	47%	23.8%					7.53%	4.75%					
	39.4%	49.5%	18.7%					7.50%	4.8%					
	#NUM!	42.3%	18.3%					6.63%						
								0.029						
								0.376						
														avg
														med
														max
														min
														std

P/E	Forecast Dividends % Change						Forecast Earnings % Change						Forecast Cash Flow %	
	2023	2024	2025	2026	2027	2028	2023	2024	2025	2026	2027	2028	2023	2024
calc	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL
7.56	4.5	4.5	4.5	2.5	-6.5	-6.5	7	5.5	5.5	2.5	0.5	1	4.5	4.5
10.22										44.5	10	10		
18.70	4	4	4	4.5	4	3	5	4.5	3	3.5	4.5	3.5	5.5	5.5
13.56	11.5	9.5	7.5	6.5	5.5	5.5	13	15	11.5	11.5	7	9	10.5	10.5
9.66							19.5	17.5	34	27.5	22.5	23	10	9.5
9.38	12	11	8.5	9	9	9	12.5	13.5	8.5	11	9	8.5	9.5	9.5
8.70	-9.5	-12	-9	-5.5	3		2.5	1	2.5	3.5	1.5	4.5	-0.5	0.5
nmf	6	7.5	8.5	5	-7	-7	10	20.5	19.5	6.5	9.5	2.5	7	7.5
19.80	7	7	7	7	7	7	8.5	7.5	9	13	15	15	7.5	7
8.08	2	2	2	2	2.5	2.5	4.5	4	4	2.5	2.5	2.5	-3.5	2

11.74
9.66
11.19
19.80
7.56
4.60

Change				Forecast Revenue % Change						Income		Balance Sheet
2025	2026	2027	2028	2023	2024	2025	2026	2027	2028	Operating Income	EBITDA	Current Assets
VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	M*	M*	M*
3.5	2	-0.5	-0.5	1	1	2.5	1.5	-4.5	-4.5	22,911,000,000	13,434,000,000	33,108,000,000
9	12	5	4			6	7.5	3	3	1,932,879,000	3,866,537,000	2,568,445,000
4	3.5	3	2	2	2	0.5	2	2	1	4,044,313,146	7,532,496,307	4,790,989,660
7	7.5	3.5	9.5	6	8.5	5	3.5	-0.5	9.5	534,355,000	911,851,000	346,705,000
9.5	11	15	14.5	10	11	7.5	9	14.5	14	12,243,000,000	21,616,000,000	4,017,000,000
6.5	7.5	7.5	7.5	7.5	9	6.5	7.5	7	7	22,624,000,000	36,459,000,000	21,826,000,000
2.5	0.5	-1.5	2.5	-3.5	-2.5	-0.5	-2	-0.5	4	3,293,000,000	6,703,000,000	5,420,000,000
6	-7.5	0.5	-1.5	5	5	4.5	-5.5	0.5	0.5	(1,466,000)	75,961,000	128,562,000
8	10	9.5	9.5	5.5	7	4	5	7	7	2,097,488,922	4,906,203,840	4,499,261,448
1.5	0.5	0.5	0.5	1.5	1.5	2	2.5	2.5	2.5	30,467,000,000	47,870,000,000	37,857,000,000

					Cash Flow	Fair Value
					Depreciation & Amortization	Debt
PP & E Gross	Intang	Current Liabilities	Long Term Debt	curr long term debt		
M*	M*	M*	M*	M*	M*	10-K
351,444,000,000	130,420,000,000	56,173,000,000	147,082,000,000	7,597,000,000	18,021,000,000	125,207,000,000
15,536,778,000	20,426,360,000	4,039,701,000	24,772,893,000	2,075,077,000	1,773,673,000	22,263,443,000
61,751,846,381	16,381,831,610	8,470,457,903	18,508,862,629		3,488,183,161	17,005,908,419
3,706,925,000	2,898,991,000	244,155,000.00	3,792,817,000	55,931,000	350,462,000	3,455,268,000
72,203,000,000	85,613,000,000	12,065,000,000	96,093,000,000	1,805,000,000	8,903,000,000	82,798,000,000
112,400,000,000	127,125,000,000	27,887,000,000	93,068,000,000	1,743,000,000	13,821,000,000	86,900,000,000
39,052,000,000	13,855,000,000	4,803,000,000	20,418,000,000	498,000,000	3,239,000,000	17,626,000,000
1,210,177,000	105,510,000	96,421,000	126,283,000	3,477,000	68,899,000	75,648,000
33,607,090,103	18,610,044,313	6,115,952,733	16,614,475,628	1,876,661,743	2,549,483,013	17,237,813,885
333,819,000,000	180,358,000,000	50,171,000,000	140,676,000,000	9,963,000,000	17,099,000,000	140,773,000,000

1,024,730,816,484

69,313,700,174

513,342,081,304

AVERAGE FOURTH QUARTER STOCK PRICE

WASHINGTON STATE DEPARTMENT OF REVENUE

2023 ASSESSMENT YEAR

TELECOMMUNICATIONS

								12/30/2022
								Adj Close
ATT	T							
Date	Open	High	Low	Close	Adj Close	Volume		
12/30/2022	18.42	18.48	18.22	18.41	18.14794	26200800		18.15
Lumen Tech	LUMN							
Date	Open	High	Low	Close	Adj Close	Volume		
12/30/2022	5.24	5.3	5.11	5.22	5.22	18540900		5.22
Comcast	CMCSA							
Date	Open	High	Low	Close	Adj Close	Volume		
12/30/2022	34.81	34.98	34.53	34.97	34.7	15385300		34.70
Verizon	VZ							
Date	Open	High	Low	Close	Adj Close	Volume		
12/30/2022	39.31	39.69	39.07	39.4	38.79018	43999100		38.79
Telus	TU							
Date	Open	High	Low	Close	Adj Close	Volume		
12/30/2022	19.48	19.51	19.12	19.31	19.31	1685000		19.31
BCE	BCE							
Date	Open	High	Low	Close	Adj Close	Volume		
12/30/2022	44	44.35	43.65	43.95	43.95	1167800		43.95
Altice USA, In	ATUS							
Date	Open	High	Low	Close	Adj Close	Volume		
12/30/2022	4.48	4.63	4.42	4.6	4.6	2850200		4.60
CHTR								
Date	Open	High	Low	Close	Adj Close	Volume		
12/30/2022	336.3	339.87	334.98	339.1	339.1	1201500		339.10
Cable One, In	CABO							
Date	Open	High	Low	Close	Adj Close	Volume		
12/30/2022	693	711.89	688.16	711.86	711.86	66300		711.86
Shenandoah T	SHEN							
Date	Open	High	Low	Close	Adj Close	Volume		
12/30/2022	15.88	15.93	15.65	15.88	15.88	157400		15.88

Source:

finance.yahoo.com

Historical Stock Quotes

02/06/2023

IMPLIED PREMIUMS FOR US MARKET

Updated January 5, 2023

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

Year	Earnings Yield	Dividend Yield	S&P 500	Earnings*	Dividends*	Ends + Buyback	Increase in Earnings	Increase in Divid.	T.Bill Rate	T.Bond Rate	Bond-Bill	Unadjusted Growth	Adjusted Premium	Real Growth Est.	Implied ERP (FC)	Implied ERP (FC)	ERP/Riskfree
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%	9.45%	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%	5.00%	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%	6.21%	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%	2.03%	3.96%	5.20%	5.06%	2.71
2020	3.72%	1.51%	3756.07	139.76	56.70	127.78	-13.91%	-3.57%	0.09%	0.93%	0.84%	0.74%	1.65%	5.42%	4.72%	4.94%	5.08
2021	4.33%	1.24%	4766.18	206.38	59.20	147.24	47.67%	4.41%	0.06%	1.51%	1.45%	1.71%	1.72%	6.47%	4.24%	4.90%	2.81
2022	5.72%	1.78%	3839.50	219.49	68.34	181.99	6.35%	15.44%	4.42%	3.88%	-0.54%	5.59%	2.16%	6.41%	5.94%	5.11%	1.53

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