

COST OF CAPITAL STUDY

YIELD CAPITALIZATION
2019 ASSESSMENT YEAR

APPENDIX C

TELECOMMUNICATIONS

EQUITY RATE					9.00%	
CAPITAL ASSET PRICING MODEL						PAGE
CAPM Ex Ante		8.7%				6
DIVIDEND GROWTH MODELS						
Value Line, based on Dividends Growth		9.00%				7
Value Line, based on Earnings Growth		9.00%				8
Value Line, based on Return on Equity		7.50%				10
			RANGE		7.5% - 9%	
DEBT RATE					5.00%	11
SECURED DEBT (LEASE) RATE					4.25%	11
MARKET CAPITAL STRUCTURE						
Equity	60%	x	9.00%	=	5.40%	3
Debt	40%	x	5.00%	=	2.00%	3
Marginal Tax Rate	24%	=	(1-.024)	x	2.00%	<u>1.52%</u>
WEIGHTED AVERAGE COST OF CAPITAL					6.9%	

rounded

SUPPORT FOR GUIDELINE COMPANIES

WASHINGTON STATE DEPARTMENT OF REVENUE
 2019 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	0.80	A++	95	20	100	8.5	6.80%	184,164,800,000	51.5%	-	0.0%	173,440,000,000	48.5%	357,604,800,000
ATN International Inc	atni	0.80	B++	45	40	45	nmf	1.20%	695,345,340	88.4%	-	0.0%	91,000,000	11.6%	786,345,340
BCE Inc	bce	0.75	A	100	25	80	16.4	5.30%	15,098,742,000	43.4%	1,602,000,000	4.6%	18,077,777,778	52.0%	34,778,519,778
Charter	chtr	1.05	B+	60	95	5	65.5	nil	36,284,216,626	33.3%	-	0.0%	72,827,000,000	66.7%	109,111,216,626
CenturyLink Inc	ctl	1.05	B	45	5	55	10.1	8.40%	19,936,571,850	35.6%	-	0.0%	36,061,000,000	64.4%	55,997,571,850
Cincinnati Bell	cbb	1.60	C+	15	15	5	nmf	nil	-	nmf	-	-	-	-	-
Comcast Corp	comca	0.85	A	90	90	95	15.1	2.20%	71,600,727,098	39.1%	-	0.0%	111,743,000,000	60.9%	183,343,727,098
Consolidated Communi	cnsi	1.15	C++	30	20	15	nmf	15.69%	410,038,854	14.9%	-	0.0%	2,345,439,000	85.1%	2,755,477,854
Frontier	frt	1.55	C	5	5	15	nmf	nil	1,596,393,480	8.5%	-	0.0%	17,172,000,000	91.5%	18,768,393,480
Telus Corp	tu	0.60	B++	100	70	90	17.5	4.80%	7,600,645,992	42.1%	-	0.0%	10,445,185,185	57.9%	18,045,831,178
Verizon Communicatio	vz	0.75	A++	95	25	65	11.9	4.30%	54,708,287,491	32.6%	-	0.0%	113,063,000,000	67.4%	167,771,287,491
Mean		1.00	B+	62	37	52	20.7	6.09%	39,209,576,873	38.9%		0.5%	55,526,540,196	60.6%	
Weighted Mean									392,095,768,732	41.3%	1,602,000,000	0.17%	555,265,401,963	58.5%	948,963,170,695
Median		0.85						5.05%		37.3%		0.0%		62.7%	
Trimmed Mean		0.97						5.30%		36.6%		0.0%		62.9%	
Max		1.60						15.69%		88.4%		4.6%		91.5%	
Min		0.60						1.20%		8.5%		0.0%		11.6%	
Say		1.00								40%		0.0%		60%	100%

**SUPPORT FOR CAPITAL STRUCTURE
MARKET VALUE**

WASHINGTON STATE DEPARTMENT OF REVENUE
2019 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	28.075	7,285,000,000	204,524,007,375	53.6%	-	0.0%	177,250,000,000	46.4%	381,774,007,375
ATN International Inc	atni	71.530	16,003,345	1,144,719,252	92.6%	-	0.0%	91,600,000	7.4%	1,236,319,252
BCE Inc	bce	39.530	898,200,000	35,505,845,102	63.3%	1,602,000,000	2.9%	18,964,444,444	33.8%	56,072,289,546
Charter	chtr	284.970	225,353,808	64,219,074,891	47.6%	-	0.0%	70,695,000,000	52.4%	134,914,074,891
CenturyLink Inc	ctl	15.150	1,080,573,000	16,370,680,950	32.7%	-	0.0%	33,716,000,000	67.3%	50,086,680,950
Cincinnati Bell	cbb	7.780	50,184,114	390,432,407	16.9%	129,400,000	5.6%	1,791,100,000	77.5%	2,310,932,407
Comcast Corp	cmcsa	34.050	4,525,962,522	154,109,019,348	57.5%	-	0.0%	114,100,000,000	42.5%	268,209,019,348
Consolidated Communicati	cnsi	9.880	71,187,301	703,330,534	24.3%	-	0.0%	2,185,489,000	75.7%	2,888,819,534
Frontier	fti	2.380	105,303,000	250,621,140	1.9%	-	0.0%	12,756,000,000	98.1%	13,006,621,140
Telus Corp	tu	33.140	599,000,122	19,850,863,444	65.4%	-	0.0%	10,525,185,185	34.6%	30,376,048,629
Verizon Communications	vz	55.640	4,132,045,883	229,906,177,597	65.8%	-	0.0%	119,440,000,000	34.2%	349,346,177,597
			Mean		47.4%		0.8%		51.8%	
			Weighted Mean	726,974,772,039	56.3%	1,731,400,000	0.13%	561,514,818,630	43.5%	1,290,220,990,669
			Median		53.6%		0.00%		46.4%	
			Trimmed Mean		47.4%		0.3%		51.6%	
			Max		92.6%		5.6%		98.1%	
			Min		1.9%		0.0%		7.4%	
			Say		60%		0%		40%	100%

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

SUPPORT FOR MARKET MULTIPLES

WASHINGTON STATE DEPARTMENT OF REVENUE

2019 ASSESSMENT YEAR

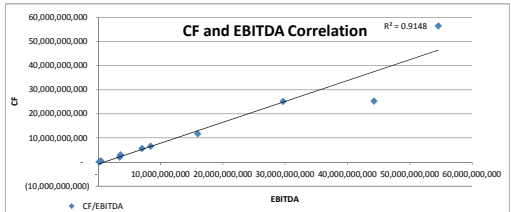
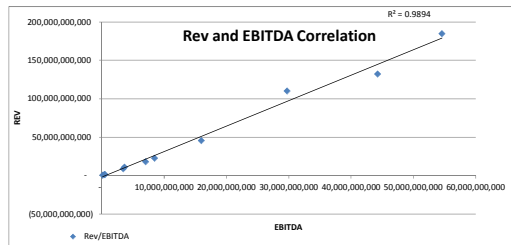
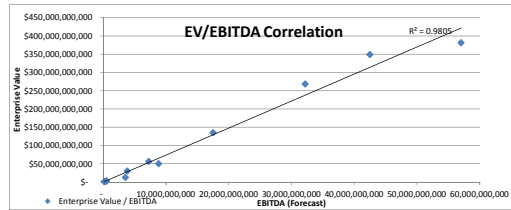
TELECOMMUNICATIONS

Company	Ticker	Stock Close	Revenues	Multiple	Cash Flow	Multiple	Earnings	Multiple	Divds Decl	Multiple	Captl Spend	Multiple	Book Value	Multiple
AT&T Inc	t	28.075	23.45	1.2	7.19	3.9	3.52	8.0	2.00	14.0	2.92	9.6	25.28	1.1
ATN International Inc	atni	71.530	28.20	2.5	6.00	11.9	0.64	111.8	0.68	105.2	11.62	6.2	43.45	1.6
BCE Inc	bce	39.530	19.90	2.0	5.93	6.7	2.67	14.8	2.36	16.7	3.23	12.2	16.81	2.4
Charter	chtr	284.970	193.62	1.5	51.24	5.6	5.22	54.6	nil		40.49	7.0	161.01	1.8
CenturyLink Inc	ctl	15.150	21.80	0.7	5.95	2.5	1.19	12.7	2.16	7.0	2.95	5.1	18.45	0.82
Cincinnati Bell	cbb	7.780	27.46	0.28	3.99	1.9	(1.11)	nmf	nil		4.40	1.8	(1.49)	nmf
Comcast Corp	cmcsa	34.050	20.88	1.6	5.05	6.7	2.55	13.4	0.76	44.8	2.26	15.1	15.82	2.15
Consolidated Communic	cnsi	9.880	19.65	0.5	5.36	1.8	(0.73)	nmf	1.55	6.4	3.44	2.9	5.76	1.7
Frontier	frt	2.380	81.59	0.03	17.38	0.1	(1.51)	nmf	nil		11.29	0.2	15.16	0.16
Telus Corp	tu	33.140	17.77	1.9	4.81	6.9	1.99	16.7	1.53	21.7	3.56	9.3	12.69	2.6
Verizon Communications	vz	55.640	31.67	1.8	6.10	9.1	4.71	11.8	2.37	23.5	4.03	13.8	13.24	4.2
				1.3		5.2		30.5		29.9		7.6		1.9
				1.5		5.6		14.1		19.2		7.0		1.7
				1.3		5.0		20.7		21.3		7.5		1.8
				2.5		11.9		111.8		105.2		15.1		4.2
				0.03		0.1						0.2		0.16
				0.8		3.5		36.0		32.7		4.9		1.1
				0.6		0.7		1.2		1.1		0.7		0.6
				0.2		1.1		15.4		14.5		1.7		0.9
				0.6		2.2		12.5		12.3		4.0		1.2
				1.8		6.8		26.2		28.8		10.9		2.3
				1.50		5.00		20.00		20.00		7.50		1.80

ENTERPRISE VALUE MULTIPLES
 WASHINGTON STATE DEPARTMENT OF REVENUE
 2019 ASSESSMENT YEAR
 TELECOMMUNICATIONS

Guideline Companies	Ticker	EV	EBITDA	EBITDA	EV / EBITDA	EV / EBITDA	Annual Change Rate	EBITDA	EV / EBITDA	Sales (Revenue)			CF	Debt Service	EV / CF
										historic	historic M*	historic			
AT&T Inc	t	\$ 381,774,007,375	54,572,000,000	61,260,000,000	7.00	6.23	4.50%	57,027,740,000	6.89	184,874,750,000	2.07	56,458,750,000	8,862,500,000	5.84	
ATN International Inc	atni	\$ 1,236,319,252	121,000,000	147,000,000	10.22	8.41	-1.00%	119,790,000	10.32	460,000,000	2.69	94,400,000	4,580,000	12.49	
BCE Inc	bce	\$ 56,072,289,546	7,003,703,704	6,704,444,444	8.01	8.36	3.50%	7,248,833,333	7.74	18,270,000,000	3.07	5,715,000,000	948,222,222	8.42	
Charter	chtr	\$ 134,914,074,891	15,966,000,000	15,966,000,000	8.45	8.45	9.50%	17,482,770,000	7.72	45,705,000,000	2.95	11,770,000,000	3,534,750,000	8.82	
CenturyLink Inc	ctl	\$ 50,086,680,950	8,416,000,000	5,734,000,000	5.95	8.74	4.50%	8,794,720,000	5.70	22,897,500,000	2.19	6,557,500,000	1,685,800,000	6.08	
Cincinnati Bell	ccb	\$ 2,310,932,407	366,000,000	323,000,000	6.31	7.15	4.00%	380,640,000	6.07	1,560,000,000	1.48	292,500,000	89,555,000	6.05	
Comcast Corp	comca	\$ 268,209,015,348	28,685,000,000	28,801,000,000	9.04	9.00	8.50%	32,208,215,000	8.33	110,025,000,000	2.44	25,240,000,000	3,703,000,000	8.68	
Consolidated Communications	cnsl	\$ 2,888,819,534	454,000,000	493,000,000	6.36	5.86	9.00%	494,860,000	5.84	1,400,400,000	2.06	421,200,000	109,274,450	5.45	
Frontier	fr	\$ 13,006,621,140	3,426,000,000	2,785,000,000	3.80	4.67	2.50%	3,511,650,000	3.70	8,793,425,000	1.48	2,030,875,000	637,800,000	4.87	
Telus corp	tu	\$ 30,376,045,629	3,595,555,556	3,751,111,111	8.45	8.10	8.00%	3,811,288,889	7.97	11,172,777,778	2.72	2,897,037,037	526,259,259	8.62	
Verizon Communications	vz	\$ 349,346,177,597	44,272,000,000	41,859,000,000	7.89	8.35	-4.00%	42,501,120,000	8.22	132,432,750,000	2.64	25,284,500,000	5,972,000,000	11.18	
Mean					7.41	7.57	4.27%		7.12			2.34		7.86	
Median					7.89	8.35	4.50%		7.72			2.44		8.42	
Trimmed Mean					7.49	7.74	4.61%		7.14			2.36		7.68	
Max					10.22	9.00	9.50%		10.32			3.07		12.49	
Min					3.80	4.67	-4.00%		3.70			1.48		4.87	
Std Dev					1.76	1.40	0.04		1.76			0.54		2.45	
Coefficient of Variation					0.24	0.19	0.97		0.25			0.23		0.31	
Harmonic Mean					6.93	7.28	#NUM!		6.65			2.21		7.22	
Say					7.50	7.50	4.50%		7.50			2.40		7.75	

EBITDA from Morningstar
 Morningstar data page



Forecast EV/EBITDA By Rank

Guideline Companies	EV/EBITDA forecast
Frontier	3.70
CenturyLink Inc	5.70
Consolidated Communications	5.84
Cincinnati Bell	6.07
AT&T Inc	6.69
Charter	7.72
BCE Inc	7.74
Telus Corp	7.97
Verizon Communications	8.22
Comcast Corp	8.33
ATN International Inc	10.32

Low Average	5.95
Low Median	5.95
Say	6.00
High Average	8.51
High Median	8.22
Say	8.50

Guideline Companies	EV/Sales
Frontier	1.48
Cincinnati Bell	1.48
Consolidated Communications	2.06
AT&T Inc	2.07
CenturyLink Inc	2.19
Comcast Corp	2.44
Verizon Communications	2.64
ATN International Inc	2.69
Telus Corp	2.72
Charter	2.95
BCE Inc	3.07
Low Average	3.07
Low Median	2.07
Say	3.8
High Average	2.81
High Median	2.72
Say	2.78

Guideline Companies	EV/CF
Frontier	4.87
Consolidated Communications	5.45
AT&T Inc	5.84
CenturyLink Inc	6.05
Cincinnati Bell	6.08
BCE Inc	6.82
Telus Corp	8.52
Comcast Corp	8.68
Charter	8.82
Verizon Communications	11.18
ATN International Inc	12.49
Low Average	6.12
Low Median	5.95
Say	6
High Average	3.96
High Median	8.82
Say	9.00

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT CAPITAL ASSET PRICING MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE
2019 ASSESSMENT YEAR
TELECOMMUNICATIONS

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

Ke = Cost of Equity 8.7%

to page 1

Rm =	rate of return	8.65%
Rf =	risk free rate	3.00%
Rp =	risk premium	5.65%
B =	Beta	1.00

page 2

Rp = Risk Premium 5.65%

to above

Shannon Pratt and Roger Grabowski	3.5 - 6%	
Cost of Capital, Applications and Examples, Third Edition, 2008, Page 113		
Dr. Aswath Damodaran	5.96%	chart page 15
http://pages.stern.nyu.edu/~adamodar/	5.65%	adjusted for Rf
2018 Implied Premium		
John Graham and Campbell Harvey	6.21%	10 year expected return
Duke CFO magazine Global Business Outlook	5.89%-6.54%	95% Interval 10 year expect
4th Qtr 2018	6.27%	adjusted for Rf
	3.06%	Rf rate used in survey

Rf = Risk Free Rate 3.00%

to above

Value Line Investment Survey, Selected Yields January 4, 2019, page 1949

as of 12-26-18

US Treasury Securities year end data	
5 year	2.65%
10 year	2.81%
30 year	3.06%
30 year Zero	3.10%

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

January 2, 2019 as of 12-31-18

Treasury Constant Maturities		
5 year	2.51%	
10 year	2.69%	
20 year	2.87%	
30 year	3.02%	
20 year TIPS	1.09%	1.78%
30 year TIPS	1.21%	1.81%
		TIPS inflation indication

Inflation 2.00%

to appraisal template

Value Line Investment Survey, Economic Series January 4, 2019, page 1500

Consumer Price Index Annual Rate of Change 2021-2023

2.30%

The Livingston Survey December 21, 2018, page 4, 10

Inflation median (measured by the Consumer Price Index) over next 10 years

2.23%

Gross Domestic Product (GDP) Nominal 3.90%

real GDP + inflation est

Federal Reserve Projected Long Run Real GDP Growth

Median Projection Value From Dec 19, 2018 Report

1.90%

<https://www.federalreserve.gov/monetarypolicy/files/fomcprojtabl20181219.pdf>

Congressional Budget Office Real GDP Economic Projections

The Budget and Economic Outlook 2019-2029

Table E-1, pg 147

Average Percentage Change Year To Year

2019-2023

1.90%

<http://www.cbo.gov/publication/54918>

2024-2029

1.78%

Federal Reserve Bank of Philadelphia

The Livingston Survey, December 21, 2018, page 4, 10

Average Annual Real GDP Growth Rate for Next 10 Years

2.07%

<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
2019 ASSESSMENT YEAR
TELECOMMUNICATIONS

Based on Dividend 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)	Dividend Growth (G)	Ke	Sustainable Dividend Growth	Ke (Sus)
AT&T Inc	t	28.075	2.04	7.27%	4.50%	11.77%	3.90%	11.17%
ATN International Inc	atni	71.530	0.68	0.95%	-4.00%	nmf	2.00%	2.95%
BCE Inc	bce	39.530	2.45	6.20%	4.00%	10.20%	3.90%	10.10%
Charter	chtr	284.970	nil		nil			
CenturyLink Inc	ctl	15.150	1.00	6.60%	0.00%	6.60%	2.00%	8.60%
Cincinnati Bell	cbb	7.780	nil		nil			
Comcast Corp	cmcsa	34.050	0.84	2.47%	13.00%	15.47%	3.90%	6.37%
Consolidated Communications	cnsl	9.880	1.55	15.69%	0.00%	15.69%	2.00%	17.69%
Frontier	fttr	2.380	nil		nmf			
Telus Corp	tu	33.140	1.64	4.96%	7.00%	11.96%	3.90%	8.86%
Verizon Communications	vz	55.640	2.37	4.26%	1.50%	5.76%	2.00%	5.76%
						11.06%	Mean	8.94%
						11.77%	Median	8.73%
						11.20%	Trimmed Mean	8.48%
						15.69%	Max	17.69%
						5.76%	Min	2.95%

Source: Value Line Projections 16-18 to 22-24

11.25% **8.75%**
Say **9.00%**

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE
2019 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	28.075	2.04	7.27%	5.50%	12.77%	3.90%	11.17%
ATN International Inc	atni	71.530	0.68	0.95%	16.00%	16.95%	3.90%	4.85%
BCE Inc	bce	39.530	2.45	6.20%	5.00%	11.20%	3.90%	10.10%
Charter	chtr	284.970	nil					
CenturyLink Inc	ctl	15.150	1.00	6.60%	2.50%	9.10%		9.10%
Cincinnati Bell	cbb	7.780	nil					
Comcast Corp	cmcsa	34.050	0.84	2.47%	13.00%	15.47%	3.90%	6.37%
Consolidated Communication	cnsi	9.880	1.55	15.69%			2.00%	17.69%
Frontier	frt	2.380	nil					
Telus Corp	tu	33.140	1.64	4.96%	7.50%	12.46%	3.90%	8.86%
Verizon Communications	vz	55.640	2.37	4.26%	4.00%	8.26%	3.90%	8.16%
						12.31%	Mean	9.54%
						12.46%	Median	8.98%
						12.20%	Trimmed Mean	8.96%
						16.95%	Max	17.69%
						8.26%	Min	4.85%
						12.25%		9.00%
						Say	9.00%	

Source: Value Line Projections 16-18 to 22-24

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT DIVIDEND GROWTH MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE
2019 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	28.075	2.04	7.27%	5.84%	13.11%	3.90%	11.17%
ATN International Inc	atni	71.530	0.68	0.95%	na			
BCE Inc	bce	39.530	2.45	6.20%	2.74%	8.94%		8.94%
Charter	chtr	284.97	nil		58.78%			
CenturyLink Inc	ctl	15.150	1.00	6.60%	-7.42%	-0.82%	2.00%	8.60%
Cincinnati Bell	cbb	7.780	nil		19.20%			
Comcast Corp	cmcsa	34.050	0.84	2.47%	17.05%	19.52%	3.90%	6.37%
Consolidated Communication	cnsi	9.880	1.55	15.69%	2.00%	17.69%		17.69%
Frontier	frt	2.380	nil		7.30%		3.90%	3.90%
Telus Corp	tu	33.140	1.64	4.96%	4.68%	9.64%	3.90%	8.86%
Verizon Communications	vz	55.640	2.37	4.26%	6.02%	10.28%	3.90%	8.16%
						11.19%	Mean	9.21%
						10.28%	Median	8.73%
						11.93%	Trimmed Mean	8.68%
						19.52%	Max	17.69%
						-0.82%	Min	3.90%

Source: Yahoo Finance 5 year growth est

11.00% **9.00%**
Say

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

WASHINGTON STATE DEPARTMENT OF REVENUE
2019 ASSESSMENT YEAR
TELECOMMUNICATIONS

Based on Return on Equity

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

$$Ke = (D1 / Po) + G$$

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	28.075	2.04	7.27%	44.0%	13.50%	3.65	13.00%	1.11	12.16%	5.72%	5.3%	5.94%	12.99%	3.90%	11.17%
ATN International Inc	atni	71.530	0.68	0.95%	-6.0%	2.00%	0.90	1.26%	1.65	1.21%	-0.08%	-0.1%	-0.12%	0.88%	2.00%	2.95%
BCE Inc	bce	39.530	2.45	6.20%	12.0%	16.00%	2.75	6.96%	2.35	6.80%	0.83%	0.8%	1.92%	7.03%	2.00%	8.20%
Charter	chtr	284.970	nil			5.00%	7.20	2.53%	1.77	2.83%						
CenturyLink Inc	ctl	15.150	1.00	6.60%		6.00%	1.20	7.92%	0.82	7.31%						
Cincinnati Bell	cbb	7.780	nil			nmf	(0.55)									
Comcast Corp	cmcsa	34.050	0.84	2.47%	72.0%	15.50%	2.80	8.22%	2.15	7.20%	5.92%	5.2%	11.16%	8.39%	3.90%	6.37%
Consolidated Communicati	cnsl	9.880	1.55	15.69%		nmf	(0.55)									
Frontier	fr	2.380	nil			nmf	0.05									
Telus Corp	tu	33.140	1.64	4.96%	30.0%	16.00%	2.11	6.37%	2.61	6.13%	1.91%	1.8%	4.80%	6.87%	2.00%	6.96%
Verizon Communications	vz	55.640	2.37	4.26%	49.0%	37%	4.65	8.36%	4.20	8.80%	4.10%	4.3%	18.13%	8.35%	3.90%	8.16%
														7.42%	Mean	7.30%
														7.69%	Median	7.56%
														7.66%	Trimmed Mean	7.42%
														12.99%	Max	11.17%
														0.88%	Min	2.95%
														7.50%	Say	7.50%

SUPPORT FOR DEBT RATING AND DEBT YIELD RATE

WASHINGTON STATE DEPARTMENT OF REVENUE

2019 ASSESSMENT YEAR

TELECOMMUNICATIONS

Company	Ticker	Mergent's Ratings	S&P Ratings	WAYTM
AT&T Inc	t	Baa2	BBB	5.58%
ATN International Inc	atni			
BCE Inc	bce	Baa1	BBB+	
Charter	chtr	Ba1	BB+	
CenturyLink Inc	ctl	Ba2	BB	9.12%
Cincinnati Bell	cbb		B	
Comcast Corp	cmcsa	A3	A-	4.58%
Consolidated Communications Ho	cnsl		B+	
Frontier	fttr	Caa1	CCC+	
Telus Corp	tu	Baa1	BBB+	4.62%
Verizon Communications	vz	Baa1	BBB+	5.01%
Overall Average Debt Rating		Baa3	BB+	5.78%

bond analysis, A-BBB- bonds

All issues 20+ year maturities

Guideline Companies, All Ratings	5.27%	5.00%
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bond analysis page 12

Mergent's Bond Record January 2019, page 13

Corporate	Aaa	Aa	A	Baa
October	4.14%	4.28%	4.46%	5.07%
November	4.22%	4.37%	4.53%	5.22%
December	4.02%	4.20%	4.37%	5.13%
4th Qtr Average	4.13%	4.28%	4.45%	5.14%
2018 Average	3.93%	4.08%	4.25%	4.80%
Public Utilities	Aaa	Aa	A	Baa
October		4.31%	4.45%	4.91%
November		4.40%	4.52%	5.03%
December		4.24%	4.37%	4.92%
4th Qtr Average		4.32%	4.45%	4.95%
2018 Average		4.09%	4.25%	4.67%
Industrials	Aaa	Aa	A	Baa
October	4.14%	4.24%	4.45%	5.22%
November	4.22%	4.34%	4.53%	5.42%
December	4.02%	4.16%	4.36%	5.34%
4th Qtr Average	4.13%	4.25%	4.45%	5.33%
2018 Average	3.93%	4.06%	4.24%	4.93%

Debt Yield Rate	5.00%
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Secured Debt (Lease) Rate	based on Aa rate 4.25%
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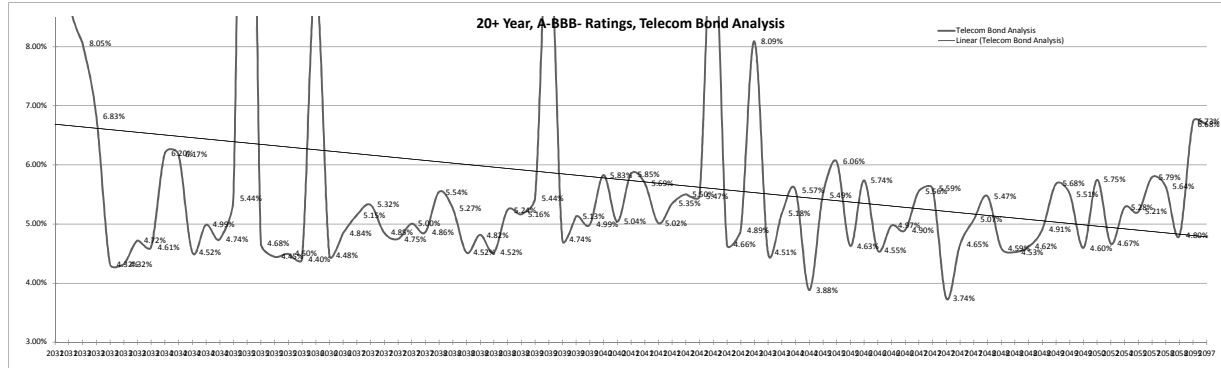
to page 1

Verizon Communications	% of NetAs	4.672	2055	91.45 \$	5,500,000,000	5.11%	5.21%	0.18%	BBB-	\$	5,029,750,000	91.45%	256,960,000	0.001811513	0.004265332	5.2			
Verizon Communications	% of NetAs	5.012	2054	95.75 \$	5,500,000,000	5.23%	5.28%	0.18%	BBB-	\$	5,266,250,000	95.75%	275,000,000	0.001888394	0.004328225	5.28			
Verizon Communications	or nt	4.532	2046	94.13 \$	5,500,000,000	4.92%	4.91%	0.16%	BBB-	\$	4,705,000,000	84.33%	236,100,000	0.001625151	0.003656253	4.9			
Verizon Communications	% of NetAs	5.580	2047	106.3 \$	1,500,000,000	5.17%	5.07%	0.05%	BBB-	\$	1,294,500,000	106.30%	82,500,000	0.004481261	0.001152163	5.08			
Verizon Communications	nt	4.882	2046	98.37 \$	4,500,000,000	4.94%	4.97%	0.14%	BBB-	\$	4,426,050,000	98.37%	212,750,000	0.001416370	0.003354940	4.87			
Verizon Communications	% of NetAs	4.125	2046	88.66 \$	1,500,000,000	4.65%	4.90%	0.05%	BBB-	\$	1,329,900,000	88.66%	61,975,000	0.000464626	0.001094699	4.88			
Verizon Communications	% of NetAs	6.350	2043	118.39 \$	15,000,000,000	5.53%	5.18%	0.49%	BBB-	\$	17,786,000,000	118.39%	962,500,000	0.004916878	0.011534771	5.22			
Verizon Communications	NetAs	3.850	2042	85.97 \$	1,250,000,000	4.48%	4.89%	0.04%	BBB-	\$	1,074,625,000	85.97%	48,125,000	0.000388963	0.000911131	4.65			
Verizon Communications	fixed rate notes	4.750	2041	96.56 \$	750,000,000	4.92%	5.02%	0.02%	BBB-	\$	724,200,000	96.56%	35,625,000	0.000236011	0.000560412	5			
Verizon Communications	fixed rate notes	6.000	2041	108.25 \$	1,000,000,000	5.54%	5.35%	0.03%	BBB-	\$	1,262,500,000	108.25%	60,000,000	0.000326243	0.000796417	5.36			
Verizon Communications	NetAs	7.350	2039	126.93 \$	1,000,000,000	6.79%	5.13%	0.03%	BBB-	\$	1,269,200,000	126.93%	73,900,000	0.000324734	0.000794655	5.19			
Verizon Communications	NetAs	8.650	2039	148.65 \$	1,250,000,000	6.92%	5.99%	0.04%	BBB-	\$	1,684,125,000	148.65%	111,675,000	0.000398177	0.000923989	5.08			
Verizon Communications	NetAs	6.400	2038	113.54 \$	1,750,000,000	5.64%	5.24%	0.06%	BBB-	\$	1,988,950,000	113.54%	112,000,000	0.000580193	0.001396103	4.97			
Verizon Communications	NetAs	6.600	2038	120.36 \$	1,250,000,000	5.73%	5.16%	0.04%	BBB-	\$	1,204,500,000	120.36%	86,650,000	0.000408541	0.000961038	5.2			
Verizon Communications	NetAs	6.250	2037	114.3 \$	750,000,000	5.47%	5.00%	0.02%	BBB-	\$	657,250,000	114.30%	46,675,000	0.000223754	0.00059216	5.04			
Verizon Communications	% of NetAs	5.250	2037	104.52 \$	3,000,000,000	5.02%	4.86%	0.09%	BBB-	\$	3,135,000,000	104.52%	157,000,000	0.000292715	0.000732595	4.87			
Verizon Communications	% of NetAs	4.272	2036	93.61 \$	2,887,000,000	4.56%	4.84%	0.09%	BBB-	\$	2,683,798,700	93.61%	122,478,240	0.000378659	0.00062882	4.83			
Verizon Global Funding	NetAs	5.650	2035	116.00 \$	1,000,000,000	5.04%	4.49%	0.03%	BBB-	\$	1,160,500,000	116.00%	58,500,000	0.000276874	0.000665156	4.83			
Verizon Communications	% of NetAs	5.050	2034	100.64 \$	1,250,000,000	5.02%	4.99%	0.04%	BBB-	\$	1,258,000,000	100.64%	63,125,000	0.000394458	0.000928779	4.99			
Verizon Communications	% of NetAs	4.400	2034	86.5 \$	2,200,000,000	4.68%	4.74%	0.07%	BBB-	\$	2,112,200,000	96.50%	110,500,000	0.000746724	0.001785276	4.72			
Verizon Communications	% of NetAs	6.400	2033	116.5 \$	6,000,000,000	5.49%	4.72%	0.18%	BBB-	\$	6,950,000,000	116.50%	384,000,000	0.001791912	0.004291178	4.62			
Verizon Communications	% of NetAs	4.500	2033	88.89 \$	3,000,000,000	4.55%	4.61%	0.09%	BBB-	\$	2,666,700,000	88.89%	135,000,000	0.000875275	0.002091601	4.61			
22 Book Val	sum	2200	4.500	234.27 \$	67,117,000,000					\$	71,076,698,700	105.90%	3,709,238,240		8.91%	5.734			
				Total	\$	158,031,553,000				Total	\$	159,470,843,539	101.04%	5.53%	\$	8,497,492,467	5.27%	7.905%	5.734

Source: FWRD, March 2019, 2018 Yr End Prices

Embedded debt rate
Weighted average yield to maturity
Debt service / Market value

5.2516%
5.2732%
5.2966%



DATA INPUT

WASHINGTON STATE DEPARTMENT OF REVENUE
 2019 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	Wtd Avg YTM	Payout Ratio	Payout Ratio	ROE	Timeliness	Safety	Technical	Income Tax Rate	Return on Total Capital	CF growth
Name	Ticker	(YE Adj) Close	Per Share	Per Share	Per Share	Per Share	per share	Stock	Shares	mk to bk		calculated	V L	V L	VL	VL	VL	VL	VL	VL
AT&T Inc	t	28.075	23.45	7.19	3.52	2.00	2.92	25.28	7,285,000,000	95.27%	5.581%	57%	56%	13.0%	3	1	3	19.7%	8.00%	4.5%
ATN International Inc	atni	71.530	28.20	6.00	0.64	0.68	11.62	43.45	16,003,345	100.66%		106%	106%	1.5%	2	3	1	33.3%	1.80%	4.5%
BCE Inc	bce	39.530	19.90	5.93	2.67	2.36	3.23	16.81	898,200,000	104.90%		88%	88%	15.9%	3	2	3	26.0%	8.10%	5.5%
Charter	chtr	284.970	193.62	51.24	5.22	nil	40.49	161.01	225,353,808	97.07%		nil	nil	3.4%	2	3	3	10.7%	2.80%	10.0%
CenturyLink Inc	ctl	15.150	21.80	5.95	1.19	2.16	2.95	18.45	1,080,573,000	86.50%	9.123%	182%	nmf	6.5%	3	3	2	24.3%	2.00%	-0.5%
Cincinnati Bell	cbi	7.780	27.46	3.99	(1.11)	nil	4.40	(1.49)	50,184,114	92.90%		nmf	nmf	5	4	4	nmf	nmf	-3.0%	
Comcast Corp	cmcsa	34.050	20.88	5.05	2.55	0.76	2.26	15.82	4,525,962,522	102.56%	4.578%	30%	28%	16.5%	2	2	2	23.1%	7.60%	10.5%
Consolidated Communications H	cnst	9.880	19.65	5.36	(0.73)	1.55	3.44	5.76	71,187,301	93.18%		nmf	nmf	4	3	2	nmf	nmf	13.5%	
Frontier	frt	2.380	81.59	17.38	(1.51)	nil	11.29	15.16	105,303,000	55.94%	18.517%		nmf	nmf	5	5		nmf	3.90%	0.5%
Telus Corp	tu	33.140	17.77	4.81	1.99	1.53	3.56	12.69	599,000,122	99.74%	4.617%	77%	70%	15.8%	1	2	2	25.4%	8.30%	6.5%
Verizon Communications	vz	55.640	31.67	6.10	4.71	2.37	4.03	13.24	4,132,045,883	105.90%	5.011%	50%	51%	37.0%	1	1	1	25.0%	15.50%	-3.0%
Value Line March 15, 2019	Yahoo	Value Line	Value Line	Value Line	Value Line	Value Line	Value Line	Value Line	Value Line	Bond analysis	Bond analysis	calculated	Value Line	Value Line	3	3	2	23%	7.60%	6.44%
										94.06%									5.79%	
										101.04%		84%	67%	13.7%					7.00%	
										101.04%				14.4%						
										91.26%										

2019 Forecast						Forecast Dividends % Change						Forecast Earnings % Change						Forecast Cash Flow % Change						Forecast Revenue % Change						
Revenues	CF	Earnings	Dividends	Common	P/E	2019	2020	2021	2022	2023	2024	2019	2020	2021	2022	2023	2024	2019	2020	2021	2022	2023	2024	2019	2020	2021	2022	2023	2024	
VL	VL	VL	VL	Shares	calc	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL
25.35	7.75	3.65	2.04	7,285,000,000	7.69	4	4	4.5	4	4.5	4.5	7	7	6.5	5.5	7	5.5	4.5	4.5	4.5	2.5	4.5	3.5	3.5	3.5	2	1	1		
28.75	5.90	0.90	0.68	16,000,000	79.48	7.5	6.5	6.5	5.5	-6	-4	7.5	10.5	12	10.5	14	16	-1	0.5	10	8	9.5	4.5	-8	-8.5	10.5	7.5	7.5	3.5	
20.30	6.35	2.75	2.45	900,000,000	14.37	6.5	6.5	1	4	4.5	4.5	5	7	3	4	5	5	3.5	2	1	3.5	5.5	5	3	2	-1.5	1.5	2	2	
207.75	53.50	7.20	nil	220,000,000	39.58	0									26	19.5	16	9.5	8	15	10	4.5	8.5	5	4	12	12.5	10	10	
21.30	6.10	1.20	1.00	1,075,000,000	12.63	-4	-3.5	-1.5	-8.5	-9.5	-10.5	6.5	19.5	14	6.5	2.5	0.5	4.5	6	3.5	0.5	-0.5	-0.5	3.5	3	2	-1	-3.5	-3	
31.20	5.85	(0.55)	nil	50,000,000	nfmf	0	0	0	0	0	0	24.5		-1	-10.5	-23	7	4	5.5	5	-2.5	-3	6.5	-2.5	-2	2	2	5.5	2	
24.45	5.60	2.80	0.84	4,500,000,000	12.16	15	13	10	8	12	11	12	10	8	11	12.5	12	8.5	8	8	8.5	9.5	9	7.5	6	8.5	10	7.5	8.5	
19.45	5.85	(0.55)	1.55	72,000,000	nfmf	0	0	0	0	0	0	11.5	15.5	28.5	34	34		9	10	11	14.5	16	13	8	8.5	7	11	7	4.5	
83.35	19.25	0.05	nil	105,500,000	nfmf	-7	-4	0.5	-14.5	-14.5		13.5	21	13.5	45	35.5		2.5	6.5	10	9.5	4	0.5	0.5	3	11.5	8.5	4.5	-3	
18.78	5.04	2.11	1.64	595,000,000	15.70	10	10	9	8	7	7	9.5	10	9	9	8.5	7.5	6	6.5	7	7	7.5	6.5	6.5	6.5	5.5	5.5	5.5	7	
31.95	6.10	4.65	2.37	4,145,000,000	11.97	2	2.5	2	2	2	2	10.5	8	3	2	4.5	4.5	-4	-3.5	-3	-4	-3.5	-3.5	-2.5	-1.5	2	0.5	1.5	1.5	
					avg	24.20																								
					med	13.50																								
					trimmed	17.73																								
					max	79.48																								
					min	7.69																								
					std	24.38																								

Income		Balance Sheet						Cash Flow		Fair Value
Operating Income	EBITDA	Current Assets	PP & E Gross	Intang	Current Liabilities	Long Term Debt	curr long term debt	Depreciation & Amortization	Debt	
M*	M*	M*	M*	M*	M*	M*	M*	M*	10-K	
26,142,000,000	61,260,000,000	51,427,000,000	330,690,000,000	163,827,000,000	64,420,000,000	166,250,000,000	10,255,000,000	28,430,000,000	177,250,000,000	
35,000,000	147,000,000	276,000,000	1,189,000,000	103,000,000	141,000,000	86,000,000	5,000,000	86,000,000	91,600,000	
4,030,370,370	6,704,444,444	4,291,111,111	53,394,814,815	9,781,481,481	7,725,185,185	14,637,037,037	3,440,740,741	2,973,333,333	18,964,444,444	
5,648,000,000	15,966,000,000	2,730,000,000	58,201,000,000	77,360,000,000	12,095,000,000	69,537,000,000	3,290,000,000	10,318,000,000	70,695,000,000	
3,296,000,000	5,734,000,000	3,820,000,000	53,267,000,000	10,779,000,000	5,531,000,000	35,409,000,000	652,000,000	5,120,000,000	33,716,000,000	
114,000,000	323,000,000	446,000,000	4,599,000,000	168,000,000	542,000,000	1,909,000,000	19,000,000	252,000,000	1,791,100,000	
19,009,000,000	29,801,000,000	21,848,000,000	95,743,000,000	105,560,000,000	27,603,000,000	107,345,000,000	4,398,000,000	10,676,000,000	114,100,000,000	
21,000,000	493,000,000	198,000,000	3,881,000,000	240,000,000	284,000,000	2,304,000,000	30,000,000	433,000,000	2,185,489,000	
1,472,000,000	2,785,000,000	1,330,000,000	27,657,000,000	1,494,000,000	2,561,000,000	16,358,000,000	814,000,000	1,954,000,000	12,756,000,000	
1,916,296,296	3,751,111,111	2,845,185,185	26,096,296,296	8,115,555,556	3,585,925,926	9,825,925,926	693,333,333	1,679,259,259	10,525,185,185	
26,869,000,000	41,859,000,000	34,636,000,000	252,835,000,000	103,905,000,000	37,930,000,000	105,873,000,000	7,190,000,000	17,403,000,000	119,446,000,000	

AVERAGE FOURTH QUARTER STOCK PRICE

WASHINGTON STATE DEPARTMENT OF REVENUE

2019 ASSESSMENT YEAR

TELECOMMUNICATIONS

								12/31/2018
ATT	T							Adj Close
Date	Open	High	Low	Close	Adj Close	Volume		
12/31/2018	28.57	28.64	28.09	28.54	28.07468	52861500		28.07
CenturyLink	CTL							
Date	Open	High	Low	Close	Adj Close	Volume		
12/31/2018	15.33	15.43	14.95	15.15	15.15	14358800		15.15
Cincinnati Bel	CBB							
Date	Open	High	Low	Close	Adj Close	Volume		
12/31/2018	7.66	7.87	7.43	7.78	7.78	497200		7.78
Frontier	FTR							
Date	Open	High	Low	Close	Adj Close	Volume		
12/31/2018	2.34	2.47	2.22	2.38	2.38	3305300		2.38
Comcast	CMCSA							
Date	Open	High	Low	Close	Adj Close	Volume		
12/31/2018	34.29	34.6	33.3	34.05	34.05	21613200		34.05
Verizon	VZ							
Date	Open	High	Low	Close	Adj Close	Volume		
12/31/2018	55.53	56.23	55.07	56.22	55.63979	15331800		55.64
Telus	TU							
Date	Open	High	Low	Close	Adj Close	Volume		
12/31/2018	33.29	33.39	32.94	33.14	33.14	446400		33.14
BCE	BCE							
Date	Open	High	Low	Close	Adj Close	Volume		
12/31/2018	39.74	39.76	39.15	39.53	39.53	1062200		39.53
Consolidated	CNSL							
Date	Open	High	Low	Close	Adj Close	Volume		
12/31/2018	10.01	10.11	9.69	9.88	9.88	663800		9.88
ATN Internati	ATNI							
Date	Open	High	Low	Close	Adj Close	Volume		
12/31/2018	72.2	72.2	69.05	71.53	71.53	61900		71.53
CHTR								
Date	Open	High	Low	Close	Adj Close	Volume		
12/31/2018	286.73	287.94	280.75	284.97	284.97	1075300		284.97

Source:
 finance.yahoo.com
 Historical Stock Quotes
 01/09/2019

IMPLIED PREMIUMS FOR US MARKET

Updated January 5, 2019.

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

Year	Earnings Yield	Dividend Yield	S&P 500	Earnings*	Dividends*	Ends + Buy	Inge in Earn	Inge in Divid	T.Bill Rate	T.Bond Rate	Bond-Bill	Boothed Grov	Premium	Growth Est	Premium (mpne	d	ERP/Riskfre
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%	6.81%	7.73%	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

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