



COST OF CAPITAL STUDY

**YIELD CAPITALIZATION
2017 ASSESSMENT YEAR**

APPENDIX C

PASSENGER AIRLINES

EQUITY RATE						12.35%		
CAPITAL ASSET PRICING MODEL							PAGE	
CAPM Ex Ante		9.04%					6	
DIVIDEND GROWTH MODELS								
Value Line, based on Dividends Growth		NMF					7	
Value Line, based on Earnings Growth		12.35%					8	
Value Line, based on Return on Equity		16.00%					9	
				RANGE		9.0375% - 16%		
DEBT RATE						6.75%	10	
COST OF SECURED DEBT (LEASE) RATE						4.00%	10	
MARKET CAPITAL STRUCTURE					Tax Shield			
Equity	64%	x	12.35%	=		7.90%	3	
Operating Leases	18%	x	4.00%	x	62.00%	=	0.45%	3
Debt	18%	x	6.75%	x	62.00%	=	0.75%	3
Marginal Tax Rate	38%							
WEIGHTED AVERAGE COST OF CAPITAL						9.10%		

SUPPORT FOR GUIDELINE COMPANIES

WASHINGTON STATE DEPARTMENT OF REVENUE

2017 ASSESSMENT YEAR

PASSENGER AIRLINES

Capital Structure at Book Value

Company	Ticker	Beta	P/E Ratio	Div'd Yield	Common Stock	%	Preferr ed Stock	%	Long Term Debt	%	Total Debt & Equity	%
Alaska Air Group, Inc.	ALK	1.10	11.2	1.35%	2,930,032,820	52.6%	-	0.0%	2,645,000,000	47.4%	5,575,032,820	100.0%
Allegiant Travel Co	ALGT	0.80	15.2	1.44%	474,046,968	39.6%	-	0.0%	722,048,000	60.4%	1,196,094,968	100.0%
American Airlines Group	AAL	1.25	10.7	0.86%	3,815,835,210	14.5%	-	0.0%	22,489,000,000	85.5%	26,304,835,210	100.0%
Delta Air Lines, Inc.	DAL	1.20	9.4	1.65%	12,167,331,123	66.2%	-	0.0%	6,201,000,000	33.8%	18,368,331,123	100.0%
Hawaiian Holdings, Inc.	HA	1.20	13.9	0.00%	552,964,016	52.6%	-	0.0%	497,908,000	47.4%	1,050,872,016	100.0%
JetBlue Airways Corp.	JBLU	1.10	11.5	0.00%	3,434,400,000	71.1%	-	0.0%	1,395,000,000	28.9%	4,829,400,000	100.0%
SkyWest, Inc.	SKYW	1.45	12.2	0.55%	1,385,650,000	38.2%	-	0.0%	2,240,000,000	61.8%	3,625,650,000	100.0%
Southwest Airlines Co.	LUV	1.10	13.5	0.96%	8,432,200,000	74.9%	-	0.0%	2,821,000,000	25.1%	11,253,200,000	100.0%
United Continental Holdings, Inc.	UAL	1.20	10.8	0.00%	9,518,567,490	49.0%	-	0.0%	9,918,000,000	51.0%	19,436,567,490	100.0%
	Mean	1.16	12.0	0.76%	4,745,669,736	51.0%		0.0%	5,436,550,667	49.0%		
	Weighted Mean				42,711,027,627	46.6%		0.0%	48,928,956,000	53.4%	91,639,983,627	
	Harmonic Mean	1.13	11.8		1,541,100,310.13	40.67%		0.0%	1,608,366,243.75	42.78%	3,354,874,272.21	
	Median	1.20		0.86%	3434400000	52.6%		0.0%	2,645,000,000.00	47.4%		
	Max	1.20		1.65%	12167331123	74.9%		0.0%	22489000000	85.5%		
	Min	0.70		0.00%	474046968	14.5%		0.0%	497908000	25.1%		
	Say	1.15				50%		0.0%		50%		100%

**SUPPORT FOR CAPITAL STRUCTURE
MARKET VALUE**

WASHINGTON STATE DEPARTMENT OF REVENUE
2017 ASSESSMENT YEAR
PASSENGER AIRLINES

Capital Structure at Market Value

Company	Ticker	Stock Price	Common Shares	Common Stock	%	Preferred Stock	%	Operating Lease	%	Long Term Debt	%	Total Debt & Equity	Sum
Alaska Air Group, Inc.	ALK	88.73	123,266,000	10,937,392,180	80.8%	-	0.0%	1,398,040,757	10.3%	1,199,000,000	8.9%	13,534,432,937	100%
Allegiant Travel Co	ALGT	166.40	16,546,142	2,753,278,029	77.1%	-	0.0%	8,614,214	0.2%	808,871,000	22.7%	3,570,763,243	100%
American Airlines Group	AAL	46.69	519,161,253	24,239,638,903	37.5%	-	0.0%	15,373,262,455	23.8%	24,983,000,000	38.7%	64,595,901,357	100%
Delta Air Lines, Inc.	DAL	49.19	730,770,638	35,946,607,683	77.2%	-	0.0%	3,327,927,991	7.1%	7,300,000,000	15.7%	46,574,535,674	100%
Hawaiian Holdings, Inc.	HA	57.00	53,426,475	3,045,309,075	62.2%	-	0.0%	1,364,436,211	27.9%	484,734,000	9.9%	4,894,479,286	100%
JetBlue Airways Corp.	JBLU	22.42	324,000,000	7,264,080,000	72.9%	-	0.0%	1,360,789,758	13.7%	1,336,000,000	13.4%	9,960,869,758	100%
SkyWest, Inc.	SKYW	36.45	51,800,000	1,888,110,000	26.2%	-	0.0%	2,753,758,445	38.2%	2,566,500,000	35.6%	7,208,368,445	100%
Southwest Airlines Co.	LUV	49.84	634,000,000	31,598,560,000	85.2%	-	0.0%	2,681,272,316	7.2%	2,787,000,000	7.5%	37,066,832,316	100%
United Continental Holdings, Inc.	UAL	72.88	317,285,583	23,123,773,289	55.6%	-	0.0%	7,374,437,227	17.7%	11,055,000,000	26.6%	41,553,210,516	100%
			Mean		63.9%		0.0%		16.2%		19.9%		
			Weighted Mean	140,796,749,159	61.5%	-	0.0%	35,642,539,374	15.57%	52,520,105,000	22.9%	228,959,393,533	
			Median		72.9%		0.0%		13.66%		15.7%		
			Harmonic Mean		55.3%		0.0%		1.9%		14.5%		
			Max		85.2%		0.0%		38.2%		38.7%		
			Min		26.2%		0.0%		0.2%		7.5%		
			Std Dev		20.5%		0.0%		11.9%		11.7%		
			Coefficient of Variation		0.32		0.0%		0.73		0.59		
			Target		64%		0%		18%		18%		100%

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

SUPPORT FOR MARKET MULTIPLES

WASHINGTON STATE DEPARTMENT OF REVENUE

2017 ASSESSMENT YEAR

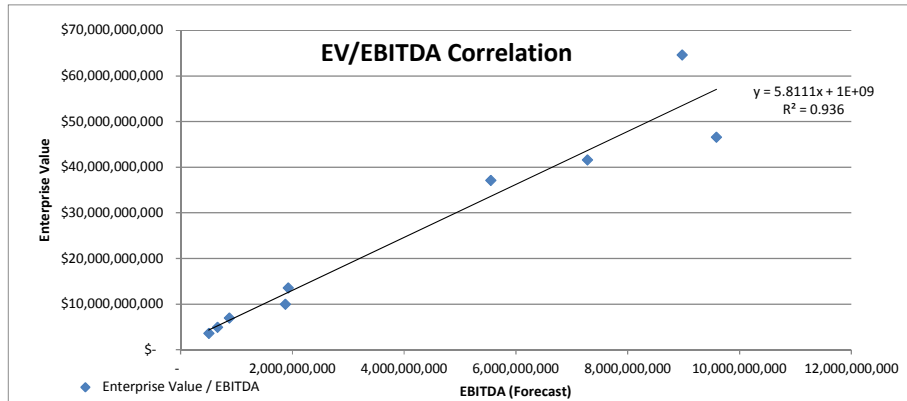
PASSENGER AIRLINES

Company	Ticker	Stock Price	Revenues	Multiple	Cash Flow	Multiple	Earnings	Multiple	Divds Decld	Multiple	Book Value	Multiple
Alaska Air Group, Inc.	ALK	88.73	48.09	1.8	10.33	8.6	7.32	12.1	1.10	80.7	23.77	3.7
Allegiant Travel Co	ALGT	166.40	82.40	2.0	19.65	8.5	13.21	12.6	2.40	69.3	28.65	5.8
American Airlines Group	AAL	46.69	78.15	0.6	8.15	5.7	4.81	9.7	0.40	116.7	7.35	6.35
Delta Air Lines, Inc.	DAL	49.19	53.21	0.9	7.95	6.2	5.32	9.2	0.68	72.3	16.65	2.95
Hawaiian Holdings, Inc.	HA	57.00	46.05	1.2	6.60	8.6	4.54	12.6	-		10.35	5.5
JetBlue Airways Corp.	JBLU	22.42	20.10	1.1	3.50	6.4	2.22	10.1	-		10.60	2.1
SkyWest, Inc.	SKYW	36.45	61.80	0.6	8.35	4.4	2.62	13.9	0.19	191.8	26.75	1.4
Southwest Airlines Co.	LUV	49.84	32.20	1.5	5.45	9.1	3.55	14.0	0.38	131.2	13.30	3.7
United Continental Holdings, Inc.	UAL	72.88	114.50	0.6	15.10	4.8	8.65	8.4	-		30.00	2.4
		Mean		1.2		6.9		11.4		110.3		3.8
		Median		1.1		6.4		12.1		98.7		3.7
		Harmonic Mean		1.0		6.5		11.1		96.7		3.0
		Max		2.0		9.1		14.0		191.8		6.4
		Min		0.59		4.4		8.4		69.3		1.36
		Std Dev		0.5		1.8		2.1		47.2		1.8
		Coefficient of Variation		0.46		0.26		0.18		0.43		0.47
		Say		1.00		6.50		10.00		110.00		3.50

ENTERPRISE VALUE MULTIPLES

WASHINGTON STATE DEPARTMENT OF REVENUE
2017 ASSESSMENT YEAR
PASSENGER AIRLINES

Guideline Companies	Ticker	EV+OL	EBITDA + OL	EV / EBITDA	Annual	EBITDA	EV / EBITDA	Revenue	EV / Sales	CF	Debt Service	EV / CF
					Change Rate							
Alaska Air Group, Inc.	ALK	\$ 13,534,432,937	1,826,000,000	7.41	5.6%	1,928,046,545	7.02	8,148,750,000	1.66	1,273,337,780	80,932,500	9.99
Allegiant Travel Co	ALGT	\$ 3,541,763,243	476,924,000	7.43	5.9%	505,249,687	7.01	1,540,170,000	2.30	325,131,690	54,598,793	9.33
American Airlines Group	AAL	\$ 64,595,901,357	8,305,000,000	7.78	8.1%	8,976,100,305	7.20	40,992,000,000	1.58	4,231,164,212	1,686,352,500	10.92
Delta Air Lines, Inc.	DAL	\$ 46,574,535,674	9,139,000,000	5.10	4.9%	9,585,782,951	4.86	41,004,000,000	1.14	5,809,626,572	492,750,000	7.39
Hawaiian Holdings, Inc.	HA	\$ 4,894,479,286	628,565,000	7.79	5.1%	660,466,527	7.41	2,575,800,000	1.90	352,614,735	32,719,545	12.70
JetBlue Airways Corp.	JBLU	\$ 9,960,869,758	1,815,000,000	5.49	3.4%	1,876,466,335	5.31	7,194,000,000	1.38	1,134,000,000	90,180,000	8.14
SkyWest, Inc.	SKYW	\$ 6,908,368,445	840,202,000	8.22	4.2%	875,236,089	7.89	3,100,000,000	2.23	432,530,000	173,238,750	11.40
Southwest Airlines Co.	LUV	\$ 37,066,832,316	5,210,000,000	7.11	6.6%	5,551,338,202	6.68	21,386,750,000	1.73	3,455,300,000	188,122,500	10.17
United Continental Holdings, Inc.	UAL	\$ 41,553,210,516	6,995,000,000	5.94	4.1%	7,281,502,019	5.71	38,006,000,000	1.09	4,791,012,303	746,212,500	7.50
	Mean			6.92	5.31%		6.56		1.67			9.73
	Median			7.41	5.08%		7.01		1.66			9.99
	Harmonic Mean			6.74			6.41		1.57			9.42
	Max			8.22	8.08%		7.89		2.30			12.70
	Min			5.10	3.39%		4.86		1.09			7.39
	Std Dev			1.12	1.4%		1.03		0.43			1.82
	Coefficient of Variation			0.16	0.27		0.16		0.26			0.19
	Say			7.00	5.50%		7.00		1.70			10.00



Forecast EV/EBITDA By Rank

Guideline Companies	EV/EBITDA forecast	
Delta Air Lines, Inc.	4.86	5.91 Low Average 5.7 Low Median 5.8 Say
JetBlue Airways Corp.	5.31	
United Continental Holdings, Inc.	5.71	
Southwest Airlines Co.	6.68	7.31 High Average 7.2 High Median 7.2 Say
Allegiant Travel Co	7.01	
Alaska Air Group, Inc.	7.02	
American Airlines Group	7.20	
Hawaiian Holdings, Inc.	7.41	
SkyWest, Inc.	7.89	

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT

CAPITAL ASSET PRICING MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE

2017 ASSESSMENT YEAR

PASSENGER AIRLINES

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

Ke = Cost of Equity **9.04%**

Rm =	rate of return	8.25%
Rf =	risk free rate	3.00%
Rp =	risk premium	5.25%
B =	Beta	1.15

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Rp = Risk Premium **5.25%**

Shannon Pratt and Roger Grabowski	3.5 - 6%	
Cost of Capital, Applications and Examples, Fifth Edition, 2014		
Dr. Aswath Damodaran	5.69%	chart page 16
http://pages.stern.nyu.edu/~adamodar/	5.14%	adjusted for Rf
2016 Implied Premium		
John Graham and Campbell Harvey	5.70%	10 year expected return
Duke CFO magazine Global Business Outlook	2.23%	95% Interval 10 year expect
4th Qtr 2016	4.93%	adjusted for Rf

to above

Rf = Risk Free Rate **3.00%**

US Department of the Treasury		
Long Term (20 years) US Treasury Bond Yield	2.79%	
as of 12-30-16		
Value Line Investment Survey, Selected Yields January 6, 2017, page 3197		
as of 12-29-16		
US Treasury Securities year end data		
5 year	2.00%	
10 year	2.51%	
30 year	3.09%	
30 year Zero	3.17%	

to above

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

as of 12-30-16

Treasury Constant Maturities		
5 year	1.93%	
10 year	2.45%	
20 year	2.79%	
30 year	3.06%	
20 year TIPS	<u>0.82%</u>	1.97%
30 year TIPS	<u>0.99%</u>	2.07%

TIPS inflation indication

Inflation **2.00%**

Value Line Investment Survey, Economic Series January 6, 2017, page 1500		
Consumer Price Index Annual Rate of Change 2019-2021	2.50%	
Federal Reserve Bank of Philadelphia		
The Livingston Survey, December 9, 2016		Table 3
Inflation median (measured by the CPI) over next 10 years		2.30%
https://www.philadelphiafed.org/research-and-data/real-time-center/livingston-survey		

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Gross Domestic Product (GDP) **3.80%**

Federal Reserve Projected Long Run Real GDP Growth		
Median Projection Value From Dec 14, 2016 Report		1.80%
http://www.federalreserve.gov/monetarypolicy/fomccalendars.htm		
Congressional Budget Office Real GDP Economic Projections		
The Budget and Economic Outlook 2017-2027		Table C-1, pg 126
Average Percentage Change From Year To Year	2017-2021	1.86%
http://www.cbo.gov/publication/52370	2022-2027	1.90%
Federal Reserve Bank of Philadelphia		
The Livingston Survey, December 9, 2016		pg 4
Average Annual Real GDP Growth Rate for Next Ten Years		2.20%
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

2017 ASSESSMENT YEAR

PASSENGER AIRLINES

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 (G)	Ke	Forecast Dividend Growth	Ke Forecast Growth	Sustainable Dividend Growth	Ke Sustainable Growth
Alaska Air Group, Inc.	ALK	88.73	1.20	1.35%	9.09%	10.44%	7.84%	9.19%	3.80%	5.15%
Allegiant Travel Co	ALGT	166.40	2.40	1.44%	0.00%		4.56%	6.01%	3.80%	5.24%
American Airlines Group	AAL	46.69	0.40	0.86%	0.00%		24.57%	25.43%	3.80%	4.66%
Delta Air Lines, Inc.	DAL	49.19	0.81	1.65%	19.12%	20.76%	8.89%	10.54%	3.80%	5.45%
Hawaiian Holdings, Inc.	HA	57.00	0.00							
JetBlue Airways Corp.	JBLU	22.42	0.00							
SkyWest, Inc.	SKYW	36.45	0.20	0.55%	5.26%	5.81%	9.86%	10.40%	3.80%	4.35%
Southwest Airlines Co.	LUV	49.84	0.48	0.96%	26.32%	27.28%	12.89%	13.85%	3.80%	4.76%
United Continental Holdings, Inc.	UAL	72.88	0.00							
			Mean	1.13%		16.07%		12.57%		4.93%
			Median	1.16%		15.60%		10.47%		4.96%
			Harmonic Mean	0.99%		11.34%		10.38%		4.91%
			Max	1.65%		27.28%		25.43%		5.45%
			Min	0.55%		5.81%		6.01%		4.35%
			Std Dev	0.4%		9.7%		6.8%		0.4%
			Coefficient of Variation	0.36		0.61		0.54		0.08

Source: Value Line Projections 12-16 to 18-22

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Say NMF

Value Line Projections are incomplete and/or have large differences. Data sets have high coefficients of variation. No meaningful figure can be reconciled from the inputs.

SUPPORT FOR YIELD CAPITALIZATION EQUITY COMPONENT

DIVIDEND GROWTH MODEL

WASHINGTON STATE DEPARTMENT OF REVENUE

2017 ASSESSMENT YEAR

PASSENGER AIRLINES

Based on Earnings Growth

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

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)	Ke	Forecast Earnings Growth	Ke Forecast Growth	Sustainable Earnings Growth	Ke Sustainable Growth	Ke with Multi Stage Growth Adj
Alaska Air Group, Inc.	ALK	88.730	7.90	8.90%	7.92%	16.83%	5.96%	14.86%	3.80%	12.70%	10.25%
Allegiant Travel Co	ALGT	166.400	10.95	6.58%	-17.11%		5.04%	11.62%	3.80%	10.38%	6.49%
American Airlines Group	AAL	46.690	4.35	9.32%	-9.56%		10.76%	20.07%	3.80%	13.12%	10.82%
Delta Air Lines, Inc.	DAL	49.190	5.25	10.67%	-1.32%	9.36%	8.79%	19.46%	3.80%	14.47%	12.33%
Hawaiian Holdings, Inc.	HA	57.000	4.10	7.19%	-9.69%		5.07%	12.26%	3.80%	10.99%	7.57%
JetBlue Airways Corp.	JBLU	22.420	1.95	8.70%	-12.16%		4.24%	12.94%	3.80%	12.50%	9.88%
SkyWest, Inc.	SKYW	36.450	3.00	8.23%	14.50%	22.73%	4.56%	12.79%	3.80%	12.03%	9.19%
Southwest Airlines Co.	LUV	49.840	3.70	7.42%	4.23%	11.65%	6.63%	14.05%	3.80%	11.22%	8.12%
United Continental Holdings, Inc.	UAL	72.880	6.75	9.26%	-21.97%		8.18%	17.44%	3.80%	13.06%	10.75%
			Mean	8.48%		15.14%		15.06%		12.28%	9.49%
			Median	8.70%		14.24%		14.05%		12.50%	9.88%
			Harmonic Mean	8.31%		13.51%		14.51%		12.16%	9.15%
			Max	10.67%		22.73%		20.07%		14.47%	12.33%
			Min	6.58%		9.36%		11.62%		10.38%	6.49%
			Std Dev	0.01		5.9%		3.2%		1.3%	1.8%
			Coefficient of Variation	14.92%		0.39		0.21		0.10	0.19

Say **12.35%**
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Source: Value Line Projections 12-16 to 18-22

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

WASHINGTON STATE DEPARTMENT OF REVENUE

2017 ASSESSMENT YEAR

PASSENGER AIRLINES

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 % = (1 - Payout Ratio)
ROE = Return on Equity = (E1 / Po)

Company	Ticker	Stock Price (Po)	Expected Dividend (D1)	Expected Earnings (E1)	Dividend Yield (D1/Po)	Retained Earnings (b)	ROE (E1/Po)	Growth (b*ROE)	Ke Dividends	Ke Earnings
Alaska Air Group, Inc.	ALK	88.73	1.20	7.90	1.35%	85.0%	8.90%	7.57%	8.92%	16.47%
Allegiant Travel Co	ALGT	166.40	2.40	10.95	1.44%	78.0%	6.58%	5.13%	6.58%	11.71%
American Airlines Group	AAL	46.69	0.40	4.35	0.86%	91.0%	9.32%	8.48%	9.33%	17.80%
Delta Air Lines, Inc.	DAL	49.19	0.81	5.25	1.65%	85.0%	10.67%	9.07%	10.72%	19.74%
Hawaiian Holdings, Inc.	HA	57.00	0.00	4.10		100.0%	7.19%	7.19%		14.39%
JetBlue Airways Corp.	JBLU	22.42	0.00	1.95		100.0%	8.70%	8.70%		17.40%
SkyWest, Inc.	SKYW	36.45	0.20	3.00	0.55%	93.0%	8.23%	7.65%	8.20%	15.88%
Southwest Airlines Co.	LUV	49.84	0.48	3.70	0.96%	87.0%	7.42%	6.46%	7.42%	13.88%
United Continental Holdings, Inc.	UAL	72.88	0.00	6.75		100.0%	9.26%	9.26%		18.52%
								Mean	8.53%	16.20%
								Median	8.56%	16.47%
								Harmonic Mean	8.32%	15.82%
								Max	10.72%	19.74%
								Min	6.58%	11.71%
								Std Dev	1.5%	2.5%
								Coefficient of Variation	0.17	0.16

16.0%

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SUPPORT FOR DEBT RATING AND DEBT YIELD RATE

WASHINGTON STATE DEPARTMENT OF REVENUE

2017 ASSESSMENT YEAR

PASSENGER AIRLINES

Company	Ticker	Mergent's Ratings	S&P Ratings
Alaska Air Group, Inc.	ALK	A3	BB+
Allegiant Travel Co	ALGT	-	BB-
American Airlines Group	AAL	A2	BB-
Delta Air Lines, Inc.	DAL	A1	BB+
Hawaiian Holdings, Inc.	HA	Baa1	BB-
JetBlue Airways Corp.	JBLU	-	BB-
SkyWest, Inc.	SKYW	Caa1	-
Southwest Airlines Co.	LUV	Baa1	BBB
United Continental Holdings, Inc.	UAL	A2	BB-
Overall Average Debt Rating		Baa1	BB

All issues

Bond Yields for Guideline Companies, All Ratings

4.88%

NMF

Mergent's Bond Record January 2017, page 201

Corporate	Aaa	Aa	A	Baa
October	3.51%	3.61%	3.78%	4.38%
November	3.86%	3.94%	4.11%	4.71%
December	4.06%	4.12%	4.28%	4.83%
4th Qtr Average	3.81%	3.89%	4.06%	4.64%
2016 Average	3.67%	3.75%	3.96%	4.72%
Public Utilities		Aa	A	Baa
October		3.59%	3.77%	4.34%
November		3.91%	4.08%	4.64%
December		4.11%	4.27%	4.79%
4th Qtr Average		3.87%	4.04%	4.59%
2016 Average		3.73%	3.93%	4.68%
Industrials	Aaa	Aa	A	Baa
October	3.51%	3.63%	3.79%	4.40%
November	3.86%	3.97%	4.14%	4.77%
December	4.06%	4.13%	4.29%	4.85%
4th Qtr Average	3.81%	3.91%	4.07%	4.67%
2016 Average	3.67%	3.77%	3.98%	4.75%

Standard & Poor's and Moody's Long Term Bond Yields (%)

S&P	Avg YTM	Med YTM	Moody's	Avg YTM	Med YTM
BB+	5.70	6.34	Ba1	5.97	5.75
BB	6.81	6.51	Ba2	6.42	6.44
BB-	7.98	7.71	Ba3	7.30	6.96

Source: Mergent Bond Database, January 1, 2017.

Debt Yield Rate

6.75% Add'l Bond Data Pg

Cost of Secured Debt (Lease) *Based on 4th Quarter Aa rate*

4.00%

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PASSENGER AIRLINES

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

Current Year

Guideline Companies		Stock Price (Yahoo)	Beta	Revenue	Cash Flow	Earnings	Gross Equipment	Load Factor	%Net Profit Margin	Long-Term Debt (Mill)	Dividends Per Share	Bk Value Per Share	Common Shares	Trailing P/E Ratio	Relative P/E Ratio	Net Operating Revenues (Mill)	Operating Margin	Net Profit (\$Mil)	Income Tax Rate
Name	Ticker	ADJ YE Close	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL CapStruct	VL	VL	VL	VL	VL	VL
Alaska Air Group, Inc.	ALK	88.73	1.10	48.09	10.33	7.32	60.00	84.3%	15.4%	2,637	1.10	23.77	123,266,000	13.10	0.49	5,931	28.9%	911	39.5%
Allegiant Travel Co	ALGT	166.40	0.80	82.40	19.65	13.21	17.60	83.1%	16.1%	722	2.40	28.65	16,546,142	13.20	0.59	1,363	34.5%	220	36.5%
American Airlines Group	AAL	46.69	1.25	78.15	8.15	4.81	65.00	82.3%	6.7%	22,489	0.40	7.35	519,161,253	9.70	0.40	40,180	13.2%	2,676	37.8%
Delta Air Lines, Inc.	DAL	49.19	1.20	53.21	7.95	5.32	32.80	84.6%	10.1%	6,201	0.68	16.65	730,770,638	9.40	0.51	39,639	21.9%	4,017	34.1%
Hawaiian Holdings, Inc.	HA	57.00	1.20	46.05	6.60	4.54	37.50	86.1%	10.0%	500	-	10.35	53,426,475	11.30	0.49	2,451	16.7%	244	38.0%
JetBlue Airways Corp.	JBLU	22.42	1.10	20.10	3.50	2.22	27.25	85.1%	11.4%	1,250	-	10.60	324,000,000	8.90	0.96	6,632	25.5%	759	37.6%
SkyWest, Inc.	SKYW	36.45	1.45	61.80	8.35	2.62	108.55	82.1%	4.4%	2,240	0.19	26.75	51,800,000	13.40	0.48	3,121	9.4%	136	39.0%
Southwest Airlines Co.	LUV	49.84	1.10	32.20	5.45	3.55	39.00	84.0%	11.0%	2,821	0.38	13.30	634,000,000	15.70	0.59	20,425	26.0%	2,244	36.7%
United Continental Holdings	UAL	72.88	1.20	114.50	15.10	8.65	70.00	84.0%	7.8%	10,000	-	30.00	317,285,583	8.40	0.25	36,556	19.0%	2,857	36.0%

Value Line February 2017

Yahoo Value Line Value Line Value Line Value Line Value Line Value Line Value Line Value Line Value Line Value Line

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

Morning Star Data ending 2016

Projected (Next Year)															Forecast Dividends % Change						
% Return on Shareholders' Equity	Revenues Per Sh	Cash Flow	Earnings	Gross Equipment per share	Load Factor	% Net Profit Margin	Dividends	Bk Value	Common Shares	Net Operating Revenues	Operating Margin	Net Profit (\$Mil)	% Return on Shareholders' Equity	All Dividends to Net Profits	2017	2018	2019	2020	2021	2022	
VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL
31.0%	66.25	11.05	7.90	60.00	85.0%	12.0%	1.20	24.40	123,000,000	8,150	25.0%	975	32.5%	15.0%	1.20	-	-	-	-	-	1.75
46.4%	94.20	17.75	10.95	19.25	84.0%	11.7%	2.40	32.10	16,350,000	1,540	28.5%	180	34.5%	22.0%	2.40	-	-	-	-	-	3.00
NMF	85.40	7.95	4.35	65.00	83.0%	5.6%	0.40	8.35	480,000,000	41,000	12.0%	2,275	NMF	9.0%	0.40	-	-	-	-	-	1.20
32.7%	56.95	7.95	5.25	35.00	85.0%	9.2%	0.81	21.00	720,000,000	41,500	20.0%	3,780	25.0%	15.0%	0.81	-	-	-	-	-	1.24
44.5%	48.60	6.25	4.10	38.00	84.0%	8.5%	-	10.85	53,000,000	2,575	16.0%	220	38.5%	0.0%	-	-	-	-	-	-	-
21.5%	21.80	3.20	1.95	27.80	84.5%	9.4%	-	11.35	330,000,000	7,200	22.5%	675	18.0%	0.0%	-	-	-	-	-	-	-
10.0%	62.00	8.90	3.00	109.00	82.5%	4.8%	0.20	30.00	50,000,000	3,100	10.0%	150	10.0%	7.0%	0.20	-	-	-	-	-	0.32
26.6%	35.35	5.85	3.70	39.00	84.5%	10.5%	0.48	14.20	605,000,000	21,400	25.5%	2,240	26.0%	13.0%	0.48	-	-	-	-	-	0.88
30.0%	122.60	13.30	6.75	72.00	84.0%	5.4%	-	35.50	310,000,000	38,000	16.0%	2,070	19.0%	0.0%	-	-	-	-	-	-	-

	Forecast Earnings % Change						Forecast Cash Flow % Change						Forecast Revenue % Change							
	2017	2018	2019	2020	2021	2022	2017	2018	2019	2020	2021	2022	2017	2018	2019	2020	2021	2022		
	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	VL	
7.84%	7.90					10.55	5.96%	11.05	-	-	-	14.55	5.66%	66.25	-	-	-	-	86.95	5.59%
4.56%	10.95					14.00	5.04%	17.75	-	-	-	22.20	4.58%	94.20	-	-	-	-	125.70	5.94%
24.57%	4.35					7.25	10.76%	7.95	-	-	-	12.35	9.21%	85.40	-	-	-	-	125.95	8.08%
8.89%	5.25					8.00	8.79%	7.95	-	-	-	11.60	7.85%	56.95	-	-	-	-	72.30	4.89%
0.00%	4.10					5.25	5.07%	6.25	-	-	-	7.75	4.40%	48.60	-	-	-	-	62.25	5.08%
0.00%	1.95					2.40	4.24%	3.20	-	-	-	3.90	4.04%	21.80	-	-	-	-	25.75	3.39%
9.86%	3.00					3.75	4.56%	8.90	-	-	-	10.65	3.66%	62.00	-	-	-	-	76.05	4.17%
12.89%	3.70					5.10	6.63%	5.85	-	-	-	7.95	6.33%	35.35	0.00	0.00	0.00	0.00	48.55	6.55%
0.00%	6.75					10.00	8.18%	13.30	-	-	-	17.45	5.58%	122.60	-	-	-	-	149.85	4.10%

1.00

Income	Balance Sheet									
Operating Income	Current Assets	PP & E Gross	Intangibles (excl. GW)	Current Liabilities	Long Term Debt Less Current Maturities	Cash Depreciation & Amortization	Carrying Value Debt	Fair Value Debt	Current Maturity Long Term Debt	Aircraft Rental Expense
M*	M*	M*	M*	10K/M*	10-K/M*	M*	10-K	10-K	10K	10-K
1,349,000,000	2,050,000,000	8,595,000,000	143,000,000	2,535,000,000	2,645,000,000	363,000,000	1,179,000,000	1,199,000,000	319,000,000	114,000,000
371,000,000	422,000,000	1,561,000,000	-	393,000,000	722,048,000	105,000,000	813,178,000	808,871,000	86,226,000	924,000
5,284,000,000	10,324,000,000	45,353,000,000	2,173,000,000	13,872,000,000	22,489,000,000	1,818,000,000	24,344,000,000	24,983,000,000	1,855,000,000	1,203,000,000
6,952,000,000	7,451,000,000	36,831,000,000	4,844,000,000	15,239,000,000	6,201,000,000	1,902,000,000	7,008,000,000	7,300,000,000	1,131,000,000	285,000,000
395,000,000	798,000,000	2,109,000,000	16,000,000	830,000,000	497,908,000	109,000,000	481,874,000	484,734,000	58,899,000	124,565,000
1,312,000,000	1,567,000,000	9,624,000,000	-	2,223,000,000	1,395,000,000	393,000,000	1,255,000,000	1,336,000,000	189,000,000	110,000,000
292,600,000	1,047,000,000	5,140,000,000	8,000,000	747,000,000	2,240,000,000	285,000,000	2,570,900,000	2,566,500,000	305,460,000	262,602,000
3,760,000,000	4,498,000,000	26,464,000,000	426,000,000	6,844,000,000	2,821,000,000	1,221,000,000	2,729,000,000	2,787,000,000	566,000,000	229,000,000
4,338,000,000	7,309,000,000	34,234,000,000	3,632,000,000	12,286,000,000	9,918,000,000	1,977,000,000	10,767,000,000	11,055,000,000	849,000,000	680,000,000

TTM DATA UPDATE

2017 Multi Stage Dividend Growth Model for DGM-e9
Airline Industry

Alaska Air Group

ALK	Year	Growth Rate	Investment Rate	Payout Ratio	Surplus(Def) Retained	Earnings	Dividends	Surplus (Def) Cash	Terminal Value	price =
	0		79.23%	15.03%	5.74%	7.32	1.10		(88.73)	88.73
	2017	1	7.92%	83.86%	15.19%	0.95%	7.90	1.20	0.08	1.28
	2018	2	8.39%	77.37%	15.62%	7.01%	8.56	1.34	0.60	1.94
	2019	3	7.74%	71.82%	15.99%	12.20%	9.23	1.48	1.13	2.60
	2020	4	7.18%	67.00%	16.31%	16.69%	9.89	1.61	1.65	3.26
	2021	5	6.70%	61.20%	16.59%	22.21%	10.55	1.75	2.34	4.09
	2022	6	6.12%	61.20%	38.80%	0.00%	11.20	4.34		4.34
	2023	7	5.54%	55.40%	44.60%	0.00%	11.82	5.27		5.27
	2024	8	4.96%	49.60%	50.40%	0.00%	12.40	6.25		6.25
	2025	9	4.38%	43.80%	56.20%	0.00%	12.95	7.28		7.28
	2026	10	3.80%	38.00%	62.00%	0.00%	13.44	8.33	172.95	181.28
	11+	3.80%	38.00%	62.00%	0.00%	13.95	8.65			
									Ke =	10.25%

Allegiant Travel Co

ALGT	Year	Growth Rate	Investment Rate	Payout Ratio	Surplus(Def) Retained	Earnings	Dividends	Surplus (Def) Cash	Terminal Value	price =
	0		-171.08%	18.17%	2.52914459	13.21	2.40		(166.40)	166.40
	2017	1	-17.11%	69.63%	21.92%	8.45%	10.95	2.40	0.93	3.33
	2018	2	6.96%	65.10%	21.77%	13.13%	11.71	2.55	1.54	4.09
	2019	3	6.51%	61.12%	21.64%	17.23%	12.48	2.70	2.15	4.85
	2020	4	6.11%	57.60%	21.53%	20.87%	13.24	2.85	2.76	5.61
	2021	5	5.76%	53.68%	21.43%	24.89%	14.00	3.00	3.48	6.48
	2022	6	5.37%	53.68%	46.32%	0.00%	14.75	6.83		6.83
	2023	7	4.98%	49.76%	50.24%	0.00%	15.49	7.78		7.78
	2024	8	4.58%	45.84%	54.16%	0.00%	16.20	8.77		8.77
	2025	9	4.19%	41.92%	58.08%	0.00%	16.87	9.80		9.80
	2026	10	3.80%	38.00%	62.00%	0.00%	17.52	10.86	225.45	236.31
	11+	3.80%	38.00%	62.00%	0.00%	18.18	11.27			
									Ke =	6.49%

American Airlines Group

AAL	Year	Growth Rate	Investment Rate	Payout Ratio	Surplus(Def) Retained	Earnings	Dividends	Surplus (Def) Cash	Terminal Value	price =
	0		-95.63%	8.32%	1.87318087	4.81	0.40		(46.69)	46.69
	2017	1	-9.56%	166.67%	9.20%	-75.86%	4.35	0.40	-3.30	-2.90
	2018	2	16.67%	142.86%	11.82%	-54.68%	5.08	0.60	-2.78	-2.18
	2019	3	14.29%	125.00%	13.79%	-38.79%	5.80	0.80	-2.25	-1.45
	2020	4	12.50%	111.11%	15.33%	-26.44%	6.53	1.00	-1.73	-0.73
	2021	5	11.11%	96.49%	16.55%	-13.04%	7.25	1.20	-0.95	0.25
	2022	6	9.65%	96.49%	3.51%	0.00%	7.95	0.28		0.28
	2023	7	8.19%	81.87%	18.13%	0.00%	8.60	1.56		1.56
	2024	8	6.72%	67.24%	32.76%	0.00%	9.18	3.01		3.01
	2025	9	5.26%	52.62%	47.38%	0.00%	9.66	4.58		4.58
	2026	10	3.80%	38.00%	62.00%	0.00%	10.03	6.22	129.08	135.30
	11+	3.80%	38.00%	62.00%	0.00%	10.41	6.45			
									Ke =	10.82%

Delta Air Lines Inc

DAL	Year	Growth Rate	Investment Rate	Payout Ratio	Surplus(Def) Retained	Earnings	Dividends	Surplus (Def) Cash	Terminal Value	price =
	0		-13.16%	12.78%	1.0037594	5.32	0.68		(49.19)	49.19
	2017	1	-1.32%	130.95%	15.43%	-46.38%	5.25	0.81	-2.44	-1.63
	2018	2	13.10%	115.79%	15.45%	-31.24%	5.94	0.92	-1.85	-0.94
	2019	3	11.58%	103.77%	15.47%	-19.25%	6.63	1.03	-1.28	-0.25
	2020	4	10.38%	94.02%	15.49%	-9.50%	7.31	1.13	-0.70	0.44
	2021	5	9.40%	82.81%	15.50%	1.69%	8.00	1.24	0.13	1.37
	2022	6	8.28%	82.81%	17.19%	0.00%	8.66	1.49		1.49
	2023	7	7.16%	71.61%	28.39%	0.00%	9.28	2.64		2.64
	2024	8	6.04%	60.41%	39.59%	0.00%	9.84	3.90		3.90
	2025	9	4.92%	49.20%	50.80%	0.00%	10.33	5.25		5.25
	2026	10	3.80%	38.00%	62.00%	0.00%	10.72	6.65	137.98	144.63
	11+	3.80%	38.00%	62.00%	0.00%	11.13	6.90			
									Ke =	12.33%

Hawaiian Holdings Inc

HA	Year	Growth Rate	Investment Rate	Payout Ratio	Surplus(Def) Retained	Earnings	Dividends	Surplus (Def) Cash	Terminal Value	price =
	0		-96.92%	0.00%	1.969163	4.54	-		(57.00)	57.00
	2017	1	-9.69%	70.12%	0.00%	29.88%	4.10	0.00	1.23	1.23
	2018	2	7.01%	65.53%	0.00%	34.47%	4.39	0.00	1.51	1.51
	2019	3	6.55%	61.50%	0.00%	38.50%	4.68	0.00	1.80	1.80
	2020	4	6.15%	57.93%	0.00%	42.07%	4.96	0.00	2.09	2.09
	2021	5	5.79%	53.95%	0.00%	46.05%	5.25	0.00	2.42	2.42
	2022	6	5.39%	53.95%	46.05%	0.00%	5.53	2.55		2.55
	2023	7	5.00%	49.96%	50.04%	0.00%	5.81	2.91		2.91
	2024	8	4.60%	45.97%	54.03%	0.00%	6.08	3.28		3.28
	2025	9	4.20%	41.99%	58.01%	0.00%	6.33	3.67		3.67
	2026	10	3.80%	38.00%	62.00%	0.00%	6.57	4.07	84.60	88.67
	11+		3.80%	38.00%	62.00%	0.00%	6.82	4.23		

Ke = 7.57%

JetBlue Airways Corp

JBLU	Year	Growth Rate	Investment Rate	Payout Ratio	Surplus(Def) Retained	Earnings	Dividends	Surplus (Def) Cash	Terminal Value	price =
	0		-121.62%	0.00%	2.21621622	2.22	-		(22.42)	22.42
	2017	1	-12.16%	57.69%	0.00%	42.31%	1.95	0.00	0.83	0.83
	2018	2	5.77%	54.55%	2.91%	42.55%	2.06	0.06	0.88	0.94
	2019	3	5.45%	51.72%	5.52%	42.76%	2.18	0.12	0.93	1.05
	2020	4	5.17%	49.18%	7.87%	42.95%	2.29	0.18	0.98	1.16
	2021	5	4.92%	46.94%	10.00%	43.06%	2.40	0.24	1.03	1.27
	2022	6	4.69%	46.94%	53.06%	0.00%	2.51	1.33		1.33
	2023	7	4.47%	44.71%	55.29%	0.00%	2.63	1.45		1.45
	2024	8	4.25%	42.47%	57.53%	0.00%	2.74	1.57		1.57
	2025	9	4.02%	40.24%	59.76%	0.00%	2.85	1.70		1.70
	2026	10	3.80%	38.00%	62.00%	0.00%	2.95	1.83	38.03	39.86
	11+		3.80%	38.00%	62.00%	0.00%	3.07	1.90		

Ke = 9.88%

SkyWest Inc

SKYW	Year	Growth Rate	Investment Rate	Payout Ratio	Surplus(Def) Retained	Earnings	Dividends	Surplus (Def) Cash	Terminal Value	price =
	0		145.04%	7.25%	-0.5229008	2.62	0.19		(36.45)	36.45
	2017	1	14.50%	62.50%	6.67%	30.83%	3.00	0.20	0.93	1.13
	2018	2	6.25%	58.82%	7.22%	33.96%	3.19	0.23	1.08	1.31
	2019	3	5.88%	55.56%	7.70%	36.74%	3.38	0.26	1.24	1.50
	2020	4	5.56%	52.63%	8.14%	39.23%	3.56	0.29	1.40	1.69
	2021	5	5.26%	49.71%	8.53%	41.76%	3.75	0.32	1.57	1.89
	2022	6	4.97%	49.71%	50.29%	0.00%	3.94	1.98		1.98
	2023	7	4.68%	46.78%	53.22%	0.00%	4.12	2.19		2.19
	2024	8	4.39%	43.85%	56.15%	0.00%	4.30	2.42		2.42
	2025	9	4.09%	40.93%	59.07%	0.00%	4.48	2.64		2.64
	2026	10	3.80%	38.00%	62.00%	0.00%	4.65	2.88	59.82	62.70
	11+		3.80%	38.00%	62.00%	0.00%	4.82	2.99		

Ke = 9.19%

Southwest Airlines Co

LUV	Year	Growth Rate	Investment Rate	Payout Ratio	Surplus(Def) Retained	Earnings	Dividends	Surplus (Def) Cash	Terminal Value	price =
	0		42.25%	10.70%	0.47042254	3.55	0.38		(49.84)	49.84
	2017	1	4.23%	94.59%	12.97%	-7.57%	3.70	0.48	-0.28	0.20
	2018	2	9.46%	86.42%	14.32%	-0.74%	4.05	0.58	-0.03	0.55
	2019	3	8.64%	79.55%	15.45%	5.00%	4.40	0.68	0.22	0.90
	2020	4	7.95%	73.68%	16.42%	9.89%	4.75	0.78	0.47	1.25
	2021	5	7.37%	66.55%	17.25%	16.20%	5.10	0.88	0.83	1.71
	2022	6	6.65%	66.55%	33.45%	0.00%	5.44	1.82		1.82
	2023	7	5.94%	59.41%	40.59%	0.00%	5.76	2.34		2.34
	2024	8	5.23%	52.27%	47.73%	0.00%	6.06	2.89		2.89
	2025	9	4.51%	45.14%	54.86%	0.00%	6.34	3.48		3.48
	2026	10	3.80%	38.00%	62.00%	0.00%	6.58	4.08	84.67	88.75
	11+		3.80%	38.00%	62.00%	0.00%	6.83	4.23		

Ke = 8.12%

United Continental Holdings

UAL	Year	Growth Rate	Investment Rate	Payout Ratio	Surplus(Def) Retained	Earnings	Dividends	Surplus (Def) Cash	Terminal Value	
	0		-219.65%	0.00%	3.19653179	8.65	-		(72.88)	price = 72.88
2017	1	-21.97%	120.37%	0.00%	-20.37%	6.75	0.00	-1.38	-1.38	
2018	2	12.04%	107.44%	0.00%	-7.44%	7.56	0.00	-0.56	-0.56	
2019	3	10.74%	97.01%	0.00%	2.99%	8.38	0.00	0.25	0.25	
2020	4	9.70%	88.44%	0.00%	11.56%	9.19	0.00	1.06	1.06	
2021	5	8.84%	78.35%	0.00%	21.65%	10.00	0.00	2.17	2.17	
2022	6	7.83%	78.35%	21.65%	0.00%	10.78	2.33		2.33	
2023	7	6.83%	68.26%	31.74%	0.00%	11.52	3.66		3.66	
2024	8	5.82%	58.17%	41.83%	0.00%	12.19	5.10		5.10	
2025	9	4.81%	48.09%	51.91%	0.00%	12.78	6.63		6.63	
2026	10	3.80%	38.00%	62.00%	0.00%	13.26	8.22		170.69	178.91
	11+	3.80%	38.00%	62.00%	0.00%	13.77	8.53			
									Ke =	10.75%

source: Value Line

IMPLIED PREMIUMS FOR US MARKET

Updated January 2017.

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

Year	Earnings Yield	Dividend Yield	S&P 500	Earnings*	Dividends*	Change in Earnings	Change in Dividends	T.Bill Rate	T.Bond Rate	Bond-Bill	Smoothed Growth	Implied Premium (DDM)	Analyst Growth Estimate	Implied Premium (FCFE)	ERP/Riskfree Rate
1960	5.34%	3.41%	58.11	3.10	1.98			0.0266	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	-30.79%	-3.24%	1.80%	5.05%	3.25%	3.56%	1.73%	10.30%	3.62%	0.72
2002	5.23%	1.83%	879.82	46.04	16.08	18.51%	2.15%	1.20%	3.81%	2.61%	3.57%	2.29%	8.00%	4.10%	1.08
2003	4.87%	1.61%	1111.91	54.69	17.88	18.79%	11.19%	1.00%	4.25%	3.25%	5.35%	2.12%	11.00%	3.69%	0.87
2004	5.58%	1.60%	1211.92	67.68	19.407	23.75%	8.54%	2.18%	4.22%	2.04%	4.90%	2.02%	8.50%	3.65%	0.86
2005	5.47%	1.79%	1248.29	76.45	22.38	12.96%	15.32%	4.31%	4.39%	0.08%	6.16%	2.20%	8.00%	4.08%	0.93
2006	6.18%	1.77%	1418.3	87.72	25.05	14.74%	11.93%	4.88%	4.70%	-0.18%	5.93%	1.97%	12.50%	4.16%	0.89
2007	5.62%	1.89%	1468.36	82.54	27.73	-5.91%	10.70%	3.31%	4.02%	0.71%	5.03%	2.06%	5.00%	4.37%	1.09
2008	7.24%	3.11%	903.25	65.39	28.05	-20.78%	1.15%	1.59%	2.21%	0.62%	2.11%	4.05%	4.00%	6.43%	2.91
2009	5.35%	2.00%	1115.10	59.65	22.31	-8.78%	-20.46%	0.14%	3.84%	3.70%	0.28%	2.60%	7.20%	4.36%	1.14
2010	6.65%	1.84%	1257.64	83.66	23.12	40.25%	3.63%	0.13%	3.29%	3.16%	3.33%	2.24%	6.95%	5.20%	1.58
2011	7.72%	2.07%	1257.60	97.05	26.02	16.01%	12.54%	0.03%	1.88%	1.85%	2.75%	2.71%	7.18%	6.01%	3.20
2012	7.18%	2.13%	1426.19	102.47	30.44	5.58%	16.99%	0.05%	1.76%	1.71%	2.93%	2.47%	5.27%	5.78%	3.28
2013	5.81%	1.96%	1848.36	107.45	36.28	4.86%	19.19%	0.07%	3.04%	2.97%	5.01%	2.03%	4.28%	4.96%	1.63
2014	5.57%	1.87%	2058.90	114.74	38.57	6.78%	6.31%	0.05%	2.17%	2.12%	2.55%	2.24%	5.58%	5.78%	2.66
2015	5.20%	2.11%	2043.94	106.32	43.16	-5.92%	9.43%	0.21%	2.27%	2.06%	2.96%	2.46%	5.55%	6.12%	2.7
2016	4.86%	2.01%	2238.83	108.86	45.03	2.39%	4.33%	0.51%	2.45%	1.94%	2.64%	2.41%	5.54%	5.69%	2.32

Summary of Bloomberg Bond Yields by Rating

Updated January 2017.

Rating	October			November			December		
	20Y	25Y	30Y	20Y	25Y	30Y	20Y	25Y	30Y
AA	3.728	3.759	3.702	4.144	4.203	4.18	4.075	4.086	4.046
AA-	3.771	3.918	3.972	4.2	4.245	4.204	4.069	4.182	4.283
A+	3.904	4.056	4.28	4.317	4.477	4.675	4.243	4.419	4.657
A	4.018	3.985	3.794	4.317	4.333	4.222	4.322	4.272	4.094
A-	4.148	4.241	4.313	4.562	4.594	4.634	4.423	4.473	4.615
BBB+	4.714	4.601	4.354	4.981	4.974	4.715	4.73	4.74	4.719
BBB	4.944	5.062	4.926	5.407	5.512	5.116	5.319	5.427	5.076
BBB-	5.644	5.598	5.11	5.786	5.731	5.495	5.54	5.613	5.348
BB+	6.219	6.474	0	6.534	6.734	0	6.447	6.635	0
BB	6.672	8.589	8.68	7.192	9.193	9.22	7.078	8.856	8.879
BB-	7.643	7.193	9.144	7.583	7.361	9.722	7.545	7.387	9.913
B+	7.94	8.105	8.046	8.569	8.814	8.706	8.272	8.51	8.479
B	9.16	10.237	0	8.266	9.982	0	8.374	9.89	0
B-	8.276	0	0	8.582	0	0	8.284	0	0