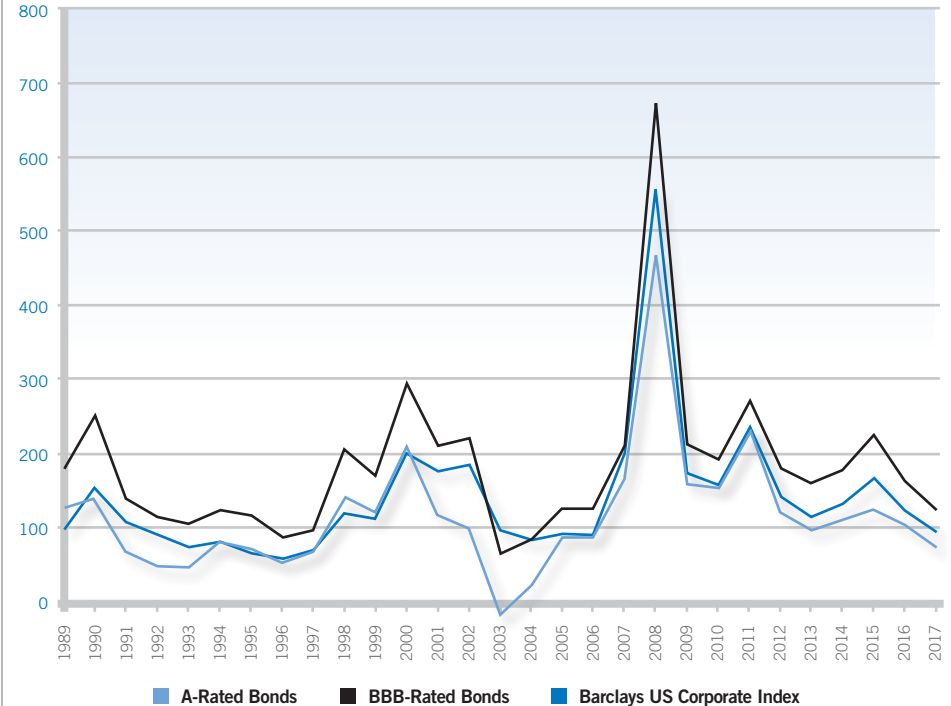


## Historical Interest Rates & Credit Spreads

10 Yr U.S. Treasury Note	A-Rated Bonds		BBB-Rated Bonds		BbgBc US Corporate Index		
Month - Year	Yield to Maturity	Yield*	Spread	Yield*	Spread	Yield*	Spread
31-Dec-89	7.92	9.16	124	9.71	179	8.89	97
31-Dec-90	8.07	9.46	139	10.56	249	9.58	151
31-Dec-91	6.07	6.74	67	7.45	138	7.14	107
31-Dec-92	6.69	7.16	47	7.81	112	7.57	88
31-Dec-93	5.79	6.26	47	6.83	104	6.52	73
31-Dec-94	7.83	8.61	78	9.05	122	8.61	78
31-Dec-95	5.58	6.27	69	6.73	115	6.23	65
31-Dec-96	6.42	6.93	51	7.27	85	6.98	56
31-Dec-97	5.85	6.51	66	6.79	94	6.52	67
31-Dec-98	4.66	6.04	138	6.70	204	5.84	118
31-Dec-99	6.44	7.65	121	8.12	168	7.55	111
31-Dec-00	5.12	7.21	209	8.06	294	7.11	199
31-Dec-01	5.04	6.20	116	7.14	210	6.78	174
31-Dec-02	3.83	4.79	96	6.04	221	5.67	184
31-Dec-03	4.32	4.15	-17	4.95	63	5.27	95
31-Dec-04	4.22	4.43	21	5.05	83	5.03	81
31-Dec-05	4.39	5.25	86	5.63	124	5.29	90
31-Dec-06	4.70	5.56	86	5.94	124	5.58	88
31-Dec-07	4.03	5.69	166	6.13	210	6.01	198
31-Dec-08	2.25	6.92	467	8.98	673	7.80	555
31-Dec-09	3.84	5.40	156	5.96	212	5.56	172
31-Dec-10	3.29	4.80	151	5.20	191	4.85	156
31-Dec-11	1.68	3.97	229	4.39	271	4.02	234
31-Dec-12	1.76	2.95	119	3.56	180	3.17	141
31-Dec-13	3.03	3.98	95	4.61	158	4.17	114
31-Dec-14	2.17	3.26	109	3.95	178	3.48	131
31-Dec-15	2.27	3.49	122	4.51	224	3.92	165
30-Nov-16	2.38	3.43	105	4.07	169	3.67	129
31-Dec-16	2.45	3.46	101	4.05	160	3.68	123
31-Jan-17	2.45	3.45	100	3.91	146	3.66	121
28-Feb-17	2.39	3.34	95	3.88	149	3.54	115
31-Mar-17	2.39	3.36	97	3.90	151	3.57	118
30-Apr-17	2.28	3.23	95	3.77	149	3.44	116
31-May-17	2.20	3.12	92	3.66	146	3.33	113
30-Jun-17	2.31	3.19	88	3.72	141	3.40	109
31-Jul-17	2.30	3.12	82	3.64	134	3.32	102
31-Aug-17	2.12	3.00	88	3.54	142	3.22	110
30-Sep-17	2.33	3.13	80	3.64	131	3.34	101
31-Oct-17	2.38	3.12	74	3.63	125	3.33	95
30-Nov-17	2.41	3.17	76	3.69	128	3.38	97
31-Dec-17	2.41	3.14	73	3.65	124	3.34	93
31-Jan-18	2.71	3.40	69	3.83	112	3.57	86
28-Feb-18	2.86	3.64	78	4.09	123	3.82	96
31-Mar-18	2.74	3.64	90	4.12	138	3.83	109
30-Apr-18	2.95	3.83	88	4.34	139	4.03	108
31-May-18	2.86	3.80	94	4.35	149	4.01	115
30-Jun-18	2.86	3.87	101	4.43	157	4.09	123
31-Jul-18	2.96	3.85	89	4.37	141	4.05	109
31-Aug-18	2.86	3.78	92	4.33	147	4.00	114
30-Sep-18	3.06	3.91	85	4.42	136	4.12	106
31-Oct-18	3.14	4.10	96	4.66	152	4.32	118

Source: Barclays Capital 11/01/18. For Financial Professional Use \*Represents an approximation.

## Credit Spreads to Treasuries - Years ended December 31



Averages	A-Rated Bonds	BBB-Rated Bonds	US Corporate Index
Period ended October 31, 2018			
2 years	0.89	1.41	1.09
Period ended December 31, 2017			
5 years	1.00	1.69	1.25
10 years	1.62	2.37	1.88
20 years	1.32	2.04	1.61

## Key Observations

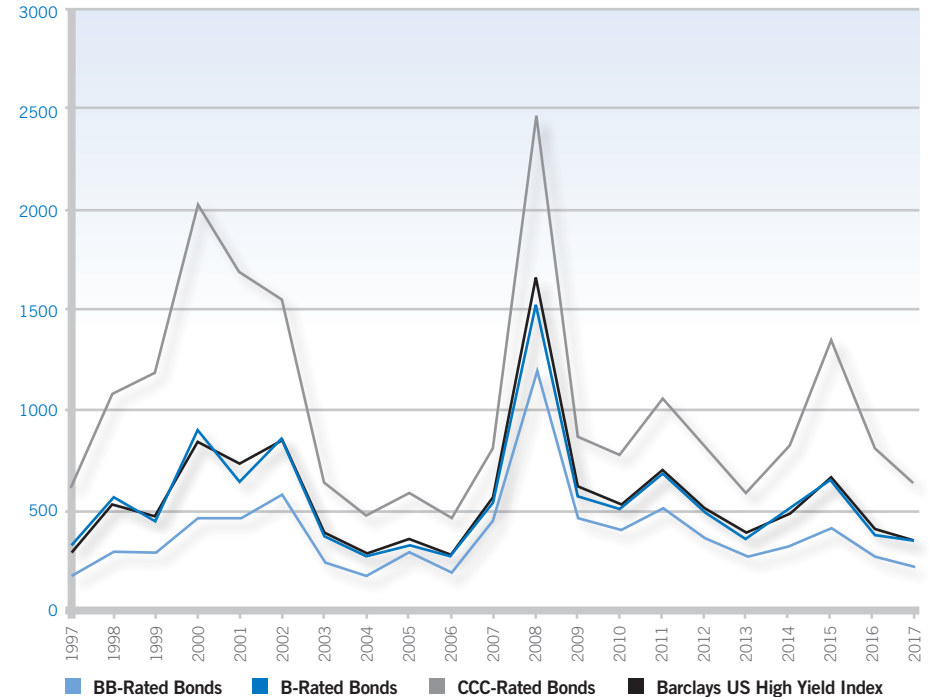
For the month of October 2018, the yield on the 10-year US Treasury Note ended at 3.14%, 8 basis points higher from the previous month. The Bloomberg Barclays US Corporate Index widened by 12 basis points to 1.18% over Treasuries. The A Rated Corporate Credit Spread increased by 11 basis points to 0.96%. The BBB Rated Corporate Credit Spreads widened by 16 basis points to 1.52%.

## Historical Interest Rates & Credit Spreads

5 Yr U.S. Treasury Note	BB-Rated Bonds		B-Rated Bonds		CCC-Rated Bonds		BbgBc US High Yield Index		
Month - Year	Yield to Maturity	Yield*	Spread	Yield*	Spread	Yield*	Spread	Yield*	Spread
31-Dec-97	5.71	7.39	168	8.97	326	11.88	617	8.59	288
31-Dec-98	4.56	7.50	294	10.15	559	15.38	1082	9.83	527
31-Dec-99	6.36	9.20	284	10.84	448	18.22	1186	11.03	467
31-Dec-00	4.99	9.64	465	13.99	900	25.25	2026	13.47	848
31-Dec-01	4.38	8.87	449	10.80	642	21.30	1692	11.66	728
31-Dec-02	2.78	8.60	582	11.37	859	18.30	1552	11.29	851
31-Dec-03	3.25	5.64	239	6.96	371	9.65	640	7.18	393
31-Dec-04	3.63	5.42	179	6.30	267	8.38	475	6.50	287
31-Dec-05	4.35	7.27	292	7.61	326	10.23	588	7.91	356
31-Dec-06	4.70	6.53	183	7.39	269	9.28	458	7.44	274
31-Dec-07	3.45	7.95	450	8.81	536	11.55	810	9.14	569
31-Dec-08	1.55	13.66	1211	16.75	1520	26.21	2466	18.17	1662
31-Dec-09	2.69	7.22	453	8.36	567	11.37	868	8.85	616
31-Dec-10	2.01	6.00	399	7.07	506	9.76	775	7.27	526
31-Dec-11	0.83	5.95	512	7.65	682	11.39	1056	7.82	699
31-Dec-12	0.72	4.31	359	5.58	486	8.84	812	5.83	511
31-Dec-13	1.75	4.44	269	5.39	364	7.66	591	5.57	382
31-Dec-14	1.65	4.89	324	6.67	502	9.85	820	6.48	483
31-Dec-15	1.76	5.93	417	8.30	654	15.27	1,351	8.36	660
30-Nov-16	1.84	4.76	292	6.08	424	10.82	898	6.39	455
31-Dec-16	1.93	4.63	270	5.75	382	10.00	807	6.02	409
31-Jan-17	1.91	4.53	262	5.55	364	9.27	736	5.79	388
28-Feb-17	1.93	4.42	249	5.39	346	8.62	669	5.56	363
31-Mar-17	1.92	4.44	252	5.67	375	8.84	692	5.75	383
30-Apr-17	1.82	4.19	237	5.43	361	8.73	691	5.53	371
31-May-17	1.75	4.12	237	5.26	351	8.37	662	5.38	363
30-Jun-17	1.89	4.16	227	5.5	361	8.69	680	5.53	364
31-Jul-17	1.84	4.01	217	5.31	347	8.33	649	5.36	352
31-Aug-17	1.70	4.02	232	5.40	370	8.69	699	5.48	378
30-Sep-17	1.94	4.00	206	5.34	340	8.41	647	5.41	347
31-Oct-17	2.02	4.04	202	5.30	328	8.39	637	5.40	338
30-Nov-17	2.14	4.16	202	5.62	348	8.32	618	5.58	344
31-Dec-17	2.21	4.32	211	5.64	343	8.36	615	5.64	343
31-Jan-18	2.52	4.42	190	5.68	316	8.32	580	5.71	319
28-Feb-18	2.64	4.75	211	5.94	330	8.59	595	6.00	336
31-Mar-18	2.56	4.93	237	6.20	364	9.00	644	6.10	354
30-Apr-18	2.80	5.00	220	6.23	343	9.14	634	6.18	338
31-May-18	2.70	5.18	248	6.41	371	9.10	640	6.32	362
30-Jun-18	2.74	5.27	253	6.46	372	8.72	598	6.37	363
31-Jul-18	2.85	5.11	226	6.35	350	8.39	554	6.21	336
31-Aug-18	2.74	4.95	221	6.09	335	8.85	611	6.12	338
30-Sep-18	2.95	5.01	206	6.07	312	8.79	584	6.11	316
31-Oct-18	2.98	5.46	248	6.70	372	9.91	693	6.69	371

Source: Barclays Capital 11/01/18. For Financial Professional Use \*Represents an approximation.

## Credit Spreads to Treasuries - Years ended December 31



Averages	BB	B	CCC	BbgBc US HY Credit Index
Period ended October 31, 2018				
2 years	2.32	3.54	6.60	3.60
Period ended December 31, 2017				
5 years	2.98	4.49	8.37	4.55
10 years	4.42	6.01	10.16	6.29
15 years	3.85	5.18	8.75	5.45

## Key Observations

For the month of October 2018, the yield on the 5-year US Treasury Note ended at 2.98%, 3 basis points higher from the previous month. The Bloomberg Barclays US High Yield Index widened by 55 basis points to 3.71% over Treasuries. The BB Rated Corporate Credit Spread increased by 42 basis points to 2.48%. The B Rated Corporate Credit Spreads widened by 60 basis points to 3.72%. The CCC Rated Corporate Credit Spread increased by 109 basis points to 6.93%.