

Market Transparency Report

Monthly Guide to the U.S. Retail Fixed Income Markets

March 2020

www.tradeweb.com

1177 Avenue of the Americas
New York, NY 10036
212.852.1234

Overview

About the Market Transparency Report

The data and analysis contained in this monthly report are intended to provide transparency into the dynamics of the U.S. Fixed Income markets for retail investors. The report presents the important trends in the market, including trade volumes, most active issuers, yield/spread movements and buy/sell ratios. Retail trades are defined as odd-lot transactions under 100 bonds (i.e. less than \$100,000 par value). The retail market is much smaller than the institutional market on a par value basis, but it accounts for more than 2/3 of the trades that occur in the marketplace.

Page Reference

- 3. Market Commentary
- 4. Yield Matrix
- 5. Treasury, Agency, CD Transaction Trend Summary
- 6. Corporate Bonds: Odd-Lot Customer Transaction Trend Summary
- 7. Municipal Bonds: Odd-Lot Customer Transaction Trend Summary
- 8. Corporate Bonds: Top 20 Most Active Issuers
- 9. Corporate Bonds: Top 20 Issuers with Highest Buy/Sell Ratio
- 10. Corporate Bonds: Top 20 Issuers with Lowest Buy/Sell Ratio
- 11. Corporate Bonds: Top 20 Most Bought Issues
- 12. Corporate Bonds: Top 20 Most Sold Issues
- 13. Appendix
- 14. Disclosures

Market Commentary

Monthly Change Table for March 2020

	Median Yield (bps)	Daily Trade Volume	Buy/Sell Ratio
Agency	-61	6.4%	-1.2
CD	-46	-4.9%	-3.9
Corp	175	10.1%	-0.1
Municipal	105	54.9%	0.1
Treasury	-114	-16.5%	-2.7

For monthly security trend data, see slides 5, 6 and 7

Yield Matrix

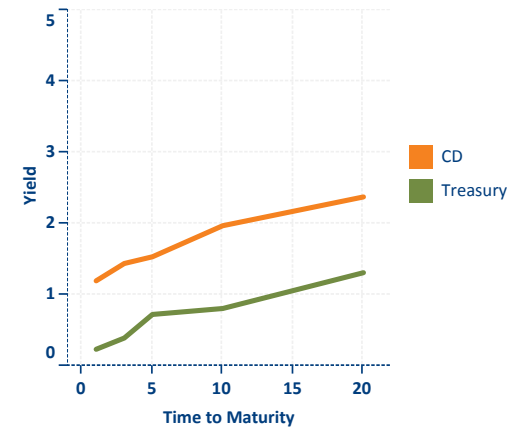
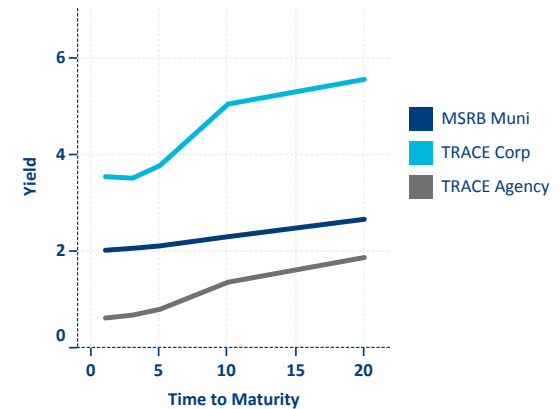
Average Yield, % for March 2020

Market	TTM					Median Maturity (Years)
	1	3	5	10	20	
MSRB Muni	2.0	2.1	2.1	2.3	2.7	8
TRACE Corp	3.6	3.5	3.8	5.1	5.6	3
TRACE Agency	0.6	0.7	0.8	1.4	1.9	3
CD	1.2	1.4	1.5	2.0	2.4	0
Treasury	0.2	0.4	0.7	0.8	1.3	0

Asset Class

Market	Category (Filtered)	Rating Key	1	3	5	10	20	Median Maturity (Years)
TRACE Corp	Financial	AA	2.6	2.0				1
		A	3.0	2.7	2.5	2.9	3.9	2
		BBB	4.8	4.1	3.9	4.4	5.1	4
		HY	12.3	6.4	9.8	9.4	6.1	3
	Non-Financial	AAA	0.9	1.0		2.1	2.7	1
		AA	1.6	3.3	1.1	2.3	3.0	1
		A	3.1	2.8	3.1	3.2	3.9	3
		BBB	4.4	6.0	4.8	5.9	5.3	2
		HY	8.2	9.5	8.4	10.0	9.2	7
MSRB Muni	GO	AAA	1.9	1.9	2.0	2.1	2.2	6
		AA	1.9	2.0	2.0	2.2	2.6	7
		A	2.2	2.2	2.3	2.5	2.6	6
		BBB	4.2	3.0	3.7	3.8	3.7	9
	Revenue	HY	4.0	3.9		4.1	3.7	10
		AAA	1.9	2.0	2.1	2.2	2.5	6
		AA	2.0	2.1	2.1	2.3	2.6	8
		A	2.5	2.3	2.4	2.6	2.8	11
		BBB	3.1	3.4	3.2	3.5	3.6	16
		HY	5.4	4.1	5.1	3.7	4.2	12

Average Yield, %



WA Yield = "Weighted Average Yield"

Source: TRACE, RTRS (MSRB's Real-time Transactional Reporting System) and Tradeweb Direct

-The yields in each cell for Corporate/Agency/Municipal are the weighted average yield based on odd-lot customer buy transactions reported in TRACE/MSRB.

-The yields in each cell for Treasury/CD are the weighted average yield based on buy transactions on the Tradeweb Direct Platform.

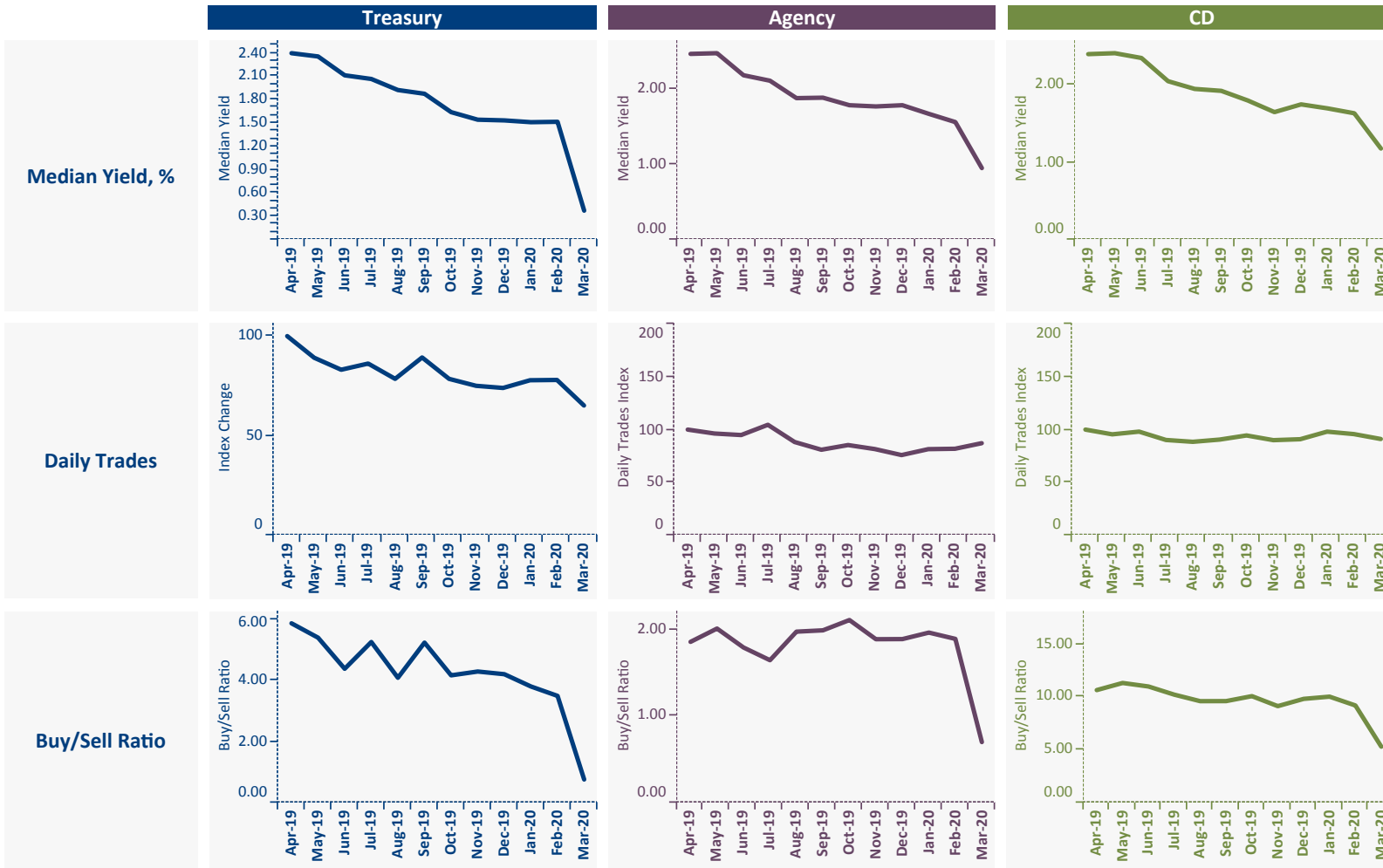
-The weights are based on transaction size.

-Yield summaries for Corporate and Agency exclude transactions in callable or floating-rate coupon bonds.

-Yield summaries for Municipal exclude transactions in taxable bonds.

-See appendix for the definition of maturity and rating buckets.

Treasury, Agency, CD Transaction Trend Summary



Daily Trades: First month = 100

Source: TRACE and Tradeweb Direct

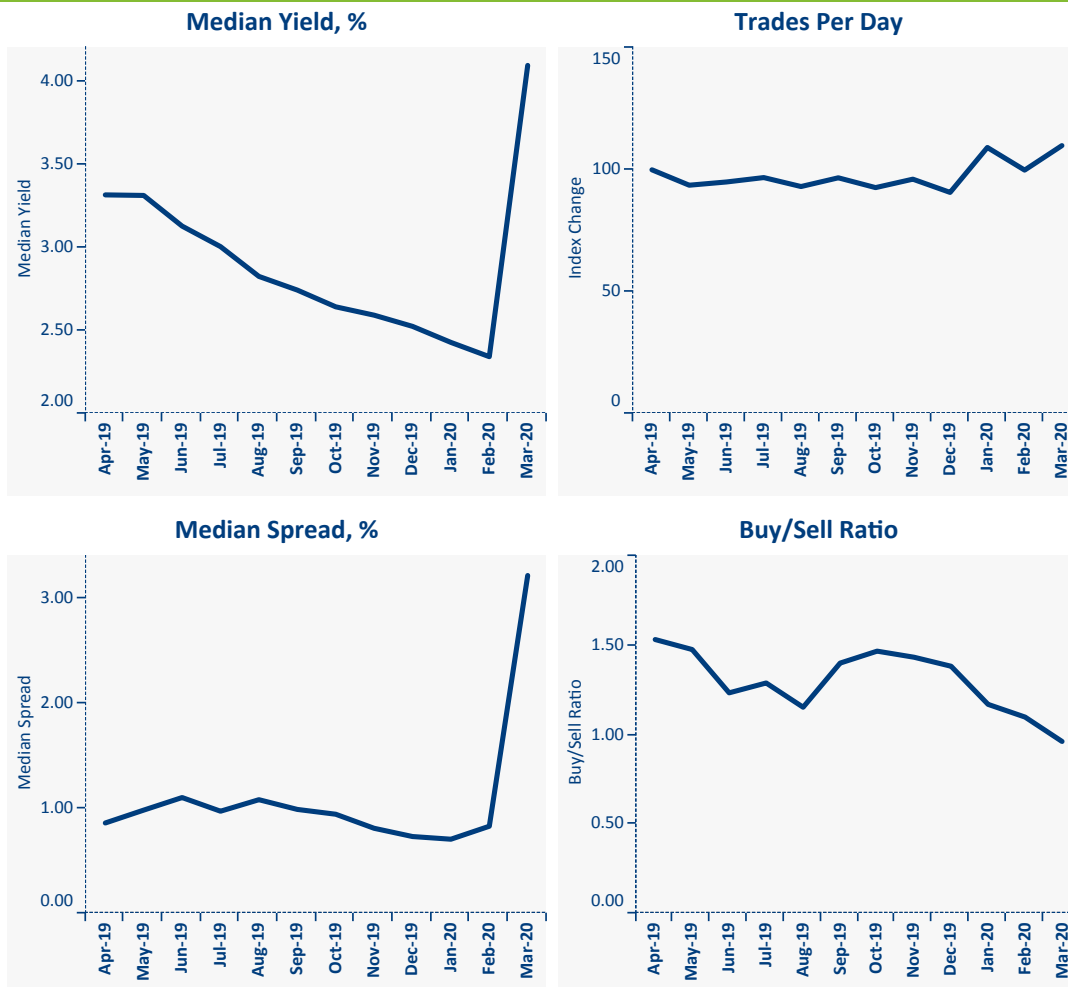
-Treasury and CD are based on transactions on the Tradeweb Direct Platform. Median yields are based on all customer buy transactions.

-Agency is based on odd-lot customer transactions (<100M) reported in TRACE. Median yields are based on all odd-lot customer buy transactions.

©2020 Tradeweb Markets LLC. All rights reserved. The information contained herein is highly confidential and some or all of it may constitute material, non-public information under applicable securities laws. This information must be kept strictly confidential, may not be disclosed or distributed to anyone without the express written consent of Tradeweb Markets LLC, and may only be used as expressly permitted by any applicable non-disclosure, customer, or other written agreement with Tradeweb.



Corporate Bonds: Odd-Lot Customer Transaction Trend Summary



Daily Trades: First month = 100

Source: TRACE and Tradeweb Direct

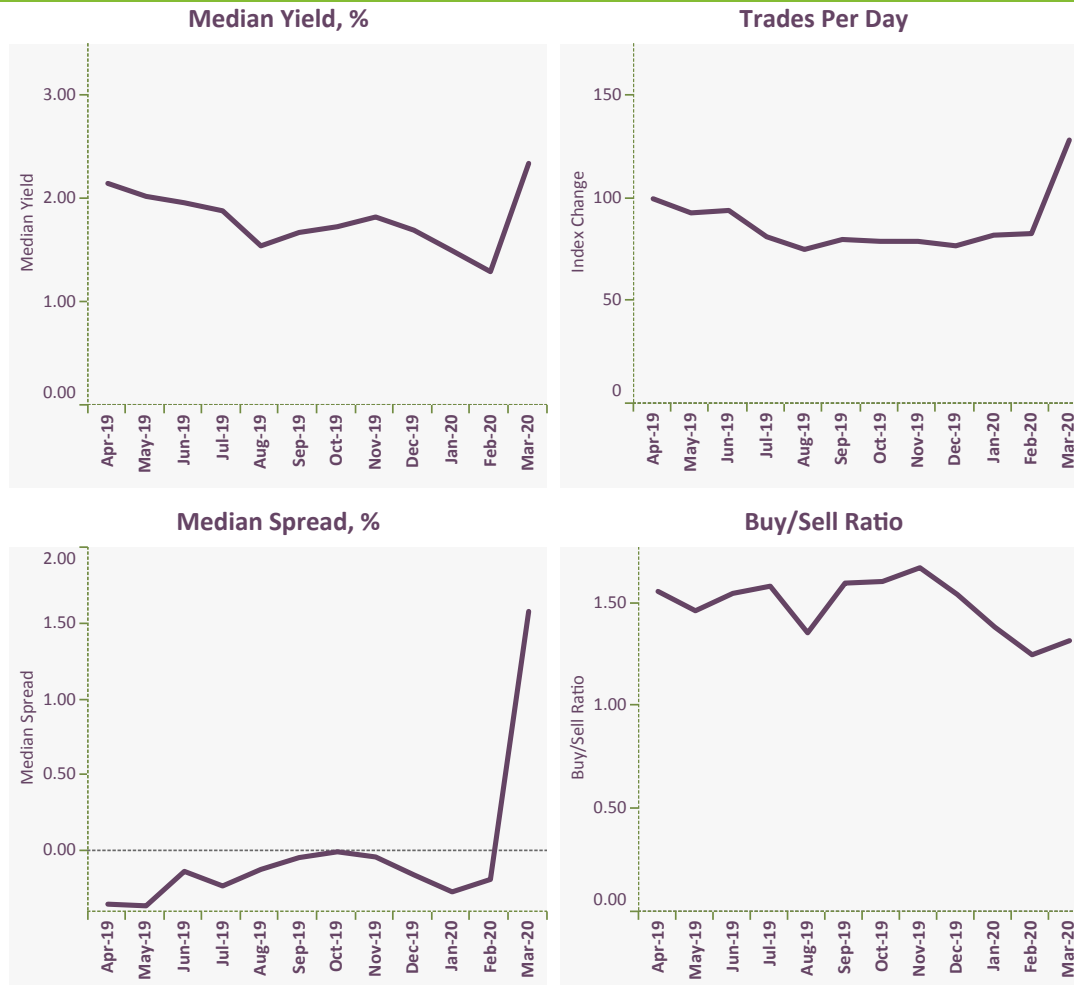
-Based on odd-lot customer transactions (<100M) reported in TRACE.

-Median yields and spreads are based on all odd-lot customer buy transactions...

©2020 Tradeweb Markets LLC. All rights reserved. The information contained herein is highly confidential and some or all of it may constitute material, non-public information under applicable securities laws. This information must be kept strictly confidential, may not be disclosed or distributed to anyone without the express written consent of Tradeweb Markets LLC, and may only be used as expressly permitted by any applicable non-disclosure, customer, or other written agreement with Tradeweb.



Municipal Bonds: Odd-Lot Customer Transaction Trend Summary



Daily Trades: First month = 100

Source: RTRS (MSRB's Real-time Transaction Reporting System) and Tradeweb Direct

-Based on odd-lot customer transactions (<100M) reported in MSRB.

-Median yields and spreads are based on all odd-lot customer buy transactions.

-Spread for each transaction is calculated against the Treasury yield for the same maturity.

©2020 Tradeweb Markets LLC. All rights reserved. The information contained herein is highly confidential and some or all of it may constitute material, non-public information under applicable securities laws. This information must be kept strictly confidential, may not be disclosed or distributed to anyone without the express written consent of Tradeweb Markets LLC, and may only be used as expressly permitted by any applicable non-disclosure, customer, or other written agreement with Tradeweb.



Corporate Bonds: Top 20 Most Active Issuers

March 2020

Index	Ticker	Company	Rating Key (Med)	Issues Traded	% of Total Trades	Trades	Buy/Sell Ratio	Dollar Vol. Traded (MM)	1Y Yield (Buy)	3Y Yield (Buy)	5Y Yield (Buy)	10Y Yield (Buy)	20Y Yield (Buy)
1	JPM	JP MORGAN CHASE	BBB	757	3.7%	22,209	1.2	447	3.0	2.8	3.1	3.8	3.4
2	GS	GOLDMAN SACHS	BBB	1,015	3.0%	17,957	1.1	354	3.4	3.5	4.1	3.5	5.3
3	BNKQ	Null	A	440	2.5%	14,718	1.0	304	3.1	2.7	3.8	3.0	3.9
4	C	CITIGROUP	BBB	465	2.4%	14,087	1.0	290	3.0	3.5	3.7	4.1	3.5
5	T	AT&T	BBB	107	2.1%	12,441	1.1	251	3.6	4.1	4.4	3.7	5.1
6	WFC	WELLS FARGO	A	271	2.1%	12,293	1.0	262	2.5	3.2	2.4	3.5	5.0
7	MS	MORGAN STANLEY	BBB	896	1.6%	9,264	0.7	192	3.4	3.3	3.0	3.5	3.6
8	GE	GENERAL ELEC CAP CORP MEDIUM TERM NTS BO	BBB	314	1.6%	9,227	1.1	175	4.0	3.7	4.6	4.2	5.2
9	GM	GENERAL MOTORS FINANCIAL COMPANY INC	BBB	106	1.5%	8,939	1.6	160	7.0	5.0	7.1	6.5	7.0
10	AAPL	APPLE INC	AA	47	1.5%	8,893	0.7	189	1.4	1.4	1.6	1.9	2.8
11	CVS	CVS CAREMARK CORP	BBB	48	1.3%	7,581	1.2	135	2.7	3.0	3.0	3.1	5.3
12	VZ	VERIZON	BBB	124	1.2%	7,096	0.8	138	3.3	2.0	2.1	2.8	3.4
13	F	FORD	BB	261	1.1%	6,785	1.6	114	8.8	5.3	6.1	7.3	6.9
14	BRK	BERKSHIRE HATHAWAY	A	144	1.0%	5,978	1.0	147	1.7	2.3	2.9	4.1	4.3
15	MSFT	MICROSOFT CORP	AAA	34	0.9%	5,600	0.8	114	1.1	1.4	1.7		2.7
16	CMCS	COMCAST	A	66	0.9%	5,141	0.7	117		2.0	2.0	2.5	3.1
17	AXP	AMERICAN EXPRESS	BBB	34	0.8%	4,968	1.3	104	3.0	3.0	3.9		4.8
18	PEMX	PETROLEOS MEXICANOS	BBB	39	0.8%	4,900	1.2	128	8.9	7.3	7.6	8.1	8.5
19	ORCL	ORACLE CORP	A	31	0.8%	4,656	0.8	89	1.9	2.4	1.8	2.4	3.4
20	APC	ANADARKO PETE CORP	BB	75	0.7%	4,333	1.5	68	6.6	9.6	8.6	8.1	7.5

Source: TRACE and Tradeweb Direct

-Based on odd-lot customer transactions (<100M) reported in TRACE.

-Issuer ratings are based on median rating of traded bonds from each issuer. Bond ratings are from Moody's and S&P.

Corporate Bonds: Top 20 Issuers with Highest Buy/Sell Ratio

March 2020

Index	Ticker	Company	Rating Key (Med)	Issues Traded	% of Total Trades	Trades	Trades (Buy)	Trades (Sell)	Buy/Sell Ratio	Dollar Vol. Traded (MM)	1Y Yield (Buy)	3Y Yield (Buy)	5Y Yield (Buy)	10Y Yield (Buy)	20Y Yield (Buy)
1	RCL	ROYAL CARIBBEAN CRUISES LTD	BBB	4	0.3%	1,759	1,365	394	3.5	29	9.5	11.2		5.8	
2	DAL	DELTA AIR LINES INC DEL	BB	15	0.3%	2,045	1,561	484	3.2	30	8.9	5.8	4.5	5.6	
3	BDX	BECTON DICKINSON & CO	BBB	15	0.3%	1,505	1,078	427	2.5	29	4.5	3.0	3.6	3.1	4.2
4	FDX	FEDEX CORP	BBB	23	0.3%	2,051	1,456	595	2.5	36		3.6	3.0	4.3	4.7
5	BA	BOEING CO	BBB	46	0.5%	3,149	2,180	969	2.3	61	4.9	4.4	6.6	5.2	5.2
6	PG	PROCTER & GAMBLE CO	AA	22	0.2%	1,440	960	480	2.0	23	1.7	1.9	1.4	2.1	2.5
7	HAL	HALLIBURTON CO	BBB	12	0.2%	1,365	890	475	1.9	27	6.6	4.8	4.3	4.8	7.6
8	MRO	MARATHON OIL CORP	BBB	22	0.2%	1,480	943	537	1.8	25	6.9	8.5	7.3	9.4	7.9
9	D	DOMINION RES INC VA NEW	BBB	65	0.3%	1,843	1,145	698	1.6	40	3.4	3.5	3.0	4.1	4.2
10	F	FORD	BB	261	1.1%	6,785	4,190	2,595	1.6	114	8.8	5.3	6.1	7.3	6.9
11	GM	GENERAL MOTORS FINANCIAL COMPANY INC	BBB	106	1.5%	8,939	5,467	3,472	1.6	160	7.0	5.0	7.1	6.5	7.0
12	COF	CAPITAL ONE FINL CORP	BBB	27	0.7%	4,100	2,493	1,607	1.6	77	3.9	3.5	4.0	4.3	
13	RIG	TRANSOCEAN INC	C	16	0.2%	1,434	862	572	1.5	12	29.4	19.5		22.8	25.2
14	APC	ANADARKO PETE CORP	BB	75	0.7%	4,333	2,585	1,748	1.5	68	6.6	9.6	8.6	8.1	7.5
15	MAR	MARRIOTT INTL INC NEW	BBB	22	0.3%	1,699	1,010	689	1.5	29	7.1	5.5	5.8	4.2	
16	VIA	VIACOM INC NEW	BBB	37	0.4%	2,230	1,314	916	1.4	39	5.3	4.7	4.2	4.4	5.8
17	DWDP	Null	BBB	13	0.2%	1,389	808	581	1.4	32	3.2	5.4	3.9	4.0	5.1
18	TUP	TUPPERWARE BRANDS CORP	C	1	0.4%	2,176	1,266	910	1.4	19	45.0				
19	X	UNITED STS STL CORP NEW	B	3	0.5%	2,740	1,564	1,176	1.3	23			13.5		10.6
20	TD	TORONTO DOMINION BK SR MEDIUM TERM BK NT	AA	81	0.3%	1,734	987	747	1.3	44	2.5	2.3	3.4		

Source: TRACE and Tradeweb Direct

-Based on odd-lot customer transactions (<100M) reported in TRACE.

-The top 20 issuers are selected among the top 100 most active issuers in odd-lot TRACE.

-Issuer ratings are based on median rating of traded bonds from each issuer. Bond ratings are from Moody's and S&P.

Corporate Bonds: Top 20 Issuers with Lowest Buy/Sell Ratio

March 2020

Index	Ticker	Company	Rating Key (Med)	Issues Traded	% of Total Trades	Trades	Trades (Buy)	Trades (Sell)	Buy/Sell Ratio	Dollar Vol. Traded (MM)	1Y Yield (Sell)	3Y Yield (Sell)	5Y Yield (Sell)	10Y Yield (Sell)	20Y Yield (Sell)
1	FTR	FRONTIER COMMUNICATIONS CORP	C	26	0.3%	1,693	310	1,383	0.22	14	123.6	78.2	34.6	10.1	25.8
2	LTD	LIMITED BRANDS INC	B	10	0.3%	1,614	445	1,169	0.38	27	9.9	6.8		7.1	8.0
3	BCS	BARCLAYS	N/R	644	0.4%	2,170	652	1,518	0.43	36	5.0	3.9	3.6	4.1	
4	CTL	CENTURYLINK	B	29	0.5%	2,841	857	1,984	0.43	59	7.9	6.2	6.8	7.5	8.2
5	STX	SEAGATE HDD CAYMAN	BBB	6	0.3%	1,795	616	1,179	0.52	34		5.6	5.2		
6	BNS	BANK NOVA SCOTIA B C	A	164	0.3%	1,918	677	1,241	0.55	39	2.9	2.3	4.1	3.3	
7	AA	ALCOA	BB	9	0.2%	1,415	517	898	0.58	30	7.4		5.9	6.3	5.8
8	AMZN	AMAZON COM INC	AA	14	0.3%	1,817	673	1,144	0.59	45		1.6	1.9		2.6
9	BP	BP	A	46	0.5%	3,206	1,188	2,018	0.59	58	3.9	3.4	3.2	3.3	
10	KMI	KINDER MORGAN ENERGY PARTNERS L P	BBB	58	0.3%	1,774	673	1,101	0.61	34	7.1	5.0	4.6	5.1	6.3
11	M	MACYS RETAIL HLDGS INC	BB	19	0.3%	1,729	664	1,065	0.62	26	26.0	15.2	13.0	9.4	8.4
12	ABBV	ABBVIE INC	BBB	23	0.5%	3,195	1,232	1,963	0.63	73	2.8	2.8	2.9	2.6	3.4
13	AAPL	APPLE INC	AA	47	1.5%	8,893	3,504	5,389	0.65	189	1.7	1.6	1.9	2.0	2.7
14	KO	COCA COLA CO	A	31	0.3%	1,966	784	1,182	0.66	44	2.5	2.1	1.9	2.3	4.7
15	MS	MORGAN STANLEY	BBB	896	1.6%	9,264	3,817	5,447	0.70	192	3.5	3.3	3.0	3.9	3.4
16	CMCS	COMCAST	A	66	0.9%	5,141	2,135	3,006	0.71	117	1.8	2.1	2.3	2.5	3.1
17	ORCL	ORACLE CORP	A	31	0.8%	4,656	1,995	2,661	0.75	89	1.9	1.8	2.0	2.4	3.0
18	AMGN	AMGEN INC	BBB	33	0.4%	2,169	936	1,233	0.76	43	2.1	2.5	2.7	2.7	3.3
19	MO	ALTRIA GROUP INC	BBB	19	0.3%	1,743	750	993	0.76	41	4.1	3.4	3.2	2.7	4.7
20	RDS	SHELL	AA	27	0.3%	2,002	867	1,135	0.76	43	3.4	2.6	2.6	2.7	3.5

Source: TRACE and Tradeweb Direct

-Based on odd-lot customer transactions (<100M) reported in TRACE.

-The top 20 issuers are selected among top 100 most active issuers in odd-lot TRACE.

-Issuer ratings are based on median rating of traded bonds from each user. Bond ratings are from Moody's and S&P.

©2020 Tradeweb Markets LLC. All rights reserved. The information contained herein is highly confidential and some or all of it may constitute material, non-public information under applicable securities laws. This information must be kept strictly confidential, may not be disclosed or distributed to anyone without the express written consent of Tradeweb Markets LLC, and may only be used as expressly permitted by any applicable non-disclosure, customer, or other written agreement with Tradeweb.



Corporate Bonds: Top 20 Most Bought Issues

March 2020

Index	Ticker	Company	Maturity	Rating Key (Med)	Coupon	Trades (Buy)	Trades (Sell)	Trades	Dollar Vol. Traded (MM)	Yield (Buy)	Yield (Sell)	Price (Buy)	Price (Sell)
1	TUP	TUPPERWARE BRANDS CORP	Jun-21	C	4.750	1,266	910	2,176	19	45.0	51.8	66.0	61.9
2	GM	GENERAL MOTORS FINANCIAL COMPANY INC	Null	BB	5.750	1,259	183	1,442	18	6.8	7.0	85.0	81.0
3	JPM	JP MORGAN CHASE	Null	BBB	5.239	1,186	263	1,449	16	7.0	5.9	75.0	88.6
4	JPM	JP MORGAN CHASE	Dec-49	BBB	5.000	1,178	129	1,307	26	5.0	5.2	99.5	95.5
5	GE	GENERAL ELEC CAP CORP MEDIUM TERM NTS BO	Null	BBB	5.000	1,169	608	1,777	35	5.4	5.4	92.8	92.0
6	WFC	WELLS FARGO	Null	BBB	0.000	1,052	513	1,565	34	5.7	5.8	98.0	96.5
7	CVS	CVS CAREMARK CORP	Mar-25	BBB	4.100	998	266	1,264	17	3.0	3.1	104.9	104.5
8	F	FORD	Jul-31	BB	7.450	972	234	1,206	15	7.3	9.8	101.5	83.9
9	JPM	JP MORGAN CHASE	Null	BBB	6.750	830	224	1,054	16	6.7	6.5	100.5	103.5
10	X	UNITED STS STL CORP NEW	Aug-25	B	6.875	786	396	1,182	11	9.3	15.9	90.0	68.3
11	COF	CAPITAL ONE FINL CORP	Null	BB	5.550	762	193	955	11	6.6	5.8	85.3	95.9
12	MSFT	MICROSOFT CORP	Aug-21	AAA	1.550	725	125	850	8	1.1	1.4	100.5	100.2
13	X	UNITED STS STL CORP NEW	Mar-26	B	6.250	701	651	1,352	9	13.9	17.2	69.4	60.0
14	AAL	AMERICAN AIRLINES INC	Jun-22	N/R	5.000	686	10	696	14			100.7	84.3
15	RCL	ROYAL CARIBBEAN CRUISES LTD	Nov-22	BBB	5.250	673	184	857	14	11.2	17.5	86.6	75.0
16	PG	PROCTER & GAMBLE CO	Aug-23	AA	3.100	663	71	734	5	1.9	1.8	103.9	104.2
17	BDX	BECTON DICKINSON & CO	Jun-22	BBB	2.894	656	62	718	12	3.0	2.4	99.8	101.0
18	JPM	JP MORGAN CHASE	Dec-49	BBB	4.600	656	115	771	18	4.9	5.2	93.4	88.0
19	HBC	HSBC	Apr-21	A	5.100	621	342	963	16	3.8	3.8	101.3	101.3
20	GS	GOLDMAN SACHS	Feb-25	BBB	3.750	618	62	680	12	5.8	5.9	91.5	90.9

Source: TRACE and Tradeweb Direct

-Based on odd-lot customer transactions (<100M) reported in TRACE.

-Ratings (AAA, AA, A, BBB, BB, B, C) are based on aggregate ratings from Moody's and S&P (when available).

Corporate Bonds: Top 20 Most Sold Issues

March 2020

Index	Ticker	Company	Maturity	Rating Key (Med)	Coupon	Trades (Buy)	Trades (Sell)	Trades	Dollar Vol. Traded (MM)	Yield (Buy)	Yield (Sell)	Price (Buy)	Price (Sell)
1	TUP	TUPPERWARE BRANDS CORP	Jun-21	C	4.750	1,266	910	2,176	19	45.0	51.8	66.0	61.9
2	AAPL	APPLE INC	May-23	AA	2.400	341	669	1,010	23	1.4	1.6	103.2	102.5
3	T	AT&T	May-25	BBB	3.400	365	656	1,021	19	4.3	2.3	95.7	105.3
4	X	UNITED STS STL CORP NEW	Mar-26	B	6.250	701	651	1,352	9	13.9	17.2	69.4	60.0
5	GE	GENERAL ELEC CAP CORP MEDIUM TERM NTS BO	Null	BBB	5.000	1,169	608	1,777	35	5.4	5.4	92.8	92.0
6	WYN	WYNDHAM WORLDWIDE CORP	Mar-22	BB	4.250	80	599	679	8	12.2	4.0	86.7	100.3
7	VZ	VERIZON	Nov-24	BBB	3.500	332	586	918	11	2.1	2.4	105.7	104.4
8	JPM	JP MORGAN CHASE	Oct-26	A	2.950	306	585	891	8	2.5	3.1	102.5	99.1
9	GM	GENERAL MOTORS FINANCIAL COMPANY INC	Feb-25	BBB	2.900	31	581	612	5	2.5	7.1	101.9	83.0
10	T	AT&T	Feb-22	BBB	3.000	463	567	1,030	11	2.8	3.2	100.4	99.6
11	TSLA	TESLA MTRS INC	Aug-25	N/R	5.300	537	533	1,070	16			92.2	92.0
12	WFC	WELLS FARGO	Null	BBB	0.000	1,052	513	1,565	34	5.7	5.8	98.0	96.5
13	AAPL	APPLE INC	Feb-26	AA	3.250	292	508	800	8	1.6	2.0	108.7	106.6
14	CVS	CVS CAREMARK CORP	Mar-28	BBB	4.300	188	499	687	14	3.0	3.3	108.9	107.1
15	CVS	CVS CAREMARK CORP	Mar-23	BBB	3.700	291	492	783	16	2.4	2.4	103.6	103.6
16	GPS	GAP	Apr-21	BB	5.950	588	467	1,055	17	6.5	8.1	99.4	97.8
17	ORCL	ORACLE CORP	Nov-27	A	3.250	325	466	791	8	2.4	2.4	105.9	105.7
18	TDOC	Null	Dec-22	N/R	3.000	18	462	480	5			321.1	326.0
19	MSFT	MICROSOFT CORP	Aug-26	AAA	2.400	302	459	761	9	1.5	1.7	105.1	104.1
20	WAG	WALGREEN CO	Nov-24	BBB	3.800	230	446	676	7	2.9	3.2	103.6	102.2

Source: TRACE and Tradeweb Direct

-Based on odd-lot customer transactions (<100M) reported in TRACE.

-Ratings (AAA, AA, A, BBB, BB, B, C) are based on aggregate ratings from Moody's and S&P (when available).

Appendix

Maturity

We consider the following maturity ranges for maturity buckets. TTM is Time to Maturity in years.

1Y: $0.5 \leq TTM \leq 1.5$
 3Y: $2 \leq TTM \leq 4$
 5Y: $4 < TTM \leq 6$
 10Y: $7.5 \leq TTM \leq 12.5$
 20Y: $15 \leq TTM \leq 25$

Rating

Rating buckets (AAA, AA, A, BBB, HY) in yield matrix are based on aggregate ratings from Moody's and S&P (when available).

For Corporate, we only consider transactions in bonds that are rated by both rating agencies.

-Corporate AAA: Bonds rated AAA by both rating agencies.

-Corporate AA: Bonds rated AA by both rating agencies.

-Corporate A: Bonds rated A by both rating agencies.

-Corporate BBB: Bonds rated BBB by both rating agencies.

-Corporate High Yield: Bonds rated High Yield by both rating agencies.

(Transactions in corporate bonds that are rated as AA by one agency and as A by another agency are excluded.)

-Municipal AAA: Bonds rated AAA by both rating agencies, or AAA by one agency and not rated by another agency.

-Municipal AA: Bonds rated AA by both rating agencies, or AA by one agency and not rated by another agency.

-Municipal A: Bonds rated A by both rating agencies, or A by one agency and not rated by another agency.

-Municipal BBB: Bonds rated High Yield by both rating agencies, or BBB by one agency and not rated by another agency.

-Municipal High Yield: Bonds rated High Yield by both rating agencies, or High Yield by one agency and not rated by another agency.

(Transactions in municipal bonds that are rated as AA by one agency and as A by another agency are excluded.)

(Transactions in municipal bonds that are rated as AA by one agency and not rated by the other agency are included.)

Disclosures

This report represents certain customer trades in securities that have been reported by dealers to FINRA's Trade Reporting and Compliance Engine ("TRACE"), and the Municipal Securities Rulemaking Board ("MSRB"). The report does not necessarily reflect all transactions that were effected on dates noted. There is the possibility of errors or delays in the trade submission process. Prices for transactions vary with market conditions and can be affected by trade size and other factors. The information provided has been obtained from sources deemed to be reliable, however Tradeweb Direct does not guarantee the accuracy of the information contained in this report.

Fixed income securities are subject to increased loss of principal during periods of rising interest rates. Fixed-income investments are subject to various risks including changes in credit quality, market valuations, liquidity, prepayments, early redemption, corporate events, tax ramifications and other factors. Defaults on interest payments and/or principal may also occur. Projections, results and assumptions contained herein reflect past performance of the referenced securities and asset classes. Past performance is no guarantee of future results. The investment return and principal value of an investment will fluctuate such that an investment, if and when redeemed, may be worth more or less than its original cost.

This information is intended for general informational purposes only, and should not be used as the sole basis for any investment decisions. None of the information in the report constitutes an offer or solicitation to buy or sell any security or financial product, a recommendation concerning any security, financial product or asset class, or an offer to provide investment advice or any other service. Where appropriate, please consult with a qualified financial and tax professional.