

Market Transparency Report

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

November 2019

www.tradeweb.com

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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.

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Market Commentary

Monthly Change Table for November 2019

	Median Yield (bps)	Daily Trade Volume	Buy/Sell Ratio
Agency	-2	-4.5%	-0.2
CD	-15	-4.7%	-0.9
Corp	-5	3.7%	0.0
Municipal	9	0.0%	0.1
Treasury	-10	-4.4%	0.1

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

Yield Matrix

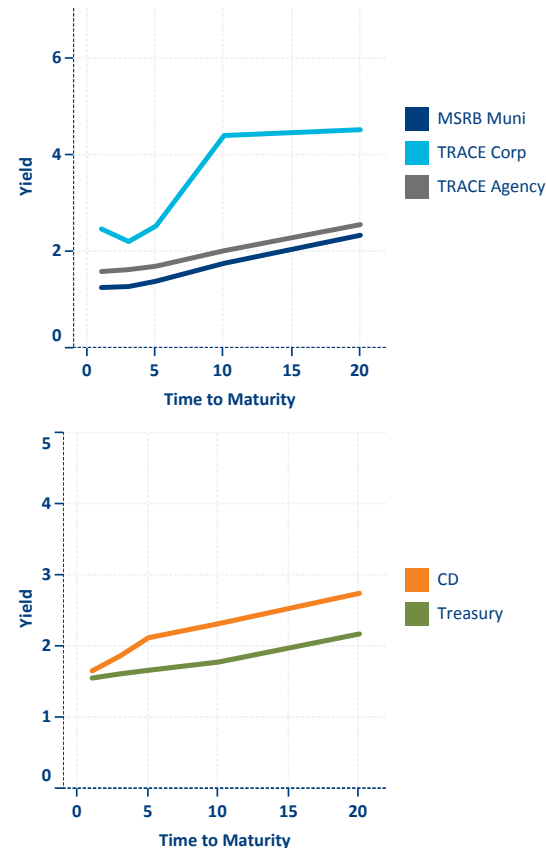
Average Yield, % for November 2019

Market	TTM					Median Maturity (Years)
	1	3	5	10	20	
MSRB Muni	1.3	1.3	1.4	1.8	2.3	11
TRACE Corp	2.5	2.2	2.5	4.4	4.5	3
TRACE Agency	1.6	1.6	1.7	2.0	2.6	3
CD	1.7	1.9	2.1	2.5	2.8	1
Treasury	1.6	1.6	1.7	1.8	2.2	1

Asset Class

Market	Category (Filtered)	Rating Key	1	3	5	10	20	Median Maturity (Years)
TRACE Corp	Financial	AA	1.8	1.7				1
		A	1.9	2.0	2.3	2.7	3.4	2
		BBB	2.3	2.4	2.8	3.4	4.3	4
		HY	1.8	3.0		6.8	5.5	8
	Non-Financial	AAA	1.6	1.7	1.7	2.2	2.9	1
		AA	1.7	1.9	1.8	3.0	3.0	1
		A	1.9	2.0	2.4	2.7	3.6	6
		BBB	2.1	2.8	2.8	3.9	4.3	5
		HY	14.2	8.4	7.1	7.9	19.2	6
MSRB Muni	GO	AAA	1.2	1.2	1.2	1.6	2.1	8
		AA	1.2	1.3	1.3	1.7	2.3	9
		A	1.3	1.4	1.5	1.8	2.4	7
		BBB	2.0	2.0	2.4	2.6	2.9	8
	Revenue	HY	3.2	2.8	3.8	3.3	2.7	15
		AAA	1.2	1.2	1.3	1.6	2.2	9
		AA	1.2	1.2	1.3	1.7	2.2	11
		A	1.3	1.3	1.4	1.7	2.2	16
		BBB	1.6	1.8	2.1	2.4	2.8	18
		HY	3.4	5.3	3.4	3.8	4.5	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.

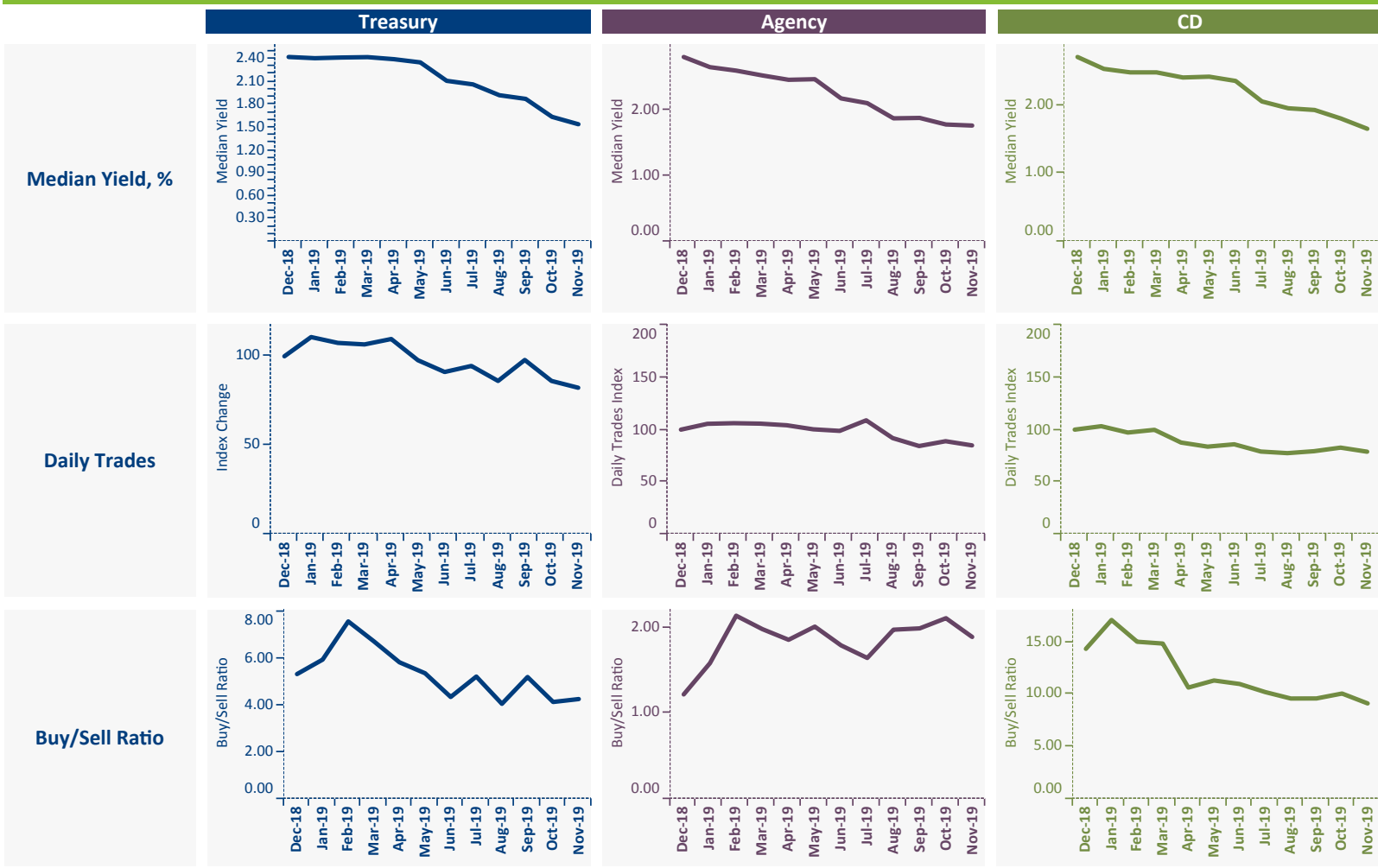
-The weights are based on transaction size.

-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

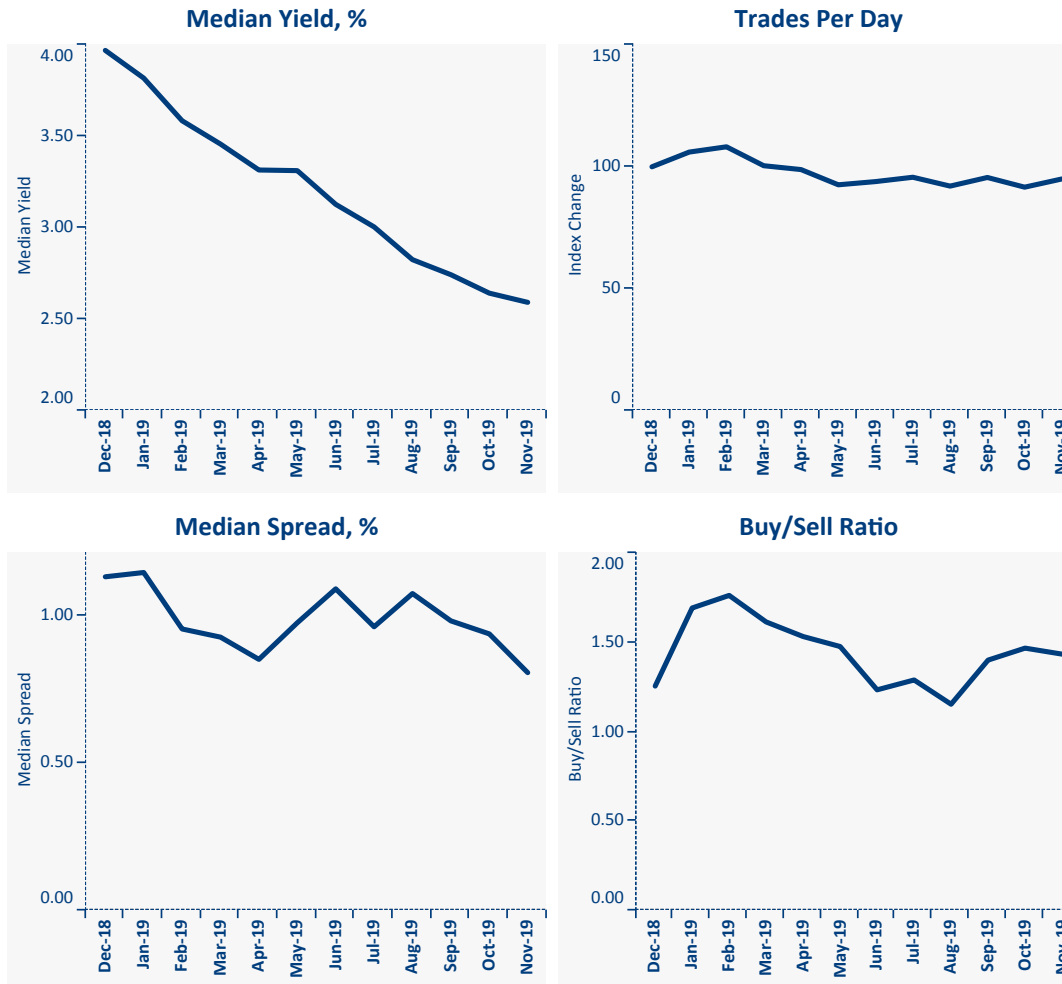
-Treasury and CD are based on transactions on the Tradeweb Direct Platform. Median yields are based on all customer buy transactions.

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

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Corporate Bonds: Odd-Lot Customer Transaction Trend Summary



Daily Trades: First month = 100

Source: TRACE and Tradeweb Direct

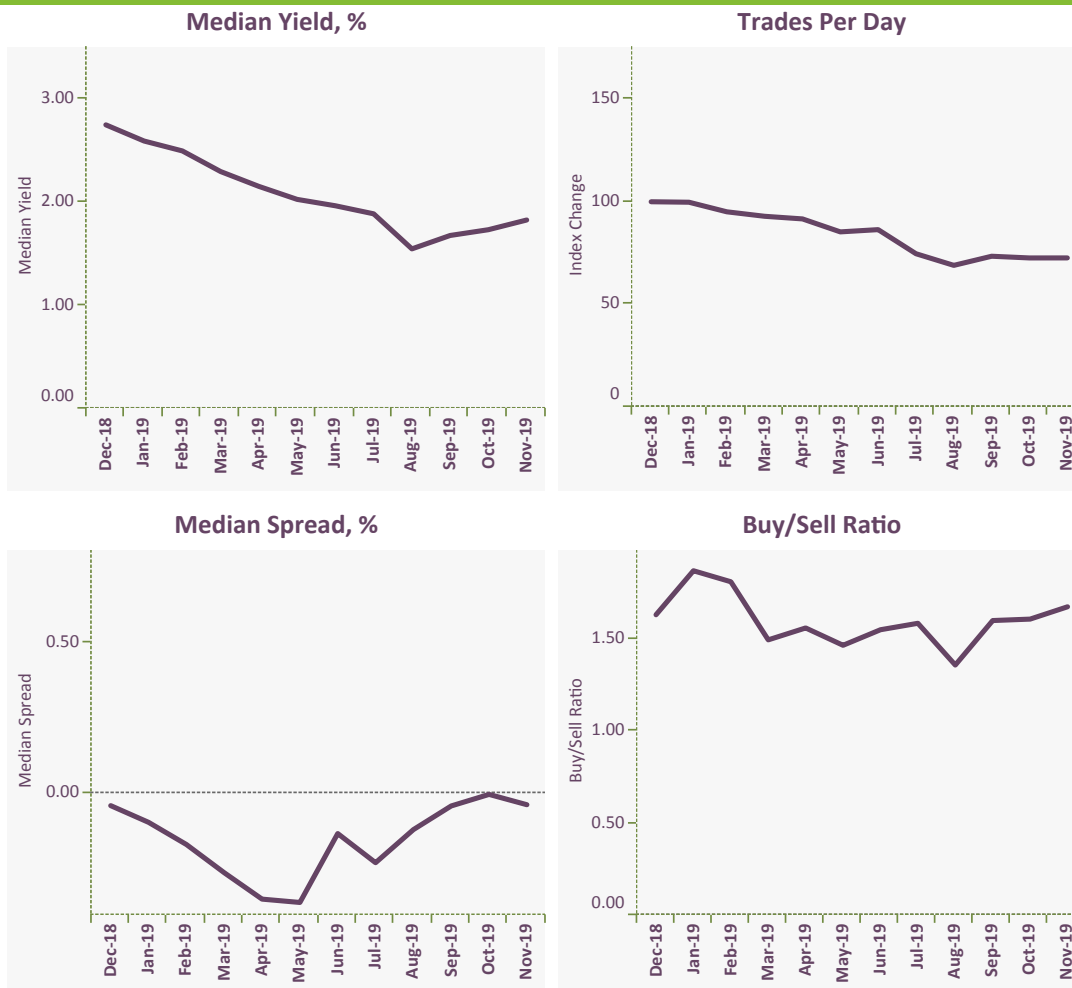
-Based on odd-lot customer transactions (<100M) reported in TRACE.

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

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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.

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Corporate Bonds: Top 20 Most Active Issuers

November 2019

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	A	664	3.0%	13,205	1.4	291	1.9	2.1	2.3	2.8	3.3
2	C	CITIGROUP	BBB	423	2.8%	12,401	1.2	250	2.0	2.1	2.5	3.0	3.3
3	GS	GOLDMAN SACHS	BBB	916	2.8%	12,313	1.2	266	1.9	2.2	2.5	3.3	4.0
4	BAC	BANK OF AMERICA	A	413	2.3%	10,322	1.5	235	1.9	2.2	2.5	2.7	3.4
5	WFC	WELLS FARGO	A	214	2.1%	9,446	2.1	201	2.0	2.1	2.4	2.8	3.6
6	GE	GENERAL ELEC CAP CORP MEDIUM TERM NTS BO	BBB	319	2.1%	9,346	1.4	186	2.2	2.4	2.9	3.8	4.2
7	MS	MORGAN STANLEY	BBB	771	1.6%	7,051	1.0	149	2.0	2.2	2.4	3.0	3.0
8	T	AT&T	BBB	112	1.4%	6,480	0.8	147	1.9	2.1	2.4	3.1	4.0
9	GM	GENERAL MOTORS FINANCIAL COMPANY INC	BBB	103	1.4%	6,261	2.2	147	2.2	2.7	3.1	3.9	4.9
10	CVS	CVS CAREMARK CORP	BBB	45	1.3%	6,009	2.9	119	1.9	2.2	2.5	3.1	4.0
11	AAPL	APPLE INC	AA	51	1.3%	5,698	1.4	127	1.7	1.9	2.0	2.3	3.1
12	F	FORD	BBB	260	1.1%	4,719	2.0	110	2.4	3.1	3.9	5.2	5.8
13	VZ	VERIZON	BBB	128	0.9%	4,178	1.0	85	1.9	2.0	2.1	2.6	3.1
14	BRK	BERKSHIRE HATHAWAY	A	152	0.9%	3,876	1.2	101	1.8	1.9	2.2	2.7	3.5
15	AXP	AMERICAN EXPRESS	BBB	35	0.8%	3,544	1.1	71	1.9	2.1	2.3	2.3	3.1
16	CMCS	COMCAST	A	62	0.8%	3,502	1.3	78	1.9	1.9	2.1	2.5	3.2
17	PEMX	PETROLEOS MEXICANOS	BBB	36	0.7%	3,231	1.3	109	2.5	3.3	4.2	5.7	6.6
18	MSFT	MICROSOFT CORP	AAA	36	0.7%	3,157	1.0	70	1.6	1.7	1.9		2.8
19	ORCL	ORACLE CORP	A	26	0.7%	3,041	1.3	60	1.7	2.0	2.1	2.4	3.0
20	MET	METLIFE	BBB	20	0.7%	2,991	1.9	66		2.1	2.1	3.8	3.2

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

November 2019

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	FLR	FLUOR CORP NEW	BBB	2	0.2%	1,111	1,053	58	18.2	26			3.5	4.3	
2	HPT	HOSPITALITY PPTYS TR	BBB	12	0.2%	1,097	968	129	7.5	26	2.5	2.9	3.7	4.8	
3	EQT	EQT CORP	BBB	10	0.4%	1,752	1,529	223	6.9	35	2.3	4.2	4.9	5.8	
4	QUAD	Null	B	1	0.5%	2,109	1,823	286	6.4	23		16.1			
5	ETFC	E TRADE FINL CORP	BB	5	0.3%	1,457	1,255	202	6.2	28		2.3		3.3	
6	CHRC	BAYSIDE CMNTY CHURCH SARASOTA INC BRADEN	N/R	144	0.3%	1,383	1,172	211	5.6	13	3.0			5.6	6.3
7	FDX	FEDEX CORP	BBB	26	0.4%	1,798	1,469	329	4.5	38		2.1	2.3	3.0	4.0
8	EIX	EDISON MISSION	BBB	38	0.3%	1,460	1,180	280	4.2	31	2.2	3.0	3.2	4.0	3.9
9	CC	Null	BB	3	0.4%	1,573	1,211	362	3.4	28		6.7	7.7	7.1	
10	DWDP	Null	BBB	14	0.3%	1,365	1,036	329	3.2	32	1.9	2.3	2.6	3.0	3.8
11	DOW	DOW CHEM CO	BBB	113	0.2%	1,079	817	262	3.1	25	1.5	2.1	2.4	3.2	4.2
12	QRTEA	Null	BB	11	0.3%	1,338	995	343	2.9	18		3.0	3.5	7.9	6.0
13	CVS	CVS CAREMARK CORP	BBB	45	1.3%	6,009	4,452	1,557	2.9	119	1.9	2.2	2.5	3.1	4.0
14	WAG	WALGREEN CO	BBB	9	0.5%	2,055	1,507	548	2.8	43		2.3	3.0		4.3
15	ABBV	ABBVIE INC	BBB	21	0.6%	2,566	1,865	701	2.7	59	2.0	2.2	2.6	3.0	3.8
16	AMT	AMERICAN TOWER CORP NEW	BBB	21	0.3%	1,145	805	340	2.4	23	1.9	2.2	2.5	3.0	
17	MO	ALTRIA GROUP INC	BBB	20	0.4%	1,715	1,202	513	2.3	45	2.0	2.3	2.6	3.5	4.4
18	BMO	BANK MONTREAL MEDIUM TERM SR NTS BOOK EN	A	59	0.3%	1,391	964	427	2.3	33	1.9	2.0	2.3		
19	GM	GENERAL MOTORS FINANCIAL COMPANY INC	BBB	103	1.4%	6,261	4,320	1,941	2.2	147	2.2	2.7	3.1	3.9	4.9
20	KEY	KEYCORP MEDIUM TERM SR NTS BOOK ENTRY	BBB	13	0.2%	1,094	754	340	2.2	17	2.0		2.3	2.8	

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

November 2019

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	0.5%	2,264	601	1,663	0.36	27	145.9	45.3	31.2	8.1	19.6
2	CHK	CHESAPEAKE ENERGY	B	13	0.4%	1,907	662	1,245	0.53	24	22.1	20.9	21.2	20.3	
3	STI	SUNTRUST BKS INC	BBB	31	0.4%	1,574	584	990	0.59	29	2.1	2.1	2.3	3.4	
4	PTRB	PETROBRAS	BB	20	0.4%	1,686	633	1,053	0.60	67	2.6	3.2	3.6	4.4	5.6
5	VIA	VIACOM INC NEW	BBB	38	0.3%	1,283	571	712	0.80	29	2.2	2.5	2.7	3.4	4.3
6	T	AT&T	BBB	112	1.4%	6,480	2,913	3,567	0.82	147	2.0	2.1	2.5	3.2	4.0
7	CTL	CENTURYLINK	B	31	0.5%	2,319	1,053	1,266	0.83	54		3.4	4.1	5.8	7.5
8	UTX	UNITED TECHNOLOGIES CORP	BBB	35	0.3%	1,294	604	690	0.88	30	2.1	2.1	2.2	2.6	3.3
9	MS	MORGAN STANLEY	BBB	771	1.6%	7,051	3,429	3,622	0.95	149	2.1	2.3	2.4	3.2	3.4
10	EDP	ENTERPRISE PRODS OPER LLC	BBB	35	0.3%	1,164	570	594	0.96	28	2.1	2.2	2.4	2.9	4.0
11	FITB	FIFTH THIRD BANCORP	BBB	14	0.3%	1,453	712	741	0.96	23	2.1	2.1	2.4	2.6	4.2
12	CS	CREDIT SUISSE	N/R	383	0.3%	1,396	689	707	0.97	30	2.6	2.6	2.6	3.5	3.3
13	CSCO	CISCO	AA	14	0.3%	1,445	719	726	0.99	23	1.8	1.9	2.0		3.2
14	GILD	GILEAD SCIENCES INC	A	18	0.3%	1,255	628	627	1.00	24	2.0	1.9	2.2		3.3
15	HBC	HSBC	BBB	405	0.6%	2,533	1,266	1,267	1.00	47	2.2	2.1	3.1	3.9	3.6
16	DELL	DELL	BB	9	0.3%	1,315	662	653	1.01	32	2.7	2.5		3.5	5.9
17	KMI	KINDER MORGAN ENERGY PARTNERS L P	BBB	62	0.3%	1,494	757	737	1.03	33	2.3	2.4	2.6	3.9	4.6
18	MSFT	MICROSOFT CORP	AAA	36	0.7%	3,157	1,607	1,550	1.04	70	1.8	1.8	1.9		2.8
19	VZ	VERIZON	BBB	128	0.9%	4,178	2,134	2,044	1.04	85	2.0	2.1	2.2	2.7	3.3
20	AXP	AMERICAN EXPRESS	BBB	35	0.8%	3,544	1,818	1,726	1.05	71	2.0	2.1	2.3	2.3	3.1

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.

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Corporate Bonds: Top 20 Most Bought Issues

November 2019

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	QUAD	Null	May-22	B	7.000	1,823	286	2,109	23	16.1	15.6	82.3	83.1
2	GE	GENERAL ELEC CAP CORP MEDIUM TERM NTS BO	Null	BBB	5.000	1,813	647	2,460	42	5.1	5.2	98.0	97.0
3	CVS	CVS CAREMARK CORP	Jun-21	BBB	2.125	1,552	33	1,585	19	2.0	2.1	100.1	100.1
4	WFC	WELLS FARGO	Mar-21	A	2.500	907	60	967	17	2.0	2.0	100.6	100.6
5	MET	METLIFE	Jun-27	BBB	3.700	811	145	956	23	3.8	4.0	99.4	98.1
6	CC	Null	May-25	BB	7.000	807	223	1,030	19	7.7	8.0	96.7	95.8
7	MMLP	Martin Midstream Partners L.P.	Feb-21	C	7.250	775	68	843	9	15.4	15.8	91.1	90.7
8	ETFC	E TRADE FINL CORP	Null	BB	5.875	751	85	836	12	5.6	5.6	105.4	105.2
9	C	CITIGROUP	Null	BB	6.125	729	166	895	9	5.9	5.9	103.1	103.0
10	FLR	FLUOR CORP NEW	Sep-28	BBB	4.250	635	21	656	16	4.3	4.6	99.3	97.7
11	WFC	WELLS FARGO	Jan-21	A	3.000	630	56	686	7	2.0	2.0	101.2	101.1
12	TUP	TUPPERWARE BRANDS CORP	Jun-21	BBB	4.750	625	44	669	14	4.2	4.5	100.7	100.3
13	DWDP	Null	Nov-23	BBB	4.205	615	92	707	14	2.3	2.3	106.9	106.9
14	QRTEA	Null	Nov-68	BB	6.250	610	84	694	5			25.2	24.9
15	UNT	UNIT CORP	May-21	C	6.625	579	417	996	8	55.9	64.9	53.8	49.3
16	KEY	KEYCORP MEDIUM TERM SR NTS BOOK ENTRY	Jul-28	BBB	0.000	497	5	502	4			92.0	91.0
17	EQT	EQT CORP	Oct-22	BBB	3.000	496	118	614	11	4.2	4.4	96.7	96.3
18	JPM	JP MORGAN CHASE	Dec-49	BBB	5.000	482	43	525	14	4.8	4.8	104.6	103.9
19	F	FORD	Dec-26	BBB	4.346	470	182	652	17	4.2	4.3	101.0	100.5
20	X	UNITED STS STL CORP NEW	Aug-25	B	6.875	470	202	672	12	8.2	8.4	93.9	93.4

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).

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Corporate Bonds: Top 20 Most Sold Issues

November 2019

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	GE	GENERAL ELEC CAP CORP MEDIUM TERM NTS BO	Null	BBB	5.000	1,813	647	2,460	42	5.1	5.2	98.0	97.0
2	C	CITIGROUP	Null	BB	5.800	6	585	591	4	5.8	5.8	100.2	100.1
3	AXP	AMERICAN EXPRESS	Dec-49	BBB	5.338	134	560	694	6	5.1	5.2	101.1	100.8
4	STI	SUNTRUST BKS INC	Dec-49	BBB	5.625	47	526	573	3	5.6	5.6	100.7	100.3
5	FITB	FIFTH THIRD BANCORP	Null	BBB	5.233	68	492	560	3	5.2	5.2	100.3	100.1
6	C	CITIGROUP	Null	BB	5.950	122	484	606	7	5.8	5.8	102.4	102.3
7	CHK	CHESAPEAKE ENERGY	Aug-20	B	6.625	173	454	627	7	20.6	21.9	90.7	89.9
8	UNT	UNIT CORP	May-21	C	6.625	579	417	996	8	55.9	64.9	53.8	49.3
9	C	CITIGROUP	Null	BB	6.250	130	411	541	8	5.5	5.5	113.9	113.3
10	MU	MICRON TECHNOLOGY INC	Feb-25	BBB	5.500	3	390	393	3	3.8	4.1	103.0	102.8
11	C	CITIGROUP	Sep-27	BBB	4.450	190	370	560	10	3.0	3.1	109.7	109.4
12	JPM	JP MORGAN CHASE	Null	BBB	0.000	300	335	635	8	5.3	5.4	101.1	100.9
13	AAPL	APPLE INC	May-23	AA	2.400	350	294	644	14	1.9	1.9	101.6	101.5
14	JCP	JC PENNEY	Jun-20	C	5.650	217	287	504	5	16.8	13.3	94.6	96.2
15	QUAD	Null	May-22	B	7.000	1,823	286	2,109	23	16.1	15.6	82.3	83.1
16	VZ	VERIZON	Sep-23	BBB	5.150	173	283	456	8	2.0	2.1	111.3	111.2
17	T	AT&T	Feb-22	BBB	3.000	230	269	499	5	2.0	2.1	102.1	102.0
18	JPM	JP MORGAN CHASE	Oct-26	A	2.950	271	268	539	6	2.5	2.5	103.0	102.8
19	GE	GENERAL ELEC CAP CORP MEDIUM TERM NTS BO	Aug-24	BBB	4.250	33	267	300	5	3.0	2.9	105.4	105.6
20	VZ	VERIZON	Nov-24	BBB	3.500	210	263	473	6	2.1	2.2	106.1	105.9

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).

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.

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