

# Market Transparency Report

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

**November 2018**

[www.tradeweb.com](http://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 2018

	Median Yield (bps)	Daily Trade Volume	Buy/Sell Ratio
Agency	2	3.6%	-0.1
CD	15	1.3%	-0.4
Corp	13	6.9%	-0.1
Municipal	3	1.8%	0.0
Treasury	4	1.3%	0.5

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

# Yield Matrix

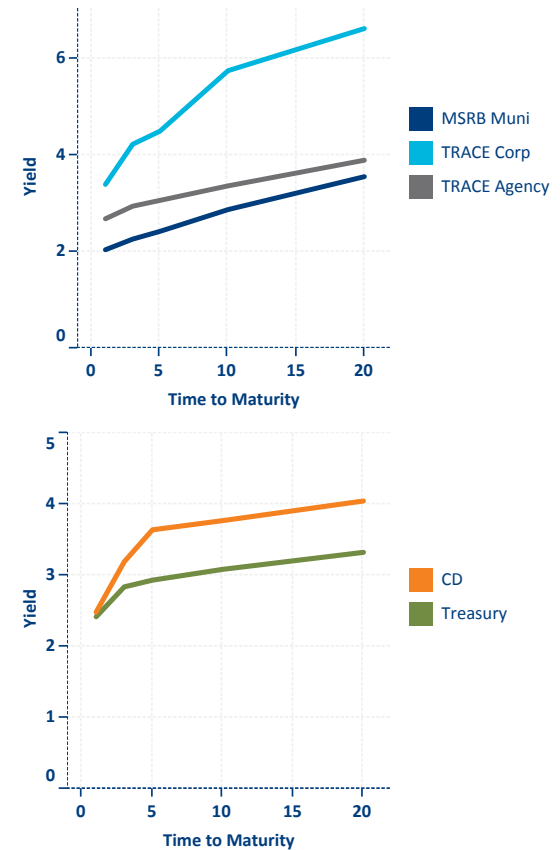
## Average Yield, % for November 2018

Market	TTM					Median Maturity (Years)
	1	3	5	10	20	
MSRB Muni	2.0	2.3	2.4	2.9	3.6	11
TRACE Corp	3.4	4.2	4.5	5.7	6.6	3
TRACE Agency	2.7	2.9	3.1	3.4	3.9	2
CD	2.5	3.2	3.6	3.8	4.1	1
Treasury	2.4	2.8	2.9	3.1	3.3	1

## Asset Class

Market	Category (Filtered)	Rating Key	1	3	5	10	20	Median Maturity (Years)
TRACE Corp	Financial	AA	2.9	3.3	3.4			2
		A	3.0	3.5	3.8	4.1	4.7	2
		BBB	4.5	5.3	5.4	5.7	7.0	4
		HY	3.7	5.0	4.6	8.7	6.6	4
	Non-Financial	AAA	2.3	2.8	3.2	3.6	4.2	2
		AA	2.8	3.2	3.5	3.9	4.3	1
		A	2.9	3.4	3.5	4.1	4.7	3
		BBB	4.1	5.3	5.8	6.4	6.6	5
		HY	10.1	12.9	20.5	11.3	17.6	8
MSRB Muni	GO	AAA	2.0	2.2	2.3	2.8	3.4	8
		AA	2.0	2.2	2.4	2.8	3.6	9
		A	2.1	2.4	2.7	3.1	3.8	9
		BBB	2.9	3.3	3.5	4.0	4.3	7
	Revenue	HY	2.6	4.8	5.4	5.0	5.1	11
		AAA	2.0	2.2	2.3	2.8	3.3	8
		AA	2.0	2.2	2.4	2.8	3.4	11
		A	2.1	2.3	2.6	3.0	3.6	15
		BBB	2.6	2.9	3.1	3.6	4.0	15
		HY	4.8	5.8	5.7	5.4	5.5	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.

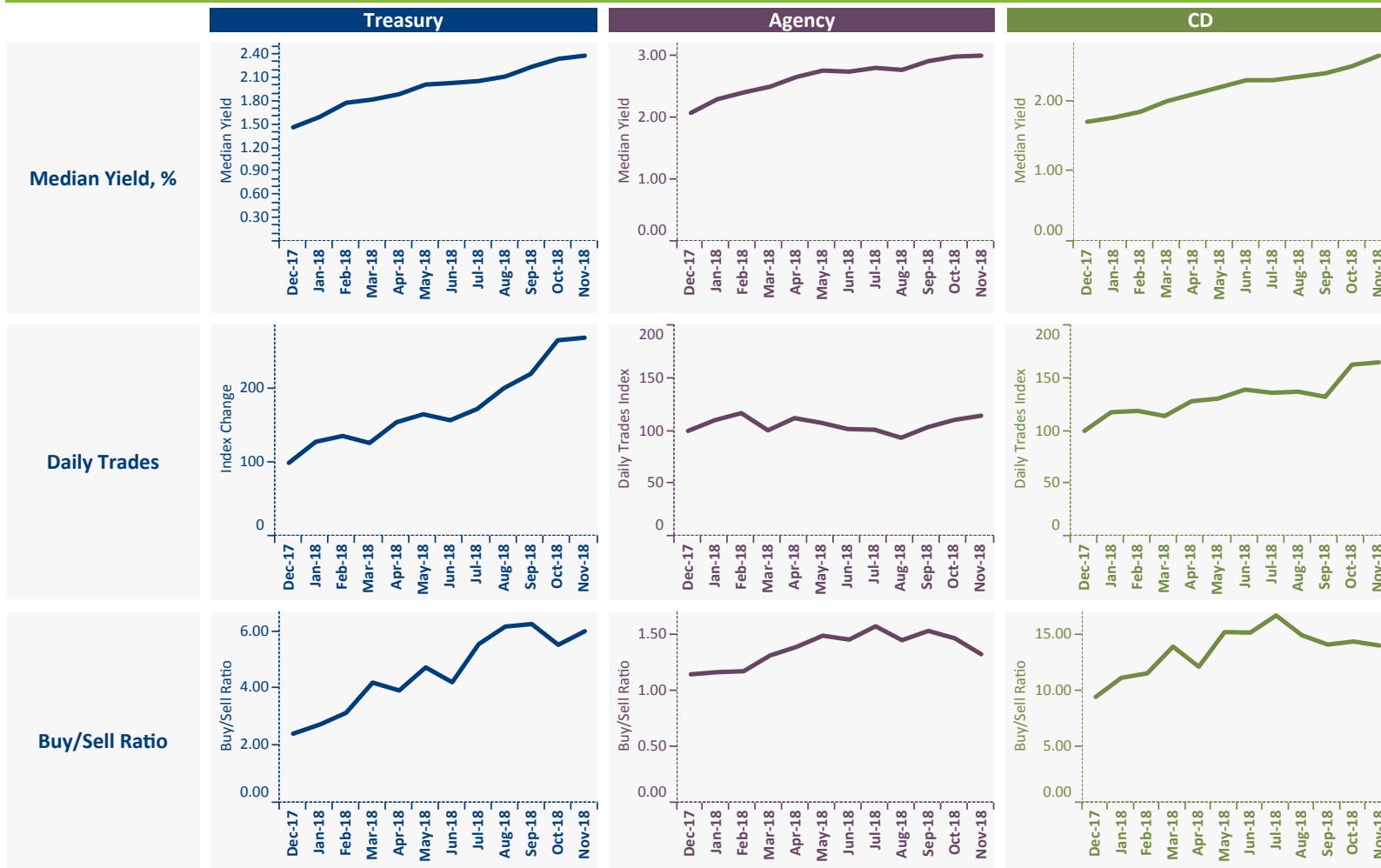
-The weights are based on transaction size.

-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



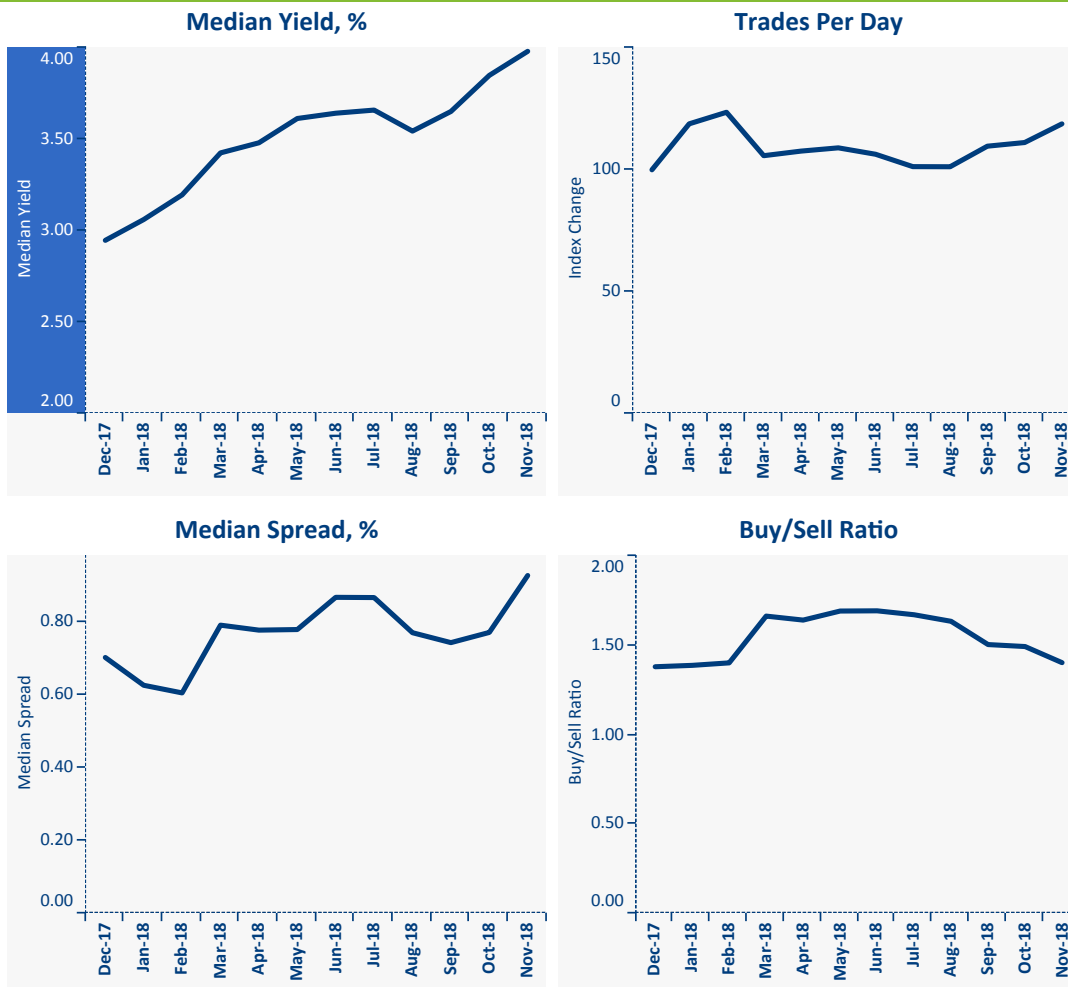
Daily Trades: First month = 100

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.

# Corporate Bonds: Odd-Lot Customer Transaction Trend Summary



Daily Trades: First month = 100

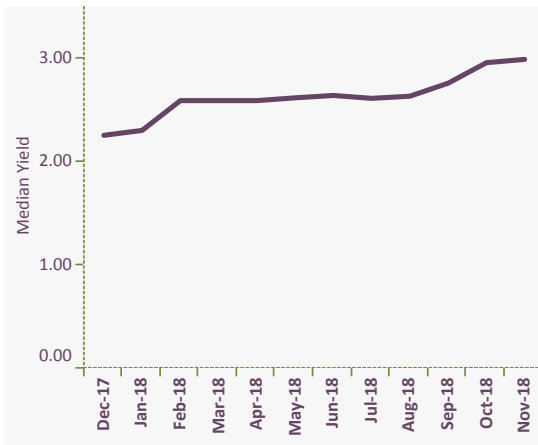
Source: TRACE and Tradeweb Direct

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

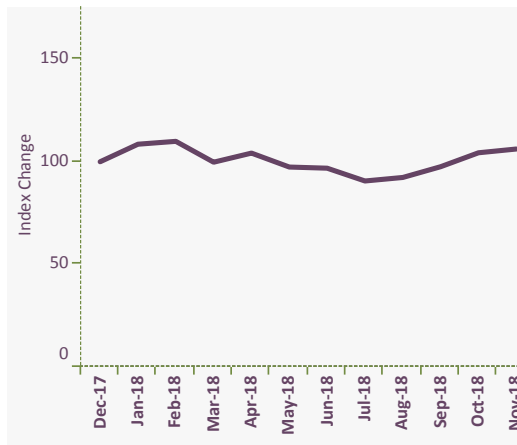
-Median yields and spreads are based on all odd-lot customer buy transactions...

# Municipal Bonds: Odd-Lot Customer Transaction Trend Summary

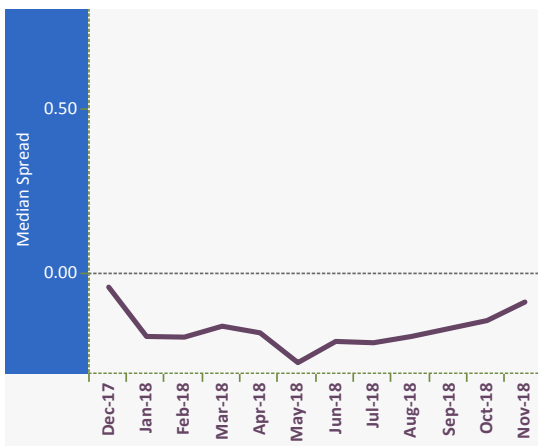
Median Yield, %



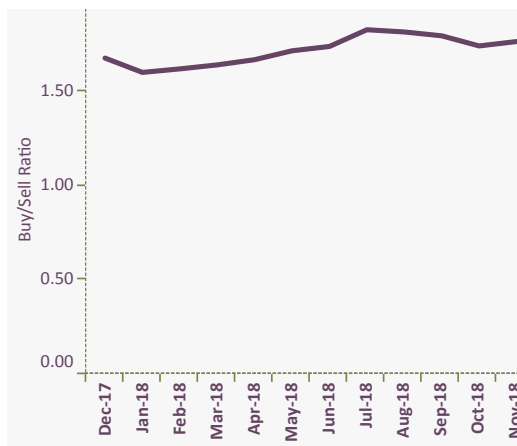
Trades Per Day



Median Spread, %



Buy/Sell Ratio



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 2018

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	GE	GENERAL ELEC CAP CORP MEDIUM TERM NTS BO	BBB	343	6.8%	33,652	1.0	639	4.1	5.6	6.5	6.4	6.8
2	GS	GOLDMAN SACHS	BBB	867	3.4%	16,803	1.5	337	3.2	3.7	4.1	4.6	5.1
3	JPM	JP MORGAN CHASE	A	574	3.2%	15,743	1.9	326	3.1	3.5	3.9	4.3	4.7
4	BAC	BANK OF AMERICA	A	419	2.5%	12,214	1.4	239	3.1	3.6	3.9	4.5	4.7
5	C	CITIGROUP	BBB	359	2.4%	11,964	1.7	245	3.1	3.7	4.0	4.7	5.0
6	WFC	WELLS FARGO	A	199	1.9%	9,474	1.5	200	3.2	3.6	4.0	4.5	4.8
7	T	AT&T	BBB	98	1.8%	8,618	1.5	172	3.1	3.7	4.0	4.6	5.6
8	MS	MORGAN STANLEY	BBB	723	1.7%	8,451	1.4	183	3.1	3.7	4.1	4.6	4.9
9	AAPL	APPLE INC	AA	56	1.3%	6,647	1.7	133	2.7	3.1	3.5	3.8	4.3
10	GM	GENERAL MOTORS FINANCIAL COMPANY INC	BBB	91	1.3%	6,214	2.4	143	3.2	4.1	4.5	5.4	6.4
11	BUD	ANHEUSER BUSCH INBEV WORLDWIDE INC	A	40	1.1%	5,650	3.2	112	3.1	3.8	4.0	4.4	5.1
12	AXP	AMERICAN EXPRESS	BBB	39	1.1%	5,475	1.9	116	3.0	3.6	3.9	3.9	4.5
13	BRK	BERKSHIRE HATHAWAY	A	159	1.1%	5,268	1.7	120	2.8	3.3	3.5	4.8	4.7
14	CVS	CVS CAREMARK CORP	BBB	29	1.0%	4,806	2.5	98	3.4	3.6	4.0	4.6	5.1
15	MSFT	MICROSOFT CORP	AAA	39	0.9%	4,540	1.9	96	2.6	3.1	3.4	3.7	4.1
16	VZ	VERIZON	BBB	132	0.9%	4,353	1.3	91	3.1	3.4	3.8	4.3	4.9
17	F	FORD	BBB	251	0.9%	4,226	1.3	83	3.6	4.2	4.8	5.9	6.6
18	CMCS	COMCAST	A	63	0.8%	3,980	1.6	80	3.0	3.4	3.7	4.2	4.7
19	PEMX	PETROLEOS MEXICANOS	BBB	38	0.8%	3,840	2.0	117	3.5	5.6	6.0	7.3	7.9
20	ORCL	ORACLE CORP	AA	31	0.8%	3,741	1.2	73	2.8	3.3	3.6	3.9	4.4

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 2018

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	CHRC	BAYSIDE CMNTY CHURCH SARASOTA INC BRADEN	N/R	92	0.2%	1,078	938	140	6.7	7		4.6	5.3	6.1	6.4
2	STZ	CONSTELLATION BRANDS INC	BBB	19	0.3%	1,286	1,074	212	5.1	26	3.2	3.6	4.0	4.6	
3	BUD	ANHEUSER BUSCH INBEV WORLDWIDE INC	A	40	1.1%	5,650	4,313	1,337	3.2	112	3.1	3.8	4.0	4.4	5.1
4	ABBV	ABBVIE INC	BBB	17	0.5%	2,575	1,946	629	3.1	47	3.3	3.7	3.9	4.5	5.2
5	GT	GOODYEAR TIRE & RUBBER	BB	5	0.2%	1,014	758	256	3.0	20			5.3	6.4	
6	XRX	XEROX CORP	BBB	11	0.4%	1,860	1,340	520	2.6	37	3.7	5.0	6.0		7.6
7	SAN	ABBAY NATL TREAS SVCS PLC	BBB	29	0.2%	1,113	801	312	2.6	32	3.2	4.1	4.3	5.3	
8	STT	STATE STR CORP	A	15	0.2%	1,220	878	342	2.6	23		3.3	3.7	3.9	
9	AMGN	AMGEN INC	A	33	0.5%	2,588	1,858	730	2.6	59	2.9	3.5	3.9	4.2	5.0
10	TWX	TIME WARNER	BBB	26	0.3%	1,303	927	376	2.5	25	3.0	3.6	4.1	4.6	5.6
11	CVS	CVS CAREMARK CORP	BBB	29	1.0%	4,806	3,413	1,393	2.5	98	3.4	3.6	4.0	4.6	5.1
12	PFE	PFIZER	AA	40	0.3%	1,606	1,140	466	2.5	38	2.6	3.1	3.4	3.7	4.2
13	JNJ	JOHNSON & JOHNSON	AAA	31	0.2%	1,130	797	333	2.4	28	2.6	3.0	3.1	3.6	4.0
14	GM	GENERAL MOTORS FINANCIAL COMPANY INC	BBB	91	1.3%	6,214	4,358	1,856	2.4	143	3.2	4.1	4.5	5.4	6.4
15	ANTM	Null	A	21	0.2%	1,214	845	369	2.3	27	2.9	3.5	3.9	4.5	5.1
16	HMC	AMERICAN HONDA FIN CORP MED TERM NTS BOO	A	27	0.2%	1,052	731	321	2.3	20	2.9	3.3	3.6	3.9	
17	AMZN	AMAZON COM INC	A	15	0.4%	1,771	1,229	542	2.3	39	2.8	3.2	3.6	3.8	4.3
18	COF	CAPITAL ONE FINL CORP	BBB	32	0.6%	2,906	2,018	888	2.3	55	3.4	3.7	4.4	4.8	
19	HTZ	HERTZ CORP	B	6	0.2%	1,080	747	333	2.2	21		9.0		8.9	
20	UNH	UNITEDHEALTH	A	39	0.4%	2,136	1,470	666	2.2	45	2.8	3.3	3.5	3.9	4.5

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 2018

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	CS	CREDIT SUISSE	N/R	339	0.3%	1,339	432	907	0.48	22	3.9	4.2	4.5	4.8	5.3
2	NWL	NEWELL RUBBERMAID INC	BBB	12	0.3%	1,324	461	863	0.53	23		4.4	4.4		6.1
3	FTR	FRONTIER COMMUNICATIONS CORP	C	24	0.3%	1,658	627	1,031	0.61	24	11.7	17.9	21.5	9.4	17.5
4	CTL	CENTURYLINK	B	35	0.5%	2,594	988	1,606	0.62	50	4.8	5.6	6.7	8.3	9.2
5	BCS	BARCLAYS	BB	446	0.4%	1,770	700	1,070	0.65	33	3.7	4.4	4.2	5.7	4.9
6	EIX	EDISON MISSION	BBB	31	0.3%	1,291	513	778	0.66	25	4.3	4.6	4.1	5.0	5.3
7	VIA	VIACOM INC NEW	BBB	37	0.3%	1,665	666	999	0.67	32	3.3	3.9	4.2	4.7	5.9
8	TRP	TRANSCANADA PIPELINES LTD	BBB	33	0.2%	1,092	442	650	0.68	19	3.5	3.8	4.0	4.7	5.3
9	EDP	ENTERPRISE PRODS OPER LLC	BBB	33	0.2%	1,203	501	702	0.71	25	3.4	3.8	3.9	4.4	5.2
10	BNS	BANK NOVA SCOTIA B C	BBB	122	0.4%	1,771	795	976	0.81	29	3.1	3.5	4.3	4.6	
11	KMI	KINDER MORGAN ENERGY PARTNERS L P	BBB	68	0.4%	1,726	835	891	0.94	35	3.6	4.0	4.3	5.6	5.8
12	GE	GENERAL ELEC CAP CORP MEDIUM TERM NTS BO	BBB	343	6.8%	33,652	16,503	17,149	0.96	639	5.4	6.2	7.0	7.5	6.9
13	HD	HOME DEPOT	A	25	0.4%	1,775	873	902	0.97	34	3.0	3.3	3.5	3.8	4.5
14	RY	ROYAL BANK OF CANADA	AA	234	0.4%	2,136	1,052	1,084	0.97	46	3.2	3.4	3.9	4.7	4.8
15	DB	DEUTSCHE BANK	BBB	103	0.3%	1,616	802	814	0.99	29	3.9	4.5	5.2	5.8	
16	HBC	HSBC	N/R	433	0.5%	2,621	1,305	1,316	0.99	49	3.4	3.9	4.8	4.9	5.0
17	AA	ALCOA	BB	8	0.3%	1,631	830	801	1.04	37	1.5	5.2	5.9	6.7	6.7
18	PTRB	PETROBRAS	BB	24	0.5%	2,553	1,315	1,238	1.06	87		4.6	5.5	6.8	7.2
19	HCA	HCA INC	BBB	23	0.2%	1,081	560	521	1.07	26	4.0	4.7	4.9	5.2	7.0
20	DIS	DISNEY WALT CO NEW MEDIUM TERM NTS BOOK	A	30	0.3%	1,544	822	722	1.14	33	3.0	3.3	3.5	3.8	4.4

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.

## Corporate Bonds: Top 20 Most Bought Issues

November 2018

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	2,060	2,750	4,810	86	6.2	6.3	80.1	79.6
2	CVS	CVS CAREMARK CORP	Mar-20	BBB	3.125	1,023	69	1,092	18	3.4	3.4	99.6	99.6
3	GS	GOLDMAN SACHS	Dec-19	BBB	2.300	979	67	1,046	25	3.3	3.4	99.0	98.9
4	GS	GOLDMAN SACHS	Oct-19	BBB	2.550	822	162	984	20	3.1	3.3	99.5	99.3
5	BUD	ANHEUSER BUSCH INBEV WORLDWIDE INC	Jan-22	A	3.750	819	30	849	12	3.8	3.8	99.7	99.7
6	JPM	JP MORGAN CHASE	Jan-20	A	2.250	761	150	911	22	3.2	3.3	98.9	98.8
7	JPM	JP MORGAN CHASE	Oct-19	A	2.200	633	66	699	14	3.0	3.2	99.3	99.1
8	ABBV	ABBVIE INC	May-25	BBB	3.600	624	56	680	6	4.4	4.4	95.8	95.5
9	GE	GENERAL ELEC CAP CORP MEDIUM TERM NTS BO	Dec-27	BBB	3.950	612	19	631	5	5.6	6.1	88.7	85.1
10	AAPL	APPLE INC	May-21	AA	2.850	563	185	748	8	3.1	3.2	99.3	99.2
11	STZ	CONSTELLATION BRANDS INC	Nov-19	BBB	2.000	559	13	572	8	3.2	3.4	98.9	98.7
12	PCG	PACIFIC GAS & ELEC CO	Oct-20	BBB	3.500	549	351	900	15	6.8	7.4	94.4	93.3
13	JPM	JP MORGAN CHASE	Jun-20	A	2.750	535	32	567	7	3.3	3.4	99.1	99.0
14	BUD	ANHEUSER BUSCH INBEV WORLDWIDE INC	Feb-23	A	3.300	534	159	693	15	4.0	4.1	97.2	96.8
15	BAC	BANK OF AMERICA	Aug-24	BBB	4.200	525	152	677	13	4.3	4.4	99.5	99.2
16	CHTR	CCO HOLDINGS LLC	Feb-21	BBB	4.125	509	32	541	3	4.0	4.1	100.2	100.1
17	JPM	JP MORGAN CHASE	Null	BBB	5.990	500	208	708	10	6.0	6.0	100.5	100.4
18	GE	GENERAL ELEC CAP CORP MEDIUM TERM NTS BO	Feb-21	BBB	5.300	494	510	1,004	23	5.5	6.0	99.5	98.6
19	C	CITIGROUP	Null	BB	6.300	493	145	638	17	6.3	6.4	99.6	97.8
20	C	CITIGROUP	Feb-20	BBB	2.400	492	70	562	7	3.2	3.3	99.0	98.9

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

November 2018

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	2,060	2,750	4,810	86	6.2	6.3	80.1	79.6
2	GS	GOLDMAN SACHS	Mar-20	BBB	5.375	162	877	1,039	12	3.3	3.5	102.6	102.4
3	NWL	NEWELL RUBBERMAID INC	Apr-23	BBB	3.850	44	699	743	11	4.3	4.4	98.1	97.8
4	EIX	EDISON MISSION	Null	BBB	6.250	170	629	799	14	6.3	6.6	99.8	94.0
5	RCII	RENT A CTR INC NEW	Nov-20	C	6.625	98	624	722	7	6.8	7.2	99.6	99.0
6	GE	GENERAL ELEC CAP CORP MEDIUM TERM NTS BO	Jan-38	BBB	5.875	178	560	738	14	6.4	6.5	93.9	92.8
7	GE	GENERAL ELEC CAP CORP MEDIUM TERM NTS BO	Aug-19	BBB	6.000	471	537	1,008	21	3.8	5.4	101.5	100.4
8	GE	GENERAL ELEC CAP CORP MEDIUM TERM NTS BO	Feb-21	BBB	5.300	494	510	1,004	23	5.5	6.0	99.5	98.6
9	GE	GENERAL ELEC CAP CORP MEDIUM TERM NTS BO	Jan-20	BBB	5.500	319	509	828	20	4.3	5.2	101.3	100.3
10	BRS	BRISTOW GROUP INC	Jun-23	N/R	4.500	2	507	509	1	8.3	14.1	86.3	68.8
11	AXP	AMERICAN EXPRESS	Null	BBB	4.900	112	498	610	9	4.9	5.0	100.0	98.8
12	WFC	WELLS FARGO	Null	BBB	5.875	286	483	769	12	5.7	5.8	103.5	102.1
13	GE	GENERAL ELEC CAP CORP MEDIUM TERM NTS BO	Sep-20	BBB	4.375	182	456	638	15	4.7	5.3	99.3	98.5
14	TRP	TRANSCANADA PIPELINES LTD	Aug-76	BBB	5.875	193	408	601	7			97.7	95.1
15	AGO	ASSURED GTY U S HLDGS INC	Jul-24	A	5.000	99	407	506	7	4.4	4.5	103.0	102.7
16	GE	GENERAL ELEC CAP CORP MEDIUM TERM NTS BO	Oct-21	BBB	4.650	143	396	539	13	5.1	5.8	98.8	96.8
17	GE	GENERAL ELEC CAP CORP MEDIUM TERM NTS BO	Sep-22	BBB	3.150	168	396	564	14	5.3	5.8	92.6	91.1
18	T	AT&T	Feb-22	BBB	3.000	286	383	669	6	3.7	3.8	97.7	97.6
19	VIA	VIACOM INC NEW	Sep-23	BBB	4.250	34	371	405	4	4.1	4.2	100.5	100.2
20	CTL	CENTURYLINK	Dec-23	B	6.750	27	362	389	3	6.5	6.7	101.2	100.0

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.

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