

Market Transparency Report

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

December 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 December 2019

	Median Yield (bps)	Daily Trade Volume	Buy/Sell Ratio
Agency	2	-7.0%	0.0
CD	10	1.0%	0.7
Corp	-7	-5.7%	-0.1
Municipal	-13	-2.7%	-0.1
Treasury	-1	-1.4%	-0.1

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

Yield Matrix

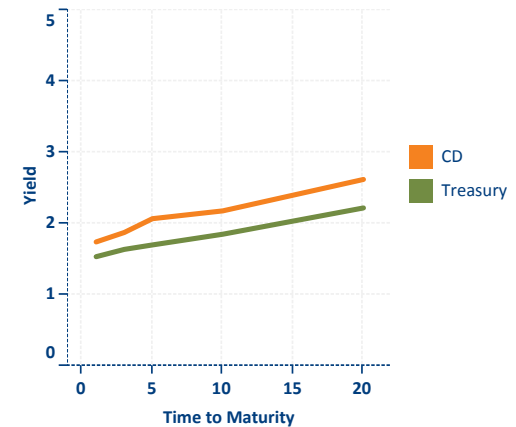
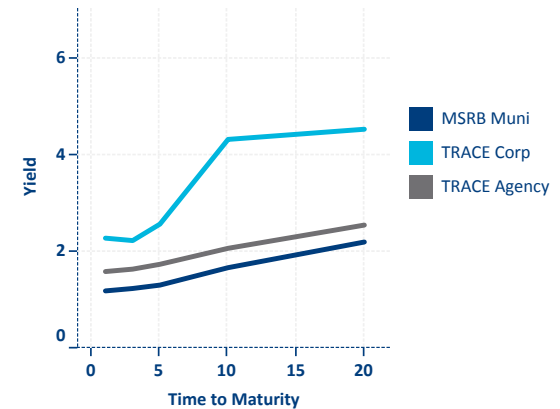
Average Yield, % for December 2019

Market	TTM					Median Maturity (Years)
	1	3	5	10	20	
MSRB Muni	1.2	1.2	1.3	1.7	2.2	10
TRACE Corp	2.3	2.2	2.6	4.3	4.5	3
TRACE Agency	1.6	1.6	1.7	2.1	2.6	3
CD	1.7	1.9	2.1	2.4	2.6	1
Treasury	1.5	1.6	1.7	1.9	2.2	1

Asset Class

Market	Category (Filtered)	Rating Key	TTM					Median Maturity (Years)
			1	3	5	10	20	
TRACE Corp	Financial	AA	1.8	1.7	2.6			1
		A	1.8	2.0	2.2	2.6	3.4	3
		BBB	2.2	2.4	2.7	3.7	4.3	5
		HY	2.3	2.9	6.2	6.6	5.4	9
		AAA	1.6	1.6		2.1	2.8	1
	Non-Financial	AA	1.6	1.9	1.9	2.4	2.9	1
		A	1.8	1.8	2.4	2.7	3.3	4
		BBB	2.0	2.7	2.7	3.7	4.3	2
		HY	16.0	13.3	8.0	7.7	14.1	7
MSRB Muni	GO	AAA	1.1	1.1	1.2	1.5	2.0	8
		AA	1.2	1.2	1.3	1.7	2.2	9
		A	1.2	1.3	1.3	1.7	2.4	8
		BBB	1.9	2.0	1.9	2.5	2.7	11
		HY		2.5	2.8	3.6	2.5	20
	Revenue	AAA	1.2	1.1	1.2	1.5	2.1	10
		AA	1.2	1.2	1.3	1.6	2.1	11
		A	1.2	1.3	1.4	1.7	2.1	14
		BBB	1.5	1.6	1.8	2.3	2.7	18
		HY	4.8	4.3	4.1	3.8	3.6	13

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.

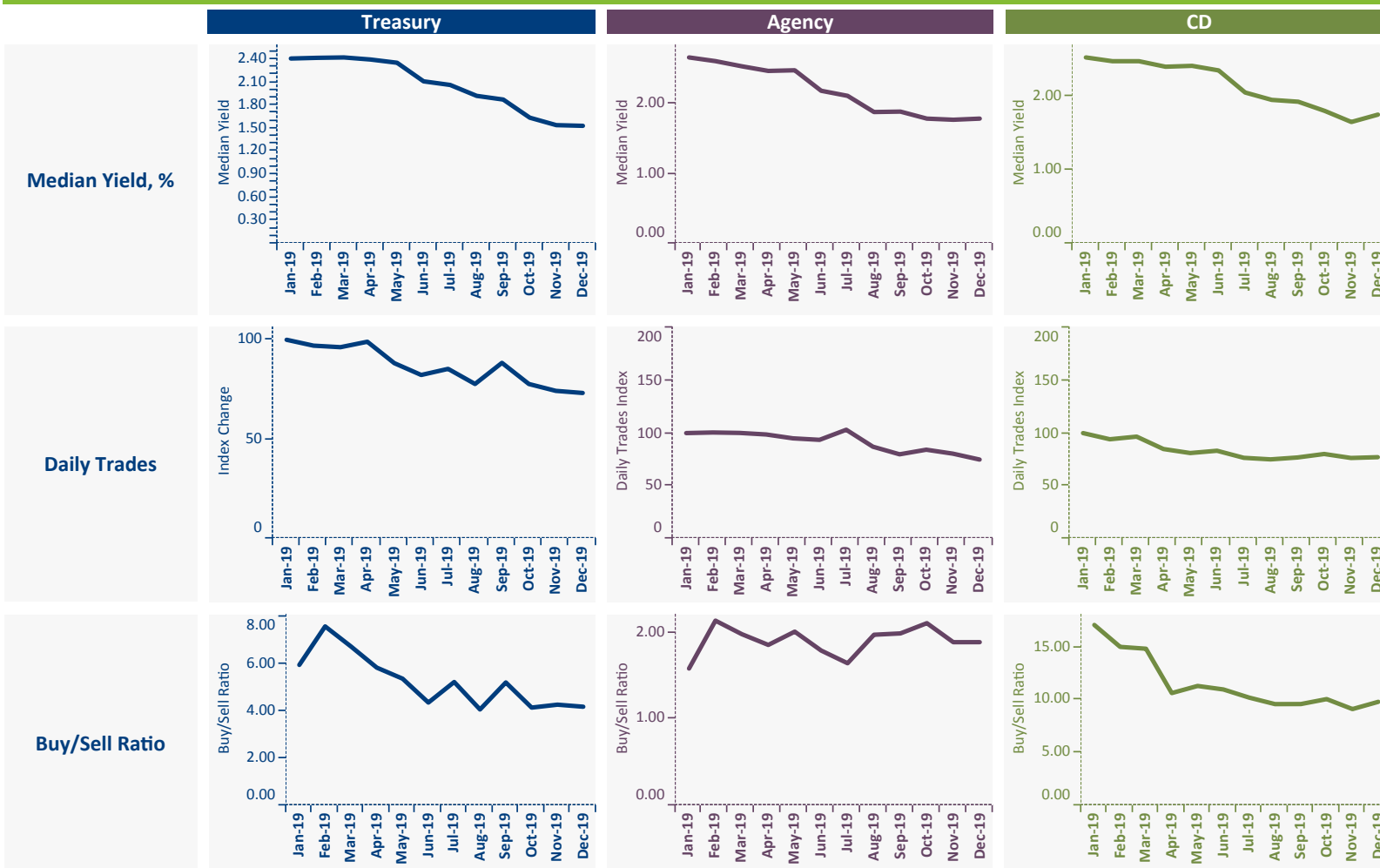
-The weights are based on transaction size.

-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

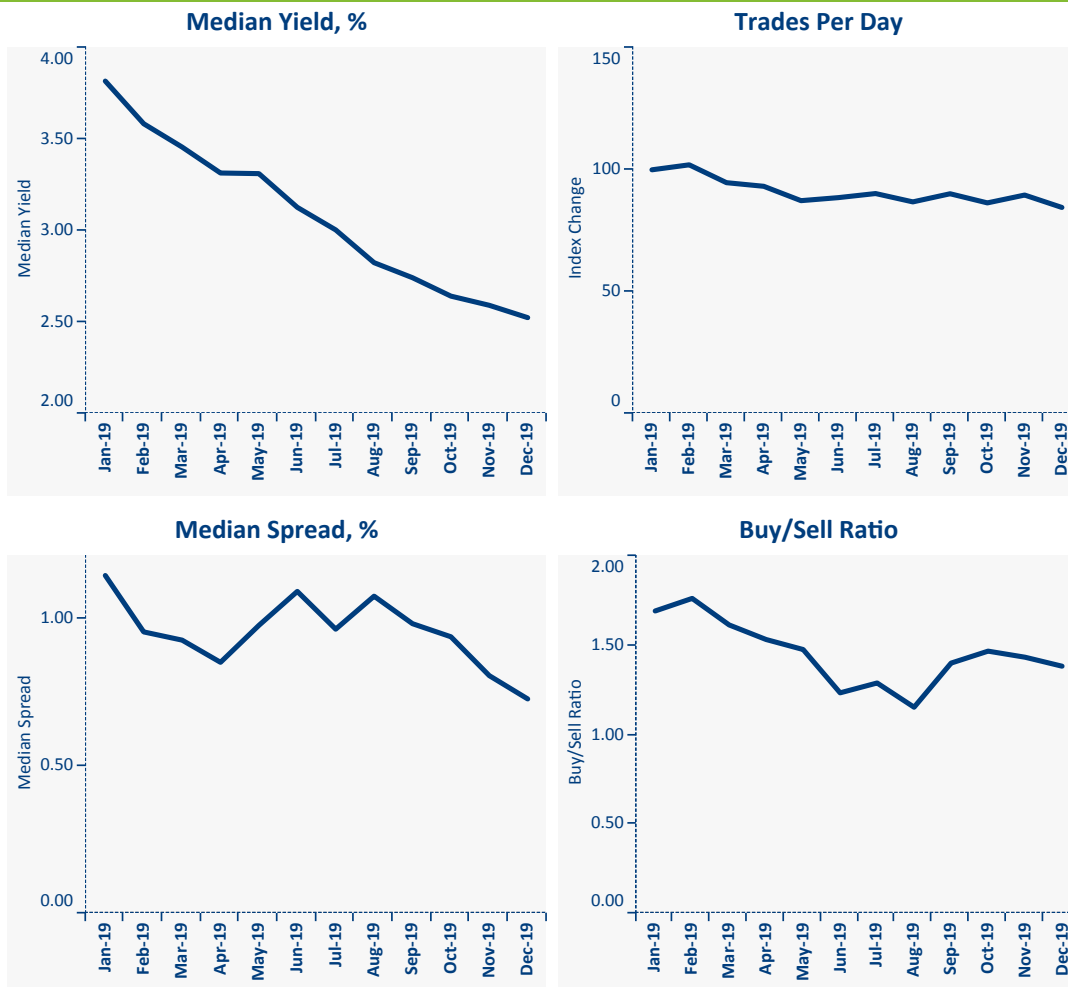
-Treasury and CD are based on transactions on the Tradeweb Direct Platform. Median yields are based on all customer buy transactions.

-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

December 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	GS	GOLDMAN SACHS	BBB	936	3.0%	14,184	1.4	295	1.9	2.2	2.5	3.2	4.0
2	JPM	JP MORGAN CHASE	A	682	2.9%	13,392	1.1	301	1.9	2.0	2.3	2.7	3.2
3	C	CITIGROUP	BBB	423	2.5%	11,654	1.2	235	2.0	2.1	2.6	2.9	3.2
4	GE	GENERAL ELEC CAP CORP MEDIUM TERM NTS BO	BBB	320	2.1%	10,020	1.2	186	2.1	2.4	2.8	3.9	4.1
5	WFC	WELLS FARGO	A	234	1.7%	7,957	1.4	182	1.9	2.1	2.3	2.8	3.5
6	MS	MORGAN STANLEY	BBB	861	1.6%	7,405	1.1	163	2.0	2.2	2.4	3.0	3.0
7	BNKQ	Null	A	344	1.4%	6,644	1.7	148	1.9	2.1	2.4	2.7	3.4
8	F	FORD	BBB	257	1.4%	6,512	2.7	125	2.7	3.0	3.7	5.0	5.6
9	T	AT&T	BBB	115	1.4%	6,456	0.8	143	1.9	2.1	2.4	3.0	3.9
10	GM	GENERAL MOTORS FINANCIAL COMPANY INC	BBB	104	1.3%	6,291	2.1	142	2.1	2.5	2.9	3.7	4.9
11	AAPL	APPLE INC	AA	51	1.2%	5,621	1.3	125	1.7	1.9	2.0	2.3	3.1
12	CVS	CVS CAREMARK CORP	BBB	44	1.1%	5,122	1.9	107	2.0	2.3	2.5	3.0	3.7
13	VZ	VERIZON	BBB	120	0.9%	4,383	1.1	92	1.9	2.0	2.1	2.6	3.2
14	BAC	BANK OF AMERICA	A	280	0.9%	4,365	1.4	100	1.9	2.1	2.5	2.8	3.5
15	CMCS	COMCAST	A	67	0.8%	3,960	1.4	97	1.9	1.9	2.1	2.5	3.1
16	USB	U S BANCORP MEDIUM TERM NTS- BOOK ENTRY	BBB	29	0.8%	3,915	0.4	47	1.8	1.9	2.1	2.3	
17	BRK	BERKSHIRE HATHAWAY	A	152	0.8%	3,888	1.1	104	1.7	1.9	2.2	2.7	3.4
18	MET	METLIFE	BBB	20	0.7%	3,226	2.3	69		2.1	2.1	3.7	3.2
19	AXP	AMERICAN EXPRESS	BBB	36	0.7%	3,196	1.5	72	1.9	2.1	2.3		2.9
20	MSFT	MICROSOFT CORP	AAA	36	0.7%	3,188	1.2	72	1.6	1.8	2.0		2.7

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.

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

December 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	TUP	TUPPERWARE BRANDS CORP	BBB	1	0.2%	1,099	959	140	6.9	23	5.0				
2	HPT	HOSPITALITY PPTYS TR	BBB	12	0.3%	1,219	1,052	167	6.3	28	2.3	2.8	3.5	4.5	
3	STZ	CONSTELLATION BRANDS INC	BBB	18	0.3%	1,442	1,226	216	5.7	28	2.0	2.2	2.6	2.9	
4	EQT	EQT CORP	BBB	11	0.5%	2,173	1,827	346	5.3	44	2.4	4.3	4.6	5.8	
5	CHRC	BAYSIDE CMNTY CHURCH SARASOTA INC BRADEN	N/R	128	0.2%	1,097	902	195	4.6	10	4.0	4.0		5.4	6.1
6	FDX	FEDEX CORP	BBB	24	0.4%	1,777	1,458	319	4.6	38		2.0	2.2	3.0	4.0
7	D	DOMINION RES INC VA NEW	BBB	67	0.6%	2,665	2,168	497	4.4	52	2.1	2.1	2.4	2.9	3.7
8	WAG	WALGREEN CO	BBB	8	0.4%	2,106	1,688	418	4.0	42		2.4	2.9		4.4
9	CXW	CORRECTIONS CORP AMER NEW	BB	4	0.2%	1,077	856	221	3.9	17		5.0		7.6	
10	DOW	DOW CHEM CO	BBB	135	0.4%	1,680	1,306	374	3.5	34	1.3	2.1	2.5	3.1	4.0
11	ALLY	ALLY FINANCIAL	BBB	59	0.3%	1,206	925	281	3.3	24	2.0	2.5	2.8	4.0	
12	CC	Null	B	3	0.3%	1,300	988	312	3.2	24		6.5	7.4		
13	QRTEA	Null	BB	10	0.3%	1,363	1,034	329	3.1	30		2.9	3.5	8.1	6.0
14	GEO	GEO GROUP INC	B	4	0.3%	1,241	932	309	3.0	15		7.0	8.3		
15	EIX	EDISON MISSION	BBB	38	0.3%	1,184	875	309	2.8	27	2.0	2.5	3.0	3.7	3.8
16	F	FORD	BBB	257	1.4%	6,512	4,760	1,752	2.7	125	2.7	3.0	3.7	5.0	5.6
17	MET	METLIFE	BBB	20	0.7%	3,226	2,256	970	2.3	69		2.1	2.1	3.7	3.2
18	EBAY	EBAY INC	BBB	10	0.3%	1,272	878	394	2.2	31	1.9	2.2	2.4	2.8	4.0
19	CI	CIGNA CORP	A	45	0.3%	1,458	997	461	2.2	31	1.9	2.2	2.4	2.9	3.5
20	ETP	ENERGY TRANSFER PARTNERS L P	BBB	37	0.4%	1,882	1,283	599	2.1	42	2.1	2.6	3.0	3.7	4.8

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

December 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	27	0.3%	1,559	413	1,146	0.36	19	127.2	47.8	30.0	8.3	18.5
2	USB	U S BANCORP MEDIUM TERM NTS- BOOK ENTRY	BBB	29	0.8%	3,915	1,066	2,849	0.37	47	1.9	1.9	2.1	2.6	
3	AR	Null	BB	3	0.2%	1,077	376	701	0.54	13		13.7	12.6		
4	PTRB	PETROBRAS	BB	19	0.3%	1,378	526	852	0.62	54	2.6	3.1	3.4	4.2	5.5
5	HBC	HSBC	A	437	0.5%	2,125	831	1,294	0.64	42	2.2	2.1	2.9	5.5	3.6
6	CTL	CENTURYLINK	BB	31	0.6%	2,702	1,159	1,543	0.75	59	3.1	3.3	4.2	5.6	7.3
7	BCS	BARCLAYS	N/R	607	0.4%	2,007	872	1,135	0.77	38	2.7	3.1	3.2	3.3	
8	BNS	BANK NOVA SCOTIA B C	A	118	0.3%	1,212	536	676	0.79	28	2.0	1.9	2.3	3.0	
9	T	AT&T	BBB	115	1.4%	6,456	2,854	3,602	0.79	143	2.1	2.1	2.4	3.1	3.9
10	BMY	BRISTOL MYERS SQUIBB CO	A	38	0.2%	1,091	503	588	0.86	22	2.2	2.2	2.6	2.9	3.2
11	BUD	ANHEUSER BUSCH INBEV WORLDWIDE INC	BBB	41	0.5%	2,123	981	1,142	0.86	46	2.3	2.0	2.2	2.6	3.5
12	VIA	VIACOM INC NEW	BBB	37	0.3%	1,456	682	774	0.88	32	2.2	2.3	2.5	3.1	4.1
13	DELL	DELL	BB	9	0.3%	1,190	561	629	0.89	26	2.7	2.7		3.4	6.0
14	CS	CREDIT SUISSE	N/R	385	0.3%	1,470	699	771	0.91	28	3.2	2.4	3.1	3.6	
15	QCOM	QUALCOMM	A	11	0.2%	1,111	542	569	0.95	26		2.0	2.3		3.0
16	EDP	ENTERPRISE PRODS OPER LLC	BBB	33	0.3%	1,248	625	623	1.00	29	2.1	2.1	2.4	2.8	3.8
17	RY	ROYAL BANK OF CANADA	A	251	0.5%	2,162	1,091	1,071	1.02	54	1.9	2.0	2.3	3.1	3.2
18	MS	MORGAN STANLEY	BBB	861	1.6%	7,405	3,787	3,618	1.05	163	2.1	2.3	2.4	3.3	3.4
19	UTX	UNITED TECHNOLOGIES CORP	BBB	35	0.3%	1,542	791	751	1.05	34	2.2	2.1	2.2	2.5	3.2
20	PEP	PEPSICO	A	32	0.3%	1,507	774	733	1.06	35	1.9	1.8	2.0	2.2	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

December 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	1,561	1,392	2,953	48	5.1	5.1	98.7	97.9
2	F	FORD	Dec-59	BBB	6.000	1,413	209	1,622	11			25.5	25.1
3	D	DOMINION RES INC VA NEW	Dec-49	BBB	4.650	1,204	18	1,222	18			102.5	102.0
4	TUP	TUPPERWARE BRANDS CORP	Jun-21	BBB	4.750	959	140	1,099	23	5.0	5.4	99.6	99.2
5	STZ	CONSTELLATION BRANDS INC	Nov-20	BBB	2.250	930	15	945	16	2.0	2.1	100.2	100.1
6	C	CITIGROUP	Sep-23	BBB	3.337	878	46	924	10			102.2	102.1
7	MET	METLIFE	Jun-27	BBB	3.700	781	92	873	19	3.7	3.8	100.3	99.2
8	MET	METLIFE	Jun-47	BBB	4.700	757	93	850	19	5.1	5.3	93.8	91.6
9	BXMT	Null	May-22	N/R	4.375	751	26	777	3	1.7	2.2	106.1	105.0
10	CVS	CVS CAREMARK CORP	Mar-28	BBB	4.300	743	260	1,003	18	3.0	3.0	109.4	109.2
11	FLEX	FLEXTRONICS INTL LTD	Jun-29	BBB	4.875	732	12	744	4	3.8	3.8	108.2	108.1
12	QUAD	Null	May-22	B	7.000	673	98	771	9	10.8	10.9	92.1	91.9
13	ANRB	ANTERO RES FIN CORP	Nov-21	BB	5.375	611	72	683	10	7.9	7.7	95.7	96.1
14	CC	Null	May-25	B	7.000	577	219	796	16	7.4	7.6	98.1	97.5
15	CBL	CBL & ASSOCS LTD PARTNERSHIP	Dec-26	B	5.950	564	262	826	7	15.0	15.2	61.7	61.0
16	CUBI	Null	Dec-34	N/R	5.375	557	3	560	2			25.0	24.6
17	WAG	WALGREEN CO	Jun-26	BBB	3.450	545	58	603	11	3.2	3.1	101.5	101.8
18	WAG	WALGREEN CO	Nov-24	BBB	3.800	510	164	674	11	2.9	2.9	103.9	103.7
19	X	UNITED STS STL CORP NEW	Aug-25	B	6.875	508	308	816	15	7.9	8.0	95.5	95.0
20	X	UNITED STS STL CORP NEW	Mar-26	B	6.250	496	230	726	11	8.6	8.8	88.7	88.2

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).

Corporate Bonds: Top 20 Most Sold Issues

December 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	USB	U S BANCORP MEDIUM TERM NTS- BOOK ENTRY	Null	BBB	5.300	85	2,027	2,112	11	4.8	4.8	111.1	110.3
2	GE	GENERAL ELEC CAP CORP MEDIUM TERM NTS BO	Null	BBB	5.000	1,561	1,392	2,953	48	5.1	5.1	98.7	97.9
3	BZH	BEAZER HOMES USA INC	Oct-27	B	5.875	105	872	977	11	5.6	5.7	101.3	101.0
4	AOI	ALLIANCE ONE INTL INC	Jul-21	C	9.875	283	757	1,040	8	59.2	71.9	53.4	46.9
5	JPM	JP MORGAN CHASE	Null	BBB	5.300	156	571	727	10	5.2	5.2	101.3	101.2
6	MDCO	MEDICINES CO	Jul-23	N/R	2.750		460	460	3				172.6
7	WMGI	WRIGHT MED GROUP INC	Feb-20	N/R	2.000	2	457	459	2	2.1	2.4	100.2	99.9
8	AR	Null	Dec-22	BB	5.125	191	427	618	6	10.7	13.7	86.2	79.6
9	AAPL	APPLE INC	May-23	AA	2.400	321	341	662	14	1.9	1.9	101.6	101.5
10	BMY	BRISTOL MYERS SQUIBB CO	Aug-22	A	3.550	50	326	376	4	2.1	2.2	103.7	103.4
11	X	UNITED STS STL CORP NEW	Aug-25	B	6.875	508	308	816	15	7.9	8.0	95.5	95.0
12	T	AT&T	Feb-22	BBB	3.000	225	303	528	5	2.1	2.1	102.0	101.9
13	C	CITIGROUP	Oct-22	BBB	2.626	9	302	311	4			100.8	100.7
14	JPM	JP MORGAN CHASE	Oct-26	A	2.950	300	299	599	6	2.4	2.4	103.3	103.1
15	VZ	VERIZON	Sep-23	BBB	5.150	168	280	448	9	2.0	2.1	111.1	110.9
16	AKS	AK STL CORP	Mar-27	B	7.000	230	270	500	11	7.7	8.1	96.3	94.3
17	CBL	CBL & ASSOCS LTD PARTNERSHIP	Dec-26	B	5.950	564	262	826	7	15.0	15.2	61.7	61.0
18	CVS	CVS CAREMARK CORP	Mar-28	BBB	4.300	743	260	1,003	18	3.0	3.0	109.4	109.2
19	C	CITIGROUP	Mar-21	BBB	3.341	5	259	264	3			101.5	101.5
20	ENLC	Null	Null	B	6.000	10	255	265	2	8.8	9.2	68.0	65.0

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.

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