

Market Transparency Report

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

December 2016

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 2016

	Median Yield (bps)	Daily Trade Volume	Buy/Sell Ratio
Agency	22	11.0%	0.1
CD	3	6.7%	0.1
Corp	8	2.8%	0.0
Municipal	19	19.4%	-0.2
Treasury	4	8.3%	0.2

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

Yield Matrix

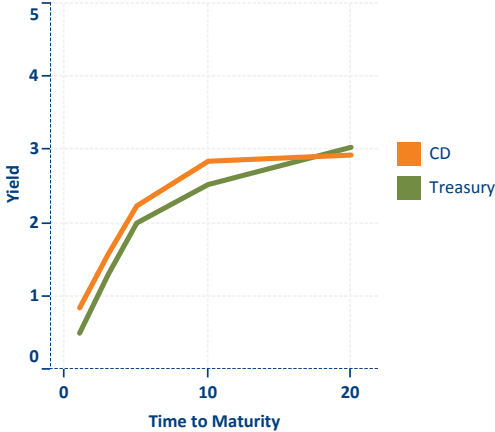
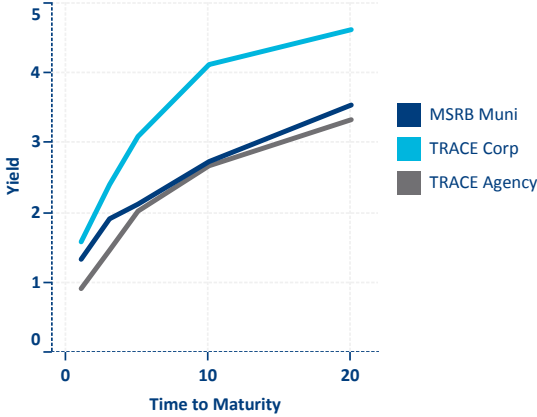
Average Yield, % for December 2016

Market	TTM					Median Maturity (Years)
	1	3	5	10	20	
MSRB Muni	1.3	1.9	2.1	2.7	3.6	14
TRACE Corp	1.6	2.4	3.1	4.1	4.6	4
TRACE Agency	0.9	1.5	2.0	2.7	3.3	3
CD	0.8	1.6	2.2	2.9	3.1	1
Treasury	0.5	1.3	2.0	2.5	3.0	1

Asset Class

Market	Category (Filtered)	Rating Key	1	3	5	10	20	Median Maturity (Years)
TRACE Corp	Financial	AA	1.4	2.0	2.4			2
		A	1.4	2.2	2.7	3.6	4.6	4
		BBB	1.6	2.6	3.5	4.0	4.2	4
		HY	2.4	3.4	4.7	5.0	7.3	3
		AAA		1.8	2.1		4.1	4
	Non-Financial	AA	1.3	1.9	2.3	3.4	4.0	3
		A	1.5	2.1	2.6	3.5	4.6	3
		BBB	1.7	2.9	3.3	4.5	6.3	6
		HY	4.7	4.7	6.0	8.0	10.2	8
MSRB Muni	GO	AAA	1.1	1.5	1.9	2.4	3.1	9
		AA	1.2	1.7	2.0	2.6	3.5	11
		A	1.4	1.8	2.2	2.7	3.7	13
		BBB	2.4	3.1	3.5	4.5	4.8	14
		HY	5.2	3.5	2.9	6.5	6.9	9
	Revenue	AAA	1.2	1.6	1.9	2.4	3.2	10
		AA	1.2	1.7	2.0	2.6	3.4	14
		A	1.3	1.9	2.2	2.8	3.6	19
		BBB	1.8	2.4	2.8	3.5	3.9	20
		HY	15.9	21.8	17.7	11.1	10.0	14

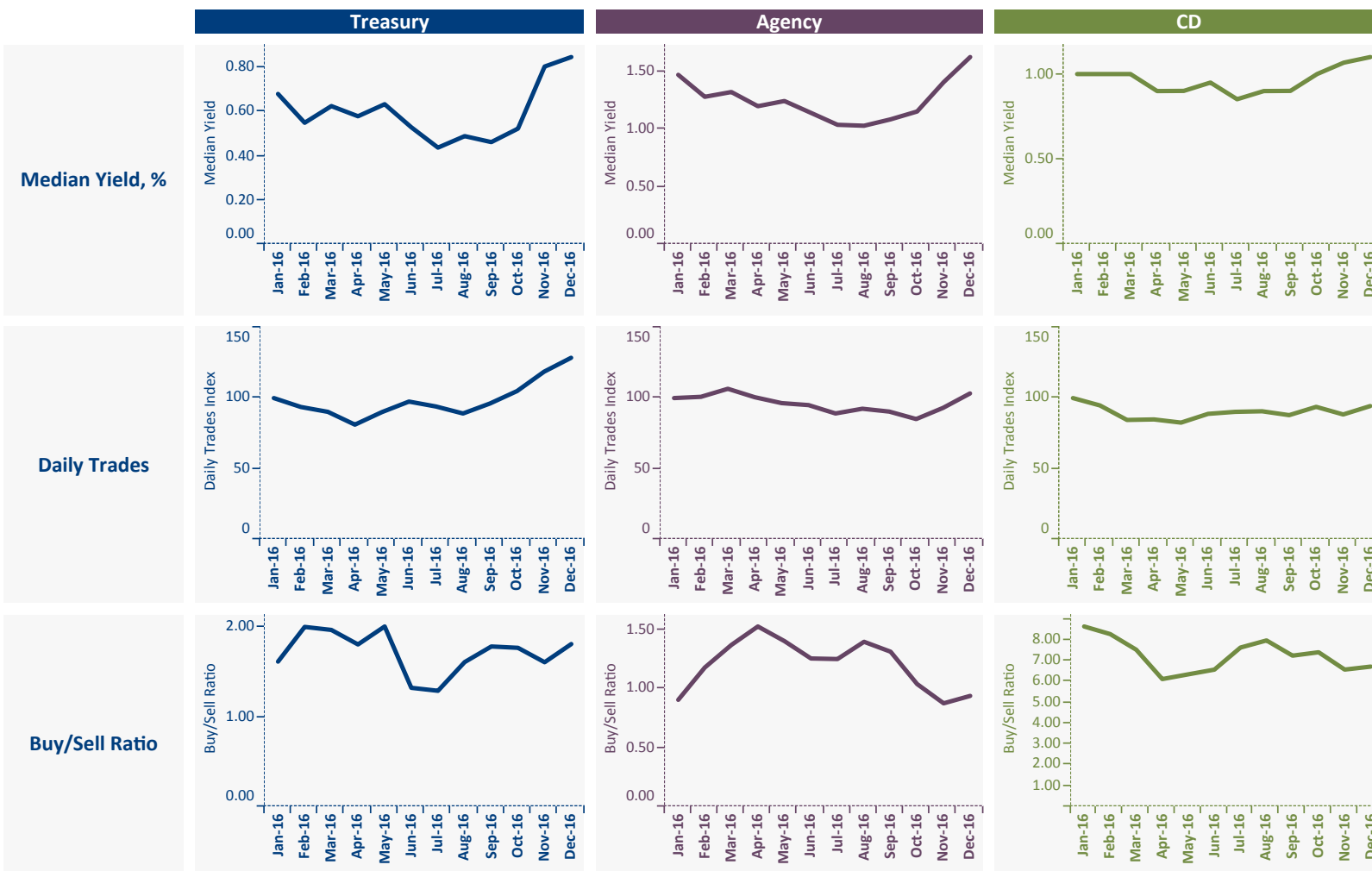
Average Yield, %



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



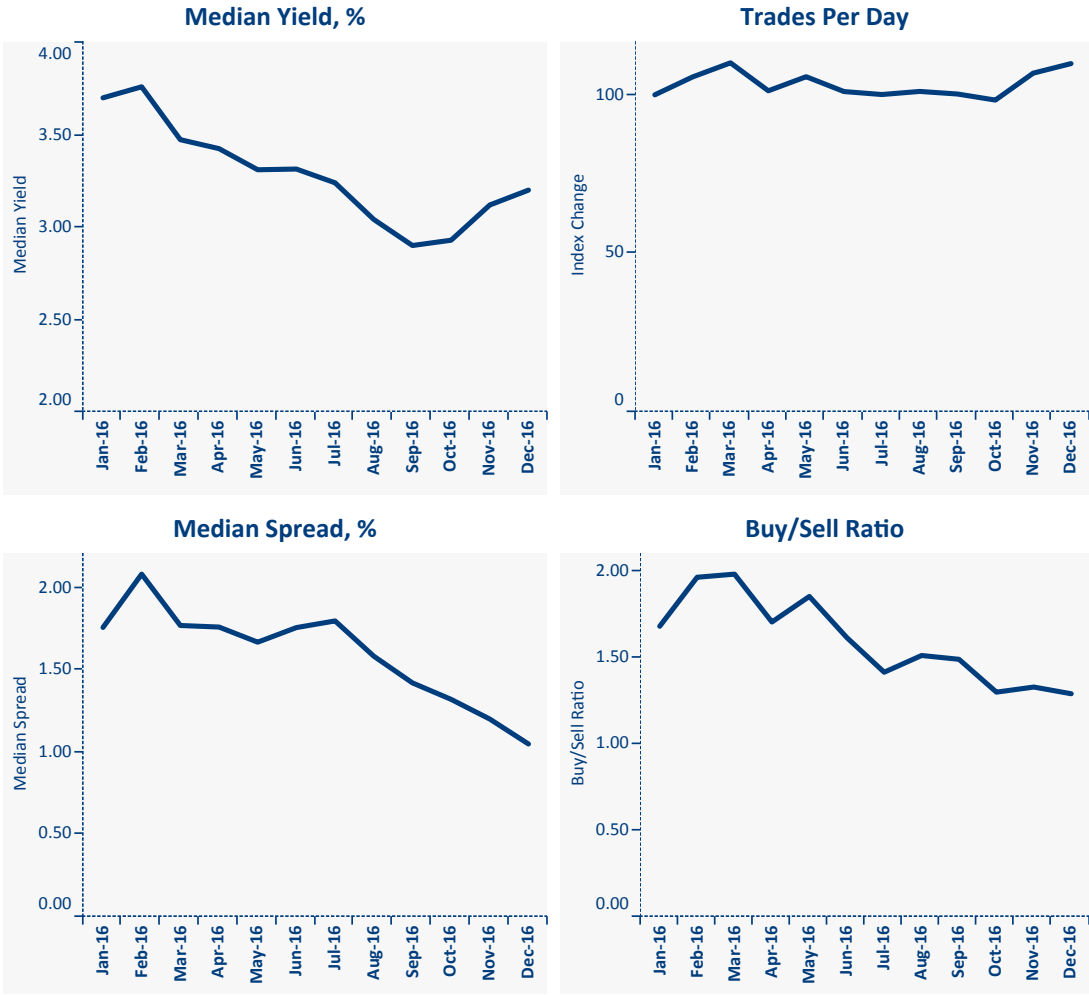
Daily Trades: First month = 100

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

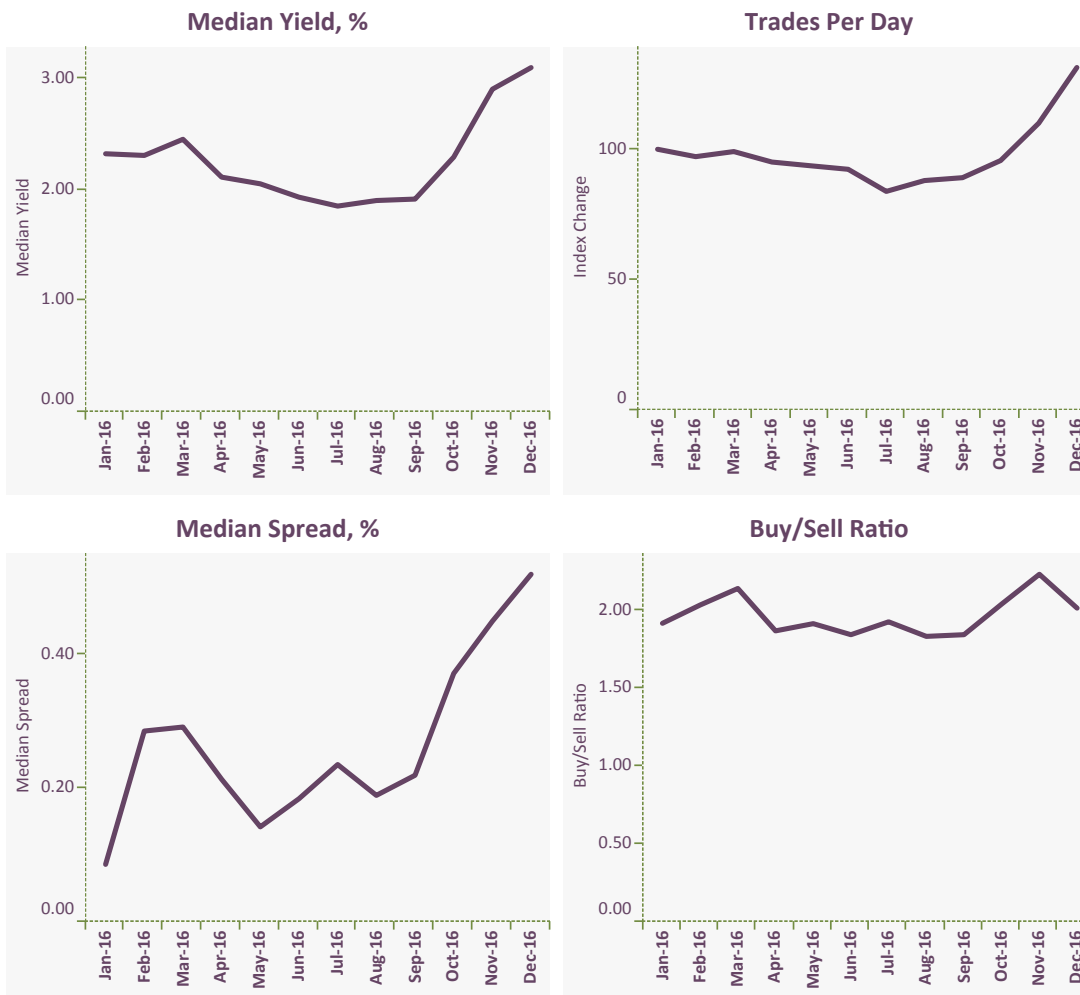


Daily Trades: First month = 100
 Source: TRACE and Tradeweb Direct
 -Based on odd-lot customer transactions (<100M) reported in TRACE.
 -Median yields and spreads are based on all odd-lot customer buy transactions...

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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 2016

Index	Ticker	Comany	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	864	3.4%	15,018	1.3	298	1.8	2.4	3.0	3.7	4.6
2	JPM	JP MORGAN CHASE	A	520	3.3%	14,297	1.6	308	1.6	2.3	2.8	3.6	3.4
3	BAC	BANK OF AMERICA	BBB	494	3.1%	13,668	1.2	267	1.6	2.4	2.9	4.0	4.2
4	C	CITIGROUP	BBB	333	2.8%	12,166	1.9	269	1.6	2.1	3.0	4.0	4.0
5	T	AT&T	BBB	78	2.7%	12,056	2.1	231	1.5	2.3	3.1	4.0	4.9
6	GE	GENERAL ELEC CAP CORP MEDIUM TERM NTS BO	AA	395	2.4%	10,463	1.0	200	1.3	2.1	2.7	3.5	4.0
7	WFC	WELLS FARGO	A	209	2.3%	10,127	1.6	230	1.4	2.3	2.7	3.7	4.5
8	MS	MORGAN STANLEY	BBB	804	1.8%	7,818	1.2	183	1.7	2.2	2.9	3.8	4.3
9	VZ	VERIZON	BBB	63	1.6%	6,870	1.3	127	1.2	2.0	2.8	3.6	4.6
10	AAPL	APPLE INC	AA	33	1.2%	5,092	1.6	107	1.3	1.7	2.4	3.2	4.0
11	BRK	BERKSHIRE HATHAWAY	AA	154	1.0%	4,464	1.3	110	1.4	1.9	2.5	3.3	4.2
12	BUD	ANHEUSER BUSCH INBEV WORLDWIDE INC	A	41	1.0%	4,414	1.5	82	1.3	1.9	2.6	3.6	4.4
13	F	FORD	BBB	180	0.9%	3,880	2.3	85	1.5	2.4	3.2	4.2	
14	MSFT	MICROSOFT CORP	AAA	35	0.8%	3,547	1.1	76	1.0	1.8	2.4	3.1	3.8
15	PEMX	PETROLEOS MEXICANOS	BBB	39	0.7%	3,134	2.6	105	3.1	3.9	4.9	5.8	7.0
16	HBC	HSBC	N/R	475	0.7%	3,127	0.9	70	1.5	2.7	3.1	4.0	4.9
17	AXP	AMERICAN EXPRESS	BBB	34	0.7%	3,077	1.5	71	1.4	2.1	2.8	3.5	4.9
18	RIG	TRANSOCEAN INC	B	15	0.7%	2,917	0.5	65	4.2		7.7	9.3	9.1
19	ORCL	ORACLE CORP	AA	29	0.7%	2,891	1.1	64	1.2	1.8	2.6	3.2	4.0
20	CTL	CENTURYLINK	BB	31	0.7%	2,872	1.5	62	2.0	3.7	5.1	7.6	7.4

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

December 2016

Index	Ticker	Comany	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	ABT	ABBOTT LABS	BBB	14	0.6%	2,782	2,554	228	11.2	61		2.3	3.0	3.8	4.7
2	CHRC	BAYSIDE CMNTY CHURCH SARASOTA INC BRADEN	N/R	176	0.4%	1,652	1,458	194	7.5	11	3.7	4.7	5.5	6.0	7.0
3	SO	GEORGIA POWER CO	BBB	69	0.5%	2,212	1,788	424	4.2	50	1.3	1.9	2.8	3.6	4.8
4	PBI	PITNEY BOWES	BBB	7	0.3%	1,227	954	273	3.5	25	2.0	2.5	3.9		5.2
5	MRK	MERCK & CO INC NEW	AA	23	0.3%	1,530	1,188	342	3.5	25	1.3	1.8	2.6	3.1	
6	GM	GENERAL MOTORS FINANCIAL COMPANY INC	BBB	36	0.6%	2,550	1,865	685	2.7	64	1.9	2.7	3.5	4.3	5.2
7	PEMX	PETROLEOS MEXICANOS	BBB	39	0.7%	3,134	2,268	866	2.6	105	3.1	3.9	4.9	5.8	7.0
8	VIA	VIACOM INC NEW	BBB	35	0.4%	1,942	1,384	558	2.5	43	1.6	2.5	3.4	3.7	5.9
9	TEVA	TEVA PHARMACEUTICAL FIN CO B V	BBB	12	0.3%	1,446	1,019	427	2.4	31		2.5	3.3	4.1	5.0
10	XRX	XEROX CORP	BBB	12	0.3%	1,346	947	399	2.4	28	2.3	2.9	3.3		6.6
11	ABBV	ABBVIE INC	BBB	15	0.4%	1,716	1,202	514	2.3	35	1.8	2.5	3.2	3.9	4.6
12	F	FORD	BBB	180	0.9%	3,880	2,687	1,193	2.3	85	1.5	2.4	3.2	4.2	
13	XOM	XTO ENERGY INC	AA	27	0.3%	1,274	882	392	2.3	26	1.3	1.7	2.4	3.1	
14	AMGN	AMGEN INC	A	32	0.4%	1,919	1,313	606	2.2	40	1.3	2.1	2.9	3.5	4.7
15	PFE	PFIZER	AA	42	0.3%	1,188	807	381	2.1	34	1.5	1.7	2.2	3.2	4.1
16	T	AT&T	BBB	78	2.7%	12,056	8,194	3,862	2.1	231	1.5	2.3	3.1	4.0	4.9
17	EXC	EXELON GENERATION CO LLC	BBB	65	0.3%	1,204	816	388	2.1	23	1.6	2.7	3.0	3.7	6.1
18	EBAY	EBAY INC	BBB	11	0.4%	1,651	1,115	536	2.1	36	1.3	2.5	3.1	3.7	
19	TD	TORONTO DOMINION BK SR MEDIUM TERM BK NT	AA	48	0.2%	1,022	688	334	2.1	23	1.5	2.0	2.5	3.2	
20	ALLY	ALLY FINANCIAL	BB	81	0.3%	1,169	778	391	2.0	27	2.3	3.3	4.1	5.5	

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

December 2016

Index	Ticker	Comany	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	BTU	PEABODY ENERGY	N/R	6	0.3%	1,384	98	1,286	0.08	23					
2	BCS	BARCLAYS	N/R	489	0.5%	2,044	517	1,527	0.34	26	3.0	3.4	3.9	4.4	4.7
3	ESV	ENSCO PLC	BB	8	0.4%	1,742	487	1,255	0.39	41		4.6	5.4	7.4	8.8
4	SFTBF	SPRINT	B	15	0.3%	1,260	369	891	0.41	33	2.6	5.0	6.2	7.2	7.8
5	QCOM	QUALCOMM	A	8	0.3%	1,170	368	802	0.46	22	1.6	2.3	2.7	3.3	4.3
6	RIG	TRANSOCEAN INC	B	15	0.7%	2,917	927	1,990	0.47	65	4.8	6.1	7.8	9.8	9.0
7	CS	CREDIT SUISSE	N/R	401	0.5%	2,330	760	1,570	0.48	37	2.5	3.1	3.4	4.4	
8	FCX	FREEMPORT-MCMORAN COPPER & GOLD INC	B	18	0.3%	1,321	447	874	0.51	32	2.8	4.1	4.8	5.6	6.9
9	X	UNITED STS STL CORP NEW	B	6	0.3%	1,156	421	735	0.57	27	4.0	5.5	6.5		8.2
10	PNC	PNC FDG CORP	BBB	38	0.3%	1,281	510	771	0.66	23	1.8	2.5	3.0	3.3	
11	CVX	CHEVRON CORP NEW	AA	27	0.5%	2,378	967	1,411	0.69	43	1.4	1.9	2.7	3.3	4.5
12	ETP	ENERGY TRANSFER PARTNERS L P	BBB	26	0.3%	1,198	488	710	0.69	23	2.4	3.3	3.6	4.5	6.0
13	NE	NOBLE HLDG INTL LTD	B	12	0.3%	1,525	651	874	0.74	34	5.7	5.5	5.9	8.8	9.5
14	INTC	INTEL CORP	A	18	0.3%	1,174	524	650	0.81	28	1.2	2.1	2.6	3.0	3.8
15	AA	ALCOA	BB	13	0.3%	1,533	690	843	0.82	35	3.0	3.6	4.0	5.3	6.3
16	VALE	VALE OVERSEAS LTD	BB	10	0.3%	1,457	656	801	0.82	50		4.0	4.6	5.6	7.1
17	WMT	WAL-MART	AA	24	0.3%	1,533	703	830	0.85	33	1.4	2.1	2.3	3.2	4.1
18	RY	ROYAL BANK OF CANADA	A	261	0.5%	2,066	955	1,111	0.86	40	1.6	2.1	2.4	3.9	4.0
19	BMO	BANK MONTREAL MEDIUM TERM SR NTS BOOK EN	N/R	56	0.3%	1,514	708	806	0.88	36	1.7	2.1	2.7		3.8
20	USB	U S BANCORP MEDIUM TERM NTS- BOOK ENTRY	A	24	0.3%	1,439	687	752	0.91	27	1.6	2.0	2.8	3.4	

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

December 2016

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	Dec-49	A	5.000	1,178	610	1,788	19			103.5	103.0
2	T	AT&T	Feb-26	BBB	4.125	1,056	149	1,205	18	4.0	4.1	101.2	100.4
3	ABT	ABBOTT LABS	Nov-19	BBB	2.350	943	18	961	19	2.3	2.3	100.2	100.0
4	F	FORD	Dec-26	BBB	4.346	845	58	903	18	4.3	4.3	100.9	100.1
5	MRK	MERCK & CO INC NEW	Feb-25	AA	2.750	802	47	849	9	3.1	3.1	97.3	97.4
6	C	CITIGROUP	Dec-49	BB	6.125	788	144	932	13			103.8	103.0
7	T	AT&T	Feb-22	BBB	3.000	714	359	1,073	13	3.2	3.3	99.1	98.5
8	T	AT&T	May-25	BBB	3.400	707	140	847	16	3.9	4.0	96.3	95.5
9	BUD	ANHEUSER BUSCH INBEV WORLDWIDE INC	Feb-19	A	2.150	638	361	999	5	1.9	1.9	100.6	100.5
10	GS	GOLDMAN SACHS	Dec-49	BB	5.375	624	110	734	14			99.8	100.0
11	VZ	VERIZON	Jun-19	BBB	2.550	592	39	631	10	2.0	2.1	101.4	101.1
12	T	AT&T	Jun-22	BBB	3.000	556	155	711	14	3.2	3.4	99.0	97.7
13	C	CITIGROUP	May-49	BB	6.300	542	171	713	19			100.5	98.0
14	SO	GEORGIA POWER CO	Mar-57	BBB	5.500	532	10	542	14			102.0	100.5
15	PMT	PENNYMAC MORTGAGE INVESTMENT TRUST	May-20	N/R	5.375	521	2	523	11	5.7	6.5	99.0	96.5
16	BAC	BANK OF AMERICA	Dec-49	BB	6.250	504	145	649	13			100.6	99.9
17	HLS	HEALTHSOUTH CORP	Dec-43	B	2.000	501	24	525	3			120.6	119.0
18	WFC	WELLS FARGO	Mar-49	BBB	5.570	498	363	861	21			99.6	97.1
19	AMAG	AMAG Pharmaceuticals, Inc.	Feb-19	N/R	2.500	494	10	504	2			142.6	139.9
20	IPHI	INPHI CORPORATION	Dec-20	N/R	1.125	494	8	502	3			136.4	133.9

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

December 2016

Index	Ticker	Comany	Maturity	Rating Key (Med)	Coupon	Trades (Buy)	Trades (Sell)	Trades	Dollar Vol. Traded (MM)	Yield (Buy)	Yield (Sell)	Price (Buy)	Price (Sell)
1	CVX	CHEVRON CORP NEW	Dec-17	AA	1.104	258	818	1,076	13	1.2	1.4	99.9	99.7
2	VZ	VERIZON	Aug-26	BBB	2.625	129	614	743	11	3.6	3.6	92.4	92.2
3	GE	GENERAL ELEC CAP CORP MEDIUM TERM NTS BO	Dec-49	A	5.000	1,178	610	1,788	19			103.5	103.0
4	QCOM	QUALCOMM	May-22	A	3.000	122	598	720	12	2.8	2.7	101.1	101.6
5	T	AT&T	Mar-19	BBB	2.300	183	568	751	12	2.1	2.0	100.4	100.5
6	MSFT	MICROSOFT CORP	Aug-21	AAA	1.550	39	564	603	10	2.2	2.2	97.0	97.2
7	NVDA	NVIDIA CORPORATION	Dec-18	BBB	1.000	29	557	586	9			473.0	470.4
8	MDSO	MEDIDATA SOLUTIONS INC	Aug-18	N/R	1.000	16	537	553	3			110.9	111.5
9	ONNN	ON SEMICONDUCTOR CORP	Dec-26	B	2.625	5	514	519	3			105.6	114.1
10	BTU	PEABODY ENERGY	Sep-20	N/R	6.500	31	472	503	8			69.5	71.6
11	TLN	TALEN ENERGY CORP	Dec-21	B	4.600	206	422	628	10	9.8	10.0	80.0	79.1
12	KSS	KOHL'S CORP	Jul-25	BBB	4.250	86	395	481	11	4.0	4.1	101.5	100.9
13	VZ	VERIZON	Sep-23	BBB	5.150	367	395	762	16	3.4	3.5	110.4	110.0
14	PNC	PNC FDG CORP	Aug-49	BBB	6.750	216	385	601	8			108.1	106.5
15	JPM	JP MORGAN CHASE	Apr-49	BBB	7.900	481	384	865	20			103.9	102.5
16	ESRX	EXPRESS SCRIPTS HLDG CO	Mar-27	BBB	3.400	388	383	771	5	4.1	4.3	94.0	92.7
17	IEP	ICAHN ENTERPRISES	Feb-22	BB	5.875	406	373	779	18	6.0	6.3	99.6	98.2
18	AAPL	APPLE INC	May-23	AA	2.400	411	370	781	17	2.9	2.9	97.1	96.8
19	RIG	TRANSOCEAN INC	Mar-38	B	6.800	78	370	448	11	8.9	8.9	80.2	79.9
20	WFC	WELLS FARGO	Mar-49	BBB	5.570	498	363	861	21			99.6	97.1

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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