



TRADEWEB MARKETS MONTHLY ACTIVITY REPORT AUGUST 2019

CONTACT US

⊗ +1.646.430.6007
≥ communications@tradeweb.com
tradeweb.com

TRADEWEB MARKETS – ACTIVITY RECAP

AN ACCELERATION OF VOLUME IN AUGUST

Average daily volume (ADV) across rates, credit, equities and money markets for Tradeweb Markets was \$832.4 billion (bn) in August 2019, representing an increase of 67.9 percent (%) year over year (YoY) and the second highest monthly total on record. Average daily trades for the month totaled 51,424.

In a reversal of a customary seasonal trend, Tradeweb total ADV rose month-over-month from July to August for the first time since 2011 powered by rising activity in both cash and derivatives. Activity in U.S. government bonds rose 40.1% YoY to record ADV of \$88.6 bn with record activity in direct streams and sessions-based trading. Rates derivatives trading increased 132.5% to a near-record ADV of \$294.5 bn as short-end trading continued to see strong activity this year amidst overall YoY volume growth. Activity in mortgages increased 62.3% YoY to \$175.9 bn per day. Credit trading remained strong as U.S. credit rose 31.1% YoY in high grade to \$2.1bn per day and 23.1% YoY in high yield to \$0.3 bn per day, while credit derivatives rose 118.1% YoY to \$9.6 bn per day. China bond trading set a new record of \$1.4 bn per day. European ETFs rose 107.2% YoY to record ADV of \$1.9 bn while U.S. ETFs increased 66.2% YoY to ADV of \$3.2 bn.

Among the markets in which Tradeweb operates:

- Average daily volume (ADV) in U.S. Government Bonds of \$88.6 billion (bn) increased 20.2 percent (%) month over month (MoM) and 40.1% year over year (YoY).
- ADV in European Government Bonds of \$21.0 bn declined 12.1% MoM and rose 35.8% YoY.
- ADV in Mortgages of \$175.9 bn increased 13.6% MoM and 62.3% YoY.
- ADV in Rates Derivatives of \$294.5 bn rose 16.7% MoM and 132.5% YoY.

- In U.S. Credit, ADV in High-Grade of \$2.1 bn declined 11.0% MoM and increased 31.1% YoY while ADV in High-Yield of \$0.3 bn declined 19.4% MoM and increased 23.1% YoY.
- ADV in European Credit of \$0.9 bn fell 27.9% MoM and rose 2.5% YoY.
- ADV in U.S. ETFs of \$3.2 bn increased 83.0% MoM and 66.2% YoY.
- ADV in European ETFs of \$1.9 bn rose 23.6% MoM and 107.2% YoY.
- ADV in Chinese Bonds of \$1.4 bn increased 38.1% MoM and 167.5% YoY.

TRADEWEB MARKETS – SINGLE COUNT

AUGUST 2019

		August 2019		July 2019		August 2018		MoM	YoY
Asset Class	Product	ADV (USD mm)	Volume (USD mm)	ADV (USD mm)	Volume (USD mm)	ADV (USD mm)	Volume (USD mm)	ADV	AD\
Rates	Cash	289,129	6,358,286	255,754	5,651,345	188,682	4,339,683	13.05%	53.24%
	U.S. Government Bonds	88,553	1,948,166	73,673	1,620,809	63,192	1,453,410	20.20%	40.13%
	European Government Bonds	20,982	461,608	23,875	549,131	15,455	355,463	-12.12%	35.76%
	Mortgages	175,885	3,869,466	154,883	3,407,420	108,350	2,492,054	13.56%	62.33%
	Other Government Bonds	3,709	79,046	3,323	73,984	1,685	38,757	11.64%	120.13%
	Derivatives	294,545	6,474,760	252,314	5,656,863	126,699	2,912,185	16.74%	132.48%
	Swaps/Swaptions $\geq 1Y$	137,340	3,016,270	140,965	3,165,683	95,437	2,193,177	-2.57%	43.91%
	Swaps/Swaptions < 1Y	156,524	3,443,518	110,935	2,482,065	30,808	708,548	41.09%	408.07%
	Futures	681	14,972	414	9,115	455	10,460	64.25%	49.63%
Total		583,674	12,833,046	508,068	11,308,208	315,381	7,251,867	14.88%	85.07%
Credit	Cash	5,032	110,710	5,332	119,643	3,590	82,561	-5.62%	40.19%
	U.S. High-Grade	2,132	46,910	2,395	52,681	1,627	37,419	-10.95%	31.06%
	U.S. High-Yield	277	6,102	344	7,571	225	5,183	-19.41%	23.09%
	European Credit	949	20,885	1,316	30,263	926	21,295	-27.85%	2.53%
	Municipal Bonds	231	5,092	218	4,801	256	5,887	6.06%	-9.58%
	Chinese Bonds	1,381	30,372	1,000	22,994	516	11,872	38.09%	167.46%
	Other Credit Bonds	61	1,349	59	1,332	39	906	3.44%	55.70%
	Derivatives	9,609	211,389	4,835	108,564	4,406	101,329	98.71%	118.10%
	Swaps	9,609	211,389	4,835	108,564	4,406	101,329	98.71%	118.10%
Total		14,641	322,098	10,167	228,207	7,995	183,890	44.00%	83.12%
Money Markets	Cash	226,437	4,981,561	225,787	5,048,861	167,333	3,848,659	0.29%	35.32%
	Repurchase Agreements (Repo)	208,345	4,583,591	208,758	4,673,180	148,365	3,412,392	-0.20%	40.43%
	Other Money Markets	18,091	397,970	17,029	375,682	18,968	436,267	6.24%	-4.62%
Total		226,437	4,981,561	225,787	5,048,861	167,333	3,848,659	0.29%	35.32%
Equities	Cash	5,045	110,989	3,246	72,918	2,815	64,737	55.42%	79.24%
	U.S. ETFs	3,184	70,057	1,740	38,290	1,917	44,080	82.97%	66.16%
	European ETFs	1,861	40,932	1,506	34,629	898	20,657	23.57%	107.16%
	Derivatives	2,642	58,130	2,060	46,503	2,350	54,045	28.26%	12.45%
	Convertibles/Swaps/Options	1,003	22,056	1,356	30,945	1,343	30,883	-26.06%	-25.34%
	Futures	1,640	36,074	704	15,557	1,007	23,162	132.86%	62.83%
Total		7,687	169,120	5,306	119,421	5,164	118,782	44.87%	48.85%

	ADV (USD mm)	Average Daily Trades	ADV (USD mm)	Average Daily Trades	ADV (USD mm)	Average Daily Trades	MoM	YoY
Total	832,439	51,424	749,329	48,849	495,873	37,194	11.09%	67.87%

PRODUCT CATEGORIES INCLUDE

U.S. Government Bonds: U.S. Treasury bills, notes and bonds, and Treasury Inflation-protected Securities. Mortgages: To-be-announced mortgage-backed securities, specified pools, collateralized mortgage obligations, commercial mortgage-backed securities, other mortgage derivatives and other asset-backed securities.

Other Government Bonds: Japanese, Canadian, Australian and New Zealand government bonds, covered bonds (including Pfandbriefe), other government-guaranteed securities, supranational, sub-sovereign and agency bonds/debentures. Starting in February 2019, Canadian Government Bonds effected on Tradeweb by non-Canadian clients have been added to these volumes.

Rates Futures: Government bond futures leg of exchange for physicals (EFPs).

U.S. High-Grade and High-Yield: All TRACE-reported corporates, excluding convertibles (see page 3 for segmentation methodology).

Chinese Bonds: Chinese Interbank Bond Market (CIBM) instruments – government and corporate – transacted via Bond Connect Company Limited (BCCL).

Other Credit Bonds: Other developed market (including non-TRACE-reported bonds, preferreds and structured notes), developing and emerging market corporate and government bonds.

Credit Swaps: Index and single name credit default swaps.

Other Money Markets: Agency discount notes, commercial paper, certificates of deposits (including structured CDs), and deposits. Starting in February 2019, Canadian Commercial Paper effected on Tradeweb by non-Canadian clients have been added to these volumes.

ETF: Exchange traded funds (ETFs), ETF leg of EFPs, and net asset value trades.

Convertibles/Swaps/Options: Convertible bonds, equity swaps, call and put strategies, and other equity derivatives excluding futures. Certain equity derivatives transactions have been reclassified as Equity Futures to better reflect the product group.

Equities Futures: Equity futures including the futures leg of EFPs. Certain equity derivatives transactions have been reclassified as Equity Futures to better reflect the product group.

VOLUMES

Volumes include Tradeweb, Dealerweb and Tradeweb Direct. Except with respect to U.S. Treasuries, both sides of a trade are included in volume totals where the trade is fully-anonymous and a Tradeweb brokerdealer is the matched principal counterparty. Riskless principal trades on Tradeweb Direct are single-count.

All volumes converted to U.S. Dollars.

Volumes for Mortgages represent current face value at time of trade.

Volumes have been corrected to address the manner in which U.S. Treasury hedges with Interest Rate Swap transactions were being counted.

Volumes can reflect cancellations and corrections that occur after prior postings.

U.S. CORPORATE BONDS USING MARKET REPORTING STANDARDS

TRADEWEB MARKETS

	August 2019				July 2019							Augus	2018			MoM		YoY					
	1	Volu	me (USD m			Trades		Volu	me (USD m			Trades		Volume (USD mm) Trades									
Product	Туре	ADV	Total	% of Reported	ADT	Total	% of Reported	ADV	Total	% of Reported	ADT	Total	% of Reported	ADV	Total	% of Reported	ADT	Total	% of Reported	ADV	ADT	ADV	ADT
U.S. High-Grade	Total	2,232	49,100	11.7%	9,642	212,133	22.0%	2,494	54,879	12.3%	9,771	214,955	21.5%	1,725	39,685	10.2%	8,917	205,096	21.2%	-10.53%	-1.31%	29.35%	8.13%
	Electronically Processed	1,262	27,772	6.6%	237	5,216	0.5%	1,462	32,175	7.2%	240	5,290	0.5%	1,105	25,410	6.6%	170	3,905	0.4%	-13.69%	-1.40%	14.26%	39.64%
	Fully Electronic	969	21,328	5.1%	9,405	206,917	21.5%	1,032	22,704	5.1%	9,530	209,665	21.0%	621	14,275	3.7%	8,747	201,191	20.8%	-6.06%	-1.31%	56.19%	7.52%
U.S. High-Yield	Total	293	6,449	3.9%	1,964	43,206	13.4%	358	7,877	4.4%	1,939	42,657	12.7%	233	5,370	3.7%	1,194	27,465	10.2%	-18.14%	1.29%	25.54%	64.46%
	Electronically Processed	149	3,287	2.0%	42	914	0.3%	181	3,973	2.2%	48	1,063	0.3%	163	3,760	2.6%	43	991	0.4%	-17.26%	-14.02%	-8.61%	-3.58%
	Fully Electronic	144	3,162	1.9%	1,922	42,292	13.1%	177	3,905	2.2%	1,891	41,594	12.3%	70	1,610	1.1%	1,151	26,474	9.9%	-19.03%	1.68%	105.28%	67.01%

REPORTED MARKET

	Augus	t 2019	July	2019	Augus	MoM	YoY	
	Volume (USD mm)	Trades	Volume (USD mm)	Trades	Volume (USD mm)	Trades		
Product	ADV Total	ADT Total	ADV Total	ADT Total	ADV Total	ADT Total	ADV ADT	ADV ADT
U.S. High-Grade (TRACE)	19,044 418,968	43,789 963,350	20,228 445,024	45,406 998,925	16,860 387,782	42,136 969,134	-5.85% -3.56%	12.95% 3.92%
U.S. High-Yield (TRACE)	7,572 166,586	14,662 322,565	8,226 180,973	15,320 337,049	6,336 145,717	11,678 268,598	-7.95% -4.30%	19.52% 25.55%

FOOTNOTES

Numbers include all activity on Tradeweb, Dealerweb and Tradeweb Direct.

Corporate bond volume and trade count numbers reflect all trades reported to TRACE, excluding emerging market and convertible bonds.

Monthly average capped volumes for HG and HY applied to capped trades based on TRACE reporting standards.

Electronically Processed include voice trades processed electronically on Tradeweb. Day counts for corporate bonds reflect all SIFMA trading days. Segmentation between HG and HY determined using the following methodology and ratings from Standards & Poor's (S&P), Moody's Investor Services and Fitch Ratings:

- If 2 of 3 of the bond's ratings are equal to or worse than BB+/Ba1/BB+ (but not including "other ratings") then the bond is HY.
- $-\,$ If 1 of 3 of the bond's ratings is equal to or worse than BB+/Ba1/BB+, and none are better, then the bond is HY.
- If the bond is not rated by any agency then the bond is HY.
- If 3 of 3 of the bond's ratings are better than BB+/Ba1/BB+ (but not including "other ratings") then the bond is HG.
- If 2 of 3 of the bond's ratings are better than BB+/Ba1/BB+ then the bond is HG.
- $-\,$ If 1 of 3 of the bond's ratings is better than BB+/Ba1/BB+, and none are equal or worse, then the bond is HG.
- If 1 of 3 of the bond's ratings is better than BB+/Ba1/BB+ and 1 of 3 is equal or worse, then the bond is HG. (i.e. The bond is split rated: 1 HG, 1 HY).

TRADEWEB MARKETS QUARTERLY ACTIVITY SUMMARY Q3 2019 (QTD)

TRADEWEB MARKETS – SINGLE COUNT

		2019 Q3 (QTE))	2018 Q3 (QTD)	YoY
Asset Class	Product	ADV (USD mm)	Volume (USD mm)	ADV (USD mm)	Volume (USD mm)	ADV
Rates	Cash	272,469	12,009,631	198,157	8,736,462	37.50%
	U.S. Government Bonds	81,113	3,568,976	64,090	2,819,949	26.56%
	European Government Bonds	22,461	1,010,739	16,624	748,088	35.11%
	Mortgages	165,384	7,276,886	115,566	5,084,889	43.11%
	Other Government Bonds	3,511	153,030	1,877	83,536	87.05%
	Derivatives	273,360	12,131,622	129,169	5,724,512	111.63%
	Swaps/Swaptions $\ge 1Y$	139,212	6,181,953	95,566	4,240,660	45.67%
	Swaps/Swaptions < 1Y	133,601	5,925,583	33,128	1,462,960	303.29%
	Futures	547	24,086	475	20,893	15.31%
Total		545,829	24,141,253	327,325	14,460,974	66.75%
Credit	Cash	5,182	230,353	3,740	166,245	38.56%
	U.S. High-Grade	2,263	99,591	1,561	68,676	45.02%
	U.S. High-Yield	311	13,674	215	9,479	44.25%
	European Credit	1,137	51,149	1,022	45,969	11.27%
	Municipal Bonds	225	9,892	248	10,910	-9.33%
	Chinese Bonds	1,186	53,366	647	29,097	83.41%
	Other Credit Bonds	60	2,681	47	2,114	27.22%
	Derivatives	7,197	319,953	4,648	207,018	54.83%
	Swaps	7,197	319,953	4,648	207,018	54.83%
Total		12,378	550,305	8,388	373,263	47.58%
Money Markets	Cash	226,157	10,030,422	165,591	7,319,188	36.58%
	Repurchase Agreements (Repo)	208,601	9,256,770	146,115	6,460,907	42.76%
	Other Money Markets	17,556	773,652	19,476	858,281	-9.86%
Total		226,157	10,030,422	165,591	7,319,188	36.58%
Equities	Cash	4,142	183,908	2,793	123,826	48.28%
	U.S. ETFs	2,462	108,347	1,860	81,834	32.40%
	European ETFs	1,679	75,561	933	41,993	79.94%
	Derivatives	2,355	104,633	2,297	102,254	2.52%
	Convertibles/Swaps/Options	1,183	53,002	1,313	58,953	-9.93%
	Futures	1,172	51,631	984	43,301	19.15%
Total		6,497	288,541	5,090	226,080	27.63%

Total 790,862 50,144 506,370 37,379 56.18%		ADV (USD mm)	Average Daily Trades	ADV (USD mm)	Average Daily Trades	YoY
	Total	790,862	50,144	506,370	37,379	56.18%

PRODUCT CATEGORIES INCLUDE

U.S. Government Bonds: U.S. Treasury bills, notes and bonds, and Treasury Inflation-protected Securities. Mortgages: To-be-announced mortgage-backed securities, specified pools, collateralized mortgage obligations, commercial mortgage-backed securities, other mortgage derivatives and other asset-backed securities.

Other Government Bonds: Japanese, Canadian, Australian and New Zealand government bonds, covered bonds (including Pfandbriefe), other government-guaranteed securities, supranational, sub-sovereign and agency bonds/debentures. Starting in February 2019, Canadian Government Bonds effected on Tradeweb by non-Canadian clients have been added to these volumes.

Rates Futures: Government bond futures leg of exchange for physicals (EFPs).

U.S. High-Grade and High-Yield: All TRACE-reported corporates, excluding convertibles (see page 3 for segmentation methodology).

Chinese Bonds: Chinese Interbank Bond Market (CIBM) instruments – government and corporate – transacted via Bond Connect Company Limited (BCCL).

Other Credit Bonds: Other developed market (including non-TRACE-reported bonds, preferreds and structured notes), developing and emerging market corporate and government bonds.

Credit Swaps: Index and single name credit default swaps.

Other Money Markets: Agency discount notes, commercial paper, certificates of deposits (including structured CDs), and deposits. Starting in February 2019, Canadian Commercial Paper effected on Tradeweb by non-Canadian clients have been added to these volumes.

ETF: Exchange traded funds (ETFs), ETF leg of EFPs, and net asset value trades.

Convertibles/Swaps/Options: Convertible bonds, equity swaps, call and put strategies, and other equity derivatives excluding futures. Certain equity derivatives transactions have been reclassified as Equity Futures to better reflect the product group.

Equities Futures: Equity futures including the futures leg of EFPs. Certain equity derivatives transactions have been reclassified as Equity Futures to better reflect the product group.

VOLUMES

Volumes include Tradeweb, Dealerweb and Tradeweb Direct. Except with respect to U.S. Treasuries, both sides of a trade are included in volume totals where the trade is fully-anonymous and a Tradeweb brokerdealer is the matched principal counterparty. Riskless principal trades on Tradeweb Direct are single-count.

All volumes converted to U.S. Dollars.

Volumes for Mortgages represent current face value at time of trade.

Volumes have been corrected to address the manner in which U.S. Treasury hedges with Interest Rate Swap transactions were being counted.

Volumes can reflect cancellations and corrections that occur after prior postings.

U.S. CORPORATE BONDS USING MARKET REPORTING STANDARDS

TRADEWEB MARKETS

				2019 Q3 (QTD)							2018 Q3 (QTD)					Y
	1			Volume (USD mm)			Trades			me (USD m	m)	Trades				
Product	Туре	e	ADV	Total	% of Reported	ADT	Total	% of Reported	ADV	Total	% of Reported	ADT	Total	% of Reported		ADT
U.S. High-Grade	Tota	al	2,363	103,978	12.0%	9,707	427,088	21.8%	1,660	73,019	9.4%	8,745	384,795	20.8%	42.40%	10.99%
		Electronically Processed	1,362	59,947	6.9%	239	10,506	0.5%	1,077	47,388	6.1%	168	7,407	0.4%	26.50%	41.84%
		Fully Electronic	1,001	44,032	5.1%	9,468	416,582	21.2%	583	25,631	3.3%	8,577	377,388	20.4%	71.79%	10.39%
U.S. High-Yield	Tota	al	326	14,326	4.1%	1,951	85,863	13.0%	224	9,854	3.3%	1,211	53,298	10.1%	45.39%	61.10%
		Electronically Processed	165	7,259	2.1%	45	1,977	0.3%	155	6,812	2.3%	42	1,856	0.4%	6.57%	6.52%
		Fully Electronic	161	7,067	2.0%	1,907	83,886	12.7%	69	3,042	1.0%	1,169	51,442	9.8%	132.30%	63.07%

REPORTED MARKET

		2019 Q3 (QTD)	2018 Q	YoY	
	Volume (USD mm)	Trades	Volume (USD mm)	Trades	
Product	ADV Total	ADT Total	ADV Total	ADT Total	ADV ADT
U.S. High-Grade (TRACE)	19,636 863,991	44,597 1,962,275	17,658 776,936	42,127 1,853,597	11.21% 5.86%
U.S. High-Yield (TRACE)	7,899 347,559	14,991 659,614	6,705 295,018	11,955 526,000	17.81% 25.40%

FOOTNOTES

Numbers include all activity on Tradeweb, Dealerweb and Tradeweb Direct.

Corporate bond volume and trade count numbers reflect all trades reported to TRACE, excluding emerging market and convertible bonds.

Monthly average capped volumes for HG and HY applied to capped trades based on TRACE reporting standards.

Electronically Processed include voice trades processed electronically on Tradeweb. Day counts for corporate bonds reflect all SIFMA trading days. Segmentation between HG and HY determined using the following methodology and ratings from Standards & Poor's (S&P), Moody's Investor Services and Fitch Ratings:

- If 2 of 3 of the bond's ratings are equal to or worse than BB+/Ba1/BB+ (but not including "other ratings") then the bond is HY.
- $-\,$ If 1 of 3 of the bond's ratings is equal to or worse than BB+/Ba1/BB+, and none are better, then the bond is HY.
- If the bond is not rated by any agency then the bond is HY.
- If 3 of 3 of the bond's ratings are better than BB+/Ba1/BB+ (but not including "other ratings") then the bond is HG.
- If 2 of 3 of the bond's ratings are better than BB+/Ba1/BB+ then the bond is HG.
- $-\,$ If 1 of 3 of the bond's ratings is better than BB+/Ba1/BB+, and none are equal or worse, then the bond is HG.
- If 1 of 3 of the bond's ratings is better than BB+/Ba1/BB+ and 1 of 3 is equal or worse, then the bond is HG. (i.e. The bond is split rated: 1 HG, 1 HY).

Q3 2019 (QTD)

DISCLOSURES

FORWARD-LOOKING STATEMENTS

This release contains forward-looking statements within the meaning of the federal securities laws. Statements related to, among other things, our outlook and future performance, the markets in which we operate, and our expectations, beliefs, plans, strategies, objectives, prospects, assumptions, or future events are forward-looking statements.

We have based these forward-looking statements on our current expectations, assumptions, estimates and projections. While we believe these expectations, assumptions, estimates and projections are reasonable, such forward-looking statements are only predictions and involve known and unknown risks and uncertainties, many of which are beyond our control. These and other important factors, including those discussed under the heading "Risk Factors" in our prospectus filed with the SEC on April 5, 2019 and other documents of Tradeweb on file with or furnished to the SEC, may cause our actual results, performance or achievements to differ materially from those expressed or implied by these forward-looking statements. In particular, the preliminary average variable fees per million dollars of volume traded information provided herein is being provided on an intra-guarter basis and is subject to the completion of the second guarter and management's final review and our other financial closing procedures and therefore is subject to change. Given these risks and uncertainties, you are cautioned not to place undue reliance on such forward-looking statements. The forward-looking statements contained in this release are not guarantees of future performance and our actual results of operations, financial condition and liquidity, and the development of the markets in which we operate, may differ materially from the forward-looking statements contained in this release. In addition, even if our results of operations, financial condition, and liquidity, and events in the markets in which we operate, are consistent with the forward-looking statements contained in this release, they may not be predictive of results or developments in future periods.

Any forward-looking statement that we make in this release speaks only as of the date of such statement. Except as required by law, we do not undertake any obligation to update or revise, or to publicly announce any update or revision to, any of the forward-looking statements, whether as a result of new information, future events or otherwise, after the date of this release.

ABOUT TRADEWEB MARKETS

Tradeweb Markets Inc. (Nasdaq: TW) is a leading, global operator of electronic marketplaces for rates, credit, equities and money markets. Founded in 1996, Tradeweb provides access to markets, data and analytics, electronic trading, straight-through-processing and reporting for more than 40 products to clients in the institutional, wholesale and retail markets. Advanced technologies developed by Tradeweb enhance price discovery, order execution and trade workflows while allowing for greater scale and helping to reduce risks in client trading operations. Tradeweb serves approximately 2,500 clients in more than 60 countries. In an average trading day, Tradeweb facilitates more than \$630 billion in notional value.

For more information, please go to www.tradeweb.com.

LEGAL & COMPLIANCE STATEMENT

This report represents certain trades in instruments that have been reported publicly. The report does not necessarily reflect all transactions that were effected on the system. There is the possibility of errors or delays in the trade submission process. The information provided has been obtained from sources deemed to be reliable, however Tradeweb does not guarantee the accuracy of the information contained in this report.

This information is intended for general informational purposes only, and should not be used 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.

Tradeweb LLC, Tradeweb Direct LLC, and Dealerweb Inc. are broker-dealers registered with the SEC and members of MSRB, FINRA. TW SEF LLC and DW SEF LLC are CFTC registered swap execution facilities. Tradeweb Europe Limited is authorized and regulated by the UK Financial Conduct Authority. Tradeweb maintains additional registrations and permissions in jurisdictions globally. Further information may be found at http://www.tradeweb.com/Disclosures/.