



2020 annual trends in futures and options trading

27 January 2021





Presenters

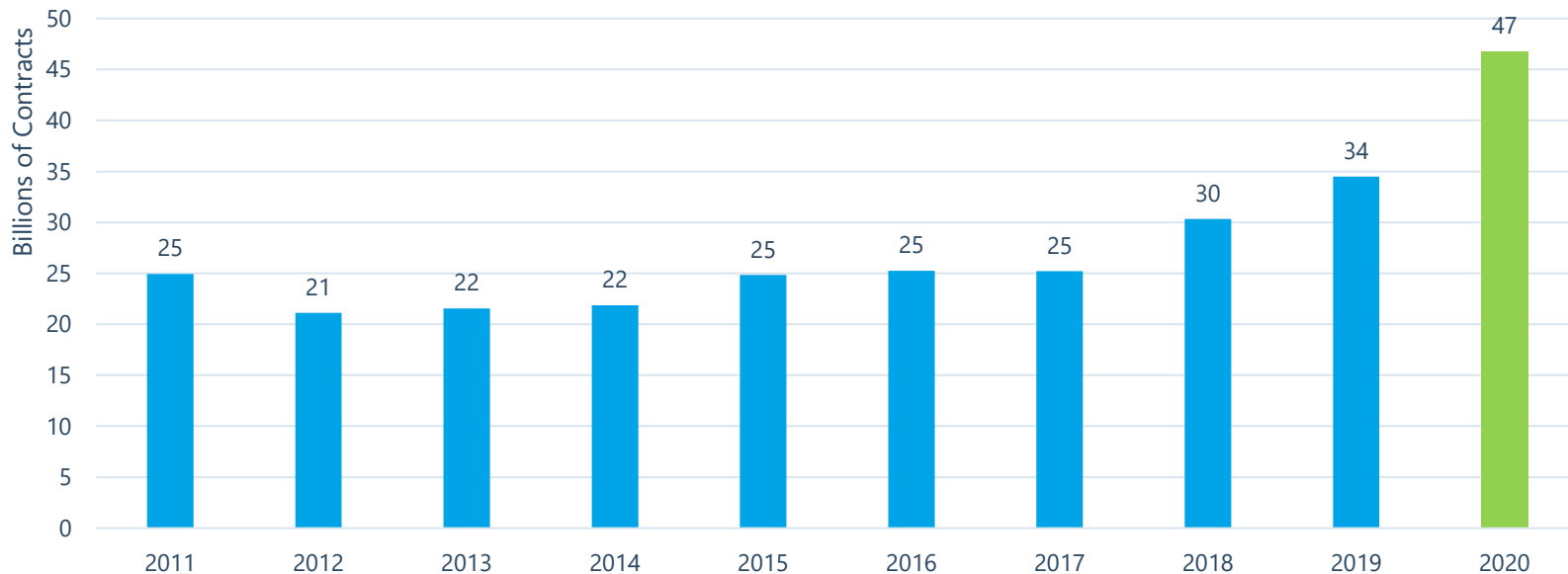
- Will Acworth, Senior Vice President – Publications, Data and Research, FIA
- Erin Perzov, Head of Futures Content, Morgan Stanley
- Simon Gittins, Fixed Income Listed Derivatives, Morgan Stanley

Agenda

- Global volume overview
 - Annual and quarterly volume over last 10 years
- Breaking down the global trends by region and category
 - Equity index and individual equity futures and options trading
 - Top 15 exchanges by volume
 - Commodity futures and options trading
 - China and Brazil
- Trends in institutional customer use of futures and options
 - Volume and open interest for main contracts in core markets
 - Focus on interest rate sector
 - Liquidity metrics – posted size, average trade size, correlation of returns
 - Current conditions – trends in trading activity going into 2021

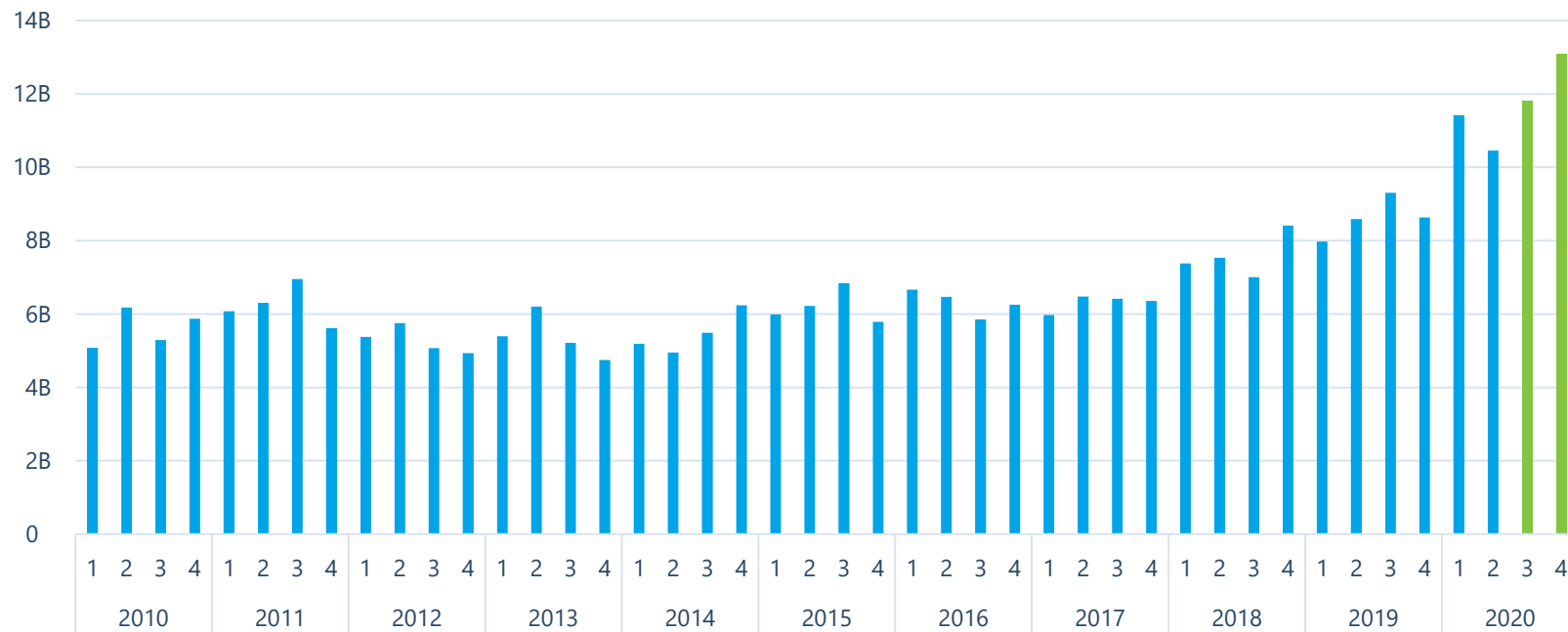
Record Volume for Third Year in a Row

Annual Futures and Options Volume



Volume Continued Rising in Second Half of 2020

Quarterly Futures and Options Volume



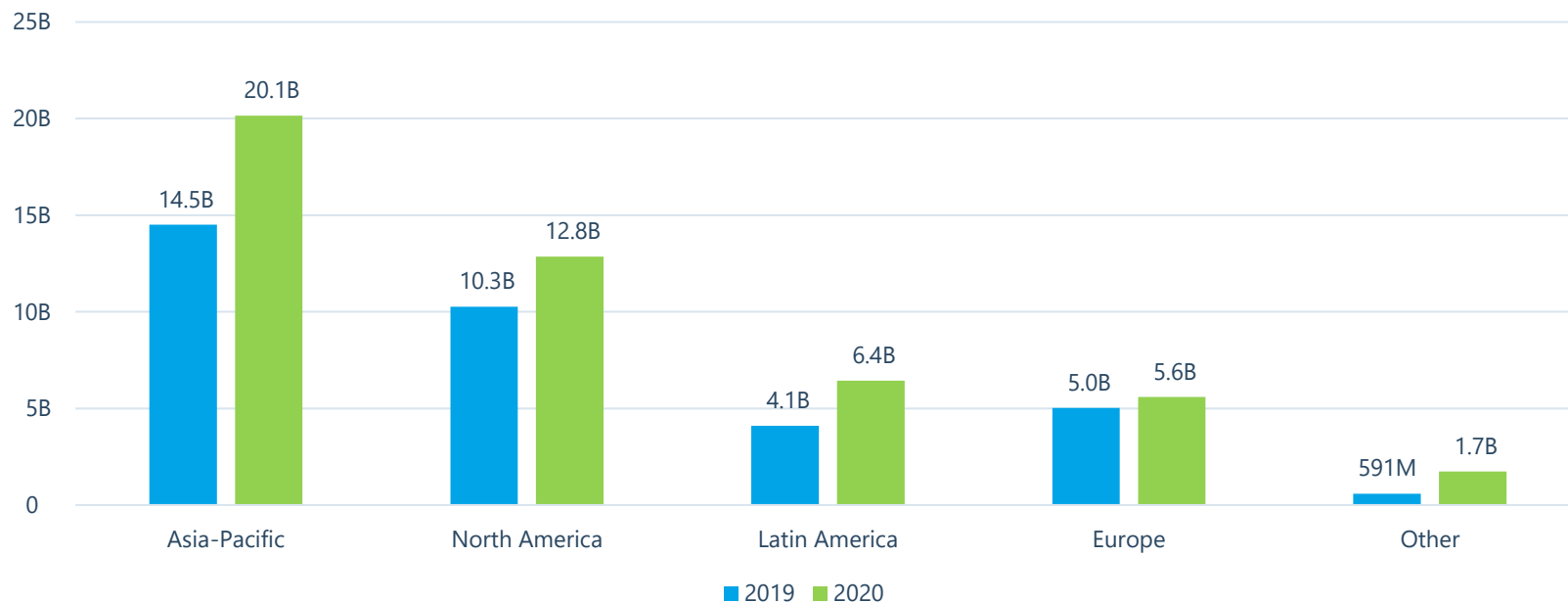
Global Volume by Type and Region

Type	Jan-Dec 2020 Vol	YoY Change	% Change	2020 Dec OI	YoY Change	% Change
Futures	25,545,752,860	6,288,109,571	32.7%	246,092,274	-2,056,130	-0.8%
Options	21,221,739,033	5,987,439,641	39.3%	741,167,934	89,014,447	13.6%
Total	46,767,491,893	12,275,549,212	35.6%	987,260,208	86,958,317	9.7%

Region	Jan-Dec 2020 Vol	YoY Change	% Change	2020 Dec OI	YoY Change	% Change
Asia-Pacific	20,147,147,117	5,643,976,050	38.9%	86,238,477	6,525,123	8.2%
North America	12,847,150,905	2,581,660,231	25.1%	515,930,701	62,829,788	13.9%
Latin America	6,432,591,785	2,333,686,275	56.9%	148,247,914	14,468,712	10.8%
Europe	5,601,015,233	567,407,062	11.3%	209,277,525	-10,693,719	-4.9%
Other	1,739,586,853	1,148,819,594	194.5%	27,565,591	13,828,413	100.7%
Total	46,767,491,893	12,275,549,212	35.6%	987,260,208	86,958,317	9.7%

APAC Grew the Most in 2020

Futures and Options Volume by Region - 2019 vs 2020

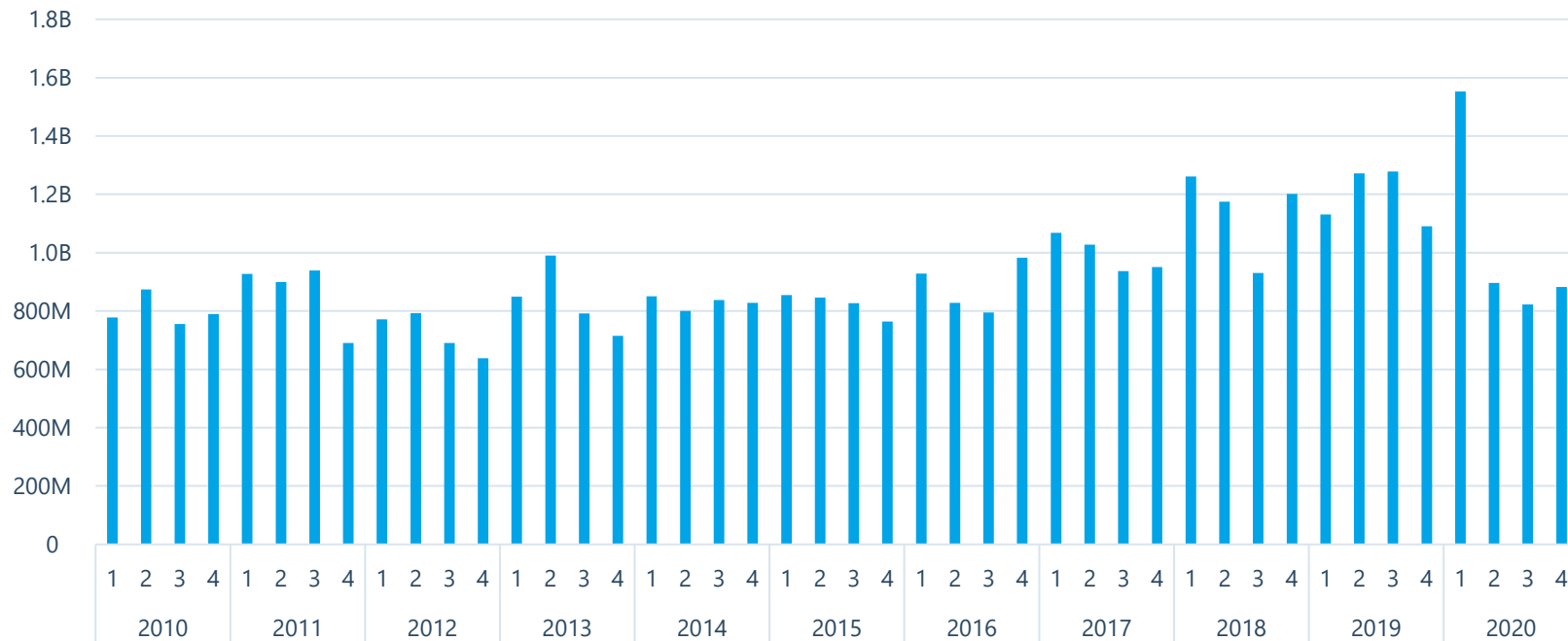


Global Volume by Category

Category	Jan-Dec 2020 Vol	YoY Change	% Change	2020 Dec OI	YoY Change	% Change
Equity Index	18,609,021,646	6,148,133,308	49.3%	223,615,160	12,646,902	6.0%
Individual Equity	9,897,318,982	3,798,106,253	62.3%	452,612,326	106,956,490	30.9%
Currency	4,523,688,389	585,091,682	14.9%	33,036,840	8,621,006	35.3%
Interest Rates	4,151,838,110	-620,147,711	-13.0%	176,564,030	-42,910,645	-19.6%
Energy	3,152,479,136	610,131,118	24.0%	57,069,053	-2,744,988	-4.6%
Agriculture	2,569,466,044	801,746,687	45.4%	22,934,186	542,669	2.4%
Other	1,447,264,077	558,095,407	62.8%	7,316,299	3,356,807	84.8%
Non-Precious Metals	1,433,275,953	-6,454,691	-0.4%	8,541,312	-173,299	-2.0%
Precious Metals	983,139,556	400,847,159	68.8%	5,571,002	663,375	13.5%
Total	46,767,491,893	12,275,549,212	35.6%	987,260,208	86,958,317	9.7%

Interest Rate Category Hits Four-Year Low

Quarterly Volume in Interest Rate Futures and Options

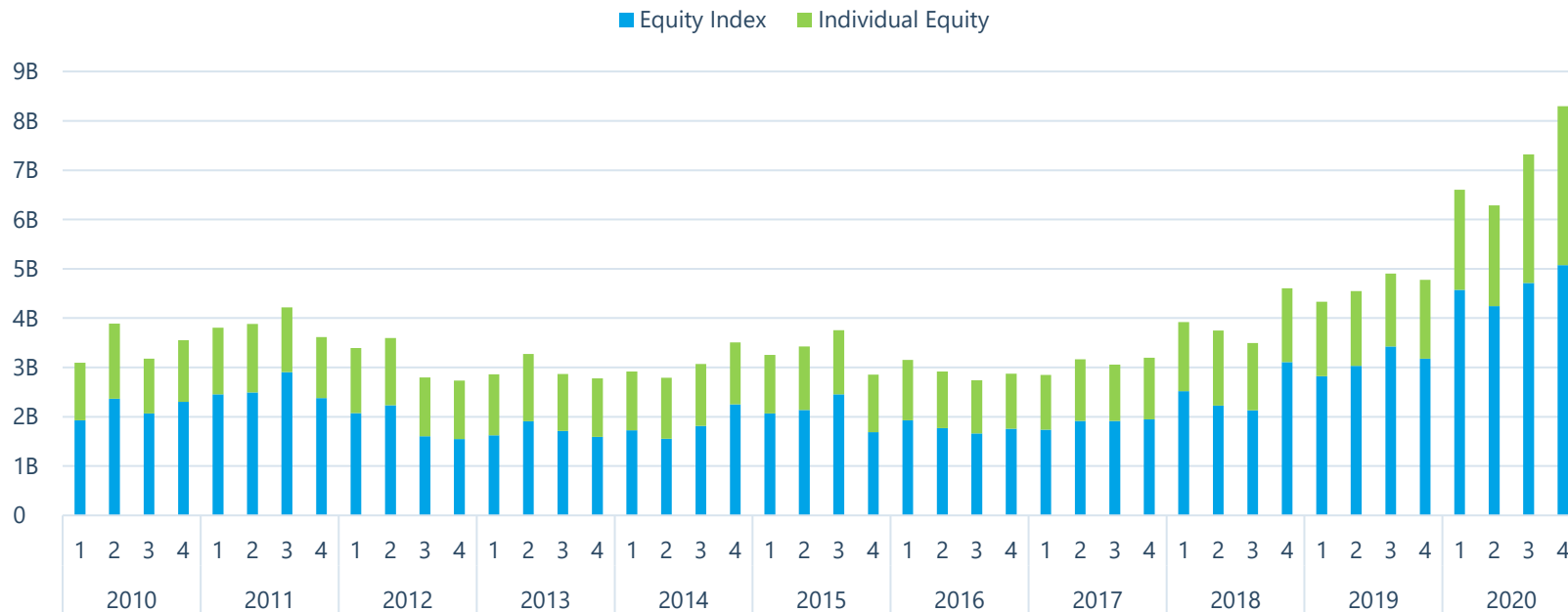


Top Interest Rate Contracts by Volume

Rank	Contract	Jan-Dec 2020 Vol	% Change	2020 Dec OI	% Change
1	One Day Inter-Bank Deposit Futures, B3	513,754,645	7.9%	27,347,609	-14.4%
2	Eurodollar Futures, CME	509,912,503	-25.8%	9,148,070	-16.4%
3	10 Year Treasury Note Futures, CBOT	405,990,223	-9.7%	3,229,739	-10.9%
4	5 Year Treasury Note Futures, CBOT	244,842,677	-16.8%	3,291,189	-23.1%
5	IDI Index Options, B3	234,756,100	9.5%	55,270,756	-9.7%
6	Eurodollar Options, CME	184,852,363	-33.7%	16,852,463	-53.5%
7	3 Month Euribor Futures, ICE Futures Europe	174,410,276	-5.9%	3,117,417	-18.4%
8	Euro-Bund Futures, Eurex	174,394,697	-5.6%	1,115,217	-17.8%
9	3 Month Sterling Futures, ICE Futures Europe	161,026,815	-9.2%	4,401,362	14.6%
10	2 Year Treasury Note Futures, CBOT	128,850,090	-29.4%	1,921,520	-46.3%
11	10 Year Treasury Note Options, CBOT	127,185,745	-25.7%	2,157,105	-30.8%
12	Euro-Bobl Futures, Eurex	106,586,687	-11.8%	959,919	-9.6%
13	30 Year Treasury Bond Futures, CBOT	95,684,575	9.0%	1,161,812	15.7%
14	Euro-Schatz Futures, Eurex	94,630,224	5.2%	1,226,490	-8.7%
15	Eurodollar Mid-Curve Options, CME	82,725,939	-43.3%	6,428,856	-22.0%
16	Iboxx High Yield Corporate Bond ETF Options *	66,195,456	35.6%	4,645,160	36.3%
17	Ultra 10 Year Treasury Note Futures, CBOT	64,579,927	11.5%	1,004,029	8.7%
18	10 Year Treasury Bond Futures, ASX 24	61,482,878	12.8%	1,400,986	12.7%
19	Long Gilt Futures, ICE Futures Europe	61,065,544	5.7%	467,516	-29.4%
20	Ultra Treasury Bond Futures, CBOT	52,401,970	9.2%	1,044,130	-16.3%

Explosive Growth in the Equity Category

Quarterly Volume in Equity Futures and Options



Top Equity Index Contracts

Rank	Contract	Jan-Dec 2020 Vol	% Change	2020 Dec OI	% Change
1	Bank Nifty Index Options, NSE India	4,295,092,542	43.5%	1,339,078	90.2%
2	Bovespa Mini Index Futures, B3	2,888,021,160	78.9%	412,330	5.4%
3	CNX Nifty Index Options, NSE India	2,372,865,911	104.4%	2,474,135	100.8%
4	SPDR S&P 500 ETF Options *	1,128,762,825	60.5%	18,633,955	-3.5%
5	Kospi 200 Options, Korea Exchange	610,510,383	-4.3%	2,096,064	-10.3%
6	E-mini S&P 500 Futures, CME	502,227,405	27.1%	2,535,696	-6.7%
7	Euro Stoxx 50 Futures, Eurex	352,195,151	20.5%	2,917,794	-14.0%
8	Nikkei 225 Mini Futures, Osaka Exchange	321,718,519	35.4%	365,751	-26.9%
9	S&P 500 (SPX) Options, CBOE	312,949,642	-1.9%	12,559,231	-22.8%
10	Euro Stoxx 50 Index Options, Eurex	295,157,618	9.1%	30,447,850	-1.8%
11	Powershares QQQ ETF Options *	250,763,463	48.5%	8,215,404	46.8%
12	Micro E-mini S&P 500 Futures, CME	226,808,530	426.5%	63,642	152.6%
13	Taifex Options, Taiwan Futures Exchange	201,733,160	18.7%	404,301	-32.9%
14	Micro E-mini Nasdaq 100 Futures, CME	178,531,164	462.3%	50,771	210.0%
15	RTS Index Futures, Moscow Exchange	156,014,870	78.8%	392,442	-8.1%
16	E-mini Nasdaq 100 Futures, CME	146,717,097	27.5%	220,853	1.7%
17	iShares Russell 2000 ETF Options *	146,523,452	61.0%	7,115,711	81.9%
18	VIX Options, CBOE	124,518,765	-1.7%	6,234,304	22.4%
19	Kospi 200 Weekly Options, Korea Exchange	120,039,385	800.5%	14,228	-81.8%
20	BIST 30 Index Futures, Borsa Istanbul	98,651,034	59.5%	497,827	5.5%



* ETF options traded on multiple US options exchanges

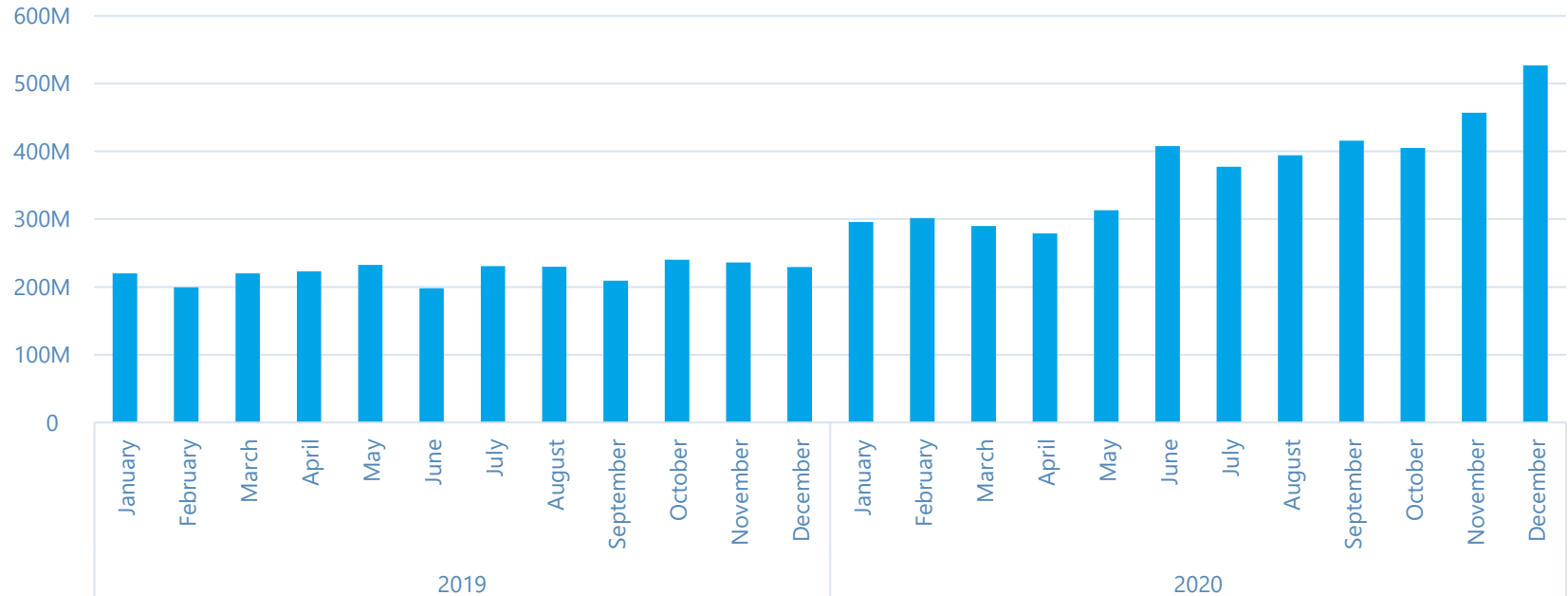
CME micro contracts began trading in May 2019. Kospi 200 weekly options began trading in October 2019

Single Stock Futures and Options – By Exchange

Rank	Exchange	2020 Volume	2019 Volume	YoY Change	% Change
1	B3	1,374,772,830	952,119,214	422,653,616	44.4%
2	Borsa Istanbul	1,201,397,163	201,656,434	999,740,729	495.8%
3	Korea Exchange	1,131,371,823	641,496,202	489,875,621	76.4%
4	Chicago Board Options Exchange	583,528,640	417,964,483	165,564,157	39.6%
5	Nasdaq PHLX	581,351,016	433,564,945	147,786,071	34.1%
6	National Stock Exchange of India	528,571,532	455,772,510	72,799,022	16.0%
7	Nasdaq Options Market	479,437,379	277,177,134	202,260,245	73.0%
8	NYSE Arca	477,103,066	265,429,742	211,673,324	79.7%
9	BATS Exchange	420,102,573	253,470,997	166,631,576	65.7%
10	ISE Gemini	308,166,967	118,718,039	189,448,928	159.6%
11	NYSE Amex	305,248,087	177,127,329	128,120,758	72.3%
12	International Securities Exchange	287,205,377	188,528,560	98,676,817	52.3%
13	Eurex	273,309,498	424,800,187	-151,490,689	-35.7%
14	Moscow Exchange	199,635,503	208,327,654	-8,692,151	-4.2%
15	EDGX Options Exchange	195,603,183	81,308,066	114,295,117	140.6%
16	MIAX Options	188,417,058	110,160,435	78,256,623	71.0%
17	BSE	161,343,804	22,996	161,320,808	701516.8%
18	MIAX Pearl	160,246,036	136,856,121	23,389,915	17.1%
19	MIAX Emerald	159,206,052	13,218,214	145,987,838	1104.4%
20	Boston Options Exchange	157,477,284	84,224,508	73,252,776	87.0%

The Robin Hood Effect

Monthly Trading of Single Stock Options on US Exchanges



Top Five Exchanges by Volume

Rank	Exchange	Jan-Dec 2020 Vol	YoY Change	% Change	2020 Dec OI	YoY Change	% Change
1	National Stock Exchange of India	8,850,473,823	2,873,254,046	48.1%	13,940,567	4,409,626	46.3%
2	B3	6,307,562,139	2,426,937,856	62.5%	143,732,530	11,439,240	8.6%
3	CME Group	4,820,589,858	-9,455,511	-0.2%	81,940,409	-31,398,383	-27.7%
	Chicago Mercantile Exchange	2,386,096,294	188,906,463	8.6%	42,963,522	-24,527,063	-36.3%
	Chicago Board of Trade	1,651,840,795	-214,280,864	-11.5%	23,611,441	-4,979,772	-17.4%
	New York Mercantile Exchange	610,984,409	5,484,319	0.9%	13,225,581	-1,171,247	-8.1%
	Commodity Exchange (COMEX)	171,668,360	10,434,571	6.5%	2,139,865	-720,301	-25.2%
4	Intercontinental Exchange	2,788,944,012	532,181,481	23.6%	73,688,383	35,258	0.0%
	ICE Futures Europe	1,124,764,380	-1,750,717	-0.2%	43,511,042	-2,541,398	-5.5%
	NYSE Arca ¹	711,701,208	286,749,466	67.5%	n/a	n/a	n/a
	NYSE Amex ¹	578,952,684	204,613,236	54.7%	n/a	n/a	n/a
	ICE Futures U.S.	371,506,254	41,917,681	12.7%	30,177,315	2,576,800	9.3%
	ICE Futures Singapore	2,019,486	651,815	47.7%	26	-144	-84.7%
5	Nasdaq	2,660,595,514	875,254,310	49.0%	5,027,300	-3,953,484	-44.0%
	Nasdaq PHLX ¹	888,987,070	186,010,024	26.5%	n/a	n/a	n/a
	Nasdaq Options Market ¹	688,942,003	298,934,631	76.6%	n/a	n/a	n/a
	International Securities Exchange ¹	545,827,621	147,495,911	37.0%	n/a	n/a	n/a
	International Securities Exchange Gemini ¹	392,674,146	208,037,195	112.7%	n/a	n/a	n/a
	Nasdaq Exchanges Nordic Markets	76,534,988	-2,717,652	-3.4%	4,811,386	-460,630	-8.7%
	International Securities Exchange Mercury ¹	52,111,029	41,402,051	386.6%	n/a	n/a	n/a
	Nasdaq Boston ¹	14,846,436	3,782,790	34.2%	n/a	n/a	n/a
	Nasdaq Commodities	672,221	129,663	23.9%	215,914	20,362	10.4%
	Nasdaq NFX ²	-	-7,820,303	-100.0%	-	-3,513,216	-100.0%



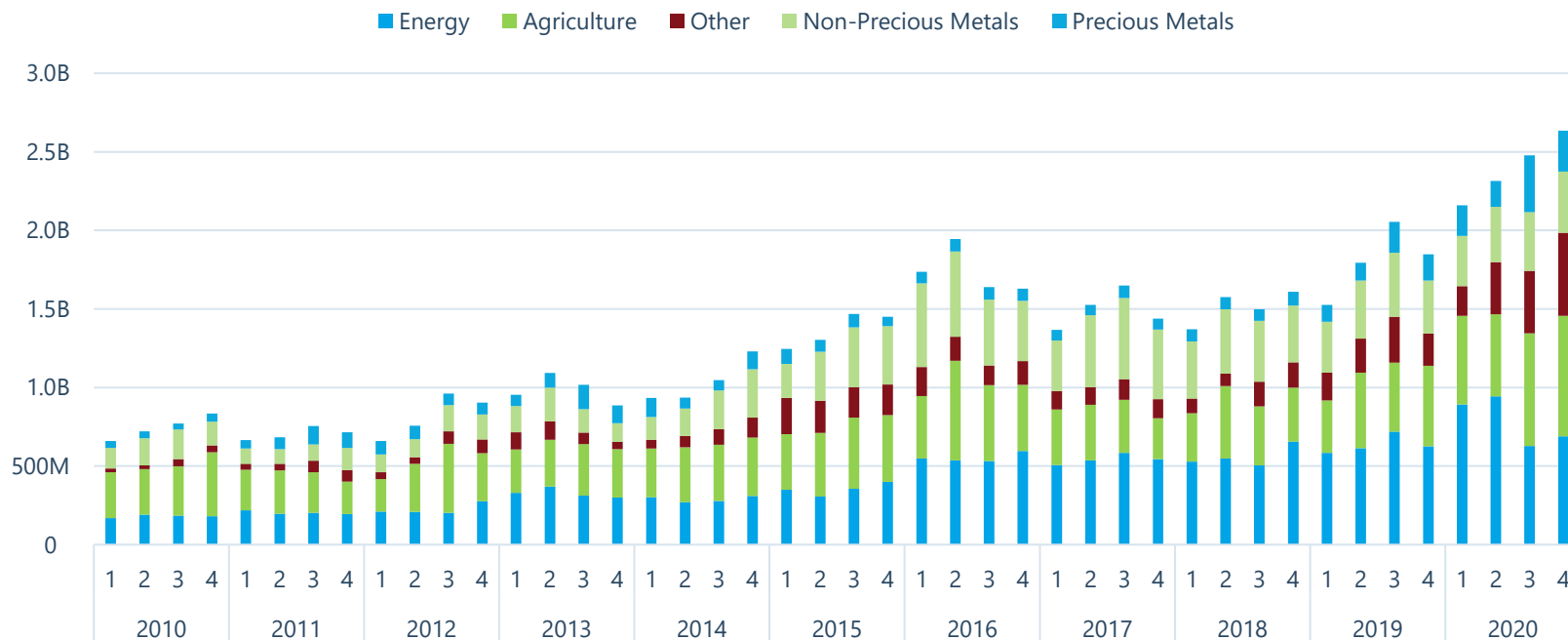
1 Open Interest for these exchanges attributed to OCC. 2 Nasdaq NFX stopped trading in December 2019

Next 10 Exchanges by Volume

Rank	Exchange	Jan-Dec 2020 Vol	YoY Change	% Change	2020 Dec OI	YoY Change	% Change
6	CBOE Holdings	2,614,108,017	702,024,009	36.7%	299,570	-105,457	-26.0%
	Chicago Board Options Exchange ¹	1,349,799,569	202,764,922	17.7%	n/a	n/a	n/a
	BATS Exchange ¹	687,320,373	290,523,978	73.2%	n/a	n/a	n/a
	EDGX Options Exchange ¹	296,397,463	162,553,271	121.4%	n/a	n/a	n/a
	C2 Exchange ¹	229,842,408	58,144,282	33.9%	n/a	n/a	n/a
	CBOE Futures Exchange	50,748,204	-11,962,444	-19.1%	299,570	-105,457	-26.0%
7	Dalian Commodity Exchange	2,207,327,866	851,743,641	62.8%	8,868,897	-818,054	-8.4%
8	Korea Exchange	2,184,930,969	638,213,775	41.3%	11,111,316	1,014,356	10.0%
9	Shanghai Futures Exchange	2,128,613,700	681,016,646	47.0%	6,667,344	847,166	14.6%
	Shanghai Futures Exchange	2,072,281,720	660,272,121	46.8%	6,377,267	628,994	10.9%
	Shanghai International Energy Exchange	56,331,980	20,744,525	58.3%	290,077	218,172	303.4%
10	Moscow Exchange	2,119,939,033	664,895,101	45.7%	7,897,304	-2,637,290	-25.0%
11	Eurex	1,861,416,584	-85,727,612	-4.4%	122,135,249	-4,490,555	-3.5%
12	Zhengzhou Commodity Exchange	1,701,847,321	609,143,741	55.7%	8,486,582	4,057,271	91.6%
13	Borsa Istanbul	1,517,476,458	1,129,480,424	291.1%	14,279,961	8,661,150	154.1%
14	BSE	924,427,025	-101,998,786	-9.9%	1,804,833	786,545	77.2%
	BSE	848,173,713	-141,043,084	-14.3%	1,803,812	789,531	77.8%
	India International Exchange	76,253,312	39,044,298	104.9%	1,021	-2,986	-74.5%
15	Miami International Holdings ¹	827,454,642	387,405,511	88.0%	n/a	n/a	n/a
	MIAX Options ¹	330,303,726	152,783,603	86.1%	n/a	n/a	n/a
	MIAX Pearl ¹	293,410,388	59,615,478	25.5%	n/a	n/a	n/a
	MIAX Emerald ¹³	203,740,528	175,006,430	609.1%	n/a	n/a	n/a

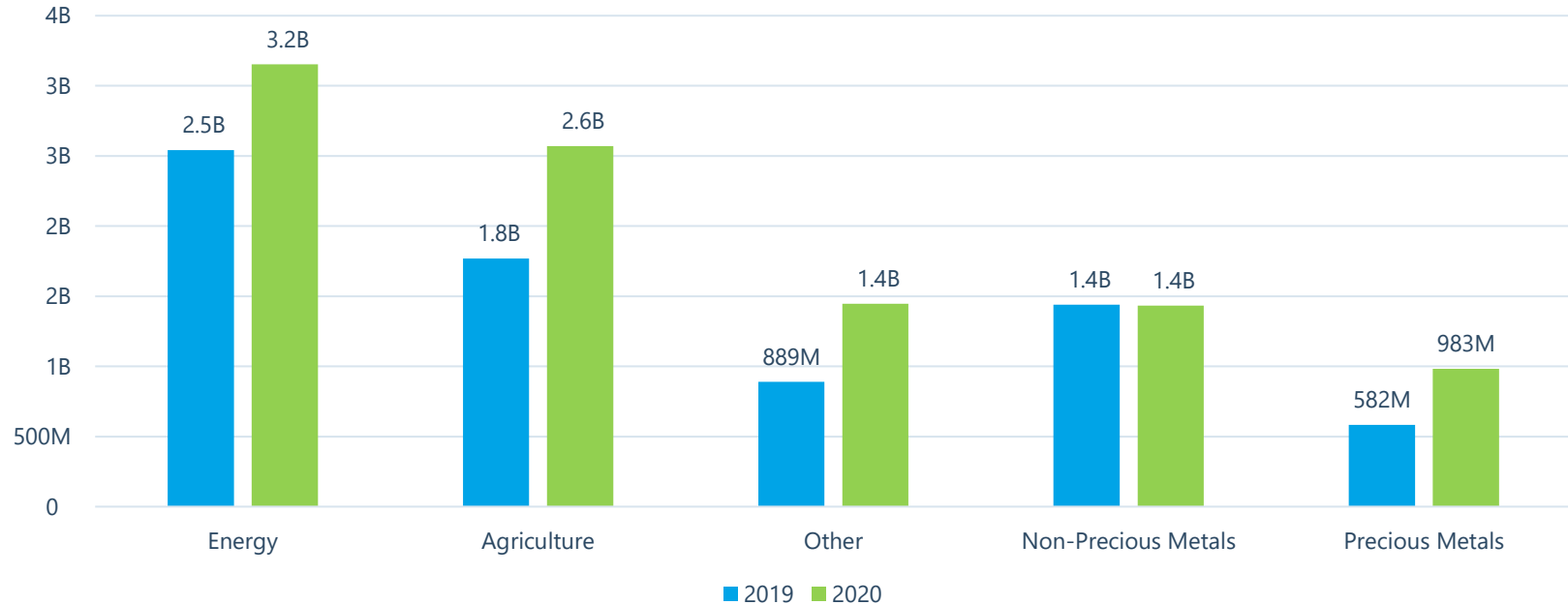
Commodity Category Continues to Set Records

Quarterly Volume in Commodity Futures and Options



Ag Sector Had Highest Rate of Growth

Commodity Futures and Options Volume - 2019 vs 2020



Top 20 Agricultural Contracts by Volume

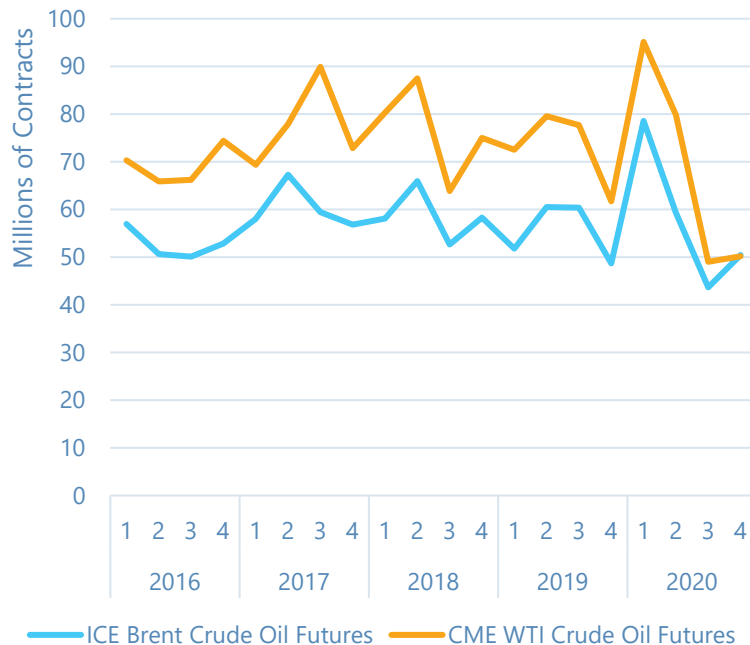
Rank	Contract	Jan-Dec 2020 Vol	% Change	2020 Dec OI	% Change
1	Soybean Meal Futures, Dalian Commodity Exchange	359,464,679	31.7%	2,304,861	-21.2%
2	RBD Palm Olein Futures, Dalian Commodity Exchange	315,167,096	132.6%	416,392	-53.1%
3	Corn Futures, Dalian Commodity Exchange	177,715,573	79.3%	1,556,234	31.7%
4	Soybean Oil Futures, Dalian Commodity Exchange	173,116,523	97.7%	587,469	-26.8%
5	Rapeseed Meal (RM) Futures, Zhengzhou Commodity Exchange	159,893,801	15.8%	478,995	45.2%
6	Egg Futures, Dalian Commodity Exchange	132,053,500	255.7%	333,364	-15.5%
7	White Sugar (SR) Futures, Zhengzhou Commodity Exchange	124,551,207	10.7%	559,029	42.7%
8	Cotton No. 1 (CF) Futures, Zhengzhou Commodity Exchange	108,338,363	69.4%	635,692	-9.4%
9	Rapeseed Oil (OI) Futures, Zhengzhou Commodity Exchange	105,447,334	179.1%	161,387	25.1%
10	Rubber Futures, Shanghai Futures Exchange	100,942,773	87.5%	280,142	7.1%
11	Corn Futures, Chicago Board of Trade	89,753,068	-13.0%	1,750,518	18.8%
12	Apple (AP) Futures, Zhengzhou Commodity Exchange	63,009,295	68.2%	329,205	231.3%
13	Soybean Futures, Chicago Board of Trade	61,122,980	14.6%	889,698	24.7%
14	No. 1 Soybean Futures, Dalian Commodity Exchange	59,445,167	222.2%	107,489	9.5%
15	Sugar #11 Futures, ICE Futures US	39,949,270	6.0%	1,066,198	7.7%
16	Woodpulp Futures, Shanghai Futures Exchange	34,362,850	-5.5%	288,927	113.6%
17	Chicago Soft Red Winter Wheat Futures, Chicago Board of Trade	33,365,343	9.7%	402,613	-2.1%
18	Soybean Oil Futures, Chicago Board of Trade	32,961,867	4.0%	469,214	-6.3%
19	Soybean Meal Options, Dalian Commodity Exchange	30,120,942	69.1%	385,373	-11.5%
20	Soybean Meal Futures, Chicago Board of Trade	29,914,836	1.7%	415,506	-3.2%

Top 20 Energy Contracts by Volume

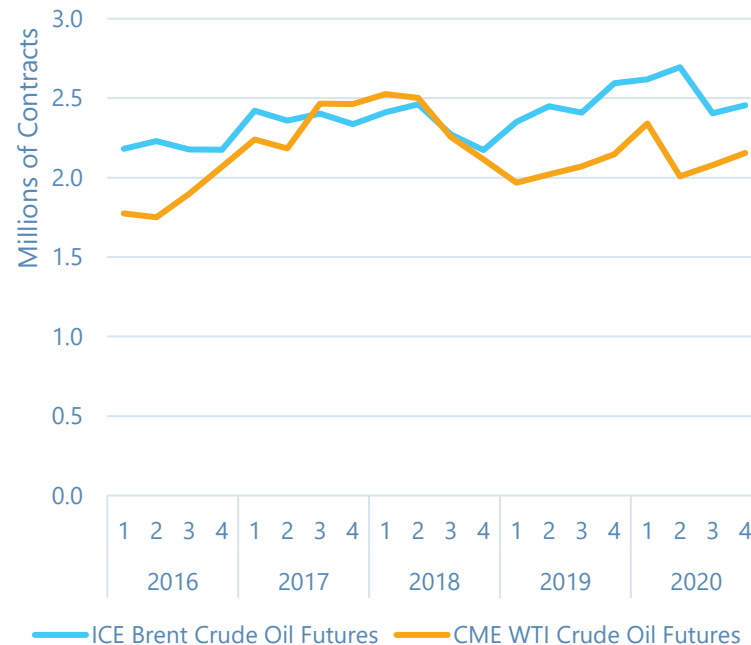
Rank	Contract	Jan-Dec 2020 Vol	% Change	2020 Dec OI	% Change
1	Brent Oil Futures, Moscow Exchange	742,813,393	20.5%	1,060,910	-60.5%
2	Fuel Oil Futures, Shanghai Futures Exchange	477,193,406	170.0%	441,258	-4.5%
3	WTI Light Sweet Crude Oil (CL) Futures, Nymex	274,180,352	-5.9%	2,154,706	0.3%
4	Brent Crude Oil Futures, ICE Futures Europe	231,879,831	4.8%	2,455,791	-5.4%
5	Bitumen Futures, Shanghai Futures Exchange	204,756,838	99.0%	661,666	144.8%
6	Henry Hub Natural Gas (NG) Futures, Nymex	120,799,509	16.8%	1,169,656	-9.4%
7	Gas Oil Futures, ICE Futures Europe	84,524,207	5.6%	915,323	0.7%
8	Thermal Coal (ZC) Futures, Zhengzhou Commodity Exchange	61,174,572	122.5%	229,471	0.2%
9	Coke Futures, Dalian Commodity Exchange	57,464,017	3.2%	211,138	15.2%
10	WTI Light Sweet Crude Oil Futures, ICE Futures Europe	50,122,648	-6.5%	471,721	-18.9%
11	Liquefied Petroleum Gas Futures, Dalian Commodity Exchange ¹	48,251,668	n/a	65,228	n/a
12	Crude Oil Futures, Multi Commodity Exchange of India	47,905,028	-22.3%	1,122	-95.6%
13	RBOB Gasoline Physical (RB) Futures, Nymex	46,492,488	-6.7%	414,673	8.5%
14	Natural Gas Futures, Multi Commodity Exchange of India	46,106,898	176.8%	8,570	-79.3%
15	NY Harbor ULSD (HO) Futures, Nymex	44,003,184	1.4%	362,667	-17.3%
16	Medium Sour Crude Oil Futures, Shanghai International Energy Exchange	41,585,786	20.0%	84,680	187.9%
17	Heating Oil Futures, ICE Futures Europe	36,021,671	237.6%	31,003	39.5%
18	Crude Oil (LO) Options, Nymex	29,567,191	-5.4%	1,420,100	-17.7%
19	Natural Gas (European) (LN) Options, Nymex	28,452,319	47.9%	2,391,759	33.4%
20	Dutch TTF Gas Futures, ICE Futures Europe	27,315,177	51.7%	1,737,598	46.8%

Crude Oil Futures: Tough Year for the Benchmarks

Volume drops to multi-year low ...

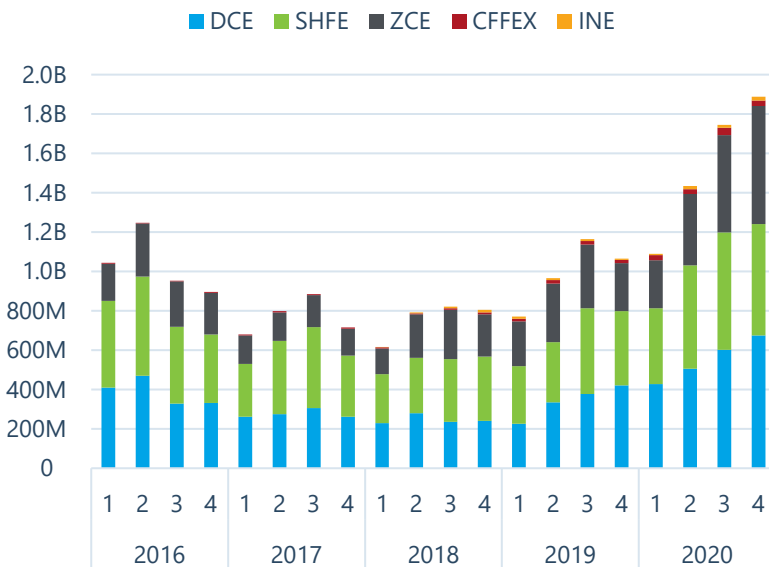


... but open interest remains elevated

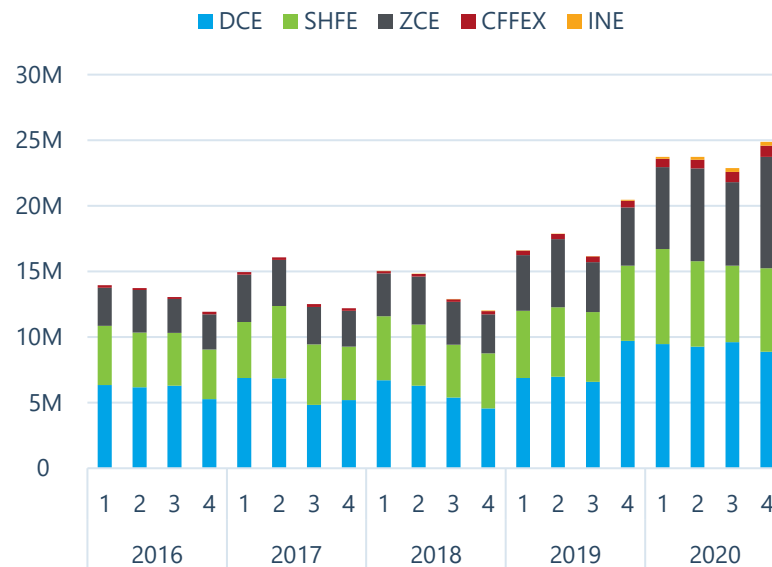


Focus on China

Quarterly Volume on Chinese Exchanges

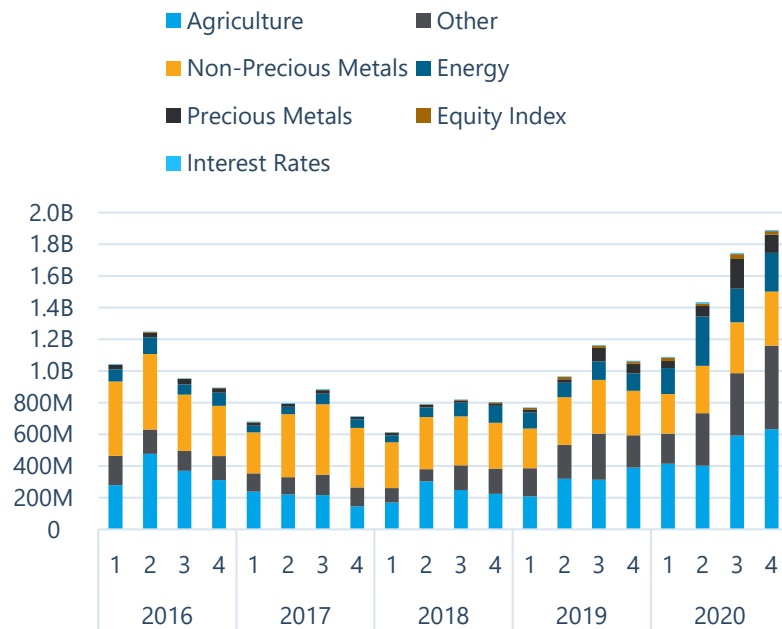


End of Quarter OI on Chinese Exchanges

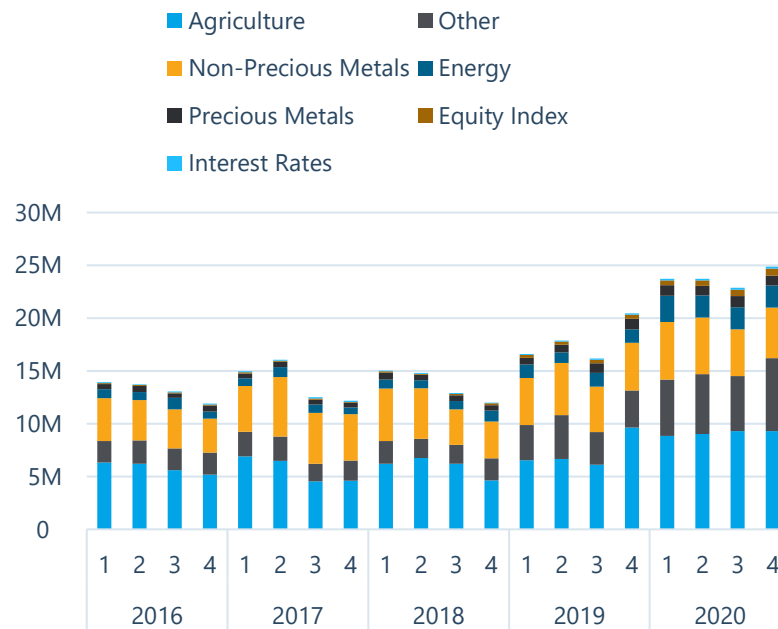


Agricultural and Industrial Commodities Dominate

Quarterly Volume on China Exchanges



End of Quarter OI on China Exchanges



What's in the "Other" Category?

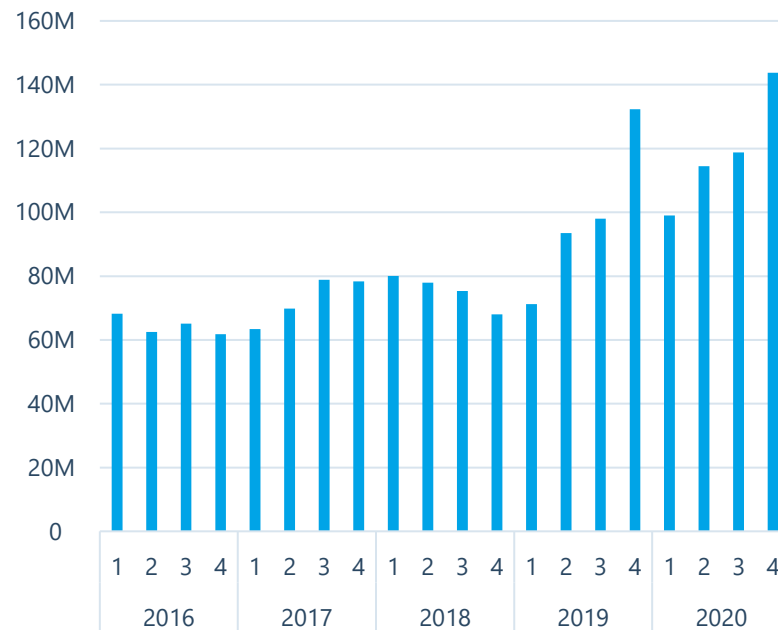
Rank	Contract	Jan-Dec 2020 Vol	Vol % Change	2020 Dec OI	OI % Change
1	Methanol (MA) Futures, Zhengzhou Commodity Exchange	344,876,192	30.1%	1,043,366	18.9%
2	PTA Futures, Zhengzhou Commodity Exchange	322,078,663	3.1%	3,105,291	237.9%
3	Flat Glass Futures, Zhengzhou Commodity Exchange	185,258,846	499.2%	479,325	151.1%
4	Polypropylene Futures, Dalian Commodity Exchange	173,374,543	85.0%	300,284	-14.0%
5	Linear Low Density Polyethylene Futures, Dalian Commodity Exchange	95,802,284	51.0%	264,848	-36.6%
6	Ethylene Glycol Futures, Dalian Commodity Exchange	83,320,391	12.4%	272,023	29.3%
7	Soda Ash (SA) Futures, Zhengzhou Commodity Exchange	68,406,084	4271.5%	203,710	376.2%
8	Polyvinyl Chloride (PVC) Futures, Dalian Commodity Exchange	58,472,901	73.0%	410,043	56.2%
9	Ethenylbenzene Futures, Dalian Commodity Exchange	52,440,684	1224.7%	101,602	17.8%
10	Urea (UR) Futures, Zhengzhou Commodity Exchange	16,646,171	254.7%	55,721	-3.7%
11	Polyester Staple Fiber (PF) Futures, Zhengzhou Commodity Exchange	16,413,948	n/a	114,127	n/a
12	PTA Options, Zhengzhou Commodity Exchange	11,788,268	5984.9%	320,099	636.3%
13	Methanol (MA) Options, Zhengzhou Commodity Exchange	10,163,945	5828.4%	130,753	288.7%
14	Polypropylene Options, Dalian Commodity Exchange	1,598,980	n/a	32,257	n/a
15	Polyvinyl Chloride (PVC) Options, Dalian Commodity Exchange	1,338,451	n/a	49,780	n/a
16	Fibre Board Futures, Dalian Commodity Exchange	1,033,613	-11.8%	848	-93.4%
17	Forward Freight Agreement Futures, Singapore Exchange	958,698	19.6%	127,768	21.2%
18	Linear Low Density Polyethylene Options, Dalian Commodity Exchange	924,492	n/a	27,764	n/a
19	DJ US Real Estate Futures, Chicago Board of Trade	871,932	37.3%	29,253	-24.4%
20	S&P GSCI Excess Return Futures, Chicago Mercantile Exchange	378,879	-0.1%	46,315	41.9%

Brazil: Long Term Growth Trend

Quarterly Volume



End of Quarter Open Interest





Three Observations

- Role of technological innovation in retail participation
 - Access, automation and social media
- Importance of cross-border trading to listed derivatives markets
 - Barriers falling in Brazil and China, new challenges rising in Europe and the US
- Decline in rates trading due to cyclical trends rather than structural weaknesses
 - Increase in debt issuance and potential for inflation sets the stage for next cycle

Exchange Volume & Open Interest Trends

Erin Perzov, Head of Futures Content

Simon Gittins, Fixed Income Listed Derivatives

January 27, 2021

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Volume & Open Interest Growth (Year-over-Year)

- Basket of > 100 most actively traded futures & options on futures
 - 16 different futures exchanges
 - Each contract in basket traded > 10 million contracts in 2020

Exchange	Futures Contracts
ASX 24	SPI 200, 3 Year & 10 Year Treasury Bonds, 90 Day Bank Bill
CBOE Futures Exchange	VIX
Chicago Board of Trade	US Treasury (and Options), Fed Funds, Corn (and Options), Soybean (and Options), Wheat, Soybean Oil, Soybean Meal, KC Wheat
Chicago Mercantile Exchange	E-mini S&P 500 (and Options), E-mini Nasdaq 100, E-mini \$5 DJIA, E-mini Russell 2000, Nikkei 225 (Yen), Eurodollar (and Options, Mid-Curves), Live Cattle, Lean Hog, Euro FX, Japanese Yen, British Pound, Australian Dollar, Canadian Dollar, Mexican Peso
COMEX	Gold (and Options), Silver, Copper
Eurex	Euro Stoxx 50, Euro Stoxx Banks, DAX, Stoxx Europe 600, SMI, German Bond (and Options), Euro-OAT, Euro-BTP, Short Term Euro-BTP
Euronext Derivatives Market	CAC 40, Milling Wheat
Hong Kong Exchanges and Clearing	Hang Seng, H-Shares
ICE Futures Europe	FTSE 100, Euribor (and Options), Short Sterling (and Options), Gilt, Brent (and Options), Gas Oil, WTI, Heating Oil, Dutch TTF Gas, RBOB
ICE Futures U.S.	Mini MSCI Emerging Markets, Mini MSCI EAFE, Sugar #11, Coffee, Cocoa
London Metal Exchange	Aluminum, Copper, Zinc, Nickel, Lead
Montreal Exchange	CGB, Bankers Acceptance
New York Mercantile Exchange	WTI (and Options), Natural Gas (NG) (and LN Options), RBOB, ULSD, Brent
Osaka Exchange	Topix, Nikkei 225
Singapore Exchange	FTSE China A50, CNX Nifty, Nikkei 225, MSCI Singapore
Taiwan Futures Exchange	Taiex

Source: Underlying Volume Data from FIA

Volume & Open Interest Growth (Year-over-Year) (cont.)

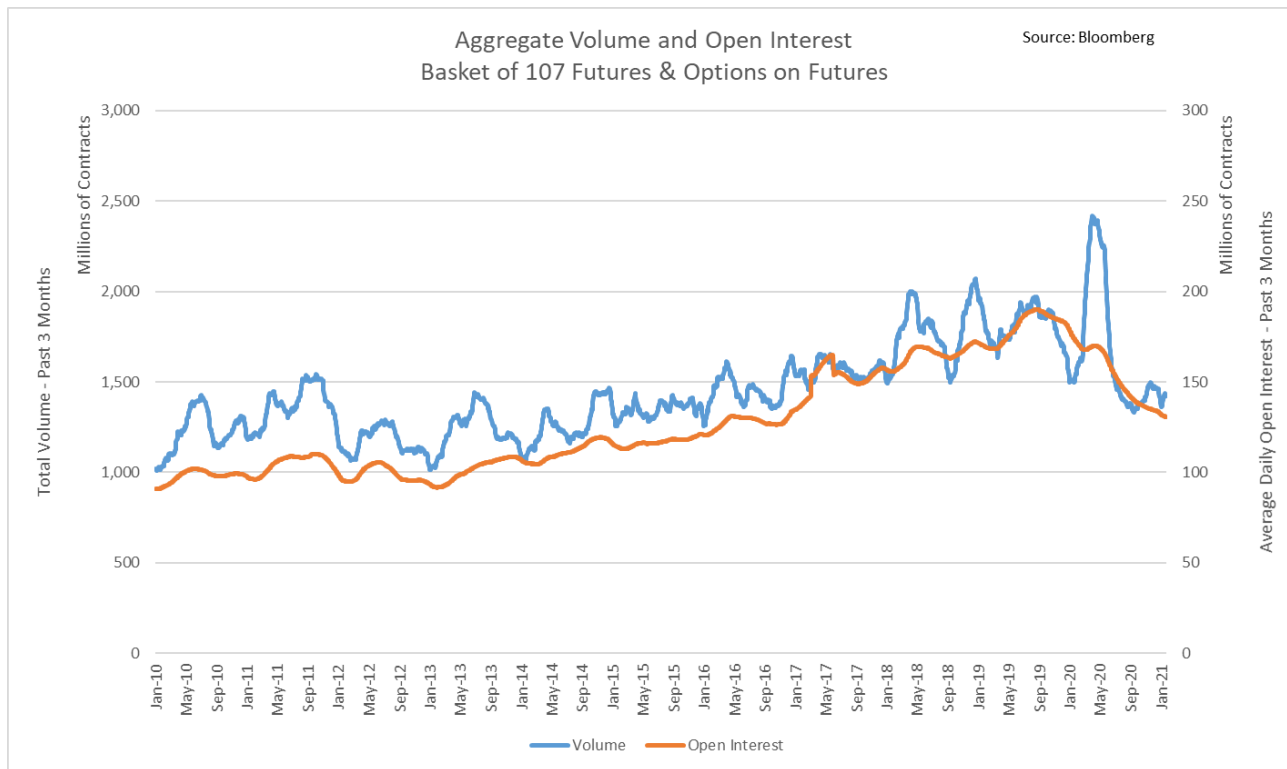
- Basket of > 100 most actively traded futures & options on futures
 - Total volume down 5% in 2020
 - Open interest down 22% at end of 2020 vs. end of 2019

	2020 Volume	2019 Volume	YoY Volume Growth	2020 Year End Open Interest	2019 Year End Open Interest	YoY Open Interest Growth
	Millions of Contracts		%	Millions of Contracts		%
TOTAL	6,981	7,352	(5%)	122	157	(22%)
Futures vs. Options						
Futures	6,205	6,334	(2%)	75	84	(11%)
Options on Futures	776	1,017	(24%)	48	74	(35%)
By Asset Class						
Interest Rates	3,182	3,833	(17%)	77	110	(30%)
Equity Indices	1,885	1,629	16%	15	18	(15%)
Commodities	1,742	1,714	2%	28	28	2%
Currencies	173	176	(2%)	1	2	(7%)
By Region						
North America	4,454	4,878	(9%)	78	109	(28%)
Europe	2,041	1,985	3%	38	42	(9%)
Asia	486	488	(0%)	6	7	(12%)

Source: FIA

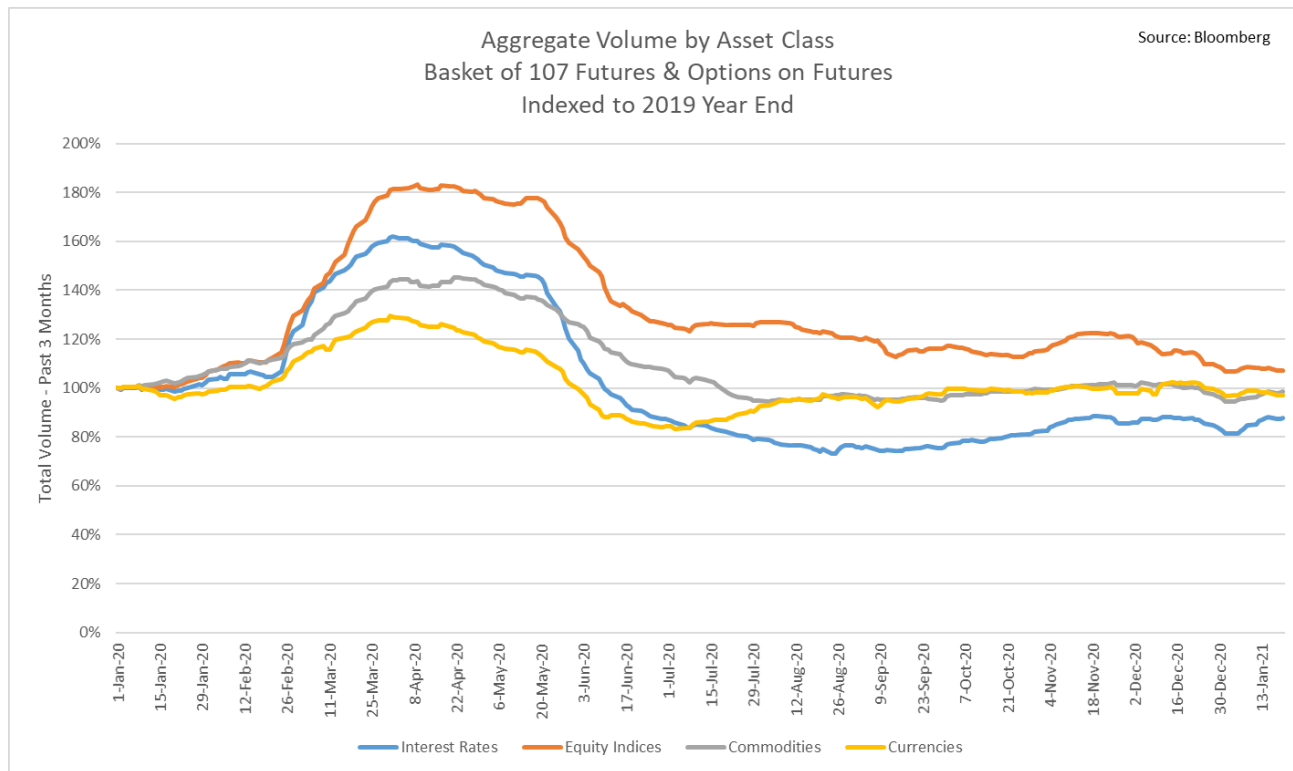
Volume & Open Interest Growth

- Dramatic volume increase in 1Q 2020, then sharp decline through 3Q 2020 (to near 5-year lows)



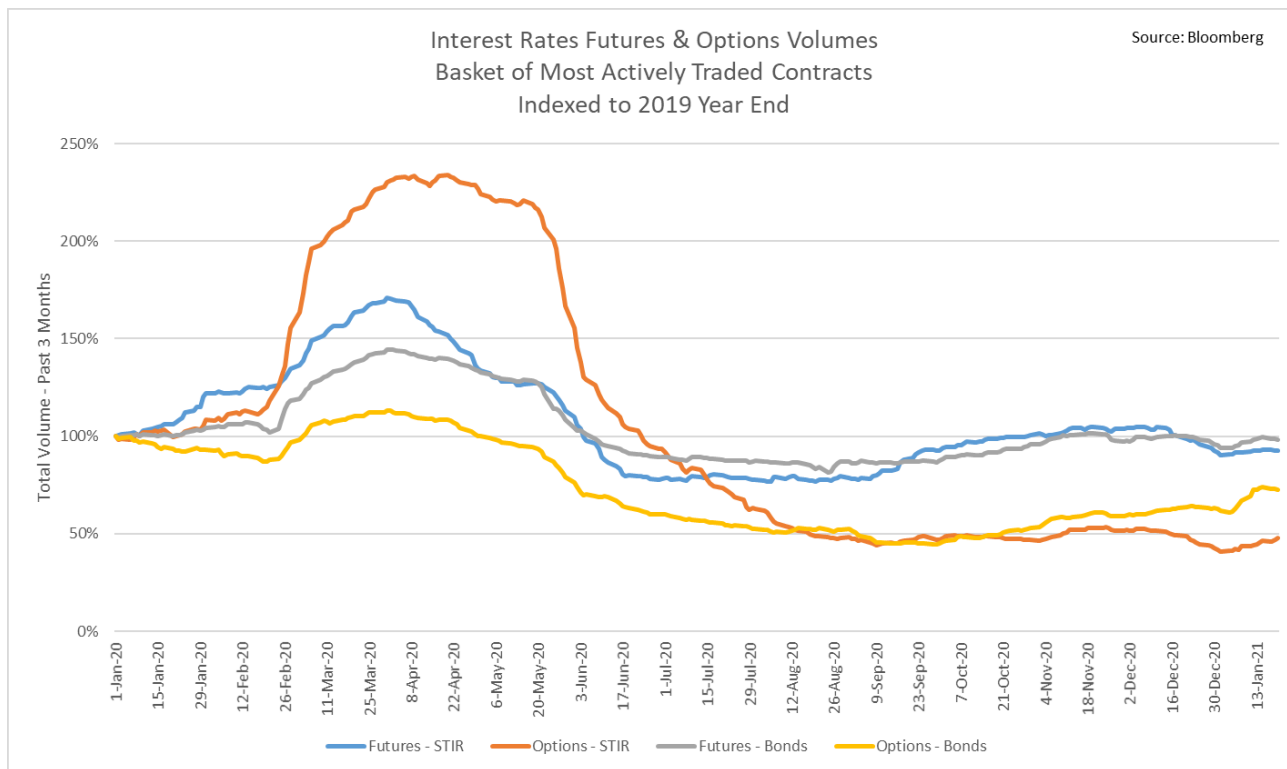
Volume Growth by Asset Class

- Decline in volume driven by Interest Rates Futures & Options



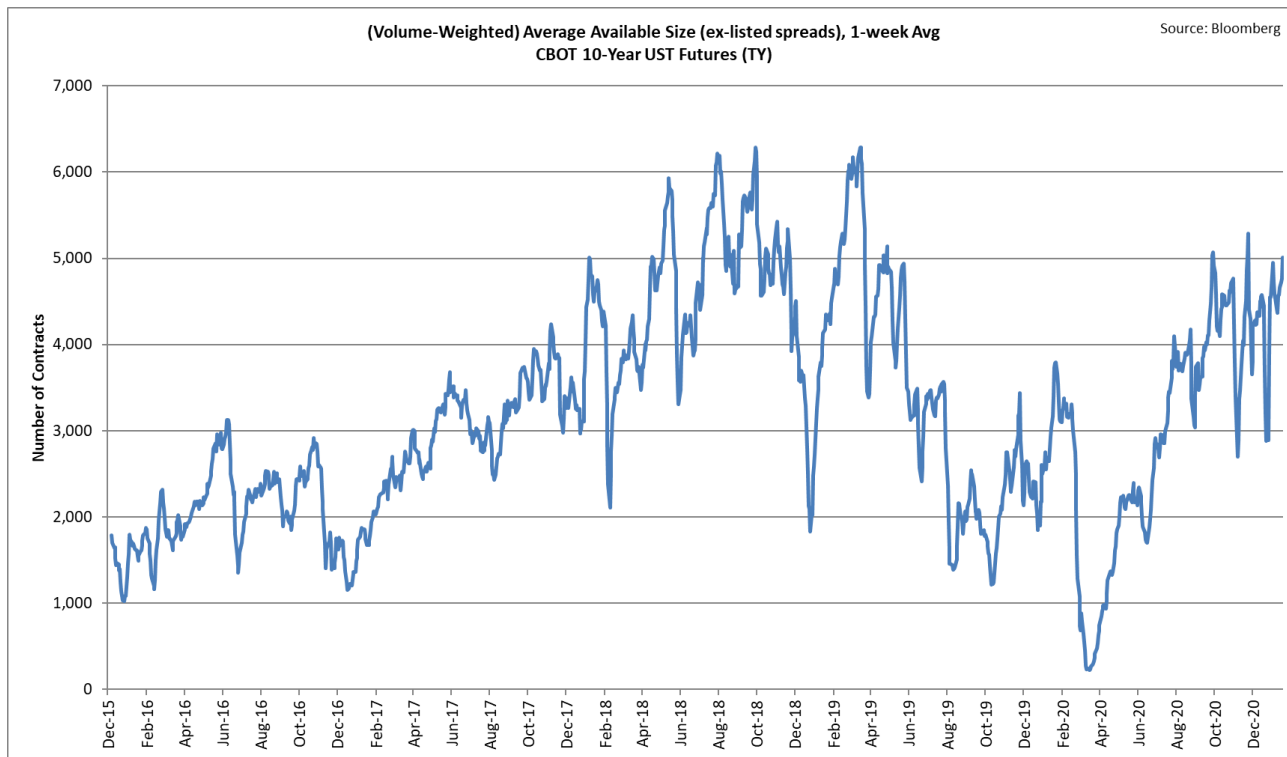
Volume Growth – Interest Rates Decomposed

- Options on Short-Term Interest Rates Futures biggest driver of rise and subsequent fall in volumes



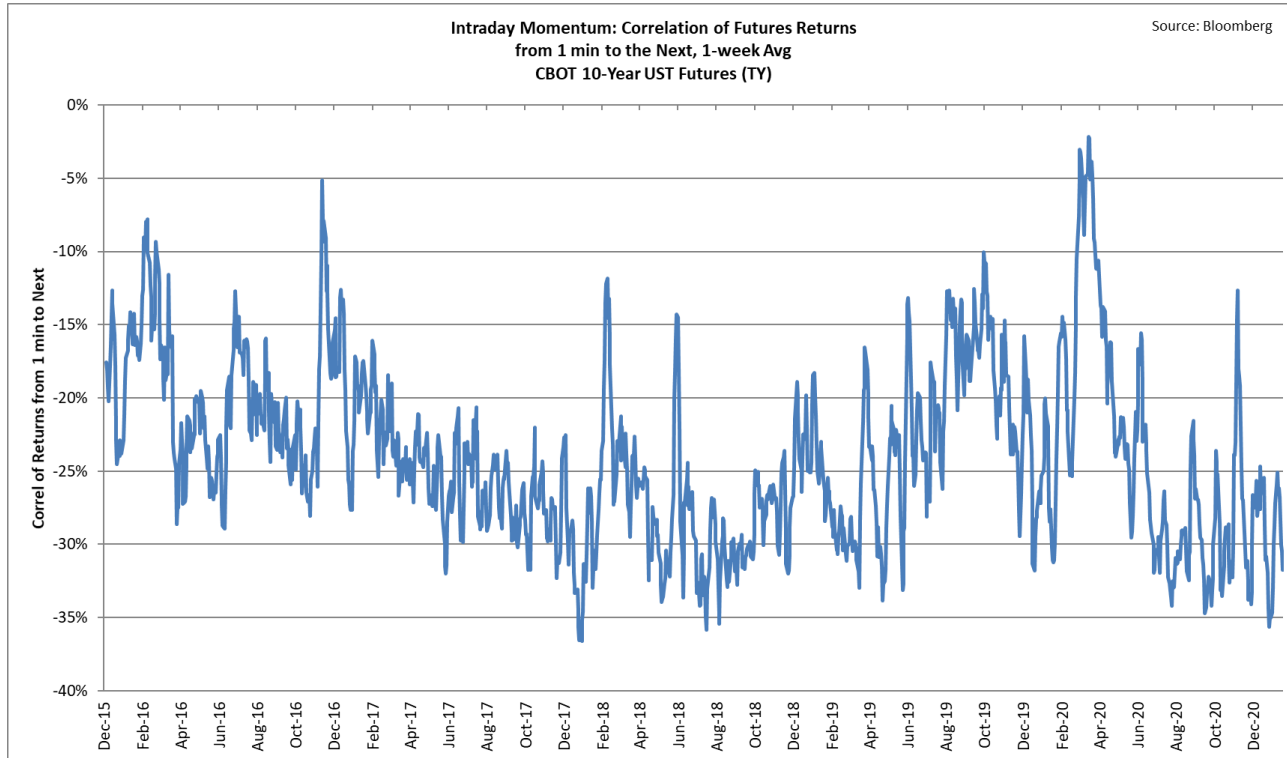
Volume Growth – Strength in Microstructure

- In Interest Rates futures, especially, available size high, intraday momentum low, trade size robust



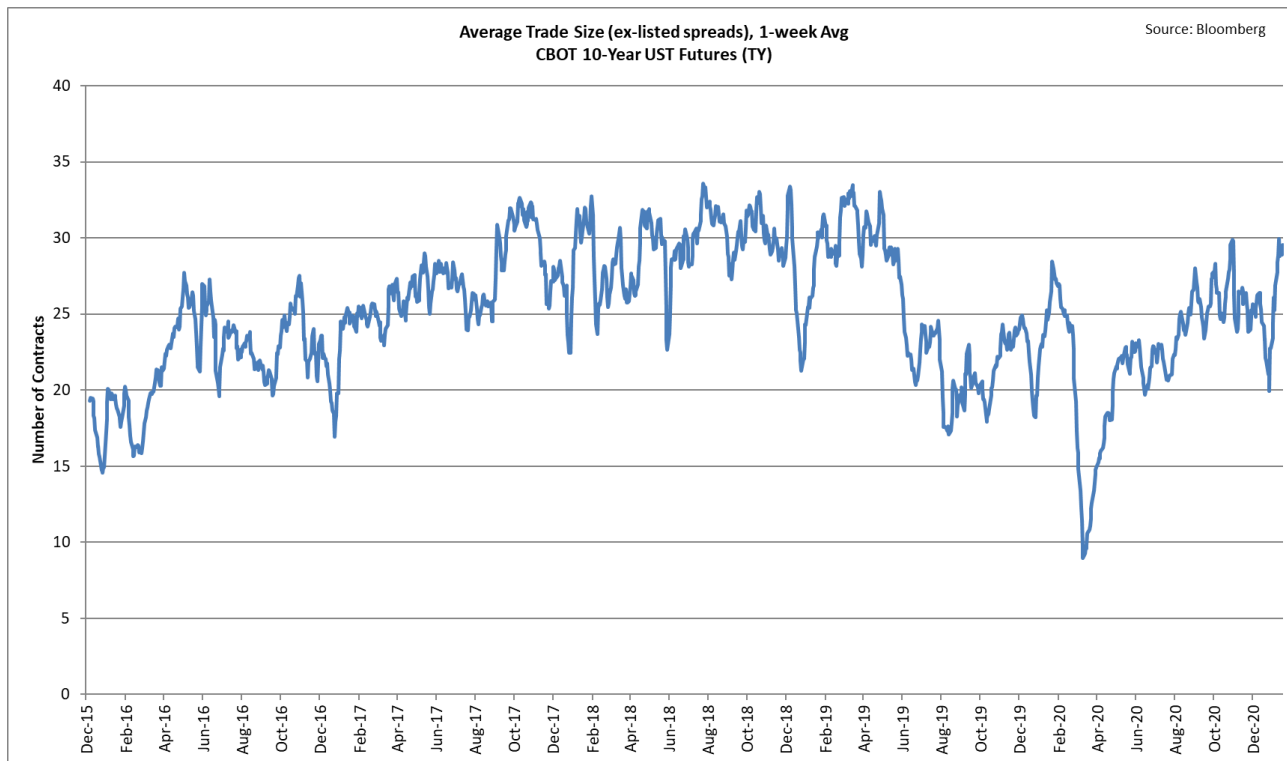
Volume Growth – Strength in Microstructure (cont.)

- In Interest Rates futures, especially, available size high, intraday momentum low, trade size robust



Volume Growth – Strength in Microstructure (cont.)

- In Interest Rates futures, especially, available size high, intraday momentum low, trade size robust

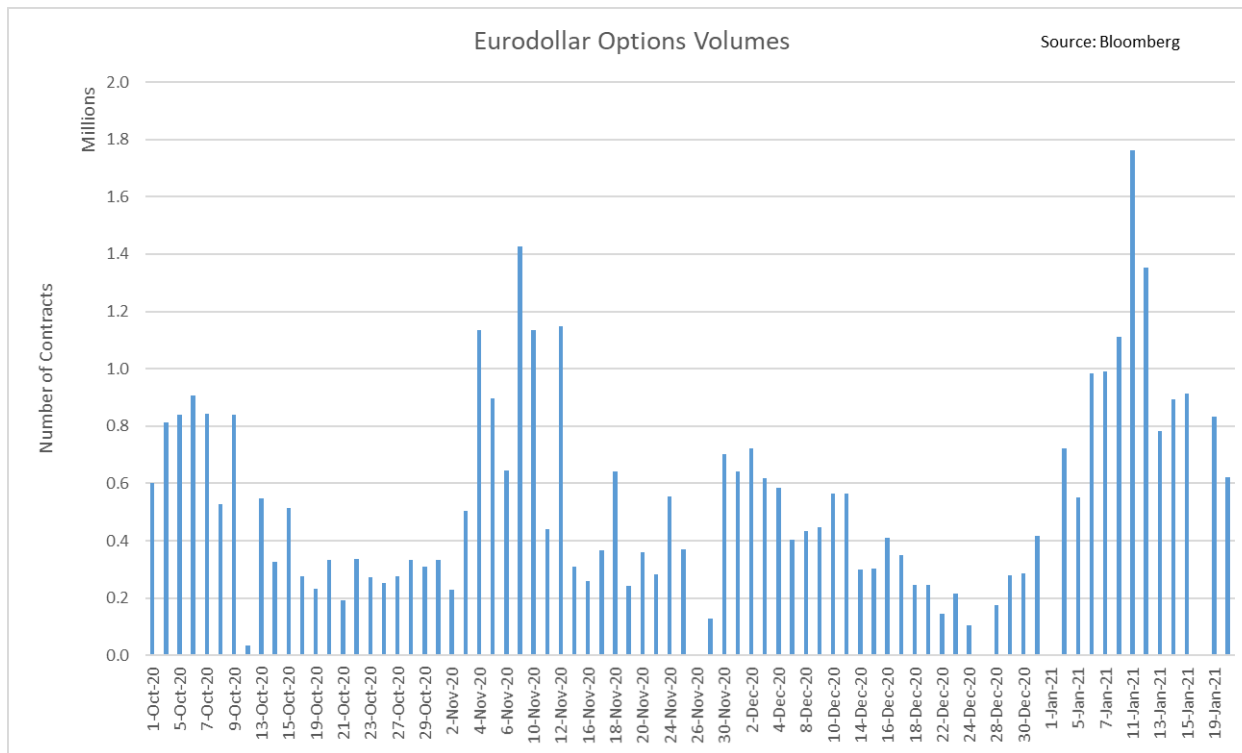


Themes in Interest Rates Futures & Options

1. REFLATION – Supporting Volume Resurgence
2. US GOVT DEBT/ISSUANCE – Monitoring UST views
3. SOFR – Volumes and Mechanics
4. UK STIRs – Negative Rates?

Eurodollar Options Activity into 2021

- Volumes at start of 2021 have exceeded volumes around 2020 US Presidential Election



Eurodollar Options Activity in 2021

- Put/call ratio, volumes, and general moves in open interest suggest active downside participation

Put Call Description
■ Put Option ■ Call Option

	Call Option	Put Option	% in Call Options	% in Put Options	Total
01/04/2021	316,693	405,513	43.85%	56.15%	722,206
01/05/2021	107,029	444,396	19.41%	80.59%	551,425
01/06/2021	391,172	591,437	39.81%	60.19%	982,609
01/07/2021	425,614	564,457	42.99%	57.01%	990,071
01/08/2021	291,077	819,261	26.22%	73.78%	1,110,338

Put Call Description
■ Put Option ■ Call Option

	Call Option	Put Option	% in Call Options	% in Put Options	Total
01/04/2021	10,477,817	13,275,041	44.11%	55.89%	23,752,858
01/05/2021	10,529,731	13,487,482	43.84%	56.16%	24,017,213
01/06/2021	10,682,710	13,733,853	43.75%	56.25%	24,416,563
01/07/2021	10,889,632	13,994,862	43.76%	56.24%	24,884,494
01/08/2021	11,023,604	14,236,587	43.64%	56.36%	25,260,191

Put Call Description
■ Put Option ■ Call Option

	Call Option	Put Option	% in Call Options	% in Put Options	Total
01/19/2021	90,471	742,531	10.86%	89.14%	833,002
01/20/2021	315,898	304,842	50.89%	49.11%	620,740
01/21/2021	200,451	578,484	25.73%	74.27%	778,935
01/22/2021	116,632	216,595	35.00%	65.00%	333,227

Put Call Description
■ Put Option ■ Call Option

	Call Option	Put Option	% in Call Options	% in Put Options	Total
01/19/2021	11,504,545	15,521,673	42.57%	57.43%	27,026,218
01/20/2021	11,696,828	15,665,791	42.75%	57.25%	27,362,619
01/21/2021	11,780,719	15,941,984	42.49%	57.51%	27,722,703
01/22/2021	11,873,830	16,072,517	42.49%	57.51%	27,946,347

Source: CME Group

Eurodollar Options Activity in 2021 (cont.)

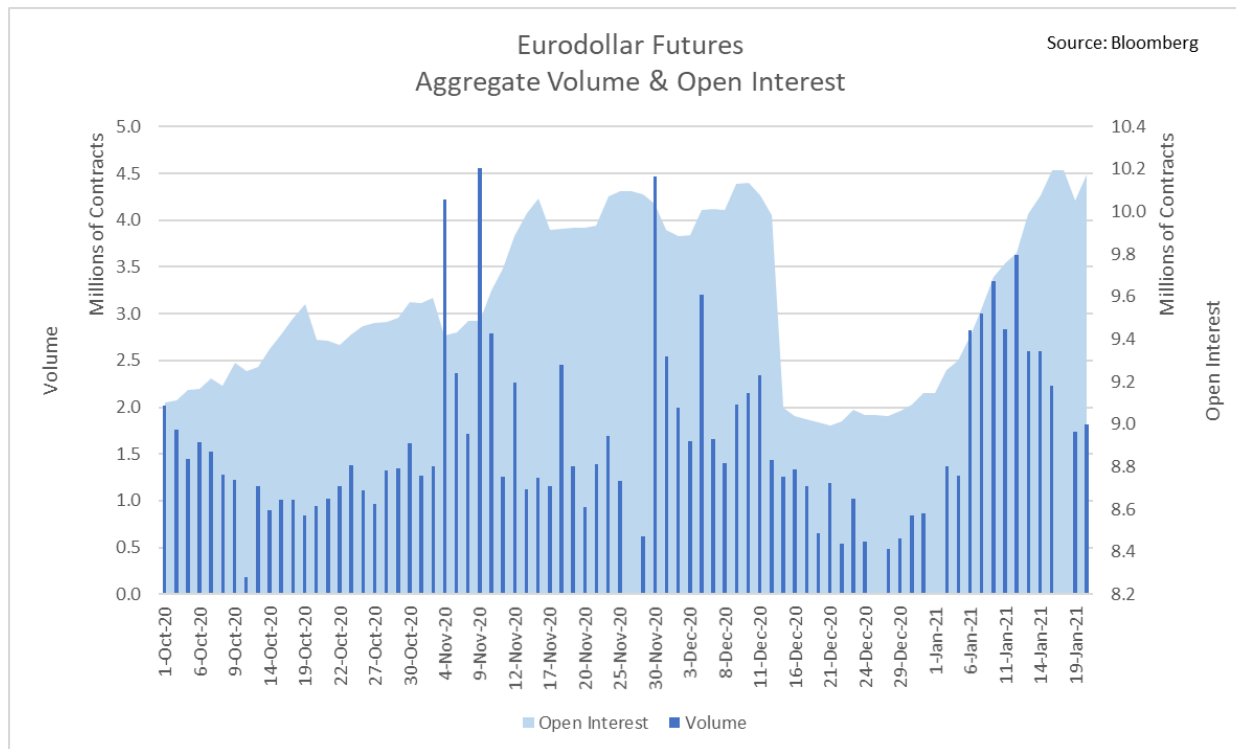
- Emphasis on new downside in Greens

Summary of Eurodollars (ED)															
CALLS							PUTS								
TOTAL VOLUME	OPEN INTEREST					NET CHG	TOTAL VOLUME	OPEN INTEREST					NET CHG		
	TOTAL	STRIKES ↑	STRIKES ↓					TOTAL	STRIKES ↑	STRIKES ↓					
200,451	11,780,719	163		52		1,519,938	578,484	15,941,984	273		48	3,086,515			
TOP 10 BY OPEN INTEREST CHANGE							TOP 10 BY OPEN INTEREST CHANGE								
STRIKE PRICE	EXP	YIELD	VOL	OPEN INTEREST			CHG CHART	STRIKE PRICE	EXP	YIELD	VOL	OPEN INTEREST			CHG CHART
				JAN 04	JAN 21	CHG						JAN 04	JAN 21	CHG	
99.5000	EDU3	0.500	6,500	9,671	129,201	119,530	█	98.8750	3EH1	1.125	18,000	56,220	311,877	255,657	█
99.6250	3EH1	0.375	2,000	225,338	303,488	78,150	█	99.1250	2EZ1	0.875	3,250	20,000	179,721	159,721	█
99.8750	EDH1	0.125	10,250	400,255	468,751	68,496	█	99.3750	2EM1	0.625	1,600	30,254	145,215	114,961	█
99.8125	EDM1	0.188	15,000	75,371	140,841	65,470	█	99.6250	2EM1	0.375	2,700	42,531	162,862	110,331	█
99.6250	2EZ1	0.375	250	2,036	44,750	42,714	█	99.2500	3EG1	0.750	8,080	30,953	137,300	106,347	█
99.7500	EDH3	0.250	0	61,276	102,164	40,888	█	99.3750	2EU1	0.625	7,500	64,679	150,306	85,627	█
100.2500	0EM1	-0.250	0	5,500	45,100	39,600	█	99.0000	3EH1	1.000	6,250	213,919	297,433	83,514	█
99.7500	2EM1	0.250	200	34,239	73,469	39,230	█	99.0000	2EU1	1.000	5,000	3,118	79,248	76,130	█
99.5000	3EJ1	0.500	0	1,638	40,200	38,562	█	99.7500	0EU1	0.250	7,000	71,750	143,361	71,611	█
99.8750	0EM1	0.125	200	51,958	90,459	38,501	█	99.1250	2EM1	0.875	0	129,260	58,562	(70,696)	█

Source: QuikStrike

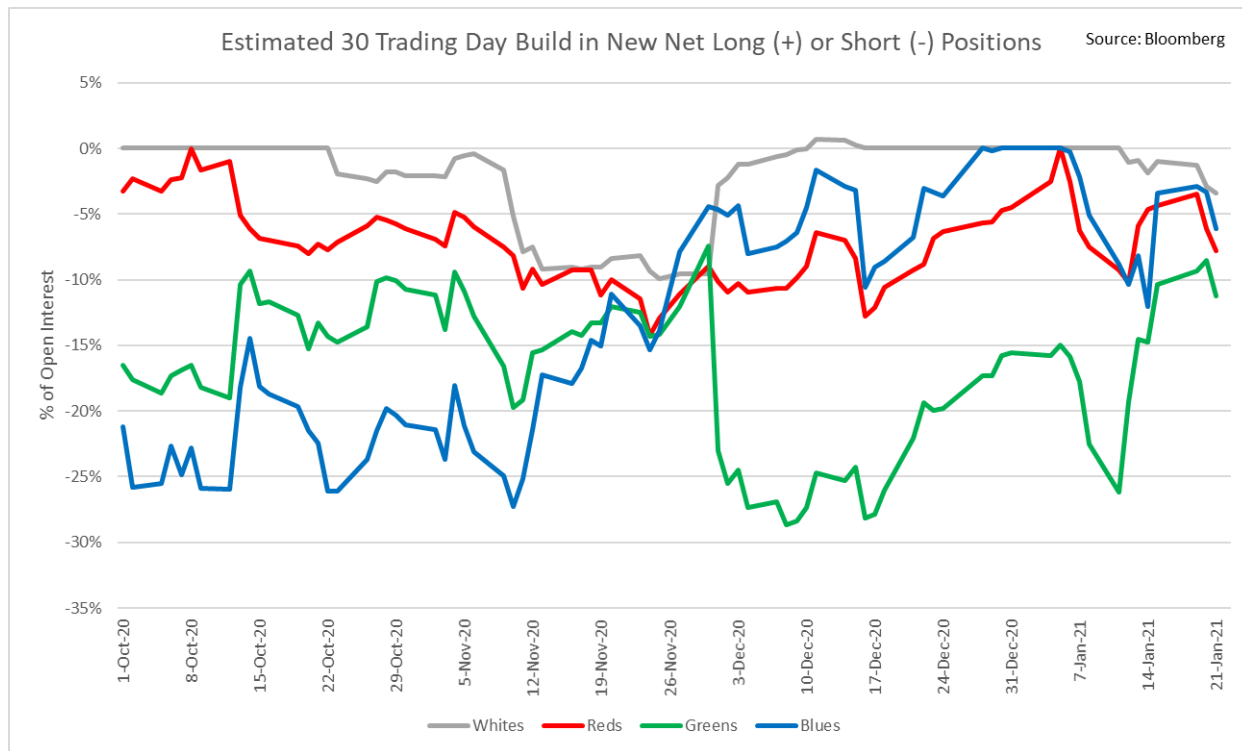
Eurodollar Futures Activity into 2021

- Open interest now back above highs this fall



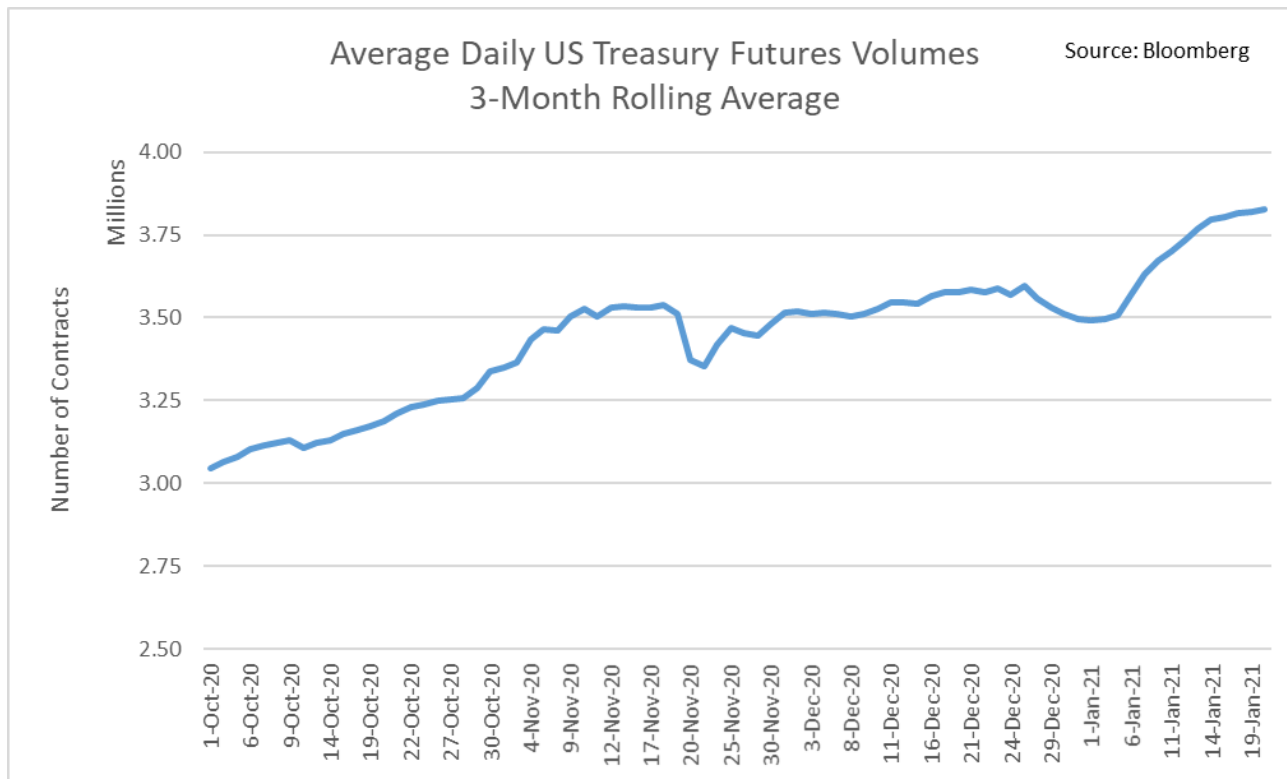
Eurodollar Futures Activity into 2021 (cont.)

- New downside risk initiated in futures, particularly in Greens



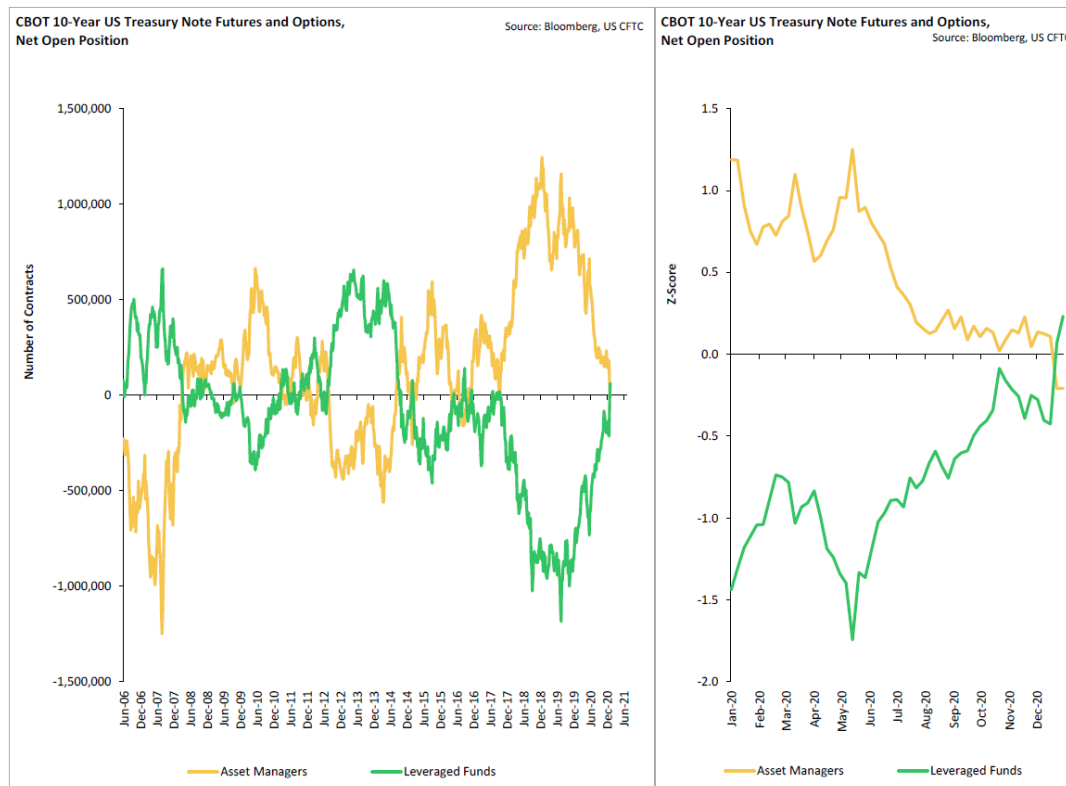
Treasury Futures Activity into 2021

- Average daily volume steadily increasing



Treasury Futures Activity into 2021 (cont.)

- Addition of shorts / reduction in longs



Treasury Futures Activity into 2021 (cont.)

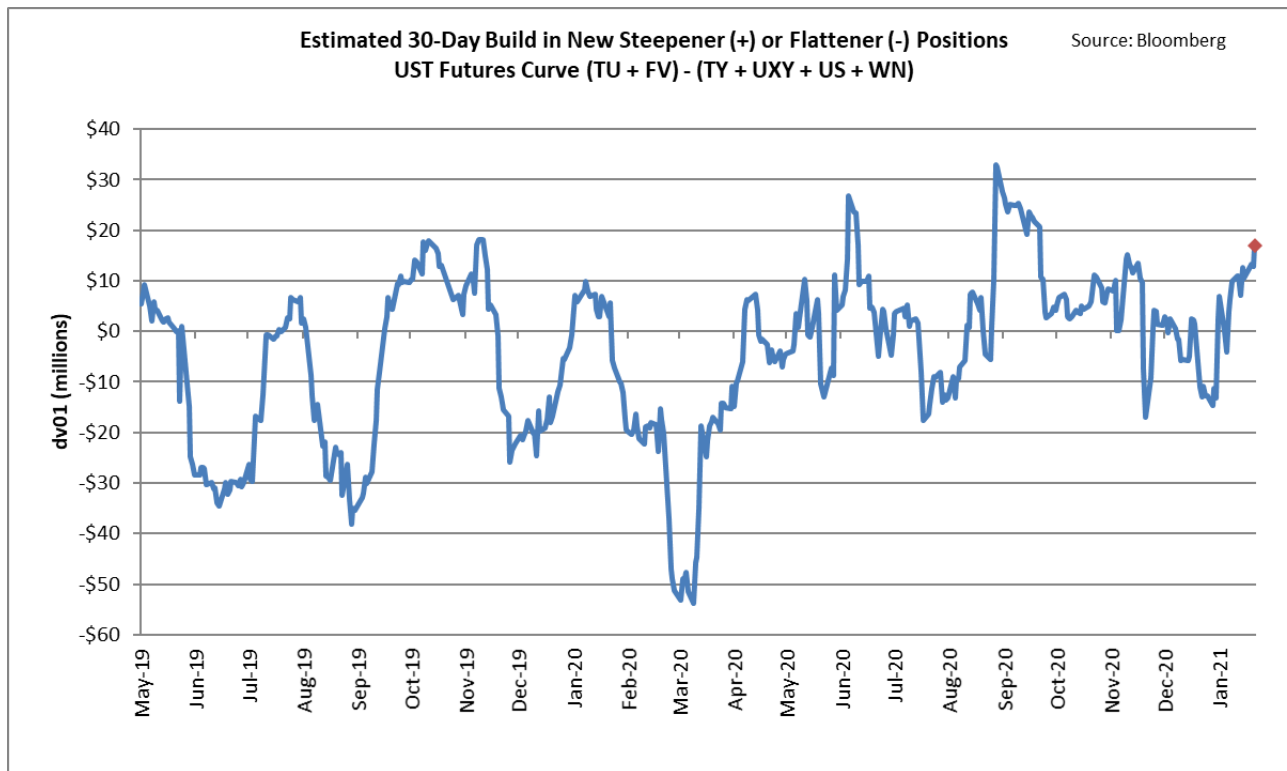
- With exception of 30-Year UST futures, Asset Manager net long positions as % of open interest now modest across UST futures curve

Futures and Options	Asset Managers						Leveraged Funds					
	Open Position Z-Score			Open Position Week over Week Change Z-Score			Open Position Z-Score			Open Position Week over Week Change Z-Score		
	Net Position	Longs Outstanding	Shorts Outstanding	Change in Net Position	Change in Longs Outstanding	Change in Shorts Outstanding	Net Position	Longs Outstanding	Shorts Outstanding	Change in Net Position	Change in Longs Outstanding	Change in Shorts Outstanding
30-DAY FEDERAL FUNDS	0.48	0.36	(0.43)	0.08	0.11	(0.00)	(0.42)	0.96	1.43	(0.15)	(0.08)	0.06
3-MONTH EURODOLLARS	(0.52)	(0.94)	(0.40)	0.32	(0.10)	(0.35)	0.10	(0.07)	(0.24)	(0.95)	(0.74)	0.58
2-YEAR U.S. TREASURY NOTES	0.99	1.33	(0.22)	0.57	(0.47)	(1.42)	(1.40)	(0.59)	1.55	(0.72)	0.19	0.80
5-YEAR U.S. TREASURY NOTES	0.59	0.66	(0.36)	(1.06)	(0.06)	1.54	(1.14)	(0.51)	1.37	1.89	(0.36)	(2.06)
10-YEAR U.S. TREASURY NOTES	(0.21)	0.03	0.43	0.03	(0.18)	(0.22)	0.23	(0.28)	(0.64)	1.18	0.21	(1.22)
Ultra 10-YEAR U.S. TREASURY NOTES	0.92	1.38	0.26	0.66	1.67	0.65	(0.93)	(0.32)	1.29	(0.19)	(1.02)	(1.12)
U.S. TREASURY BONDS	1.61	1.50	(1.23)	(0.76)	(0.92)	(0.15)	(2.97)	(1.49)	3.15	0.08	(0.28)	(0.27)
LONG-TERM U.S. TREASURY BONDS	(1.76)	(0.99)	2.19	0.11	0.02	(0.21)	1.00	1.72	(0.39)	0.36	1.95	0.48

Source: Bloomberg, U.S. CFTC

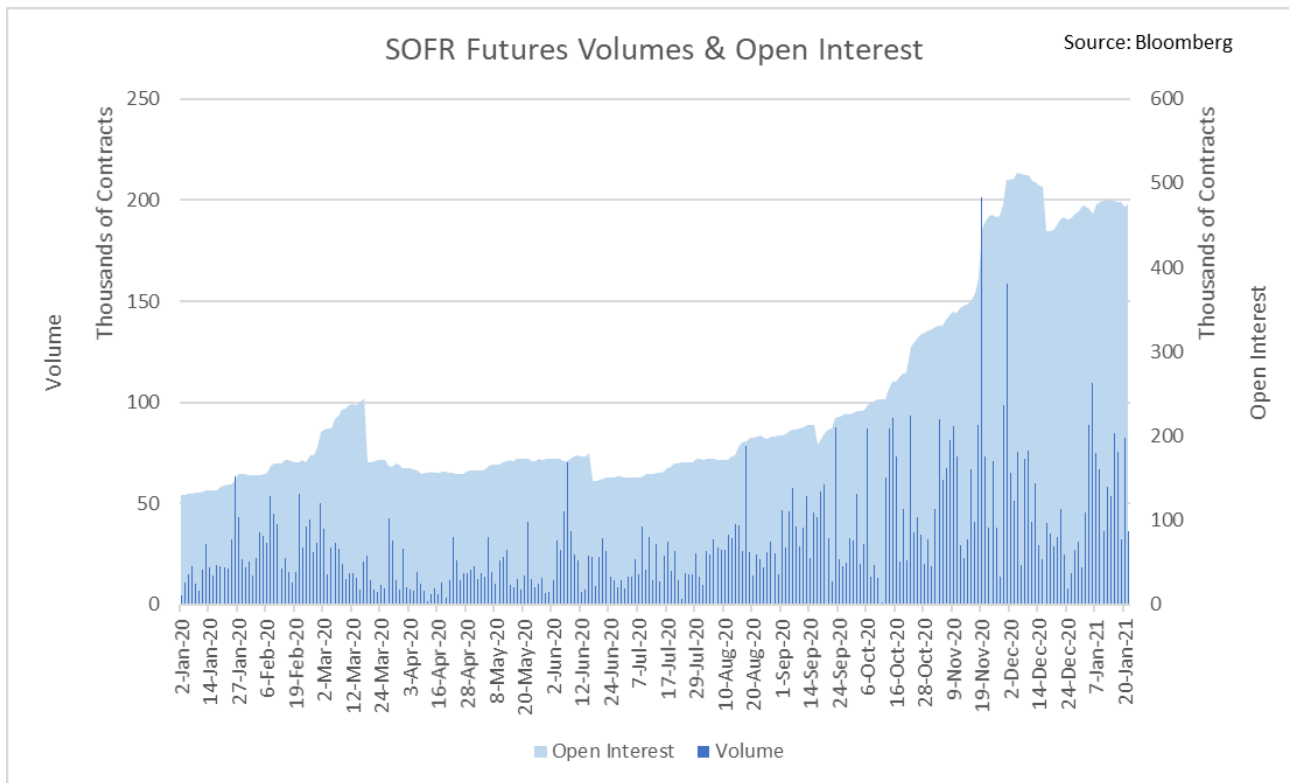
Treasury Futures Activity into 2021 (cont.)

- Initiation of new curve steepener risk



SOFR Futures

- Volumes and Open Interest have grown steadily over past year



SOFR Futures (cont.)

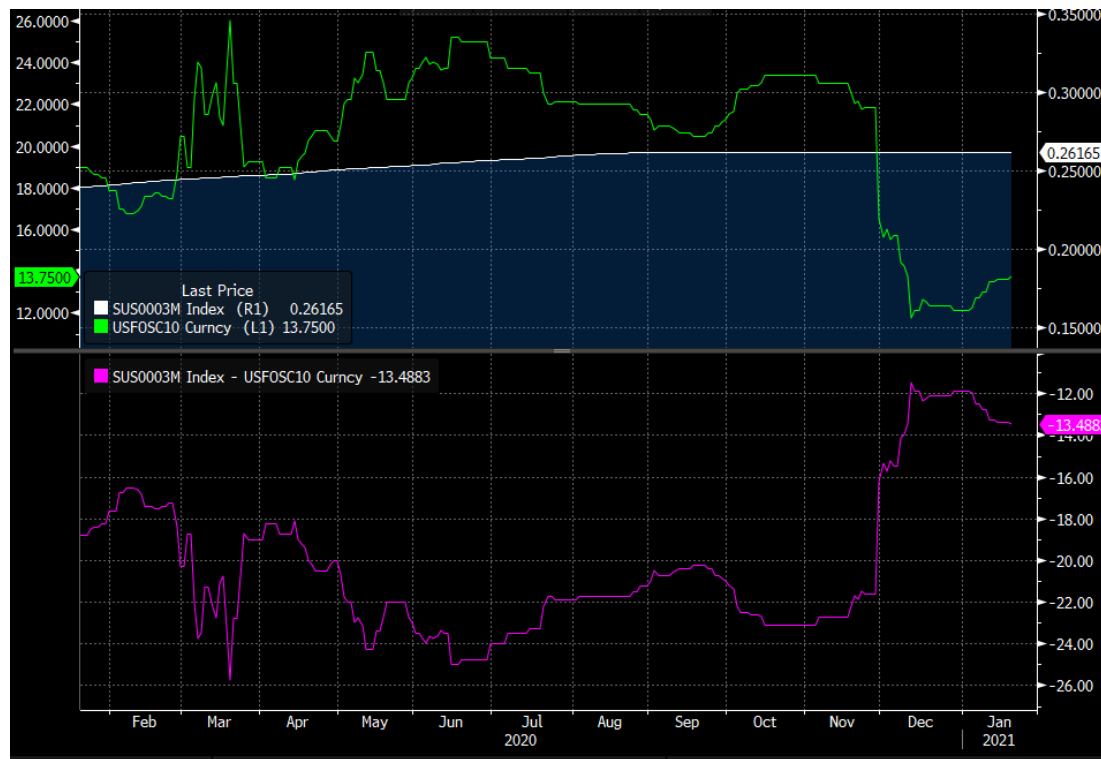
- Impact on Eurodollar futures activity



Source: Bloomberg

SOFR Futures (cont.)

- Impact on Eurodollar futures activity



Source: Bloomberg

Short Sterling Futures

- Increased activity in Whites around possibility of negative target rate

	L_H1 56 DTE 99.985		L_M1 147 DTE 100.020				L_U1 238 DTE 100.040		L_Z1 325 DTE 100.050		L_H2 420 DTE 99.975		L_M2 511 DTE 99.960		L_U2 608 DTE 99.940		L_Z2 700 DTE 99.920		L_M3 882 DTE 99.870		L_U3 973 DTE 99.840		L_Z3 1064 DTE 99.805		
STRIKES	L_H1 56 DTE		L_M1 147 DTE				L_U1 238 DTE		L_Z1 325 DTE		L_H2 420 DTE		L_M2 511 DTE		L_U2 608 DTE		L_Z2 700 DTE		L_M3 882 DTE		L_U3 973 DTE		L_Z3 1064 DTE		STRIKES
	CALL	PUT	CALL	PUT	CALL	PUT	CALL	PUT	CALL	PUT	CALL	PUT	CALL	PUT	CALL	PUT	CALL	PUT	CALL	PUT	CALL	PUT	CALL	PUT	
98.625																									98.625
98.750																									98.750
98.875																									98.875
99.000																							5.500		99.000
99.125																							49		99.125
99.250																							5.559		99.250
99.375																									99.375
99.500																									99.500
99.625																									99.625
99.750																									99.750
99.875																									99.875
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100.625																									100.625
100.750																									100.750
100.875																									100.875
101.000																									101.000
101.125																									101.125
101.250																									101.250

Source: QuikStrike



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