

## QUARTERLY MARKET IMPACT / TRADING PATTERN REPORT – Q4 2019

EXPIRATION FRIDAY, PM-SETTLED FLEX OPTIONS ON BROAD-BASED INDEXES

DECEMBER 31, 2019

On January 28, 2010, the Chicago Board Options Exchange, Incorporated (“CBOE”) received approval of a proposed rule change to, among other things, modify exercise settlement values for Flexible Exchange Options (“FLEX Options”) on a pilot basis. Unless otherwise extended, the pilot program is currently set to expire on the earlier of November 2, 2014 or the date on which the pilot program is approved on a permanent basis.<sup>1</sup>

As part of this pilot program, on a quarterly basis CBOE will submit reports analyzing volume and open interest for each broad-based FLEX Index Option class overlying an Expiration Friday, PM-Settled FLEX Index Option Series (“EF/PM Index FLEX”). Pursuant to the terms of the pilot program, CBOE is submitting the Q4 2019 quarterly report to the SEC.

### ***Monthly Analysis of Volume & Open Interest:***

As of December 31, 2019, CBOE listed Non-FLEX Options on the following broad-based indexes that are eligible for EF/PM Index FLEX trading<sup>2</sup>:

DJX – Dow Jones Industrial Average  
MNX® – CBOE Mini-NDX Index  
NDX – Nasdaq-100® Index  
OEX® – S&P 100® Index  
XEO® – European-style S&P 100® Index  
RUT – Russell 2000® Index  
SPX – S&P 500® Index  
XSP – Mini-SPX Index  
VIX – CBOE Volatility Index® (VIX®)  
RVX – CBOE Russell 2000 Volatility Index (RVX)  
MXEF – MSCI Emerging Markets Index  
MXEA - MSCI EAFE Index

### 1. ***Monthly volume aggregated for all EF/PM Index FLEX trades***

Industry	EF-PM FLEX Volume									
	DJX	MNX	NDX	OEX	XEO	RUT	SPX	XSP	VIX	RVX
Oct-19	5,250					4,852	34,407			
Nov-19	7,398					8,864	51,371			
Dec-19						430	57,855	70		

<sup>1</sup> See Securities Exchange Act Release Nos. 61439 (January 28, 2010), 75 FR 5831 (February 4, 2010) (SR-CBOE-2009-087) (Approval Order); 61676 (March 9, 2010), 75 FR 13191 (March 18, 2010) (SR-CBOE-2010-026) (technical rule change to include original pilot’s conclusion date of March 28, 2011 in the rule text); 64110 (March 24, 2011), 76 FR 17463 (March 29, 2011) (SR-CBOE-2011-024) (extending the pilot through March 30, 2012); 66701 (March 30, 2012), 77 FR 20673 (April 5, 2012) (SR-CBOE-2012-027) (extending the pilot through the earlier of November 2, 2012 or the date on which the pilot program is approved on a permanent basis); 68145 (November 2, 2012), 77 FR 67044 (November 18, 2012) (SR-CBOE-2012-102) (extending the pilot through the earlier of November 2, 2013 or the date on which the pilot program is approved on a permanent basis); and 70752 (October 24, 2013), 78 FR 65023 (October 30, 2013) (SR-CBOE-2013-099) (extending the pilot program through the earlier of November 3, 2014 or the date on which the pilot program is approved on a permanent basis).

<sup>2</sup> On February 19, 2013, Non-FLEX Options on the PM-settled S&P 500 Index (SPXpm) began trading on CBOE on a pilot basis. There were no SPXpm FLEX Options traded during Q2 2014. Volume and open interest analysis for SPXpm options is included in a separate pilot report.

**2. Monthly volume for EF/PM Index FLEX trades aggregated by expiration date.**

Refer to spreadsheet, Tab “Aggregated by expiration date”

**3. Monthly volume for individual EF/PM Index FLEX series**

Refer to spreadsheet, Tab “EF-PM FLEX Volume Detail”

**4. Month-end open interest aggregated for all EF/PM Index FLEX series**

Industry	EF-PM	FLEX	Open Interest									
	DJX	MNX	NDX	OEX	XEQ	RUT	SPX	XSP	VIX	RVX	MXEA	MXEF
Oct-19	101,102			102		56,967	193,598	109			2,503	806
Nov-19	112,052			102		65,600	239,755	71			3,430	
Dec-19	53,978			102		31,081	133,078	119			567	834

**5. Month-end open interest for EF/PM Index FLEX series aggregated by expiration date**

Refer to spreadsheet, TAB “Aggregated by expiration date”

**6. Month-end open interest for individual EF/PM Index FLEX series**

Refer to spreadsheet, Tab “EF-PM FLEX OI Detail”

**7. Ratios of monthly aggregate volume for EF/PM Index FLEX and all series of that class, including EF/PM Index FLEX trades**

Industry Volume												
	DJX	MNX	NDX	OEX	XEO	RUT	SPX	XSP	VIX	RVX	MXEA	MXEF
Oct-19	102,994	1	233,506	32,903	792	873,234	29,283,992	1,767,456	14,764,599		17,547	29,478
Nov-19	74,315		193,308	17,328	2,052	717,910	22,249,985	1,605,961	12,177,402		12,110	16,713
Dec-19	55,439		227,470	14,571	2,765	723,133	26,122,590	1,757,355	13,786,091		13,416	39,098
Industry FLEX Volume												
	DJX	MNX	NDX	OEX	XEO	RUT	SPX	XSP	VIX	RVX	MXEA	MXEF
Oct-19	20,380		1,169			31,596	218,619	663,769			6,642	9,823
Nov-19	16,020		63			18,033	106,056	448,891			2,139	927
Dec-19	1,142		67			1,004	131,156	548,551			732	3,950
Industry EF-PM FLEX Volume												
	DJX	MNX	NDX	OEX	XEO	RUT	SPX	XSP	VIX	RVX	MXEA	MXEF
Oct-19	5,250					4,852	34,407					1612
Nov-19	7,398					8,864	51,371				1,854	
Dec-19						430	57,855	70			54	1,598
Ratio of EF-PM FLEX to All FLEX												
	DJX	MNX	NDX	OEX	XEO	RUT	SPX	XSP	VIX	RVX	MXEA	MXEF
Oct-19	25.8%					15.4%	15.7%					16.4%
Nov-19	46.2%					49.2%	48.4%				86.7%	
Dec-19						42.8%	44.1%	0.01%			7.4%	40.5%
Ratio of EF-PM FLEX to Industry Volume												
	DJX	MNX	NDX	OEX	XEO	RUT	SPX	XSP	VIX	RVX	MXEA	MXEF
Oct-19	5.1%					0.556%	0.12%					5.5%
Nov-19	10.0%					1.235%	0.231%					
Dec-19						0.059%	0.22%	0.00%				4.1%

**8. Ratios of monthly month-end open interest for EF/PM Index FLEX and all series of that class, including EF/PM Index FLEX trades**

Industry Open Interest												
	<u>DJX</u>	<u>MNX</u>	<u>NDX</u>	<u>OEX</u>	<u>XEO</u>	<u>RUT</u>	<u>SPX</u>	<u>XSP</u>	<u>VIX</u>	<u>RVX</u>	<u>MXEA</u>	<u>MXEF</u>
Oct-19	305,859			7,969	1,264	610,509	17,965,260	2,004,536	6,583,443		19,759	35,043
Nov-19	337,069			6,821	1,186	614,348	18,709,143	2,209,158	6,441,383		19,467	31,970
Dec-19	247,056			5,558	670	480,199	15,017,674	1,600,015	5,040,471		18,357	48,959
Industry FLEX Open Interest												
	<u>DJX</u>	<u>MNX</u>	<u>NDX</u>	<u>OEX</u>	<u>XEO</u>	<u>RUT</u>	<u>SPX</u>	<u>XSP</u>	<u>VIX</u>	<u>RVX</u>	<u>MXEA</u>	<u>MXEF</u>
Oct-19	204,626		807	102		132,172	865,386	664,378			7,198	5,848
Nov-19	219,136		816	102		149,508	936,514	486,114			8,331	5,915
Dec-19	161,644		645	102		114,663	866,316	428,419			5,964	7,494
Industry EF-PM FLEX Open Interest												
	<u>DJX</u>	<u>MNX</u>	<u>NDX</u>	<u>OEX</u>	<u>XEO</u>	<u>RUT</u>	<u>SPX</u>	<u>XSP</u>	<u>VIX</u>	<u>RVX</u>	<u>MXEA</u>	<u>MXEF</u>
Oct-19	101,102			102		56,967	193,598	109			2,503	806
Nov-19	112,052			102		65,600	239,755	71			3,430	
Dec-19	53,978			102		31,081	133,078	119			567	834
Ratio of EF-PM FLEX to All FLEX Open Interest												
	<u>DJX</u>	<u>MNX</u>	<u>NDX</u>	<u>OEX</u>	<u>XEO</u>	<u>RUT</u>	<u>SPX</u>	<u>XSP</u>	<u>VIX</u>	<u>RVX</u>	<u>MXEA</u>	<u>MXEF</u>
Oct-19	49.4%			100.0%		43.1%	22.4%	0.02%			34.8%	13.8%
Nov-19	51.1%			100.0%		43.9%	25.6%	0.01%			41.2%	0.0%
Dec-19	33.4%			100.0%		27.1%	15.4%	0.03%			9.5%	11.1%
Ratio of EF-PM FLEX to Industry Open Interest												
	<u>DJX</u>	<u>MNX</u>	<u>NDX</u>	<u>OEX</u>	<u>XEO</u>	<u>RUT</u>	<u>SPX</u>	<u>XSP</u>	<u>VIX</u>	<u>RVX</u>	<u>MXEA</u>	<u>MXEF</u>
Oct-19	33.1%			1.28%		9.33%	1.1%	0.01%			12.7%	2.3%
Nov-19	33.2%			1.50%		10.68%	1.3%	0.00%			17.6%	0.0%
Dec-19	21.8%			1.84%		6.47%	0.9%	0.01%			3.1%	1.7%