FEDERAL RESERVE BANK OF MINNEAPOLIS

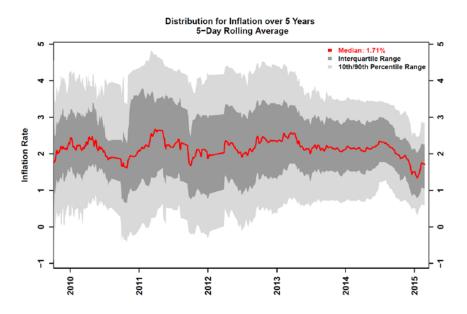
BANKING AND POLICY STUDIES

Minneapolis Options Report – February 27th

Recent themes from our reporting on the options markets have changed little. The positive reversal in median inflation rates has abated this week. Treasury rates have pared some of their recent rise, and market-based probability densities (MPDs) derived from options on 5- and 10-year notes continue to indicate bias toward lower rates. The dollar has weakened slightly from its recent strong position against other major currencies, and market-implied uncertainty has decreased, as seen in falling MPD standard deviations. The S&P 500 index reached all-time highs, accompanying the FTSE 100 and DAX indices, but investor desire for downside equity market protection has remained very high, given the MPD skew we measure from derived options on the index. A number of European bank equities have had sizeable positive returns over the past two weeks, but a subset of these show increased demand for downside risk protection. Wheat and corn prices remain low or falling but conviction in future price increases have become more dominant, as indicated by increasingly positive MPD skew.

Inflation

The positive reversal in market-based inflation expectations, as derived from caps and floors on the CPI, has abated and the median expectation for inflation over the next five years remains below 2%.



Additional detail:

- Median expectations for inflation from market-based probability distributions (MPDs) remain low despite recent gains. They now sit at 0.80%, 1.26%, and 1.68% for the 1-, 2-, and 5-year tenors, respectively.
- Uncertainty regarding market-based CPI inflation expectations, as measured by MPD standard deviation, also remains low relative to levels observed over the past five years.
- MPD skew is low and continues its decline across the near tenors (1- and 2-years out), implying a downward inflation expectation bias.

Interest Rates

Median short-term interest rate expectations, as derived from caps and floors on three month LIBOR, have dropped slightly and MPD skew remains low but positive, suggesting movement in expectations toward lower rates. Long rates have also shown downward movement over the past two weeks and the MPD skew points decidedly towards lower rates (see figure below; Note: these data are based on treasury prices and not rates).

Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min		
5 Year Treasury (3-Month Expiry)						
MPD Skew	0.03	0.052	0.36 Oct15 -0.5 Sep10	-0.5 0.03 0.36 last 5 months		
10 Year Treasury (3-Month Expiry)						
MPD Skew	0.1	-0.15	0.31 Jan07 0.34 May01	-0.75 0.31		

Additional detail:

- Uncertainty regarding three month LIBOR expectations, as measured by MPD standard deviations, has fallen dramatically at the 3-year tenor but is in the median of the range. It remains low and steady at the 5-year tenor.
- MPD standard deviations have fallen for both three month LIBOR (3-year tenor) and 5- and 10-year treasuries. This may imply an increase in investor certainty regarding future rates since October of last year. MPD standard deviations remain high relative to a year ago.

Banks and Insurance Companies

The S&P 500 rallied another 2.2% over the past two weeks, and price changes in bank (17) and insurance (11) company stocks we follow generally moved in the same direction. A number of firms had substantial positive returns over this period, especially the European banks BCS (6.1%), CS (17.7%), and DB (8.9%).

Volumes were surprisingly high for a subset of insurance companies: AFL, AIG, and CB. Apart from AIG which announced earnings on February 12th, spikes in volume are not attributable to earnings releases.

Across the universe of monitored financial company equities, tail risks as measured by MPD standard deviations continue to fall and remain low, particularly for insurance companies. The average standard deviation derived from options on US bank equities fell -0.9%. The same average based on options on US insurance company equities fell -1.3%.

Additional details:

• MPD skew on BCS and CS to a lesser extent fell. This coincides with strong equity returns over the same period. This may be suggestive of increased demand for downside protection and/or an increased conviction of tail risk in these equities.



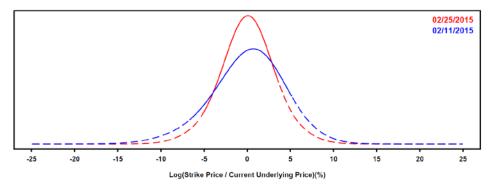
Other Markets

- The S&P 500 price reached another all-time high, accompanied by the FTSE 100 and DAX. At the same time, the MPD skew derived from options on the index price has remained highly negative, suggesting investors demand for downside protection is high.
- The dollar weakened against the suite of currencies we follow, in particular the Pound, but remains strong compared to a year ago. MPD standard deviations decreased substantially over the last two weeks, signaling a reduction in investor uncertainty (see figure below showing the MPD standard deviation of the USD-Pound pair narrowing by 1.1 percentage points to 3.31%).

MARKET PROBABILITY DENSITY FUNCTIONS -- DOLLAR-POUND EXCHANGE RATE FUTURES

Log returns are based on the market probability density function of the underlying asset derived from options that expire in approximately 3 months.

Market Probability Density Function of the Log Return Distribution



- Corn and wheat prices again dropped over the last two weeks with wheat approaching its September 2014 low of around \$4.92 per bushel. MPD standard deviations are stable and skews are positive for both commodities, suggesting an increase in conviction about future positive price movements.
- The cattle market continues to see deterioration in prices, moving from a peak above \$1.70 per pound in November of last year to just below \$1.40 per pound this past week. MPD standard deviations remain very high in this market, suggesting increased uncertainty about future prices (see figure below).

Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min		
	Cattle (6-Month Expiry)					
Spot	139.48	-1.6%	70.32 Nov19 32.82 Apří7	129.05 + - 139.48 129.05 - 1 last 19 months		
MPD Std Dev	10.88%	-0.2%	12.2 Dec17 4.23 Jun05	10,88 3.6 • 12.2 last 19 months		

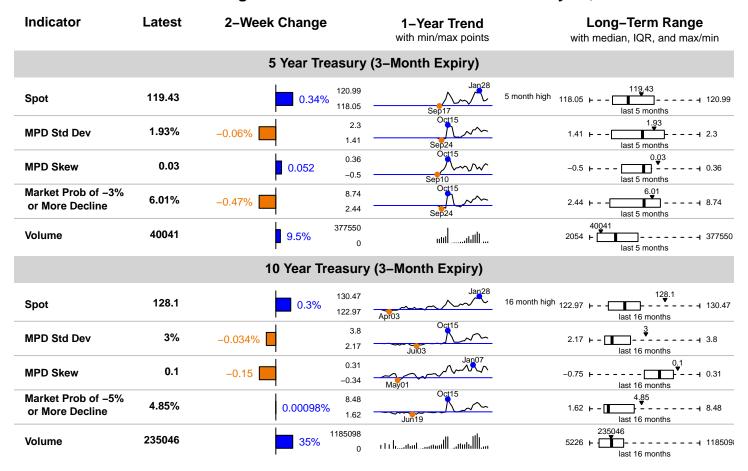
• Trading in options on WTI crude oil was light again, consistent with the seasonal activity we see in the data. Spot prices gained 3.8% over the past two weeks; however, the MPD skew continued to fall and is historically very negative. This indicates increased investor protection against tail risks and/or a bias towards lower future prices of WTI crude.

Inflation MPD Statistics as of February 24, 2015

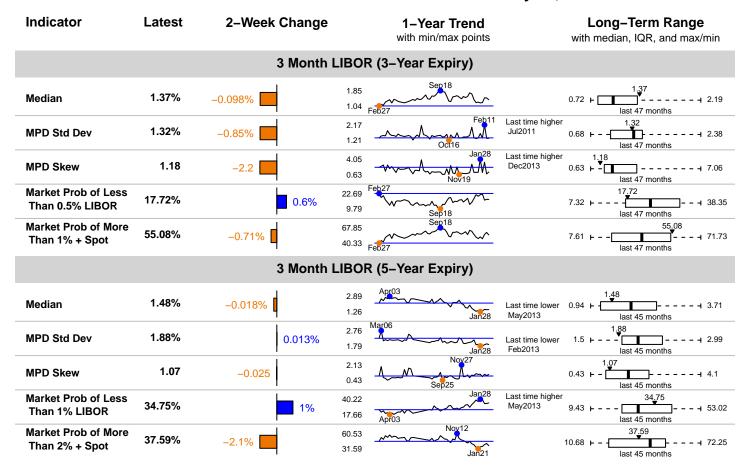


Source: Bloomberg Page 1 of 16

Medium-to-Long Bond Price MPD Statistics as of February 25, 2015

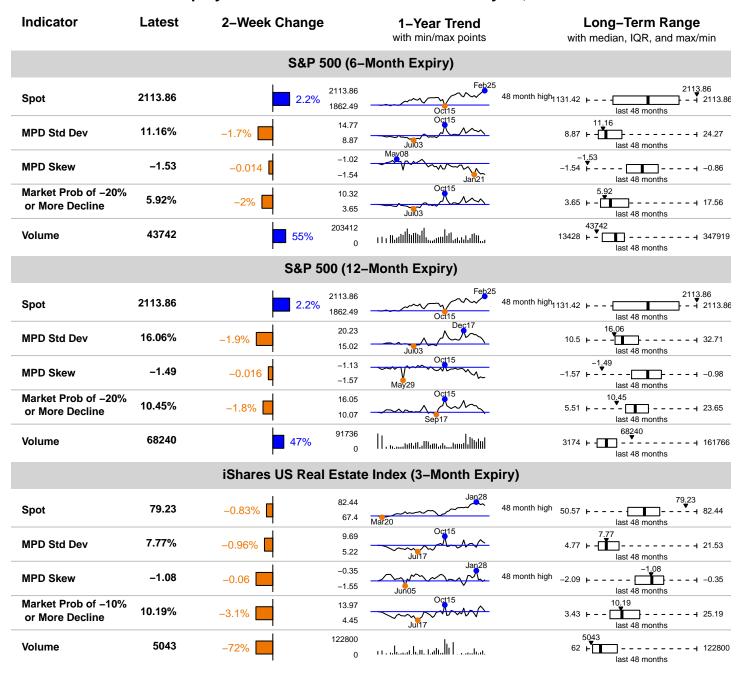


Short Interest Rates MPD Statistics as of February 25, 2015



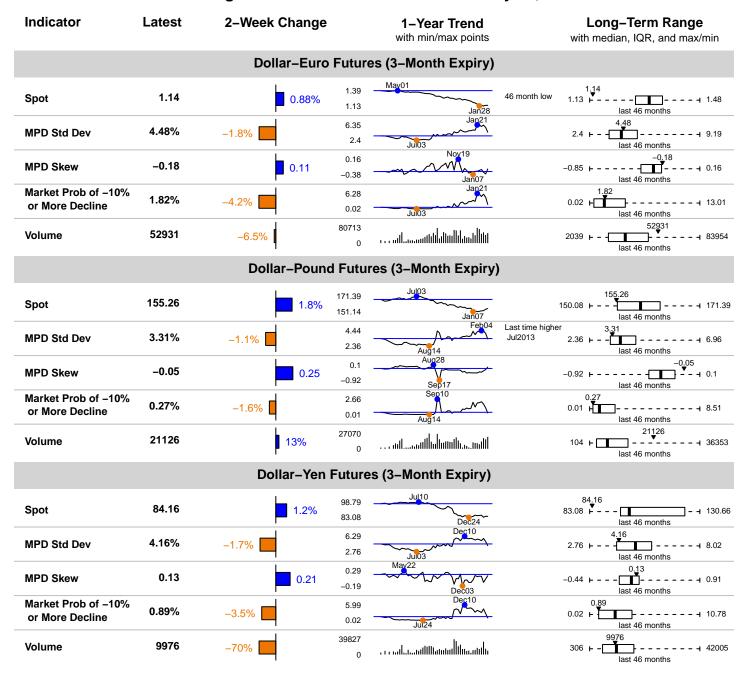
Source: Bloomberg Page 3 of 16

Equity Index MPD Statistics as of February 25, 2015

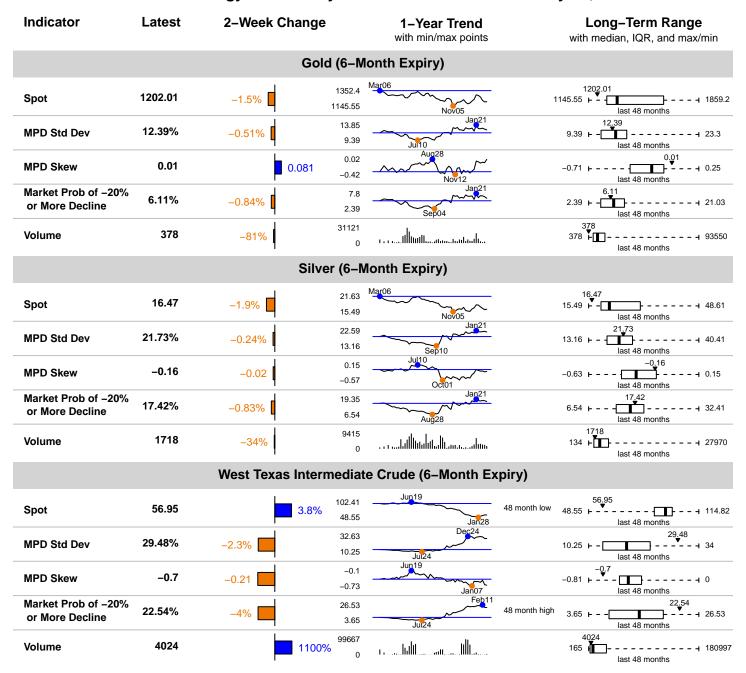


Source: FactSet Page 4 of 16

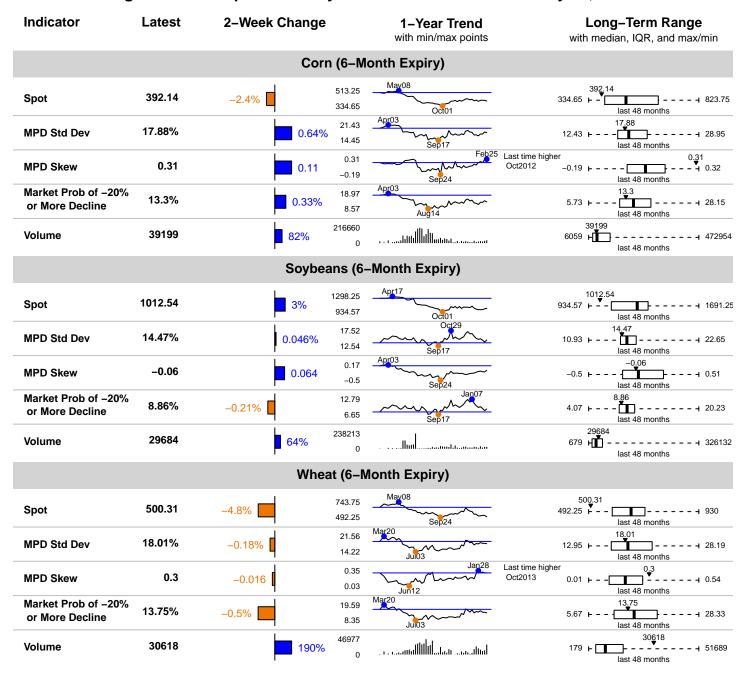
Exchange Rate MPD Statistics as of February 25, 2015



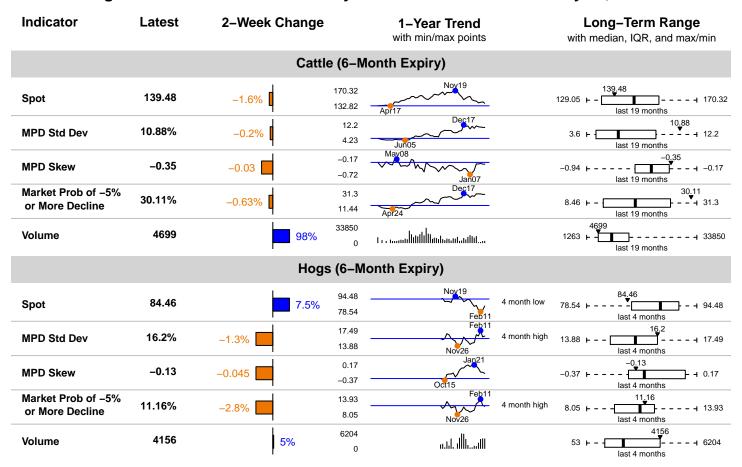
Metal and Energy Commodity MPD Statistics as of February 25, 2015

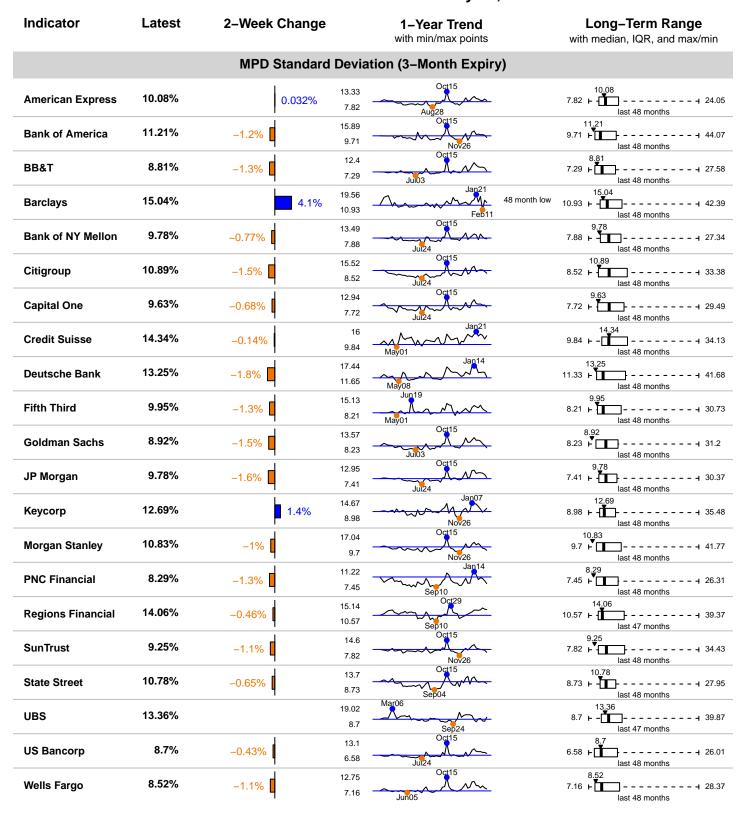


Agricultural Crop Commodity MPD Statistics as of February 25, 2015

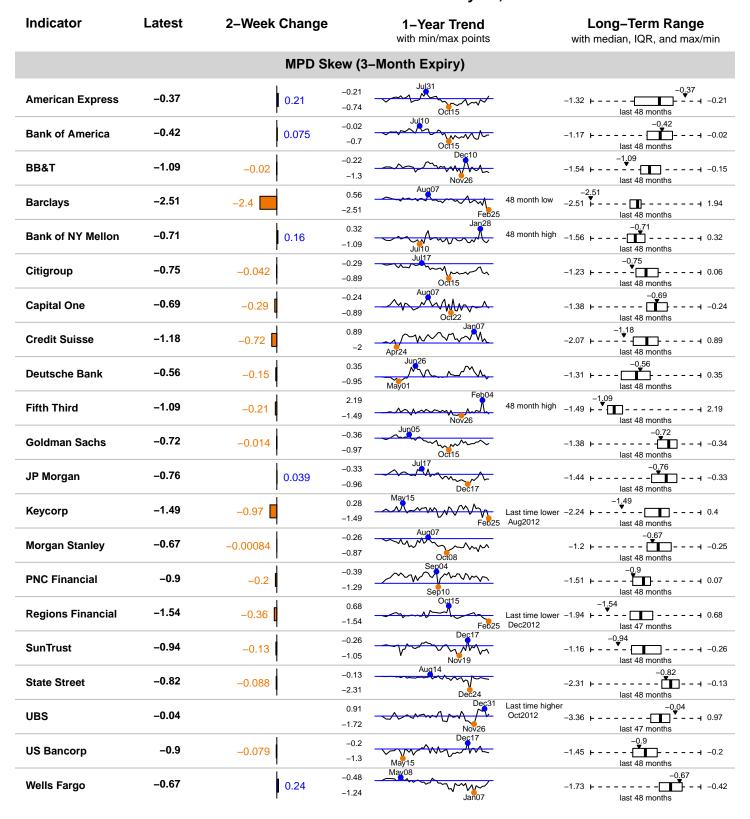


Agricultural Livestock Commodity MPD Statistics as of February 25, 2015

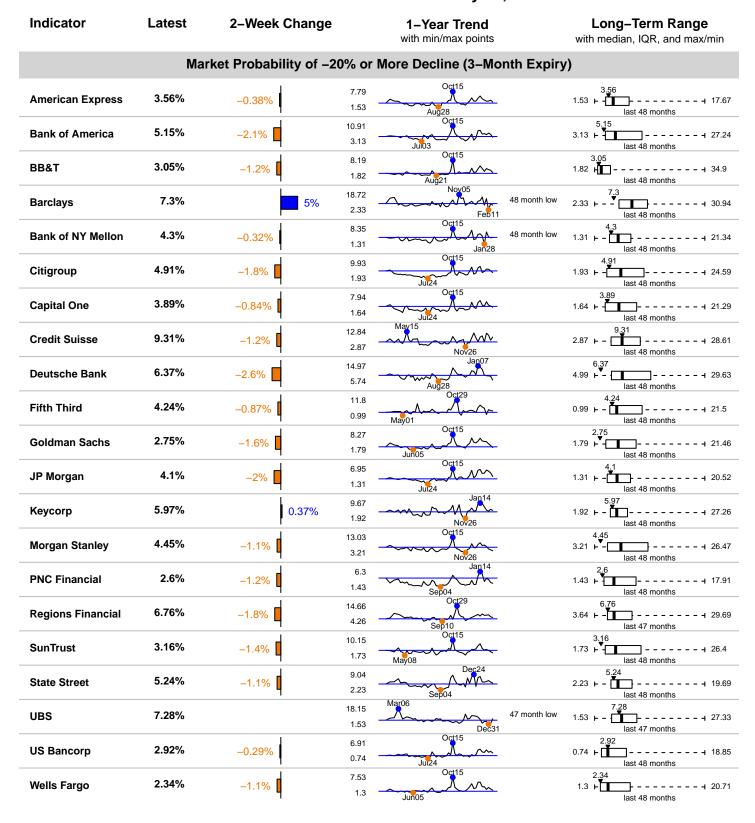




Source: FactSet Page 9 of 16



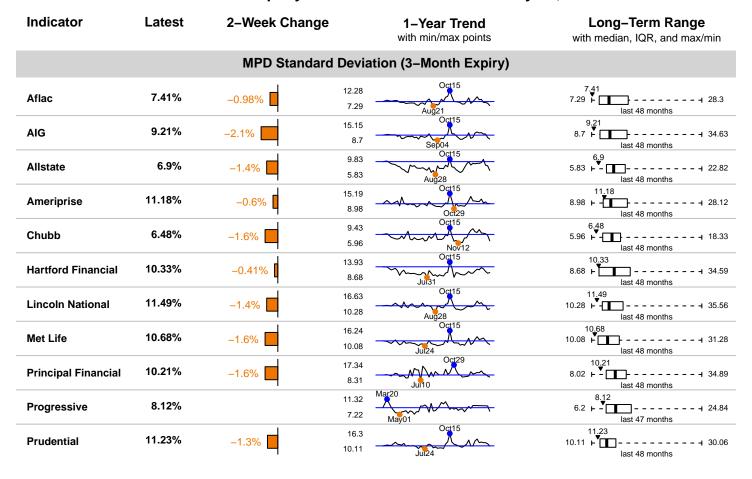
Source: FactSet Page 10 of 16



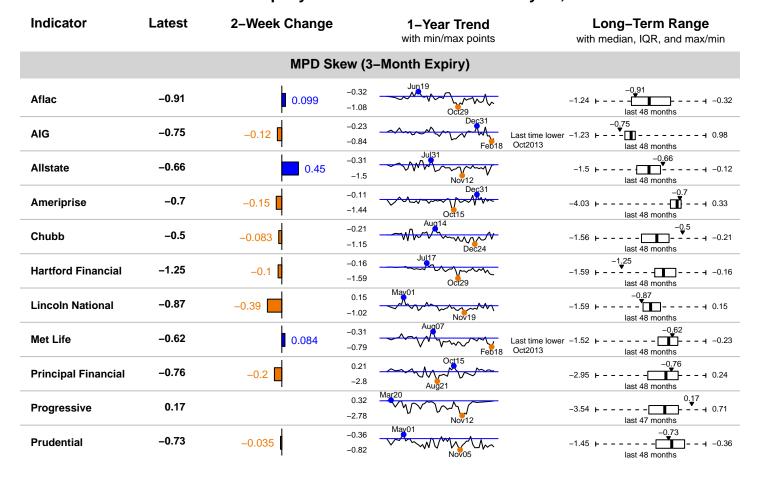
Source: FactSet Page 11 of 16

Indicator	Latest	2-Week Change		1–Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
		Volume	e (3-l	Month Expiry)	
American Express	26693	780%	28004	channaanthamath	26693 623 ⊢
Bank of America	133777	150%	133777	Fradoudla.ididuaaitidud	133777 7419 F 1 363160 last 48 months
BB&T	1843	-12%	6490 0	er dimendikatetoedaliin	1843 190 F - 1843 last 48 months
Barclays	320	-39%	11011	r callm.rlm.lttman	320 13 ♣ 1 1 15208 last 48 months
Bank of NY Mellon	1718	140%	15678 0		1718 59 H 1 17091 last 48 months
Citigroup	21922	100%	140439 0		21922 1104 + 1 1 150972 last 48 months
Capital One	341	-72%	5543 0	r Frithmanidasanah tarah albar	341 164 + 1 1 16299 last 48 months
Credit Suisse	251	-76 %	15145 0		251 0 1 1 15145 last 48 months
Deutsche Bank	2983	240%	25112 0	. Lt.aananaa.aldun.atmata	2983 62 H 1 29575 last 48 months
Fifth Third	4637	100%	6299 0	d. Ilalaandan atdaand	4637 28 HT 19127 last 48 months
Goldman Sachs	5708	34%	21840	l Muuthisimansiislistassa sasaa	5708 296 F - 1 43413 last 48 months
JP Morgan	13394	13%	79587		13394 943 + 1 119246 last 48 months
Keycorp	527	25%	3300	بالشمينانية المستندية	527 44 1 76270 last 48 months
Morgan Stanley	13636	100%	48955 0	r har. Latranauth litta .a.atadi	13636 327 ▶ 13636 1ast 48 months
PNC Financial	1666	-2.6%	4810	r t i haitain.litaanantaahtilistit	1666 83 FT 12224 last 48 months
Regions Financial	3337	-27%	4635 0	. Littilikaanikilissa altili	3337 20 FTF 19649 last 47 months
SunTrust	850	-64%	4232 0	nlan.atmlatmlitm.aatilitm	850 61 + 1 13788 last 48 months
State Street	235	-72 %	5339	1 c. datharahamanata.tarata.du	235 42 + 1
UBS	124		2034	r I I I , tions dituits assume assum	124 6 HT + 6502 last 47 months
US Bancorp	314	-71%	9006	. 1 : 1414-1414-1414-1414-1414-1414-1414-	314 172 HIII
Wells Fargo	8902	-33%	62697 0	nahaaaaaaadhillihaaadhiin	8902 950 + 167820 last 48 months

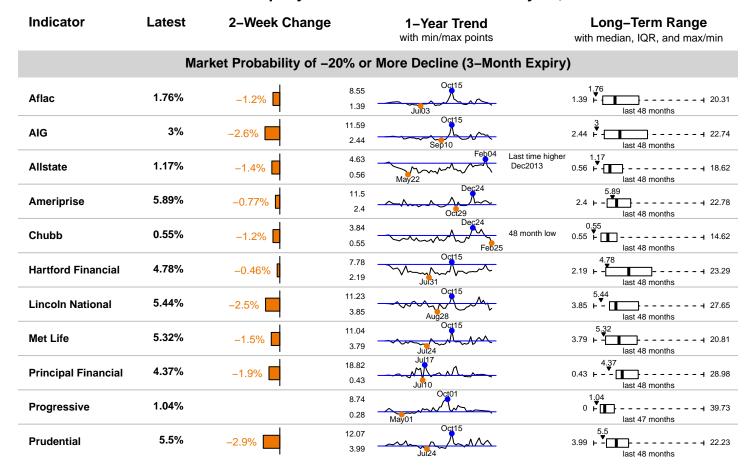
Source: FactSet Page 12 of 16



Source: FactSet Page 13 of 16



Source: FactSet Page 14 of 16



Source: FactSet Page 15 of 16

Indicator	Latest	2-Week Change		1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min	
Volume (3–Month Expiry)						
Aflac	12624	530%	13324	11 - matrimostatistis litsimata atsatisti	12624 405 + 1 22718 last 48 months	
AIG	69392	1900%	69392 0	Les alluttana taliaan aa alama aa al	69392 432 H∏D 103998 last 48 months	
Allstate	1222	100%	2913 0	Fr. walususaalaassaadalassaasaa	1222 76 1 68926 last 48 months	
Ameriprise	40	-83%	1071 0	idaaaadalaaadidaaadalaaa	5 + 1114 last 48 months	
Chubb	9027	1300%	9027 0		9027 11 11114 last 48 months	
Hartford Financial	402	5.2%	13441 0	.1.1	402 65 1 37285 last 48 months	
Lincoln National	1519	17%	8403 0	r r · · · · · · · · · · · · · · · · · ·	1519 51 H	
Met Life	3415	9.2%	29248 0	o catalaanaa kanaa hallka	3415 319 1 161416 last 48 months	
Principal Financial	545	1500%	545 0	t collibration delication of the total	545 2 ¶ 3846 last 48 months	
Progressive	10		474 0	.1 . (0 1 0 4 4283 last 47 months	
Prudential	1817	-66%	13225 0	da.inlalad.lattoolit.aa.o.indis	1817 222 F 1 13225 last 48 months	

Source: FactSet Page 16 of 16