#### FEDERAL RESERVE BANK OF MINNEAPOLIS

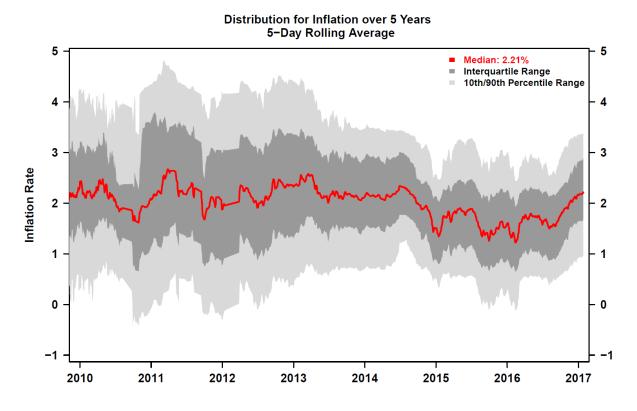
BANKING AND POLICY STUDIES

## Minneapolis Options Report – Jan 27<sup>th</sup>

Median inflation expectations rose over the two week period for both inflation tenors; notably the 5-year tenor has risen at a steady rate of 3 bps per week since September 2016. MPD skews for Treasuries point towards neutral investor bias; the 5-year note posted near record volume. The 5-year LIBOR tenor experienced one of its largest increases within its 47-month observational history as the market probability of LIBOR less than 1% fell by -7 percentage points. Options volumes for the S&P 500, banks, insurance, and the iShares US Real Estate Index were all at elevated levels; notably banks and insurance volumes were call-heavy while the remaining markets were put-heavy. The dollar was weaker against all currencies we follow.

#### Inflation

Market-based inflation expectations derived from caps and floors on the CPI for 1- and 5-year periods increased for both tenors by 3.1 bps and 3.9 bps respectively. Median inflation expectations currently stand at 2.31% for the 1-year tenor and 2.23% and 5-year tenor. The increase registered by the 5-year tenor is shown for reference (see figure, below).



#### Additional detail:

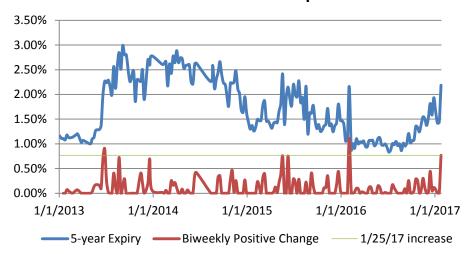
• Median expectations for the 5-year tenor have been increasing since September 2016 at a rate of 3 bps per week and stands at its highest level in 12 months.

#### Interest Rate

Treasuries prices declined over the two-week period; consequently yields rose; MPD skew levels have increased form lows plumbed on December 14, 2016 and currently signal neutral bias. The 5-year LIBOR tenor experienced its largest increase since February, 2016 and the probability of a low LIBOR,

defined as the market probability of LIBOR below 1%, fell by -7 percentage points. The increase in median LIBOR expectation represents one of the largest changes in nearly four years (see chart, below).

#### **Median 3 Month LIBOR Expectations**



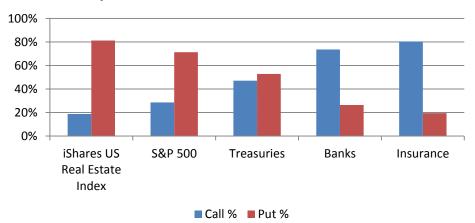
#### Banks and Insurance Companies

The S&P 500 rose by 1% over the past two weeks with the 6- and 12-month tenors posting an average MPD standard deviation decrease of -0.95 percentage points sending the metric to its lowest level in 12 months for each tenor. The 20 banking firms we follow posted a -0.2% return, underperforming the market. The 11 insurance companies we follow outperformed the broader market index returning 1.4% on average.

#### Additional details:

• The S&P 500, 9 of the 20 banks we follow and 3 of the 11 insurance firms we follow posted the volume increases at or above the 75<sup>th</sup> percentile level of their respective 47-month observational history. While financials (banking and insurance) had call-heavy volume, real estate, treasuries and the S&P 500 had put-heavy volume.

# Aggregated Call and Put Share of Markets with Options' Volume Above 75th Percentile

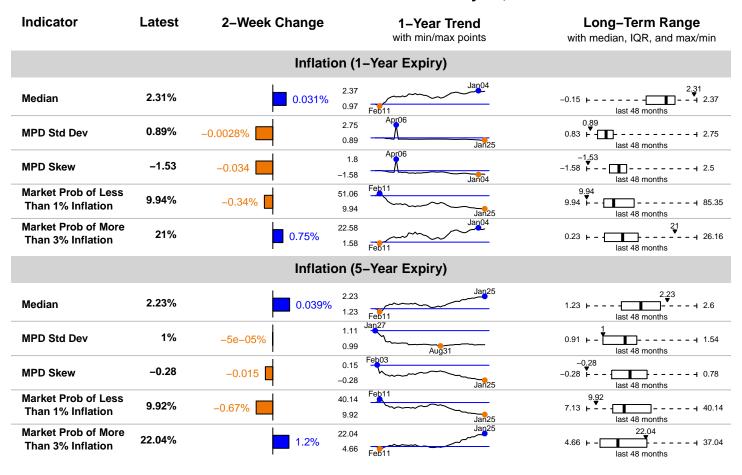


• MPD standard deviation, a proxy for investor uncertainty, for the S&P 500 has fallen at an average rate of -0.1 percentage points per week since it registered its high on February 11, 2016.

#### Other Markets

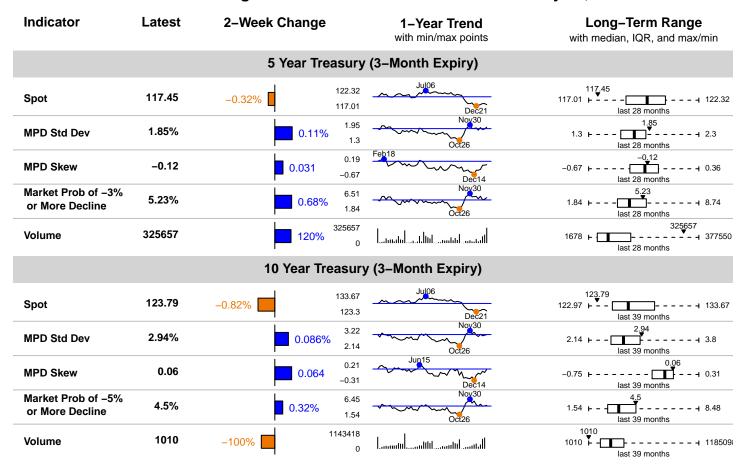
- The iShares US Real Estate Index outperformed the market returning 1.2%; MPD standard deviation decreased by -0.7 percentage points. As noted above, the index posted record volume over the two-week period.
- The dollar was weaker all the currencies we follow. MPD standard deviation fell across all currency pairs, implying a reduction in investor uncertainty. MPD skew for the USD-Yen pairing signals towards neutral bias.
- Gold and silver rose by 0.1% and 0.8% respectively. MPD standard deviation fell by an average 0.65 percentage points for both metals. MPD skews currently signal neutral bias for both metals.
- WTI crude fell by -1.4% over the 2 week period. Changes in MPD statistics were mostly flat.
- Corn, soybeans and wheat increased by 2.6%, 4.2% and 1.4%. MPD skews for all crops signal investor bias towards future higher crop prices.
- Agricultural livestock increased modestly with cattle and hogs each posting returns of 0.65%. MPD standard deviation rose for both markets by an average 0.6 percentage points.

#### Inflation MPD Statistics as of January 25, 2017

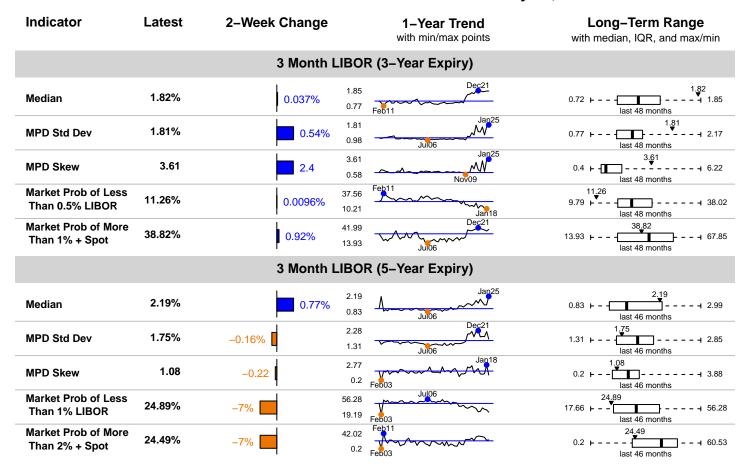


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#### Medium-to-Long Bond Price MPD Statistics as of January 25, 2017



#### Short Interest Rates MPD Statistics as of January 25, 2017



Source: Bloomberg Page 3 of 16

#### Equity Index MPD Statistics as of January 25, 2017



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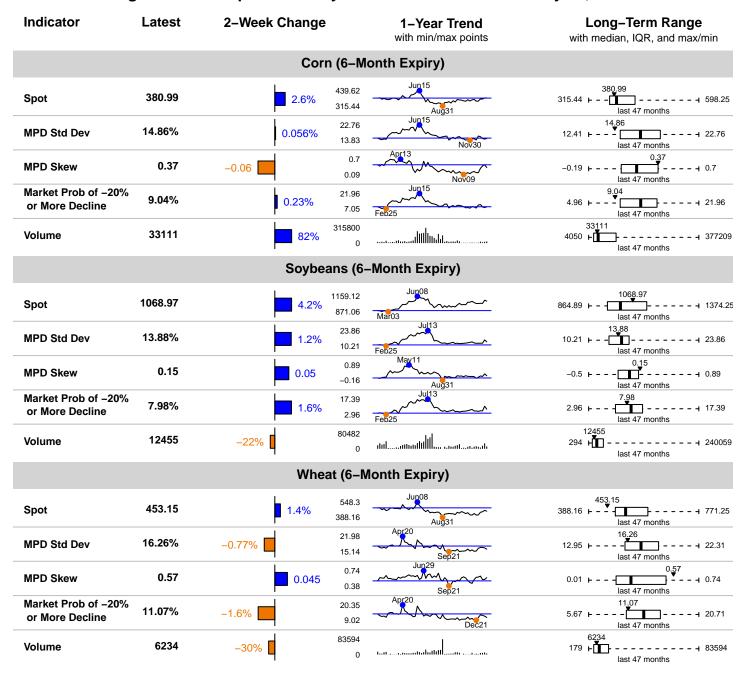
#### Exchange Rate MPD Statistics as of January 25, 2017



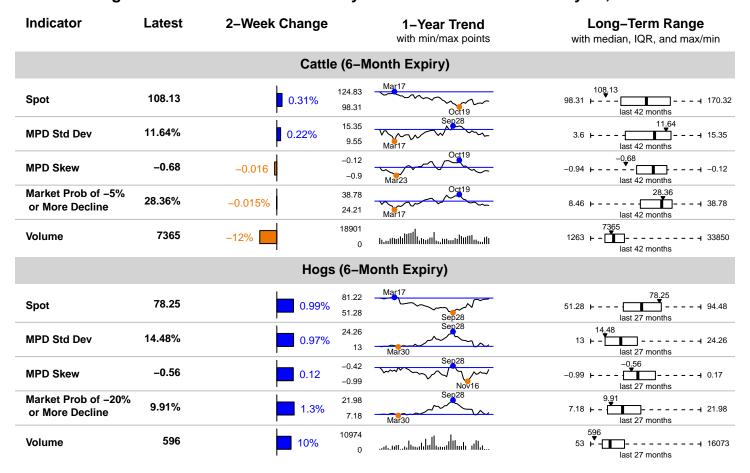
#### Metal and Energy Commodity MPD Statistics as of January 25, 2017



#### Agricultural Crop Commodity MPD Statistics as of January 25, 2017



## Agricultural Livestock Commodity MPD Statistics as of January 25, 2017

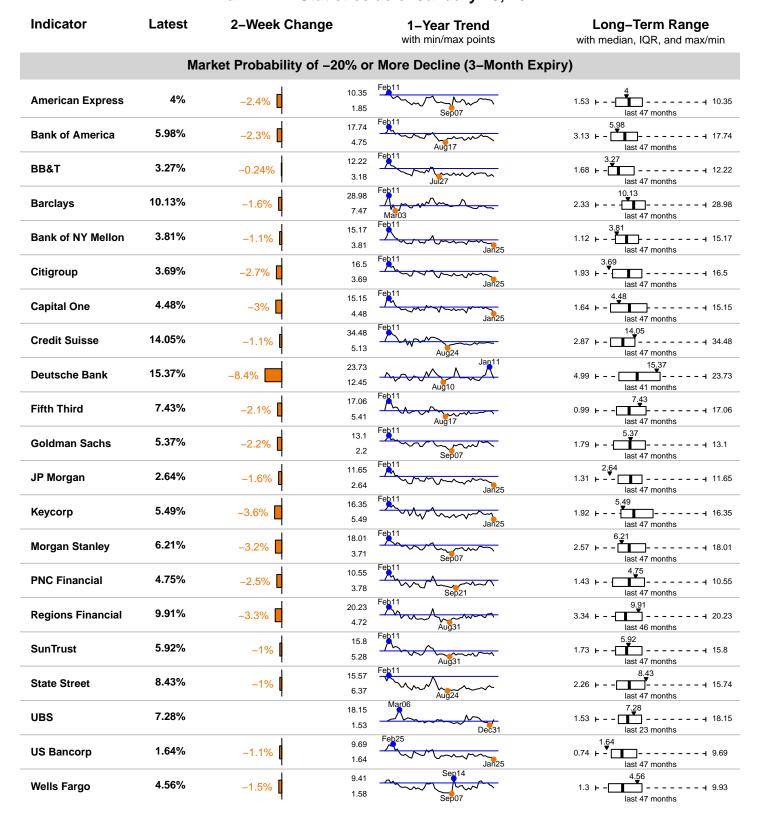


Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min			
MPD Standard Deviation (3–Month Expiry)							
American Express	10.13%	-1.9%	5.87 Sep14 8.2 Sep07	7.82 + 10,13 15.87 last 47 months			
Bank of America	12.2%	-1.6%	1.78 Feb11 1.39 Aug17	9.68 + - 12.2 9.68 + - 12.78 last 47 months			
BB&T	9.35%	_0.81% <b> </b>	6.69 Feb11 9.09 Oct26	9.35 7.29 + - 16.69 last 47 months			
Barclays	16.6%	-1.2%	1.05 Jun <sup>29</sup> 4.24 Maro3	16.6 10.93 F - 16.6 last 47 months			
Bank of NY Mellon	10.08%	-0.66%	7.63 Feb11 0.08 Jan25	10.08 7.13 + 117.63 last 47 months			
Citigroup	10.57%	-1.8%	0.73 Feb11 0.57 Jan25	10.57 8.52 F - Ilast 47 months			
Capital One	10.8%	_2 4%	3.85 Feb11 10.8 Jan25	7.72 F - 10.8  10.8  7.72 F - 19.11  last 47 months			
Credit Suisse	19.92%	-0.71%	1.32 Aug24 5.53 Aug31	19,92 9.84 + - 10 - 31.32 last 47 months			
Deutsche Bank	20.38%	-3.2%	Dec28 3.18 Maro3	20,38 11.33 + 1 39.74 last 41 months			
Fifth Third	12.59%	-1.2%	9.87 Feb18 1.62 Aug17	12,59 8.21 + - 12,59 last 47 months			
Goldman Sachs	11.35%	-1.6%	3.62 Feb11 8.8 Sep07	11.35 8.23 F - 18.62 last 47 months			
JP Morgan	9.1%	-1.5%	16.5 Feb11 9.02 Oct19	9,1 7.41 + - 16.5 last 47 months			
Keycorp	12.19%	-1.9%	18.8 Apr13 1.79 Oct26	12.19 8.98 + 18.8 last 47 months			
Morgan Stanley	11.92%	<b>-2 1%</b>	2.74 Feb11 0.87 Sep07	11,92 8.97 + - 122.74 last 47 months			
PNC Financial	10.59%	-1.4%	15 Feb11 9.59 Apr20	7.45 + last 47 months			
Regions Financial	14.22%	-1 8% <b></b>	1.74 Feb11 1.55 Aug31	10.09 + 14.22 last 46 months			
SunTrust	11.84%	_0 72%	9.05 Feb18 1.22 Aug24	11.84 7.82 + 19.05 last 47 months			
State Street	13.15%	-0.54%	3.31 Feb18 Apr27 Apr27	13.15 8.81 + 18.49 last 47 months			
UBS	13.36%	19	9.02 Mar06 8.7 Sep24	13.36 8.7 + - 13.36 last 23 months			
US Bancorp	8.11%	<b>–1 1%</b> ■	4.43 Feb11 Oct 26	8.11 6.58 + - 14.54 last 47 months			
Wells Fargo	10.43%	<b>−1 1%</b> ■	7.68 Sep14 7.86 Sep07	10,43 7.16 F - 17.68 last 47 months			

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Indicator	Latest	2-Week Change	1–Year Trend with min/max points	Long-Term Range with median, IQR, and max/min		
MPD Skew (3-Month Expiry)						
American Express	-0.57	0.05	0.21 Sep14 0.99 Sep21	-0.99 <b></b> last 47 months		
Bank of America	-0.24	0.1	0.2 Dec14 0.83 Feb18	-0.24 -0.99 F		
BB&T	-0.74	0.15	Jan04 1.76 Sep14	-0.74 -1.76 +		
Barclays	-0.68	0.11	0.27 Mar10 .88 May25	-0.68 -2.51 <b>⊢                            </b>		
Bank of NY Mellon	-0.55	0.3	0.53 Dec28 0.35 Nov09	-0.55 -1.39 <b>⊢                              </b>		
Citigroup	-0.21	0.23	0.21 Jan 25 0.04 Feb 25	-0.21 -1.17 +		
Capital One	-0.48	0.039	0.42 Dec28 -1.2 Mar03	-0.48 -1.2 +		
Credit Suisse	-0.95	0.22	0.4 Jan <sup>28</sup> 2.76 Aug <sup>24</sup>	-0.95 -2.76 + 1.81 last 47 months		
Deutsche Bank	-0.42	0.33	0.47 Dec28 0.52 Oct12	-1.52 F 0.47 last 41 months		
Fifth Third	-0.8	-0.35	0.25 Jan 28 Aug 31	-0.8 -1.69 + 1 2.19 last 47 months		
Goldman Sachs	-0.41	0.063	0.15 Sep14 0.99 Sep28	-0.41 -1.09 <b>⊢ </b>		
JP Morgan	-0.41	0.012	).41 .22 Sep21	-0.41 -1.22 +		
Keycorp	-0.44	0.07	0.34 Jan28	-0.44 -1.79 + 0.34 last 47 months		
Morgan Stanley	-0.52	0.039	0.33 Sep14 0.07 Oct19	-0.52 -1.12 +		
PNC Financial	-0.69	0.17	).42 Jan28	-0.69 -1.84 +		
Regions Financial	-0.39	0.044	0.03 Mar10 -1.6 Aug03	-0.39 -1.6 + 0.68 last 46 months		
SunTrust	-0.47	0.055	0.21 Feb11 .07 Sep14	-0.47 -1.27		
State Street	-0.7	0.089	0.24 Feb11 .42 Aug31	-0.7 -2.31 <b>⊦ </b>		
UBS	-0.04		0.91 Dec31 1.72 Nov26	-0.04 -3.36 + 0.91 last 23 months		
US Bancorp	-0.35	0.11	Jan 25 .34 Aug 31	-0.35 -1.55 +		
Wells Fargo	-0.5	-0.054	0.06 Sep14 -1.1 Mar03	-1.3 <b>F </b>		

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Indicator	Latest	2-Week Change		1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
		Volum	e (3-l	Month Expiry)	
American Express	13961	210%	15162 0	hustatilistismistitilissilmitassil	13961 532 <b>- 1</b> 32713 last 47 months
Bank of America	202436	160%	215456 0	ultintaaanitatitaatintatillad	202436 7419 + - 1 215456 last 47 months
BB&T	1930	-23%	5463 0	haana.lahannahahanadhiinh	1930 126 <b> 193  6</b> 490 last 47 months
Barclays	1277	31%	18909 0	مستدينا فالسلطان مدامين	1277 8 <b>⋅√√</b> 18909 last 47 months
Bank of NY Mellon	1870	330%	33235 0	L	1870 44 <b> </b>
Citigroup	4197	-88%	90561	haatmatiathaliatdi.ar.atatl.	4197 1810 + 140439 last 47 months
Capital One	2413	130%	10334	L	2413 136 <b>⊢ □□□</b> 1 10334 last 47 months
Credit Suisse	2267	-22%	31577 0		2267 1 <b>¶</b> → 31577 last 47 months
Deutsche Bank	4661	480%	99132 0	ahahhddumat i	4661 76 1 99132 last 41 months
Fifth Third	578	-14%	6123	nta allatuu ka atuu arattalla.	578 24 HT 19127 last 47 months
Goldman Sachs	11087	22%	40920 0	anhanaddadllu.ah	11087 612 F 1 4 40920 last 47 months
JP Morgan	23927	-13%	66163 0	lanatatlaaathilaaatiditatuuh	23927 951 + 132116 last 47 months
Keycorp	31081	870%	31081		31081 44 # 31081 last 47 months
Morgan Stanley	37739	710%	37739 0	أميمنا الشياشين الممسيد بسيسيسي	37739 327 <b>⊢                                   </b>
PNC Financial	1723	60%	2996 0	anda a dilla adiila adiildi	1723 42 F 1 4932 last 47 months
Regions Financial	37329	3400%	47587 0		37329 20 <b>1</b> 47940 last 46 months
SunTrust	14765	950%	14765 0		14765 61 HT 14765 last 47 months
State Street	1685	370%	2700 0	استسمماليا الماليمانيا	1685 19 H∏D
UBS	124		2034	r I I I , tumadiliutkataana watan	23   2766   last 23 months
US Bancorp	4003	-11%	33496 0	tut.at.tualunaat.altiin.ah	4003 52 HT 33496 last 47 months
Wells Fargo	28143	55%	80746 0	uuaant.aa.taatlahtitdhaati	28143 950 <b>⊢                                   </b>

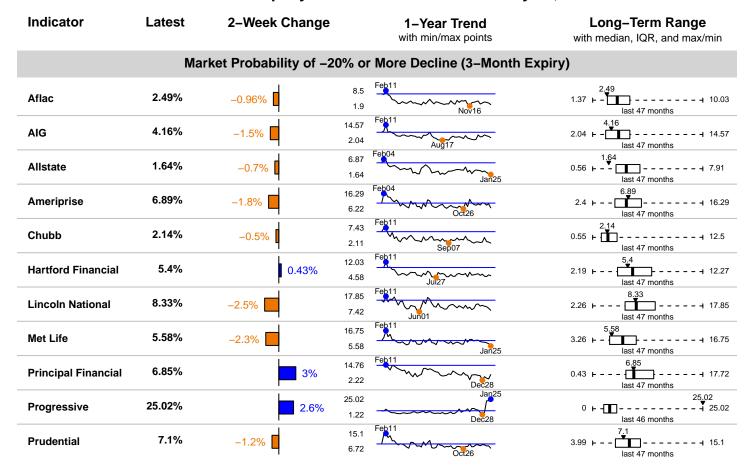
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Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
		MPD Standard	Deviation (3–Month Expiry)	
Aflac	8.28%	-0.77%	13.6 Feb11 8.18 Jun08	8.28 7.11 + - 13.91 last 47 months
AIG	10.03%	-1.1%	18.95 Feb11 8.3 Sep07	10.03 8.3 F - 18.95 last 47 months
Allstate	7.61%	-0.41%	7 Feb11 Aug24	7.61 5.83 + 13.18 last 47 months
Ameriprise	12.36%	-1.1%	18.71 Feb11 11.92 Oct26	8.98 F 12.36 last 47 months
Chubb	7.67%	-0.61%	7.67 Feb11 Jan25	7.67 5.96 + 1 24.08 last 47 months
Hartford Financial	11.6%	0.51%	17.91 Feb11 10.39 Sep07	8.35 F 11.6 last 47 months
Lincoln National	13.77%	-1.2%	22.48 Feb11 13.77 Jan25	13.77 8.98 <b> 1</b> 22.48 last 47 months
Met Life	11.81%	-1.6%	19.33 Feb11 11.81 Jan25	9.4 <b>F</b> - 11.81 9.4 <b>F</b> - 19.33 last 47 months
Principal Financial	13.23%	3.1%	18.94 Feb18 8.97 Nov16	8.02 F 3.83 last 47 months
Progressive	21.37%	1.7%	21.37 Jan <sup>25</sup> 8.44 Aug <sup>10</sup>	21,37 5.79 + 1 21.37 last 46 months
Prudential	13.04%	-0.82%	18.24 Feb11 12.39 Sep28	13.04 10.09 F 18.54 last 47 months

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Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min			
	MPD Skew (3-Month Expiry)						
Aflac	-1.03	_0.034	-0.06 Nov16 -1.25 Sep07	-1.03 -1.31 + last 47 months			
AIG	-0.62	0.095	-0.32 -1.14 Feb04	-1.16 F			
Allstate	-0.67	0.15	-0.59 Dec28 -1.39 Sep07	-0.67 -1.5 +			
Ameriprise	-0.86	0.0051	-0.21 -1.47 Nov30 Oct05	-0.86 -1.7  0.11 last 47 months			
Chubb	-0.9	-0.017	-0.64 -1.65 Aug31	-1.65 <b></b>			
Hartford Financial	-0.52	0.14	-0.16 Jul 7 -1.55 Feb 11	-0.52 -1.67 <b></b> last 47 months			
Lincoln National	-0.58	0.0097	-0.33 Apr06 Apr06 May04	-0.58 -1.15 <b>⊢ □ □ □ − →</b> 0.15 last 47 months			
Met Life	-0.37	0.064	-0.28 Dec14 -1.24 Jun01	-0,37 -1.24 <b></b> last 47 months			
Principal Financial	-1.89	-1.3	0.07 Jun08 -2.73 Oct19	-1.89 -2.95 <b>⊢ </b>			
Progressive	0.65	-0.31	0.96 Jan11 -3.87 Jan04	0.65 -3.87 + 0.96 last 46 months			
Prudential	-0.4	-0.004	-0.4 -1.2 Jan11 May18	-0.4 -1.2 <b>F </b>			

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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	5991	900%	9135 0		5991 68 HT 22718 last 47 months	
AIG	1482	47%	44233 0	latilist	1482 110 Final 69392 last 47 months	
Allstate	621	21%	3608 0	ana.a.a.ala.a.anathl.anath	621 33 <b>⊢                                  </b>	
Ameriprise	175	9.4%	1973 0		175 7 <b>- П</b> 1973 last 47 months	
Chubb	458	-23%	6138 0	han	458 3 <b>4</b> 9027 last 47 months	
Hartford Financial	1618	61%	2758 0	landeleatibleleadadheatrali	1618 16 <b>⊢∭</b> 13441 last 47 months	
Lincoln National	798	23%	4145 0	an anathan almatica arailtiman	798 51 <b>म∏ੈ</b> 8403 last 47 months	
Met Life	27721	550%	27721 0	ua.a.a.a.lula.a.a.t.dliutad	27721 319 F 29248 last 47 months	
Principal Financial	85	-5.6%	1379 0		85 2 <b>円∭ 1</b> 1379 last 47 months	
Progressive	107	1100%	1424 0	adada datamaaa	107 0 <b>(Ĭ</b> □ 3415 last 46 months	
Prudential	4027	65%	14512 0	adalaraanaraaalaadhu	4027 222 <b>⊢</b>	

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