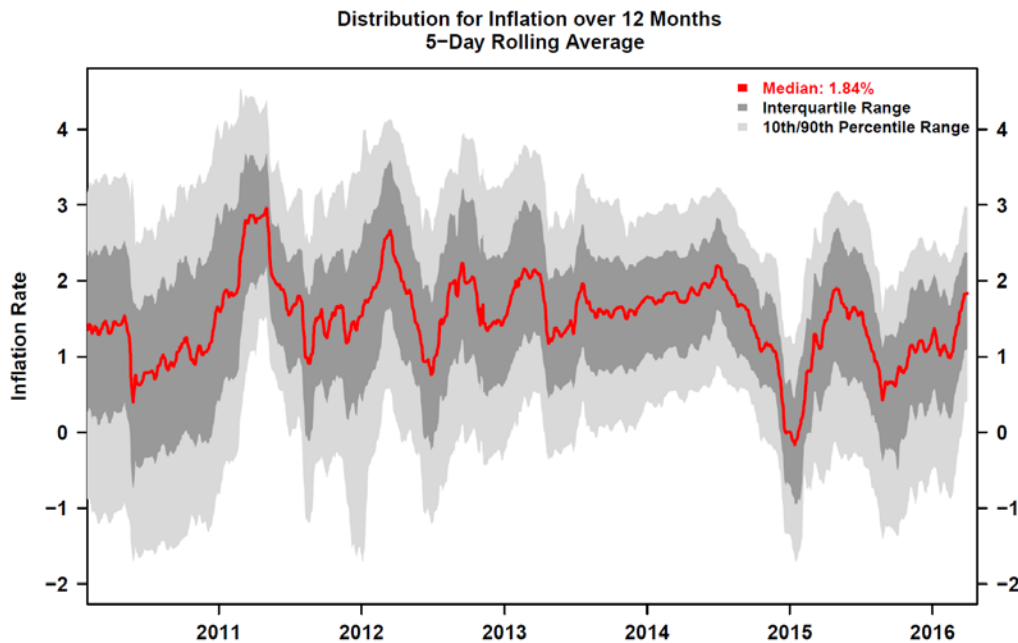


## Minneapolis Options Report – April 1<sup>st</sup>

Median inflation expectations rose for all inflation tenors we follow (1-, 2-, and 5-year periods) over the 2-week reporting period. Expectations for the 1- and 2-year inflation expectations are at or above historic median values whereas the 5-year tenor is well below its historic median. The S&P 500 returned 1.8% as did the insurance firms we follow; banking firms however underperformed. All currencies we follow (euro, pound, yen) were stronger against the dollar. Changes in MPD standard deviation for lean hogs are beginning to diverge from that of cattle as lean hogs posted a new historic low.

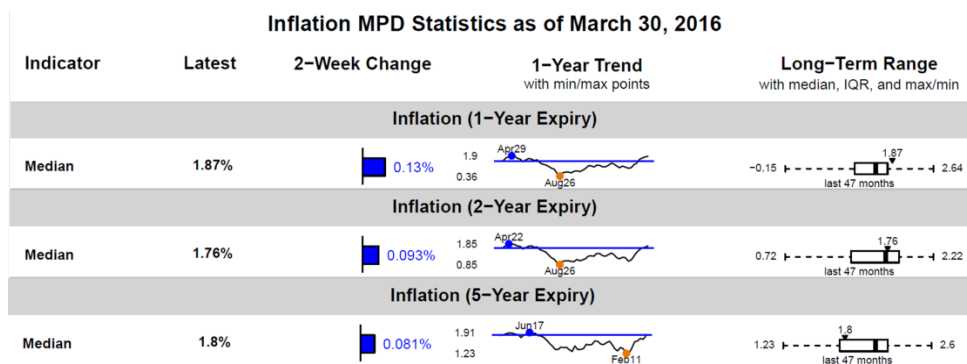
### *Inflation*

Market-based inflation expectations derived from caps and floors on the CPI for 1-, 2-, and 5-year periods rose over the 2-week period to 1.87%, 1.76% and 1.80%, respectively. This increase is best observed in the 1-year tenor (see figure, below).



### Additional detail:

- The MPD standard deviation of the 1-year tenor set a new 1-year low at 1.01%.
- Short term inflation expectations are currently higher than longer term inflation expectations. When compared with respective historical measurements the 2-year inflation tenor is at its 4-year median value and the 1-year tenor's median expectation is slightly above its 75<sup>th</sup> percentile range. The 5-year tenor however is just above the 25<sup>th</sup> percentile range demonstrating that long term expectations are depressed relative to historical expectations (see chart below).



### *Interest Rate*

Treasury spots and LIBOR rates increased slightly over the 2-week period; however changes in respective MPD statistics were negligible. The 3-year LIBOR tenor did post a new 1-year low for MPD standard deviation ending at 1.1% which is just below its 4-year 25<sup>th</sup> percentile range.

### *Banks and Insurance Companies*

The S&P 500 returned 1.8% over the past two weeks with the 6- and 12- month tenors registering an average MPD standard deviation decrease of -0.9 percentage points. The 19 banking firms we follow posted a -0.2% return, underperforming the market. Changes in MPD standard deviation, for most firms, mirrored those of the S&P 500, falling by -0.7 percentage points and signaling a slight reduction in investor uncertainty. The 11 insurance companies we follow matched the market, returning 1.8% on average as MPD standard deviations moved in line with the broader equity market, falling by -0.6 percentage points respectively.

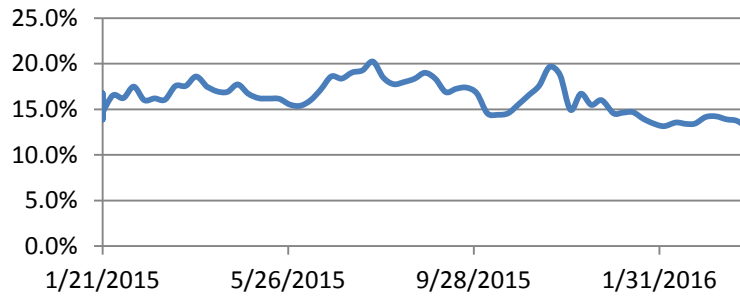
Additional details:

- BCS and DB posted the largest MPD standard deviation increases over the 2-week reporting period registering increases of 4.4 and 5.8 percentage points respectively. Additionally tail risk, as measured by the market probability of -20% or more decline, rose for these firms by 7.9 for and 3.0 percentage points.

### *Other Markets*

- The iShares US Real Estate Index underperformed the markets, registering a 1.2% return.
- All currencies we follow (euro, pound, yen) were stronger against the dollar. Investor uncertainty regarding the USD-Euro currency pair, as measured by MPD standard deviation, set a new 1-year low at 4.51%.
- Gold returned -0.2% over the two-week period. Its MPD standard deviation fell by -0.6 percentage points, indicating a small reduction in investor uncertainty. Silver's MPD skew set a new 4-yr high during the 2-week reporting cycle, signaling market bias towards higher future silver prices.
- The market probability of -20% or more decline for WTI crude fell by -1.3 percentage points and has moved downwards since February 11<sup>th</sup> 2016.
- The MPD standard deviation increased for soybeans to 13.2% and has been increasing since February 25<sup>th</sup> 2016 when it set its current 1-year low.
- MPD standard deviation has diverged for agricultural livestock where hogs have been witnessing a decreasing trend; cattle have seen a flat trend since the start of 2016. MPD standard deviation for hogs has been falling since November 2015 setting a new historic low as demonstrated in the plot below.

### MPD Standard Deviation for Hogs



## Inflation MPD Statistics as of March 30, 2016

Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
<b>Inflation (1-Year Expiry)</b>				
Median	1.87%	0.13%		
MPD Std Dev	1.01%	-0.075%		
MPD Skew	-1.11	-0.061		
Market Prob of Less Than 1% Inflation	21.22%	-5.2%		
Market Prob of More Than 3% Inflation	10.29%	2%		
<b>Inflation (2-Year Expiry)</b>				
Median	1.76%	0.093%		
MPD Std Dev	1.12%	-0.082%		
MPD Skew	-0.15	0.058		
Market Prob of Less Than 1% Inflation	25.28%	-3.9%		
Market Prob of More Than 3% Inflation	11.83%	0.52%		
<b>Inflation (5-Year Expiry)</b>				
Median	1.8%	0.081%		
MPD Std Dev	1.01%	-0.01%		
MPD Skew	-0.17	-0.008		
Market Prob of Less Than 1% Inflation	21.73%	-2.8%		
Market Prob of More Than 3% Inflation	9.8%	1.2%		

## Medium-to-Long Bond Price MPD Statistics as of March 30, 2016

Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
<b>5 Year Treasury (3-Month Expiry)</b>				
Spot	120.91	0.72%		
MPD Std Dev	1.66%	-0.088%		
MPD Skew	0.05	0.15		
Market Prob of -3% or More Decline	3.84%	-0.71%		
Volume	75984	-3.3%		
<b>10 Year Treasury (3-Month Expiry)</b>				
Spot	130.01	0.91%		
MPD Std Dev	2.68%	0.0013%		
MPD Skew	0.08	0.054		
Market Prob of -5% or More Decline	3.31%	-0.16%		
Volume	262845	10%		


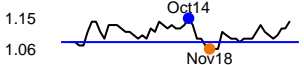


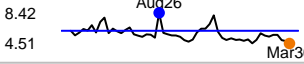
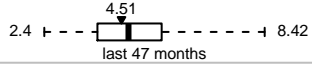

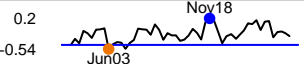
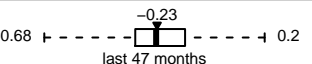

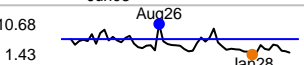
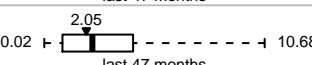


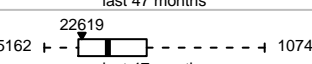
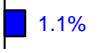

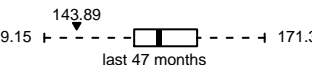


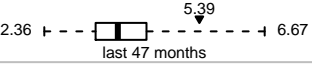

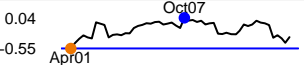
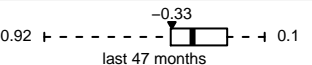





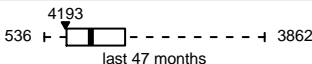
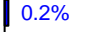
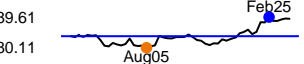
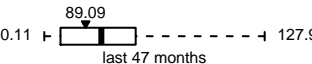

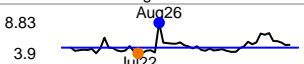
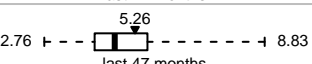


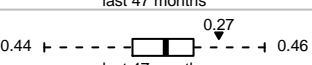

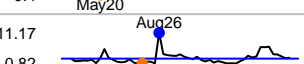
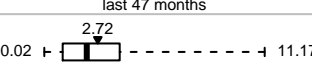
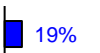

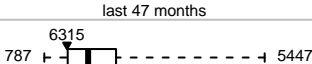
## Short Interest Rates MPD Statistics as of March 30, 2016

Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
<b>3 Month LIBOR (3-Year Expiry)</b>				
Median	1.01%	0.038%		
MPD Std Dev	1.05%	-0.17%		
MPD Skew	1.28	0.35		
Market Prob of Less Than 0.5% LIBOR	27.31%	-0.75%		
Market Prob of More Than 1% + Spot	26.69%	-3.8%		
<b>3 Month LIBOR (5-Year Expiry)</b>				
Median	1.06%	0.017%		
MPD Std Dev	1.55%	-0.0058%		
MPD Skew	1.42	-0.2		
Market Prob of Less Than 1% LIBOR	47.86%	-0.6%		
Market Prob of More Than 2% + Spot	21.52%	2.4%		

## Equity Index MPD Statistics as of March 30, 2016

Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
<b>S&amp;P 500 (6-Month Expiry)</b>				
Spot	2063.95	<span style="color: blue;">1.8%</span>		
MPD Std Dev	11.31%	<span style="color: orange;">-1.5%</span>		
MPD Skew	-1.47	<span style="color: blue;">0.096</span>		
Market Prob of -20% or More Decline	6.25%	<span style="color: orange;">-1.8%</span>		
Volume	136668	<span style="color: blue;">23%</span>		
<b>S&amp;P 500 (12-Month Expiry)</b>				
Spot	2063.95	<span style="color: blue;">1.8%</span>		
MPD Std Dev	17.88%	<span style="color: orange;">-0.42%</span>		
MPD Skew	-1.55	<span style="color: blue;">0.036</span>		
Market Prob of -20% or More Decline	12.48%	<span style="color: blue;">0.025%</span>		
Volume	45507	<span style="color: orange;">-44%</span>		
<b>iShares US Real Estate Index (3-Month Expiry)</b>				
Spot	77.4	<span style="color: blue;">1.2%</span>		
MPD Std Dev	7.93%	<span style="color: orange;">-0.59%</span>		
MPD Skew	-0.8	<span style="color: blue;">0.42</span>		
Market Prob of -10% or More Decline	11.37%	<span style="color: orange;">-0.69%</span>		
Volume	46733	<span style="color: blue;">490%</span>		

## Exchange Rate MPD Statistics as of March 30, 2016

Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
<b>Dollar-Euro Futures (3-Month Expiry)</b>				
Spot	1.14	 1.8%		
MPD Std Dev	4.51%	 -0.42%		
MPD Skew	-0.23	 -0.11		
Market Prob of -10% or More Decline	2.05%	 -0.55%		
Volume	22619	 -21%		
<b>Dollar-Pound Futures (3-Month Expiry)</b>				
Spot	143.89	 1.1%		
MPD Std Dev	5.39%	 0.097%		
MPD Skew	-0.33	 0.024		
Market Prob of -10% or More Decline	4.29%	 0.18%		
Volume	4193	 -37%		
<b>Dollar-Yen Futures (3-Month Expiry)</b>				
Spot	89.09	 0.2%		
MPD Std Dev	5.26%	 -0.34%		
MPD Skew	0.27	 -0.13		
Market Prob of -10% or More Decline	2.72%	 -0.45%		
Volume	6315	 19%		



## Metal and Energy Commodity MPD Statistics as of March 30, 2016

Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
<b>Gold (6-Month Expiry)</b>				
Spot	1230.06	-0.16%		
MPD Std Dev	12.27%	-0.6%		
MPD Skew	0.1	0.011		
Market Prob of -20% or More Decline	5.33%	-0.98%		
Volume	8507	-35%		
<b>Silver (6-Month Expiry)</b>				
Spot	15.29	0%		
MPD Std Dev	18.47%	-0.32%		
MPD Skew	0.21	0.06		
Market Prob of -20% or More Decline	15.02%	-0.55%		
Volume	1018	-13%		
<b>West Texas Intermediate Crude (6-Month Expiry)</b>				
Spot	41.76	-1.6%		
MPD Std Dev	29.61%	-0.74%		
MPD Skew	-0.51	-0.045		
Market Prob of -20% or More Decline	23.76%	-1.3%		
Volume	18920	-44%		

## Agricultural Crop Commodity MPD Statistics as of March 30, 2016

Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
<b>Corn (6-Month Expiry)</b>				
Spot	376.64	-0.61%		
MPD Std Dev	18.42%	0.058%		
MPD Skew	0.55	-0.12		
Market Prob of -20% or More Decline	14.63%	-0.26%		
Volume	46675	100%		
<b>Soybeans (6-Month Expiry)</b>				
Spot	919.95	1.9%		
MPD Std Dev	13.18%	0.73%		
MPD Skew	0.39	0.055		
Market Prob of -20% or More Decline	6.42%	0.91%		
Volume	7291	120%		
<b>Wheat (6-Month Expiry)</b>				
Spot	481.72	-1.3%		
MPD Std Dev	17.74%	-0.38%		
MPD Skew	0.52	-0.012		
Market Prob of -20% or More Decline	13.88%	-0.81%		
Volume	1019	20%		

## Agricultural Livestock Commodity MPD Statistics as of March 30, 2016

Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
<b>Cattle (6-Month Expiry)</b>				
Spot	119.12	-4.6%		
MPD Std Dev	12.48%	2.9%		
MPD Skew	-0.82	0.03		
Market Prob of -5% or More Decline	28.04%	3.8%		
Volume	6980	-3.4%		
<b>Hogs (6-Month Expiry)</b>				
Spot	80.84	-0.47%		
MPD Std Dev	13%	-0.9%		
MPD Skew	-0.47	0.11		
Market Prob of -20% or More Decline	7.18%	-1.5%		
Volume	3417	46%		

## Bank MPD Statistics as of March 30, 2016

Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
<b>MPD Standard Deviation (3-Month Expiry)</b>				
American Express	11.5%	-0.9%		
Bank of America	15.75%	-0.95%		
BB&T	11.17%	-1%		
Barclays	18.85%	4.4%		
Bank of NY Mellon	13.06%	0.26%		
Citigroup	14.14%	-1.2%		
Capital One	12.95%	-1.1%		
Credit Suisse	21.41%	-0.25%		
Deutsche Bank	26.43%	5.8%		
Fifth Third	13.87%	-1.5%		
Goldman Sachs	12.54%	-1.2%		
JP Morgan	10.94%	-1.2%		
Keycorp	15.05%	-0.26%		
Morgan Stanley	15.73%	-1.7%		
PNC Financial	10.89%	-1.2%		
Regions Financial	17.5%	-1.6%		
SunTrust	14.14%	-1.3%		
State Street	14.51%	-0.81%		
UBS	13.36%			
US Bancorp	9.58%	-1.2%		
Wells Fargo	10.27%	-0.63%		

## Bank MPD Statistics as of March 30, 2016

Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
<b>MPD Skew (3-Month Expiry)</b>				
American Express	-0.76	0.031		
Bank of America	-0.38	0.17		
BB&T	-1.04	-0.16		
Barclays	-0.61	-0.74		
Bank of NY Mellon	-0.89	-0.081		
Citigroup	-0.73	0.13		
Capital One	-0.94	0.056		
Credit Suisse	-0.65	0.38		
Deutsche Bank	-1.17	-0.35		
Fifth Third	-0.51	0.15		
Goldman Sachs	-0.91	-0.044		
JP Morgan	-0.88	0.039		
Keycorp	-0.72	-0.55		
Morgan Stanley	-0.9	0.055		
PNC Financial	-0.91	-0.12		
Regions Financial	-0.74	-0.17		
SunTrust	-0.9	0.016		
State Street	-0.6	0.15		
UBS	-0.04			
US Bancorp	-0.9	0.089		
Wells Fargo	-0.98	0.041		

## Bank MPD Statistics as of March 30, 2016

Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
<b>Market Probability of -20% or More Decline (3-Month Expiry)</b>				
American Express	6.22%	-1.2%		
Bank of America	9.97%	-1.2%		
BB&T	5.87%	-0.96%		
Barclays	15.96%	7.9%		
Bank of NY Mellon	7.43%	0.68%		
Citigroup	8.29%	-1.5%		
Capital One	7.39%	-1.3%		
Credit Suisse	17.23%	1.6%		
Deutsche Bank	18.41%	3%		
Fifth Third	7.9%	-1.6%		
Goldman Sachs	7.15%	-1.4%		
JP Morgan	5.26%	-1.5%		
Keycorp	9.77%	-1.8%		
Morgan Stanley	10.61%	-2.4%		
PNC Financial	5.14%	-1.3%		
Regions Financial	10.84%	-3.6%		
SunTrust	9.67%	-1%		
State Street	8.71%	-1.5%		
UBS	7.28%			
US Bancorp	3.74%	-1.4%		
Wells Fargo	4.8%	-0.71%		

## Bank MPD Statistics as of March 30, 2016

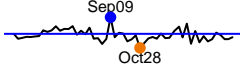
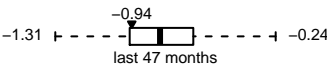
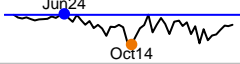
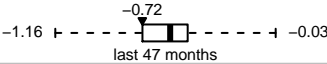
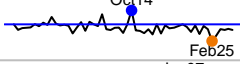
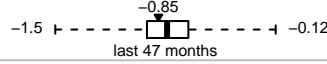

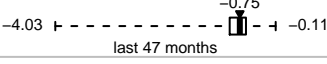
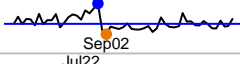
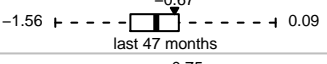
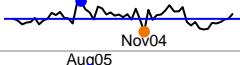
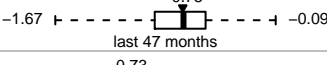

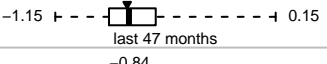
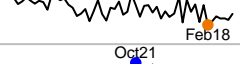
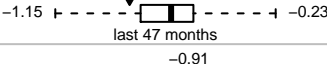
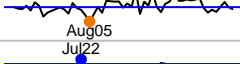
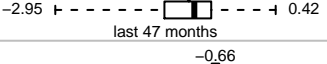

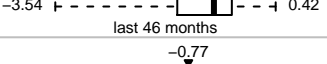

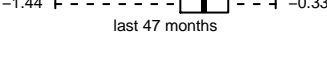
Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
<b>Volume (3-Month Expiry)</b>				
American Express	2168	-31%	32713 0	2168 623 - 32713 last 47 months
Bank of America	139395	120%	187673 0	139395 7419 - 363160 last 47 months
BB&T	1712	-11%	6459 0	1712 126 - 6490 last 47 months
Barclays	2243	720%	7859 0	2243 8 - 11011 last 47 months
Bank of NY Mellon	339	-73%	22171 0	339 44 - 22171 last 47 months
Citigroup	25718	-4%	57016 0	25718 1104 - 140439 last 47 months
Capital One	722	-47%	7596 0	722 136 - 16299 last 47 months
Credit Suisse	1339	-23%	12477 0	1339 0 - 15145 last 47 months
Deutsche Bank	5643	-37%	38235 0	5643 76 - 38235 last 41 months
Fifth Third	3007	66%	7607 0	3007 28 - 19127 last 47 months
Goldman Sachs	2376	-35%	19311 0	2376 296 - 28030 last 47 months
JP Morgan	13799	-1.2%	132116 0	13799 943 - 132116 last 47 months
Keycorp	2526	500%	3099 0	2526 44 - 76270 last 47 months
Morgan Stanley	12457	270%	36166 0	12457 327 - 69872 last 47 months
PNC Financial	923	220%	4932 0	923 42 - 5757 last 47 months
Regions Financial	1961	110%	4832 0	1961 20 - 47940 last 46 months
SunTrust	462	-47%	3345 0	462 61 - 13788 last 47 months
State Street	919	670%	961 0	919 19 - 5339 last 47 months
UBS	124		2034 0	124 6 - 6502 last 33 months
US Bancorp	5977	67%	9927 0	5977 52 - 29142 last 47 months
Wells Fargo	6008	-62%	55478 0	6008 950 - 121351 last 47 months

## Insurance Company MPD Statistics as of March 30, 2016

Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
<b>MPD Standard Deviation (3-Month Expiry)</b>				
<b>Aflac</b>	8.93%	-0.57%		
<b>AIG</b>	11.46%	-0.41%		
<b>Allstate</b>	9.07%	-0.54%		
<b>Ameriprise</b>	13.35%	-2.4%		
<b>Chubb</b>	8.8%	-0.94%		
<b>Hartford Financial</b>	11.35%	-1.4%		
<b>Lincoln National</b>	17.86%	-0.48%		
<b>Met Life</b>	13.42%	-0.34%		
<b>Principal Financial</b>	15.43%	0.64%		
<b>Progressive</b>	8.75%	-0.32%		
<b>Prudential</b>	14.47%	-0.19%		



## Insurance Company MPD Statistics as of March 30, 2016

Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
<b>MPD Skew (3-Month Expiry)</b>				
<b>Aflac</b>	-0.94	0.066	-0.24 -1.31 	-1.31   -0.94   -0.24 last 47 months 
<b>AIG</b>	-0.72	0.019	-0.47 -1.16 	-1.16   -0.72   -0.03 last 47 months 
<b>Allstate</b>	-0.85	0.00034	-0.16 -1.25 	-1.5   -0.85   -0.12 last 47 months 
<b>Ameriprise</b>	-0.75	-0.019	-0.32 -1.1 	-4.03   -0.75   -0.11 last 47 months 
<b>Chubb</b>	-0.67	0.38	0.09 -1.42 	-1.56   -0.67   0.09 last 47 months 
<b>Hartford Financial</b>	-0.75	0.28	-0.09 -1.67 	-1.67   -0.75   -0.09 last 47 months 
<b>Lincoln National</b>	-0.73	0.24	-0.07 -1.15 	-1.15   -0.73   0.15 last 47 months 
<b>Met Life</b>	-0.84	0.076	-0.51 -1.03 	-1.15   -0.84   -0.23 last 47 months 
<b>Principal Financial</b>	-0.91	-0.52	0.42 -1.79 	-2.95   -0.91   0.42 last 47 months 
<b>Progressive</b>	-0.66	-0.16	0.24 -2.03 	-3.54   -0.66   0.42 last 46 months 
<b>Prudential</b>	-0.77	0.19	-0.33 -1.04 	-1.44   -0.77   -0.33 last 47 months 

## Insurance Company MPD Statistics as of March 30, 2016

Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
<b>Market Probability of -20% or More Decline (3-Month Expiry)</b>				
Aflac	3.03%	-0.77%		
AIG	5.26%	-0.47%		
Allstate	3.28%	-0.97%		
Ameriprise	8.06%	-3.9%		
Chubb	2.58%	-1.7%		
Hartford Financial	5.94%	-0.92%		
Lincoln National	14.36%	-0.053%		
Met Life	7.87%	-0.8%		
Principal Financial	10.8%	-1.6%		
Progressive	2.44%	-0.51%		
Prudential	9.46%	-0.21%		

## Insurance Company MPD Statistics as of March 30, 2016

Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
<b>Volume (3-Month Expiry)</b>				
<b>Aflac</b>	<b>3061</b>	-20%	13168 0	88  22718 last 47 months
<b>AIG</b>	<b>12787</b>	100%	44233 0	110  103998 last 47 months
<b>Allstate</b>	<b>135</b>	-70%	4626 0	63  10621 last 47 months
<b>Ameriprise</b>	<b>97</b>	-67%	1035 0	5  1114 last 47 months
<b>Chubb</b>	<b>1101</b>	34%	3292 0	3  9027 last 47 months
<b>Hartford Financial</b>	<b>612</b>	-22%	9444 0	16  37285 last 47 months
<b>Lincoln National</b>	<b>348</b>	-52%	4145 0	51  8403 last 47 months
<b>Met Life</b>	<b>3720</b>	-26%	20912 0	319  161416 last 47 months
<b>Principal Financial</b>	<b>96</b>	78%	610 0	2  2956 last 47 months
<b>Progressive</b>	<b>578</b>	150%	2216 0	0  3415 last 46 months
<b>Prudential</b>	<b>14512</b>	390%	17185 0	222  17185 last 47 months