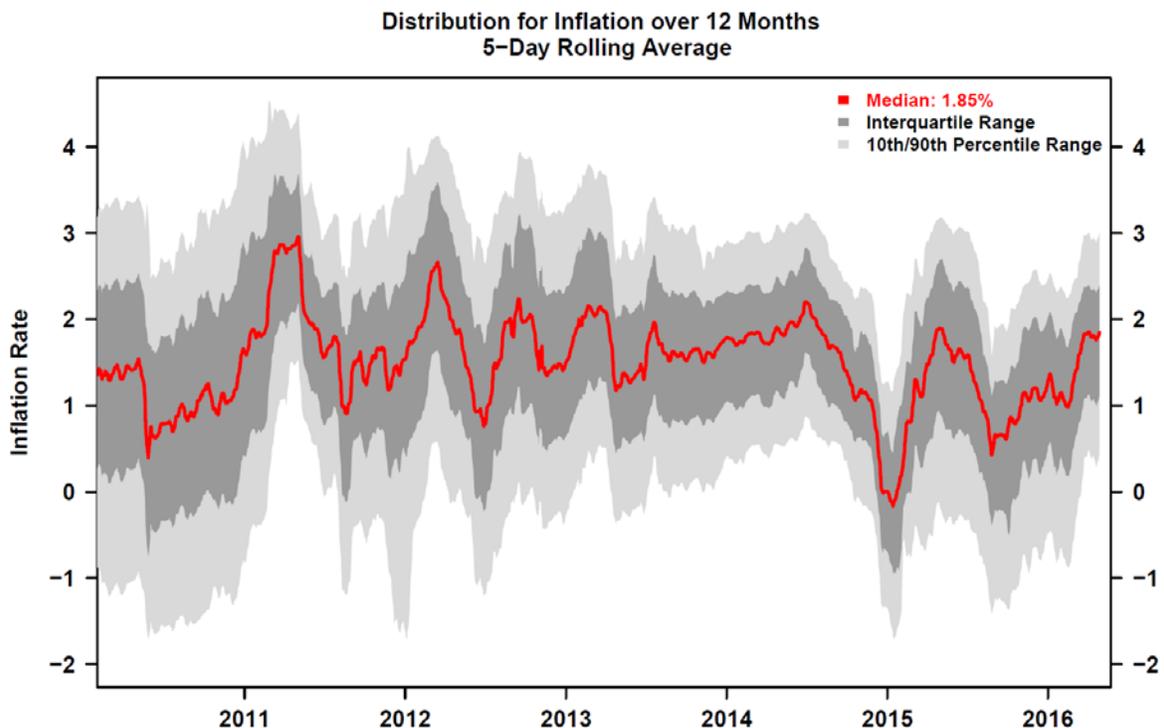


## Minneapolis Options Report – April 29<sup>th</sup>

Median inflation expectations rose for all inflation tenors over the 2-week period. Median expectations of near-term inflation are higher than those for the next five years. The S&P 500 returned 0.6%, while banks and insurance firms we follow outperformed the market with average returns of 6.5% and 2.1%, respectively. The MPD standard deviation of most banks has trended downward since the fourth quarter of 2015, save for KEY, whose MPD has remained relatively flat. Silver posted a 6.0% return, and its MPD skew has trended higher since the end of the fourth quarter 2015.

### *Inflation*

Market-based inflation expectations derived from caps and floors on the CPI for 1-, 2-, and 5-year periods increased over the 2-week period to 1.89%, 1.76% and 1.78%, respectively. This suggests that median expectations of near-term inflation are higher than those for the next five years. This rise is best observed in the 1-year tenor (see figure, below).



Additional detail:

- MPD standard deviations, for all tenors, currently stand below respective 47-month medians, implying that current level of investor uncertainty surrounding inflation expectations is lower than previous readings.
- The probability of low inflation, defined by the market probability of less than 1% inflation, fell across tenors by an average of -1.8 percentage points.

### *Interest Rates*

Spots for the 5- and 10-year Treasury prices declined from their historical highs, indicating that yields rose over the 2-week period. Changes in MPD statistics were flat over the reporting period. Current levels of MPD standard deviation point to low levels of investor uncertainty, and MPD skew levels imply neutral bias. The 3-year out and 5-year-out LIBOR tenors both rose by 8.3 and 13 basis points respectively. The probability of low short term rates, defined as the market probability of less than 0.5%

LIBOR, fell by -2.2 and -4.9 percentage points for the 3-year-out and the 5-year-out tenors, respectively. However, they both remain elevated relative to respective long term medians.

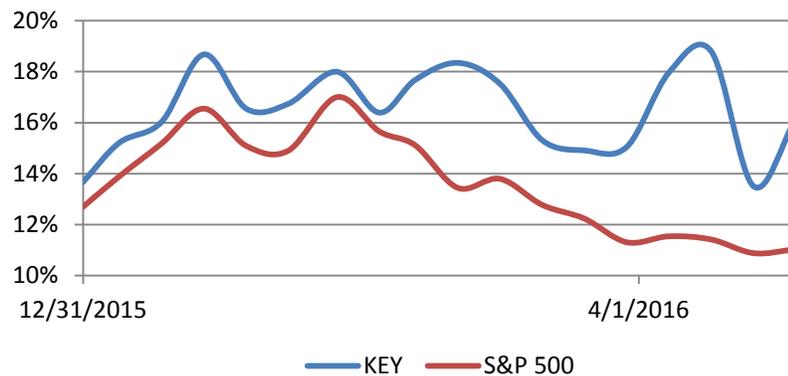
### *Banks and Insurance Companies*

The S&P 500 returned 0.6% over the past two weeks. Changes in MPD statistics for the S&P 500 were flat over the 2-week period. The 19 banking firms we follow posted a 6.0% return, outperforming the market. Changes in MPD standard deviation, for most firms, declined over the two-week reporting period. The 11 insurance companies we follow, returned 2.1% on average and changes in MPD statistics were mostly flat.

Additional details:

- MPD standard deviations have trended downward for most banks since February 11, 2016, implying that investor uncertainty surrounding banking equities has decreased over the same period. While MPD standard deviations are near historic 4-year median values for most banks, this measure remains above the 75<sup>th</sup> percentile for KEY and FITB. Specifically for KEY, its MPD standard deviation has trended flat over this period (see plot below).

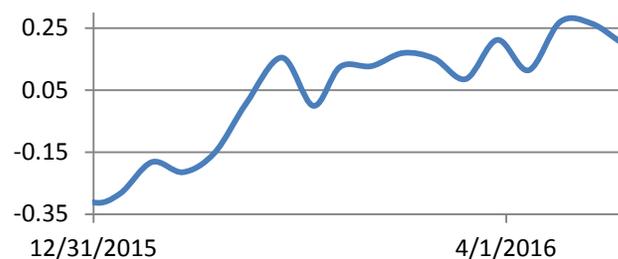
### MPD Standard Deviation for S&P 500 and KEY



### *Other Markets*

- Currency movements were mixed, as the pound was stronger against the dollar, while the dollar was stronger against the yen. MPD standard deviation for the USD-Pound and USD-Yen pairs are above their respective 4-year 75<sup>th</sup> percentile values indicating higher levels of investor uncertainty for each currency pair.
- Silver rose 6.0% over the 2-week period. MPD standard deviation rose by 1.7 percentage points. MPD skew decreased slightly but remains near its 47-month high of 0.27. MPD skew for silver has steadily risen since the 4<sup>th</sup> quarter of 2015, indicating bias towards higher future silver prices (see chart below).

### MPD Skew for Silver



- WTI Crude rose 5.3% but remains well below its 47-month median value. MPD Standard deviation continued its decline, which started on February 18, 2016. It fell by 2.6 percentage points over the 2-week period.
- Agricultural crops all rose by an average of 3.1%. Soybeans registered a new 47-month high for MPD skew. MPD skew also remains elevated for both corn and wheat, indicating bias towards higher future crop prices. MPD standard deviation remains elevated for all three crops.
- Agricultural livestock posted mixed results this reporting period. Cattle posted a loss of -2.5%, setting a new 33-month low, whereas lean hogs rose 1.7%. Both spot prices remain below respective historical medians.

## Inflation MPD Statistics as of April 27, 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	1.89%	0.062%		
MPD Std Dev	1.02%	0.011%		
MPD Skew	-1.12	-0.048		
Market Prob of Less Than 1% Inflation	20.89%	-1.6%		
Market Prob of More Than 3% Inflation	10.98%	1.6%		
<b>Inflation (2-Year Expiry)</b>				
Median	1.76%	0.045%		
MPD Std Dev	1.13%	0.001%		
MPD Skew	-0.15	-0.008		
Market Prob of Less Than 1% Inflation	25.33%	-1.3%		
Market Prob of More Than 3% Inflation	12.12%	0.82%		
<b>Inflation (5-Year Expiry)</b>				
Median	1.78%	0.081%		
MPD Std Dev	1.01%	0.0027%		
MPD Skew	-0.16	-0.029		
Market Prob of Less Than 1% Inflation	22.37%	-2.6%		
Market Prob of More Than 3% Inflation	9.43%	1.3%		

## Medium-to-Long Bond Price MPD Statistics as of April 27, 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	120.61	-0.47%	121.46 118.22	118.05 - 121.46 last 19 months
MPD Std Dev	1.66%	0.077%	1.96 1.5	1.41 - 2.3 last 19 months
MPD Skew	-0.06	-0.045	0.19 -0.54	-0.54 - 0.36 last 19 months
Market Prob of -3% or More Decline	3.71%	0.57%	6.61 2.68	2.44 - 8.74 last 19 months
Volume	270658	250%	335039 0	2054 - 377550 last 19 months
<b>10 Year Treasury (3-Month Expiry)</b>				
Spot	129.76	-0.67%	131.11 124.66	122.97 - 131.11 last 30 months
MPD Std Dev	2.62%	0.066%	3.3 2.47	2.17 - 3.8 last 30 months
MPD Skew	0.06	-0.0053	0.2 -0.39	-0.75 - 0.31 last 30 months
Market Prob of -5% or More Decline	2.97%	0.31%	6.49 2.5	1.62 - 8.48 last 30 months
Volume	1143418	200%	1143418 0	5226 - 1185091 last 30 months

## Short Interest Rates MPD Statistics as of April 27, 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	1.06%	0.083%		
MPD Std Dev	1.08%	-0.025%		
MPD Skew	1.03	-0.83		
Market Prob of Less Than 0.5% LIBOR	25.7%	-2.2%		
Market Prob of More Than 1% + Spot	32.54%	8%		
<b>3 Month LIBOR (5-Year Expiry)</b>				
Median	1.06%	0.13%		
MPD Std Dev	1.56%	0.03%		
MPD Skew	1.53	-0.43		
Market Prob of Less Than 1% LIBOR	47.63%	-4.9%		
Market Prob of More Than 2% + Spot	24.39%	14%		

## Equity Index MPD Statistics as of April 27, 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	2095.15	0.61%		
MPD Std Dev	11.03%	-0.38%		
MPD Skew	-1.36	0.2		
Market Prob of -20% or More Decline	5.72%	-0.68%		
Volume	96994	5.2%		
<b>S&amp;P 500 (12-Month Expiry)</b>				
Spot	2095.15	0.61%		
MPD Std Dev	17.5%	-0.46%		
MPD Skew	-1.5	0.071		
Market Prob of -20% or More Decline	12.02%	-0.58%		
Volume	16898	-22%		
<b>iShares US Real Estate Index (3-Month Expiry)</b>				
Spot	77.38	-0.57%		
MPD Std Dev	7.71%	-0.3%		
MPD Skew	-0.77	0.13		
Market Prob of -10% or More Decline	10.35%	-0.33%		
Volume	35778	120%		

## Exchange Rate MPD Statistics as of April 27, 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	1.13	0%		
MPD Std Dev	4.27%	-0.41%		
MPD Skew	0.09	0.16		
Market Prob of -10% or More Decline	1.05%	-0.92%		
Volume	51750	110%		
<b>Dollar-Pound Futures (3-Month Expiry)</b>				
Spot	145.41	2.3%		
MPD Std Dev	5.02%	-0.56%		
MPD Skew	-0.16	0.064		
Market Prob of -10% or More Decline	2.93%	-1.5%		
Volume	16921	110%		
<b>Dollar-Yen Futures (3-Month Expiry)</b>				
Spot	89.94	-1.9%		
MPD Std Dev	6.13%	0.41%		
MPD Skew	0.15	-0.038		
Market Prob of -10% or More Decline	4.72%	1%		
Volume	18597	-2.6%		

## Metal and Energy Commodity MPD Statistics as of April 27, 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	1253.9	0.19%		
MPD Std Dev	12.51%	-0.26%		
MPD Skew	0.13	0.018		
Market Prob of -20% or More Decline	5.83%	-0.63%		
Volume	2598	-61%		
<b>Silver (6-Month Expiry)</b>				
Spot	17.38	6%		
MPD Std Dev	20.64%	1.7%		
MPD Skew	0.2	-0.07		
Market Prob of -20% or More Decline	16.71%	1.7%		
Volume	1586	27%		
<b>West Texas Intermediate Crude (6-Month Expiry)</b>				
Spot	47.4	5.3%		
MPD Std Dev	27.95%	-2.6%		
MPD Skew	-0.41	0.022		
Market Prob of -20% or More Decline	23.45%	-2.5%		
Volume	4174	290%		

## Agricultural Crop Commodity MPD Statistics as of April 27, 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	385.81	1.8%	440.56 356.74 	385.81 334.65  last 47 months
MPD Std Dev	19.82%	1.8%	20.43 12.41 	19.82 12.41  last 47 months
MPD Skew	0.56	-0.13	0.7 0.05 	0.56 -0.19  last 47 months
Market Prob of -20% or More Decline	16.26%	3%	17.77 4.96 	16.26 4.96  last 47 months
Volume	38334	13%	377209 0 	38334 5486  last 47 months
<b>Soybeans (6-Month Expiry)</b>				
Spot	1003.88	4%	1032.2 864.89 	1003.88 864.89  last 47 months
MPD Std Dev	16.19%	1.7%	17.76 10.21 	16.19 10.21  last 47 months
MPD Skew	0.81	0.36	0.81 -0.23 	0.81 -0.5  last 47 months
Market Prob of -20% or More Decline	9.52%	1.6%	11.45 2.96 	9.52 2.96  last 47 months
Volume	23019	55%	82132 0 	23019 496  last 47 months
<b>Wheat (6-Month Expiry)</b>				
Spot	493.34	3.4%	596.88 458.99 	493.34 458.99  last 47 months
MPD Std Dev	19.48%	1.3%	22.31 16.04 	19.48 12.95  last 47 months
MPD Skew	0.58	0.022	0.62 0.15 	0.58 0.01  last 47 months
Market Prob of -20% or More Decline	15.99%	2.1%	20.71 10.96 	15.99 5.67  last 47 months
Volume	7812	180%	46232 0 	7812 179  last 47 months

## Agricultural Livestock Commodity MPD Statistics as of April 27, 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	114.4	-2.5%		
MPD Std Dev	12%	0.76%		
MPD Skew	-0.43	0.29		
Market Prob of -5% or More Decline	31.27%	3%		
Volume	12514	67%		
<b>Hogs (6-Month Expiry)</b>				
Spot	69.35	1.7%		
MPD Std Dev	13.44%	-0.35%		
MPD Skew	-0.52	-0.028		
Market Prob of -20% or More Decline	7.76%	-1.3%		
Volume	1664	96%		

## Bank MPD Statistics as of April 27, 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	9.65%	-1.4%		
Bank of America	13.78%	-0.28%		
BB&T	9.58%	-0.8%		
Barclays	17.55%	-2.5%		
Bank of NY Mellon	10.78%	-0.045%		
Citigroup	13.01%	-1.2%		
Capital One	11.31%	-0.99%		
Credit Suisse	15.99%	-4.2%		
Deutsche Bank	21.13%	-1%		
Fifth Third	13.6%	0.25%		
Goldman Sachs	11.59%	-0.88%		
JP Morgan	9.78%	-0.23%		
Keycorp	16.16%	-2.6%		
Morgan Stanley	14.18%	-0.74%		
PNC Financial	10.31%	-0.36%		
Regions Financial	13.48%	-2.1%		
SunTrust	12.02%	-1.2%		
State Street	12.16%	-1.4%		
UBS	13.36%			
US Bancorp	8.49%	-1.1%		
Wells Fargo	9.72%	-0.29%		

## Bank MPD Statistics as of April 27, 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	-0.62	0.088		
Bank of America	-0.6	0.14		
BB&T	-0.83	0.01		
Barclays	-0.78	0.29		
Bank of NY Mellon	-0.8	0.02		
Citigroup	-0.59	0.11		
Capital One	-0.87	-0.07		
Credit Suisse	-1.06	0.74		
Deutsche Bank	-0.97	0.19		
Fifth Third	-0.9	-0.23		
Goldman Sachs	-0.7	0.087		
JP Morgan	-0.63	0.04		
Keycorp	-0.02	0.55		
Morgan Stanley	-0.77	-0.008		
PNC Financial	-0.94	0.054		
Regions Financial	-0.81	-0.2		
SunTrust	-0.77	-0.4		
State Street	-0.76	0.1		
UBS	-0.04			
US Bancorp	-0.67	-0.042		
Wells Fargo	-0.65	0.38		

## Bank MPD Statistics as of April 27, 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	3.58%	-1.7%		
Bank of America	8.68%	-0.44%		
BB&T	3.55%	-1.1%		
Barclays	11.4%	-3.5%		
Bank of NY Mellon	4.74%	-0.057%		
Citigroup	6.7%	-1.5%		
Capital One	5.61%	-0.89%		
Credit Suisse	8.1%	-2.7%		
Deutsche Bank	14.78%	-0.4%		
Fifth Third	8.97%	0.71%		
Goldman Sachs	5.71%	-1.2%		
JP Morgan	3.57%	-0.38%		
Keycorp	9.89%	-2.1%		
Morgan Stanley	8.39%	-1.8%		
PNC Financial	4.89%	-0.5%		
Regions Financial	7.81%	-4.4%		
SunTrust	5.95%	-3%		
State Street	6.8%	-2%		
UBS	7.28%			
US Bancorp	2.29%	-1.2%		
Wells Fargo	3.83%	-0.73%		

## Bank MPD Statistics as of April 27, 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	8273	210%	32713 0	623 - 8273 - 32713 last 48 months
Bank of America	33234	-21%	187673 0	7419 - 33234 - 244509 last 48 months
BB&T	5463	570%	6459 0	126 - 5463 - 6490 last 48 months
Barclays	2087	340%	7859 0	8 - 2087 - 11011 last 48 months
Bank of NY Mellon	33235	1900%	33235 0	44 - 33235 - 33235 last 48 months
Citigroup	29433	30%	57016 0	1104 - 29433 - 140439 last 48 months
Capital One	2845	76%	7596 0	136 - 2845 - 16299 last 48 months
Credit Suisse	17099	1300%	17099 0	0 - 17099 - 17099 last 48 months
Deutsche Bank	6462	-37%	38235 0	76 - 6462 - 38235 last 42 months
Fifth Third	316	-17%	7607 0	28 - 316 - 19127 last 48 months
Goldman Sachs	7493	32%	19311 0	296 - 7493 - 28030 last 48 months
JP Morgan	40301	40%	132116 0	943 - 40301 - 132116 last 48 months
Keycorp	1482	2.3%	5129 0	44 - 1482 - 76270 last 48 months
Morgan Stanley	12438	160%	36166 0	327 - 12438 - 69872 last 48 months
PNC Financial	409	-52%	4932 0	42 - 409 - 5757 last 48 months
Regions Financial	1570	35%	4832 0	20 - 1570 - 47940 last 47 months
SunTrust	5155	390%	5155 0	61 - 5155 - 13788 last 48 months
State Street	197	13%	961 0	19 - 197 - 5339 last 48 months
UBS	124		2034 0	6 - 124 - 6502 last 33 months
US Bancorp	6589	330%	9927 0	52 - 6589 - 29142 last 48 months
Wells Fargo	11007	-26%	55478 0	950 - 11007 - 121351 last 48 months

## Insurance Company MPD Statistics as of April 27, 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>	8.68%	0.03%		
<b>AIG</b>	10.88%	-0.35%		
<b>Allstate</b>	9.34%	0.055%		
<b>Ameriprise</b>	12.71%	-0.95%		
<b>Chubb</b>	9.46%	0.017%		
<b>Hartford Financial</b>	11.8%	0.22%		
<b>Lincoln National</b>	14.79%	-0.86%		
<b>Met Life</b>	12.93%	0.041%		
<b>Principal Financial</b>	13.28%	-1.4%		
<b>Progressive</b>	9.89%	-0.049%		
<b>Prudential</b>	12.9%	-0.91%		

## Insurance Company MPD Statistics as of April 27, 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>	-1.23	-0.087	-0.24 -1.31 Sep09 Oct28	-1.23 -1.31 last 48 months -0.24
<b>AIG</b>	-0.82	0.27	-0.47 -1.16 Jun24 Oct14	-0.82 -1.16 last 48 months -0.23
<b>Allstate</b>	-0.75	0.21	-0.16 -1.25 Oct14 Feb25	-0.75 -1.5 last 48 months -0.12
<b>Ameriprise</b>	-0.75	-0.054	-0.32 -1.1 Jan07 Jan21	-0.75 -4.03 last 48 months -0.11
<b>Chubb</b>	-0.98	0.13	0.09 -1.42 Aug19 Sep02	-0.98 -1.56 last 48 months 0.09
<b>Hartford Financial</b>	-1.01	0.32	-0.09 -1.67 Jul22 Nov04	-1.01 -1.67 last 48 months -0.09
<b>Lincoln National</b>	-0.84	-0.068	-0.07 -1.15 Aug05 Aug26	-0.84 -1.15 last 48 months 0.15
<b>Met Life</b>	-0.75	-0.1	-0.51 -1.03 Oct14 Feb18	-0.75 -1.15 last 48 months -0.23
<b>Principal Financial</b>	-0.76	0.18	0.42 -1.79 Oct21 Aug05	-0.76 -2.95 last 48 months 0.42
<b>Progressive</b>	-0.36	0.4	0.24 -2.03 Jul22 Jun10	-0.36 -3.54 last 47 months 0.42
<b>Prudential</b>	-0.69	0.22	-0.37 -1.04 Apr29 Nov18	-0.69 -1.44 last 48 months -0.33

## Insurance Company MPD Statistics as of April 27, 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>				
<b>Aflac</b>	3.55%	0.28%	8.5 1.37 Jun24 Feb11	3.55 1.37 last 48 months 14.69
<b>AIG</b>	5.28%	-0.96%	14.57 2.51 Jun24 Feb11	5.28 2.44 last 48 months 17.45
<b>Allstate</b>	3.48%	-0.24%	7.91 1.01 May20 Jan21 Feb11	3.48 0.56 last 48 months 8.12
<b>Ameriprise</b>	6.84%	-1.8%	16.29 3.68 Jul22 Aug19 Feb04 Feb11	6.84 2.4 last 48 months 17.52
<b>Chubb</b>	4.25%	0.17%	12.5 0.88 May13 Aug19 Feb11	4.25 0.55 last 48 months 12.5
<b>Hartford Financial</b>	6.22%	0.024%	12.03 2.64 Jun24 Feb11	6.22 2.19 last 48 months 22.23
<b>Lincoln National</b>	9.42%	-1.5%	17.85 2.26 May27 Feb11	9.42 2.26 last 48 months 22.05
<b>Met Life</b>	6.97%	-0.37%	16.75 3.99 May27 Feb11	6.97 3.26 last 48 months 18.59
<b>Principal Financial</b>	9.38%	-1.1%	17.72 2.22 May06 Sep09 Feb11	9.38 0.43 last 48 months 20.44
<b>Progressive</b>	3.29%	-0.49%	9.41 0.15 Jun24 Feb11	3.29 0 last 47 months 16.08
<b>Prudential</b>	7.05%	-1.6%	15.1 4.02 Jun24 Feb11	7.05 3.99 last 48 months 17.82

## Insurance Company MPD Statistics as of April 27, 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>1388</b>	<b>-54%</b>	13168 0	1388 88  22718 last 48 months
<b>AIG</b>	<b>566</b>	<b>-42%</b>	44233 0	566 110  103998 last 48 months
<b>Allstate</b>	<b>180</b>	<b>-50%</b>	4626 0	180 63  10621 last 48 months
<b>Ameriprise</b>	<b>147</b>	<b>44%</b>	1035 0	147 5  1114 last 48 months
<b>Chubb</b>	<b>296</b>	<b>-37%</b>	3292 0	296 3  9027 last 48 months
<b>Hartford Financial</b>	<b>2758</b>	<b>1300%</b>	9444 0	2758 16  37285 last 48 months
<b>Lincoln National</b>	<b>707</b>	<b>-49%</b>	4145 0	707 51  8403 last 48 months
<b>Met Life</b>	<b>3081</b>	<b>7.4%</b>	20912 0	3081 319  161416 last 48 months
<b>Principal Financial</b>	<b>30</b>	<b>-70%</b>	610 0	30 2  2956 last 48 months
<b>Progressive</b>	<b>1010</b>	<b>250%</b>	2216 0	1010 0  3415 last 47 months
<b>Prudential</b>	<b>2955</b>	<b>39%</b>	14512 0	2955 222  17185 last 48 months