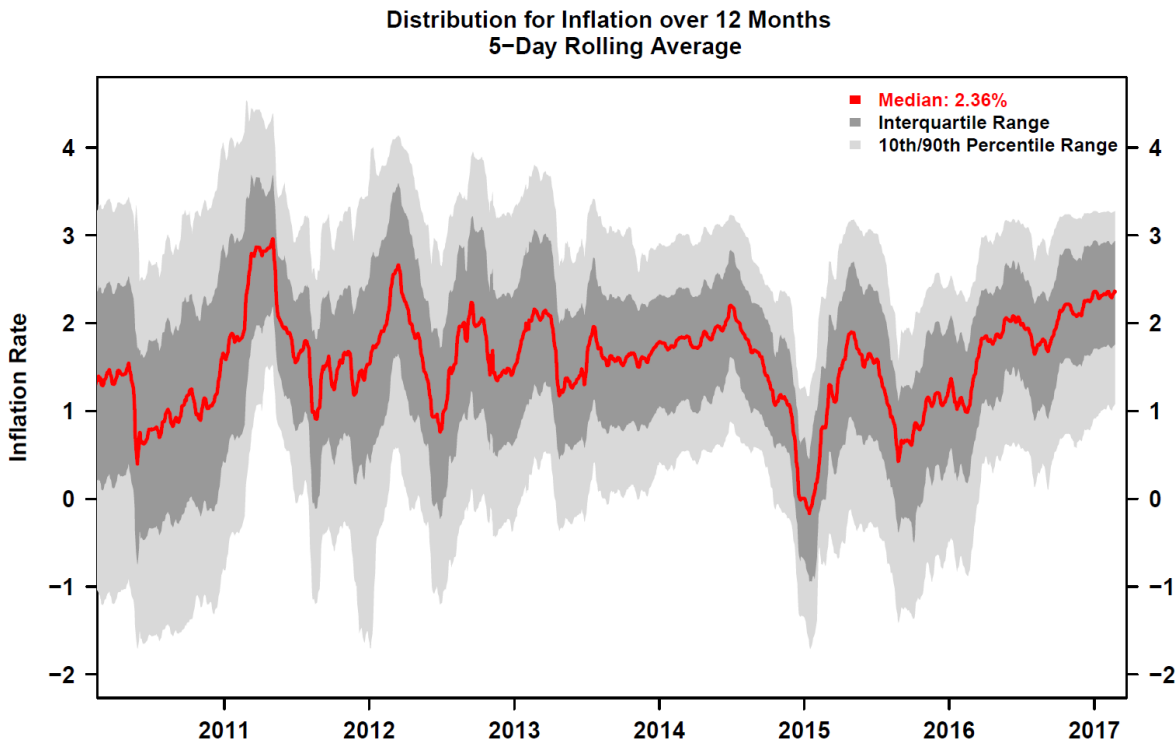


## Minneapolis Options Report – Feb 24<sup>th</sup>

Median inflation expectations rose for both the 1- and 5-year tenors over the two week period. The market probability of high inflation, defined as the market probability of more than 3% inflation, has risen in unison for both tenors since August 31, 2016. Treasury prices were lower, while LIBOR rates increased modestly. The S&P 500 returned 3% over the two week period; the 20 banks and 11 insurance firms we follow outperformed the market index, returning 5.1% and 4%, respectively. MPD standard deviation was lower for the S&P 500 by an average -0.6 percentage points; banks and insurance posted similar declines. Notably, 8 insurance firms posted 12-month lows for MPD standard deviation within the past 4 weeks. The dollar was stronger against all currency we follow. Since the start of the year (January 1, 2017) the dollar has gained against all currencies.

### *Inflation*

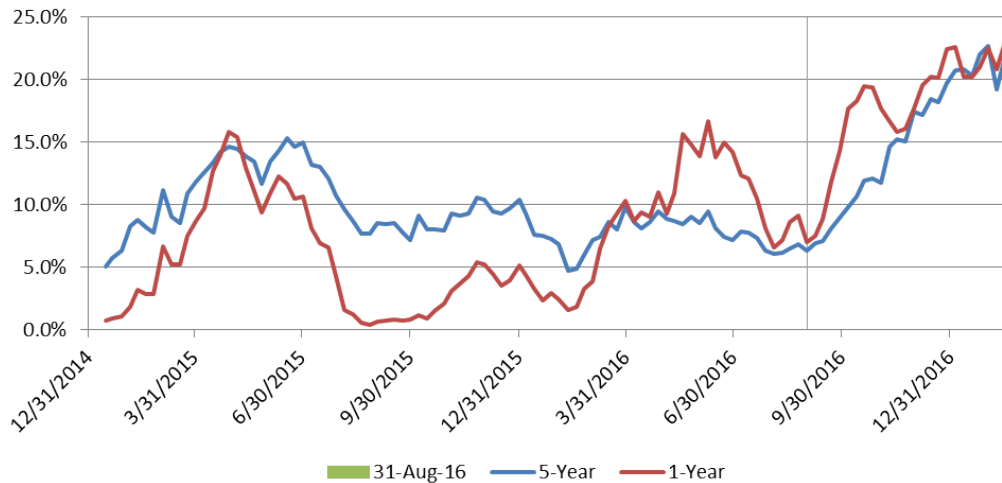
Market-based inflation expectations derived from caps and floors on the CPI for 1- and 5-year periods were higher for both tenors. The 1-year increased by 5.2 bps to 2.36% and the 5-year rose by 4.9 bps to 2.19%. The increased level registered by the 1-year tenor is shown for reference (see figure, below).



Additional detail:

- Since August 31, 2016 the market probability of high inflation has risen by 0.5 percentage points per week, on average, for both tenors (see chart, below).

## Market Probability of High Inflation



### *Interest Rate*

Treasury prices fell over the two week period: The 5-year was lower by -0.4%, and the 10-year decreased by -0.5%. As a result, yields rose. Changes in MPD standard deviation have been flat for both tenors since November 30, 2016. MPD skews currently signal neutral bias. Both LIBOR tenors were higher; the 3-year tenor rose by 12 bps, and the 5-year tenor increased by 23 bps. The 5-year tenor experienced the largest movements in MPD metrics with MPD standard deviation rising by 0.2 percentage points and the skew increasing by 1.1. MPD skews for both tenors signal investor bias towards higher future LIBOR rates.

### *Banks and Insurance Companies*

The S&P 500 jumped by 3% over the past two weeks to a new 47-month high. MPD standard deviation fell slightly for both the 6- and 12-month tenor by an average of -0.5 percentage points. The 20 banking firms we follow outperformed the S&P 500, posting a 5.1% return. The 11 insurance companies we follow rose by 4% on average, also outperforming the broader market index.

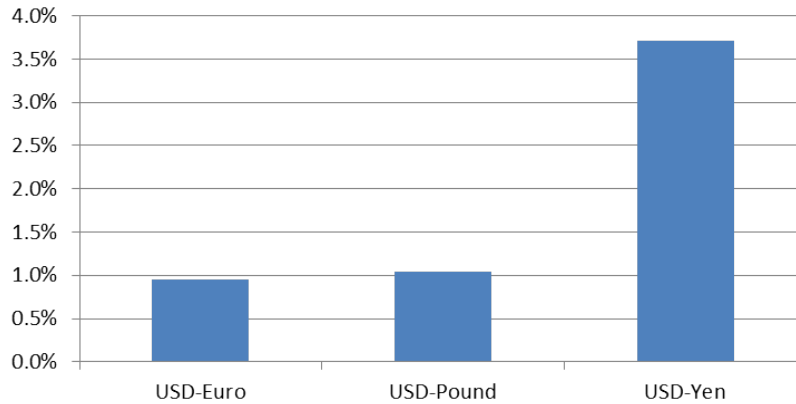
### *Additional details:*

- While MPD standard deviation for banks fell in line with the S&P 500 at -0.3 percentage points, the average decrease for insurance companies was nearly 4 times larger at -1.3 percentage points. Notably, within the past 4 weeks, MPD standard deviation for 8 of the 11 insurance firms is at a 12-month low implying that investor uncertainty has fallen for the firms in question.

### *Other Markets*

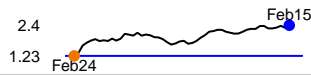
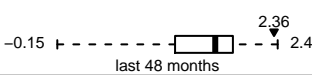
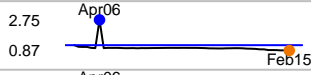


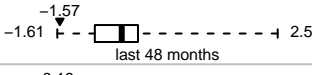

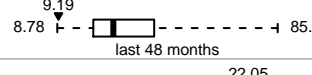
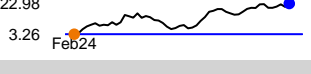
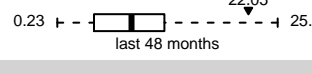

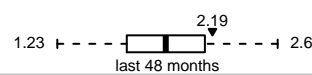
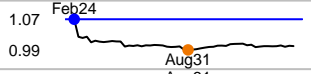

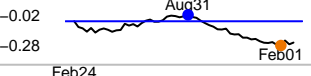
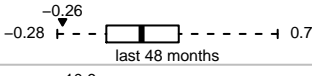
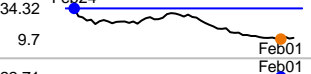
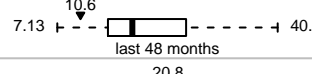
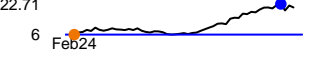
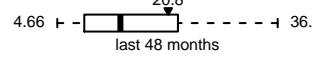
- The iShares US Real Estate Index underperformed the market, returning 2.4%. Its MPD standard deviation fell in line with the broader market, decreasing by -0.33 percentage points.
- The dollar was stronger against all currencies we follow; MPD standard deviation was lower for all tenors. The dollar has positive gains against all currencies since the start of this year. In particular the dollar has gained the most against the yen (see plot, below).

## US Dollar Gains Since 1/1/2017



- Gold and silver moved in opposite directions. Gold was lower by -0.5%; however, silver was higher by 1.4%. MPD standard deviation fell by -0.45 percentage points for both metals, on average.
- WTI crude increase by 0.4% over the 2 week period. MPD standard deviation fell by -2 percentage points setting a new 1-year low.
- Soybeans fell by -3.1%, while wheat increased by 3%. MPD standard deviation increased for both corn and wheat by an average of 2.8 percentage points, signaling that investor uncertainty has risen for both crops.
- Lean hogs registered a -1.3% decline, while the MPD standard deviation rose by 0.9 percentage points.

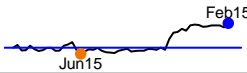
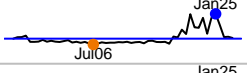
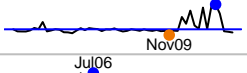

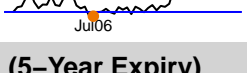
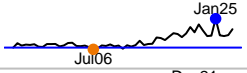
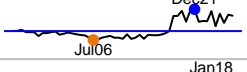
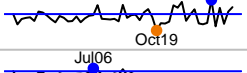

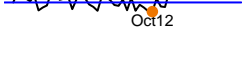
## Inflation MPD Statistics as of February 22, 2017

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	2.36%	0.052%		
MPD Std Dev	0.87%	-0.0062%		
MPD Skew	-1.57	-0.053		
Market Prob of Less Than 1% Inflation	9.19%	-0.55%		
Market Prob of More Than 3% Inflation	22.05%	1.2%		
<b>Inflation (5-Year Expiry)</b>				
Median	2.19%	0.049%		
MPD Std Dev	1%	0.0017%		
MPD Skew	-0.26	-0.018		
Market Prob of Less Than 1% Inflation	10.6%	-0.89%		
Market Prob of More Than 3% Inflation	20.8%	1.6%		

## Medium-to-Long Bond Price MPD Statistics as of February 22, 2017

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	117.55	-0.39%	122.32 117.01	117.01 - 122.32 117.55 last 29 months
MPD Std Dev	1.74%	0.081%	1.95 1.3	1.3 - 2.3 1.74 last 29 months
MPD Skew	0.04	0.28	0.12 -0.67	-0.67 - 0.36 0.04 last 29 months
Market Prob of -3% or More Decline	4.24%	0.075%	6.51 1.84	1.84 - 8.74 4.24 last 29 months
Volume	116964	320%	325657 0	1678 - 377550 116964 last 29 months
<b>10 Year Treasury (3-Month Expiry)</b>				
Spot	124.2	-0.51%	133.67 123.3	122.97 - 133.67 124.2 last 40 months
MPD Std Dev	2.74%	0.019%	3.22 2.14	2.14 - 3.8 2.74 last 40 months
MPD Skew	0.22	0.22	0.22 -0.31	-0.75 - 0.31 0.22 last 40 months
Market Prob of -5% or More Decline	3.45%	-0.36%	6.45 1.54	1.54 - 8.48 3.45 last 40 months
Volume	339441	160%	1143418 0	1010 - 1185091 339441 last 40 months

## Short Interest Rates MPD Statistics as of February 22, 2017

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	1.87%	0.12%	1.89 0.85 	0.72 - 1.89 last 48 months
MPD Std Dev	1.16%	-0.024%	1.81 0.98 	0.77 - 2.17 last 48 months
MPD Skew	0.83	-0.12	3.61 0.58 	0.4 - 6.01 last 48 months
Market Prob of Less Than 0.5% LIBOR	9.67%	-2.1%	32.91 9.63 	9.63 - 38.02 last 48 months
Market Prob of More Than 1% + Spot	38.96%	0.76%	41.99 13.93 	13.93 - 67.85 last 48 months
<b>3 Month LIBOR (5-Year Expiry)</b>				
Median	1.72%	0.3%	2.19 0.83 	0.83 - 2.99 last 45 months
MPD Std Dev	2.08%	0.23%	2.28 1.31 	1.31 - 2.85 last 45 months
MPD Skew	2.3	1.1	2.77 0.81 	0.2 - 3.88 last 45 months
Market Prob of Less Than 1% LIBOR	27.19%	-3.4%	56.28 24.89 	17.66 - 56.28 last 45 months
Market Prob of More Than 2% + Spot	30.58%	5.4%	35.06 7.2 	0.2 - 60.53 last 45 months

## Equity Index MPD Statistics as of February 22, 2017

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	2362.82	<span style="color: blue;">3%</span>		
MPD Std Dev	9.96%	<span style="color: orange;">-0.37%</span>		
MPD Skew	-1.32	<span style="color: blue;">0.057</span>		
Market Prob of -20% or More Decline	4.79%	<span style="color: orange;">-0.6%</span>		
Volume	97014	<span style="color: blue;">120%</span>		
<b>S&amp;P 500 (12-Month Expiry)</b>				
Spot	2362.82	<span style="color: blue;">3%</span>		
MPD Std Dev	14.77%	<span style="color: orange;">-0.57%</span>		
MPD Skew	-1.29	<span style="color: blue;">0.056</span>		
Market Prob of -20% or More Decline	9.54%	<span style="color: orange;">-0.66%</span>		
Volume	132066	<span style="color: blue;">190%</span>		
<b>iShares US Real Estate Index (3-Month Expiry)</b>				
Spot	79.57	<span style="color: blue;">2.4%</span>		
MPD Std Dev	7.65%	<span style="color: orange;">-0.33%</span>		
MPD Skew	-0.84	<span style="color: orange;">-0.12</span>		
Market Prob of -10% or More Decline	10.91%	<span style="color: orange;">-1.2%</span>		
Volume	3138	<span style="color: orange;">-76%</span>		

## Exchange Rate MPD Statistics as of February 22, 2017

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	1.06	-0.93%		
MPD Std Dev	3.8%	-0.12%		
MPD Skew	-0.23	-0.061		
Market Prob of -10% or More Decline	0.9%	-0.036%		
Volume	41447	-7.6%		
<b>Dollar-Pound Futures (3-Month Expiry)</b>				
Spot	124.61	-0.57%		
MPD Std Dev	4.07%	-0.88%		
MPD Skew	-0.1	0.073		
Market Prob of -10% or More Decline	1.1%	-1.6%		
Volume	13099	-60%		
<b>Dollar-Yen Futures (3-Month Expiry)</b>				
Spot	88.44	-0.96%		
MPD Std Dev	5.39%	-0.44%		
MPD Skew	0.1	-0.05		
Market Prob of -10% or More Decline	2.94%	-0.99%		
Volume	39485	-11%		




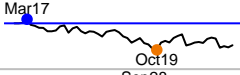
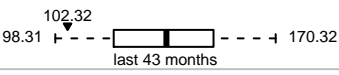


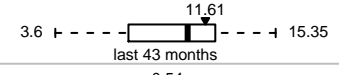

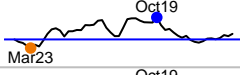
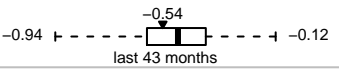

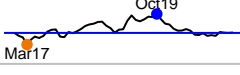
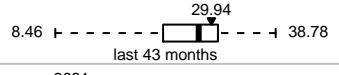


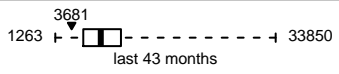

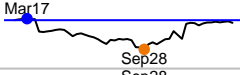
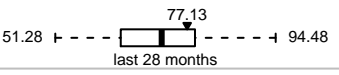

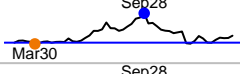
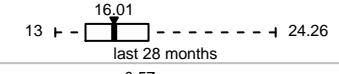

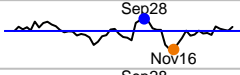


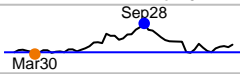
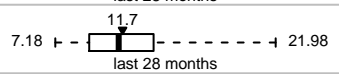


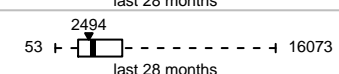
## Metal and Energy Commodity MPD Statistics as of February 22, 2017

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	1239.64	-0.5%		
MPD Std Dev	10.49%	-0.29%		
MPD Skew	0.12	-0.019		
Market Prob of -20% or More Decline	3.31%	-0.36%		
Volume	1359	-59%		
<b>Silver (6-Month Expiry)</b>				
Spot	18.07	1.4%		
MPD Std Dev	16.16%	-0.59%		
MPD Skew	0.07	-0.01		
Market Prob of -20% or More Decline	10.87%	-0.91%		
Volume	1279	6%		
<b>West Texas Intermediate Crude (6-Month Expiry)</b>				
Spot	54.49	0.41%		
MPD Std Dev	19.56%	-2%		
MPD Skew	-0.5	0.095		
Market Prob of -20% or More Decline	15.7%	-2%		
Volume	8314	19%		

## Agricultural Crop Commodity MPD Statistics as of February 22, 2017

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	386.26	0.1%		
MPD Std Dev	17.4%	2.5%		
MPD Skew	0.33	-0.084		
Market Prob of -20% or More Decline	12.77%	4.1%		
Volume	58371	110%		
<b>Soybeans (6-Month Expiry)</b>				
Spot	1039.97	-3.1%		
MPD Std Dev	14.6%	0.12%		
MPD Skew	0.13	0.079		
Market Prob of -20% or More Decline	8.76%	0.0013%		
Volume	26289	22%		
<b>Wheat (6-Month Expiry)</b>				
Spot	469.2	3%		
MPD Std Dev	18.17%	1.5%		
MPD Skew	0.59	-0.04		
Market Prob of -20% or More Decline	13.89%	2.5%		
Volume	19495	140%		

## Agricultural Livestock Commodity MPD Statistics as of February 22, 2017

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	102.32	 0.79%		
MPD Std Dev	11.61%	 0.062%		
MPD Skew	-0.54	 0.032		
Market Prob of -5% or More Decline	29.94%	 0.037%		
Volume	3681	 60%		
<b>Hogs (6-Month Expiry)</b>				
Spot	77.13	 -1.3%		
MPD Std Dev	16.01%	 0.9%		
MPD Skew	-0.57	 0.054		
Market Prob of -20% or More Decline	11.7%	 0.68%		
Volume	2494	 84%		

## Bank MPD Statistics as of February 22, 2017

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	9.82%	-0.41%		
Bank of America	13.34%	-0.26%		
BB&T	9.91%	-0.029%		
Barclays	16.43%	-0.35%		
Bank of NY Mellon	10.05%	-0.44%		
Citigroup	11.82%	-0.52%		
Capital One	12.1%	-0.038%		
Credit Suisse	19.42%	-0.34%		
Deutsche Bank	17.06%	-1.6%		
Fifth Third	12.87%	-0.57%		
Goldman Sachs	11%	-0.54%		
JP Morgan	10.07%	-0.55%		
Keycorp	13.51%	-0.14%		
Morgan Stanley	12.93%	-0.9%		
PNC Financial	10.06%	-0.46%		
Regions Financial	14.47%	-0.39%		
SunTrust	11.42%	-0.35%		
State Street	12.02%	-0.33%		
UBS	13.36%			
US Bancorp	9.1%	-0.069%		
Wells Fargo	10.25%	-0.49%		

## Bank MPD Statistics as of February 22, 2017

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	-0.46	0.1		
Bank of America	-0.38	0.061		
BB&T	-0.67	0.094		
Barclays	-0.58	0.22		
Bank of NY Mellon	-0.6	0.076		
Citigroup	-0.45	0.04		
Capital One	-0.48	0.17		
Credit Suisse	-1.02	-0.11		
Deutsche Bank	-0.44	-0.31		
Fifth Third	-0.57	-0.13		
Goldman Sachs	-0.38	0.048		
JP Morgan	-0.57	0.1		
Keycorp	-0.46	0.096		
Morgan Stanley	-0.43	0.064		
PNC Financial	-0.59	-0.023		
Regions Financial	-0.54	-0.012		
SunTrust	-0.55	-0.0074		
State Street	-0.58	0.26		
UBS	-0.04			
US Bancorp	-0.67	0.0088		
Wells Fargo	-0.34	-0.051		

## Bank MPD Statistics as of February 22, 2017

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	3.37%	-0.72%		
Bank of America	8.34%	-0.88%		
BB&T	4.29%	0.38%		
Barclays	11.29%	-0.6%		
Bank of NY Mellon	4%	-0.41%		
Citigroup	6.07%	-0.88%		
Capital One	6.66%	-0.3%		
Credit Suisse	15.01%	-0.4%		
Deutsche Bank	10.05%	-2.4%		
Fifth Third	8.06%	-0.59%		
Goldman Sachs	4.64%	-0.79%		
JP Morgan	4.2%	-0.89%		
Keycorp	9.22%	-0.11%		
Morgan Stanley	7.7%	-1.7%		
PNC Financial	3.76%	-0.43%		
Regions Financial	9.24%	-1.2%		
SunTrust	5.29%	-0.041%		
State Street	6.19%	-0.77%		
UBS	7.28%			
US Bancorp	3.14%	-0.078%		
Wells Fargo	3.85%	-0.68%		

## Bank MPD Statistics as of February 22, 2017

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	5973	-28%	15162 0	532 - 5973 - 32713 last 47 months
Bank of America	69163	120%	215456 0	7419 - 69163 - 215456 last 47 months
BB&T	993	-65%	5463 0	126 - 993 - 6490 last 47 months
Barclays	1265	200%	18909 0	8 - 1265 - 18909 last 47 months
Bank of NY Mellon	1147	-38%	33235 0	44 - 1147 - 33235 last 47 months
Citigroup	20912	20%	90561 0	1810 - 20912 - 140439 last 47 months
Capital One	1659	-21%	10334 0	136 - 1659 - 10334 last 47 months
Credit Suisse	587	-91%	31577 0	1 - 587 - 31577 last 47 months
Deutsche Bank	28287	310%	99132 0	76 - 28287 - 99132 last 41 months
Fifth Third	548	-60%	6123 0	24 - 548 - 19127 last 47 months
Goldman Sachs	11827	-13%	40920 0	612 - 11827 - 40920 last 47 months
JP Morgan	6538	-69%	66163 0	951 - 6538 - 132116 last 47 months
Keycorp	1081	76%	31081 0	44 - 1081 - 31081 last 47 months
Morgan Stanley	1749	-52%	37739 0	327 - 1749 - 48955 last 47 months
PNC Financial	1419	190%	2996 0	42 - 1419 - 4932 last 47 months
Regions Financial	6806	210%	47587 0	20 - 6806 - 47940 last 46 months
SunTrust	831	200%	14765 0	61 - 831 - 14765 last 47 months
State Street	925	26%	2700 0	19 - 925 - 5339 last 47 months
UBS	124		2034 0	23 - 124 - 2766 last 22 months
US Bancorp	5930	60%	33496 0	52 - 5930 - 33496 last 47 months
Wells Fargo	27494	130%	80746 0	950 - 27494 - 121351 last 47 months

## Insurance Company MPD Statistics as of February 22, 2017

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>	7.62%	-0.032%		
<b>AIG</b>	9.55%	-0.48%		
<b>Allstate</b>	7.18%	0.2%		
<b>Ameriprise</b>	12.57%	-0.75%		
<b>Chubb</b>	6.28%	-1.6%		
<b>Hartford Financial</b>	9.91%	-0.34%		
<b>Lincoln National</b>	12.93%	-0.23%		
<b>Met Life</b>	11.56%	-1.3%		
<b>Principal Financial</b>	9.94%	-3.4%		
<b>Progressive</b>	8.22%	-5.2%		
<b>Prudential</b>	12.08%	-1.4%		



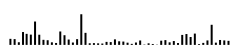
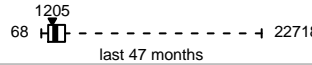
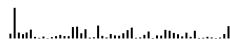
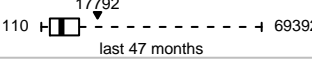

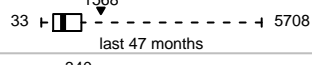


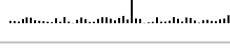
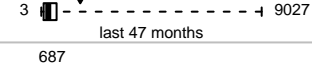

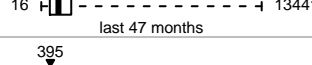

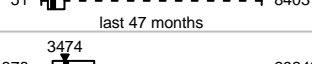

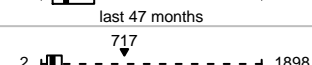

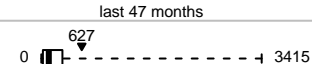

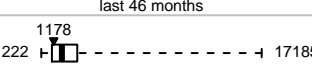

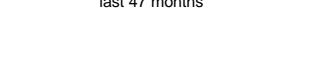
## Insurance Company MPD Statistics as of February 22, 2017

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>				
Aflac	-0.73	0.41		
AIG	-0.55	0.11		
Allstate	-0.78	-0.056		
Ameriprise	-0.71	0.11		
Chubb	-1.38	-0.12		
Hartford Financial	-0.81	0.027		
Lincoln National	-0.55	-0.019		
Met Life	-0.62	-0.066		
Principal Financial	-1.05	1.3		
Progressive	-0.31	3.7		
Prudential	-0.52	0.059		

## Insurance Company MPD Statistics as of February 22, 2017

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>	1.79%	-0.43%		
<b>AIG</b>	3.46%	-0.71%		
<b>Allstate</b>	1.29%	0.18%		
<b>Ameriprise</b>	7.6%	-1.3%		
<b>Chubb</b>	1.15%	-1.3%		
<b>Hartford Financial</b>	4.2%	-0.47%		
<b>Lincoln National</b>	6.84%	-0.7%		
<b>Met Life</b>	6.04%	-1.9%		
<b>Principal Financial</b>	3.93%	-3.3%		
<b>Progressive</b>	1.91%	-2.7%		
<b>Prudential</b>	6.33%	-2.7%		

## Insurance Company MPD Statistics as of February 22, 2017

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>1205</b>	-18%	9135 0 	1205 68  22718 last 47 months
<b>AIG</b>	<b>17792</b>	1300%	44233 0 	17792 110  69392 last 47 months
<b>Allstate</b>	<b>1568</b>	94%	3608 0 	1568 33  5708 last 47 months
<b>Ameriprise</b>	<b>340</b>	-35%	1973 0 	340 7  1973 last 47 months
<b>Chubb</b>	<b>1599</b>	110%	6138 0 	1599 3  9027 last 47 months
<b>Hartford Financial</b>	<b>687</b>	-69%	2758 0 	687 16  13441 last 47 months
<b>Lincoln National</b>	<b>395</b>	4.8%	4145 0 	395 51  8403 last 47 months
<b>Met Life</b>	<b>3474</b>	-53%	27721 0 	3474 378  29248 last 47 months
<b>Principal Financial</b>	<b>717</b>	530%	1898 0 	717 2  1898 last 47 months
<b>Progressive</b>	<b>627</b>	10000%	1424 0 	627 0  3415 last 46 months
<b>Prudential</b>	<b>1178</b>	83%	14512 0 	1178 222  17185 last 47 months