

FEDERAL RESERVE BANK OF MINNEAPOLIS
BANKING AND POLICY STUDIES

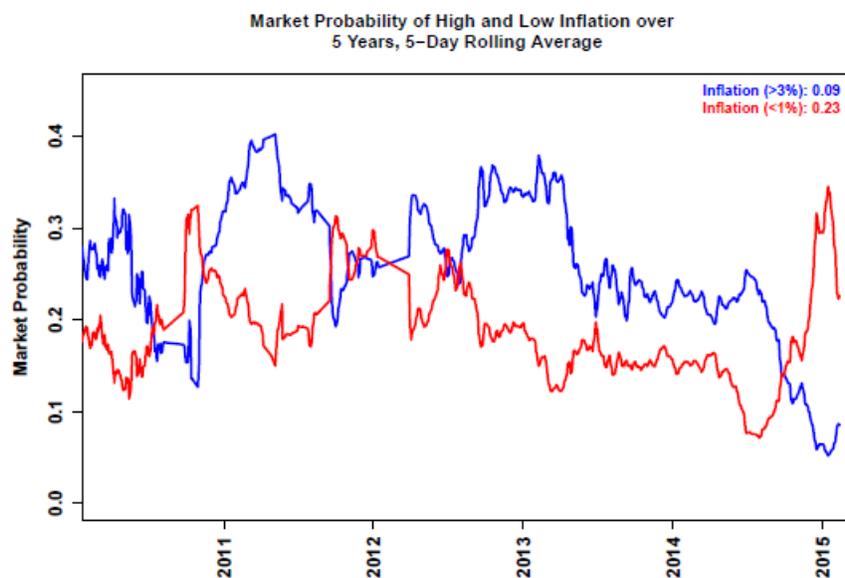
Minneapolis Options Report – Feb 13th

Inflation

The reversal in market-based inflation expectations as derived from caps and floors on the CPI continues. The dramatic declines we have reported in recent reports have been partially erased by recent activity.

Additional Detail:

- Medians of market-based inflation probability distributions, as derived from caps and floors on the CPI, remain below 1% for the one year time period and below 2% for the two and five year time periods.
- Uncertainty, as measured by MPD standard deviation continues its slow movement higher. This suggests investor conviction about their expectations is declining.
- Market probabilities of high and low inflation are experiencing reversals that mirror that of the medians. Note the sharp decline in the probability of inflation less than 1% in the graph below.



Interest Rates

Three month LIBOR rates are expected to reach 1.5% in the next three years and to remain there for the following two years. Treasury note and bond prices have declined since our last report. At the same time, MPDs indicate that markets maintain a bias toward lower 10 year rates as indicated by the MPD skew derived from options on the 10 year bond futures.

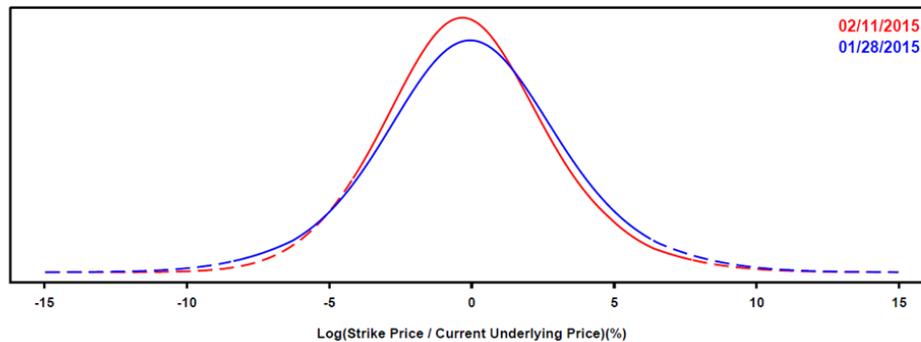
Additional Details:

- The median 3-month LIBOR rates as derived from options on LIBOR with three and five years to expiry both increased about 25 basis points to 1.48% over the past two weeks.
- The MPD standard deviation is higher for LIBOR over the shorter term suggesting increased tail risk to the 1.48% expectation within the three year time frame.
- MPDs derived from options on longer maturity treasury futures exhibited higher skews relative to two weeks ago. The MPD skew for near term changes in the 5-year treasury price is close to zero indicating relatively little bias for the direction of rate changes in the near term. On the other hand, the MPD skew related to 10-year treasury prices rose again over the past two weeks *indicating a near-term bias towards lower rates* (see graph below).

MARKET PROBABILITY DENSITY FUNCTIONS -- TEN YEAR TREASURY

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

Market Probability Density Function of the Log Return Distribution



Banks & Insurance Companies

The S&P 500 rallied 3.3% over the past two weeks while the average price change of bank (17) and insurance (11) company stocks we follow was 6.5% and 5.3% respectively.

Volumes were light for options on financial institution and mostly lower relative to two weeks ago. Most firms made their Q4 earnings announcements within the past few weeks and options volumes tend to rise around those events.

Across the universe of bank and insurance company equities, tail risks as measured by MPD standard deviations fell and remain low. The average standard deviation derived from options on US bank equities fell about -0.3%. The same average based on options on US insurance company equities fell -0.8%.

Additional Details:

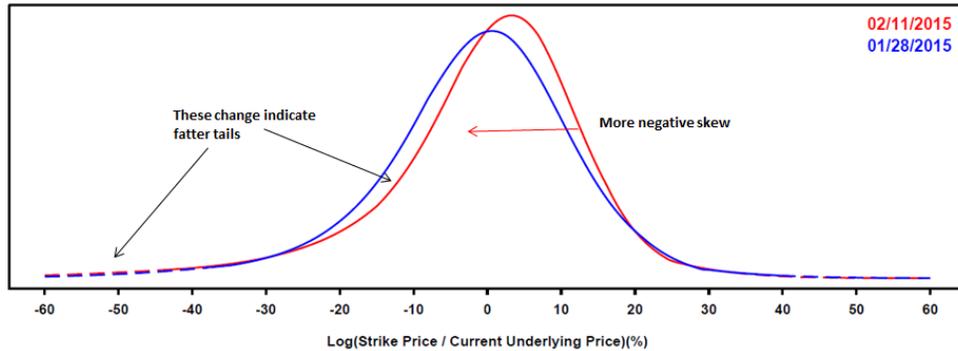
- Trading activity rose for PRU in anticipation of their upcoming earnings announcement.

- The standard deviation of the MPD derived from options on RF *rose* and the skew declined relative to two weeks ago. These moves were the opposite of the rest of the universe suggesting a market perception of more tail risk and downside bias in share price for RF relative to its peers.

MARKET PROBABILITY DENSITY FUNCTIONS -- REGIONS FINANCIAL

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

Market Probability Density Function of the Log Return Distribution



Other Commodity Markets

Options trading was light across most market we follow last week. Equity markets exhibited expectations of a reversal in the near term. Tail risks changed very little. Commodity prices were mixed with oil rising sharply by 13%.

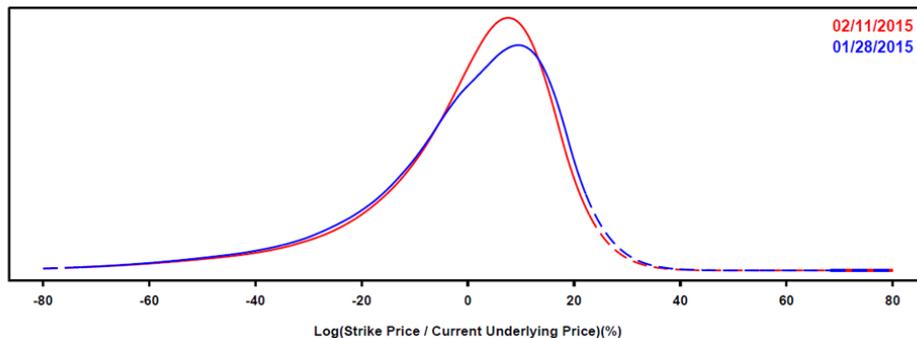
Additional Details:

- MPDs derived from options on the S&P 500 index remain unusually skewed toward downside price moves for both six and twelve month expiries.

MARKET PROBABILITY DENSITY FUNCTIONS -- S&P 500

Log returns are based on the market probability density function of the underlying asset derived from options that expire in approximately 12 months.

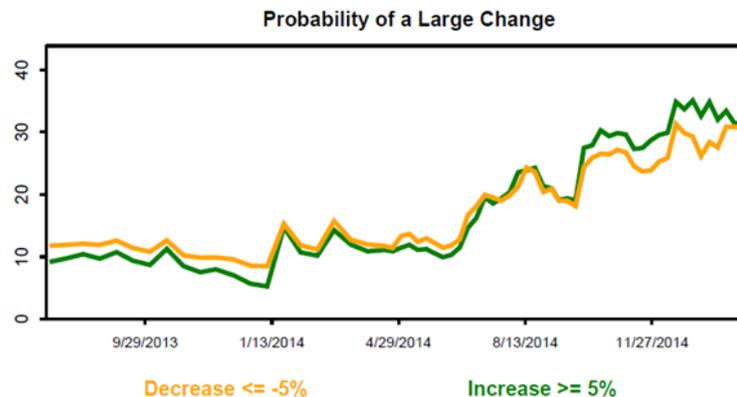
Market Probability Density Function of the Log Return Distribution



- Trading in options on WTI oil futures was light over the past two weeks. Despite a 13% increase in the spot price, the characteristics of our derived MPDs remained mostly unchanged.
- Trading was heavy last week in all three currency markets we follow. MPD standard deviations derived from options on dollar-pound and dollar-yen currency pairs rose. As the dollar continued to strengthen, tail risks rose as well.
- Spot prices for corn, soybeans, and wheat rallied 3.2%, 0.2%, and 2.1% relative to two weeks ago. Expectations, as measured by MPD skew, are biased toward higher prices for corn and wheat and neutral for soybeans.
- Tail risks in precious metals markets, as measured by the MPD standard deviation derived from options on gold and silver futures, rose. Spot prices dropped sharply for both commodities over the past two weeks.
- Cattle and hog spot prices fell -2% and -7.6% respectively. The MPD standard deviation derived from options on cattle futures remains near 12 month highs suggesting tail risks remain elevated in this market. Cattle price tail risks, as measured by large change probabilities, recently became less biased as the probability of upside price moves has fallen (see graph below).

MARKET PROBABILITY DENSITY FUNCTIONS -- CATTLE FUTURES

Log returns are based on the market probability density function of the underlying asset derived from options that expire in approximately 6 months.



Inflation MPD Statistics as of February 10, 2015

Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
Inflation (1-Year Expiry)				
Median	0.82%	0.72%		48 month low
MPD Std Dev	1.18%	0.037%		
MPD Skew	-0.15	-0.21		
Market Prob of Less Than 1% Inflation	56.68%	-21%		
Market Prob of More Than 3% Inflation	3.2%	2.2%		
Inflation (2-Year Expiry)				
Median	1.36%	0.39%		
MPD Std Dev	1.14%	0.016%		Last time higher Aug2013
MPD Skew	0.02	-0.081		
Market Prob of Less Than 1% Inflation	36.75%	-14%		
Market Prob of More Than 3% Inflation	7.62%	3.6%		
Inflation (5-Year Expiry)				
Median	1.76%	0.23%		47 month low
MPD Std Dev	0.96%	-0.0039%		
MPD Skew	0.18	-0.054		Last time higher Aug2013
Market Prob of Less Than 1% Inflation	22.06%	-6.9%		47 month high
Market Prob of More Than 3% Inflation	8.75%	2.4%		

Medium-to-Long Bond Price MPD Statistics as of February 11, 2015

Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
5 Year Treasury (3-Month Expiry)				
Spot	119.03	-1.6%	120.99 118.05	5 month high 118.05 119.03 120.99 last 5 months
MPD Std Dev	1.99%	-0.057%	2.3 1.41	1.41 1.99 2.3 last 5 months
MPD Skew	-0.02	0.06	0.36 -0.5	-0.5 -0.02 0.36 last 5 months
Market Prob of -3% or More Decline	6.48%	-0.39%	8.74 2.44	2.44 6.48 8.74 last 5 months
Volume	36554	-84%	377550 0	2054 36554 377550 last 5 months
10 Year Treasury (3-Month Expiry)				
Spot	127.72	-2.1%	130.47 122.97	16 month high 122.97 127.72 130.47 last 16 months
MPD Std Dev	3.04%	-0.34%	3.8 2.17	2.17 3.04 3.8 last 16 months
MPD Skew	0.25	0.2	0.31 -0.34	-0.75 0.25 0.31 last 16 months
Market Prob of -5% or More Decline	4.85%	-1.5%	8.48 1.62	1.62 4.85 8.48 last 16 months
Volume	174605	-80%	1185098 0	5226 174605 1185098 last 16 months

Short Interest Rates MPD Statistics as of February 11, 2015

Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
3 Month LIBOR (3-Year Expiry)				
Median	1.47%	0.27%	1.85 1.04 Feb27 Sep18	0.72 1.47 last 48 months 2.19
MPD Std Dev	2.17%	0.55%	2.17 1.21 Feb11 Oct16	Last time higher Jul2011 0.68 2.17 last 48 months 2.38
MPD Skew	3.36	-0.69	4.05 0.63 Nov19 Jan28	Last time higher Dec2013 0.6 3.36 last 48 months 7.06
Market Prob of Less Than 0.5% LIBOR	17.13%	-4.5%	22.69 9.79 Feb27	17.13 7.32 38.35 last 48 months
Market Prob of More Than 1% + Spot	55.79%	4.2%	67.85 40.33 Feb27 Sep18	55.79 7.61 71.73 last 48 months
3 Month LIBOR (5-Year Expiry)				
Median	1.49%	0.24%	2.89 1.26 Apr03 Jan28	Last time lower May2013 0.94 1.49 last 46 months 3.79
MPD Std Dev	1.87%	0.079%	2.76 1.79 Mar06 Jan28	Last time lower Feb2013 1.5 1.87 last 46 months 2.99
MPD Skew	1.1	-0.0033	2.13 0.43 Nov27 Sep25	1.1 0.35 4.1 last 46 months
Market Prob of Less Than 1% LIBOR	33.71%	-6.5%	40.22 17.66 Apr03 Jan28	Last time higher May2013 9.43 33.71 last 46 months 53.02
Market Prob of More Than 2% + Spot	39.65%	4.4%	60.53 31.59 Nov12 Jan21	Last time lower Jun2013 10.68 39.65 last 46 months 72.25

Equity Index MPD Statistics as of February 11, 2015

Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
S&P 500 (6-Month Expiry)				
Spot	2068.53	3.3%		
MPD Std Dev	12.83%	0.3%		
MPD Skew	-1.52	-0.19		
Market Prob of -20% or More Decline	7.97%	0.93%		
Volume	28280	-73%		
S&P 500 (12-Month Expiry)				
Spot	2068.53	3.3%		
MPD Std Dev	17.99%	-0.84%		
MPD Skew	-1.48	-0.15		
Market Prob of -20% or More Decline	12.25%	-1.3%		
Volume	46283	10%		
iShares US Real Estate Index (3-Month Expiry)				
Spot	79.89	-3.1%		
MPD Std Dev	8.72%	2.2%		
MPD Skew	-1.02	-0.66		
Market Prob of -10% or More Decline	13.26%	6.7%		
Volume	17722	-22%		

Exchange Rate MPD Statistics as of February 11, 2015

Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
Dollar-Euro Futures (3-Month Expiry)				
Spot	1.13	0%		
MPD Std Dev	6.28%	-0.025%		
MPD Skew	-0.3	-0.063		
Market Prob of -10% or More Decline	5.98%	-0.044%		
Volume	56586	-23%		
Dollar-Pound Futures (3-Month Expiry)				
Spot	152.44	0.6%		
MPD Std Dev	4.38%	-0.011%		
MPD Skew	-0.29	0.073		
Market Prob of -10% or More Decline	1.82%	-0.25%		
Volume	18754	130%		
Dollar-Yen Futures (3-Month Expiry)				
Spot	83.17	-2.2%		
MPD Std Dev	5.81%	0.27%		
MPD Skew	-0.08	-0.2		
Market Prob of -10% or More Decline	4.43%	0.93%		
Volume	33244	130%		

Metal and Energy Commodity MPD Statistics as of February 11, 2015

Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
Gold (6-Month Expiry)				
Spot	1220.47	-5.2%		
MPD Std Dev	12.89%	0.11%		
MPD Skew	-0.07	-0.013		
Market Prob of -20% or More Decline	6.96%	0.65%		
Volume	1956	-78%		
Silver (6-Month Expiry)				
Spot	16.79	-7.4%		
MPD Std Dev	21.97%	0.11%		
MPD Skew	-0.14	-0.031		
Market Prob of -20% or More Decline	18.25%	0.0065%		
Volume	2601	-9.2%		
West Texas Intermediate Crude (6-Month Expiry)				
Spot	54.86	13%		
MPD Std Dev	31.81%	-0.12%		
MPD Skew	-0.5	0.056		
Market Prob of -20% or More Decline	26.53%	0.85%		
Volume	342	-88%		

Agricultural Crop Commodity MPD Statistics as of February 11, 2015

Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
Corn (6-Month Expiry)				
Spot	401.67	3.2%		
MPD Std Dev	17.25%	0.8%		
MPD Skew	0.2	8.7e-05		
Market Prob of -20% or More Decline	12.97%	1.5%		
Volume	21508	1.4%		
Soybeans (6-Month Expiry)				
Spot	983.34	0.2%		
MPD Std Dev	14.42%	-0.25%		
MPD Skew	-0.13	-0.01		
Market Prob of -20% or More Decline	9.07%	-0.42%		
Volume	18080	11%		
Wheat (6-Month Expiry)				
Spot	525.77	2.1%		
MPD Std Dev	18.2%	0.29%		
MPD Skew	0.32	-0.031		
Market Prob of -20% or More Decline	14.25%	-0.085%		
Volume	10588	-44%		

Agricultural Livestock Commodity MPD Statistics as of February 11, 2015

Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
Cattle (6-Month Expiry)				
Spot	141.73	-2%		
MPD Std Dev	11.08%	-0.6%		
MPD Skew	-0.32	0.013		
Market Prob of -5% or More Decline	30.74%	-0.12%		
Volume	2374	-85%		
Hogs (6-Month Expiry)				
Spot	78.54	-7.6%		
MPD Std Dev	17.49%	0.95%		
MPD Skew	-0.08	-0.21		
Market Prob of -5% or More Decline	13.93%	1.8%		
Volume	3957	270%		

Bank MPD Statistics as of February 11, 2015

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	10.05%	-0.6%		
Bank of America	12.37%	-0.22%		
BB&T	10.11%	-0.074%		
Barclays	10.93%	-4.3%		
Bank of NY Mellon	10.55%	1%		
Citigroup	12.36%	0.23%		
Capital One	10.31%	-0.3%		
Credit Suisse	14.48%	0.27%		
Deutsche Bank	15.09%	0.17%		
Fifth Third	11.25%	-0.46%		
Goldman Sachs	10.4%	-1.2%		
JP Morgan	11.38%	-0.13%		
Keycorp	11.27%	-2.1%		
Morgan Stanley	11.87%	-2.2%		
PNC Financial	9.55%	0.29%		
Regions Financial	14.52%	0.71%		
SunTrust	10.38%	-0.41%		
State Street	11.42%	0.28%		
UBS	13.36%			
US Bancorp	9.13%	-0.3%		
Wells Fargo	9.62%	-0.098%		

Bank MPD Statistics as of February 11, 2015

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	-0.58	-0.087		
Bank of America	-0.5	-0.27		
BB&T	-1.07	-0.5		
Barclays	-0.13	0.74		
Bank of NY Mellon	-0.87	-1.2		
Citigroup	-0.7	-0.26		
Capital One	-0.41	0.25		
Credit Suisse	-0.45	-1.3		
Deutsche Bank	-0.42	-0.41		
Fifth Third	-0.88	-0.39		
Goldman Sachs	-0.7	-0.12		
JP Morgan	-0.8	-0.33		
Keycorp	-0.53	-0.091		
Morgan Stanley	-0.67	-0.094		
PNC Financial	-0.7	0.26		
Regions Financial	-1.18	-0.57		
SunTrust	-0.81	0.18		
State Street	-0.74	-0.15		
UBS	-0.04			
US Bancorp	-0.82	-0.4		
Wells Fargo	-0.91	0.091		

Bank MPD Statistics as of February 11, 2015

Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
Market Probability of -20% or More Decline (3-Month Expiry)				
American Express	3.94%	-0.42%		
Bank of America	7.27%	0.25%		
BB&T	4.28%	0.73%		
Barclays	2.33%	-5.1%		
Bank of NY Mellon	4.62%	3.3%		
Citigroup	6.71%	1.2%		
Capital One	4.73%	0.41%		
Credit Suisse	10.51%	4.5%		
Deutsche Bank	8.96%	-0.47%		
Fifth Third	5.12%	-1%		
Goldman Sachs	4.32%	-1%		
JP Morgan	6.08%	0.74%		
Keycorp	5.59%	-2.2%		
Morgan Stanley	5.6%	-2.5%		
PNC Financial	3.83%	0.66%		
Regions Financial	8.6%	0.33%		
SunTrust	4.53%	-0.25%		
State Street	6.35%	0.66%		
UBS	7.28%			
US Bancorp	3.21%	0.074%		
Wells Fargo	3.44%	-0.27%		

Bank MPD Statistics as of February 11, 2015

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)				
American Express	3020	-68%	10151 0	623 - 3020 - 20941 last 48 months
Bank of America	53758	-32%	132589 0	7419 - 53758 - 363160 last 48 months
BB&T	2093	6.4%	6490 0	190 - 2093 - 6903 last 48 months
Barclays	524	55%	11011 0	13 - 524 - 15208 last 48 months
Bank of NY Mellon	719	-68%	15678 0	59 - 719 - 17091 last 48 months
Citigroup	10934	-91%	140439 0	1104 - 10934 - 192846 last 48 months
Capital One	1223	-77%	5543 0	164 - 1223 - 16299 last 48 months
Credit Suisse	1027	-81%	15145 0	0 - 1027 - 15145 last 48 months
Deutsche Bank	873	-64%	25112 0	62 - 873 - 29575 last 48 months
Fifth Third	2324	1.4%	6299 0	28 - 2324 - 19127 last 48 months
Goldman Sachs	4270	32%	21840 0	296 - 4270 - 43413 last 48 months
JP Morgan	11896	-69%	79587 0	943 - 11896 - 119246 last 48 months
Keycorp	421	-87%	3300 0	44 - 421 - 76270 last 48 months
Morgan Stanley	6762	42%	48955 0	327 - 6762 - 84281 last 48 months
PNC Financial	1711	72%	4810 0	83 - 1711 - 12224 last 48 months
Regions Financial	4564	80%	4635 0	20 - 4564 - 19649 last 47 months
SunTrust	2382	-23%	4232 0	61 - 2382 - 13788 last 48 months
State Street	827	-60%	5339 0	42 - 827 - 5370 last 48 months
UBS	124		2034 0	6 - 124 - 6502 last 47 months
US Bancorp	1074	-52%	9006 0	172 - 1074 - 29201 last 48 months
Wells Fargo	13307	-22%	62697 0	950 - 13307 - 167820 last 48 months

Insurance Company MPD Statistics as of February 11, 2015

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	8.39%	-1.1%	12.28 7.29 	8.39 7.29 last 48 months
AIG	11.31%	-0.58%	15.15 8.7 	11.31 8.7 last 48 months
Allstate	8.26%	-0.68%	9.83 5.83 	8.26 5.83 last 48 months
Ameriprise	11.78%	-1.1%	15.19 8.98 	11.78 8.98 last 48 months
Chubb	8.09%	-0.16%	9.43 5.96 	8.09 5.96 last 48 months
Hartford Financial	10.73%	-1.3%	13.93 8.68 	10.73 8.68 last 48 months
Lincoln National	12.88%	-1.2%	16.63 10.28 	12.88 10.28 last 48 months
Met Life	12.29%	-0.61%	16.24 10.08 	12.29 10.08 last 48 months
Principal Financial	11.85%	-1.9%	17.34 8.31 	11.85 8.02 last 48 months
Progressive	9.64%		11.32 6.2 	9.64 6.2 last 46 months
Prudential	12.58%	-0.26%	16.3 10.11 	12.58 10.11 last 48 months

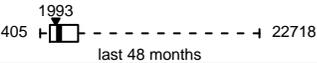
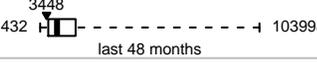
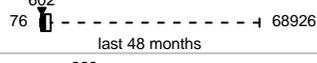
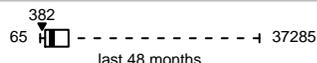
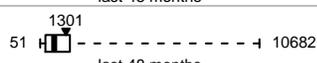
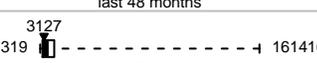
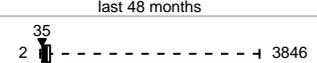
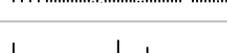
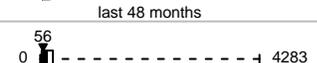
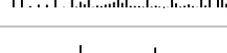
Insurance Company MPD Statistics as of February 11, 2015

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	-1.01	-0.56	-0.32 -1.08	-1.24 - -1.01 - -0.32 last 48 months
AIG	-0.63	-0.35	-0.23 -0.79	-1.23 - -0.63 - 1.05 last 48 months
Allstate	-1.11	-0.34	-0.31 -1.5	-1.5 - -1.11 - -0.12 last 48 months
Ameriprise	-0.55	-0.1	-0.11 -1.44	-4.03 - -0.55 - 0.33 last 48 months
Chubb	-0.41	0.43	-0.21 -1.15	-1.56 - -0.41 - -0.21 last 48 months
Hartford Financial	-1.16	-0.085	-0.16 -1.59	-1.59 - -1.16 - -0.16 last 48 months
Lincoln National	-0.47	-0.17	0.15 -1.02	-1.59 - -0.47 - 0.15 last 48 months
Met Life	-0.71	-0.23	-0.31 -0.79	-1.52 - -0.71 - -0.23 last 48 months
Principal Financial	-0.56	0.37	0.21 -2.8	-2.95 - -0.56 - 0.24 last 48 months
Progressive	-0.13		0.36 -2.78	-3.54 - -0.13 - 0.71 last 46 months
Prudential	-0.69	-0.02	-0.36 -0.82	-1.45 - -0.69 - -0.36 last 48 months

Insurance Company MPD Statistics as of February 11, 2015

Indicator	Latest	2-Week Change	1-Year Trend with min/max points	Long-Term Range with median, IQR, and max/min
Market Probability of -20% or More Decline (3-Month Expiry)				
Aflac	2.91%	-0.45%		
AIG	5.58%	-0.55%		
Allstate	2.61%	-0.33%		
Ameriprise	6.66%	-0.24%		
Chubb	1.71%	-0.95%		
Hartford Financial	5.24%	-0.16%		
Lincoln National	7.96%	-1.4%		
Met Life	6.81%	0.31%		
Principal Financial	6.24%	-1.2%		
Progressive	2.83%			
Prudential	8.44%	2.4%		

Insurance Company MPD Statistics as of February 11, 2015

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	1993	-3.8%	13324 0 	1993 405  22718 last 48 months
AIG	3448	-62%	38744 0 	3448 432  103998 last 48 months
Allstate	602	72%	5708 0 	602 76  68926 last 48 months
Ameriprise	229	25%	1071 0 	229 5  1114 last 48 months
Chubb	646	1100%	2541 0 	646 11  11114 last 48 months
Hartford Financial	382	-96%	13441 0 	382 65  37285 last 48 months
Lincoln National	1301	330%	8403 0 	1301 51  10682 last 48 months
Met Life	3127	-86%	29248 0 	3127 319  161416 last 48 months
Principal Financial	35	75%	310 0 	35 2  3846 last 48 months
Progressive	56		474 0 	56 0  4283 last 46 months
Prudential	5376	150%	13225 0 	5376 222  13225 last 48 months