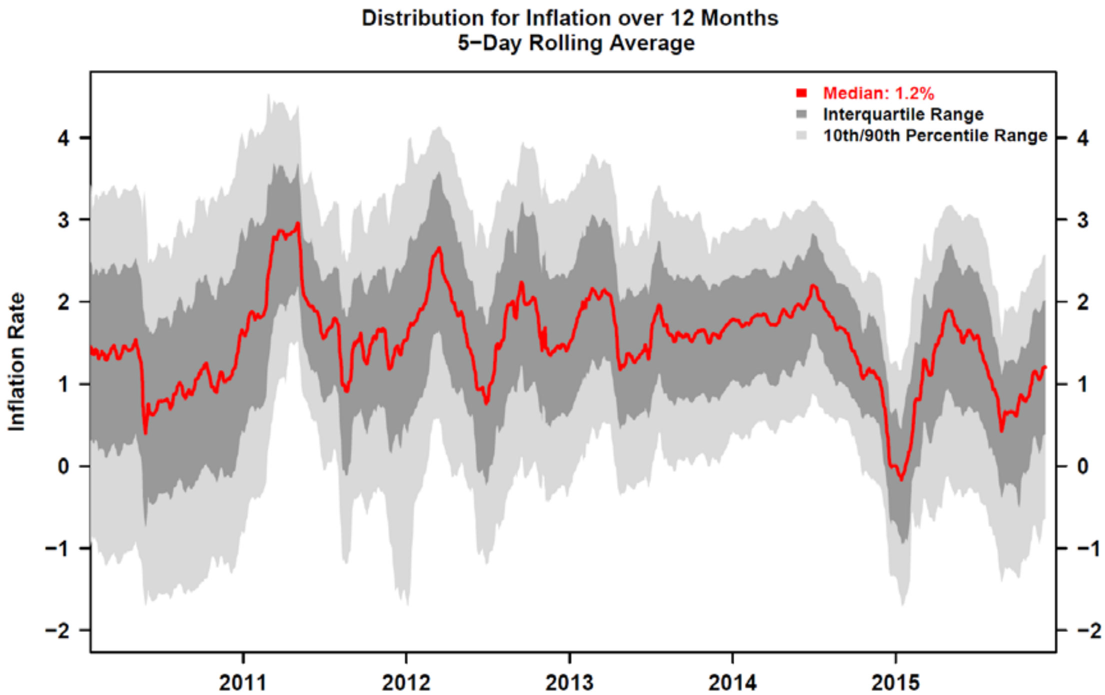
Minneapolis Options Report – December 4th

Over the past two weeks, market-implied inflation expectations rose across all tenors we follow (1-, 2-, and 5-year periods). The market probability of low inflation (inflation less than 1%) has steadily fallen, across all tenors since August 2015. The S&P 500 returned -0.2% and statistics associated with its market-based probability distribution (MPD) were largely unchanged. Statistics for banks and insurance companies were similar to those computed for the S&P 500, and the industries barely outperformed the market, returning -0.1% each. In contrast, MPD statistics for PFG registered sizable movements over the two week period. The dollar strengthened against the pound by 1.2%; change against the yen and the euro were negligible.

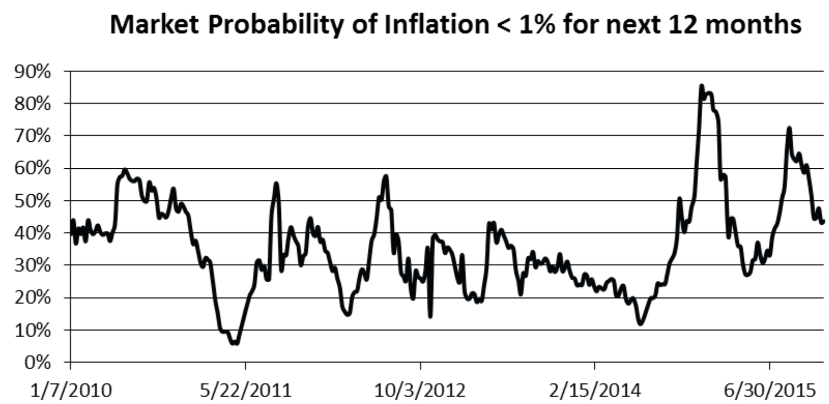
Inflation

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 1.19%, 1.38% and 1.63% respectively. This rise can be observed most clearly in the 1-year tenor, as inflation expectations continue to rise.



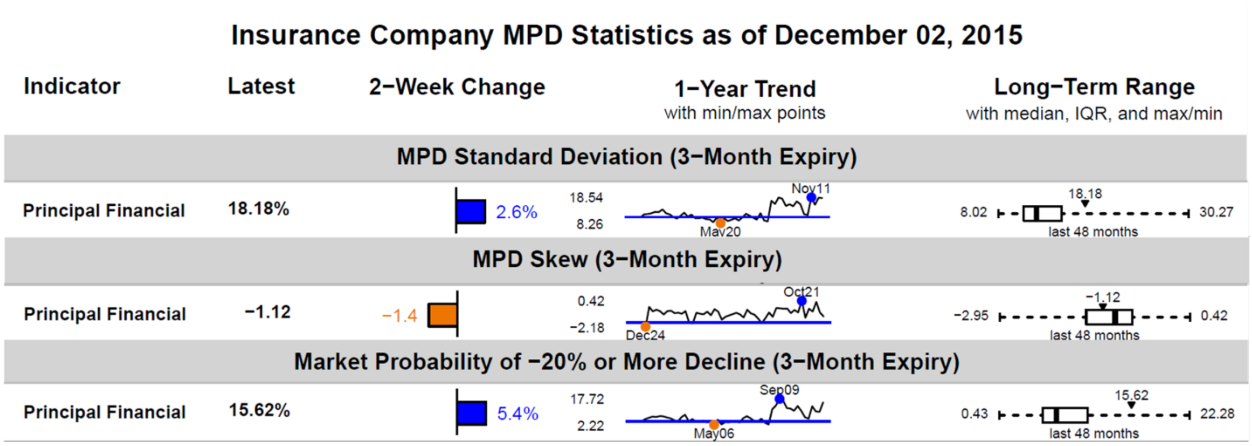
Additional detail:

- Current median inflation expectations, across all tenors, remained below their respective 4-year medians.
- MPD skew for the 5-year tenor trebled to 0.73, nearing its 47-month high. This is indicative of bias towards higher future inflation in the long term.
- The probability of low inflation has steadily fallen across all inflation tenors since August 26th, 2015 and this trend is best captured by the 1-year tenor (see chart below).



Interest Rates
MPD statistical skews for all Treasury tenors were unchanged and suggest neutral bias towards long term rate changes. Over the two-week period, spot prices for both tenors rose slightly thus producing minor yield reductions. The 5-year LIBOR rate moved lower by -13 basis points. The MPD skew for the 5-year LIBOR more than doubled to 2.31 suggesting increased bias towards higher future short term rates.

Banks and Insurance Companies
The S&P 500 lost -0.2% over the past two weeks. The 20 domestic bank company stocks and 11 insurance companies we follow outperformed the market, with each industry returning - 0.1% on average. While statistical measures were largely unchanged for the banking and insurance firms, PFG had large movements in its statistical measures as demonstrated below.

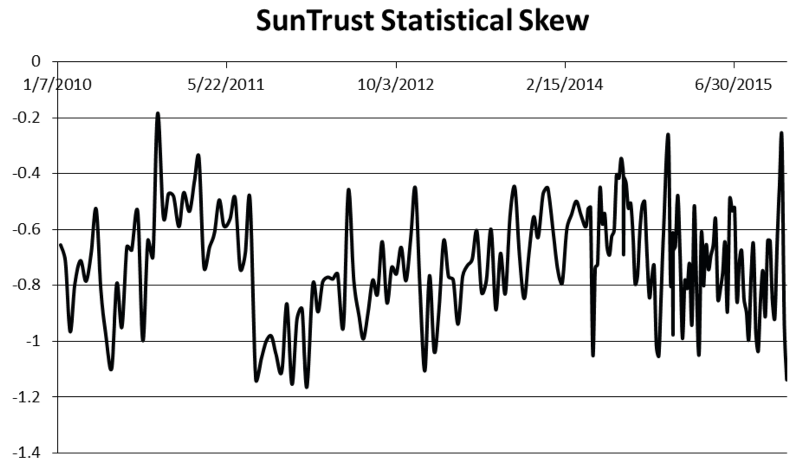

Insurance Company MPD Statistics as of December 02, 2015

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)				
Principal Financial	18.18%	2.6%	18.54 / 8.26; Nov11; May20	8.02 – 30.27; 18.18; last 48 months
MPD Skew (3−Month Expiry)				
Principal Financial	−1.12	−1.4	0.42 / −2.18; Oct21; Dec24	−2.95 – 0.42; −1.12; last 48 months
Market Probability of −20% or More Decline (3−Month Expiry)				
Principal Financial	15.62%	5.4%	17.72 / 2.22; Sep09; May06	0.43 – 22.28; 15.62; last 48 months

The movement in MPD standard deviation implies that uncertainty has increased. Statistical skew turned negative pointing to a bias towards future lower prices for PFG and this appears to be corroborated by the sharp rise in tail risk as measured by the market probability of a -20% or more decline. The change in skew is also one of its largest historically.

Additional details:

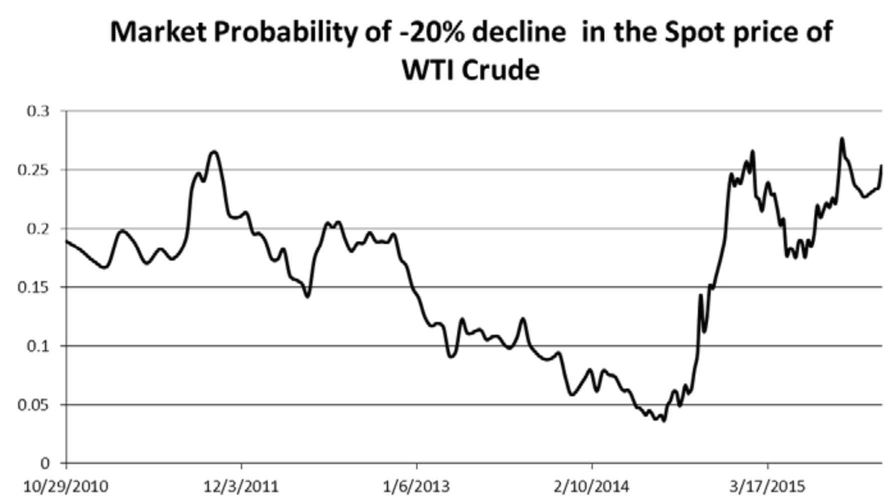
- SunTrust posted a large fall in statistical skew ending at -1.14. This value is near its 4-year low and, despite the generally high volatility of this measure, represents one of its largest downward movements (see chart below).



- Tail risk, as measured by market probability of a -20% or more decline, for Regions Financial declined by nearly 40%.

Other Markets

- The iShares US Real Estate Index outperformed the market with a 0.8% return over the two week period. MPD skew rose by 0.3 and is approaching its four year high. MPD standard deviation moved downward suggesting a reduction in investor uncertainty.
- The pound weakened against the dollar by -1.9% over the two-week period. MPD standard deviation increased to 4.2% signaling an increase in investor uncertainty. MPD skew took a sharp downward turn to -0.26, near its median value. This movement suggests further market bias towards a weaker comparative pound.
- Gold and silver continued their respective falls, giving back -1.3% and -0.8% and setting new 4-year lows.
- MPD standard deviations for agricultural crop commodities have been in decline since July 2015, roughly tracking the declines in spot price.
- The market probability of -20% or more declines in the spot price of oil increased by 2% over the two week period. Of note is the fact that after falling recently through Sept 2015, tail risk has picked up in since late Oct, 2015 as demonstrated in the plot below.



Inflation MPD Statistics as of December 02, 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	**1.19%**	0.12%	1.9 Apr29 −0.15 Jan14	−0.15 1.19 2.65 last 48 months
MPD Std Dev	**1.24%**	−0.021%	1.51 May06 0.93 Dec10	0.83 1.24 2.75 last 48 months
MPD Skew	**−0.6**	−0.053	0.2 Jan14 −0.73 Nov04	−0.77 −0.6 2.5 last 48 months
Market Prob of Less Than 1% Inflation	**43.69%**	−4%	85.35 Dec17 27.11 Apr29	11.88 43.69 85.35 last 48 months
Market Prob of More Than 3% Inflation	**5.24%**	1%	15.81 Apr29 0.23 Dec17	0.23 5.24 40.43 last 48 months
Inflation (2−Year Expiry)				
Median	**1.38%**	0.13%	1.85 Apr22 0.72 Jan07	0.72 1.38 2.22 last 47 months
MPD Std Dev	**1.29%**	0.00053%	1.32 Apr29 0.96 Dec17	0.88 1.29 1.66 last 47 months
MPD Skew	**−0.01**	−0.034	0.22 Jan07 −0.4 Mar25	−0.4 −0.01 2.74 last 47 months
Market Prob of Less Than 1% Inflation	**37.55%**	−3.8%	61.36 Jan07 25.22 Apr22	10.74 37.55 61.36 last 47 months
Market Prob of More Than 3% Inflation	**9.63%**	1.4%	17.23 Apr29 1.8 Dec17	1.8 9.63 27.1 last 47 months
Inflation (5−Year Expiry)				
Median	**1.63%**	0.1%	1.91 Jun17 1.29 Sep30	1.29 1.63 2.6 last 47 months
MPD Std Dev	**1.21%**	0.042%	1.23 Oct07 0.96 Feb18	0.91 1.21 1.79 last 47 months
MPD Skew	**0.73**	0.49	0.78 Oct07 −0.08 Mar25	−0.1 0.73 0.78 last 47 months
Market Prob of Less Than 1% Inflation	**28.38%**	−2.8%	38.01 Sep30 19.52 Mar04	7.13 28.38 38.01 last 47 months
Market Prob of More Than 3% Inflation	**10.42%**	1.1%	15.28 Jun17 5.02 Jan07	5.02 10.42 37.29 last 47 months

Source: Bloomberg

Medium−to−Long Bond Price MPD Statistics as of December 02, 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	**118.76**	0.19%	121.01 / 118.22; Oct14, Nov11	118.05 – 121.01; 118.76; last 15 months
MPD Std Dev	**1.61%**	0.013%	2.16 / 1.49; Jan21, Apr15	1.41 – 2.3; 1.61; last 15 months
MPD Skew	**−0.16**	−0.064	0.14 / −0.54; Jul15, Jun03	−0.54 – 0.36; −0.16; last 15 months
Market Prob of −3% or More Decline	**3.72%**	0.0081%	7.72 / 2.59; Jan21, Apr15	2.44 – 8.74; 3.72; last 15 months
Volume	**18100**	−88%	281321 / 0	2054 – 377550; 18100; last 15 months
10 Year Treasury (3−Month Expiry)				
Spot	**126.72**	0.53%	130.47 / 124.66; Jan28, Jun10	122.97 – 130.47; 126.72; last 26 months
MPD Std Dev	**2.52%**	−0.0091%	3.49 / 2.46; Jan21, Apr15	2.17 – 3.8; 2.52; last 26 months
MPD Skew	**0**	−0.022	0.31 / −0.39; Jan07, May13	−0.75 – 0.31; 0; last 26 months
Market Prob of −5% or More Decline	**2.76%**	−0.034%	7.05 / 2.46; Jan21, Apr15	1.62 – 8.48; 2.76; last 26 months
Volume	**61340**	20%	1185098 / 0	5226 – 118509[illegible]; 61340; last 26 months

Short Interest Rates MPD Statistics as of December 02, 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	**1.37%**	−0.044%	1.73 / 1.03; Dec24, Oct14	0.72 – 1.85; 1.37; last 48 months
MPD Std Dev	**1.21%**	−0.051%	2.17 / 1.09; Feb11, Oct14	0.68 – 2.17; 1.21; last 48 months
MPD Skew	**0.84**	0.033	4.05 / 0.4; Jan28, Jun03	0.4 – 7.06; 0.84; last 48 months
Market Prob of Less Than 0.5% LIBOR	**17.99%**	−0.73%	25.57 / 13.44; Oct14, Dec24	9.79 – 38.35; 17.99; last 48 months
Market Prob of More Than 1% + Spot	**45.03%**	−5.5%	63.37 / 39.74; Dec24, Sep30	7.61 – 67.85; 45.03; last 48 months
3 Month LIBOR (5−Year Expiry)				
Median	**1.24%**	−0.13%	2.41 / 1.21; May20, Aug26	0.94 – 2.99; 1.24; last 46 months
MPD Std Dev	**1.85%**	0.09%	2.44 / 1.62; Aug26, Sep23	1.5 – 2.85; 1.85; last 46 months
MPD Skew	**2.31**	1.4	2.53 / 0.29; Aug26, May20	0.29 – 4.1; 2.31; last 46 months
Market Prob of Less Than 1% LIBOR	**41.17%**	2.9%	41.31 / 27.21; Aug26, Jul22	17.66 – 53.02; 41.17; last 46 months
Market Prob of More Than 2% + Spot	**35.75%**	−0.94%	52.05 / 24.74; Jun17, Oct14	10.68 – 60.53; 35.75; last 46 months

Source: Bloomberg

Equity Index MPD Statistics as of December 02, 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	**2079.51**	−0.2%	2125.85 / 1920.03; May20 / Sep30	1215.75 – 2125.85; 2079.51; last 48 months
MPD Std Dev	**12.49%**	0.086%	16.21 / 9.85; Sep02 / Aug05	8.87 – 20.07; 12.49; last 48 months
MPD Skew	**−1.38**	0.21	−1.21 / −1.59; Dec10 / Aug12	−1.59 – −0.86; −1.38; last 48 months
Market Prob of −20% or More Decline	**7.59%**	0.43%	10.79 / 4.72; Sep02 / Jul29	3.65 – 14.96; 7.59; last 48 months
Volume	**25747**	−57%	164021 / 0	13428 – 309308; 25747; last 48 months
S&P 500 (12−Month Expiry)				
Spot	**2079.51**	−0.2%	2125.85 / 1920.03; May20 / Sep30	1215.75 – 2125.85; 2079.51; last 48 months
MPD Std Dev	**19.12%**	0.7%	22.38 / 16; Sep09 / Jul29	10.5 – 29.36; 19.12; last 48 months
MPD Skew	**−1.39**	0.24	−1.22 / −1.63; Dec10 / Nov18	−1.63 – −0.98; −1.39; last 48 months
Market Prob of −20% or More Decline	**13.92%**	1.6%	17.06 / 10.24; Sep30 / Jul29	5.51 – 21.74; 13.92; last 48 months
Volume	**47715**	120%	100038 / 0	3174 – 161766; 47715; last 48 months
iShares US Real Estate Index (3−Month Expiry)				
Spot	**74.7**	0.8%	82.44 / 68.88; Jan28 / Sep09	54.99 – 82.44; 74.7; last 48 months
MPD Std Dev	**8.81%**	−0.66%	11.83 / 6.49; Sep09 / Jan28	4.77 – 15.33; 8.81; last 48 months
MPD Skew	**−0.58**	0.3	−0.35 / −1.49; Jan28 / Dec17	−2.09 – −0.35; −0.58; last 48 months
Market Prob of −10% or More Decline	**14.73%**	−1.6%	20.5 / 6.56; Sep09 / Jan28	3.43 – 20.5; 14.73; last 48 months
Volume	**2128**	2.5%	141443 / 0	62 – 141443; 2128; last 48 months

Source: FactSet

Exchange Rate MPD Statistics as of December 02, 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	**1.06**	0%	1.24 Dec10 1.05 Mar11	1.05 – 1.06 – 1.39 last 48 months
MPD Std Dev	**6%**	−0.98%	8.42 Aug26 4.48 Feb25	2.4 – 6 – 8.42 last 48 months
MPD Skew	**−0.12**	−0.32	0.2 Nov18 −0.54 Jun03	−0.68 – −0.12 – 0.2 last 48 months
Market Prob of −10% or More Decline	**5.11%**	−1.4%	10.68 Aug26 1.82 Feb25	0.02 – 5.11 – 10.68 last 48 months
Volume	**16596**	−73%	98539 0	5162 – 16596 – 98539 last 48 months
Dollar−Pound Futures (3−Month Expiry)				
Spot	**149.4**	−1.9%	158.19 Jun17 147.73 Apr15	147.73 – 149.4 – 171.39 last 48 months
MPD Std Dev	**4.19%**	0.78%	6.67 Apr01 3.31 Feb25	2.36 – 4.19 – 6.67 last 48 months
MPD Skew	**−0.26**	−0.2	0.04 Oct07 −0.7 Mar04	−0.92 – −0.26 – 0.1 last 48 months
Market Prob of −10% or More Decline	**1.61%**	1.3%	7.63 Apr01 0.27 Feb25	0.01 – 1.61 – 7.63 last 48 months
Volume	**2633**	−83%	38626 0	536 – 2633 – 38626 last 48 months
Dollar−Yen Futures (3−Month Expiry)				
Spot	**81.41**	0.58%	85.33 Jan14 80.11 Aug05	80.11 – 81.41 – 130.37 last 48 months
MPD Std Dev	**4.43%**	−0.21%	8.83 Aug26 3.9 Jul22	2.76 – 4.43 – 8.83 last 48 months
MPD Skew	**0.03**	0.12	0.32 Aug26 −0.4 May20	−0.44 – 0.03 – 0.34 last 48 months
Market Prob of −10% or More Decline	**1.6%**	−0.45%	11.17 Aug26 0.82 Jul29	0.02 – 1.6 – 11.17 last 48 months
Volume	**2371**	−86%	45672 0	787 – 2371 – 45672 last 48 months

Sources: Chicago Mercantile Exchange, Bloomberg

Metal and Energy Commodity MPD Statistics as of December 02, 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	**1054.83**	−1.3%	1295.06 / 1054.83; Jan21, Dec02	1054.83; 1054.83 – 1800.6; last 48 months
MPD Std Dev	**11.58%**	−0.35%	13.85 / 10.81; Jan21, May27	11.58; 9.39 – 19.19; last 48 months
MPD Skew	**−0.35**	0.051	0.01 / −0.6; Feb25, Jul22	−0.35; −0.71 – 0.11; last 48 months
Market Prob of −20% or More Decline	**5.56%**	−0.24%	7.8 / 4.3; Jan21, May27	5.56; 2.39 – 14.95; last 48 months
Volume	**9893**	46%	36077 / 0	9893; 378 – 49792; last 48 months
Silver (6−Month Expiry)				
Spot	**14.03**	−0.78%	18.23 / 14.03; Jan21, Dec02	14.03; 14.03 – 35.69; last 48 months
MPD Std Dev	**19.21%**	−1.1%	22.59 / 18.19; Jan21, Jul01	19.21; 13.16 – 32.93; last 48 months
MPD Skew	**−0.3**	0.095	−0.07 / −0.49; Jan21, Dec17	−0.3; −0.63 – 0.15; last 48 months
Market Prob of −20% or More Decline	**14.63%**	−1.6%	19.35 / 12.82; Jan21, May27	14.63; 6.54 – 26.15; last 48 months
Volume	**1159**	−0.6%	6702 / 0	1159; 72 – 27970; last 48 months
West Texas Intermediate Crude (6−Month Expiry)				
Spot	**44.76**	−1.3%	68.04 / 41.77; Dec03, Aug26	44.76; 41.77 – 109.02; last 48 months
MPD Std Dev	**28.32%**	1.2%	32.63 / 21.9; Dec24, Dec03	28.32; 10.25 – 32.63; last 48 months
MPD Skew	**−0.29**	−4e−04	−0.24 / −0.76; Nov25, Mar04	−0.29; −0.81 – −0.1; last 48 months
Market Prob of −20% or More Decline	**25.36%**	2%	27.63 / 17.51; Sep02, May20	25.36; 3.65 – 27.63; last 48 months
Volume	**21663**	1200%	99667 / 0	21663; 165 – 180997; last 48 months

Sources: Chicago Mercantile Exchange, Bloomberg

Agricultural Crop Commodity MPD Statistics as of December 02, 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	**375.91**	0.67%	440.56 / 356.74; Jul15, May27	375.91; 334.65 – 823.75; last 48 months
MPD Std Dev	**13.71%**	−0.66%	20.6 / 13.58; Mar25, Nov25	13.71; 12.43 – 24.61; last 48 months
MPD Skew	**0.34**	0.058	0.61 / 0.02; May06, Dec03	0.34; −0.19 – 0.61; last 48 months
Market Prob of −20% or More Decline	**7.12%**	−1.4%	19.2 / 6.93; Mar11, Nov25	7.12; 5.73 – 22.19; last 48 months
Volume	**12578**	−6.5%	377209 / 0	12578; 5486 – 472954; last 48 months
Soybeans (6−Month Expiry)				
Spot	**901.04**	4%	1065.04 / 864.89; Jan07, Nov11	901.04; 864.89 – 1691.25; last 48 months
MPD Std Dev	**12.06%**	0.31%	17.76 / 11.4; Jul08, Nov11	12.06; 10.93 – 22.65; last 48 months
MPD Skew	**0.05**	0.024	0.24 / −0.25; Jun17, Dec17	0.05; −0.5 – 0.51; last 48 months
Market Prob of −20% or More Decline	**5.4%**	0.34%	12.79 / 4.67; Jan07, Nov11	5.4; 4.07 – 18.72; last 48 months
Volume	**23479**	40%	82132 / 0	23479; 496 – 326132; last 48 months
Wheat (6−Month Expiry)				
Spot	**473.97**	−3.1%	650.95 / 473.97; Dec17, Dec02	473.97; 473.97 – 930; last 48 months
MPD Std Dev	**16.04%**	−0.73%	22.31 / 16.04; Jul01, Dec02	16.04; 12.95 – 26.5; last 48 months
MPD Skew	**0.42**	0.13	0.42 / 0.15; Dec02, Jul08	0.42; 0.01 – 0.54; last 48 months
Market Prob of −20% or More Decline	**10.96%**	−1.5%	20.71 / 10.96; Jul01, Dec02	10.96; 5.67 – 24.34; last 48 months
Volume	**6224**	110%	46232 / 0	6224; 179 – 51689; last 48 months

Sources: Chicago Mercantile Exchange, Bloomberg

Agricultural Livestock Commodity MPD Statistics as of December 02, 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	**123.51**	−7.4%	160.39 Dec03; 123.51 Dec02	123.51 (123.51) – 170.32, last 29 months
MPD Std Dev	**12.71%**	−2.1%	14.81 Nov18; 7.8 Jun24	3.6 – 14.81 (12.71), last 29 months
MPD Skew	**−0.41**	−0.018	−0.18 Sep30; −0.72 Jan07	−0.94 – −0.17 (−0.41), last 29 months
Market Prob of −5% or More Decline	**33.06%**	−1.2%	34.83 Sep30; 23.02 Jun24	8.46 – 34.83 (33.06), last 29 months
Volume	**7307**	−44%	24569; 0	1263 – 33850 (7307), last 29 months
Hogs (6−Month Expiry)				
Spot	**74.94**	21%	94.34 Dec03; 60.95 Jun24	60.95 – 94.48 (74.94), last 14 months
MPD Std Dev	**14.95%**	−4.7%	20.24 Jul22; 14 Dec03	13.88 – 20.24 (14.95), last 14 months
MPD Skew	**−0.29**	−0.11	0.17 Jan21; −0.69 Sep09	−0.69 – 0.17 (−0.29), last 14 months
Market Prob of −20% or More Decline	**10.74%**	−6.2%	16.97 Nov18; 8.83 Dec03	8.05 – 16.97 (10.74), last 14 months
Volume	**1730**	−75%	16073; 0	53 – 16073 (1730), last 14 months

Bank MPD Statistics as of December 02, 2015

MPD Standard Deviation (3−Month Expiry)

Indicator	Latest	2−Week Change	1−Year Trend with min/max points: max	Max date	Min	Min date	Long−Term Range with median, IQR, and max/min: min	Median	Max	Period
American Express	10.66%	0.28%	13.78	Aug26	8.53	May20	7.82	10.66	17.9	last 48 months
Bank of America	14.08%	1.2%	16.81	Sep02	9.68	May27	9.68	14.08	30.79	last 48 months
BB&T	11.37%	−0.22%	13.98	Sep02	7.54	Jul22	7.29	11.37	27.58	last 48 months
Barclays	16.2%	0.98%	19.56	Jan21	10.93	Feb11	10.93	16.2	39.78	last 48 months
Bank of NY Mellon	10.5%	−0.75%	14.78	Sep09	7.13	Jul22	7.13	10.5	22.57	last 48 months
Citigroup	12.15%	−0.057%	15.57	Sep02	8.94	Apr29	8.52	12.15	29.48	last 48 months
Capital One	12.18%	−0.054%	14.13	Sep30	8.35	Jun24	7.72	12.18	20.62	last 48 months
Credit Suisse	15.78%	0.58%	24.1	Sep30	11.9	Dec10	9.84	15.78	30.71	last 48 months
Deutsche Bank	16.69%	−0.72%	19.88	Apr15	13.25	Feb25	11.33	16.69	37.94	last 42 months
Fifth Third	13.4%	−0.41%	16.61	Oct07	8.88	Apr29	8.21	13.4	21.73	last 48 months
Goldman Sachs	11.48%	−0.16%	16	Aug26	8.4	May27	8.23	11.48	25.18	last 48 months
JP Morgan	10.83%	−0.37%	15	Sep02	8.19	Jul22	7.41	10.83	22.41	last 48 months
Keycorp	15.46%	0.041%	18.04	Sep09	9.92	Jul29	8.98	15.46	24.19	last 48 months
Morgan Stanley	12.6%	−0.77%	18.78	Aug26	8.97	May27	8.97	12.6	33.5	last 48 months
PNC Financial	10.16%	−0.36%	14.53	Aug26	7.58	Jun24	7.45	10.16	18.45	last 48 months
Regions Financial	13.33%	−2.4%	19.55	Sep09	10.09	May27	10.09	13.33	32.79	last 47 months
SunTrust	12.81%	1.1%	15.82	Aug26	8.49	May20	7.82	12.81	27.57	last 48 months
State Street	11.83%	−0.0047%	16.05	Aug26	9.09	Jun03	8.81	11.83	20.56	last 48 months
UBS	13.36%		19.02	Mar06	8.7	Sep24	8.7	13.36	27.31	last 37 months
US Bancorp	9.79%	−0.37%	14.54	Sep09	6.99	Jul15	6.58	9.79	17.17	last 48 months
Wells Fargo	9.39%	−0.076%	14.79	Aug26	7.32	Aug05	7.16	9.39	20.96	last 48 months

Source: FactSet

Bank MPD Statistics as of December 02, 2015

MPD Skew (3−Month Expiry)

Indicator	Latest	2−Week Change	1−Year Trend (with min/max points): max	max date	min	min date	Long−Term Range (with median, IQR, and max/min): min	latest	max	period
American Express	−0.52	0.15	−0.32	Apr15	−0.96	Sep02	−1.27	−0.52	−0.21	last 48 months
Bank of America	−0.35	0.17	−0.07	Mar25	−0.99	Sep02	−1.01	−0.35	−0.02	last 48 months
BB&T	−1.04	0.056	−0.22	Dec10	−1.56	Nov04	−1.56	−1.04	−0.15	last 48 months
Barclays	−0.31	−0.11	0.38	Sep23	−2.51	Feb25	−2.51	−0.31	1.94	last 48 months
Bank of NY Mellon	−0.47	0.36	0.32	Jan28	−1.39	Nov11	−1.39	−0.47	0.32	last 48 months
Citigroup	−0.67	−0.037	−0.37	Apr22	−1.17	Aug26	−1.23	−0.67	−0.23	last 48 months
Capital One	−0.9	−0.48	−0.23	Oct14	−1.09	Jul08	−1.09	−0.9	−0.16	last 48 months
Credit Suisse	0.2	−0.67	1.81	Sep30	−1.58	Apr01	−2.07	0.2	1.81	last 48 months
Deutsche Bank	0.41	0.88	0.41	Dec02	−1.06	Mar18	−1.31	0.41	0.41	last 42 months
Fifth Third	−0.69	0.8	2.19	Feb04	−1.6	Oct28	−1.6	−0.69	2.19	last 48 months
Goldman Sachs	−0.54	0.034	−0.52	Nov25	−1.09	Sep02	−1.21	−0.54	−0.34	last 48 months
JP Morgan	−0.71	0.066	−0.46	Jan28	−1.16	Sep02	−1.33	−0.71	−0.33	last 48 months
Keycorp	−0.88	−0.022	0.17	Jan07	−1.59	May13	−2.24	−0.88	0.28	last 48 months
Morgan Stanley	−0.34	0.28	−0.34	Dec02	−1.12	Sep02	−1.16	−0.34	−0.25	last 48 months
PNC Financial	−0.71	0.37	−0.44	Nov04	−1.84	Oct28	−1.84	−0.71	−0.39	last 48 months
Regions Financial	−0.55	0.027	0.36	Aug26	−1.54	Feb25	−1.94	−0.55	0.68	last 47 months
SunTrust	−1.14	−0.86	−0.26	Dec17	−1.14	Dec02	−1.16	−1.14	−0.26	last 48 months
State Street	−0.64	−0.13	−0.28	Sep30	−2.31	Dec24	−2.31	−0.64	−0.13	last 48 months
UBS	−0.04		0.91	Dec31	−1.72	Nov26	−3.36	−0.04	0.97	last 37 months
US Bancorp	−1.05	−0.072	−0.2	Dec17	−1.55	Nov04	−1.55	−1.05	−0.2	last 48 months
Wells Fargo	−0.65	−0.056	−0.56	May20	−1.3	Sep02	−1.34	−0.65	−0.42	last 48 months

Source: FactSet

Bank MPD Statistics as of December 02, 2015

Market Probability of −20% or More Decline (3−Month Expiry)

Indicator	Latest	2−Week Change	1−Year Trend with min/max points	Long−Term Range with median, IQR, and max/min
American Express	5.21%	1%	8.77 (Sep02) / 2.19 (May20)	1.53 – 5.21 – 13.4, last 48 months
Bank of America	8.95%	2%	10.62 (Sep02) / 3.14 (Jun24)	3.13 – 8.95 – 22.26, last 48 months
BB&T	5.97%	−0.34%	9.77 (Sep02) / 1.82 (Jul22)	1.68 – 5.97 – 34.9, last 48 months
Barclays	12.86%	0.79%	15.95 (Jan21) / 2.33 (Feb11)	2.33 – 12.86 – 30.94, last 48 months
Bank of NY Mellon	4.55%	−1.8%	10.41 (Sep09) / 1.12 (Jun24)	1.12 – 4.55 – 15.87, last 48 months
Citigroup	6.65%	0.077%	9.94 (Sep02) / 2.32 (Apr29)	1.93 – 6.65 – 21.32, last 48 months
Capital One	7.23%	−0.19%	9.86 (Sep09) / 2.37 (Jun24)	1.64 – 7.23 – 15.78, last 48 months
Credit Suisse	12.53%	1.7%	17.76 (Oct07) / 5.22 (Jul29)	2.87 – 12.53 – 25.29, last 48 months
Deutsche Bank	15.93%	3.5%	19.81 (Apr15) / 6.37 (Feb25)	4.99 – 15.93 – 28.94, last 42 months
Fifth Third	8.59%	0.94%	13.92 (Oct07) / 1.72 (Feb04)	0.99 – 8.59 – 18.01, last 48 months
Goldman Sachs	5.76%	0.32%	9.74 (Sep02) / 2.18 (May27)	1.79 – 5.76 – 20.13, last 48 months
JP Morgan	5.28%	−0.83%	9.7 (Aug26) / 2.08 (Apr29)	1.31 – 5.28 – 16.36, last 48 months
Keycorp	10.1%	−0.39%	13.06 (Sep02) / 2.08 (Mar18)	1.92 – 10.1 – 17.31, last 48 months
Morgan Stanley	8%	0.29%	13.91 (Aug26) / 2.57 (May27)	2.57 – 8 – 26.47, last 48 months
PNC Financial	4.55%	1.1%	9.41 (Sep09) / 1.67 (Jun24)	1.43 – 4.55 – 12.51, last 48 months
Regions Financial	6.8%	−4.4%	15.77 (Sep09) / 3.34 (May27)	3.34 – 6.8 – 29.69, last 47 months
SunTrust	8.13%	2.8%	10.89 (Sep02) / 2.53 (May20)	1.73 – 8.13 – 21.63, last 48 months
State Street	6.29%	−0.061%	11.17 (Oct07) / 2.96 (Jun24)	2.26 – 6.29 – 14.27, last 48 months
UBS	7.28%		18.15 (Mar06) / 1.53 (Dec31)	1.53 – 7.28 – 21.32, last 37 months
US Bancorp	4.19%	−0.33%	9.41 (Sep09) / 1.28 (Dec10)	0.74 – 4.19 – 10.68, last 48 months
Wells Fargo	3.88%	0.6%	9.18 (Aug26) / 1.55 (Aug05)	1.3 – 3.88 – 15.78, last 48 months

Source: FactSet

Bank MPD Statistics as of December 02, 2015

Volume (3−Month Expiry)

Indicator	Latest	2−Week Change	1−Year Trend with min/max points (max)	1−Year Trend (min)	Long−Term Range with median, IQR, and max/min (min)	Long−Term Range (latest)	Long−Term Range (max)	Long−Term Range (period)
American Express	1088	−82%	32713	0	623	1088	32713	last 48 months
Bank of America	84790	−51%	174767	0	7419	84790	363160	last 48 months
BB&T	1556	1100%	6459	0	126	1556	6490	last 48 months
Barclays	865	190%	4055	0	8	865	11011	last 48 months
Bank of NY Mellon	160	−67%	13099	0	44	160	15678	last 48 months
Citigroup	8211	230%	140439	0	1104	8211	150972	last 48 months
Capital One	387	−51%	6937	0	136	387	16299	last 48 months
Credit Suisse	74	−2.6%	15145	0	0	74	15145	last 48 months
Deutsche Bank	1660	−21%	7280	0	182	1660	25112	last 42 months
Fifth Third	640	250%	7607	0	28	640	19127	last 48 months
Goldman Sachs	1301	−90%	19311	0	296	1301	28374	last 48 months
JP Morgan	6092	−20%	132116	0	943	6092	132116	last 48 months
Keycorp	208	−90%	3300	0	44	208	76270	last 48 months
Morgan Stanley	1106	−77%	36166	0	327	1106	69872	last 48 months
PNC Financial	139	−46%	3466	0	42	139	7855	last 48 months
Regions Financial	582	−84%	47940	0	20	582	47940	last 47 months
SunTrust	426	−63%	4808	0	61	426	13788	last 48 months
State Street	64	−75%	2086	0	19	64	5339	last 48 months
UBS	124		2034	0	6	124	6502	last 37 months
US Bancorp	303	−64%	9927	0	52	303	29201	last 48 months
Wells Fargo	8137	−82%	55478	0	950	8137	121351	last 48 months

Source: FactSet

Insurance Company MPD Statistics as of December 02, 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	**9.05%**	−0.072%	13.29 Aug26; 7.11 May20	7.11; 9.05; 22.61; last 48 months
AIG	**10.82%**	−0.32%	15.04 Sep02; 9.01 Jun24	8.7; 10.82; 25.32; last 48 months
Allstate	**10.38%**	1.6%	12.36 Sep09; 6.73 May20	5.83; 10.38; 17.18; last 48 months
Ameriprise	**11.85%**	−1.7%	15.2 Sep02; 9.76 Jul29	8.98; 11.85; 28.12; last 48 months
Chubb	**7.32%**	0.73%	24.08 Aug19; 6.17 Oct21	5.96; 7.32; 24.08; last 48 months
Hartford Financial	**11.14%**	0.024%	16.35 Sep09; 8.35 Jun24	8.35; 11.14; 29.28; last 48 months
Lincoln National	**12.82%**	−0.44%	18.05 Aug26; 8.98 May27	8.98; 12.82; 30.47; last 48 months
Met Life	**12.12%**	−0.43%	16.59 Aug26; 9.4 Apr15	9.4; 12.12; 24.96; last 48 months
Principal Financial	**18.18%**	2.6%	18.54 Nov11; 8.26 May20	8.02; 18.18; 30.27; last 48 months
Progressive	**11.69%**	0.86%	13.49 Sep23; 5.79 Jun24	5.79; 11.69; 23.43; last 47 months
Prudential	**12.95%**	−0.15%	17.36 Aug26; 10.09 Jun24	10.09; 12.95; 22.92; last 48 months

Insurance Company MPD Statistics as of December 02, 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	**−0.81**	0.12	−0.24 / −1.31; Sep09, Oct28	−1.31 / −0.81 / −0.24; last 48 months
AIG	**−0.56**	0.33	−0.23 / −1.16; Dec31, Oct14	−1.16 / −0.56 / −0.03; last 48 months
Allstate	**−0.98**	0.033	−0.16 / −1.46; Oct14, Feb04	−1.5 / −0.98 / −0.12; last 48 months
Ameriprise	**−0.69**	0.2	−0.11 / −0.98; Dec31, Aug26	−4.03 / −0.69 / 0.33; last 48 months
Chubb	**−0.59**	0.71	0.09 / −1.42; Aug19, Sep02	−1.56 / −0.59 / 0.09; last 48 months
Hartford Financial	**−0.78**	0.27	−0.09 / −1.67; Jul22, Nov04	−1.67 / −0.78 / −0.09; last 48 months
Lincoln National	**−0.75**	−0.22	−0.07 / −1.15; Aug05, Aug26	−1.15 / −0.75 / 0.15; last 48 months
Met Life	**−0.92**	−0.1	−0.46 / −0.96; Mar25, Aug05	−1.15 / −0.92 / −0.23; last 48 months
Principal Financial	**−1.12**	−1.4	0.42 / −2.18; Oct21, Dec24	−2.95 / −1.12 / 0.42; last 48 months
Progressive	**−0.02**	0.66	0.42 / −2.03; Mar04, Jun10	−3.54 / −0.02 / 0.42; last 47 months
Prudential	**−0.76**	0.28	−0.33 / −1.04; Apr22, Nov18	−1.44 / −0.76 / −0.33; last 48 months

Insurance Company MPD Statistics as of December 02, 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	**3.25%**	−0.31%	7.53 Sep09 1.37 Jun24	1.37 · 3.25 · 16.7 last 48 months
AIG	**4.77%**	−0.5%	9.46 Sep02 2.51 Jun24	2.44 · 4.77 · 17.45 last 48 months
Allstate	**5.31%**	2.4%	7.32 Sep09 1.01 May20	0.56 · 5.31 · 12.4 last 48 months
Ameriprise	**6.65%**	−2.7%	11.32 Sep02 3.68 Jul22	2.4 · 6.65 · 17.52 last 48 months
Chubb	**1.44%**	−0.026%	12.5 Aug19 0.55 Feb25	0.55 · 1.44 · 12.5 last 48 months
Hartford Financial	**5.7%**	−0.22%	11.78 Sep09 2.61 Apr15	2.19 · 5.7 · 22.23 last 48 months
Lincoln National	**8.09%**	0.44%	14.3 Sep09 2.26 May27	2.26 · 8.09 · 26.04 last 48 months
Met Life	**6.86%**	−0.62%	12.61 Aug26 3.26 Apr15	3.26 · 6.86 · 18.79 last 48 months
Principal Financial	**15.62%**	5.4%	17.72 Sep09 2.22 May06	0.43 · 15.62 · 22.28 last 48 months
Progressive	**5.48%**	0.0052%	8.67 Oct21 0.15 Jun24	0 · 5.48 · 39.73 last 47 months
Prudential	**8.31%**	−0.37%	13.35 Aug26 4.02 Jun24	3.99 · 8.31 · 17.82 last 48 months

Insurance Company MPD Statistics as of December 02, 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	**711**	−68%	13168 0	711 88 – 22718 last 48 months
AIG	**2194**	−93%	69392 0	2194 110 – 103998 last 48 months
Allstate	**1648**	19%	4626 0	1648 63 – 10621 last 48 months
Ameriprise	**62**	340%	881 0	62 5 – 1114 last 48 months
Chubb	**15**	−52%	9027 0	15 3 – 11114 last 48 months
Hartford Financial	**127**	−67%	9444 0	127 16 – 37285 last 48 months
Lincoln National	**81**	−76%	2635 0	81 51 – 8403 last 48 months
Met Life	**4263**	160%	29248 0	4263 319 – 161416 last 48 months
Principal Financial	**18**	−90%	545 0	18 2 – 2956 last 48 months
Progressive	**140**	−80%	2216 0	140 0 – 4283 last 47 months
Prudential	**2685**	400%	17185 0	2685 222 – 17185 last 48 months