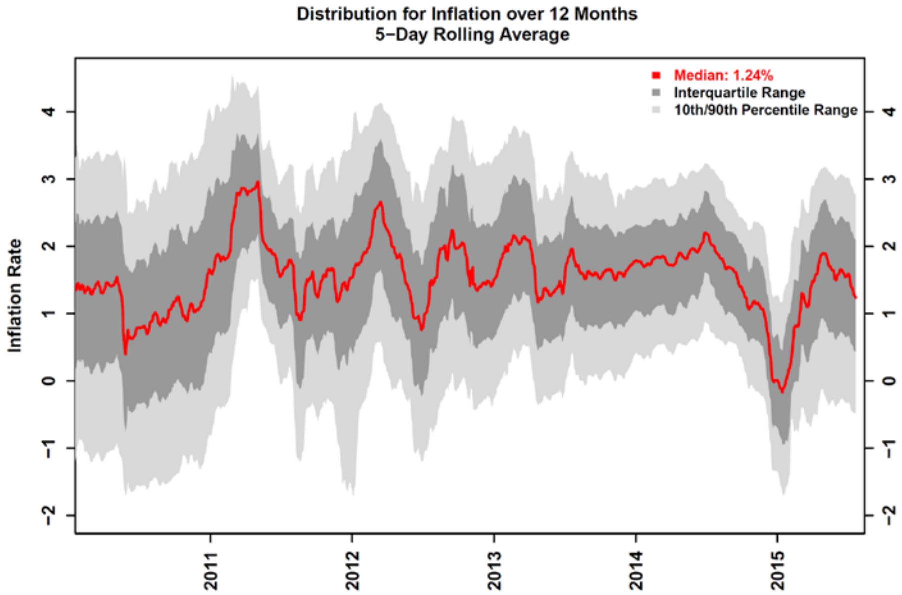
FEDERAL RESERVE BANK OF MINNEAPOLIS
BANKING AND POLICY STUDIES

Minneapolis Options Report – July 24th

Over the past two weeks, market-implied inflation expectations continued to decrease across the tenors we follow (1-, 2-, and 5-year periods). MPD standard deviation and skews on three-month LIBOR rates jumped, suggesting an increase in market-implied uncertainty and bias towards higher rates at the short end of the curve. The dollar strengthened against the euro and yen, and uncertainty, as indicated by MPD standard deviation, fell. The S&P 500 rose over the last two weeks (3.3%), and the banks and insurance companies that we follow outperformed (7.3% and 4.9%, respectively). The metal, energy, and agricultural commodities that we follow fell with few exceptions. Additionally, the MPD skew for gold neared its 4-year low implying bias towards lower future prices.

Inflation

Market-based inflation expectations derived from caps and floors on the CPI for 1-, 2-, and 5-year period decreased over the past two weeks, as seen most clearly in the 1-year tenor (see figure below).

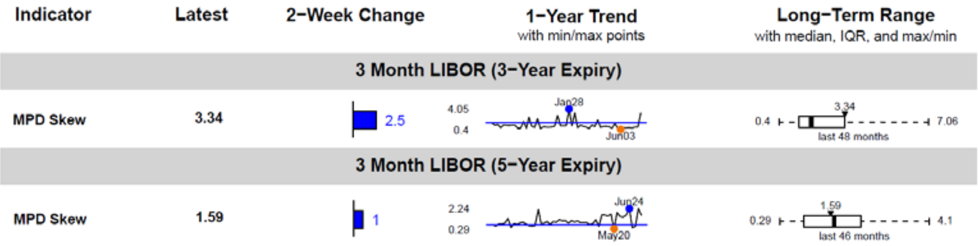


Additional detail:

- Median expectations for inflation from market-based probability distributions (MPDs) currently sit at 1.22%, 1.46%, and 1.75% for the 1-, 2-, and 5-year tenors, respectively.
- The peak-to-trough changes in medians from late April 2015 to the present are -69, -39, and -15 basis points, respectively.
- MPD standard deviations remained flat across tenors, suggesting little change in investor uncertainty. Current measures are very close to their 4-year medians.
- MPD skew on the 5-year tenor remained at the very high end of its 4-year range and positive (0.67), denoting a market-implied bias toward higher inflation rates over this time frame. Skews were negative (-0.38) for the 1-year period MPD and near zero (0.05) for the 2-year period MPD, suggesting market-implied bias towards lower inflation rates in the near-term.

Interest Rates

Prices on 5- and 10-year Treasury notes decreased over the two week period (-0.7% and -0.82%, respectively), and yields consequently rose. MPD skews decreased and were close to zero, suggesting little market-implied bias. MPD skews of short-term interest rate expectations, as derived from caps and floors on three-month LIBOR, jumped (See figure below). This suggested that market-implied bias towards higher future short term rates increased.



Banks and Insurance Companies

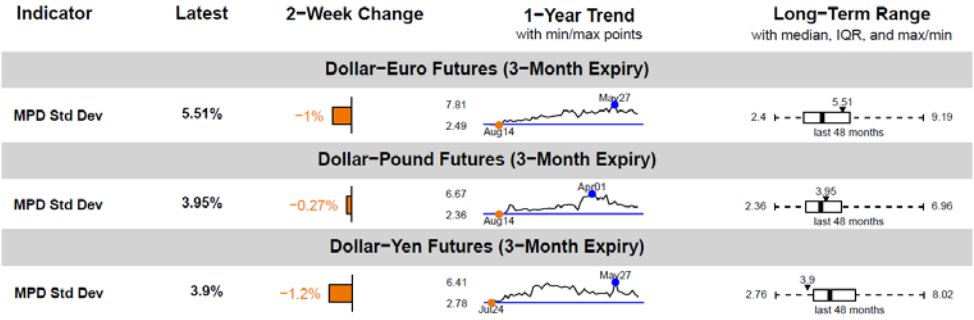
The S&P 500 gained 3.3% over the past two weeks. The 17 domestic bank company stocks we follow more than doubled this, with an average return of 7.3%. This came during a generally positive earnings season for banking institutions. The 11 insurance companies we follow outperformed the index, with a return of 4.9%. Investor uncertainty surrounding the bank and insurance companies decreased across the board, as measured by changes in MPD standard deviations of -2.1% and -1.2%, respectively. Tail risk, as measured by the market-implied probability of a -20% or more decline, also fell across the board.

Additional details:

- The two-week returns for BAC and C were very high at 13.5% and 14.3%, respectively. BAC reported Q2 earnings that beat the average of analyst estimates by over 20%. C reported a smaller positive earnings surprise. Tail risk, as measured by the market-implied probability of a -20% or more decline, fell -3.3% and -2.1%, respectively.
- Options volume on JPM rose to unusual levels relative to their four-year range, increasing by 240% over the past two weeks.

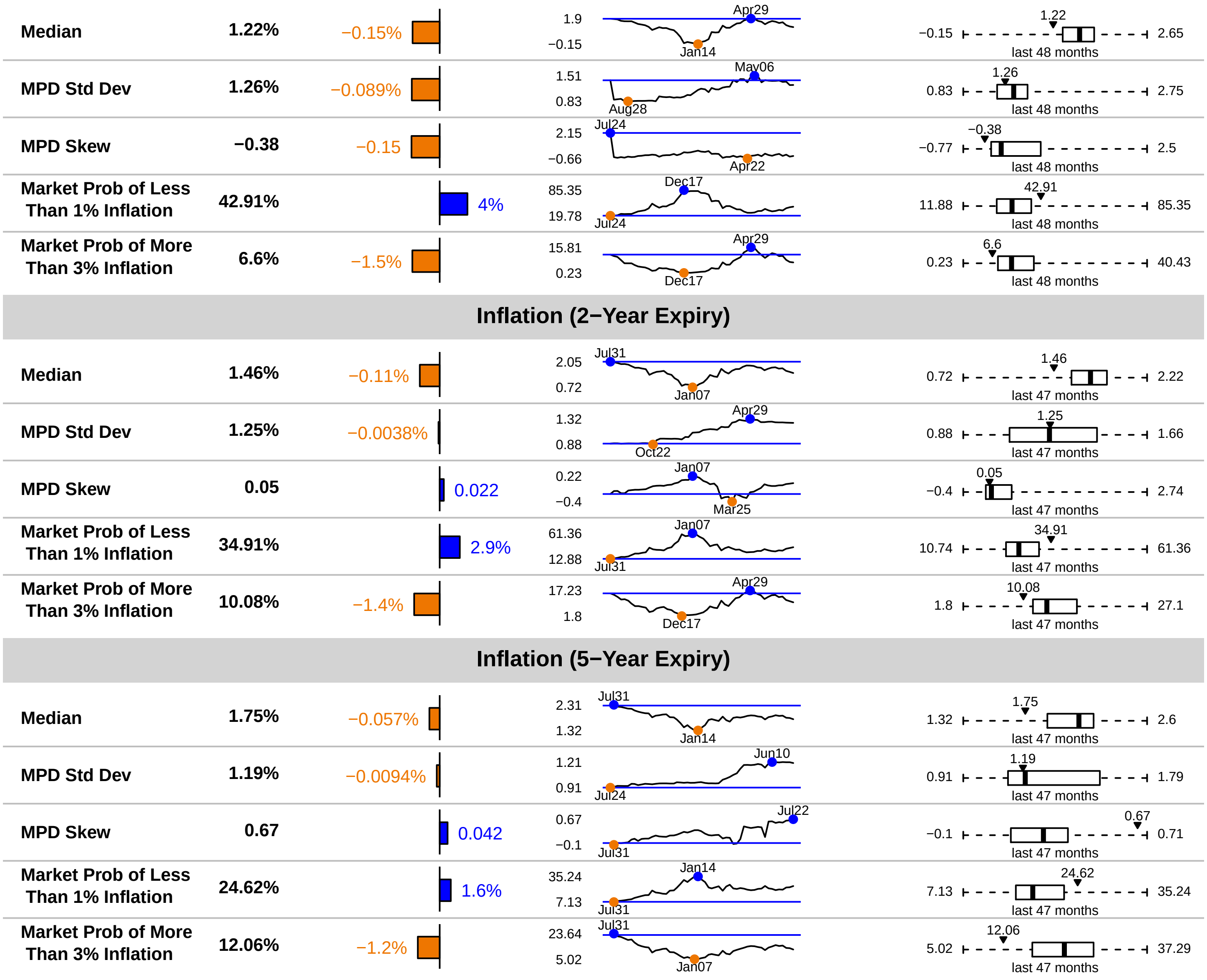
Other Markets

- The market-implied probability of a -20% or more decline, derived from 6- and 12-month-out options on the S&P 500 index, decreased by -2.7 and -2.2 percentage points over the past two weeks, suggesting decreased tail risk in domestic equity markets.
- The MPD skew for the iShares U.S. Real Estate Index was negative but near its 4-year high, suggesting that investor bias towards lower prices was less pronounced than it has been.
- The dollar strengthened against the euro and yen, and weakened against the pound. The MPD standard deviations associated with the three currency pairs decreased, continuing a trend seen since late spring of 2015 of falling market-implied uncertainty (see figure below).



- Spot prices for gold and silver fell over the last two weeks (-6.2% and -5.4%, respectively) and were at 4-year lows. MPD skew for gold was highly negative and near its 4-year low, implying strong bias towards lower future prices. Options volume for gold was up by 180% and high relative to its 4-year range.
- The price of WTI crude oil fell again (-4.2%), and market-implied bias, as measured by MPD skews, continued to point toward lower future prices.
- The agricultural commodities that we follow fell with few exceptions. Wheat was particularly hard hit (-10%). MPD skews on grain prices remained positive, suggesting investor bias towards higher future prices. Lean hog prices remained near their 9-month low and MPD skew dropped to an even more negative level. The market-implied probability of a -20% or more decline in lean hog prices hit its 9-month high, implying a high degree of tail risk being priced in by market participants.

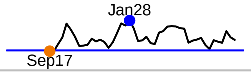
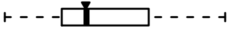
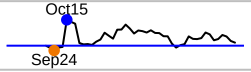
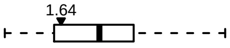
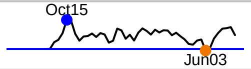
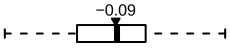
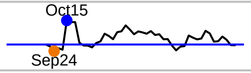
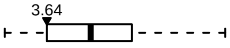
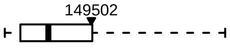
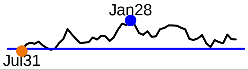
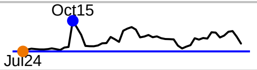
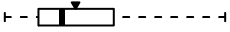
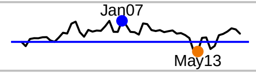
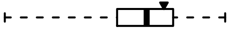
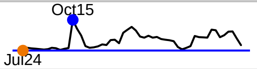
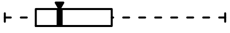
Inflation MPD Statistics as of July 22, 2015



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	**1.22%**	−0.15%	1.9 −0.15 Apr29 Jan14	1.22 −0.15 2.65 last 48 months
MPD Std Dev	**1.26%**	−0.089%	1.51 0.83 May06 Aug28	1.26 0.83 2.75 last 48 months
MPD Skew	**−0.38**	−0.15	2.15 −0.66 Jul24 Apr22	−0.38 −0.77 2.5 last 48 months
Market Prob of Less Than 1% Inflation	**42.91%**	4%	85.35 19.78 Dec17 Jul24	42.91 11.88 85.35 last 48 months
Market Prob of More Than 3% Inflation	**6.6%**	−1.5%	15.81 0.23 Apr29 Dec17	6.6 0.23 40.43 last 48 months
Inflation (2−Year Expiry)				
Median	**1.46%**	−0.11%	2.05 0.72 Jul31 Jan07	1.46 0.72 2.22 last 47 months
MPD Std Dev	**1.25%**	−0.0038%	1.32 0.88 Apr29 Oct22	1.25 0.88 1.66 last 47 months
MPD Skew	**0.05**	0.022	0.22 −0.4 Jan07 Mar25	0.05 −0.4 2.74 last 47 months
Market Prob of Less Than 1% Inflation	**34.91%**	2.9%	61.36 12.88 Jan07 Jul31	34.91 10.74 61.36 last 47 months
Market Prob of More Than 3% Inflation	**10.08%**	−1.4%	17.23 1.8 Apr29 Dec17	10.08 1.8 27.1 last 47 months
Inflation (5−Year Expiry)				
Median	**1.75%**	−0.057%	2.31 1.32 Jul31 Jan14	1.75 1.32 2.6 last 47 months
MPD Std Dev	**1.19%**	−0.0094%	1.21 0.91 Jun10 Jul24	1.19 0.91 1.79 last 47 months
MPD Skew	**0.67**	0.042	0.67 −0.1 Jul22 Jul31	0.67 −0.1 0.71 last 47 months
Market Prob of Less Than 1% Inflation	**24.62%**	1.6%	35.24 7.13 Jan14 Jul31	24.62 7.13 35.24 last 47 months
Market Prob of More Than 3% Inflation	**12.06%**	−1.2%	23.64 5.02 Jul31 Jan07	12.06 5.02 37.29 last 47 months

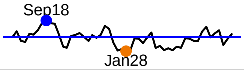
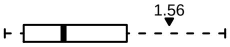
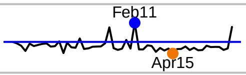
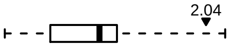
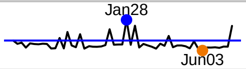
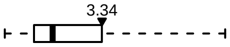
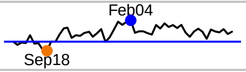
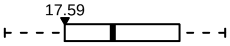
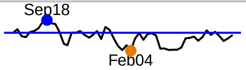
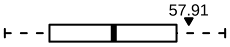
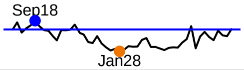
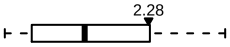
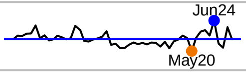
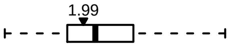
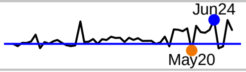
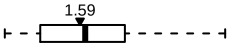
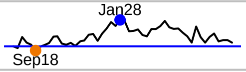
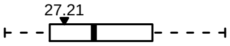
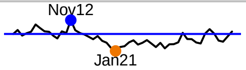
Source: Bloomberg

Medium−to−Long Bond Price MPD Statistics as of July 22, 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	**119.13**	−0.7%	120.99 118.05  Jan28 Sep17	118.05  120.99 119.13 last 10 months
MPD Std Dev	**1.64%**	−0.18%	2.3 1.41  Oct15 Sep24	1.41  2.3 1.64 last 10 months
MPD Skew	**−0.09**	−0.2	0.36 −0.54  Oct15 Jun03	−0.54  0.36 −0.09 last 10 months
Market Prob of −3% or More Decline	**3.64%**	−1.1%	8.74 2.44  Oct15 Sep24	2.44  8.74 3.64 last 10 months
Volume	**149502**	−37%	377550 0 	2054  377550 149502 last 10 months
10 Year Treasury (3−Month Expiry)				
Spot	**126.32**	−0.82%	130.47 123.77  Jan28 Jul31	122.97  130.47 126.32 last 21 months
MPD Std Dev	**2.69%**	−0.61%	3.8 2.32  Oct15 Jul24	2.17  3.8 2.69 last 21 months
MPD Skew	**0.02**	−0.12	0.31 −0.39  Jan07 May13	−0.75  0.31 0.02 last 21 months
Market Prob of −5% or More Decline	**3.32%**	−2.8%	8.48 2.23  Oct15 Jul24	1.62  8.48 3.32 last 21 months
Volume	**548715**	−16%	1185098 0 	5226  118509 548715 last 21 months

Source: Chicago Mercantile Exchange

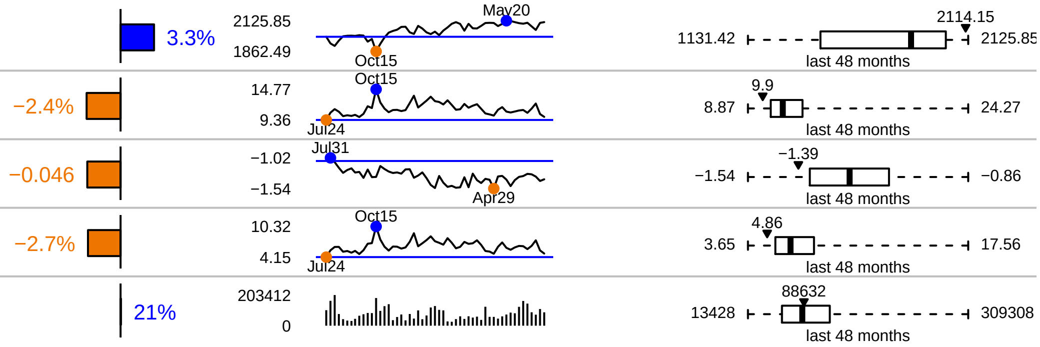
Short Interest Rates MPD Statistics as of July 22, 2015

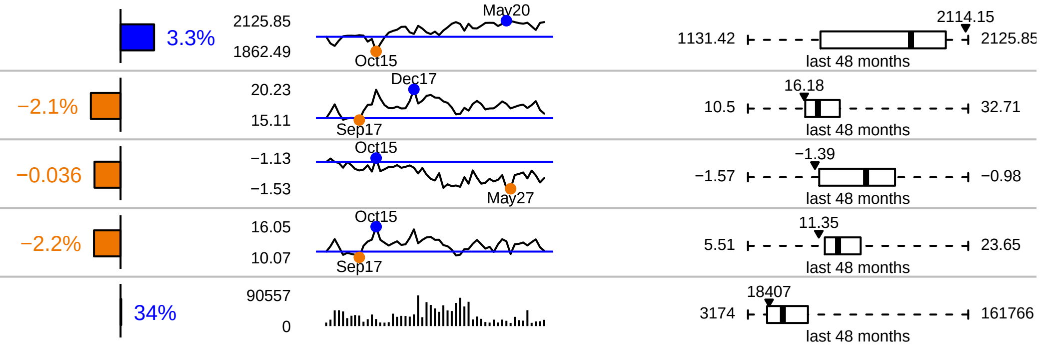
Indicator	Latest	2−Week Change	1−Year Trend with min/max points	Long−Term Range with median, IQR, and max/min
3 Month LIBOR (3−Year Expiry)				
Median	**1.56%**	0.23%	1.85 1.2  Sep18 Jan28	0.72  1.56 1.85 last 48 months
MPD Std Dev	**2.04%**	0.74%	2.17 1.19  Feb11 Apr15	0.68  2.04 2.17 last 48 months
MPD Skew	**3.34**	2.5	4.05 0.4  Jan28 Jun03	0.4  3.34 7.06 last 48 months
Market Prob of Less Than 0.5% LIBOR	**17.59%**	−1%	22.24 9.79  Feb04 Sep18	9.79  17.59 38.35 last 48 months
Market Prob of More Than 1% + Spot	**57.91%**	3.6%	67.85 48.07  Sep18 Feb04	7.61  57.91 67.85 last 48 months
3 Month LIBOR (5−Year Expiry)				
Median	**2.28%**	0.28%	2.66 1.26  Sep18 Jan28	0.94  2.28 2.99 last 46 months
MPD Std Dev	**1.99%**	0.19%	2.42 1.72  Jun24 May20	1.5  1.99 2.88 last 46 months
MPD Skew	**1.59**	1	2.24 0.29  Jun24 May20	0.29  1.59 4.1 last 46 months
Market Prob of Less Than 1% LIBOR	**27.21%**	−1.4%	40.22 22.69  Jan28 Sep18	17.66  27.21 53.02 last 46 months
Market Prob of More Than 2% + Spot	**49.79%**	9.5%	60.53 31.59  Nov12 Jan21	10.68  49.79 60.53 last 46 months

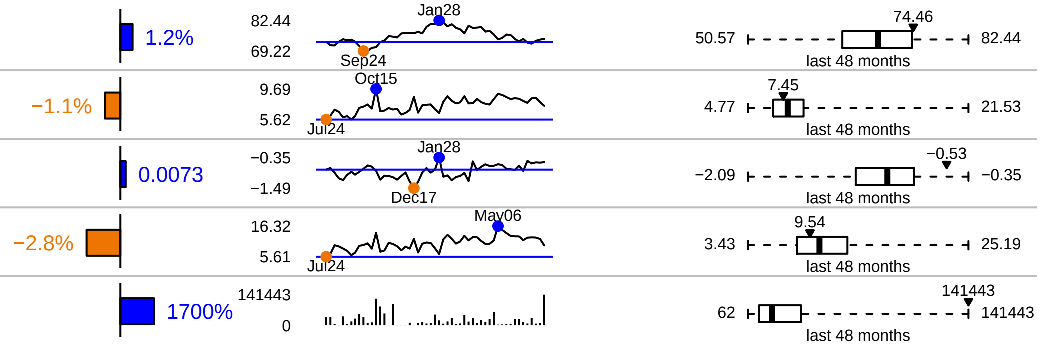
Source: Bloomberg

Equity Index MPD Statistics as of July 22, 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	**2114.15**	3.3%	2125.85 1862.49 May20 Oct15	1131.42 2114.15 2125.85 last 48 months
MPD Std Dev	**9.9%**	−2.4%	14.77 9.36 Oct15 Jul24	8.87 9.9 24.27 last 48 months
MPD Skew	**−1.39**	−0.046	−1.02 −1.54 Jul31 Apr29	−1.54 −1.39 −0.86 last 48 months
Market Prob of −20% or More Decline	**4.86%**	−2.7%	10.32 4.15 Oct15 Jul24	3.65 4.86 17.56 last 48 months
Volume	**88632**	21%	203412 0	13428 88632 309308 last 48 months
S&P 500 (12−Month Expiry)				
Spot	**2114.15**	3.3%	2125.85 1862.49 May20 Oct15	1131.42 2114.15 2125.85 last 48 months
MPD Std Dev	**16.18%**	−2.1%	20.23 15.11 Dec17 Sep17	10.5 16.18 32.71 last 48 months
MPD Skew	**−1.39**	−0.036	−1.13 −1.53 Oct15 May27	−1.57 −1.39 −0.98 last 48 months
Market Prob of −20% or More Decline	**11.35%**	−2.2%	16.05 10.07 Oct15 Sep17	5.51 11.35 23.65 last 48 months
Volume	**18407**	34%	90557 0	3174 18407 161766 last 48 months
iShares US Real Estate Index (3−Month Expiry)				
Spot	**74.46**	1.2%	82.44 69.22 Jan28 Sep24	50.57 74.46 82.44 last 48 months
MPD Std Dev	**7.45%**	−1.1%	9.69 5.62 Oct15 Jul24	4.77 7.45 21.53 last 48 months
MPD Skew	**−0.53**	0.0073	−0.35 −1.49 Jan28 Dec17	−2.09 −0.53 −0.35 last 48 months
Market Prob of −10% or More Decline	**9.54%**	−2.8%	16.32 5.61 May06 Jul24	3.43 9.54 25.19 last 48 months
Volume	**141443**	1700%	141443 0	62 141443 141443 last 48 months

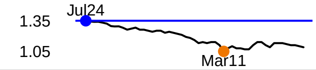
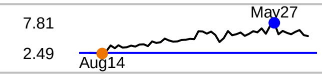
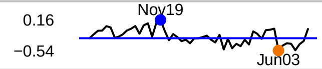
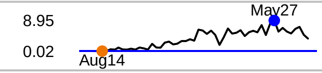
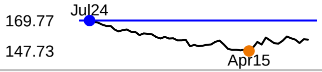
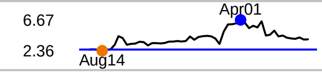
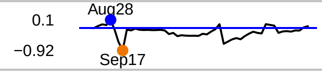
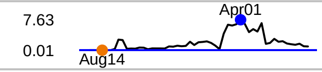
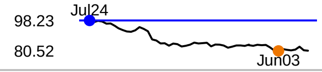
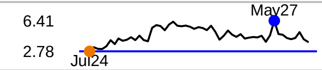
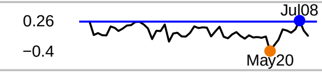
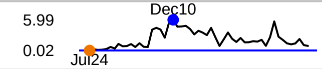






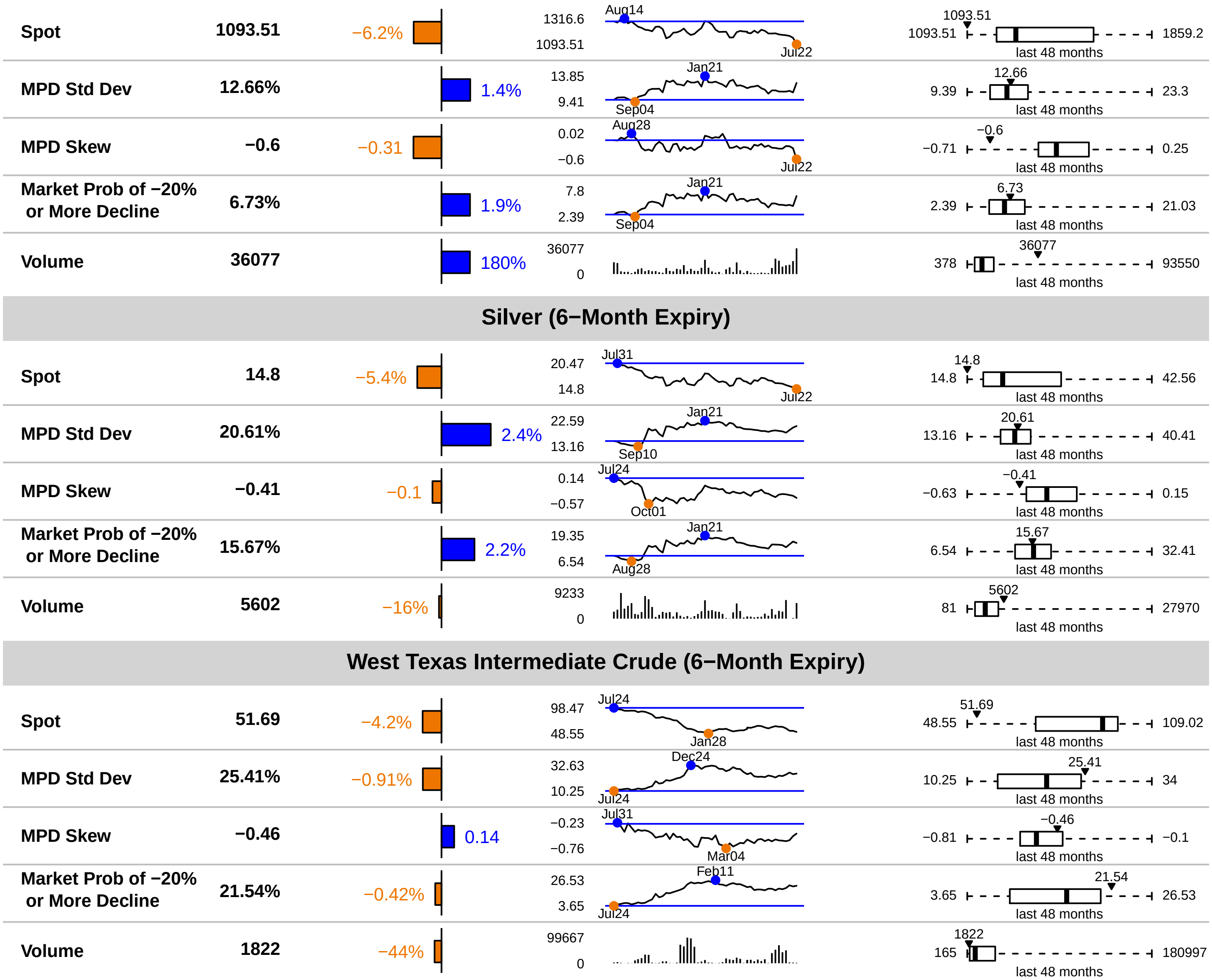
Source: FactSet

Exchange Rate MPD Statistics as of July 22, 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	**1.09**	−1.8%	 1.35 1.05 Jul24 Mar11	1.05 1.09 1.45 last 48 months
MPD Std Dev	**5.51%**	−1%	 7.81 2.49 May27 Aug14	2.4 5.51 9.19 last 48 months
MPD Skew	**−0.05**	0.35	 0.16 −0.54 Nov19 Jun03	−0.85 −0.05 0.16 last 48 months
Market Prob of −10% or More Decline	**3.68%**	−3.4%	 8.95 0.02 May27 Aug14	0.02 3.68 13.01 last 48 months
Volume	**53546**	57%	 98539 0	2039 53546 98539 last 48 months
Dollar−Pound Futures (3−Month Expiry)				
Spot	**155.93**	1.6%	 169.77 147.73 Jul24 Apr15	147.73 155.93 171.39 last 48 months
MPD Std Dev	**3.95%**	−0.27%	 6.67 2.36 Apr01 Aug14	2.36 3.95 6.96 last 48 months
MPD Skew	**−0.11**	0.14	 0.1 −0.92 Aug28 Sep17	−0.92 −0.11 0.1 last 48 months
Market Prob of −10% or More Decline	**0.94%**	−0.68%	 7.63 0.01 Apr01 Aug14	0.01 0.94 8.51 last 48 months
Volume	**9157**	27%	 38626 0	208 9157 38626 last 48 months
Dollar−Yen Futures (3−Month Expiry)				
Spot	**80.64**	−2.8%	 98.23 80.52 Jul24 Jun03	80.52 80.64 130.66 last 48 months
MPD Std Dev	**3.9%**	−1.2%	 6.41 2.78 May27 Jul24	2.76 3.9 8.02 last 48 months
MPD Skew	**−0.07**	−0.33	 0.26 −0.4 Jul08 May20	−0.44 −0.07 0.91 last 48 months
Market Prob of −10% or More Decline	**0.9%**	−1.3%	 5.99 0.02 Dec10 Jul24	0.02 0.9 10.78 last 48 months
Volume	**12131**	10%	 39827 0	365 12131 42005 last 48 months

Sources: Chicago Mercantile Exchange, Bloomberg

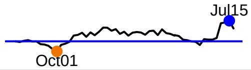
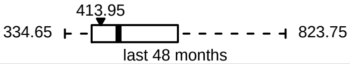
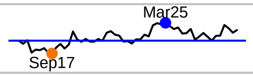
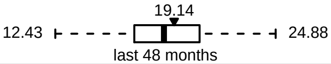
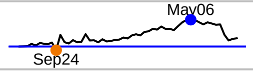
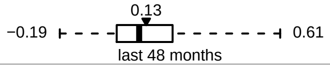
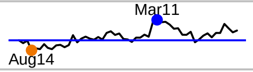
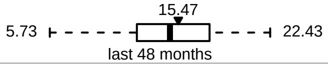
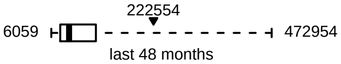
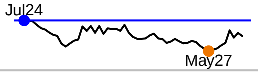
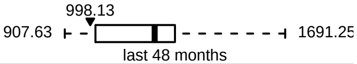
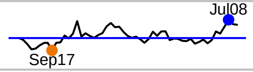
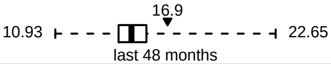
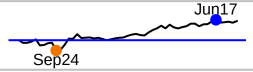
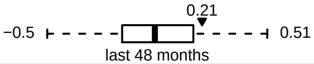
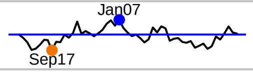
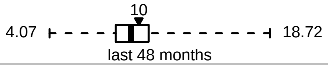
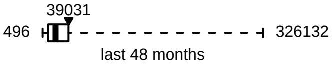
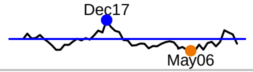
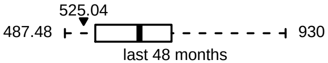
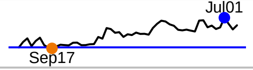
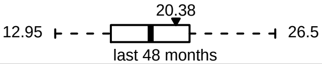
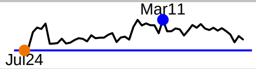
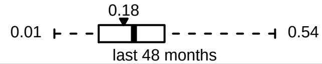
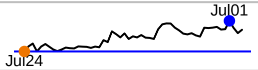
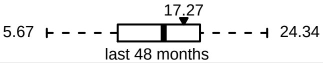
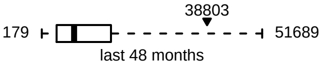
Metal and Energy Commodity MPD Statistics as of July 22, 2015



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	**1093.51**	−6.2%	1316.6 1093.51 Aug14 Jul22	1093.51 1093.51 1859.2 last 48 months
MPD Std Dev	**12.66%**	1.4%	13.85 9.41 Jan21 Sep04	12.66 9.39 23.3 last 48 months
MPD Skew	**−0.6**	−0.31	0.02 −0.6 Aug28 Jul22	−0.6 −0.71 0.25 last 48 months
Market Prob of −20% or More Decline	**6.73%**	1.9%	7.8 2.39 Jan21 Sep04	6.73 2.39 21.03 last 48 months
Volume	**36077**	180%	36077 0	36077 378 93550 last 48 months
Silver (6−Month Expiry)				
Spot	**14.8**	−5.4%	20.47 14.8 Jul31 Jul22	14.8 14.8 42.56 last 48 months
MPD Std Dev	**20.61%**	2.4%	22.59 13.16 Jan21 Sep10	20.61 13.16 40.41 last 48 months
MPD Skew	**−0.41**	−0.1	0.14 −0.57 Jul24 Oct01	−0.41 −0.63 0.15 last 48 months
Market Prob of −20% or More Decline	**15.67%**	2.2%	19.35 6.54 Jan21 Aug28	15.67 6.54 32.41 last 48 months
Volume	**5602**	−16%	9233 0	5602 81 27970 last 48 months
West Texas Intermediate Crude (6−Month Expiry)				
Spot	**51.69**	−4.2%	98.47 48.55 Jul24 Jan28	51.69 48.55 109.02 last 48 months
MPD Std Dev	**25.41%**	−0.91%	32.63 10.25 Dec24 Jul24	25.41 10.25 34 last 48 months
MPD Skew	**−0.46**	0.14	−0.23 −0.76 Jul31 Mar04	−0.46 −0.81 −0.1 last 48 months
Market Prob of −20% or More Decline	**21.54%**	−0.42%	26.53 3.65 Feb11 Jul24	21.54 3.65 26.53 last 48 months
Volume	**1822**	−44%	99667 0	1822 165 180997 last 48 months

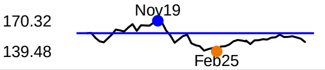
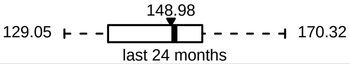
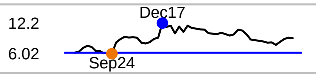
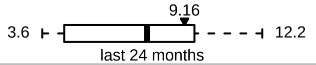
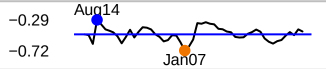
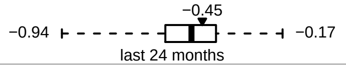
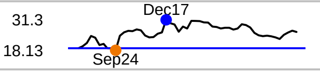
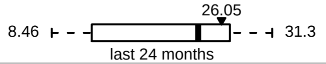
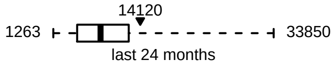
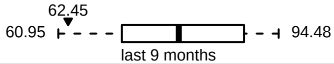
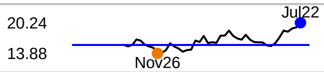
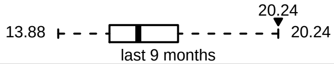
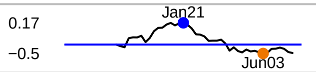
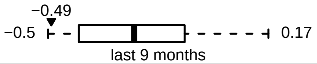
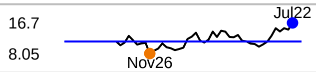
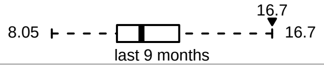
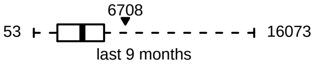
Sources: Chicago Mercantile Exchange, Bloomberg

Agricultural Crop Commodity MPD Statistics as of July 22, 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	**413.95**	−4.7%	 440.56 334.65 Jul15 Oct01	 334.65 413.95 823.75 last 48 months
MPD Std Dev	**19.14%**	−0.37%	 20.6 14.45 Mar25 Sep17	 12.43 19.14 24.88 last 48 months
MPD Skew	**0.13**	0.057	 0.61 −0.19 May06 Sep24	 −0.19 0.13 0.61 last 48 months
Market Prob of −20% or More Decline	**15.47%**	−0.78%	 19.2 8.57 Mar11 Aug14	 5.73 15.47 22.43 last 48 months
Volume	**222554**	−27%	 377209 0	 6059 222554 472954 last 48 months
Soybeans (6−Month Expiry)				
Spot	**998.13**	1%	 1091.5 907.63 Jul24 May27	 907.63 998.13 1691.25 last 48 months
MPD Std Dev	**16.9%**	−0.86%	 17.76 12.54 Jul08 Sep17	 10.93 16.9 22.65 last 48 months
MPD Skew	**0.21**	0.017	 0.24 −0.5 Jun17 Sep24	 −0.5 0.21 0.51 last 48 months
Market Prob of −20% or More Decline	**10%**	−1.4%	 12.79 6.65 Jan07 Sep17	 4.07 10 18.72 last 48 months
Volume	**39031**	−3.1%	 82132 0	 496 39031 326132 last 48 months
Wheat (6−Month Expiry)				
Spot	**525.04**	−10%	 650.95 487.48 Dec17 May06	 487.48 525.04 930 last 48 months
MPD Std Dev	**20.38%**	−0.38%	 22.31 14.56 Jul01 Sep17	 12.95 20.38 26.5 last 48 months
MPD Skew	**0.18**	0.025	 0.35 0.08 Mar11 Jul24	 0.01 0.18 0.54 last 48 months
Market Prob of −20% or More Decline	**17.27%**	−0.71%	 20.71 8.94 Jul01 Jul24	 5.67 17.27 24.34 last 48 months
Volume	**38803**	−7.1%	 46977 0	 179 38803 51689 last 48 months

Sources: Chicago Mercantile Exchange, Bloomberg

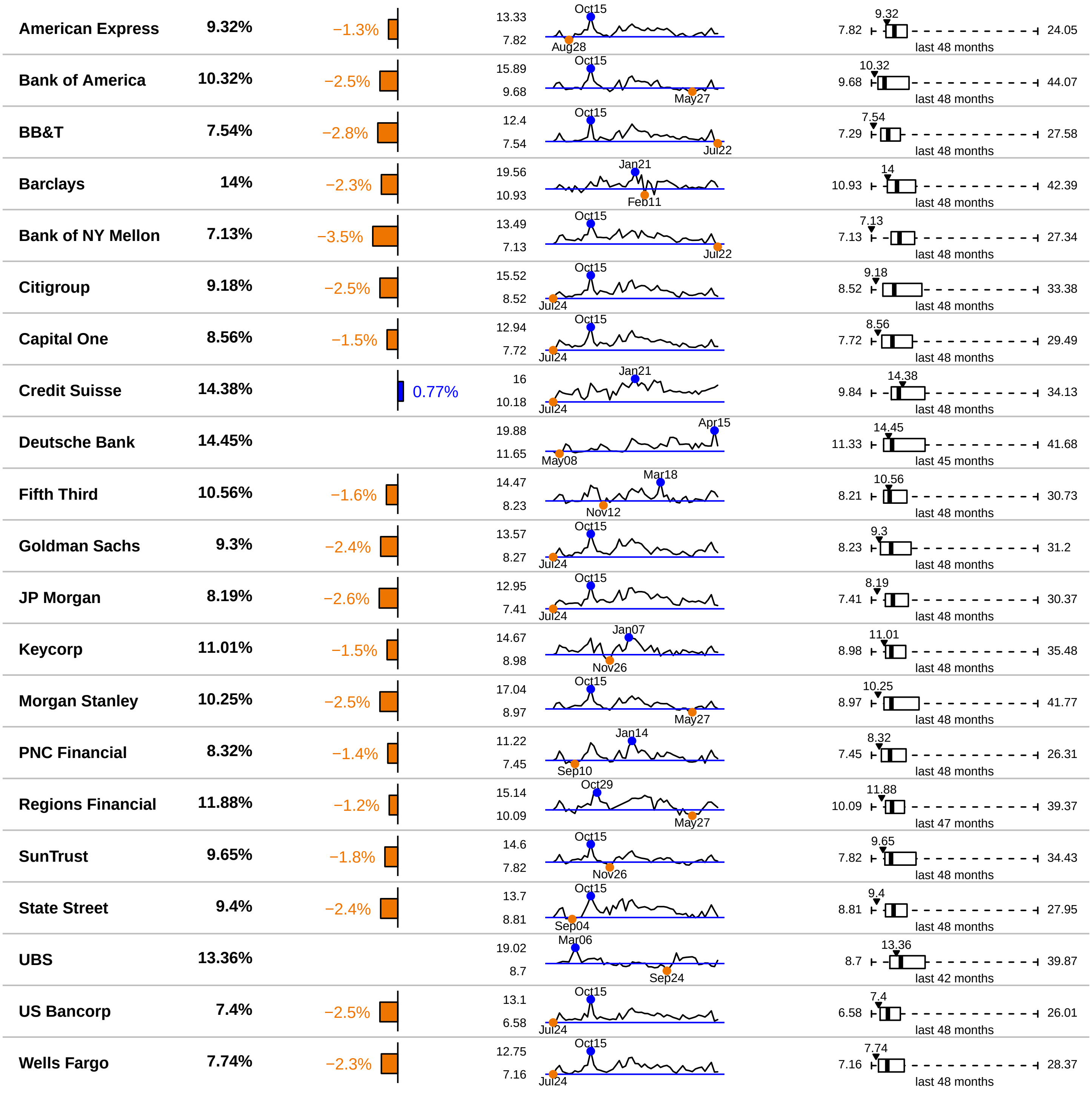
Agricultural Livestock Commodity MPD Statistics as of July 22, 2015

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	**148.98**	−3%	 170.32 139.48 Nov19 Feb25	 148.98 129.05 170.32 last 24 months
MPD Std Dev	**9.16%**	0.17%	 12.2 6.02 Dec17 Sep24	 9.16 3.6 12.2 last 24 months
MPD Skew	**−0.45**	0.052	 −0.29 −0.72 Aug14 Jan07	 −0.45 −0.94 −0.17 last 24 months
Market Prob of −5% or More Decline	**26.05%**	0.25%	 31.3 18.13 Dec17 Sep24	 26.05 8.46 31.3 last 24 months
Volume	**14120**	99%	 33850 0	 14120 1263 33850 last 24 months
Hogs (6−Month Expiry)				
Spot	**62.45**	−0.62%	 94.48 60.95 Nov19 Jun24	 62.45 60.95 94.48 last 9 months
MPD Std Dev	**20.24%**	1.2%	 20.24 13.88 Jul22 Nov26	 20.24 13.88 20.24 last 9 months
MPD Skew	**−0.49**	−0.092	 0.17 −0.5 Jan21 Jun03	 −0.49 −0.5 0.17 last 9 months
Market Prob of −20% or More Decline	**16.7%**	1.5%	 16.7 8.05 Jul22 Nov26	 16.7 8.05 16.7 last 9 months
Volume	**6708**	130%	 16073 0	 6708 53 16073 last 9 months

Sources: Chicago Mercantile Exchange, Bloomberg

Bank MPD Statistics as of July 22, 2015

MPD Standard Deviation (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	**9.32%**	−1.3%	13.33 7.82 Oct15 Aug28	9.32 7.82 24.05 last 48 months
Bank of America	**10.32%**	−2.5%	15.89 9.68 Oct15 May27	10.32 9.68 44.07 last 48 months
BB&T	**7.54%**	−2.8%	12.4 7.54 Oct15 Jul22	7.54 7.29 27.58 last 48 months
Barclays	**14%**	−2.3%	19.56 10.93 Jan21 Feb11	14 10.93 42.39 last 48 months
Bank of NY Mellon	**7.13%**	−3.5%	13.49 7.13 Oct15 Jul22	7.13 7.13 27.34 last 48 months
Citigroup	**9.18%**	−2.5%	15.52 8.52 Oct15 Jul24	9.18 8.52 33.38 last 48 months
Capital One	**8.56%**	−1.5%	12.94 7.72 Oct15 Jul24	8.56 7.72 29.49 last 48 months
Credit Suisse	**14.38%**	0.77%	16 10.18 Jan21 Jul24	14.38 9.84 34.13 last 48 months
Deutsche Bank	**14.45%**		19.88 11.65 Apr15 May08	14.45 11.33 41.68 last 45 months
Fifth Third	**10.56%**	−1.6%	14.47 8.23 Mar18 Nov12	10.56 8.21 30.73 last 48 months
Goldman Sachs	**9.3%**	−2.4%	13.57 8.27 Oct15 Jul24	9.3 8.23 31.2 last 48 months
JP Morgan	**8.19%**	−2.6%	12.95 7.41 Oct15 Jul24	8.19 7.41 30.37 last 48 months
Keycorp	**11.01%**	−1.5%	14.67 8.98 Jan07 Nov26	11.01 8.98 35.48 last 48 months
Morgan Stanley	**10.25%**	−2.5%	17.04 8.97 Oct15 May27	10.25 8.97 41.77 last 48 months
PNC Financial	**8.32%**	−1.4%	11.22 7.45 Jan14 Sep10	8.32 7.45 26.31 last 48 months
Regions Financial	**11.88%**	−1.2%	15.14 10.09 Oct29 May27	11.88 10.09 39.37 last 47 months
SunTrust	**9.65%**	−1.8%	14.6 7.82 Oct15 Nov26	9.65 7.82 34.43 last 48 months
State Street	**9.4%**	−2.4%	13.7 8.81 Oct15 Sep04	9.4 8.81 27.95 last 48 months
UBS	**13.36%**		19.02 8.7 Mar06 Sep24	13.36 8.7 39.87 last 42 months
US Bancorp	**7.4%**	−2.5%	13.1 6.58 Oct15 Jul24	7.4 6.58 26.01 last 48 months
Wells Fargo	**7.74%**	−2.3%	12.75 7.16 Oct15 Jul24	7.74 7.16 28.37 last 48 months

Source: FactSet

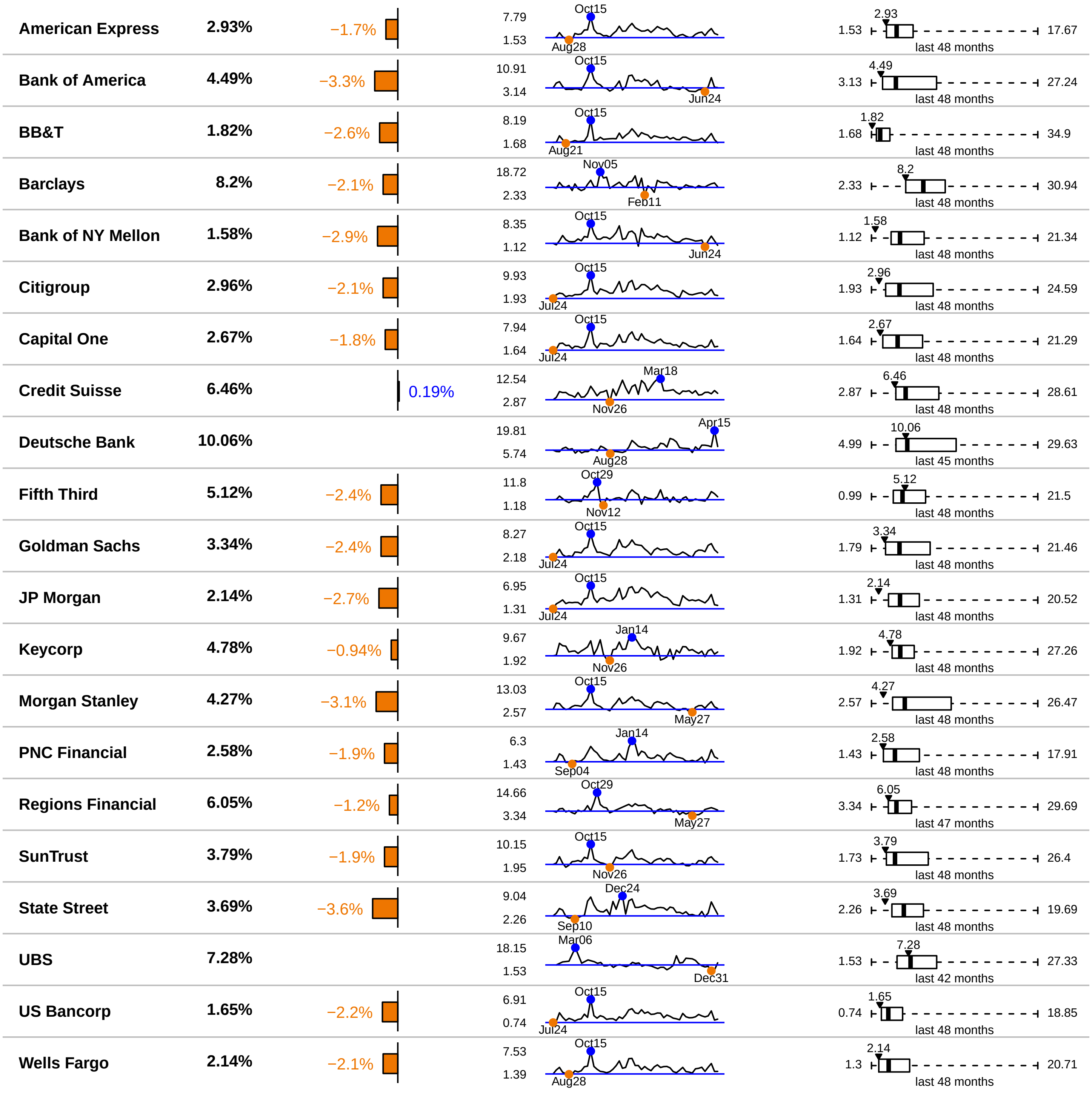
Bank MPD Statistics as of July 22, 2015

MPD Skew (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	**−0.43**	0.081	−0.21 −0.74 Jul31 Oct15	−1.32 −0.43 −0.21 last 48 months
Bank of America	**−0.52**	−0.011	−0.07 −0.7 Mar25 Oct15	−1.17 −0.52 −0.02 last 48 months
BB&T	**−0.95**	0.1	−0.22 −1.3 Dec10 Nov26	−1.54 −0.95 −0.15 last 48 months
Barclays	**−1.72**	−1.8	0.56 −2.51 Aug07 Feb25	−2.51 −1.72 1.94 last 48 months
Bank of NY Mellon	**−1.02**	−0.35	0.32 −1.09 Jan28 Jul15	−1.56 −1.02 0.32 last 48 months
Citigroup	**−0.7**	−0.11	−0.3 −0.89 Jul24 Oct15	−1.23 −0.7 −0.17 last 48 months
Capital One	**−0.94**	0.15	−0.16 −1.09 Aug07 Jul08	−1.38 −0.94 −0.16 last 48 months
Credit Suisse	**0.06**	0.3	0.89 −1.58 Jan07 Apr01	−2.07 0.06 0.89 last 48 months
Deutsche Bank	**−0.74**		0.35 −1.06 Jun26 Mar18	−1.31 −0.74 0.35 last 45 months
Fifth Third	**−1.15**	−0.45	2.19 −1.49 Feb04 Nov26	−1.49 −1.15 2.19 last 48 months
Goldman Sachs	**−0.72**	−0.11	−0.57 −0.97 Nov26 Oct15	−1.38 −0.72 −0.34 last 48 months
JP Morgan	**−0.67**	0.033	−0.35 −0.96 Aug07 Dec17	−1.44 −0.67 −0.33 last 48 months
Keycorp	**−0.56**	0.11	0.17 −1.59 Jan07 May13	−2.24 −0.56 0.28 last 48 months
Morgan Stanley	**−0.77**	−0.1	−0.26 −0.87 Aug07 Oct08	−1.2 −0.77 −0.25 last 48 months
PNC Financial	**−0.78**	−0.034	−0.39 −1.29 Sep04 Sep10	−1.51 −0.78 −0.39 last 48 months
Regions Financial	**−0.9**	−0.2	0.68 −1.54 Oct15 Feb25	−1.94 −0.9 0.68 last 47 months
SunTrust	**−0.68**	0.18	−0.26 −1.05 Dec17 Nov19	−1.16 −0.68 −0.26 last 48 months
State Street	**−0.69**	0.055	−0.13 −2.31 Aug14 Dec24	−2.31 −0.69 −0.13 last 48 months
UBS	**−0.04**		0.91 −1.72 Dec31 Nov26	−3.36 −0.04 0.97 last 42 months
US Bancorp	**−0.88**	−0.034	−0.2 −1.18 Dec17 Oct15	−1.45 −0.88 −0.2 last 48 months
Wells Fargo	**−1.01**	−0.27	−0.52 −1.24 Aug21 Jan07	−1.73 −1.01 −0.42 last 48 months

Source: FactSet

Bank MPD Statistics as of July 22, 2015

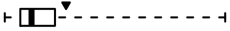
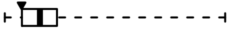
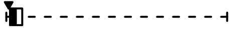
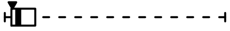
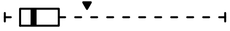
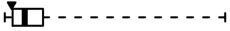
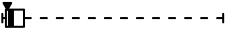
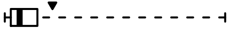
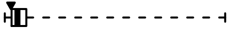
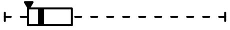
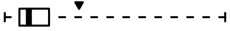
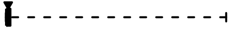
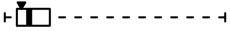
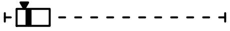
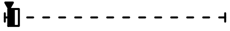
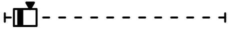
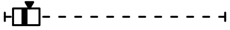
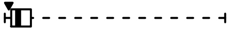
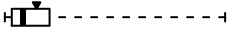
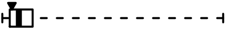


Indicator	Latest	2−Week Change	1−Year Trend with min/max points	Long−Term Range with median, IQR, and max/min
Market Probability of −20% or More Decline (3−Month Expiry)				
American Express	**2.93%**	−1.7%	7.79 1.53 Oct15 Aug28	2.93 1.53 17.67 last 48 months
Bank of America	**4.49%**	−3.3%	10.91 3.14 Oct15 Jun24	4.49 3.13 27.24 last 48 months
BB&T	**1.82%**	−2.6%	8.19 1.68 Oct15 Aug21	1.82 1.68 34.9 last 48 months
Barclays	**8.2%**	−2.1%	18.72 2.33 Nov05 Feb11	8.2 2.33 30.94 last 48 months
Bank of NY Mellon	**1.58%**	−2.9%	8.35 1.12 Oct15 Jun24	1.58 1.12 21.34 last 48 months
Citigroup	**2.96%**	−2.1%	9.93 1.93 Oct15 Jul24	2.96 1.93 24.59 last 48 months
Capital One	**2.67%**	−1.8%	7.94 1.64 Oct15 Jul24	2.67 1.64 21.29 last 48 months
Credit Suisse	**6.46%**	0.19%	12.54 2.87 Mar18 Nov26	6.46 2.87 28.61 last 48 months
Deutsche Bank	**10.06%**		19.81 5.74 Apr15 Aug28	10.06 4.99 29.63 last 45 months
Fifth Third	**5.12%**	−2.4%	11.8 1.18 Oct29 Nov12	5.12 0.99 21.5 last 48 months
Goldman Sachs	**3.34%**	−2.4%	8.27 2.18 Oct15 Jul24	3.34 1.79 21.46 last 48 months
JP Morgan	**2.14%**	−2.7%	6.95 1.31 Oct15 Jul24	2.14 1.31 20.52 last 48 months
Keycorp	**4.78%**	−0.94%	9.67 1.92 Jan14 Nov26	4.78 1.92 27.26 last 48 months
Morgan Stanley	**4.27%**	−3.1%	13.03 2.57 Oct15 May27	4.27 2.57 26.47 last 48 months
PNC Financial	**2.58%**	−1.9%	6.3 1.43 Jan14 Sep04	2.58 1.43 17.91 last 48 months
Regions Financial	**6.05%**	−1.2%	14.66 3.34 Oct29 May27	6.05 3.34 29.69 last 47 months
SunTrust	**3.79%**	−1.9%	10.15 1.95 Oct15 Nov26	3.79 1.73 26.4 last 48 months
State Street	**3.69%**	−3.6%	9.04 2.26 Dec24 Sep10	3.69 2.26 19.69 last 48 months
UBS	**7.28%**		18.15 1.53 Mar06 Dec31	7.28 1.53 27.33 last 42 months
US Bancorp	**1.65%**	−2.2%	6.91 0.74 Oct15 Jul24	1.65 0.74 18.85 last 48 months
Wells Fargo	**2.14%**	−2.1%	7.53 1.39 Oct15 Aug28	2.14 1.3 20.71 last 48 months

Source: FactSet

Bank MPD Statistics as of July 22, 2015

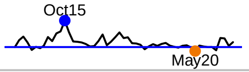
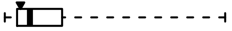
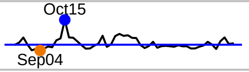
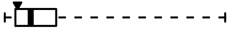
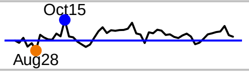
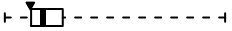
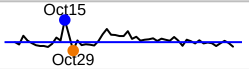
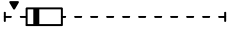
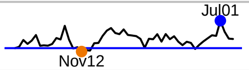
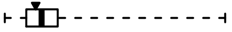
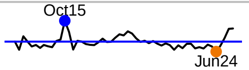
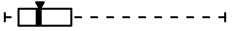
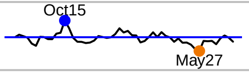
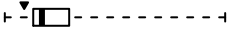
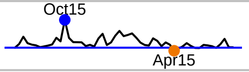
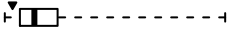
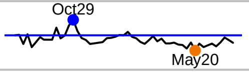
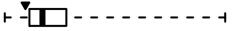
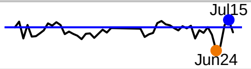
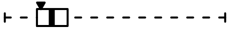
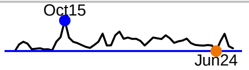
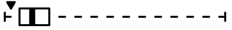
Volume (3−Month Expiry)

Indicator	Latest	2−Week Change	1−Year Trend with min/max points	Long−Term Range with median, IQR, and max/min
American Express	**9542**	−71%	32713  0	9542 623  32713 last 48 months
Bank of America	**34508**	95%	138459  0	34508 7419  363160 last 48 months
BB&T	**3169**	13%	5688  0	3169 136  6490 last 48 months
Barclays	**176**	−20%	11011  0	176 13  15208 last 48 months
Bank of NY Mellon	**599**	−13%	13099  0	599 59  15678 last 48 months
Citigroup	**57016**	20%	140439  0	57016 1104  150972 last 48 months
Capital One	**651**	−81%	5543  0	651 148  16299 last 48 months
Credit Suisse	**347**	−67%	15145  0	347 0  15145 last 48 months
Deutsche Bank	**6538**		25112  0	6538 182  29575 last 45 months
Fifth Third	**562**	1.8%	7607  0	562 28  19127 last 48 months
Goldman Sachs	**4389**	43%	15721  0	4389 296  37943 last 48 months
JP Morgan	**40813**	240%	79587  0	40813 943  119246 last 48 months
Keycorp	**879**	14%	3300  0	879 44  76270 last 48 months
Morgan Stanley	**6675**	210%	48955  0	6675 327  84281 last 48 months
PNC Financial	**923**	260%	3466  0	923 83  9560 last 48 months
Regions Financial	**958**	87%	47940  0	958 20  47940 last 47 months
SunTrust	**1639**	21%	4808  0	1639 61  13788 last 48 months
State Street	**633**	330%	2086  0	633 42  5339 last 48 months
UBS	**124**		2034  0	124 6  6502 last 42 months
US Bancorp	**4362**	−56%	9927  0	4362 172  29201 last 48 months
Wells Fargo	**8212**	130%	62697  0	8212 950  167820 last 48 months

Source: FactSet

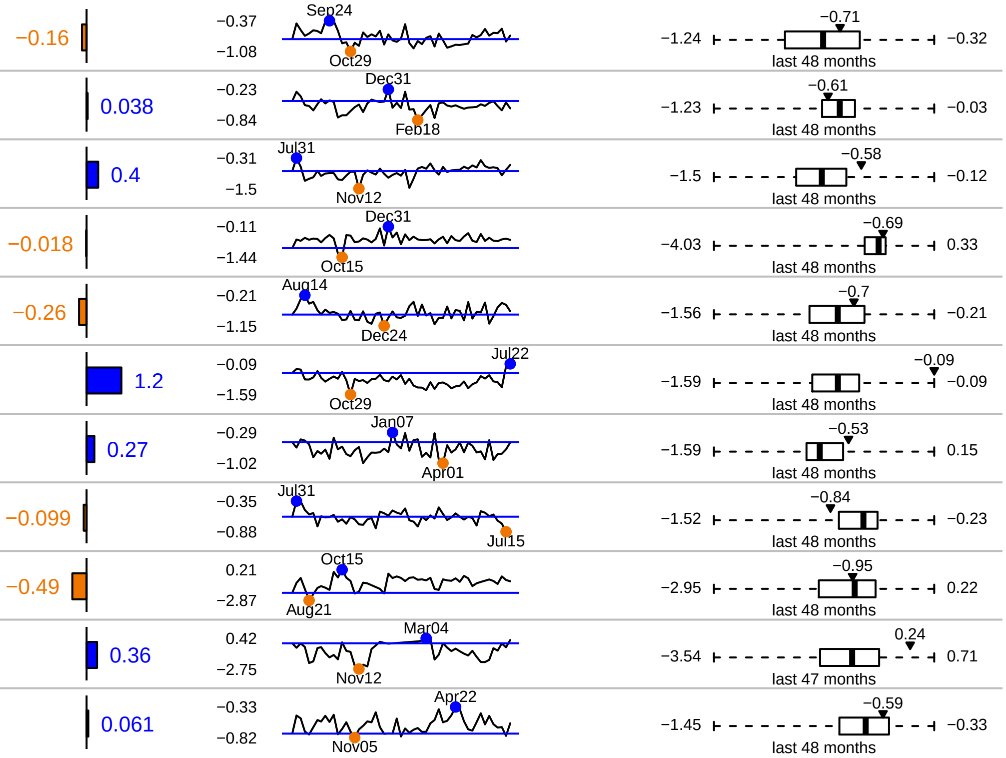
Insurance Company MPD Statistics as of July 22, 2015

MPD Standard Deviation (3−Month Expiry)

Indicator	Latest	2−Week Change	1−Year Trend with min/max points	Long−Term Range with median, IQR, and max/min
Aflac	**8.62%**	−0.64%	12.28 7.11 Oct15 May20 	8.62 7.11 28.3 last 48 months 
AIG	**10.2%**	−1.2%	15.15 8.7 Oct15 Sep04 	10.2 8.7 34.63 last 48 months 
Allstate	**7.8%**	−1.5%	10.19 5.83 Oct15 Aug28 	7.8 5.83 22.82 last 48 months 
Ameriprise	**9.79%**	−1.2%	15.19 8.98 Oct15 Oct29 	9.79 8.98 28.12 last 48 months 
Chubb	**7.7%**	−1%	10.23 5.96 Jul01 Nov12 	7.7 5.96 18.33 last 48 months 
Hartford Financial	**12.53%**	1.7%	13.93 8.35 Oct15 Jun24 	12.53 8.35 34.59 last 48 months 
Lincoln National	**11.32%**	−1.5%	16.63 8.98 Oct15 May27 	11.32 8.98 35.56 last 48 months 
Met Life	**10.17%**	−1.9%	16.24 9.4 Oct15 Apr15 	10.17 9.4 31.28 last 48 months 
Principal Financial	**10.54%**	−1.6%	17.34 8.26 Oct29 May20 	10.54 8.02 34.89 last 48 months 
Progressive	**8.91%**	−1.2%	11.04 5.79 Jul15 Jun24 	8.91 5.79 24.84 last 47 months 
Prudential	**10.66%**	−3%	16.3 10.09 Oct15 Jun24 	10.66 10.09 30.06 last 48 months 

Source: FactSet

Insurance Company MPD Statistics as of July 22, 2015

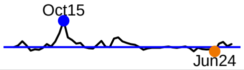
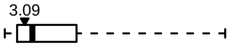
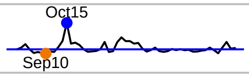
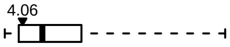
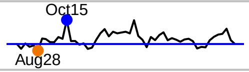
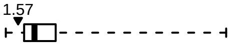
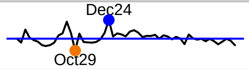
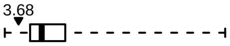
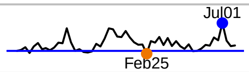
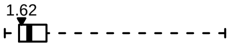
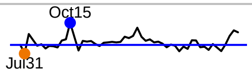
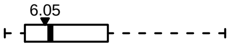
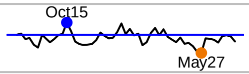
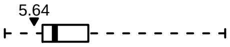
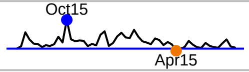
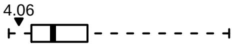
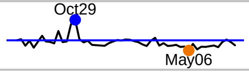
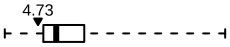
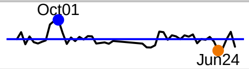
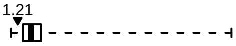
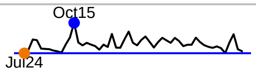
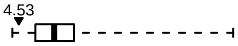


Indicator	Latest	2−Week Change	1−Year Trend with min/max points	Long−Term Range with median, IQR, and max/min
MPD Skew (3−Month Expiry)				
Aflac	**−0.71**	−0.16	−0.37 −1.08 Sep24 Oct29	−1.24 −0.71 −0.32 last 48 months
AIG	**−0.61**	0.038	−0.23 −0.84 Dec31 Feb18	−1.23 −0.61 −0.03 last 48 months
Allstate	**−0.58**	0.4	−0.31 −1.5 Jul31 Nov12	−1.5 −0.58 −0.12 last 48 months
Ameriprise	**−0.69**	−0.018	−0.11 −1.44 Dec31 Oct15	−4.03 −0.69 0.33 last 48 months
Chubb	**−0.7**	−0.26	−0.21 −1.15 Aug14 Dec24	−1.56 −0.7 −0.21 last 48 months
Hartford Financial	**−0.09**	1.2	−0.09 −1.59 Jul22 Oct29	−1.59 −0.09 −0.09 last 48 months
Lincoln National	**−0.53**	0.27	−0.29 −1.02 Jan07 Apr01	−1.59 −0.53 0.15 last 48 months
Met Life	**−0.84**	−0.099	−0.35 −0.88 Jul31 Jul15	−1.52 −0.84 −0.23 last 48 months
Principal Financial	**−0.95**	−0.49	0.21 −2.87 Oct15 Aug21	−2.95 −0.95 0.22 last 48 months
Progressive	**0.24**	0.36	0.42 −2.75 Mar04 Nov12	−3.54 0.24 0.71 last 47 months
Prudential	**−0.59**	0.061	−0.33 −0.82 Apr22 Nov05	−1.45 −0.59 −0.33 last 48 months

Source: FactSet

Insurance Company MPD Statistics as of July 22, 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
Aflac	**3.09%**	−0.5%	8.55 1.37  	1.37  20.31 last 48 months
AIG	**4.06%**	−1.8%	11.59 2.44  	2.44  22.42 last 48 months
Allstate	**1.57%**	−2%	4.67 0.75  	0.56  18.62 last 48 months
Ameriprise	**3.68%**	−1.5%	9.67 2.4  	2.4  22.78 last 48 months
Chubb	**1.62%**	−0.63%	4.54 0.55  	0.55  14.62 last 48 months
Hartford Financial	**6.05%**	0.65%	7.78 2.19  	2.19  23.29 last 48 months
Lincoln National	**5.64%**	−1.8%	11.23 2.26  	2.26  27.65 last 48 months
Met Life	**4.06%**	−2%	11.04 3.26  	3.26  20.81 last 48 months
Principal Financial	**4.73%**	−2.8%	17.08 2.22  	0.43  28.98 last 48 months
Progressive	**1.21%**	−2.1%	8.74 0.15  	0  39.73 last 47 months
Prudential	**4.53%**	−4.5%	12.07 3.99  	3.99  22.23 last 48 months

Source: FactSet

Insurance Company MPD Statistics as of July 22, 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	**386**	−39%	13324 0	386 386 22718 last 48 months
AIG	**1163**	−10%	69392 0	1163 432 103998 last 48 months
Allstate	**445**	−61%	4626 0	445 63 68926 last 48 months
Ameriprise	**295**	32%	881 0	295 5 1114 last 48 months
Chubb	**98**	−92%	9027 0	98 10 11114 last 48 months
Hartford Financial	**4807**	220%	9444 0	4807 65 37285 last 48 months
Lincoln National	**387**	16%	2635 0	387 51 10682 last 48 months
Met Life	**2590**	−52%	29248 0	2590 319 161416 last 48 months
Principal Financial	**102**	82%	545 0	102 2 2956 last 48 months
Progressive	**335**	−55%	1084 0	335 0 4283 last 47 months
Prudential	**860**	−25%	17185 0	860 222 17185 last 48 months

Source: FactSet