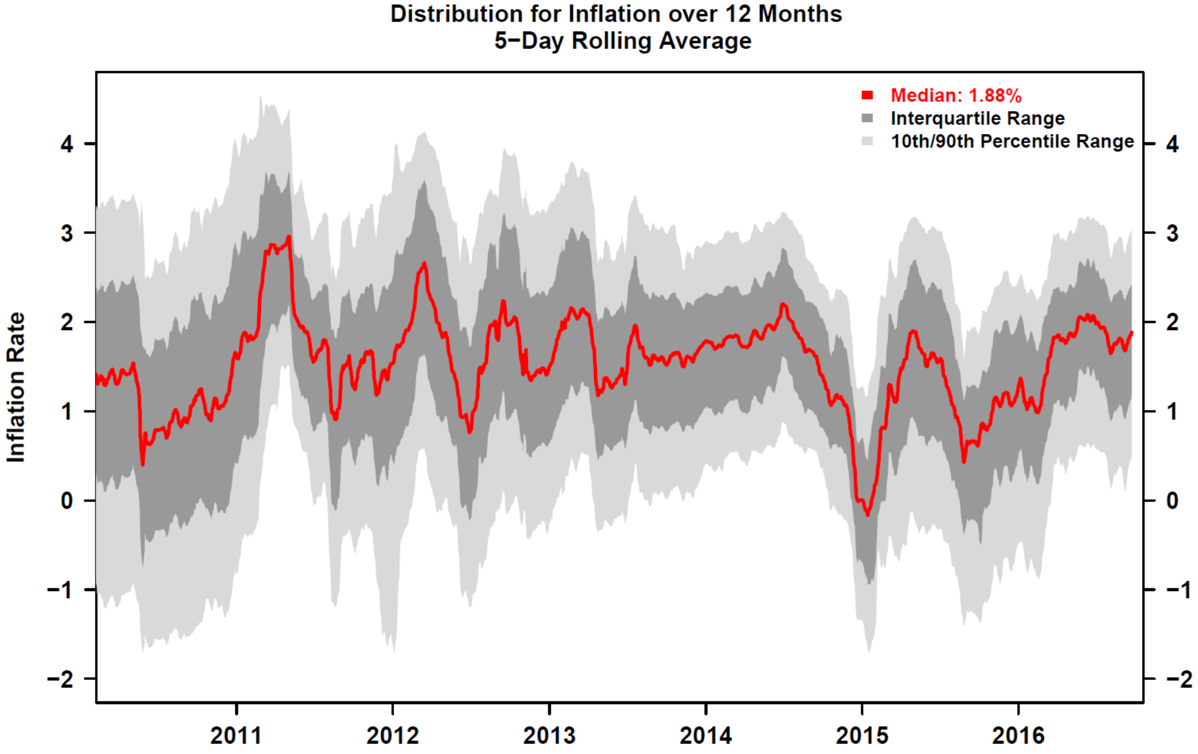
FEDERAL RESERVE BANK OF MINNEAPOLIS
BANKING AND POLICY STUDIES

Minneapolis Options Report – September 23rd

Market based inflation expectations rose for both the 1- and 5-year tenors. The S&P 500 returned -1.1%, while the 19 banks we follow underperformed the market, returning an average of -1.5%. The 11 insurance company stocks we follow outperformed the index, returning 0.3%. WFC and DB share prices dropped by -7.9% and -12.8% on market reaction to recent events affecting each institution. The dollar was stronger against the euro and the pound; in particular, MPD skews continue to signal that the dollar will be comparatively stronger against the two currencies in the future. Lean hogs lost -12%, while its MPD standard deviation reached a 23-month high.

Inflation

Market-based inflation expectations, derived from caps and floors on the CPI for 1- and 5-year periods, increased over the past two weeks to 1.93% and 1.7%, respectively. The 1-year tenor, best demonstrates this increase (see figure below).



Additional detail:

- 1-year median inflation expectations are currently above the 75th percentile mark for observations spanning the past 48 months.
- The probability of low inflation, defined as the market probability of less than 1% inflation, fell across the 1- and 5-year tenors by -6.1 and -2.9 percentage points, respectively.
- The 2-year tenor is absent due to non-reporting of the associated options prices.

Interest Rates

Prices for 5- and 10-year Treasuries were lower by -32 and -59 bps; consequently, yields rose. Changes in MPD statistics were largely flat for both tenors although the MPD standard deviation set a new 1-year low for the 5-year tenor. MPD skew for the 5-year tenor signals investor bias towards lower future Treasury prices. Both LIBOR tenors were higher this period. The 3-year LIBOR rose by 2.9 bps and 5-year LIBOR rose by 29 bps. While changes in MPD standard deviation were flat over the two week period, their overall levels remain depressed relative to their 4-year observational histories. MPD skew levels continue to signal investor bias towards higher future LIBOR rates.

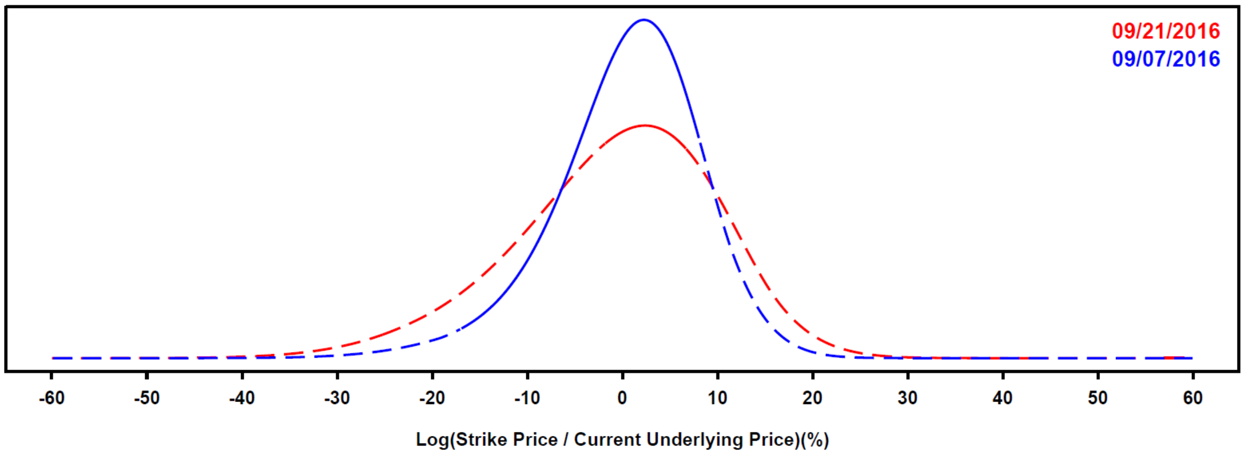
Banks and Insurance Companies

The S&P 500 returned -1.1% over the past two weeks. The MPD standard deviation was higher by 1.4 percentage points on average for both the 6- and 12-month tenors. The 19 domestic banks underperformed the market, returning an average of -1.5%. The 11 insurance company stocks we follow outperformed the index, returning 0.3%.

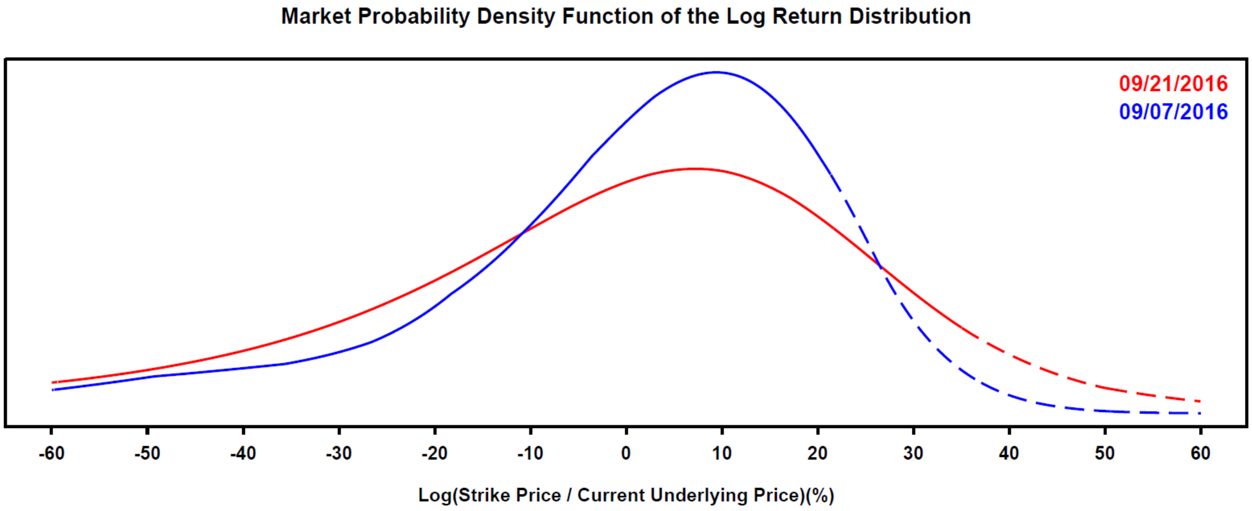
Additional details:

- WFC dropped by -7.9% on news of significant penalties imposed by the Consumer Financial Protection Bureau for fraudulent consumer account activities. The MPD standard deviation was higher by 2.9 percentage points, implying that investor uncertainty has risen concerning the bank (see chart below).

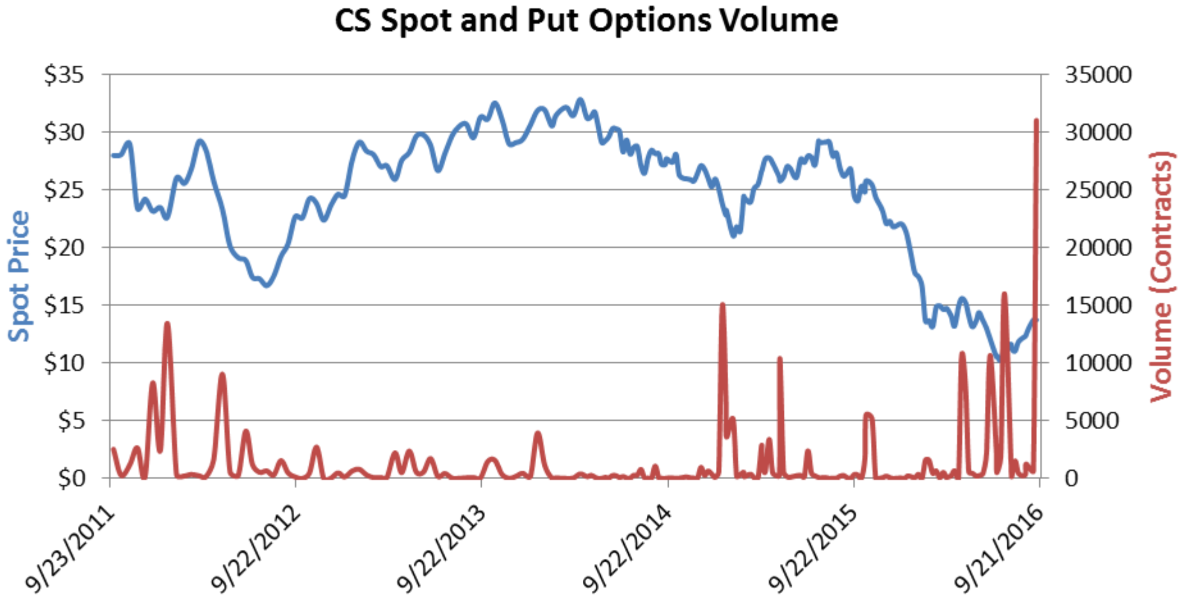
Market Probability Density Function of the Log Return Distribution



- DB fell -12.8% on news of a potential $14 billion dollar settlement with the Justice Department. Its MPD standard deviation jumped by 6.9 percentage points (see chart below).



- Put options volume soared for CS over the two week period. This may indicate that investors are moving to lock in recent gains in the share price (see plot below).

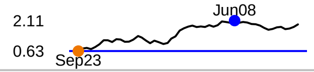
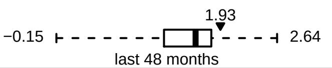
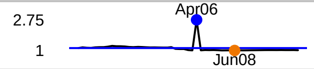
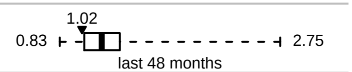
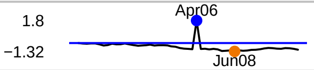
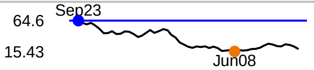
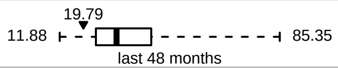
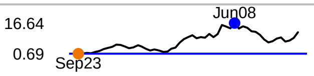
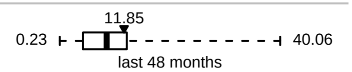
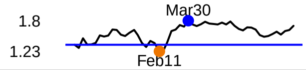
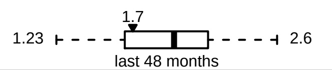
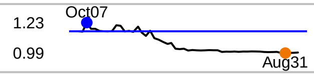
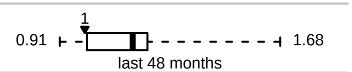
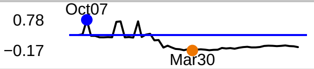
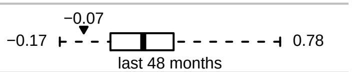
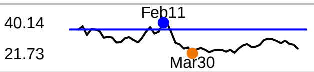
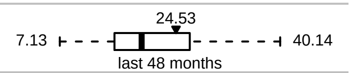
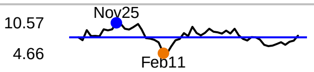
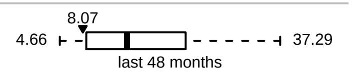


Other Markets

- iShares US Real Estate Index underperformed the market, returning -3.8%. Its MPD standard deviation increased by 1.1 percentage points, in line with the increase generated by the S&P 500.
- The dollar was stronger against the euro and the pound, but weaker against the yen. MPD skews for the USD-Euro and USD-Pound pairings point to market bias towards a comparatively stronger dollar. MPD skew for the USD-Yen pair, however, points to a comparatively weaker dollar in the future.
- Gold and silver both fell over the two week reporting period, gold falling by -1.3% and silver by -0.4%. Changes in MPD statistics were minimal.
- WTI crude spots fell by -2.1%. MPD standard deviation rose slightly by 1 percentage point.
- Corn and wheat rose by a respective 2.1% and 1.7%. Corn experienced a -2.1 percentage point decline in its MPD standard deviation, likely signaling that investors have become less uncertain about corn prices.

- Cattle increased by 3.8% whereas lean hogs declined by -12%, a new 23-month low. The MPD standard deviation for hogs rose by 2.3 percentage points to a new 23-month high, indicating that investor uncertainty is elevated for the commodity.

Inflation MPD Statistics as of September 21, 2016

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	**1.93%**	0.2%		
MPD Std Dev	**1.02%**	−0.0068%		
MPD Skew	**−1.15**	−0.15		
Market Prob of Less Than 1% Inflation	**19.79%**	−6.1%		
Market Prob of More Than 3% Inflation	**11.85%**	4.3%		
Inflation (5−Year Expiry)				
Median	**1.7%**	0.097%		
MPD Std Dev	**1%**	0.0036%		
MPD Skew	**−0.07**	−0.033		
Market Prob of Less Than 1% Inflation	**24.53%**	−2.9%		
Market Prob of More Than 3% Inflation	**8.07%**	1.2%		

Source: Bloomberg

Medium−to−Long Bond Price MPD Statistics as of September 21, 2016

5 Year Treasury (3−Month Expiry)

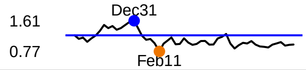
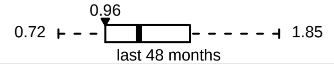
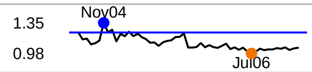
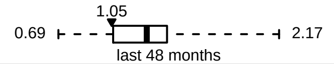
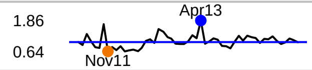
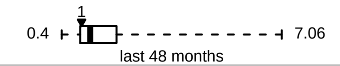
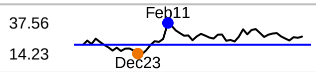
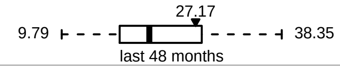
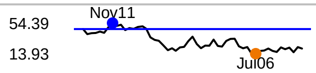
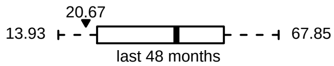
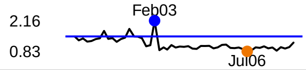
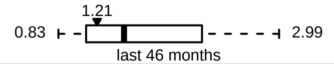
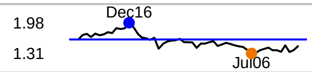
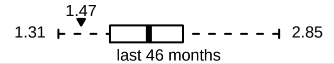
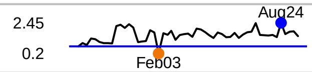
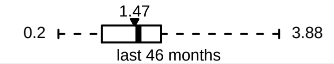
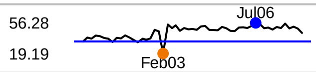
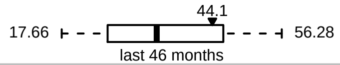
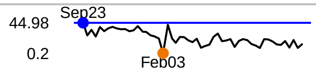
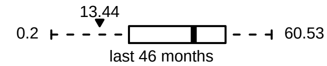
Indicator	Latest	2−Week Change	1−Year Trend with min/max points	Long−Term Range with median, IQR, and max/min
Spot	121.19	−0.32%	122.32 118.22 Jul06 Nov11	118.05 121.19 122.32 last 24 months
MPD Std Dev	1.48%	−0.074%	1.96 1.48 Jan21 Sep21	1.41 1.48 2.3 last 24 months
MPD Skew	−0.29	0.16	0.19 −0.45 Feb18 Sep07	−0.54 −0.29 0.36 last 24 months
Market Prob of −3% or More Decline	3.02%	−0.62%	5.64 2.68 Feb18 Oct14	2.44 3.02 8.74 last 24 months
Volume	55146	1.5%	335039 0	2054 55146 377550 last 24 months

10 Year Treasury (3−Month Expiry)

Indicator	Latest	2−Week Change	1−Year Trend with min/max points	Long−Term Range with median, IQR, and max/min
Spot	130.59	−0.59%	133.67 125.4 Jul06 Nov11	122.97 130.59 133.67 last 35 months
MPD Std Dev	2.46%	−0.051%	3.28 2.43 Jan21 Aug10	2.17 2.46 3.8 last 35 months
MPD Skew	−0.01	0.064	0.21 −0.18 Jun15 Aug17	−0.75 −0.01 0.31 last 35 months
Market Prob of −5% or More Decline	2.68%	−0.25%	5.72 2.5 Jan21 Oct21	1.62 2.68 8.48 last 35 months
Volume	268026	64%	1143418 0	5226 268026 118509 last 35 months

Source: Chicago Mercantile Exchange

Short Interest Rates MPD Statistics as of September 21, 2016

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	**0.96%**	0.029%	 1.61 0.77 Dec31 Feb11	 0.96 0.72 1.85 last 48 months
MPD Std Dev	**1.05%**	0.026%	 1.35 0.98 Nov04 Jul06	 1.05 0.69 2.17 last 48 months
MPD Skew	**1**	−0.15	 1.86 0.64 Apr13 Nov11	 1 0.4 7.06 last 48 months
Market Prob of Less Than 0.5% LIBOR	**27.17%**	0.42%	 37.56 14.23 Feb11 Dec23	 27.17 9.79 38.35 last 48 months
Market Prob of More Than 1% + Spot	**20.67%**	4.8%	 54.39 13.93 Nov11 Jul06	 20.67 13.93 67.85 last 48 months
3 Month LIBOR (5−Year Expiry)				
Median	**1.21%**	0.26%	 2.16 0.83 Feb03 Jul06	 1.21 0.83 2.99 last 46 months
MPD Std Dev	**1.47%**	0.13%	 1.98 1.31 Dec16 Jul06	 1.47 1.31 2.85 last 46 months
MPD Skew	**1.47**	−0.32	 2.45 0.2 Aug24 Feb03	 1.47 0.2 3.88 last 46 months
Market Prob of Less Than 1% LIBOR	**44.1%**	−7.6%	 56.28 19.19 Jul06 Feb03	 44.1 17.66 56.28 last 46 months
Market Prob of More Than 2% + Spot	**13.44%**	−6.3%	 44.98 0.2 Sep23 Feb03	 13.44 0.2 60.53 last 46 months

Source: Bloomberg

Equity Index MPD Statistics as of September 21, 2016

S&P 500 (6−Month Expiry)

Indicator	Latest	2−Week Change	1−Year Trend with min/max points	Long−Term Range with median, IQR, and max/min
Spot	**2163.12**	−1.1%	2186.16 1851.86 Sep07 Feb11	1353.33 2163.12 2186.16 last 47 months
MPD Std Dev	**11.67%**	0.85%	17 10.31 Feb11 Jul20	8.87 11.67 17 last 47 months
MPD Skew	**−1.58**	−0.0029	−1.27 −1.74 Jan14 Mar03	−1.74 −1.58 −0.86 last 47 months
Market Prob of −20% or More Decline	**6.96%**	1.1%	12.52 4.74 Feb11 Jul13	3.65 6.96 12.52 last 47 months
Volume	**90610**	87%	203231 0	13428 90610 309308 last 47 months

S&P 500 (12−Month Expiry)

Indicator	Latest	2−Week Change	1−Year Trend with min/max points	Long−Term Range with median, IQR, and max/min
Spot	**2163.12**	−1.1%	2186.16 1851.86 Sep07 Feb11	1353.33 2163.12 2186.16 last 47 months
MPD Std Dev	**18.23%**	1.9%	23.52 16.2 Jan21 Aug10	10.5 18.23 23.52 last 47 months
MPD Skew	**−1.54**	−0.056	−1.27 −1.78 Sep30 Mar03	−1.78 −1.54 −0.98 last 47 months
Market Prob of −20% or More Decline	**12.69%**	2.1%	17.37 9.5 Jan21 Jul13	5.51 12.69 17.37 last 47 months
Volume	**8742**	−84%	105728 0	3174 8742 123271 last 47 months

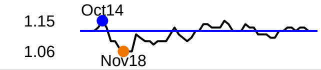
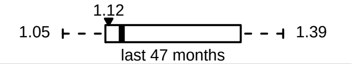
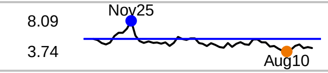
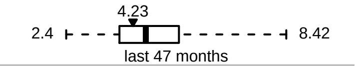
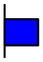
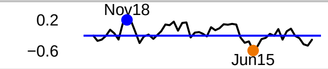
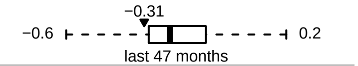
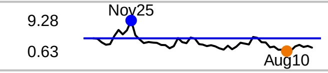
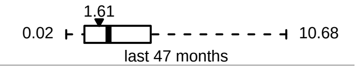
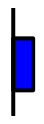
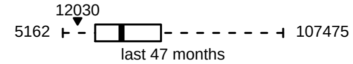
iShares US Real Estate Index (3−Month Expiry)

Indicator	Latest	2−Week Change	1−Year Trend with min/max points	Long−Term Range with median, IQR, and max/min
Spot	**80.92**	−3.8%	84.23 67.26 Aug10 Feb11	61.19 80.92 84.23 last 47 months
MPD Std Dev	**8.95%**	1.1%	11.7 6.52 Jan21 Jul20	4.77 8.95 11.83 last 47 months
MPD Skew	**−1.08**	−0.07	−0.47 −1.36 Aug10 Mar03	−2.09 −1.08 −0.35 last 47 months
Market Prob of −10% or More Decline	**13.71%**	2.3%	18.66 7.17 Feb11 Jul20	3.43 13.71 20.5 last 47 months
Volume	**4842**	−46%	98246 0	32 4842 141443 last 47 months

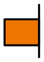
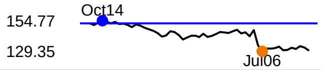
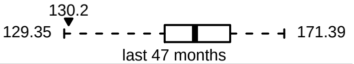
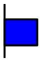
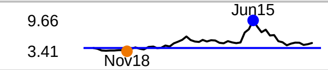
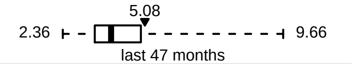
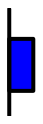
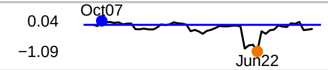
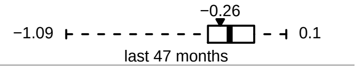
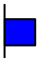
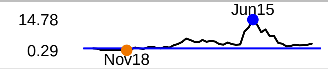
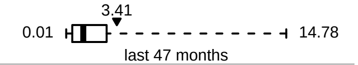
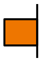
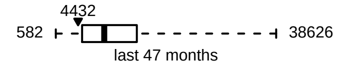
Source: FactSet

Exchange Rate MPD Statistics as of September 21, 2016

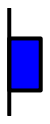
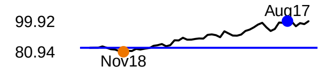
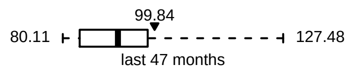
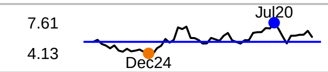
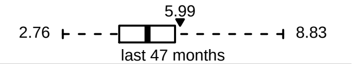
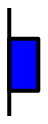
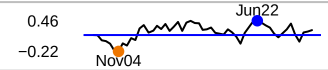
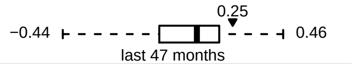
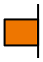
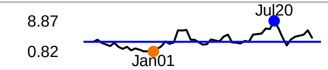
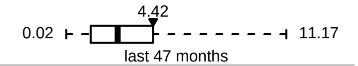
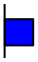
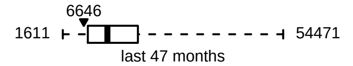
Dollar−Euro Futures (3−Month Expiry)

Indicator	Latest	2−Week Change	1−Year Trend with min/max points	Long−Term Range with median, IQR, and max/min
Spot	**1.12**	 −0.88%	 1.15 1.06 Oct14 Nov18	 1.12 1.05 1.39 last 47 months
MPD Std Dev	**4.23%**	 0.019%	 8.09 3.74 Nov25 Aug10	 4.23 2.4 8.42 last 47 months
MPD Skew	**−0.31**	 0.12	 0.2 −0.6 Nov18 Jun15	 −0.31 −0.6 0.2 last 47 months
Market Prob of −10% or More Decline	**1.61%**	 −0.18%	 9.28 0.63 Nov25 Aug10	 1.61 0.02 10.68 last 47 months
Volume	**12030**	 15%	 107475 0	 12030 5162 107475 last 47 months

Dollar−Pound Futures (3−Month Expiry)

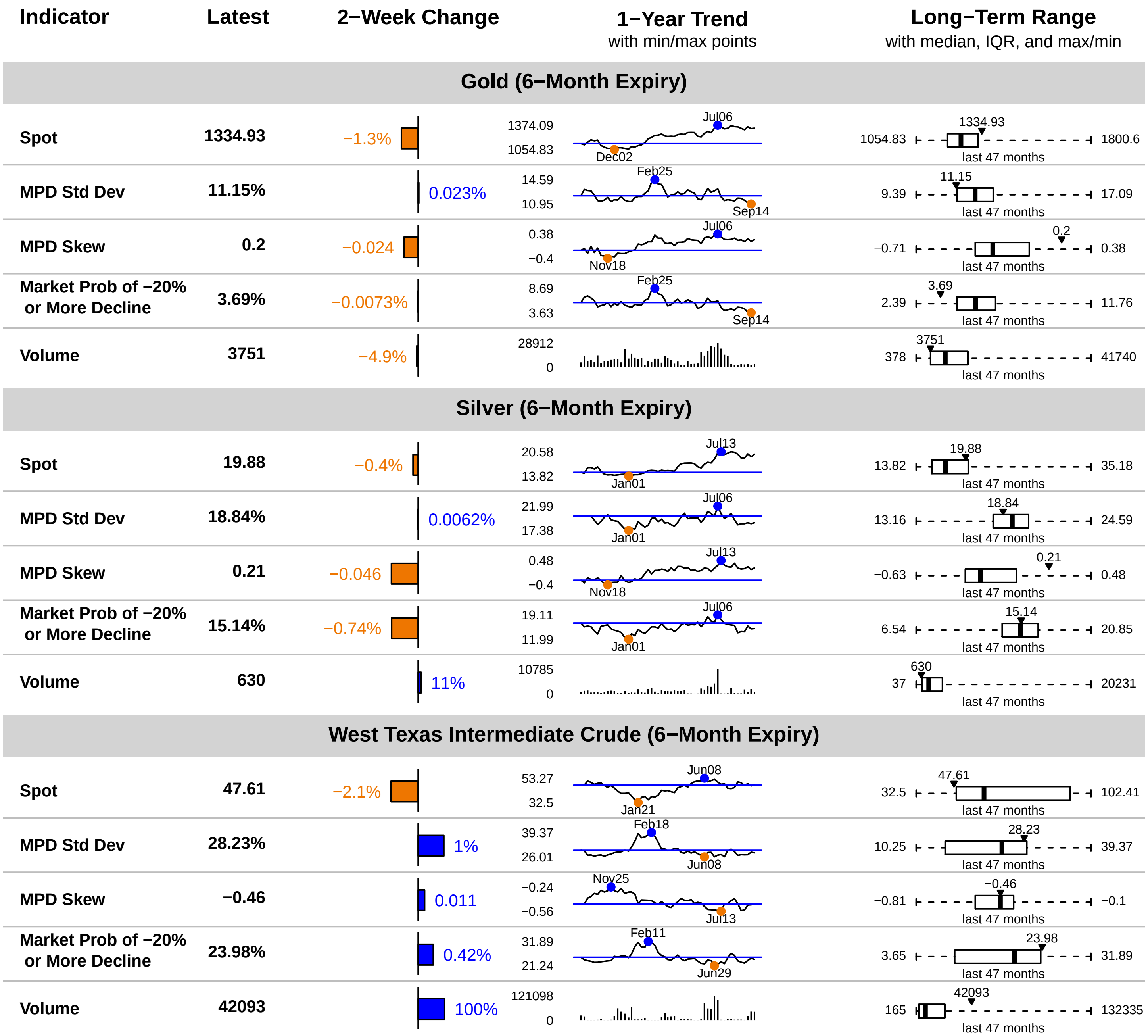
Indicator	Latest	2−Week Change	1−Year Trend with min/max points	Long−Term Range with median, IQR, and max/min
Spot	**130.2**	 −2.6%	 154.77 129.35 Oct14 Jul06	 130.2 129.35 171.39 last 47 months
MPD Std Dev	**5.08%**	 0.38%	 9.66 3.41 Jun15 Nov18	 5.08 2.36 9.66 last 47 months
MPD Skew	**−0.26**	 0.043	 0.04 −1.09 Oct07 Jun22	 −0.26 −1.09 0.1 last 47 months
Market Prob of −10% or More Decline	**3.41%**	 0.73%	 14.78 0.29 Jun15 Nov18	 3.41 0.01 14.78 last 47 months
Volume	**4432**	 −50%	 32199 0	 4432 582 38626 last 47 months

Dollar−Yen Futures (3−Month Expiry)

Indicator	Latest	2−Week Change	1−Year Trend with min/max points	Long−Term Range with median, IQR, and max/min
Spot	**99.84**	 1.2%	 99.92 80.94 Aug17 Nov18	 99.84 80.11 127.48 last 47 months
MPD Std Dev	**5.99%**	 −0.25%	 7.61 4.13 Jul20 Dec24	 5.99 2.76 8.83 last 47 months
MPD Skew	**0.25**	 0.052	 0.46 −0.22 Jun22 Nov04	 0.25 −0.44 0.46 last 47 months
Market Prob of −10% or More Decline	**4.42%**	 −0.79%	 8.87 0.82 Jul20 Jan01	 4.42 0.02 11.17 last 47 months
Volume	**6646**	 43%	 54471 0	 6646 1611 54471 last 47 months

Sources: Chicago Mercantile Exchange, Bloomberg

Metal and Energy Commodity MPD Statistics as of September 21, 2016

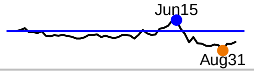
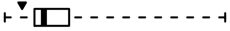
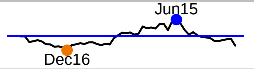
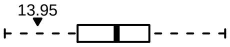
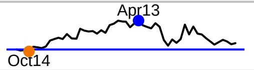
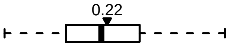
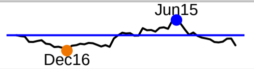
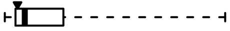


Indicator	Latest	2−Week Change	1−Year Trend with min/max points	Long−Term Range with median, IQR, and max/min
Gold (6−Month Expiry)				
Spot	**1334.93**	−1.3%	1374.09 1054.83 Jul06 Dec02	1054.83 1334.93 1800.6 last 47 months
MPD Std Dev	**11.15%**	0.023%	14.59 10.95 Feb25 Sep14	9.39 11.15 17.09 last 47 months
MPD Skew	**0.2**	−0.024	0.38 −0.4 Jul06 Nov18	−0.71 0.2 0.38 last 47 months
Market Prob of −20% or More Decline	**3.69%**	−0.0073%	8.69 3.63 Feb25 Sep14	2.39 3.69 11.76 last 47 months
Volume	**3751**	−4.9%	28912 0	378 3751 41740 last 47 months
Silver (6−Month Expiry)				
Spot	**19.88**	−0.4%	20.58 13.82 Jul13 Jan01	13.82 19.88 35.18 last 47 months
MPD Std Dev	**18.84%**	0.0062%	21.99 17.38 Jul06 Jan01	13.16 18.84 24.59 last 47 months
MPD Skew	**0.21**	−0.046	0.48 −0.4 Jul13 Nov18	−0.63 0.21 0.48 last 47 months
Market Prob of −20% or More Decline	**15.14%**	−0.74%	19.11 11.99 Jul06 Jan01	6.54 15.14 20.85 last 47 months
Volume	**630**	11%	10785 0	37 630 20231 last 47 months
West Texas Intermediate Crude (6−Month Expiry)				
Spot	**47.61**	−2.1%	53.27 32.5 Jun08 Jan21	32.5 47.61 102.41 last 47 months
MPD Std Dev	**28.23%**	1%	39.37 26.01 Feb18 Jun08	10.25 28.23 39.37 last 47 months
MPD Skew	**−0.46**	0.011	−0.24 −0.56 Nov25 Jul13	−0.81 −0.46 −0.1 last 47 months
Market Prob of −20% or More Decline	**23.98%**	0.42%	31.89 21.24 Feb11 Jun29	3.65 23.98 31.89 last 47 months
Volume	**42093**	100%	121098 0	165 42093 132335 last 47 months

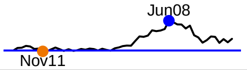
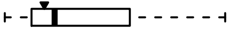
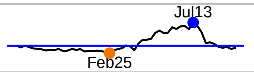
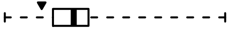
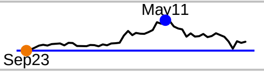
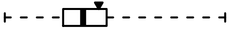
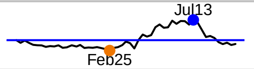
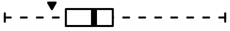
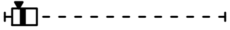
Sources: Chicago Mercantile Exchange, Bloomberg

Agricultural Crop Commodity MPD Statistics as of September 21, 2016

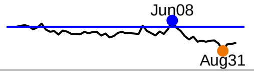
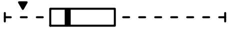
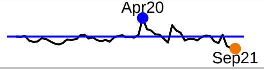
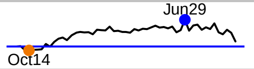
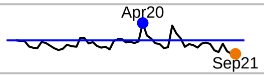
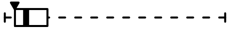
Corn (6−Month Expiry)

Indicator	Latest	2−Week Change	1−Year Trend with min/max points	Long−Term Range with median, IQR, and max/min
Spot	**350.33**	2.1%	 439.62 315.44 Jun15 Aug31	 350.33 315.44 759.25 last 47 months
MPD Std Dev	**13.95%**	−2.1%	 22.76 12.41 Jun15 Dec16	 13.95 12.41 22.76 last 47 months
MPD Skew	**0.22**	−0.036	 0.7 0.05 Apr13 Oct14	 0.22 −0.19 0.7 last 47 months
Market Prob of −20% or More Decline	**7.88%**	−3.7%	 21.96 4.96 Jun15 Dec16	 7.88 4.96 21.96 last 47 months
Volume	**26948**	−1.4%	 315800 0	 26948 5486 377209 last 47 months

Soybeans (6−Month Expiry)

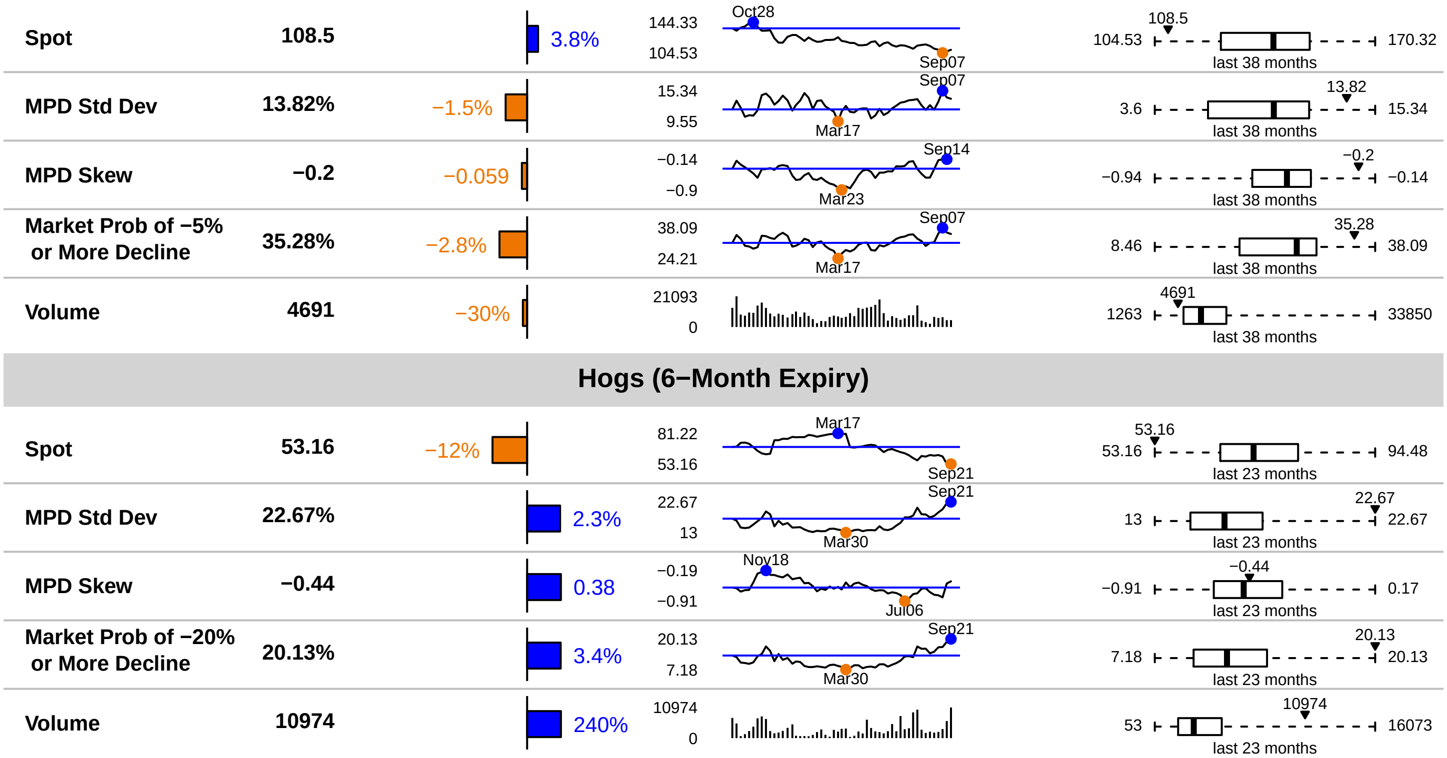
Indicator	Latest	2−Week Change	1−Year Trend with min/max points	Long−Term Range with median, IQR, and max/min
Spot	**984.81**	0.25%	 1159.12 864.89 Jun08 Nov11	 984.81 864.89 1533.5 last 47 months
MPD Std Dev	**12.5%**	−0.48%	 23.86 10.21 Jul13 Feb25	 12.5 10.21 23.86 last 47 months
MPD Skew	**0.09**	−0.019	 0.89 −0.23 May11 Sep23	 0.09 −0.5 0.89 last 47 months
Market Prob of −20% or More Decline	**6.04%**	−0.61%	 17.39 2.96 Jul13 Feb25	 6.04 2.96 17.39 last 47 months
Volume	**15543**	43%	 80482 0	 15543 294 240059 last 47 months

Wheat (6−Month Expiry)

Indicator	Latest	2−Week Change	1−Year Trend with min/max points	Long−Term Range with median, IQR, and max/min
Spot	**429.5**	1.7%	 548.3 388.16 Jun08 Aug31	 429.5 388.16 893 last 47 months
MPD Std Dev	**15.14%**	−0.56%	 21.98 15.14 Apr20 Sep21	 15.14 12.95 22.31 last 47 months
MPD Skew	**0.38**	−0.19	 0.74 0.23 Jun29 Oct14	 0.38 0.01 0.74 last 47 months
Market Prob of −20% or More Decline	**9.66%**	−0.92%	 20.35 9.66 Apr20 Sep21	 9.66 5.67 20.71 last 47 months
Volume	**3951**	27%	 83594 0	 3951 179 83594 last 47 months

Sources: Chicago Mercantile Exchange, Bloomberg

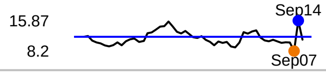
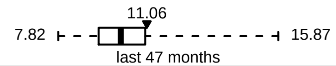
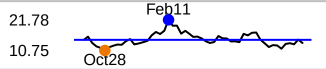
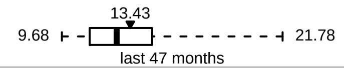
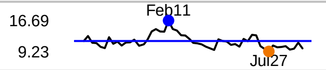
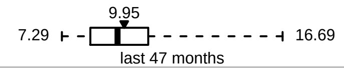
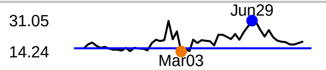
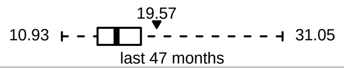
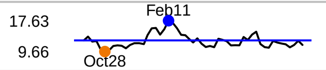
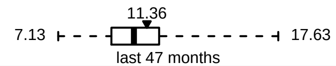
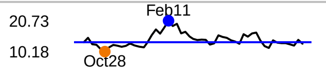
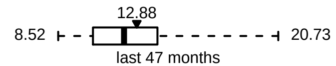
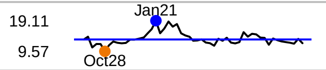
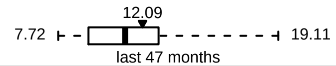
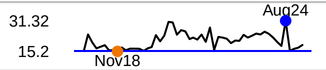
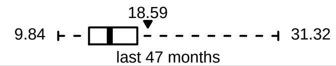
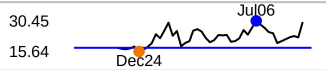
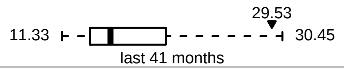
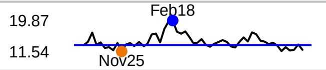
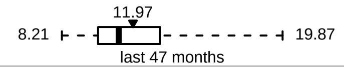
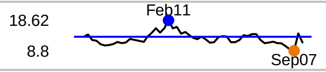
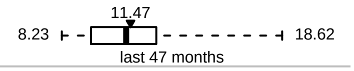
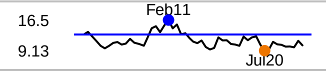
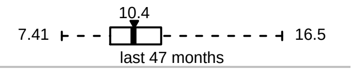
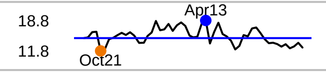
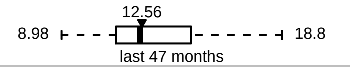
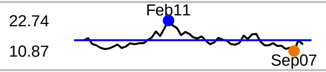
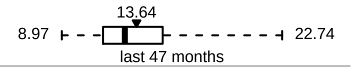
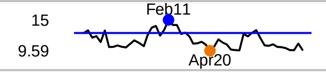
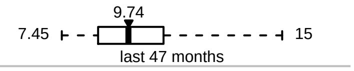
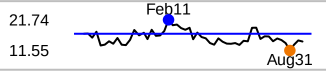
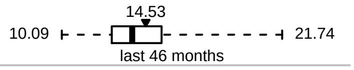
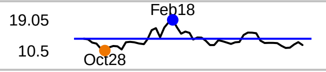
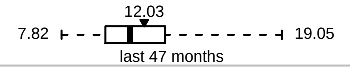
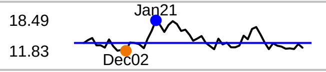
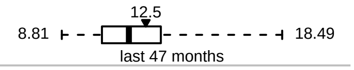
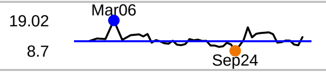
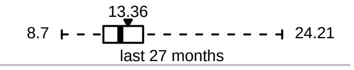
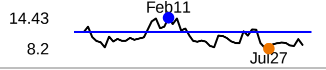
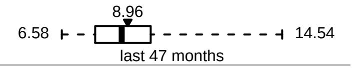
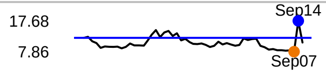
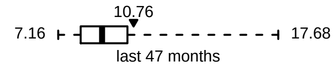
Agricultural Livestock Commodity MPD Statistics as of September 21, 2016



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	**108.5**	3.8%	144.33 104.53 Oct28 Sep07	108.5 104.53 170.32 last 38 months
MPD Std Dev	**13.82%**	−1.5%	15.34 9.55 Sep07 Mar17	13.82 3.6 15.34 last 38 months
MPD Skew	**−0.2**	−0.059	−0.14 −0.9 Sep14 Mar23	−0.2 −0.94 −0.14 last 38 months
Market Prob of −5% or More Decline	**35.28%**	−2.8%	38.09 24.21 Sep07 Mar17	35.28 8.46 38.09 last 38 months
Volume	**4691**	−30%	21093 0	4691 1263 33850 last 38 months
Hogs (6−Month Expiry)				
Spot	**53.16**	−12%	81.22 53.16 Mar17 Sep21	53.16 53.16 94.48 last 23 months
MPD Std Dev	**22.67%**	2.3%	22.67 13 Sep21 Mar30	22.67 13 22.67 last 23 months
MPD Skew	**−0.44**	0.38	−0.19 −0.91 Nov18 Jul06	−0.44 −0.91 0.17 last 23 months
Market Prob of −20% or More Decline	**20.13%**	3.4%	20.13 7.18 Sep21 Mar30	20.13 7.18 20.13 last 23 months
Volume	**10974**	240%	10974 0	10974 53 16073 last 23 months

Sources: Chicago Mercantile Exchange, Bloomberg

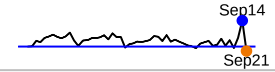
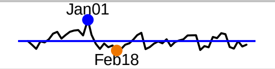
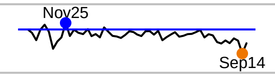
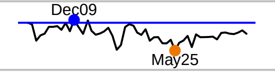
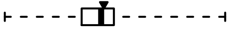
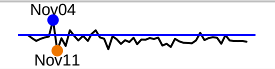
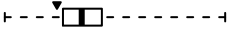
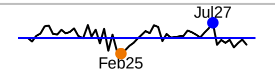
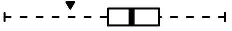
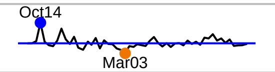
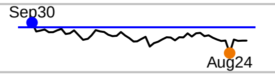
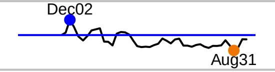
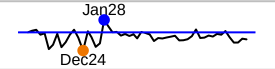
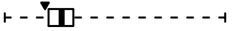
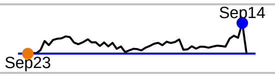
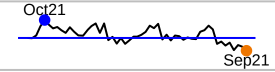
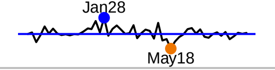
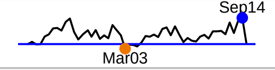
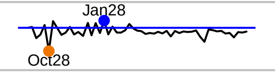
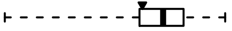
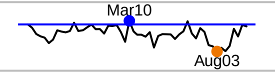
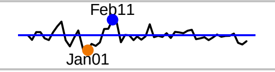
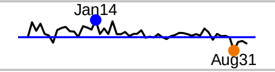
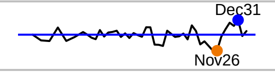
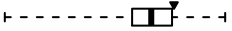
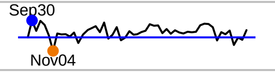
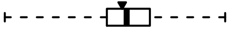
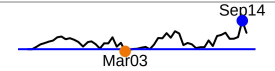
Bank MPD Statistics as of September 21, 2016

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	**11.06%**	2.9%		
Bank of America	**13.43%**	0.45%		
BB&T	**9.95%**	0.062%		
Barclays	**19.57%**	1.6%		
Bank of NY Mellon	**11.36%**	0.016%		
Citigroup	**12.88%**	0.65%		
Capital One	**12.09%**	0.14%		
Credit Suisse	**18.59%**	2.1%		
Deutsche Bank	**29.53%**	6.4%		
Fifth Third	**11.97%**	−0.015%		
Goldman Sachs	**11.47%**	2.7%		
JP Morgan	**10.4%**	0.47%		
Keycorp	**12.56%**	−0.27%		
Morgan Stanley	**13.64%**	2.8%		
PNC Financial	**9.74%**	0.05%		
Regions Financial	**14.53%**	1.1%		
SunTrust	**12.03%**	−0.15%		
State Street	**12.5%**	0.3%		
UBS	**13.36%**			
US Bancorp	**8.96%**	0.21%		
Wells Fargo	**10.76%**	2.9%		

Source: FactSet

Bank MPD Statistics as of September 21, 2016

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	**−0.99**	−0.34	 −0.21 −0.99 Sep14 Sep21	 −0.99 −0.99 −0.21 last 47 months
Bank of America	**−0.68**	−0.092	 −0.05 −0.83 Jan01 Feb18	 −0.68 −0.99 −0.02 last 47 months
BB&T	**−1.33**	−0.11	 −0.5 −1.76 Nov25 Sep14	 −1.33 −1.76 −0.15 last 47 months
Barclays	**−0.51**	−0.091	 0.6 −1.88 Dec09 May25	 −0.51 −2.51 1.94 last 47 months
Bank of NY Mellon	**−0.99**	−0.029	 −0.01 −1.39 Nov04 Nov11	 −0.99 −1.39 0.32 last 47 months
Citigroup	**−0.89**	−0.027	 −0.52 −1.04 Jul27 Feb25	 −0.89 −1.17 −0.23 last 47 months
Capital One	**−0.91**	0.043	 −0.23 −1.2 Oct14 Mar03	 −0.91 −1.2 −0.16 last 47 months
Credit Suisse	**−0.89**	0.04	 1.81 −2.76 Sep30 Aug24	 −0.89 −2.76 1.81 last 47 months
Deutsche Bank	**−0.72**	0.49	 0.41 −1.36 Dec02 Aug31	 −0.72 −1.36 0.41 last 41 months
Fifth Third	**−0.98**	0.2	 0.25 −1.69 Jan28 Dec24	 −0.98 −1.69 2.19 last 47 months
Goldman Sachs	**−0.98**	−0.42	 −0.15 −0.99 Sep14 Sep23	 −0.98 −1.09 −0.15 last 47 months
JP Morgan	**−1.22**	−0.12	 −0.55 −1.22 Oct21 Sep21	 −1.22 −1.22 −0.33 last 47 months
Keycorp	**−0.71**	−0.012	 0.34 −1.79 Jan28 May18	 −0.71 −1.79 0.34 last 47 months
Morgan Stanley	**−0.93**	−0.53	 −0.33 −1.04 Sep14 Mar03	 −0.93 −1.12 −0.25 last 47 months
PNC Financial	**−0.93**	0.026	 −0.42 −1.84 Jan28 Oct28	 −0.93 −1.84 −0.39 last 47 months
Regions Financial	**−0.32**	0.51	 −0.03 −1.6 Mar10 Aug03	 −0.32 −1.94 0.68 last 46 months
SunTrust	**−0.96**	0.056	 −0.21 −1.27 Feb11 Jan01	 −0.96 −1.27 −0.21 last 47 months
State Street	**−1.13**	−0.056	 −0.19 −1.42 Jan14 Aug31	 −1.13 −2.31 −0.13 last 47 months
UBS	**−0.04**		 0.91 −1.72 Dec31 Nov26	 −0.04 −3.36 0.97 last 27 months
US Bancorp	**−0.83**	0.25	 −0.5 −1.55 Sep30 Nov04	 −0.83 −1.55 −0.2 last 47 months
Wells Fargo	**−0.47**	0.14	 −0.06 −1.1 Sep14 Mar03	 −0.47 −1.3 −0.06 last 47 months

Source: FactSet

Bank MPD Statistics as of September 21, 2016

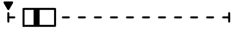
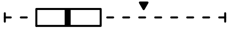
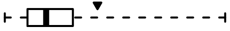
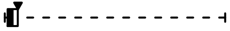
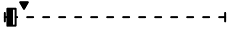
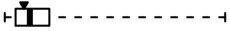
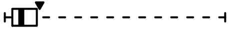
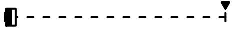
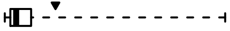
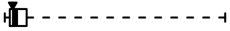
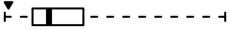
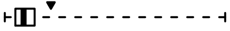
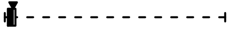
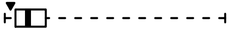
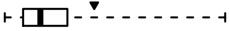
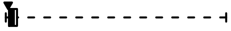
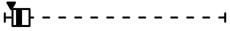
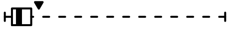
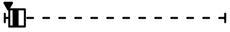
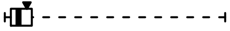
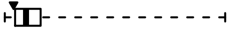
Market Probability of −20% or More Decline (3−Month Expiry)

Indicator	Latest	2−Week Change	1−Year Trend with min/max points	Long−Term Range with median, IQR, and max/min
American Express	**5.39%**	3.5%	10.35 Feb11 1.85 Sep07	1.53 5.39 10.35 last 47 months
Bank of America	**8.01%**	0.31%	17.74 Feb11 4.71 Oct28	3.13 8.01 17.74 last 47 months
BB&T	**3.88%**	−0.18%	12.22 Feb11 3.18 Jul27	1.68 3.88 12.22 last 47 months
Barclays	**14.89%**	1.4%	28.98 Feb11 7.47 Mar03	2.33 14.89 28.98 last 47 months
Bank of NY Mellon	**5.17%**	−0.83%	15.17 Feb11 2.61 Nov04	1.12 5.17 15.17 last 47 months
Citigroup	**7.11%**	0.62%	16.5 Feb11 3.72 Oct28	1.93 7.11 16.5 last 47 months
Capital One	**6.6%**	−0.067%	15.15 Feb11 3.57 Oct28	1.64 6.6 15.15 last 47 months
Credit Suisse	**13.37%**	2%	34.48 Feb11 5.13 Aug24	2.87 13.37 34.48 last 47 months
Deutsche Bank	**23.04%**	6.9%	23.37 Jan21 11.34 Dec24	4.99 23.04 23.37 last 41 months
Fifth Third	**5.82%**	−0.64%	17.06 Feb11 5.41 Aug17	0.99 5.82 17.06 last 47 months
Goldman Sachs	**5.69%**	3.5%	13.1 Feb11 2.2 Sep07	1.79 5.69 13.1 last 47 months
JP Morgan	**4.96%**	0.52%	11.65 Feb11 3.02 Jul20	1.31 4.96 11.65 last 47 months
Keycorp	**6.78%**	−1%	16.35 Feb11 4.53 Oct28	1.92 6.78 16.35 last 47 months
Morgan Stanley	**8.59%**	4.9%	18.01 Feb11 3.71 Sep07	2.57 8.59 18.01 last 47 months
PNC Financial	**3.78%**	−0.17%	10.55 Feb11 3.45 Nov18	1.43 3.78 10.55 last 47 months
Regions Financial	**7.91%**	−0.18%	20.23 Feb11 4.72 Aug31	3.34 7.91 20.23 last 46 months
SunTrust	**6.26%**	−0.41%	15.8 Feb11 4.46 Nov25	1.73 6.26 15.8 last 47 months
State Street	**6.7%**	0.058%	15.74 Jan21 6.03 Jan01	2.26 6.7 15.74 last 47 months
UBS	**7.28%**		18.15 Mar06 1.53 Dec31	1.53 7.28 18.15 last 27 months
US Bancorp	**2.97%**	0.082%	9.69 Feb25 2.13 Jul27	0.74 2.97 9.69 last 47 months
Wells Fargo	**5.19%**	3.6%	9.93 Jan21 1.58 Sep07	1.3 5.19 9.93 last 47 months

Source: FactSet

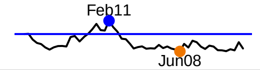
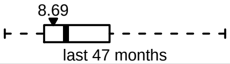
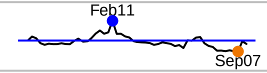
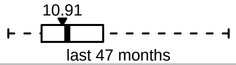
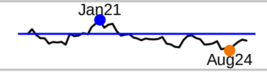
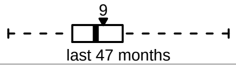
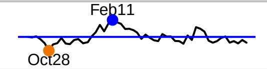
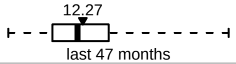
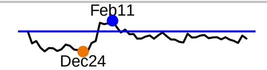
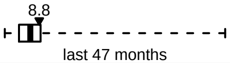
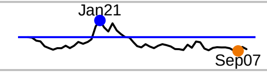
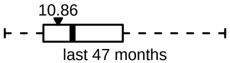
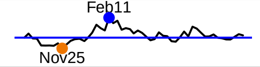
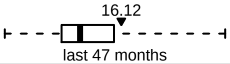
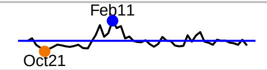
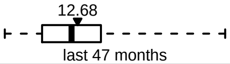
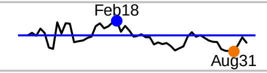
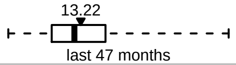
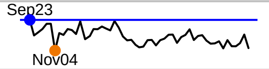
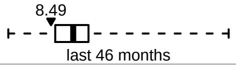
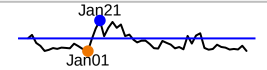
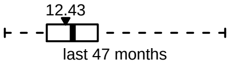
Bank MPD Statistics as of September 21, 2016

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	**532**	−95%	22968  0	532 532  32713 last 47 months
Bank of America	**125859**	330%	187673  0	125859 7419  195347 last 47 months
BB&T	**2803**	400%	5986  0	2803 126  6490 last 47 months
Barclays	**1141**	−73%	18909  0	1141 8  18909 last 47 months
Bank of NY Mellon	**2937**	260%	33235  0	2937 44  33235 last 47 months
Citigroup	**13234**	10%	90561  0	13234 1104  140439 last 47 months
Capital One	**2693**	−34%	9096  0	2693 136  16299 last 47 months
Credit Suisse	**31577**	1500%	31577  0	31577 0  31577 last 47 months
Deutsche Bank	**10946**	410%	47326  0	10946 76  47326 last 41 months
Fifth Third	**715**	280%	6123  0	715 28  19127 last 47 months
Goldman Sachs	**1078**	−93%	28155  0	1078 612  28155 last 47 months
JP Morgan	**28410**	310%	55464  0	28410 943  132116 last 47 months
Keycorp	**1075**	46%	5129  0	1075 44  27404 last 47 months
Morgan Stanley	**2147**	−91%	36166  0	2147 327  69872 last 47 months
PNC Financial	**2102**	57%	4932  0	2102 42  5118 last 47 months
Regions Financial	**540**	−88%	4754  0	540 20  47940 last 46 months
SunTrust	**459**	−13%	5155  0	459 61  13788 last 47 months
State Street	**840**	290%	2700  0	840 19  5339 last 47 months
UBS	**124**		2034  0	124 23  6502 last 27 months
US Bancorp	**2971**	270%	9418  0	2971 52  29142 last 47 months
Wells Fargo	**5741**	−85%	80746  0	5741 950  121351 last 47 months

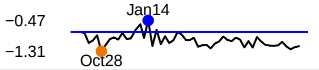
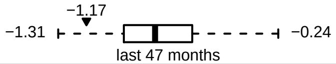
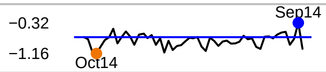
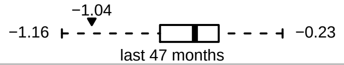
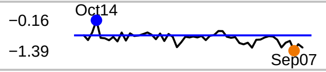
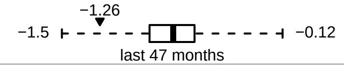
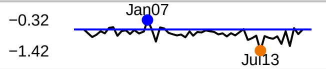
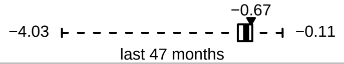
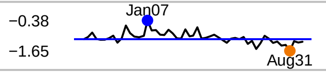
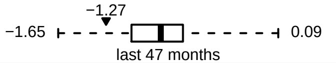
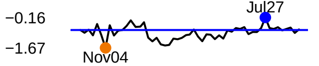
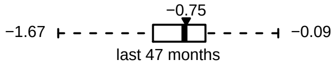
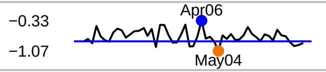
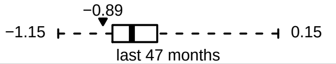
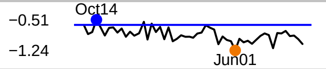
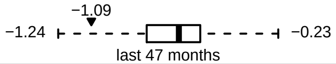
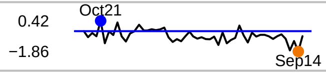
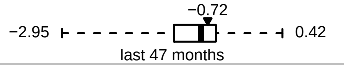
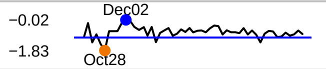
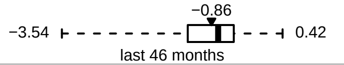
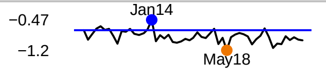
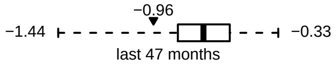
Source: FactSet

Insurance Company MPD Statistics as of September 21, 2016

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	**8.69%**	0.33%	13.6 8.18  Feb11 Jun08	7.11  8.69 14.27 last 47 months
AIG	**10.91%**	2.6%	18.95 8.3  Feb11 Sep07	8.3  10.91 18.95 last 47 months
Allstate	**9%**	0.27%	13.18 7  Jan21 Aug24	5.83  9 13.18 last 47 months
Ameriprise	**12.27%**	0.21%	18.71 10.02  Feb11 Oct28	8.98  12.27 18.71 last 47 months
Chubb	**8.8%**	0.9%	12.49 6.13  Feb11 Dec24	5.96  8.8 24.08 last 47 months
Hartford Financial	**10.86%**	0.47%	18.69 10.39  Jan21 Sep07	8.35  10.86 18.69 last 47 months
Lincoln National	**16.12%**	0.52%	22.48 11.47  Feb11 Nov25	8.98  16.12 22.48 last 47 months
Met Life	**12.68%**	−0.017%	19.33 10.88  Feb11 Oct21	9.4  12.68 19.33 last 47 months
Principal Financial	**13.22%**	0.57%	18.94 10.92  Feb18 Aug31	8.02  13.22 23.83 last 47 months
Progressive	**8.49%**	−0.88%	13.49 8.06  Sep23 Nov04	5.79  8.49 19.73 last 46 months
Prudential	**12.43%**	−0.29%	18.54 12.39  Jan21 Jan01	10.09  12.43 18.54 last 47 months

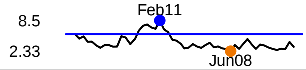
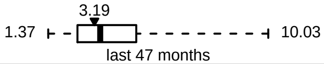
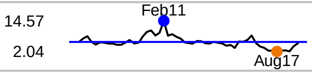
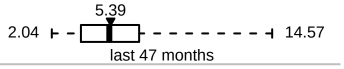
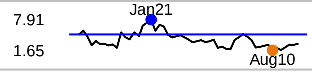
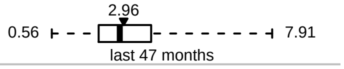
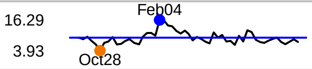
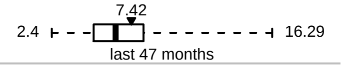
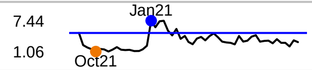
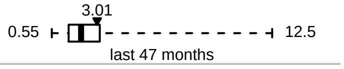
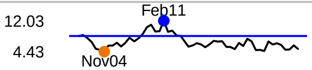
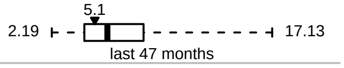
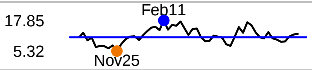
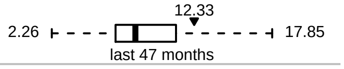
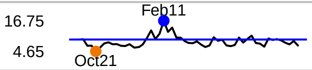
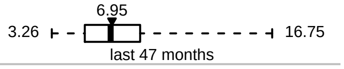
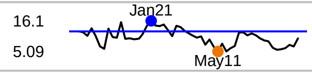
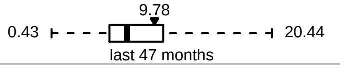
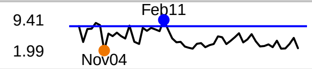
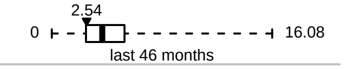
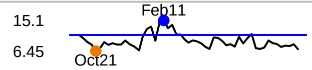
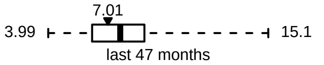
Source: FactSet

Insurance Company MPD Statistics as of September 21, 2016

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	**−1.17**	0.083		
AIG	**−1.04**	−0.27		
Allstate	**−1.26**	0.13		
Ameriprise	**−0.67**	−0.061		
Chubb	**−1.27**	−0.023		
Hartford Financial	**−0.75**	−0.091		
Lincoln National	**−0.89**	0.067		
Met Life	**−1.09**	−0.2		
Principal Financial	**−0.72**	0.36		
Progressive	**−0.86**	0.022		
Prudential	**−0.96**	−0.073		

Source: FactSet

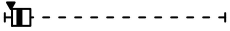
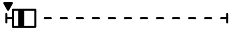
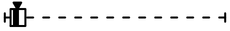
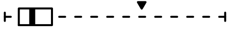
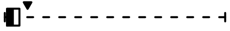
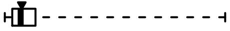
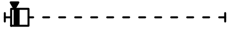
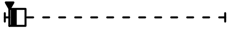
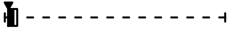
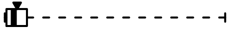
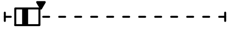
Insurance Company MPD Statistics as of September 21, 2016

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	**3.19%**	0.43%		
AIG	**5.39%**	3.3%		
Allstate	**2.96%**	0.15%		
Ameriprise	**7.42%**	−0.074%		
Chubb	**3.01%**	0.89%		
Hartford Financial	**5.1%**	0.16%		
Lincoln National	**12.33%**	1.1%		
Met Life	**6.95%**	−0.47%		
Principal Financial	**9.78%**	2.3%		
Progressive	**2.54%**	−1%		
Prudential	**7.01%**	−0.86%		

Source: FactSet

Insurance Company MPD Statistics as of September 21, 2016

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
Aflac	**705**	7.3%	11177 0 	705 88  22718 last 47 months
AIG	**947**	−92%	44233 0 	947 110  103998 last 47 months
Allstate	**666**	130%	2467 0 	666 63  10621 last 47 months
Ameriprise	**694**	84%	1035 0 	694 5  1114 last 47 months
Chubb	**936**	26%	6138 0 	936 3  9027 last 47 months
Hartford Financial	**1166**	160%	2769 0 	1166 16  14934 last 47 months
Lincoln National	**419**	16%	4145 0 	419 51  8403 last 47 months
Met Life	**1928**	−26%	22250 0 	1928 319  74100 last 47 months
Principal Financial	**52**	−37%	610 0 	52 2  2956 last 47 months
Progressive	**191**	37%	1798 0 	191 0  3415 last 46 months
Prudential	**3004**	390%	14512 0 	3004 222  17185 last 47 months

Source: FactSet