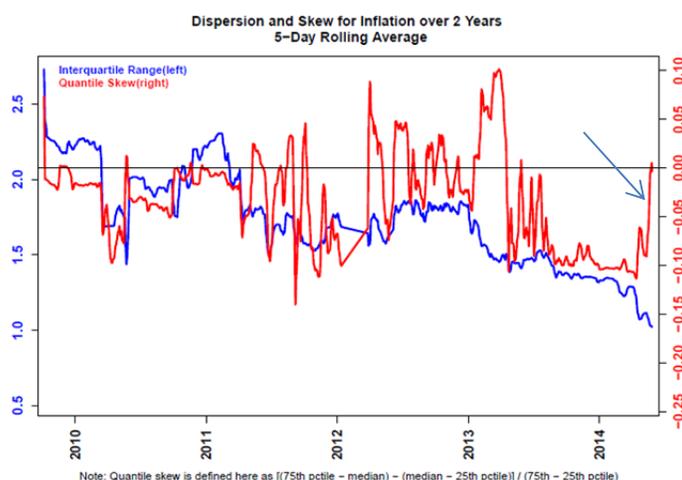FEDERAL RESERVE BANK OF MINNEAPOLIS
BANKING AND POLICY STUDIES

Minneapolis Options Report – May 29th

Inflation
RNPD skew derived from inflation caps and floors moved higher (became less negative) over the past two weeks (note the 1 and 2 year quantile skews in the inflation reports). This indicates markets are assigning less probability to lower inflation rates.

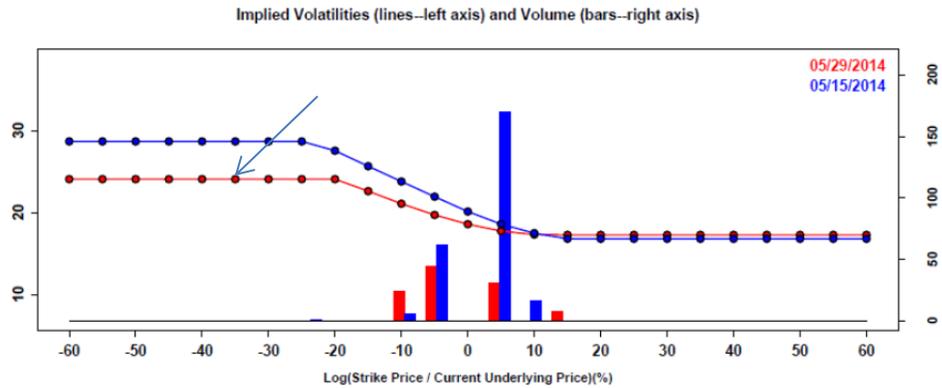MARKET PROBABILITY DENSITY FUNCTIONS -- Inflation Rate Caps & Floors

Dispersion and Skew for Inflation over 2 Years
5-Day Rolling Average

Note: Quantile skew is defined here as [(75th pctile – median) – (median – 25th pctile)] / (75th – 25th pctile)

Banks & Insurance Companies
The average CCAR 17 bank outperformed the S&P 500 by 25 basis points over the past two weeks while the average insurance company in our 11 company universe underperformed by -93 basis points. Average RNPD standard deviations fell for both groups suggesting a decline in expected tail risks for bank and insurance company share prices by market participants. Options trading volumes were about average relative to the past 20 measurement periods.

- RNPD skews generally rose in both insurance and bank universes. For many of the companies we noted a greater decline in implied volatilities for negative price changes than for positive price changes. This means that investors are less willing to pay for downside price protection and reflects decreased expectations for downside price moves. The volatility smile for ST is a good example.

Options Data: Suntrust

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

Log(Strike Price / Current Underlying Price)(%)

- We continued to note out of the money trading for options on WFC stock below the current spot price indicating investor demand for downside protection. The stock underperformed the CCAR group by -30 basis points over the past two weeks. (*See WFC report*)

- Trading in options on MS shares jumped substantially relative to two weeks ago. The MS share price rose 4.6% and its RNPD standard deviation fell more than -130 basis points. This indicates less risk of large price moves for the company's stock. (*See MS report*)

- PRU had the second best performing share price of the insurance group and relatively strong options trading. Different from the other companies in the sample, the RNPD skew calculated from options on PRU shares became more negative indicating increased market expectations for downside price changes. (*See PRU report*)

Other Commodity Markets
The S&P 500 rose 260 basis points over the last two weeks and the standard deviation of the RNPD derived from options on the index fell about 60 basis points indicating decreased tail risk in the stock market. Trading in options on the index rose about 25% from two weeks ago and was about at its long-term average.

Trading for options on other commodities was mixed. There was strong options trading in the grain and oil markets. Trading was also strong for options on 10 year treasury futures and the DJ Real Estate ETF. The direction of tail risk, as measured by RNPD standard deviations tended to be down.

- Grain prices sold off again over the past two weeks. Corn and wheat spot prices are now down -7.9% and -7.3% respectively over the past month. RNPD standard deviations also fell considerably for corn (-2.0%) and wheat (-2.3%) suggesting less uncertainty in near term price changes. (*See corn and wheat reports*)

- Spot prices in the oil markets were mixed with WTI rising about 1% and Brent falling -80 basis points. RNPD standard deviations derived from options on futures prices fell for

both types of crude. Risk neutral probabilities of large price changes have been declining since 2011. (*See WT and Brent reports*)

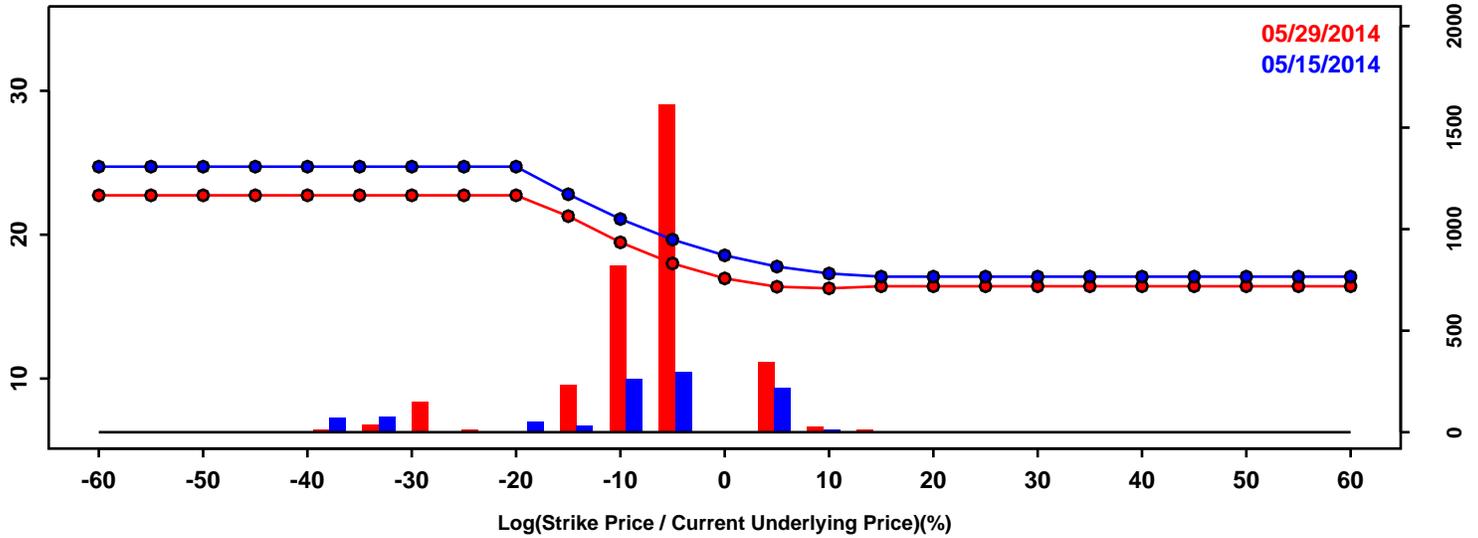**Options Data: WTI Crude Oil**
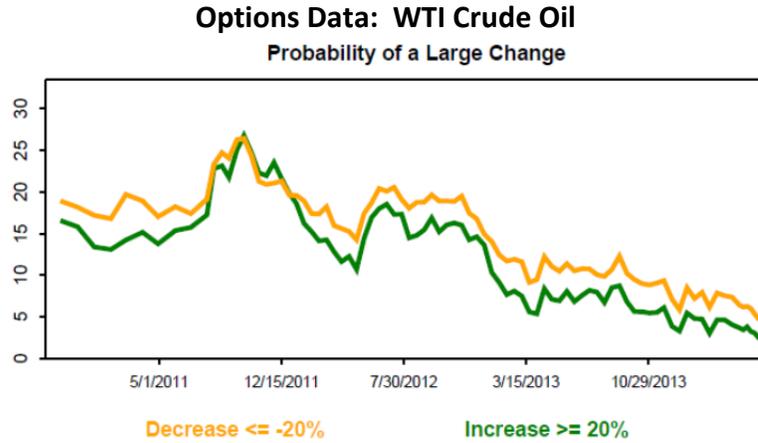
- The standard deviation derived from options on the DJ real estate ETF fell approximately -30 basis points over the past two weeks indicating declining tail risks. The RNPD remains strongly skewed to the downside indicating that market participants continue to demand insurance for downside price moves. At the same time, the spot price continues to rally and is up 13% since December 26. (*See Real Estate Report*)
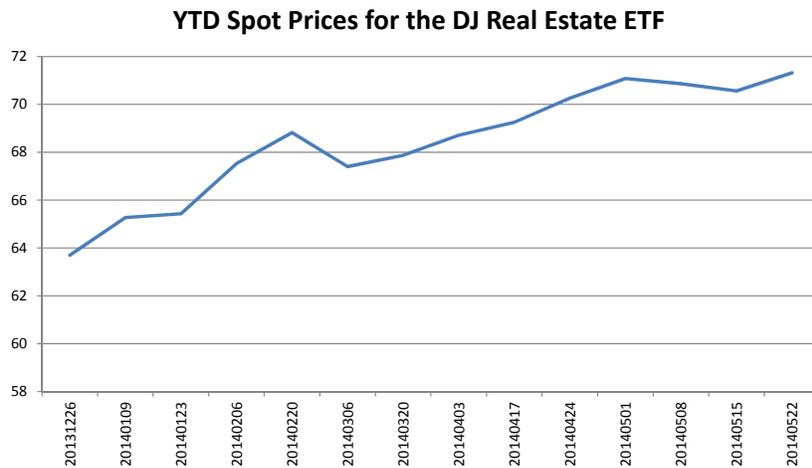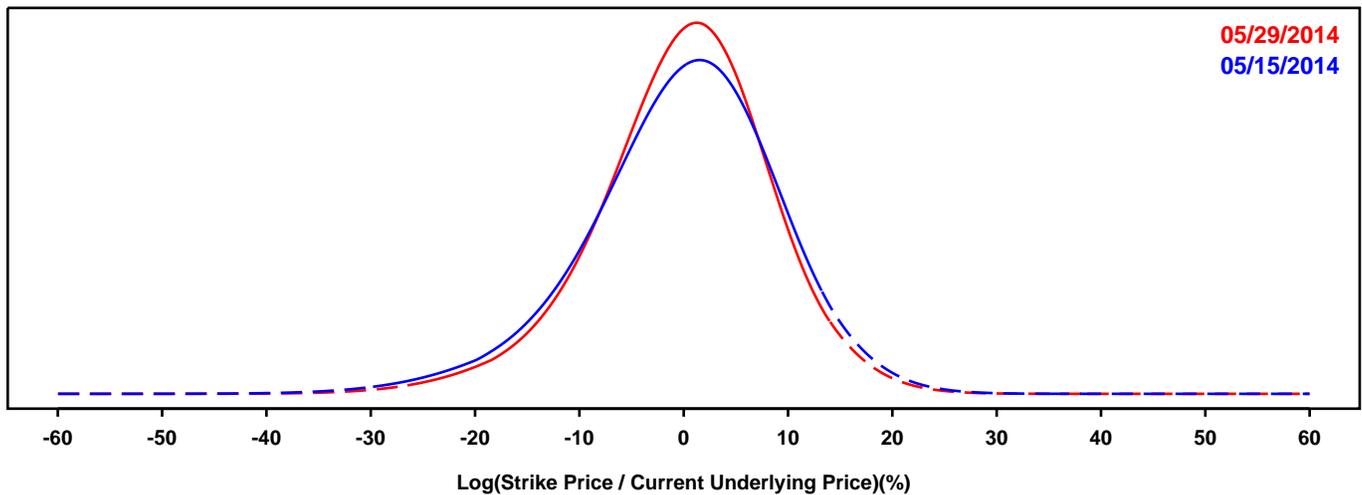
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- AMERICAN EXPRESS

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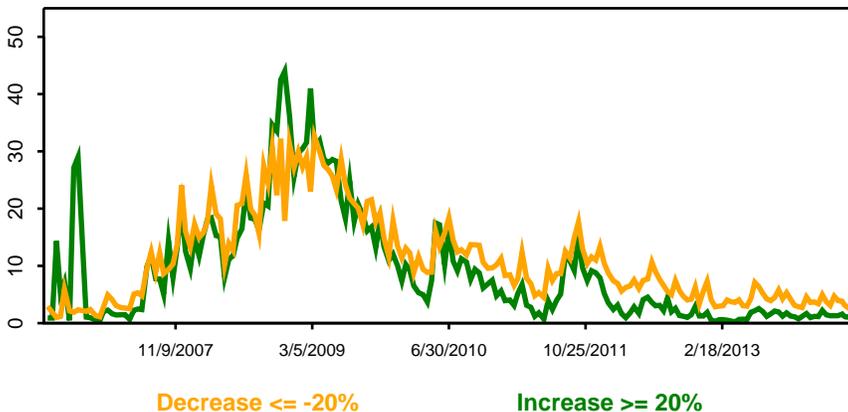derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%　　　　**Increase >= 20%**

Statistics of the Log Return Distributions

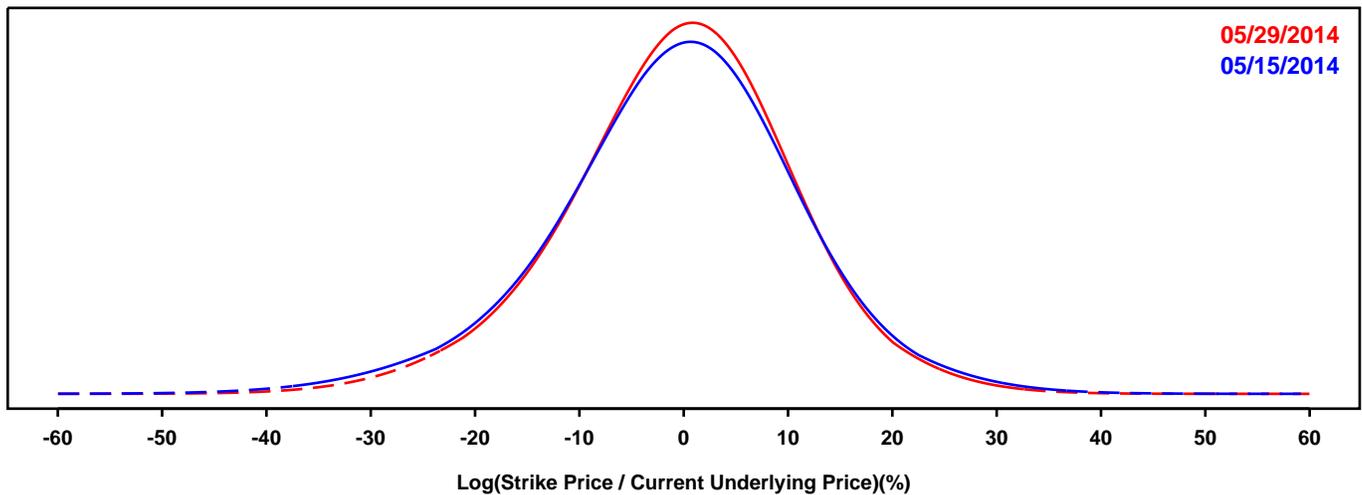|	05/15/2014	05/29/2014	Change
10th Pct	-12.11%	-10.81%	1.30%
50th Pct	0.48%	0.42%	-0.06%
90th Pct	10.99%	10.11%	-0.87%
Mean	-0.12%	-0.03%	0.09%
Std Dev	9.32%	8.50%	-0.83%
Skew	-0.45%	-0.40	0.05
Kurtosis	0.69	0.75	0.06

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- BANK OF AMERICA

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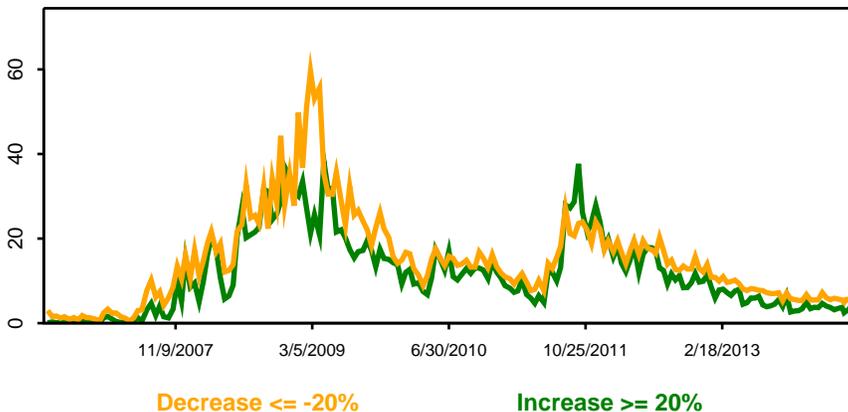*derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
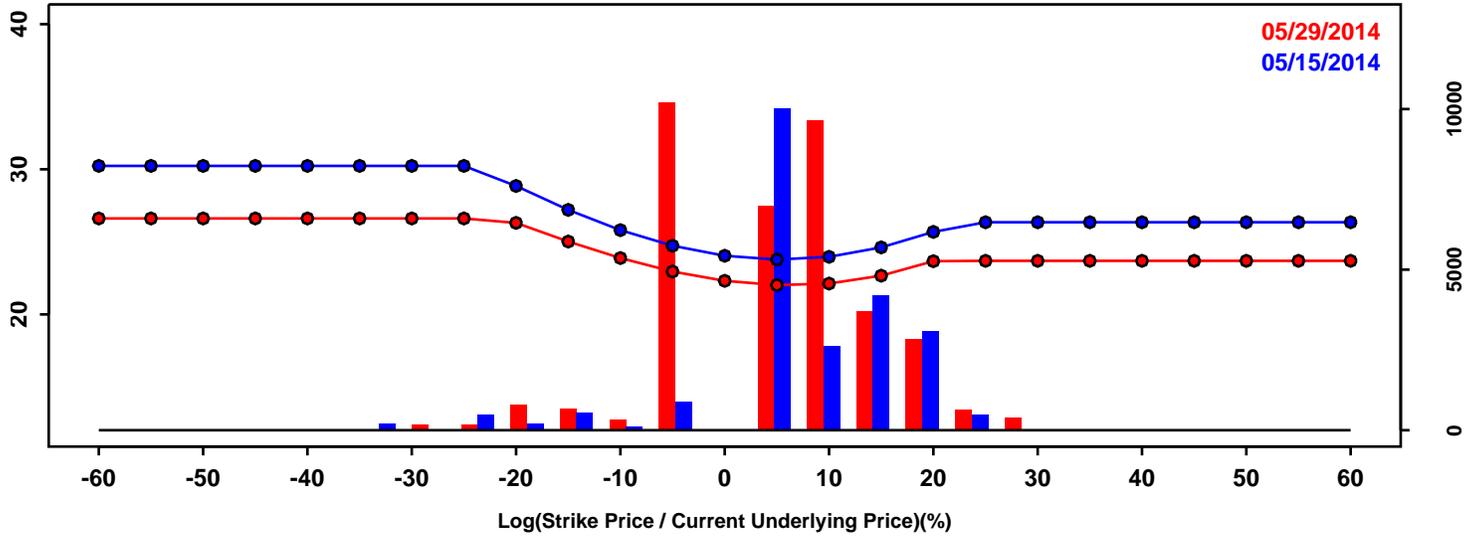
Statistics of the Log Return Distributions

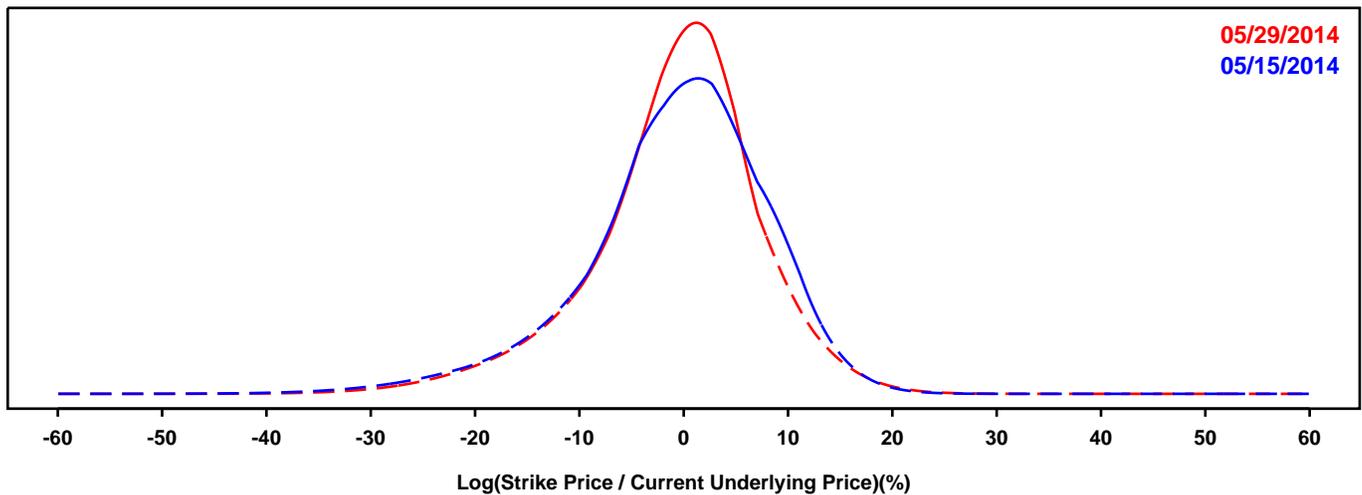|	05/15/2014	05/29/2014	Change
10th Pct	-15.78%	-14.63%	1.15%
50th Pct	-0.13%	0.05%	0.18%
90th Pct	13.81%	13.15%	-0.67%
Mean	-0.60%	-0.35%	0.25%
Std Dev	12.03%	11.16%	-0.87%
Skew	-0.25%	-0.22	0.04
Kurtosis	0.72	0.52	-0.21

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- BB&T

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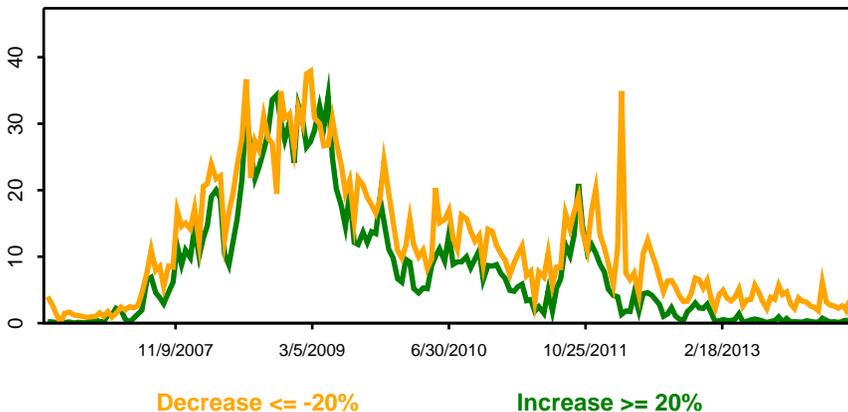*derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   Increase >= 20%
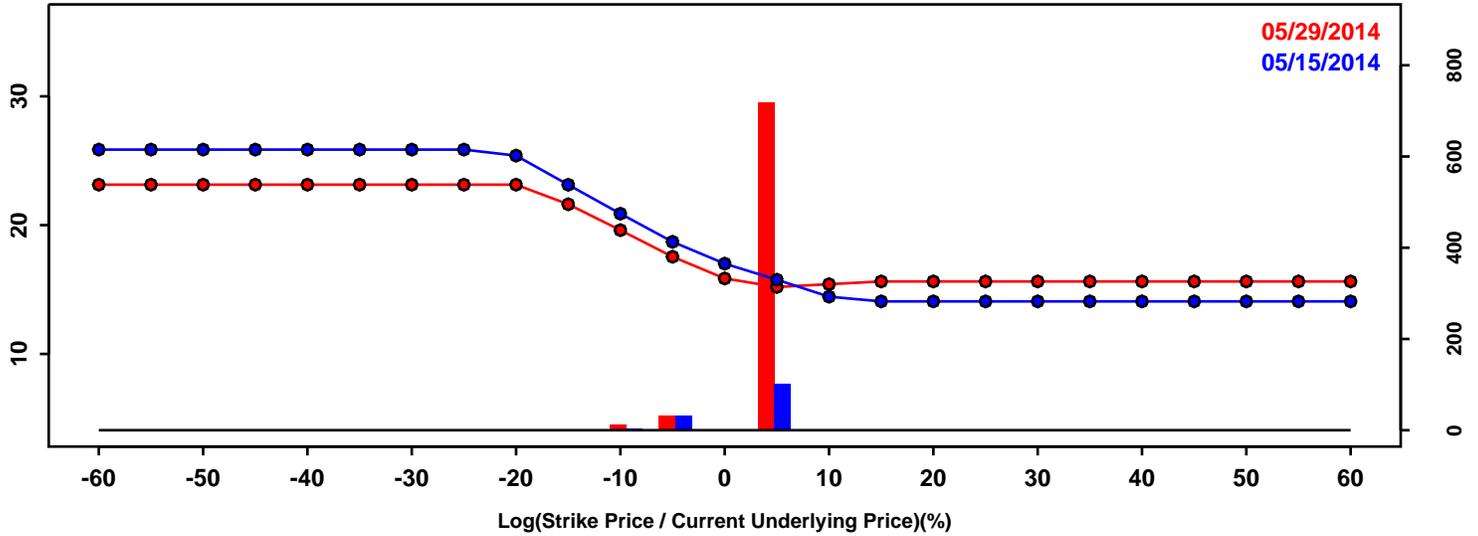
Statistics of the Log Return Distributions

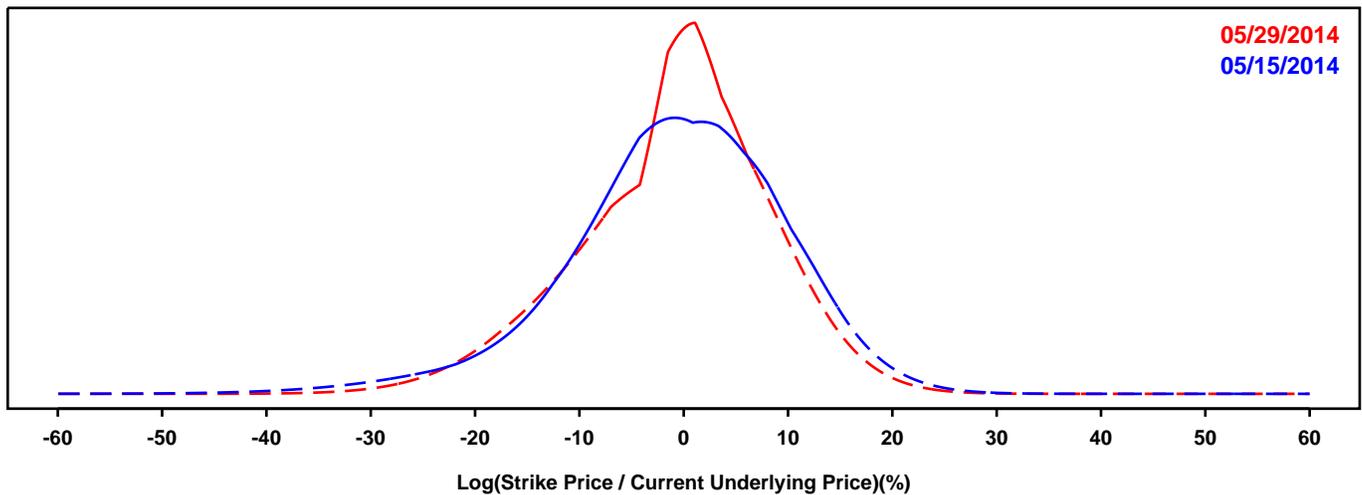|	05/15/2014	05/29/2014	Change
10th Pct	-12.18%	-11.41%	0.78%
50th Pct	0.15%	0.00%	-0.15%
90th Pct	9.61%	8.56%	-1.05%
Mean	-0.73%	-0.79%	-0.06%
Std Dev	8.90%	8.23%	-0.67%
Skew	-0.77%	-0.65%	0.12
Kurtosis	1.29	1.30	0.01

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- BANK OF NEW YORK MELLON

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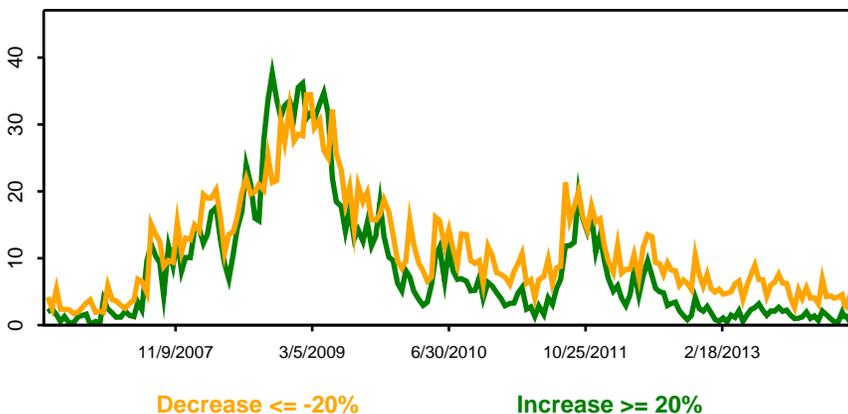*derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
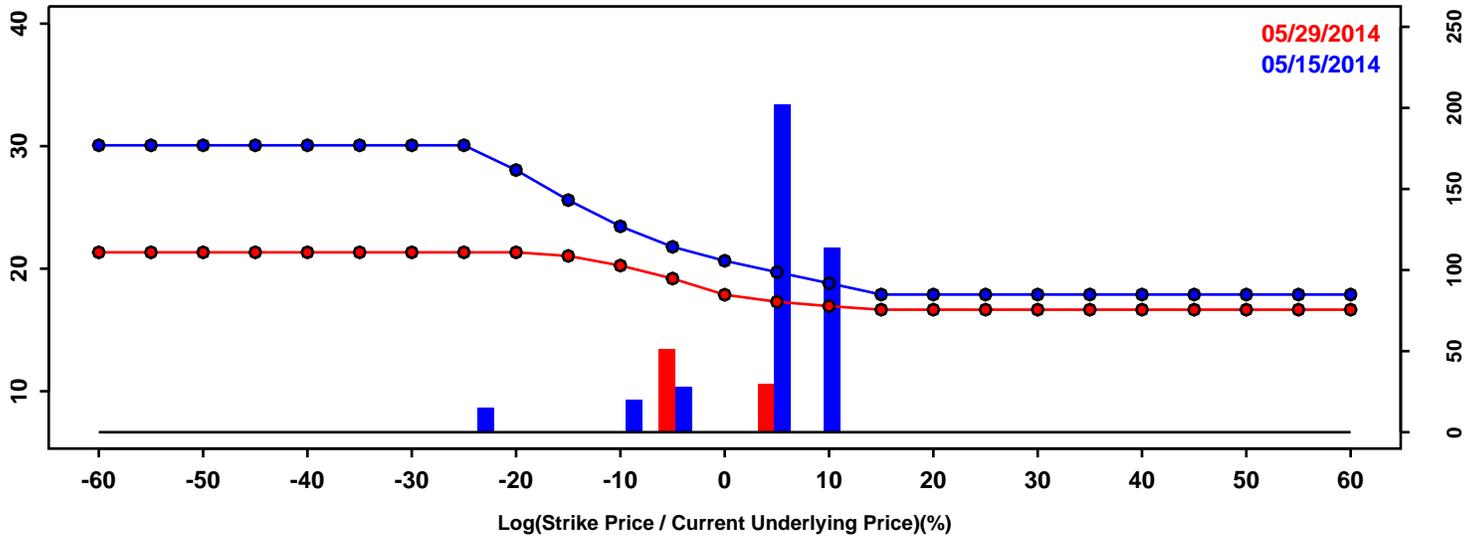
Statistics of the Log Return Distributions

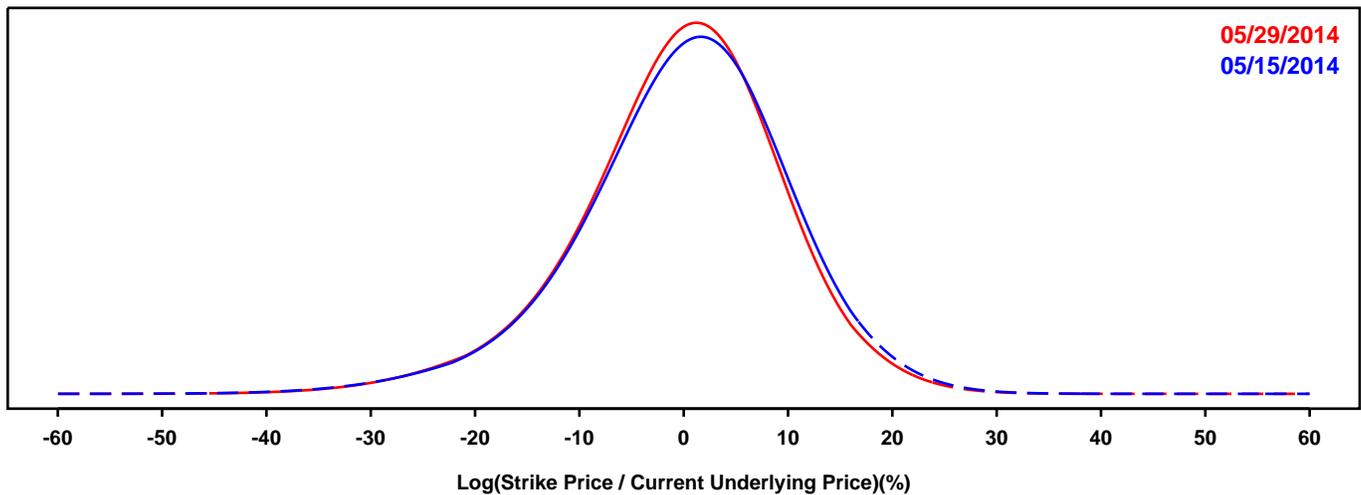|	05/15/2014	05/29/2014	Change
10th Pct	-13.78%	-13.35%	0.43%
50th Pct	-0.11%	0.00%	0.11%
90th Pct	11.85%	10.34%	-1.51%
Mean	-0.72%	-0.80%	-0.08%
Std Dev	10.48%	9.25%	-1.23%
Skew	-0.57	-0.40	0.17
Kurtosis	1.00	0.35	-0.65

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CITIGROUP

Log returns are based on the risk neutral density function of the underlying asset derived from options that expire in approximately 3 months.
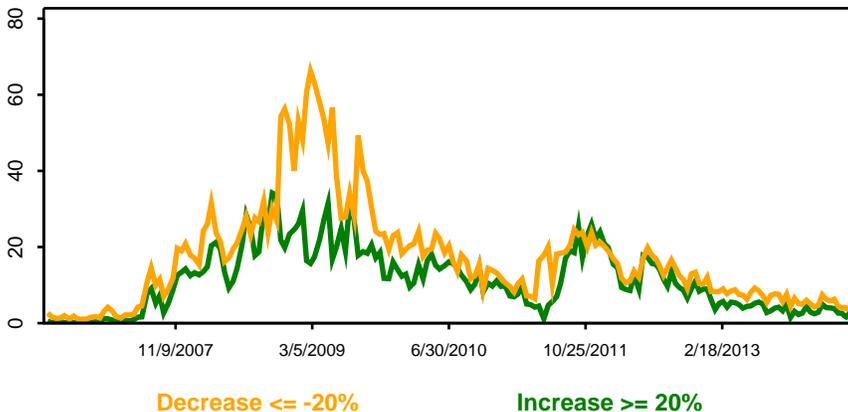
Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   Increase >= 20%
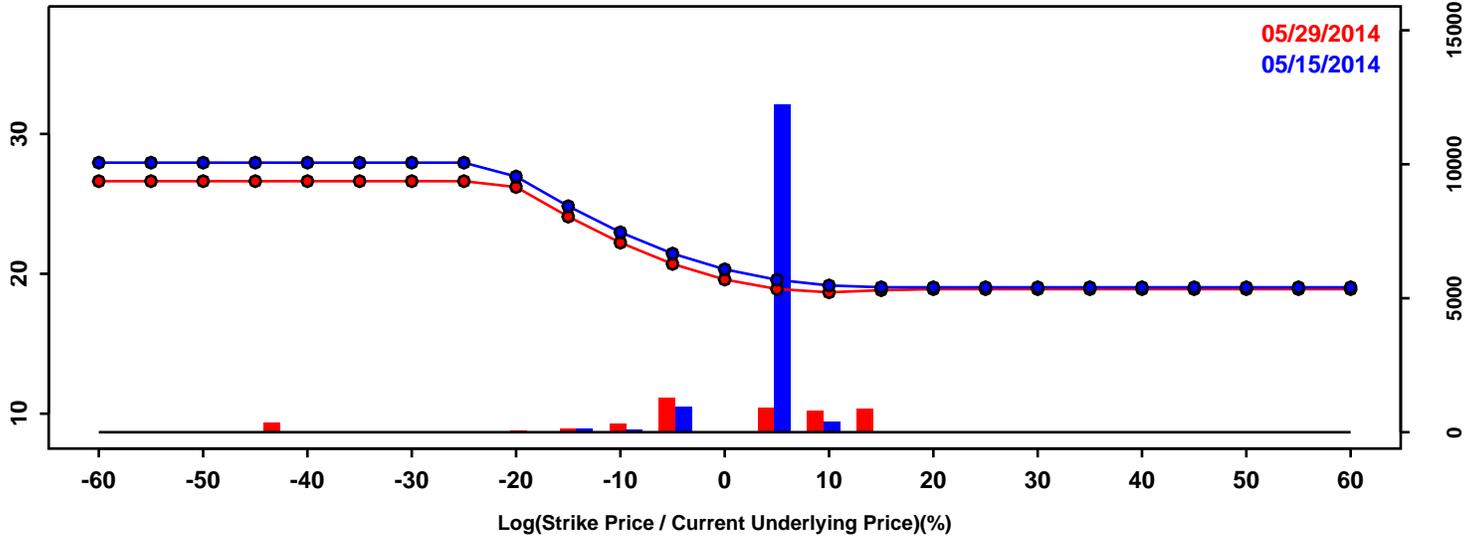
Statistics of the Log Return Distributions

	05/15/2014	05/29/2014	Change
10th Pct	-12.82%	-12.93%	-0.11%
50th Pct	0.69%	0.28%	-0.41%
90th Pct	12.19%	11.38%	-0.81%
Mean	0.08%	-0.35%	-0.43%
Std Dev	10.18%	9.89%	-0.28%
Skew	-0.46	-0.46	0.00
Kurtosis	0.83	0.84	0.00

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CAPITAL ONE

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

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

Risk Neutral PDF of the Log Return Distribution
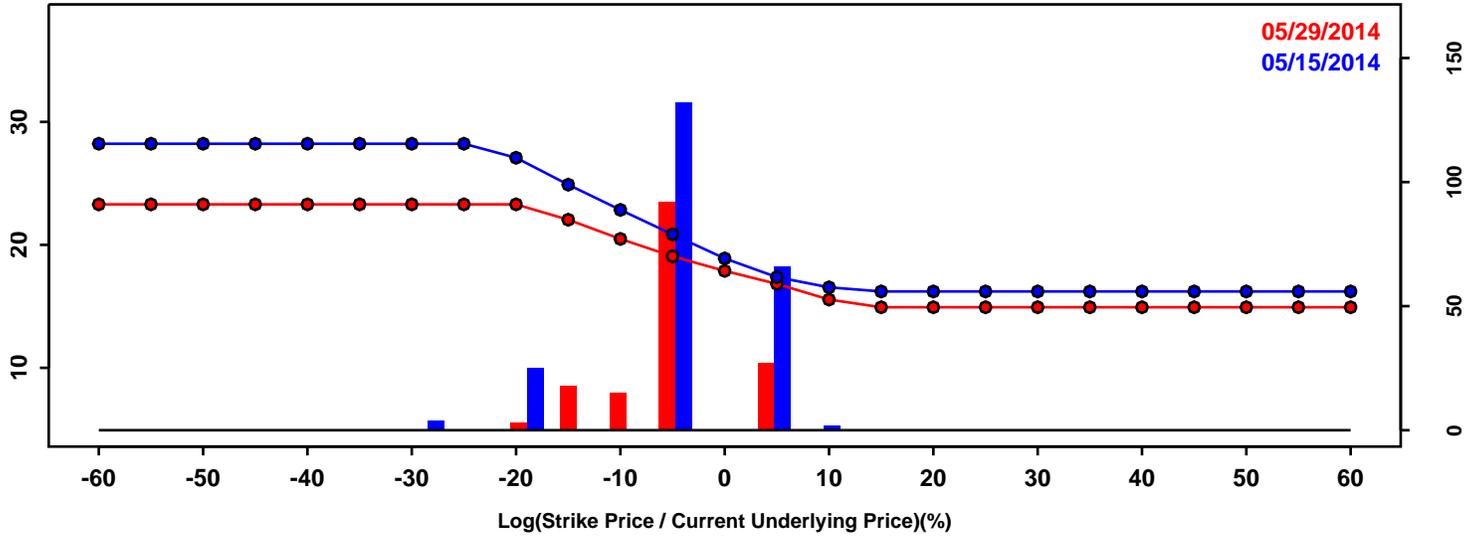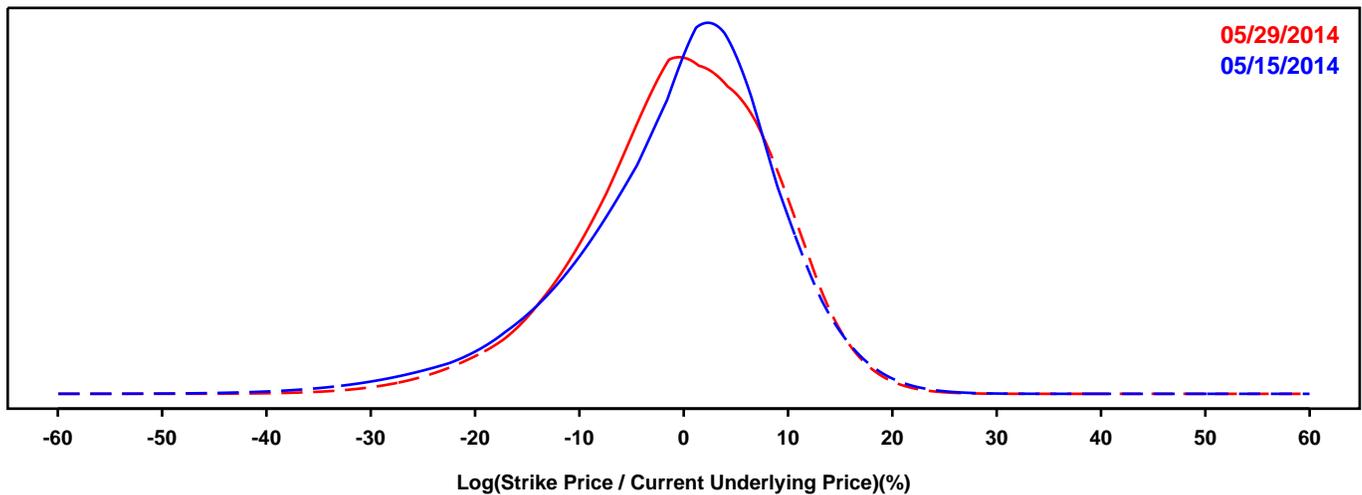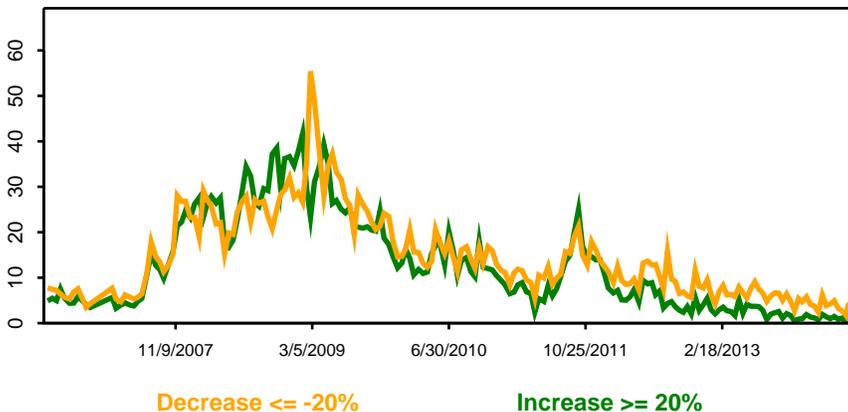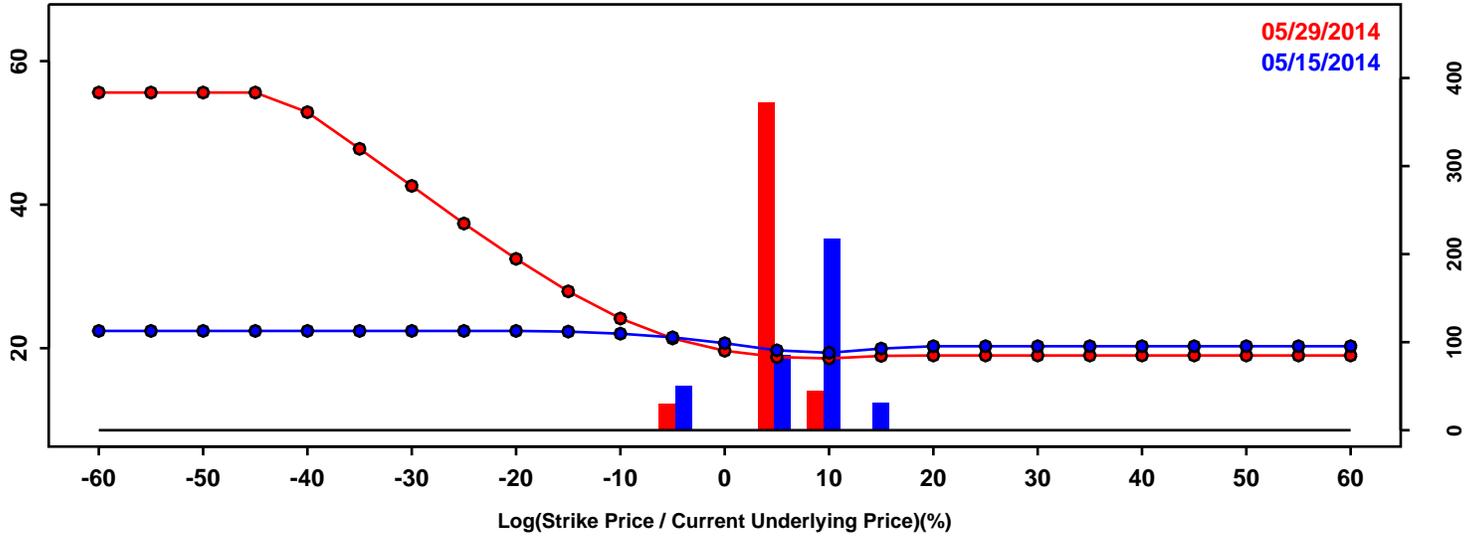

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**

Statistics of the Log Return Distributions

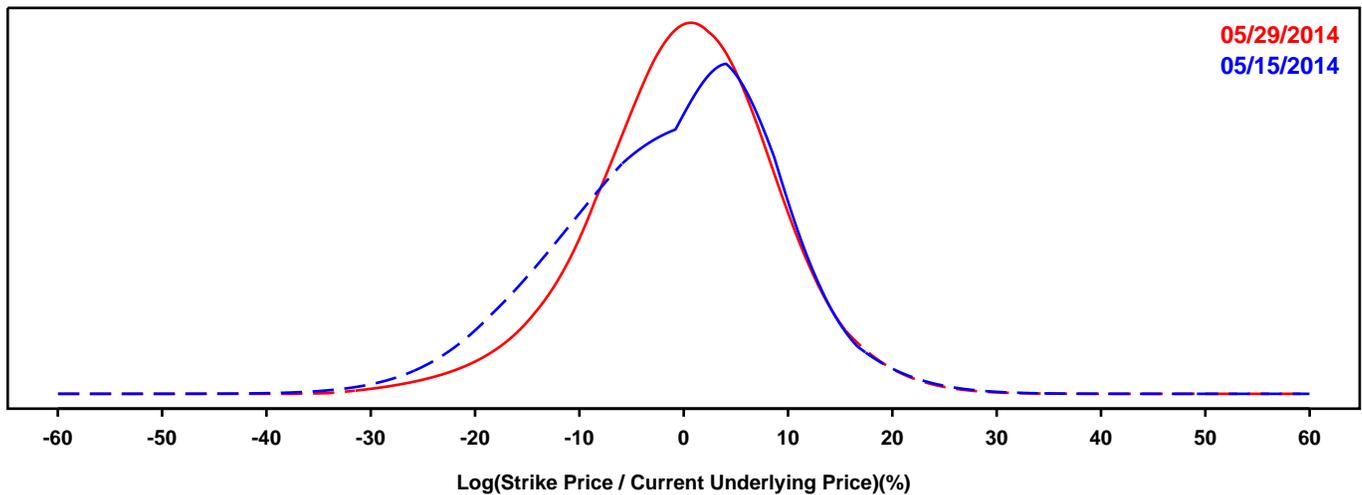|	05/15/2014	05/29/2014	Change
10th Pct	-13.64%	-12.42%	1.22%
50th Pct	0.68%	0.16%	-0.52%
90th Pct	10.32%	10.45%	0.13%
Mean	-0.68%	-0.47%	0.21%
Std Dev	9.81%	9.11%	-0.70%
Skew	-0.79%	-0.52	0.27
Kurtosis	1.24	0.53	-0.71

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- FIFTH THIRD

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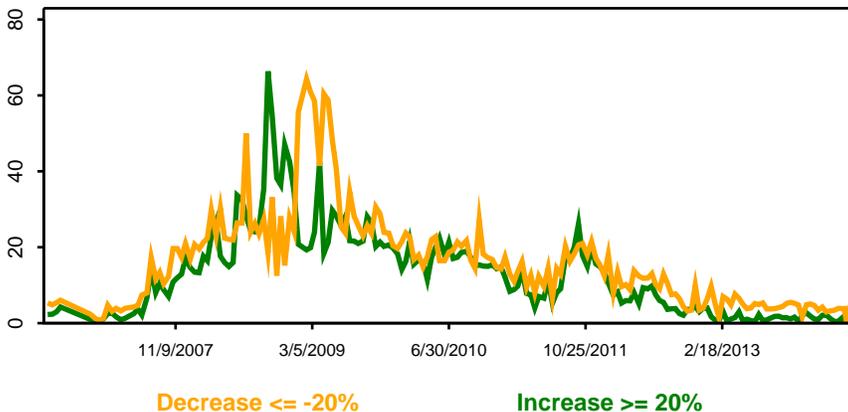derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**

Statistics of the Log Return Distributions

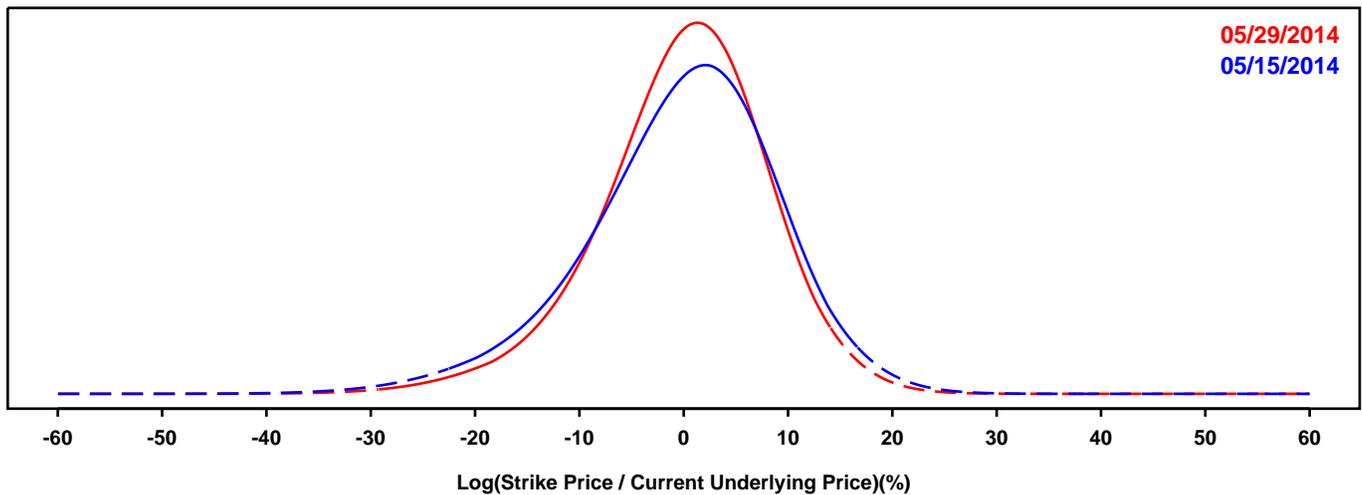|	05/15/2014	05/29/2014	Change
10th Pct	-15.16%	-11.36%	3.80%
50th Pct	-0.09%	0.34%	0.43%
90th Pct	10.94%	10.85%	-0.09%
Mean	-1.13%	0.02%	1.15%
Std Dev	10.33%	8.96%	-1.37%
Skew	-0.31	-0.22	0.09
Kurtosis	0.09	0.49	0.40

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- GOLDMAN SACHS

Log returns are based on the risk neutral density function of the underlying asset derived from options that expire in approximately 3 months.
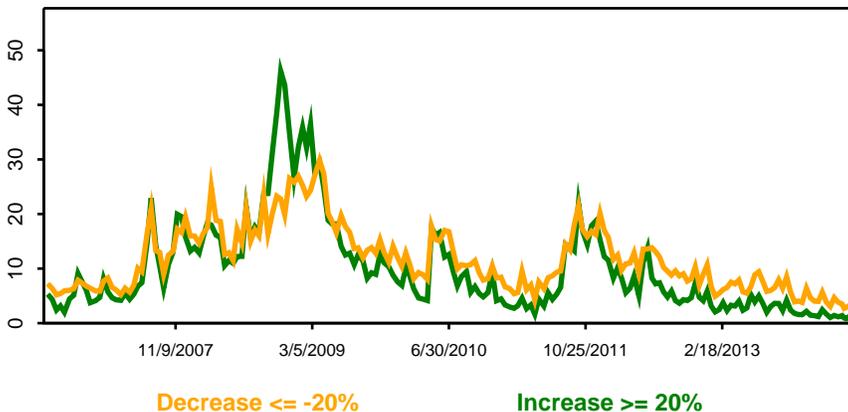
Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
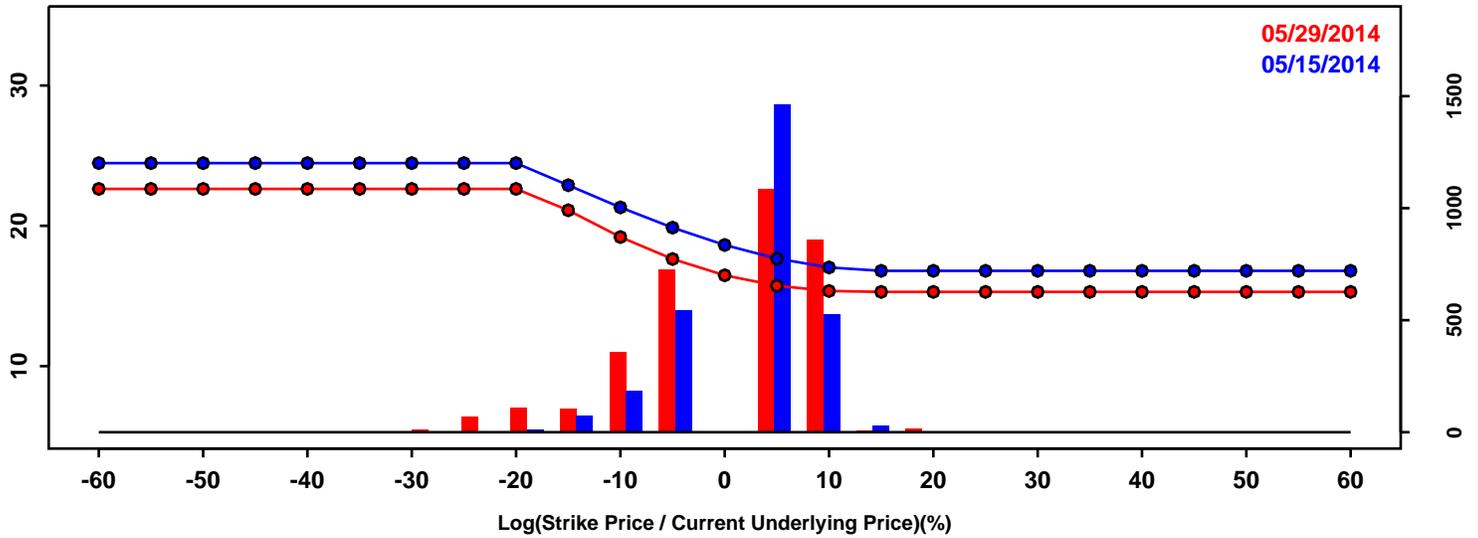
Statistics of the Log Return Distributions

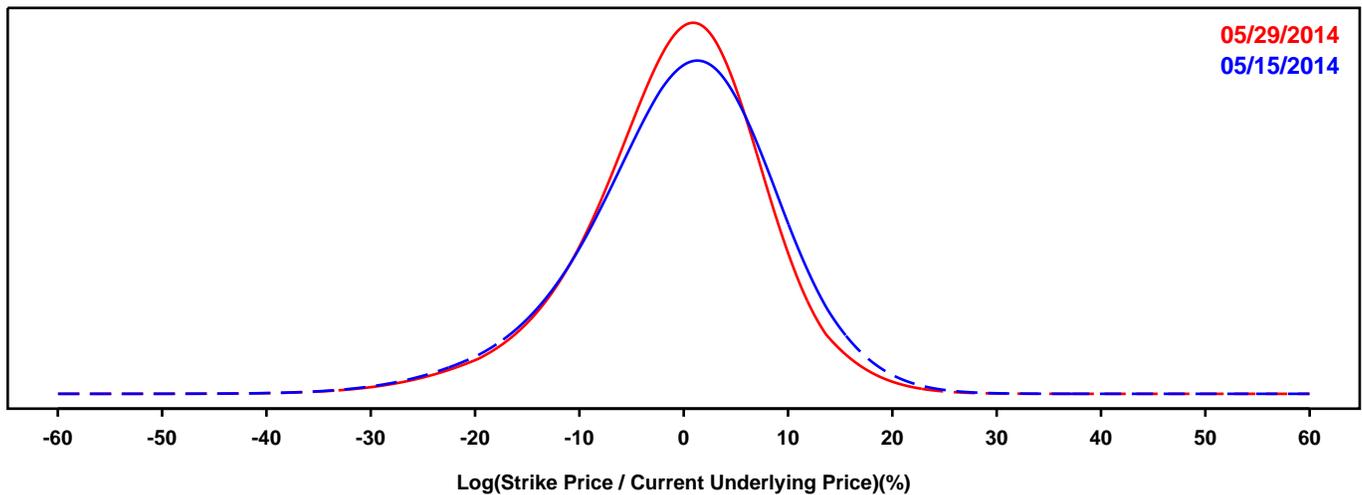|	05/15/2014	05/29/2014	Change
10th Pct	-12.40%	-10.61%	1.79%
50th Pct	0.64%	0.48%	-0.16%
90th Pct	10.89%	9.78%	-1.11%
Mean	-0.15%	-0.04%	0.11%
Std Dev	9.38%	8.28%	-1.09%
Skew	-0.50	-0.47	0.03
Kurtosis	0.67	0.79	0.12

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- JP MORGAN

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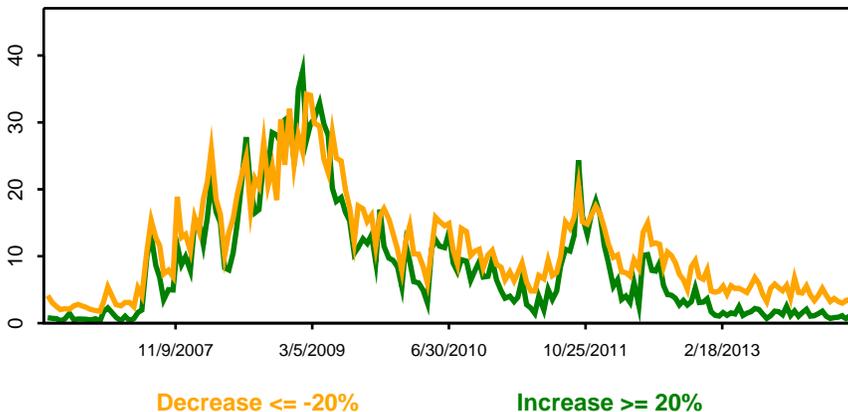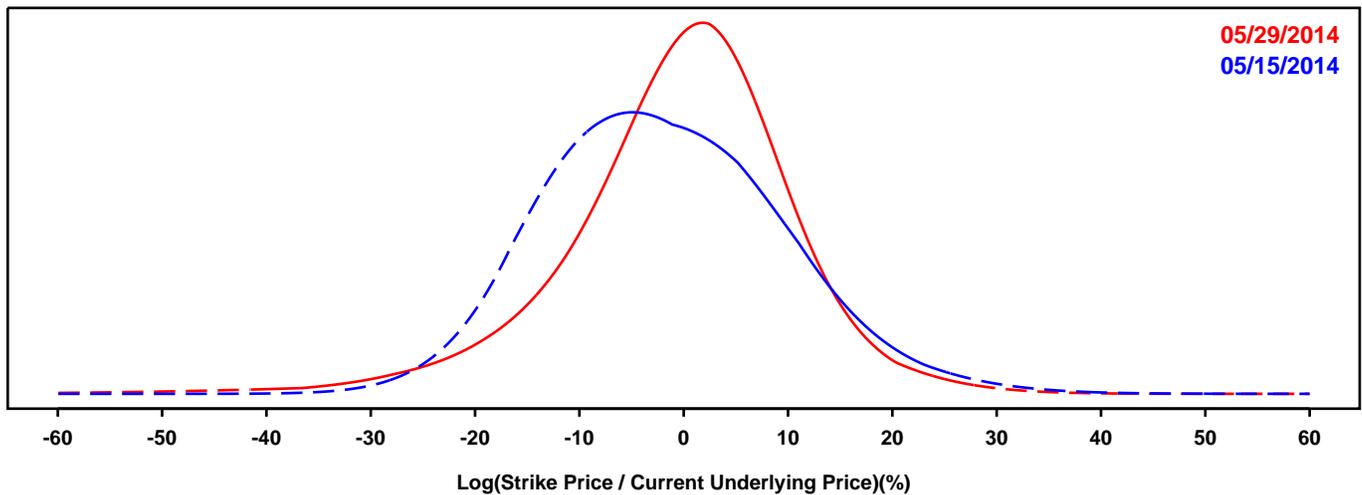derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
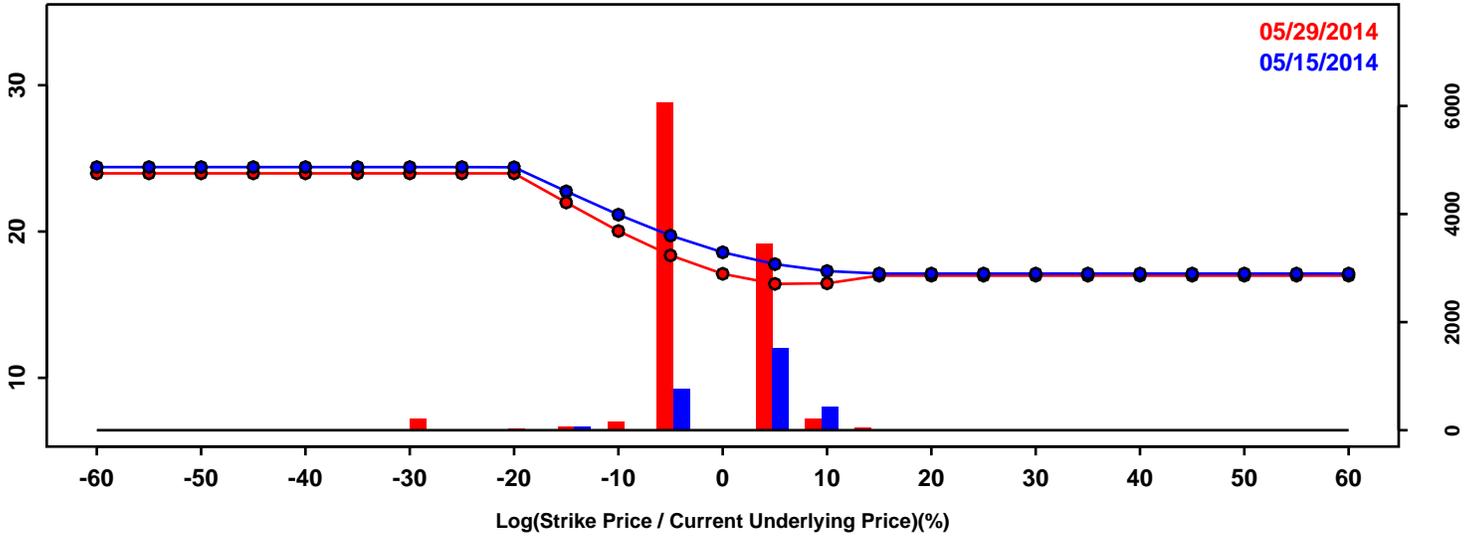
Statistics of the Log Return Distributions

	05/15/2014	05/29/2014	Change
10th Pct	-12.58%	-12.14%	0.44%
50th Pct	0.21%	-0.24%	-0.45%
90th Pct	10.65%	9.18%	-1.47%
Mean	-0.47%	-0.95%	-0.48%
Std Dev	9.37%	8.73%	-0.64%
Skew	-0.47	-0.53	-0.06
Kurtosis	0.68	0.98	0.30

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- KEYCORP

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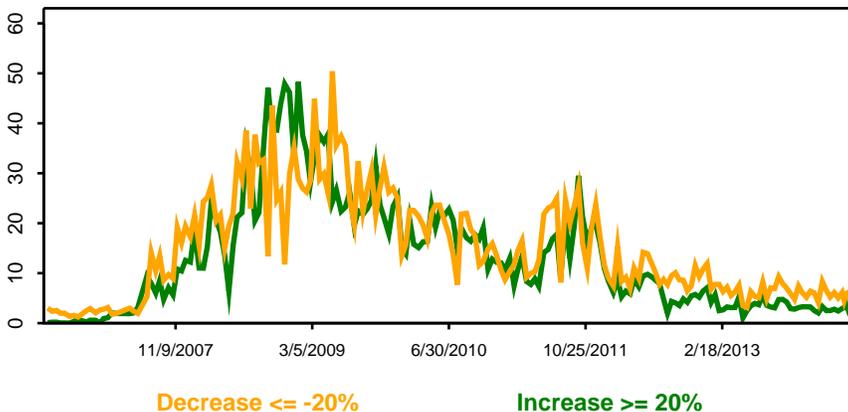*derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%　　　　**Increase >= 20%**
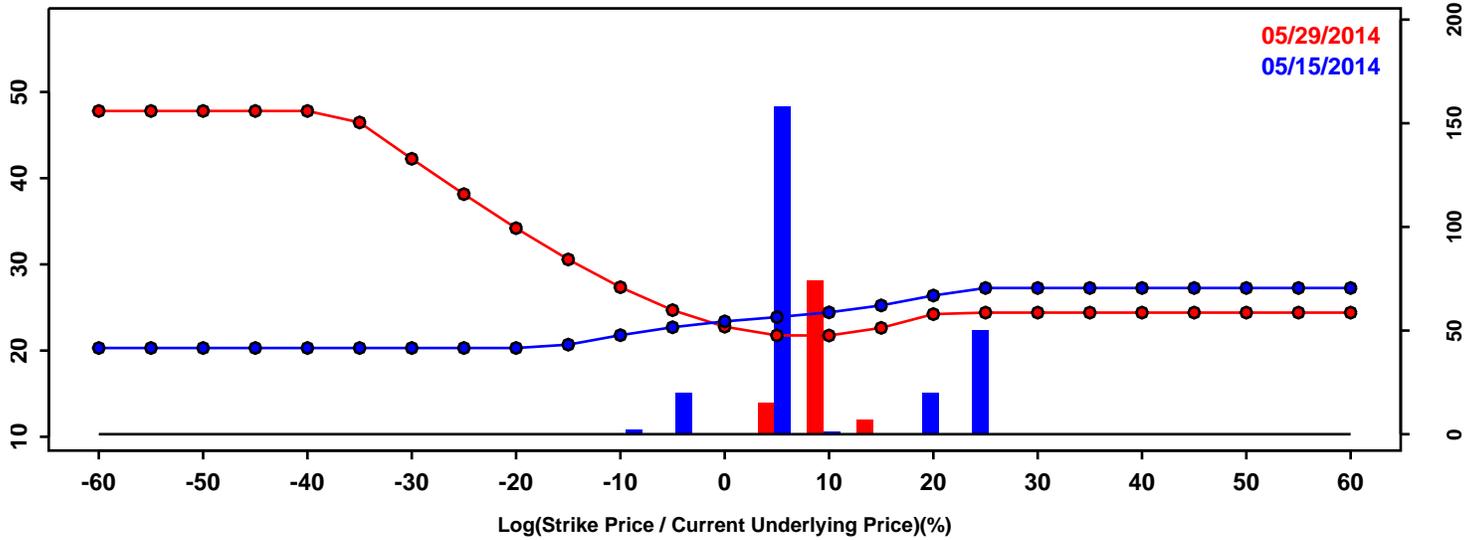
Statistics of the Log Return Distributions

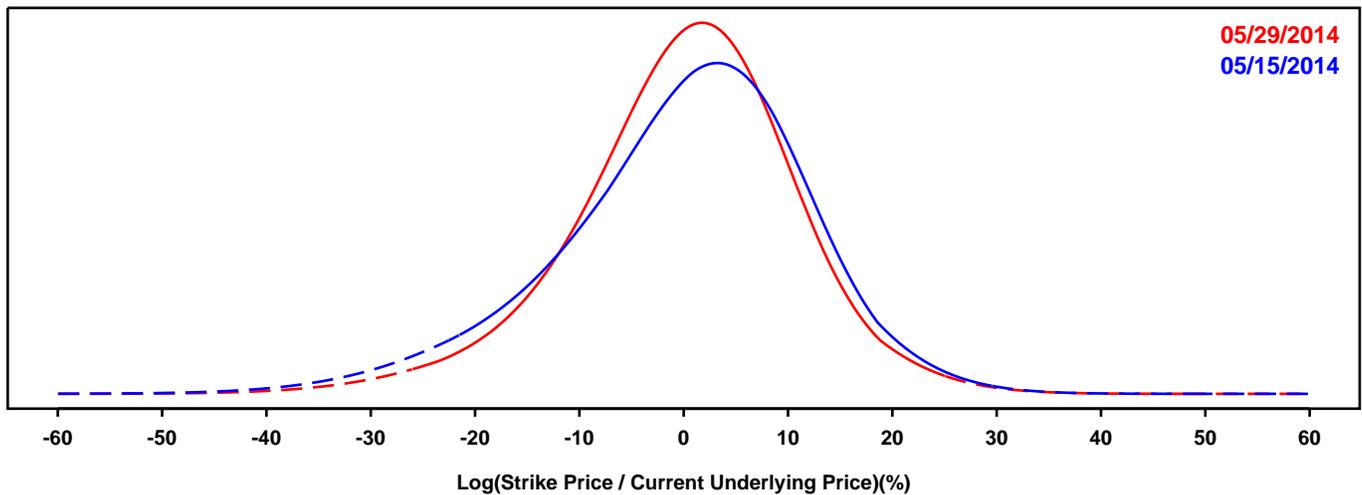|	05/15/2014	05/29/2014	Change
10th Pct	-16.08%	-14.15%	1.94%
50th Pct	-2.42%	0.44%	2.87%
90th Pct	13.06%	11.94%	-1.12%
Mean	-1.84%	-0.55%	1.30%
Std Dev	11.50%	11.32%	-0.18%
Skew	0.28	-0.87	-1.15
Kurtosis	0.09	3.11	3.01

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- MORGAN STANLEY

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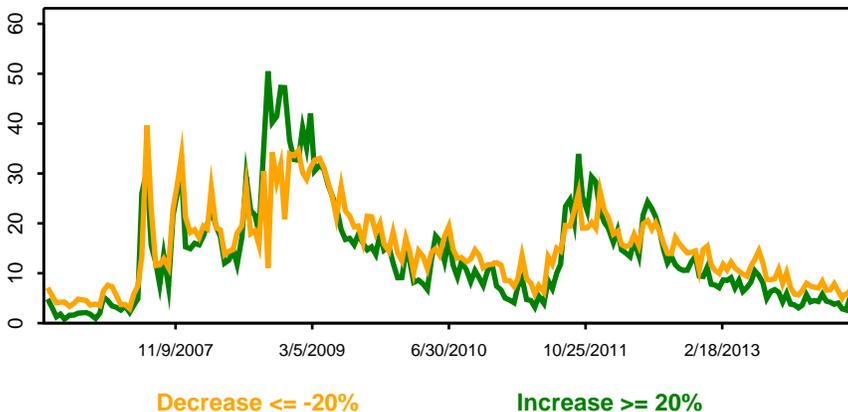derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
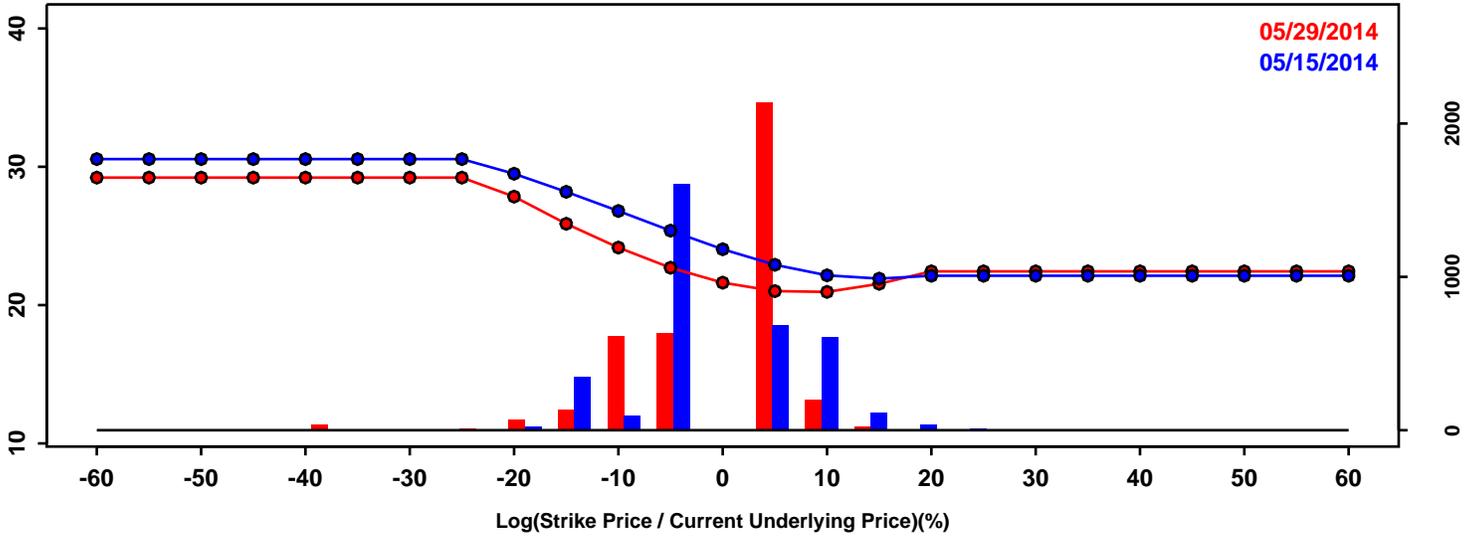
Statistics of the Log Return Distributions

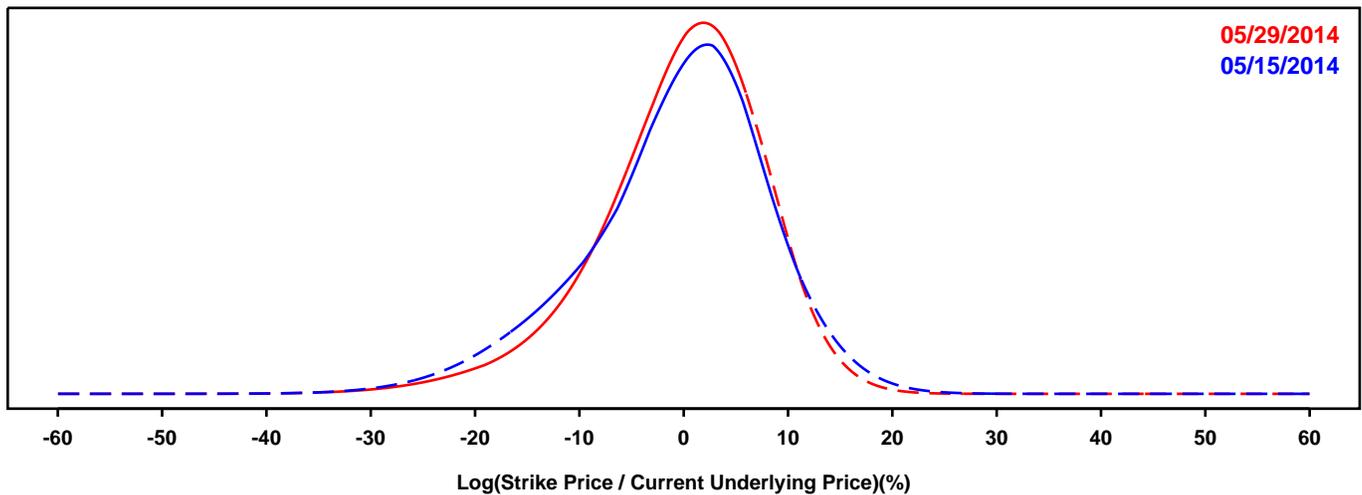|	05/15/2014	05/29/2014	Change
10th Pct	-16.29%	-13.63%	2.66%
50th Pct	1.11%	0.72%	-0.39%
90th Pct	13.95%	12.71%	-1.24%
Mean	-0.11%	0.06%	0.17%
Std Dev	12.13%	10.80%	-1.33%
Skew	-0.53%	-0.40	0.12
Kurtosis	0.63	0.91	0.27

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- PNC FINANCIAL

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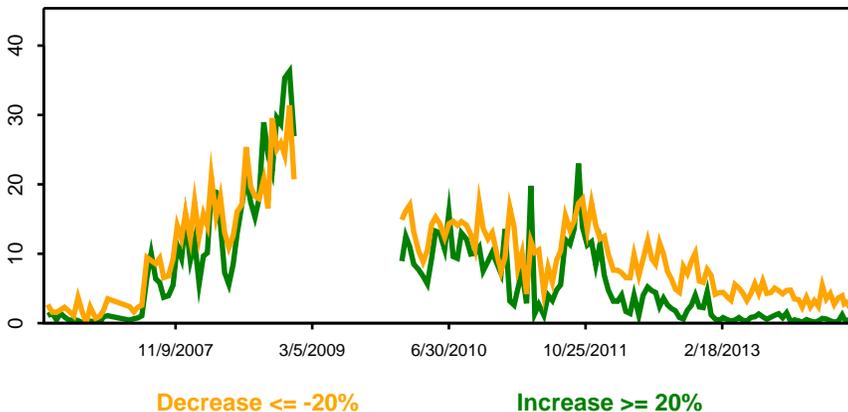*derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)
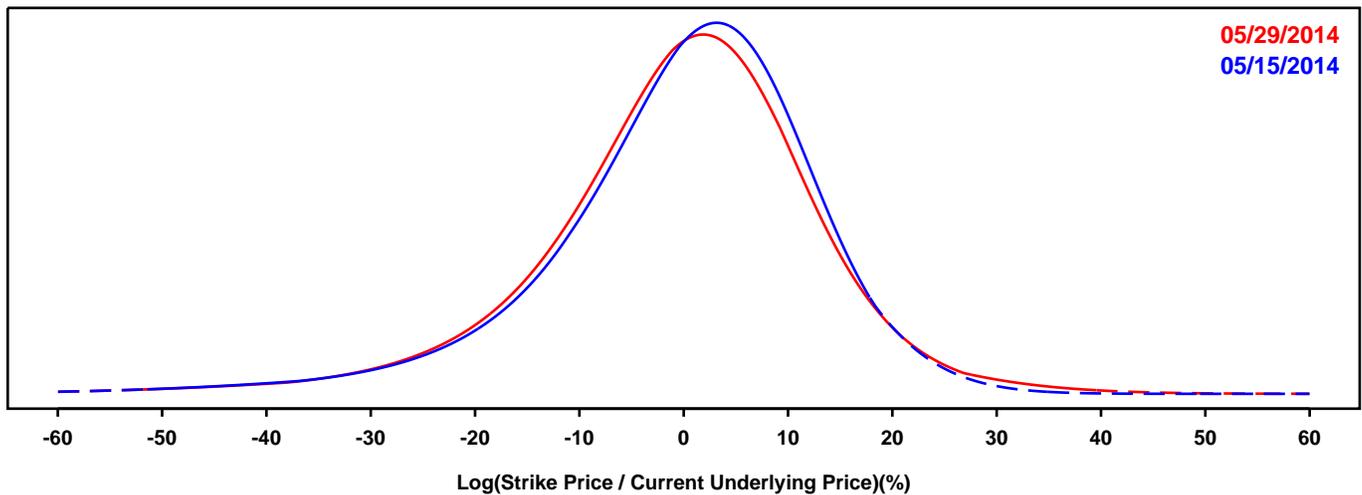

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
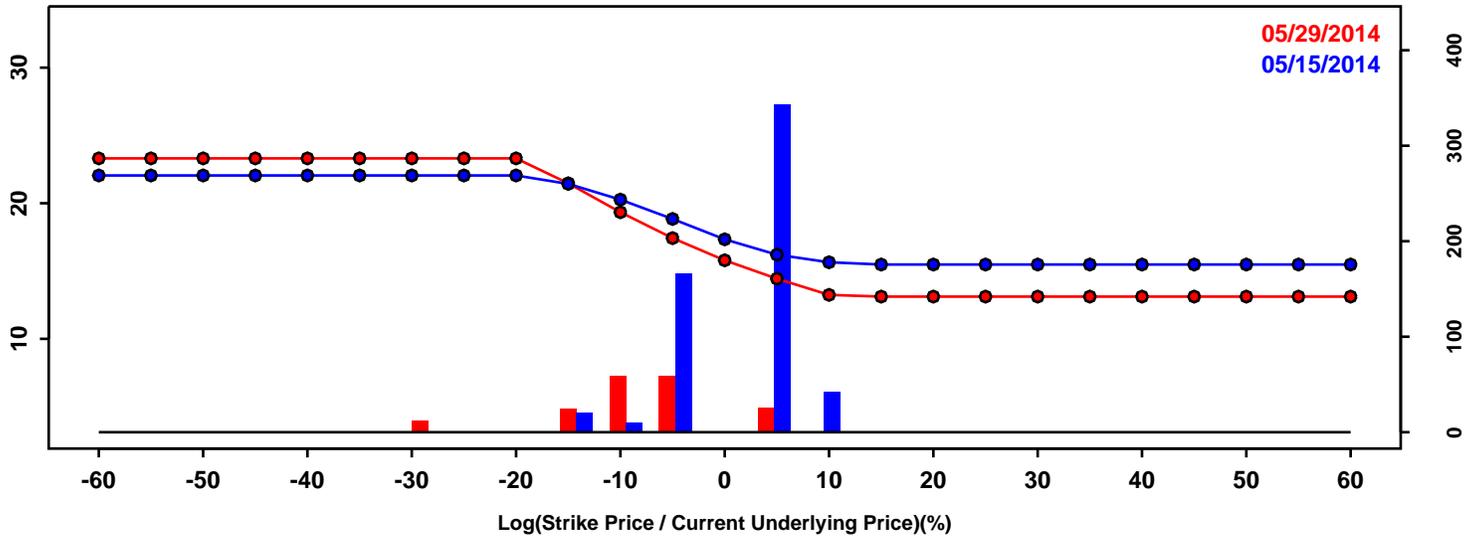
Statistics of the Log Return Distributions

	05/15/2014	05/29/2014	Change
10th Pct	-12.80%	-10.77%	2.03%
50th Pct	0.36%	0.58%	0.22%
90th Pct	9.62%	9.04%	-0.58%
Mean	-0.65%	-0.28%	0.37%
Std Dev	8.91%	8.08%	-0.83%
Skew	-0.57	-0.71	-0.15
Kurtosis	0.59	1.08	0.50

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- REGIONS FINANCIAL

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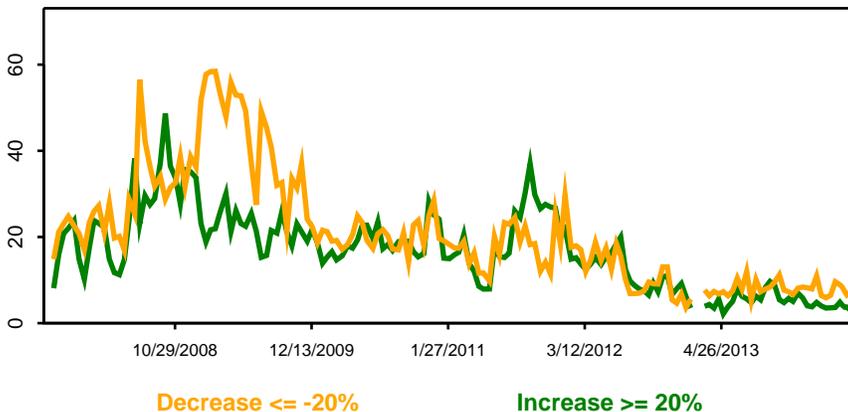derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
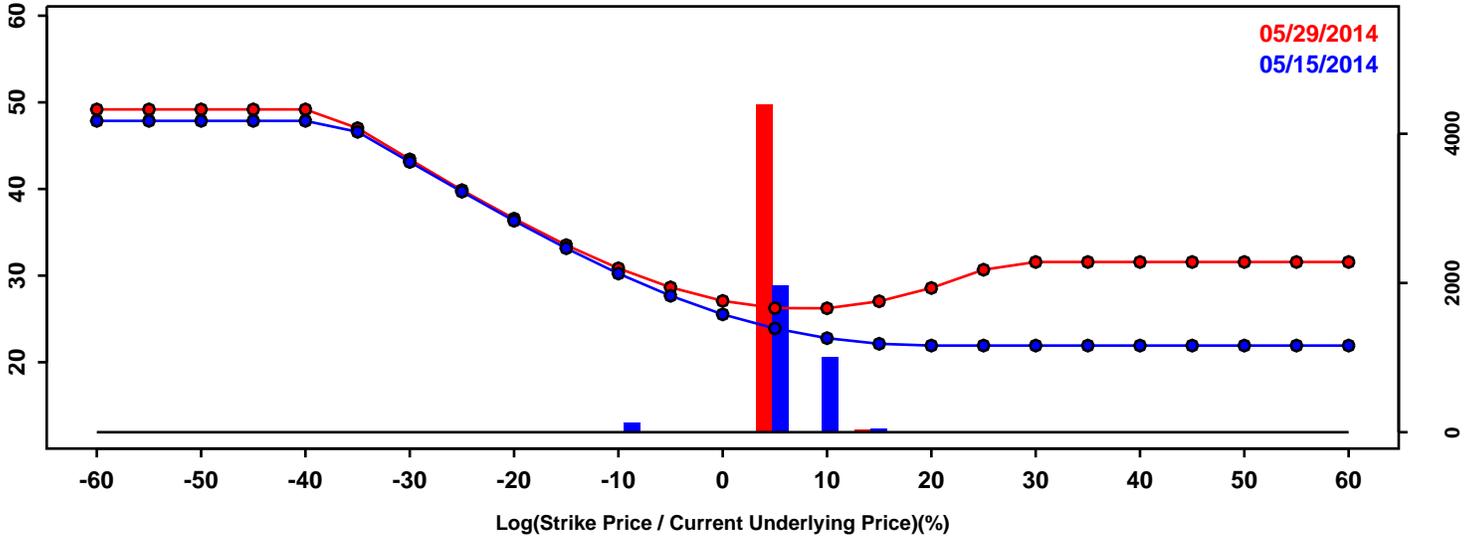
Statistics of the Log Return Distributions

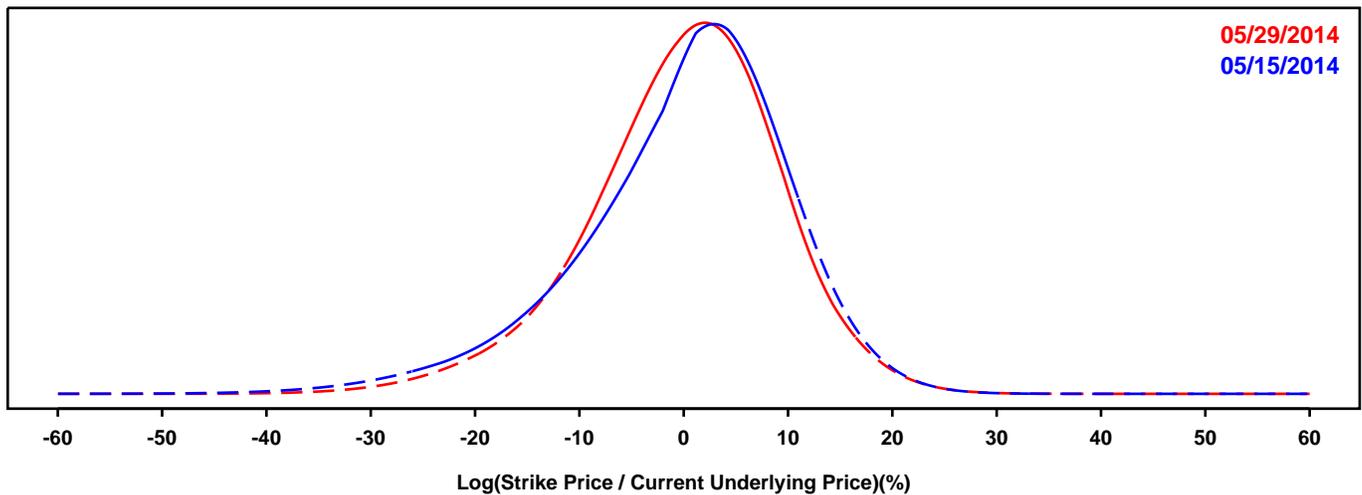|	05/15/2014	05/29/2014	Change
10th Pct	-16.15%	-16.65%	-0.50%
50th Pct	1.33%	0.63%	-0.70%
90th Pct	14.16%	14.55%	0.39%
Mean	-0.20%	-0.46%	-0.26%
Std Dev	13.07%	13.54%	0.47%
Skew	-1.04	-0.75	0.29
Kurtosis	2.72	2.51	-0.21

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- SUNTRUST

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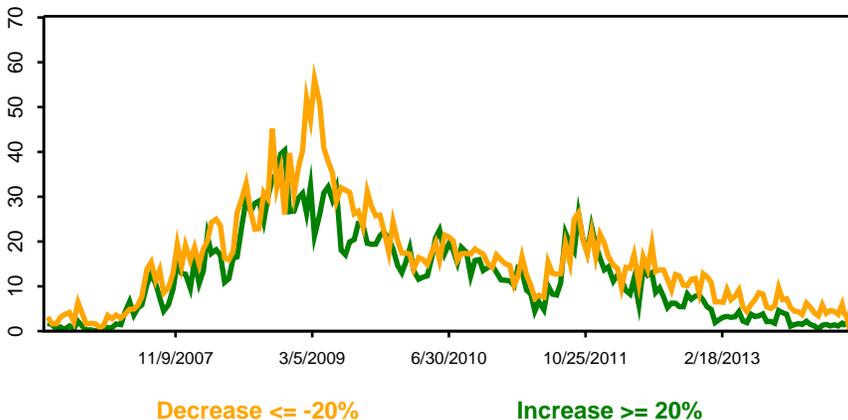derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
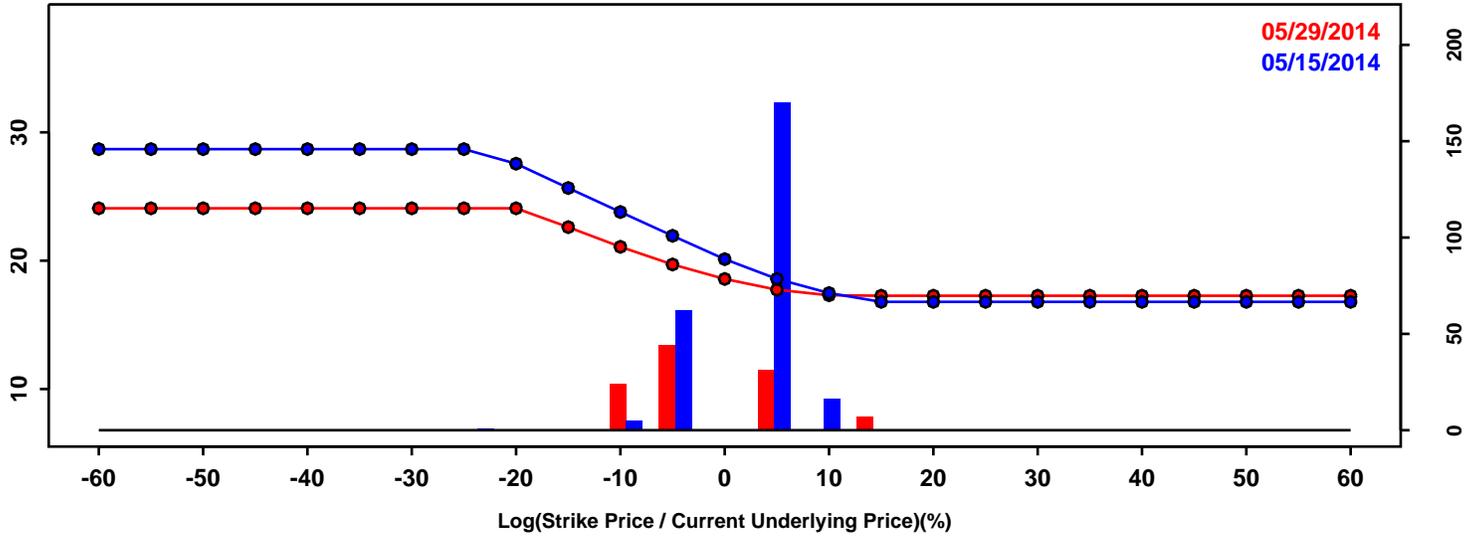
Statistics of the Log Return Distributions

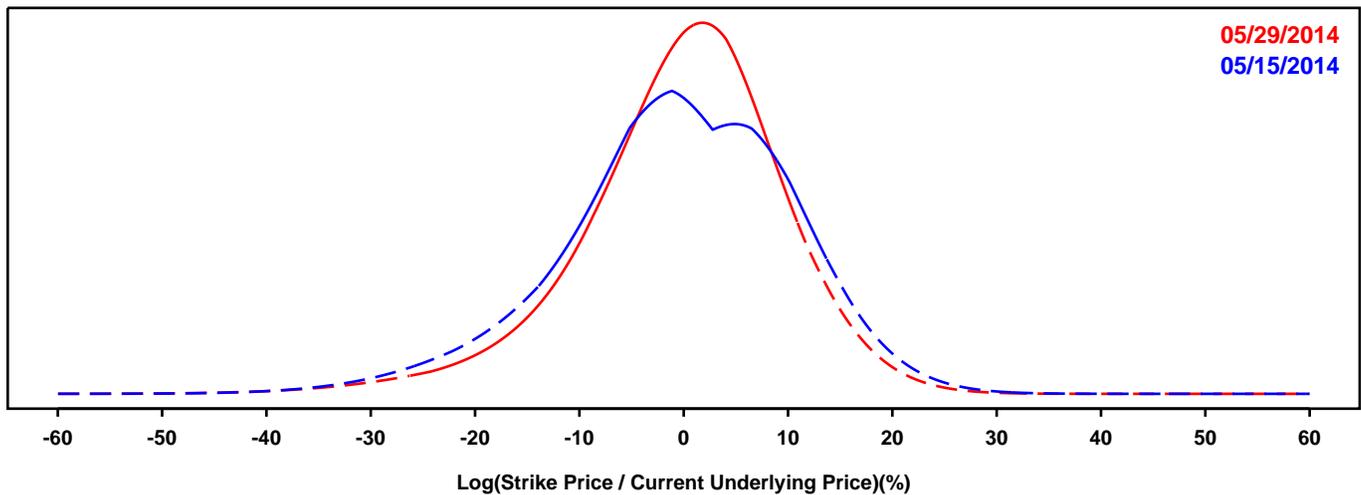|	05/15/2014	05/29/2014	Change
10th Pct	-13.53%	-11.98%	1.55%
50th Pct	1.32%	0.66%	-0.66%
90th Pct	11.62%	11.00%	-0.61%
Mean	0.03%	0.01%	-0.01%
Std Dev	10.22%	9.29%	-0.93%
Skew	-0.74%	-0.45%	0.29
Kurtosis	1.06	0.66	-0.40

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- STATE STREET

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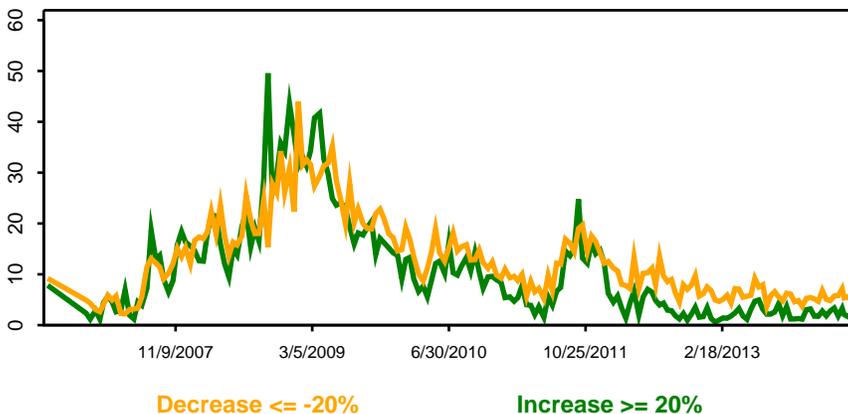derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
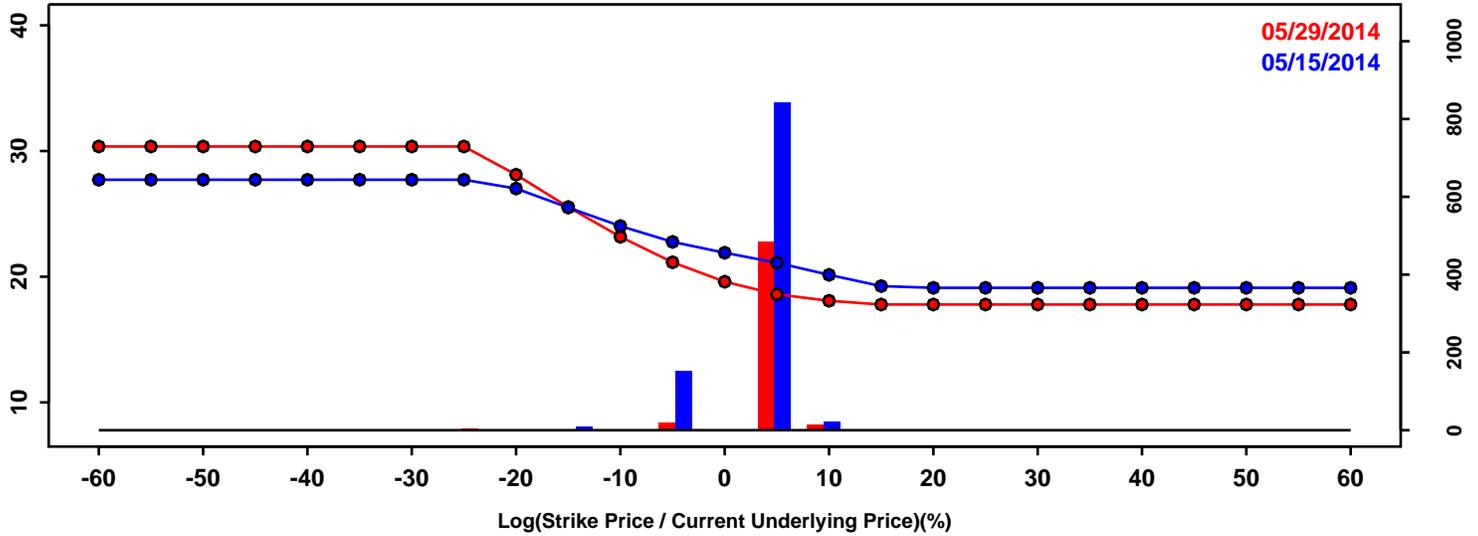
Statistics of the Log Return Distributions

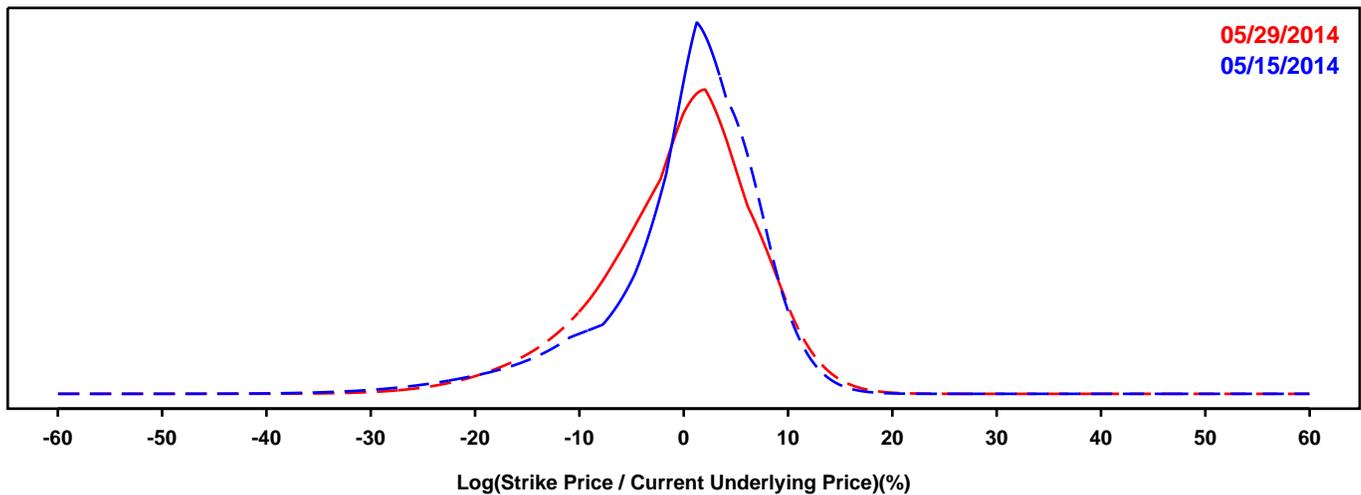|	05/15/2014	05/29/2014	Change
10th Pct	-14.90%	-12.60%	2.29%
50th Pct	-0.04%	0.58%	0.62%
90th Pct	12.84%	11.29%	-1.55%
Mean	-0.55%	-0.22%	0.33%
Std Dev	11.07%	9.91%	-1.16%
Skew	-0.44%	-0.66	-0.22
Kurtosis	0.48	1.39	0.92

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- US BANCORP

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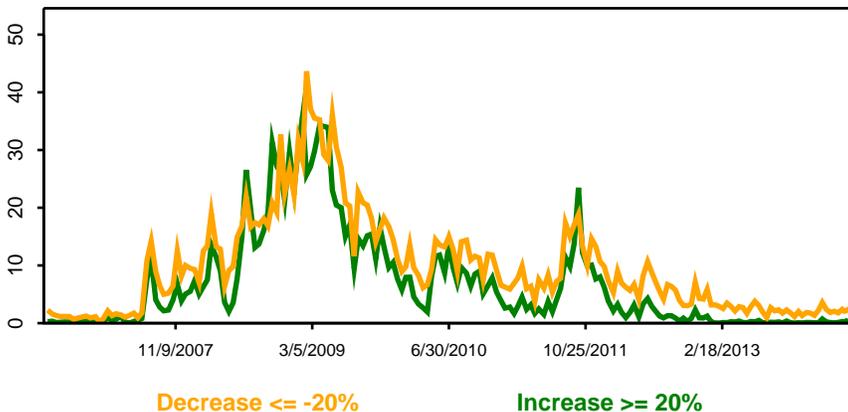*derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%　　　　**Increase >= 20%**
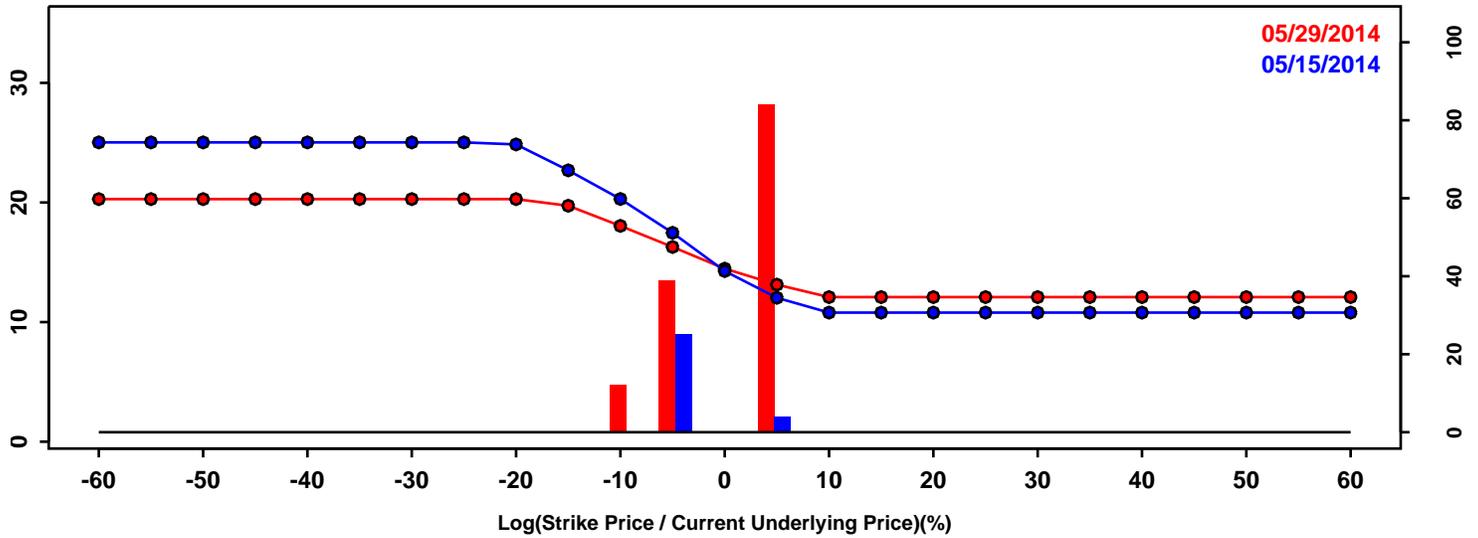
Statistics of the Log Return Distributions

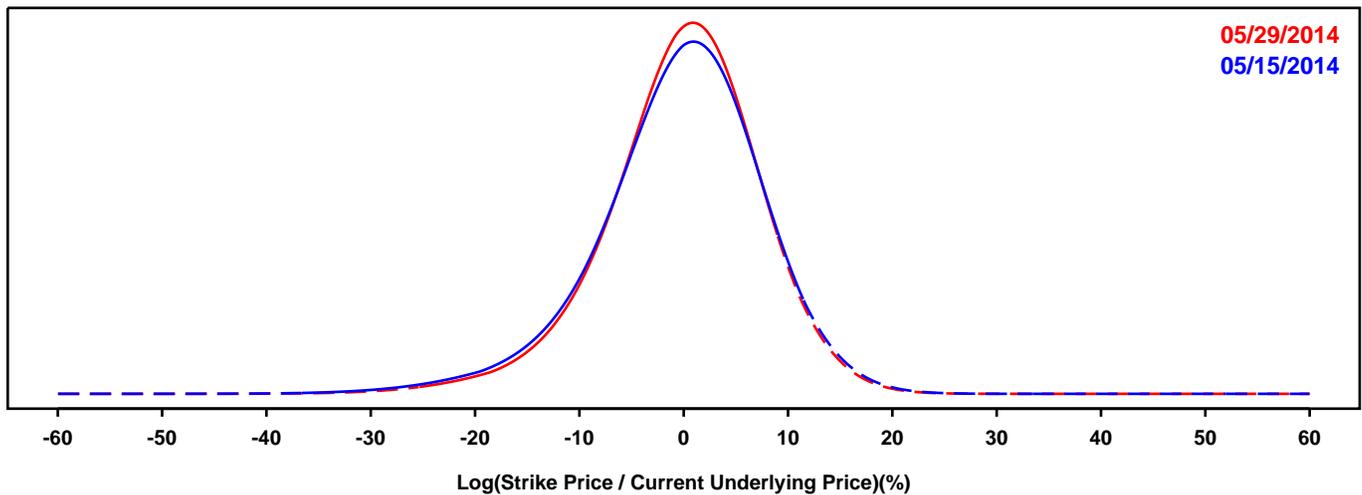|	05/15/2014	05/29/2014	Change
10th Pct	-10.24%	-10.63%	-0.39%
50th Pct	1.32%	0.40%	-0.92%
90th Pct	7.80%	8.09%	0.28%
Mean	-0.02%	-0.57%	-0.55%
Std Dev	7.61%	7.53%	-0.08%
Skew	-1.30	-0.71	0.59
Kurtosis	2.67	0.92	-1.75

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- WELLS FARGO

Log returns are based on the risk neutral density function of the underlying asset derived from options that expire in approximately 3 months.
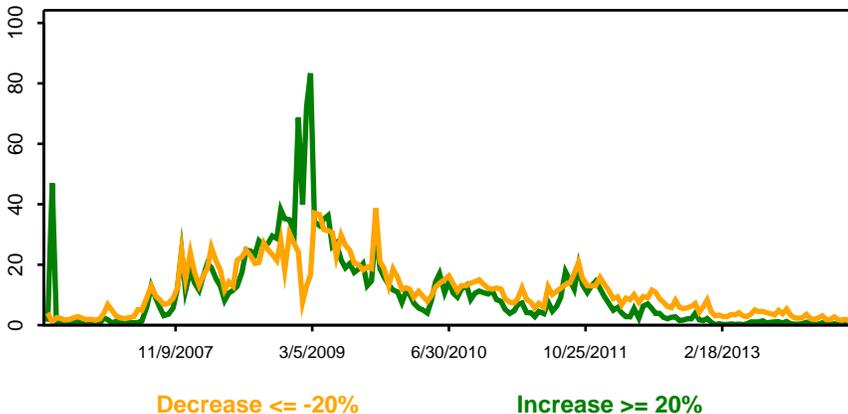
Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
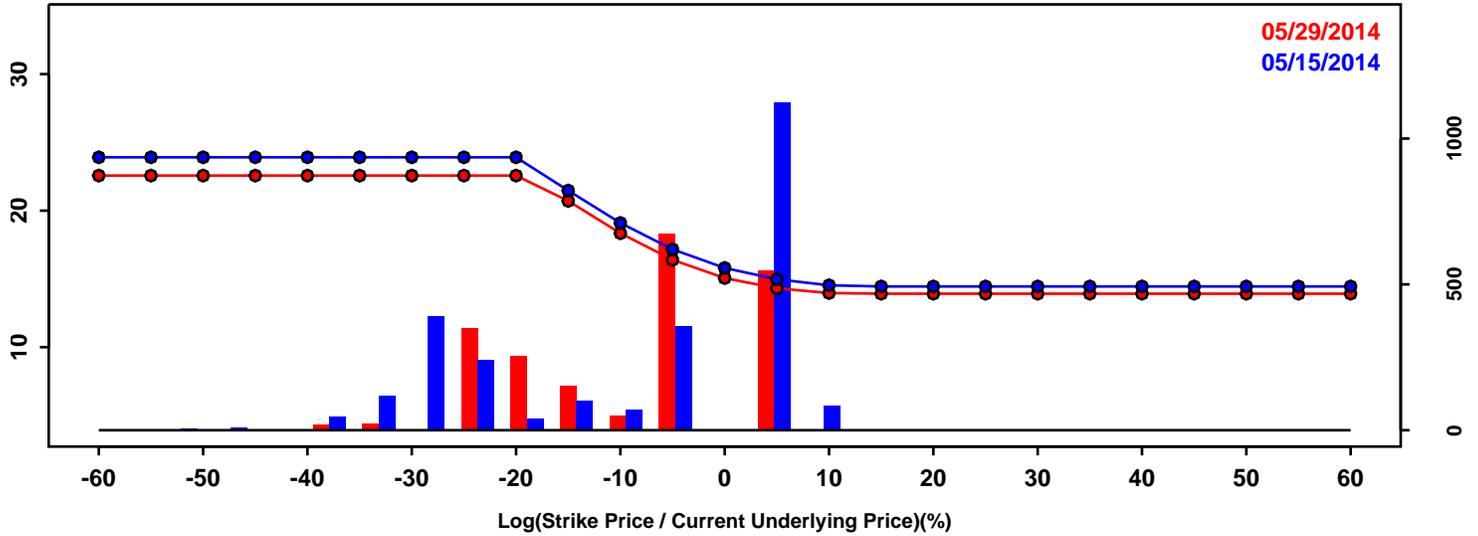
Statistics of the Log Return Distributions

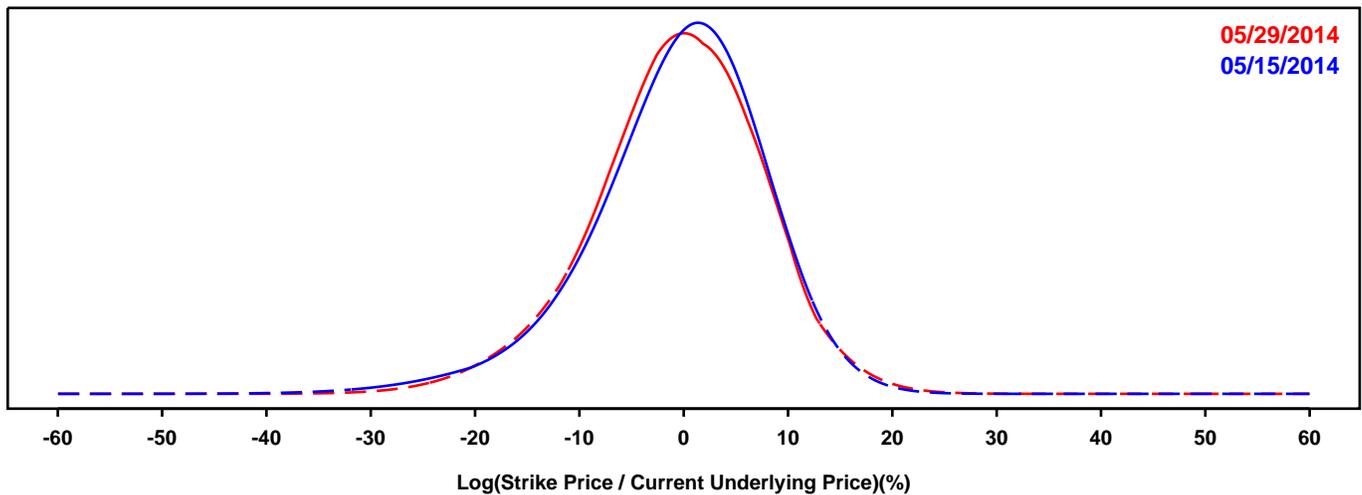|	05/15/2014	05/29/2014	Change
10th Pct	-10.42%	-9.58%	0.84%
50th Pct	0.21%	0.30%	0.09%
90th Pct	9.04%	8.77%	-0.27%
Mean	-0.34%	-0.15%	0.19%
Std Dev	8.01%	7.54%	-0.46%
Skew	-0.59	-0.54	0.05
Kurtosis	1.17	1.12	-0.05

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- AFLAC

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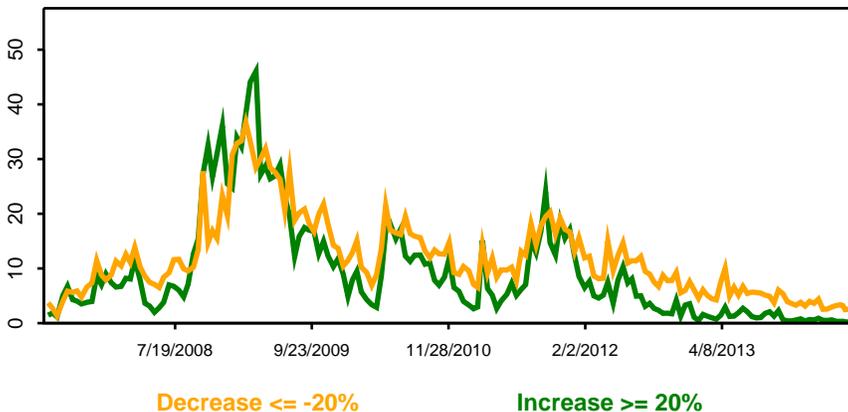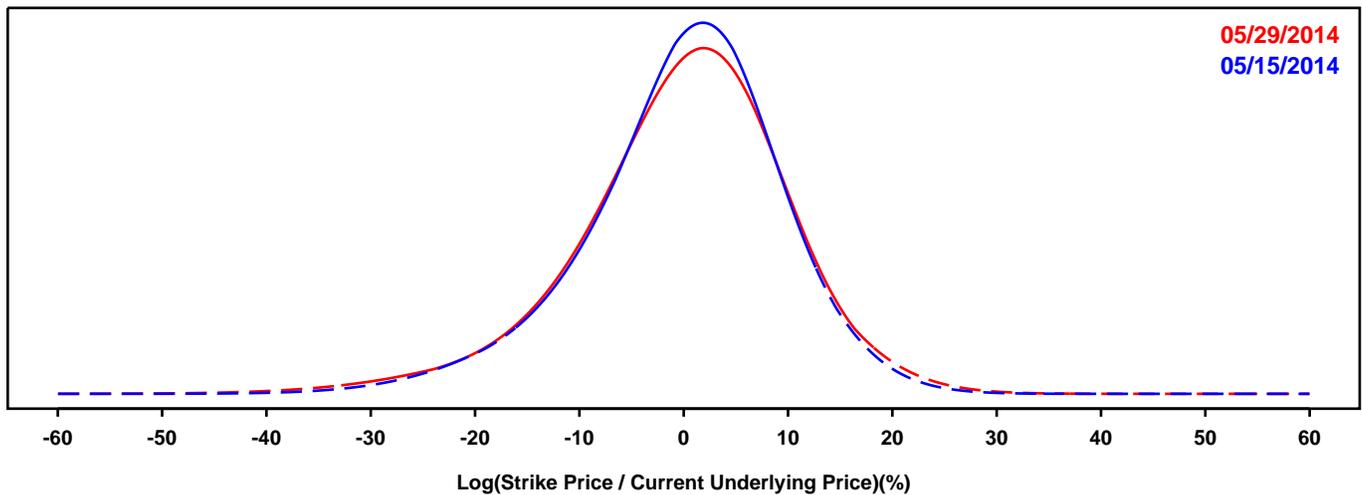derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

7/19/2008　9/23/2009　11/28/2010　2/2/2012　4/8/2013

Decrease <= -20%　　　**Increase >= 20%**
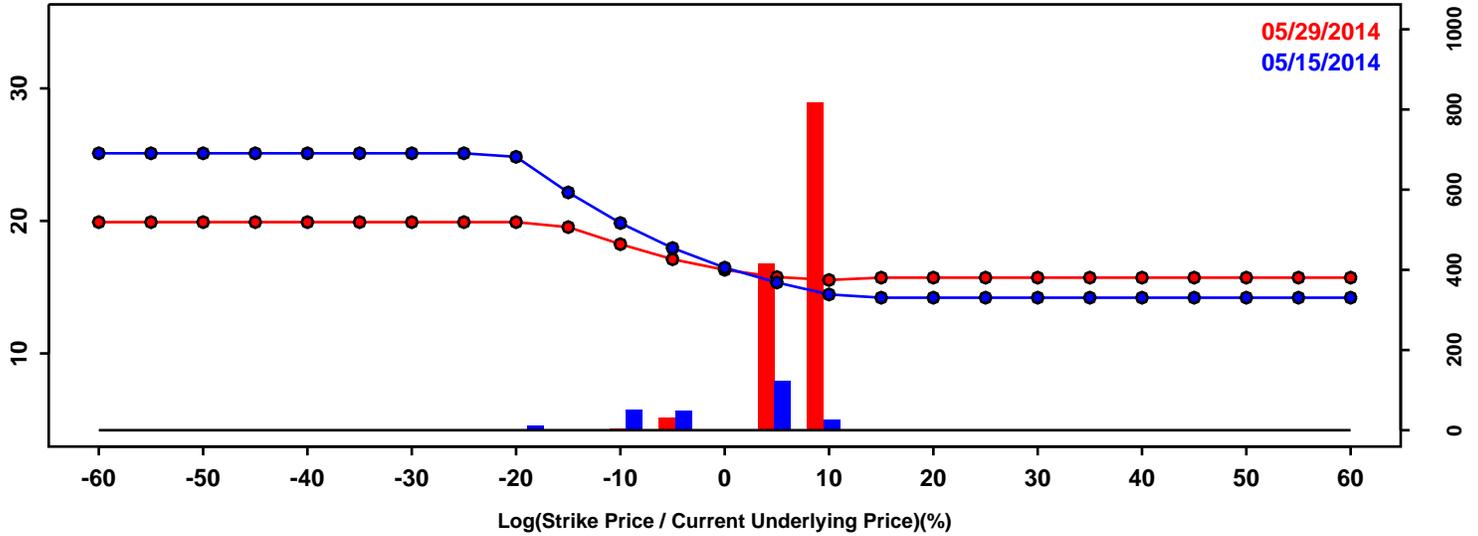
Statistics of the Log Return Distributions

	05/15/2014	05/29/2014	Change
10th Pct	-11.34%	-11.15%	0.20%
50th Pct	0.22%	-0.19%	-0.42%
90th Pct	9.30%	9.27%	-0.03%
Mean	-0.55%	-0.58%	-0.03%
Std Dev	8.47%	8.18%	-0.29%
Skew	-0.67%	-0.34	0.33
Kurtosis	1.16	0.45	-0.71

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- AIG

Log returns are based on the risk neutral density function of the underlying asset derived from options that expire in approximately 3 months.
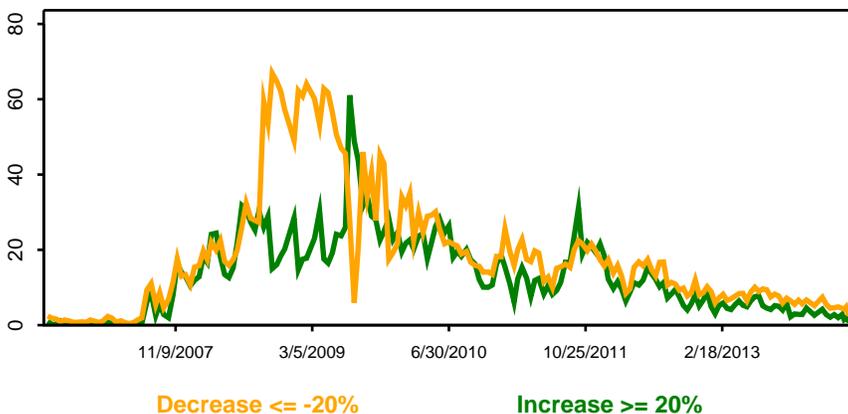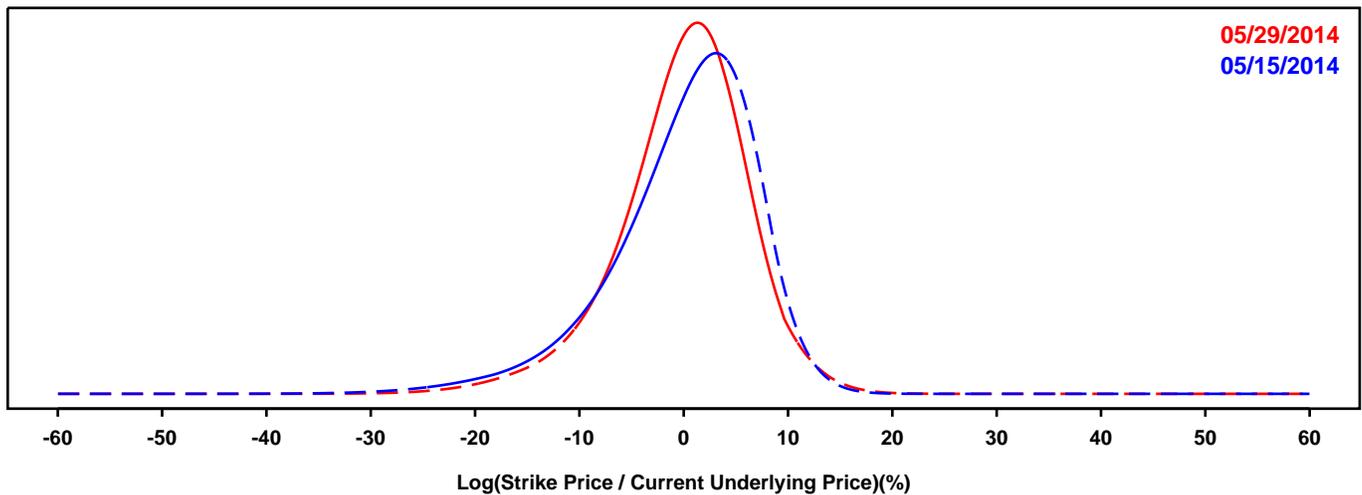
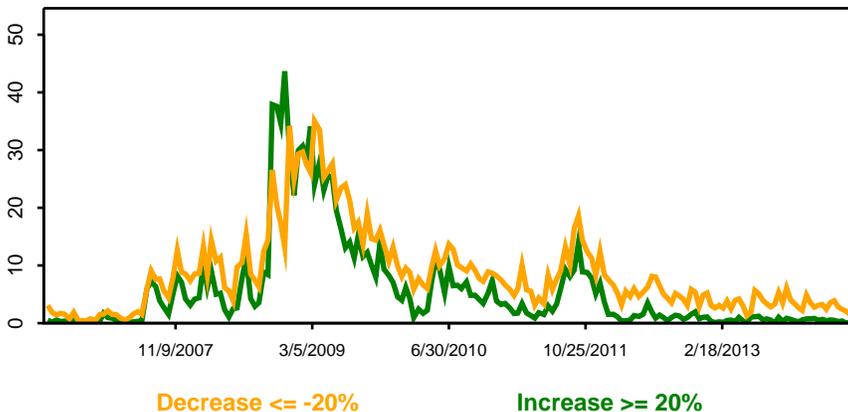### Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
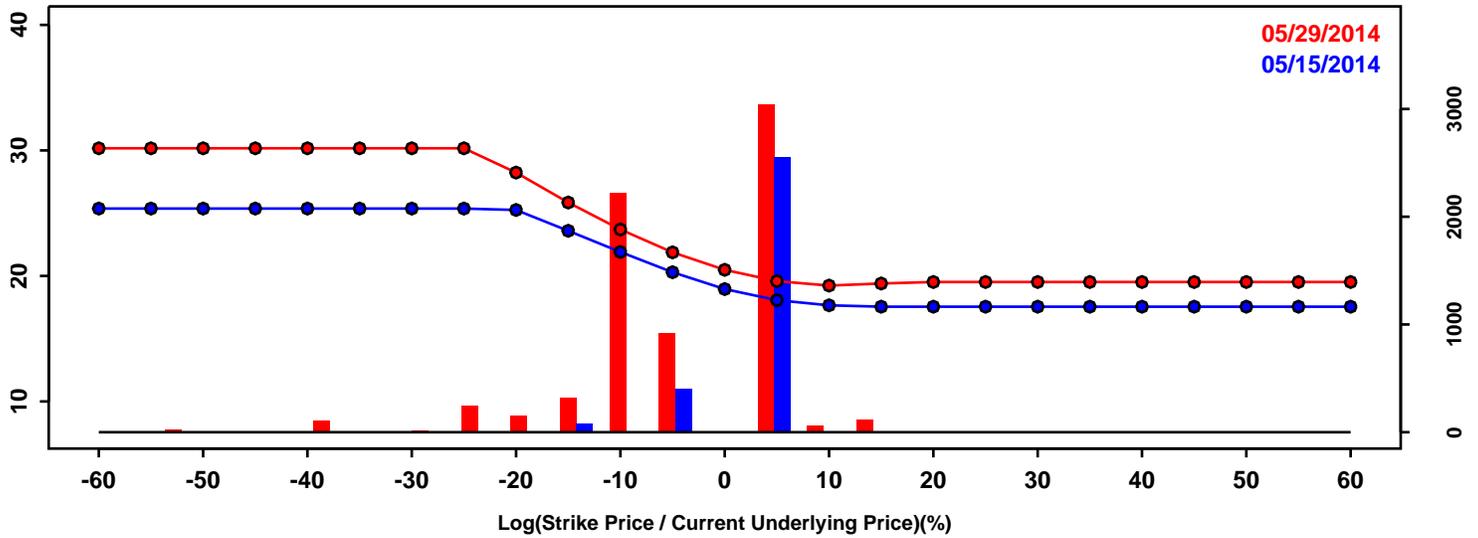
Statistics of the Log Return Distributions

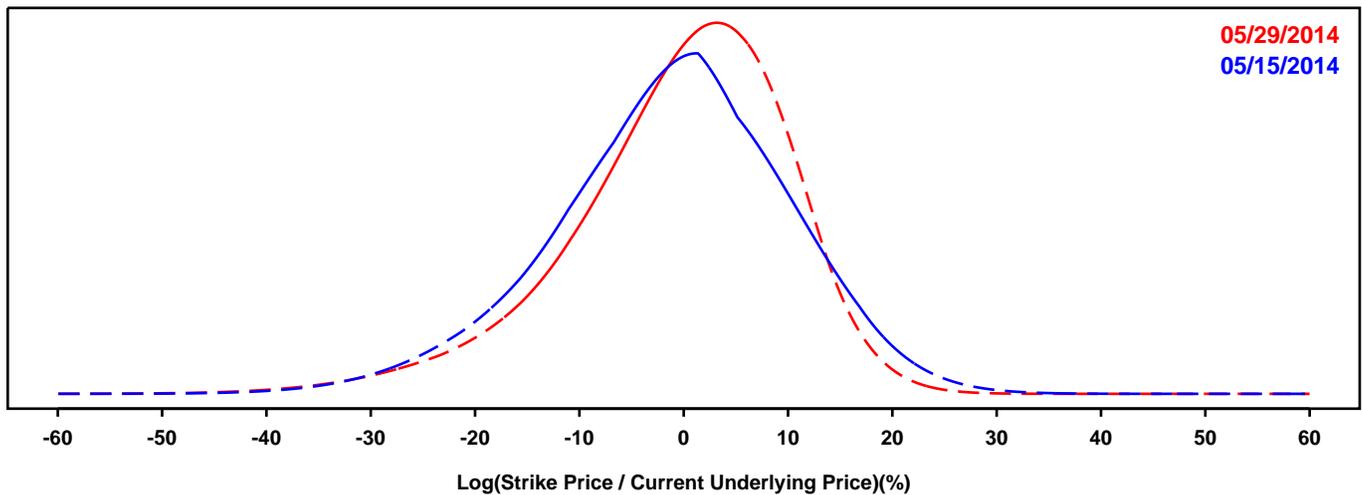|	05/15/2014	05/29/2014	Change
10th Pct	-12.40%	-13.09%	-0.69%
50th Pct	0.74%	0.68%	-0.07%
90th Pct	11.18%	11.81%	0.63%
Mean	-0.02%	-0.13%	-0.11%
Std Dev	9.54%	10.31%	0.76%
Skew	-0.52	-0.58	-0.06
Kurtosis	0.83	1.20	0.37

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- ALLSTATE

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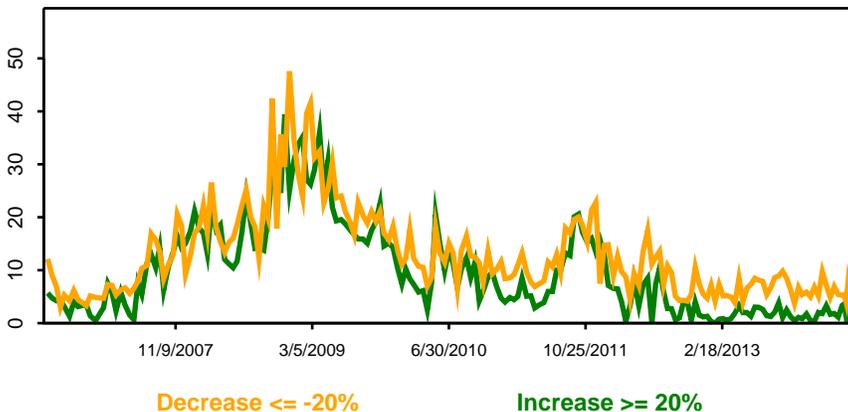derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   Increase >= 20%
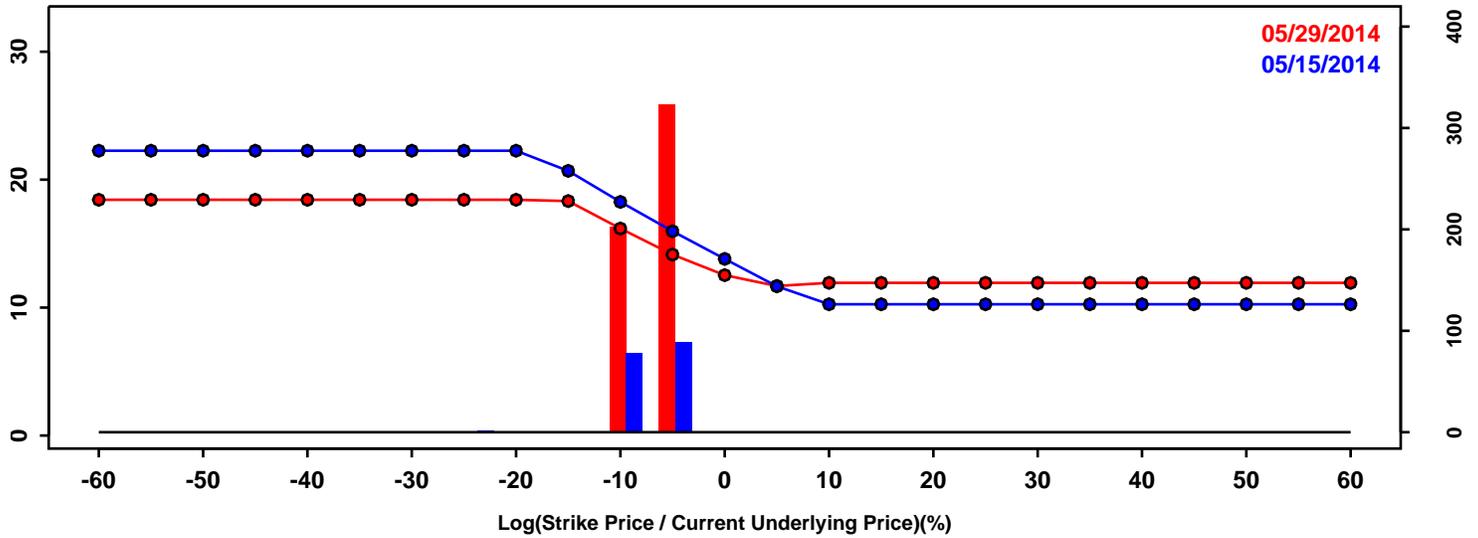
Statistics of the Log Return Distributions

	05/15/2014	05/29/2014	Change
10th Pct	-9.26%	-8.10%	1.16%
50th Pct	1.11%	0.48%	-0.63%
90th Pct	7.80%	7.19%	-0.61%
Mean	0.05%	-0.07%	-0.12%
Std Dev	7.08%	6.32%	-0.76%
Skew	-0.98	-0.62	0.36
Kurtosis	1.65	1.21	-0.44

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- AMERIPRISE

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

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
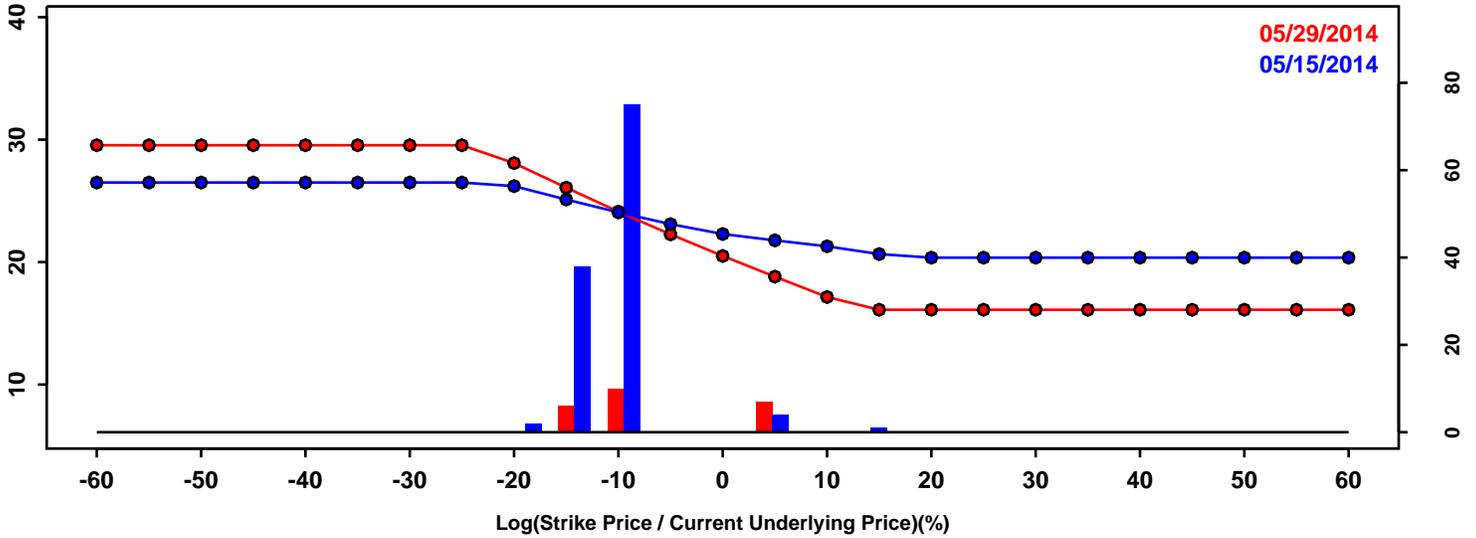
Statistics of the Log Return Distributions

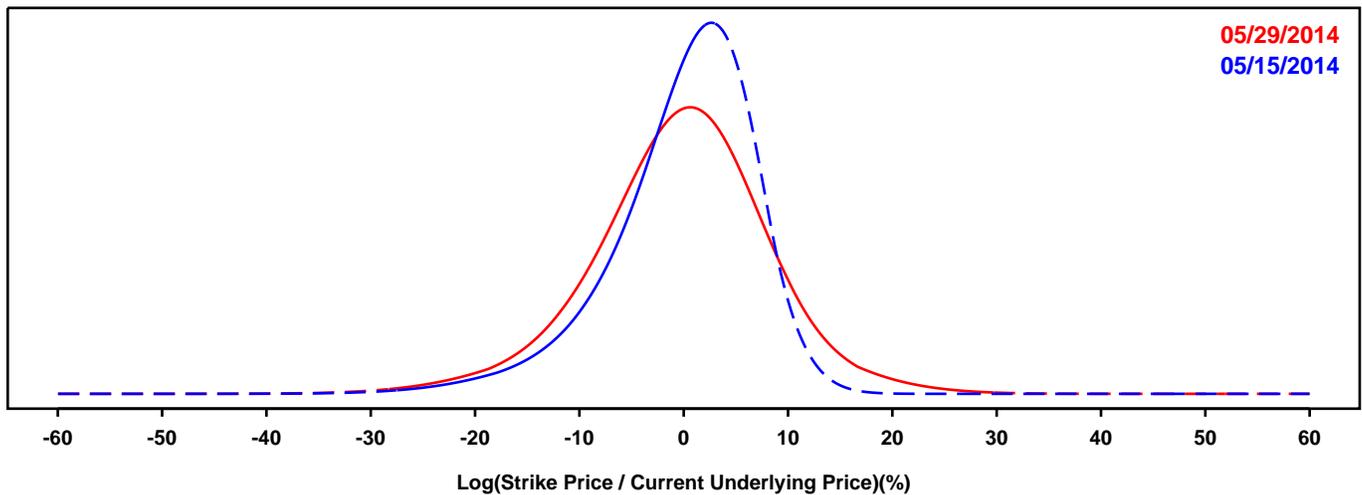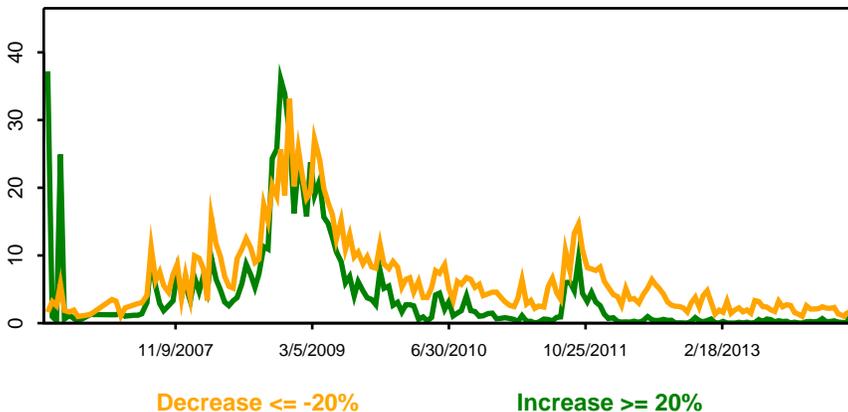|	05/15/2014	05/29/2014	Change
10th Pct	-16.04%	-14.57%	1.47%
50th Pct	-0.57%	0.80%	1.37%
90th Pct	12.87%	11.52%	-1.35%
Mean	-1.19%	-0.55%	0.64%
Std Dev	11.37%	10.61%	-0.76%
Skew	-0.32%	-0.78	-0.46
Kurtosis	0.30	1.02	0.72

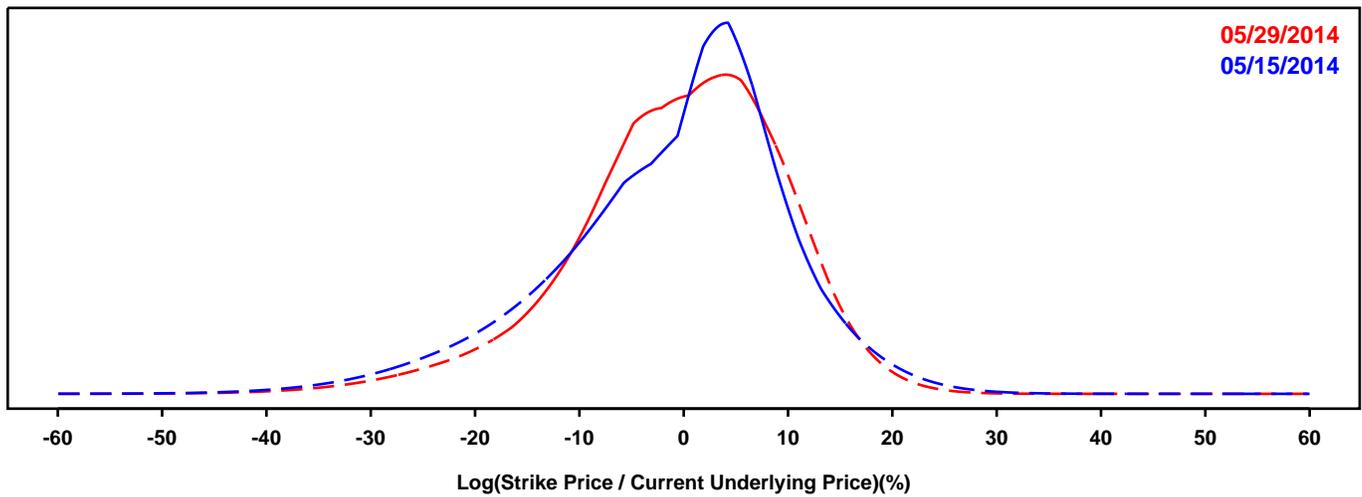# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CHUBB

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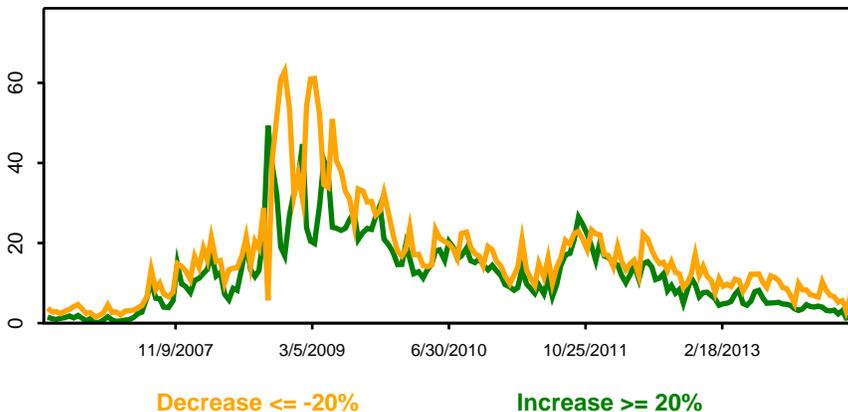derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
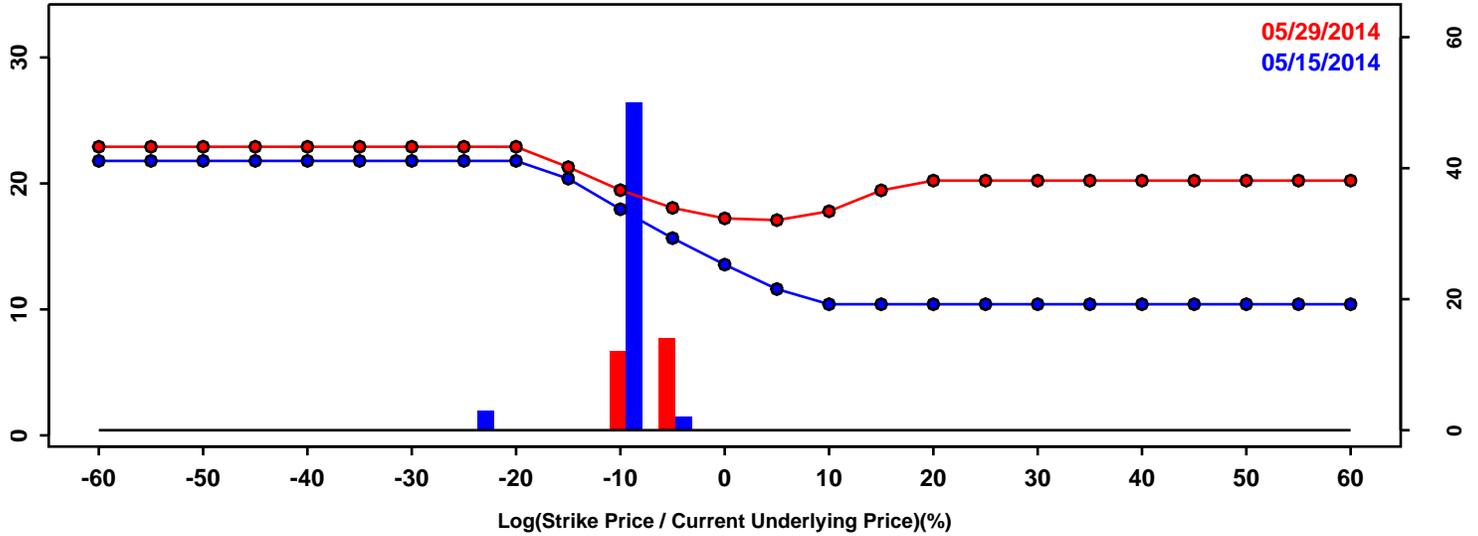
Statistics of the Log Return Distributions

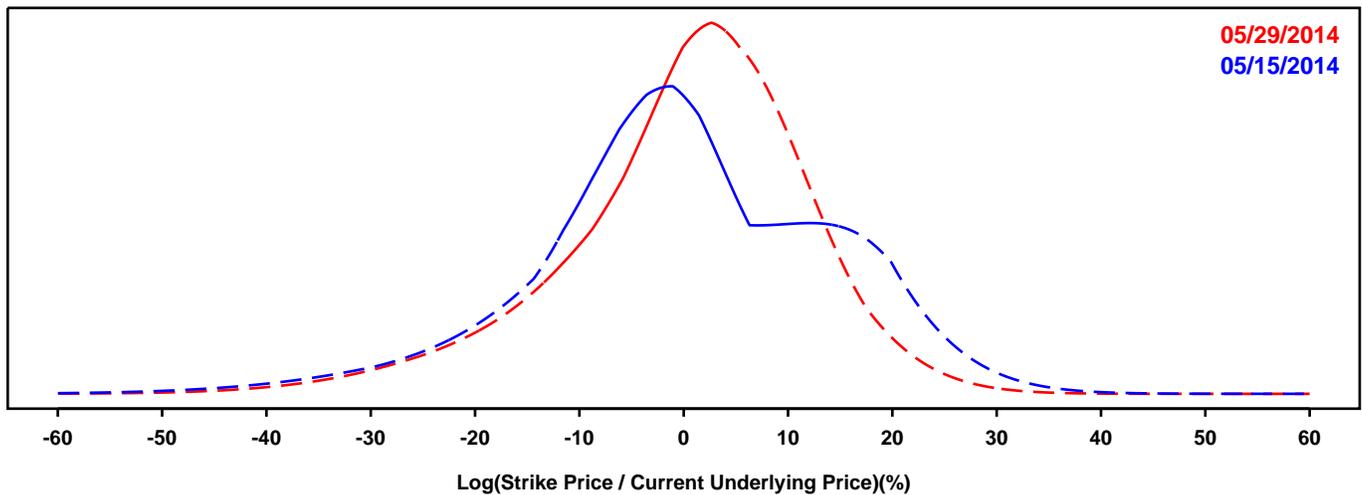|	05/15/2014	05/29/2014	Change
10th Pct	-9.09%	-11.00%	-1.91%
50th Pct	0.95%	0.06%	-0.89%
90th Pct	7.65%	9.95%	2.29%
Mean	-0.03%	-0.24%	-0.22%
Std Dev	6.95%	8.63%	1.68%
Skew	-0.94	-0.24	0.70
Kurtosis	1.62	0.95	-0.67

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- HARTFORD FINANCIAL

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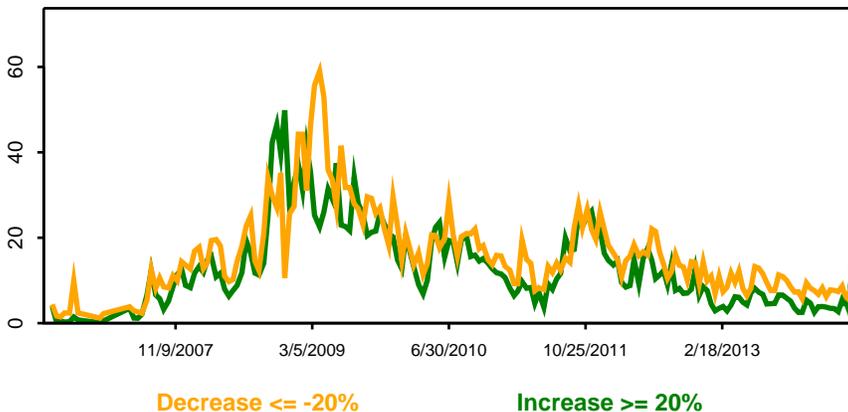*derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
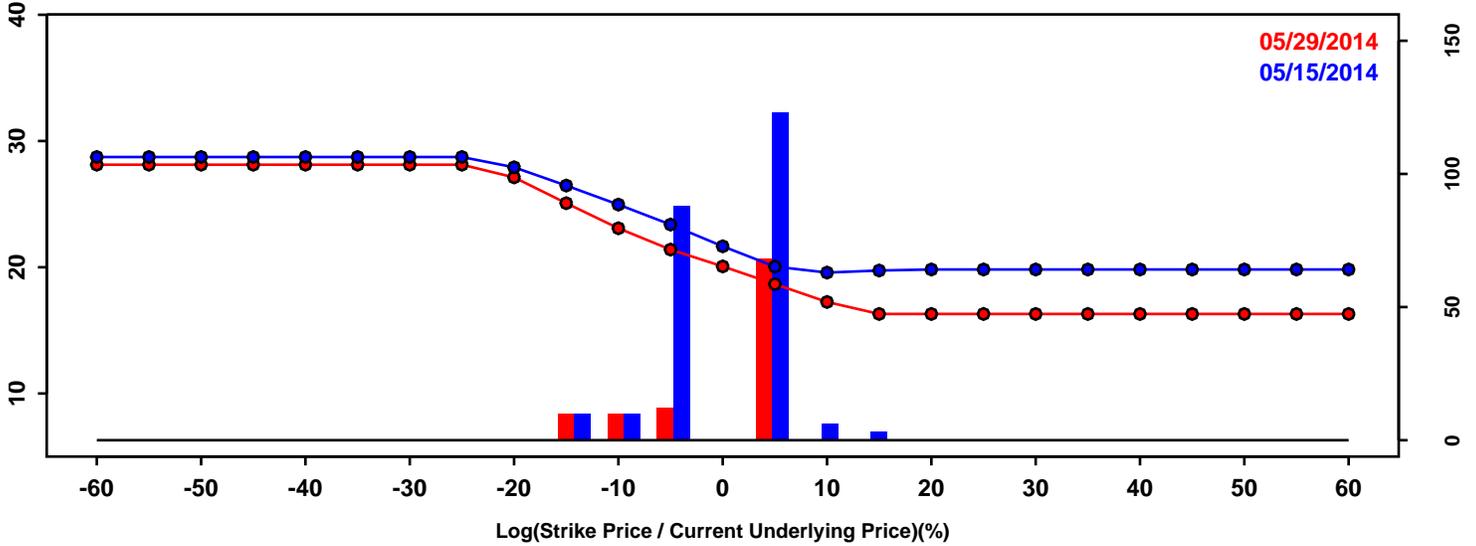
Statistics of the Log Return Distributions

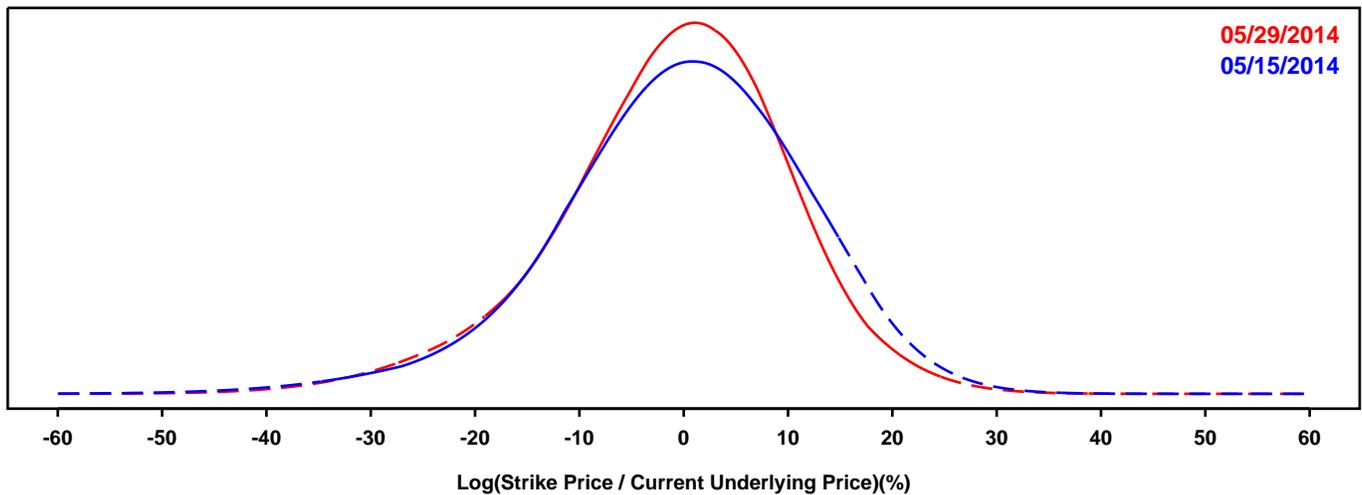|	05/15/2014	05/29/2014	Change
10th Pct	-16.18%	-13.58%	2.59%
50th Pct	0.76%	0.48%	-0.27%
90th Pct	11.29%	11.45%	0.16%
Mean	-1.06%	-0.48%	0.58%
Std Dev	11.15%	10.22%	-0.93%
Skew	-0.65	-0.66	-0.00
Kurtosis	0.79	0.88	0.09

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- LINCOLN NATIONAL

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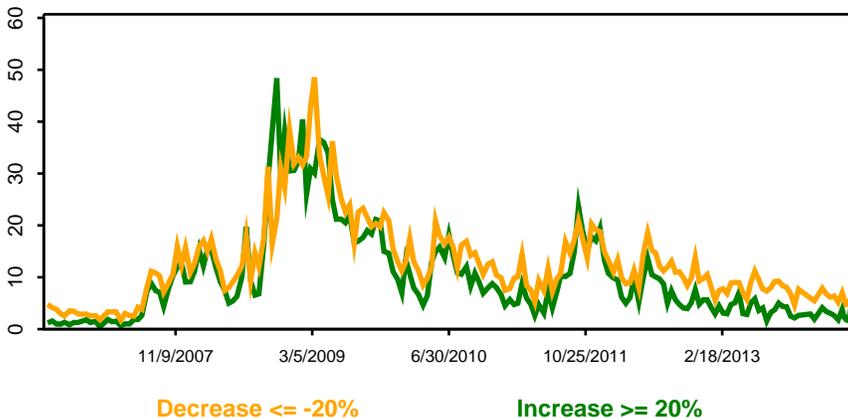derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   Increase >= 20%
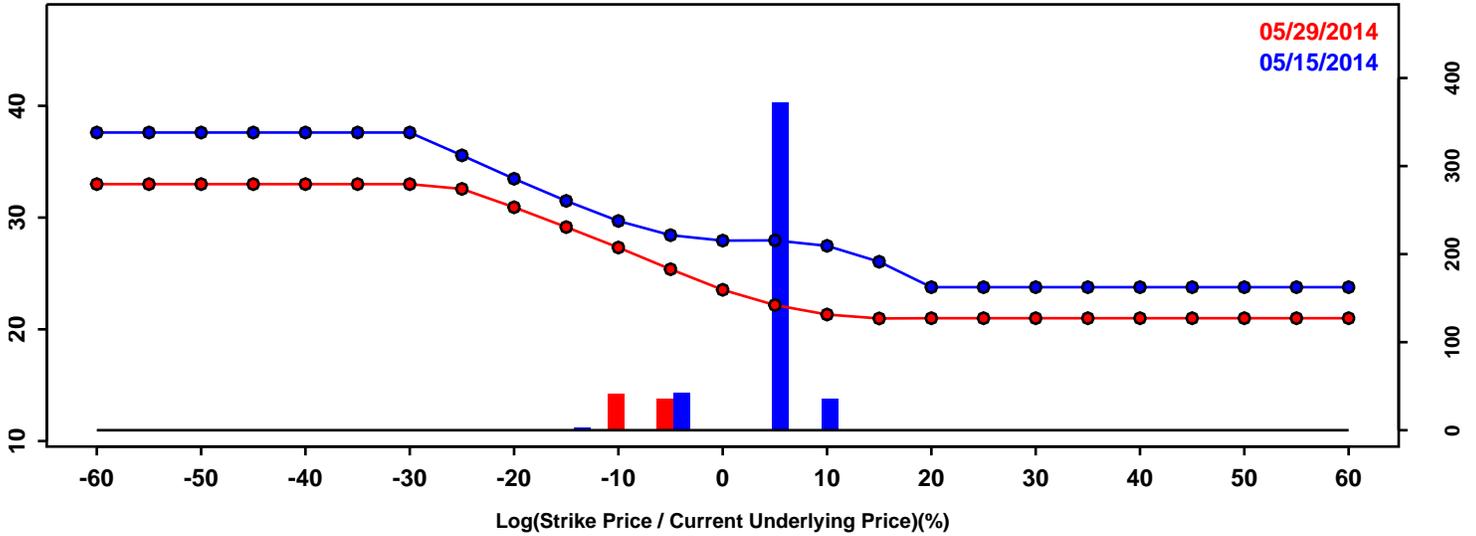
Statistics of the Log Return Distributions

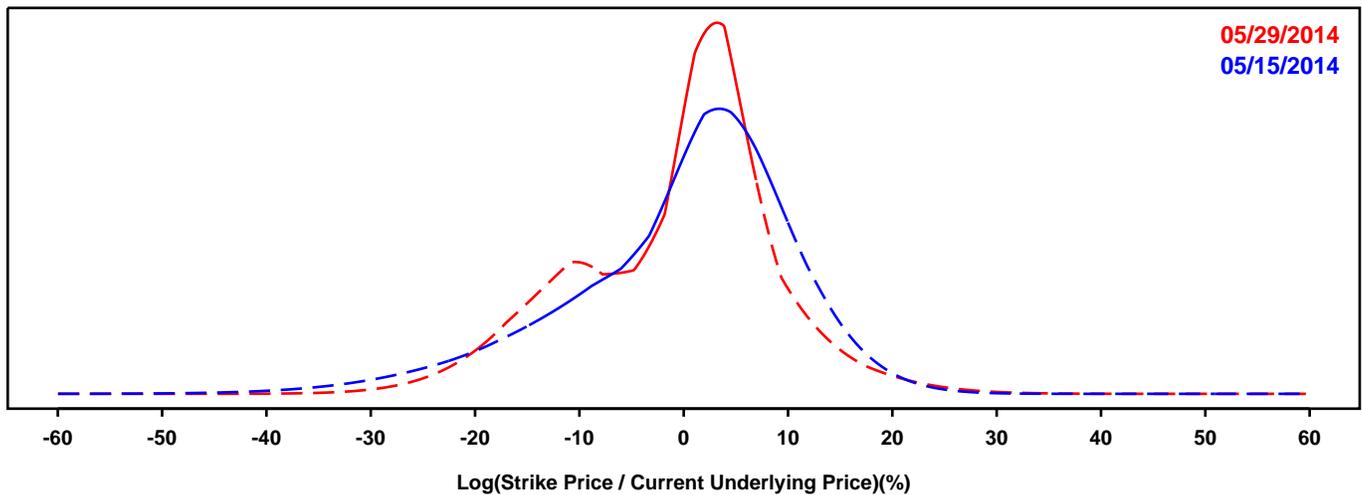|	05/15/2014	05/29/2014	Change
10th Pct	-17.27%	-15.71%	1.56%
50th Pct	-0.16%	1.49%	1.65%
90th Pct	18.67%	13.63%	-5.03%
Mean	0.23%	0.15%	-0.08%
Std Dev	14.31%	11.95%	-2.36%
Skew	-0.35%	-0.71	-0.36
Kurtosis	0.54	1.10	0.56

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- METLIFE

Log returns are based on the risk neutral density function of the underlying asset derived from options that expire in approximately 3 months.
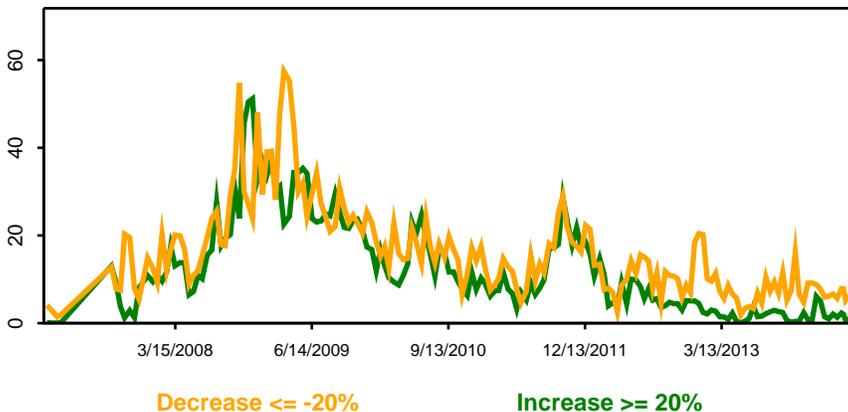
Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
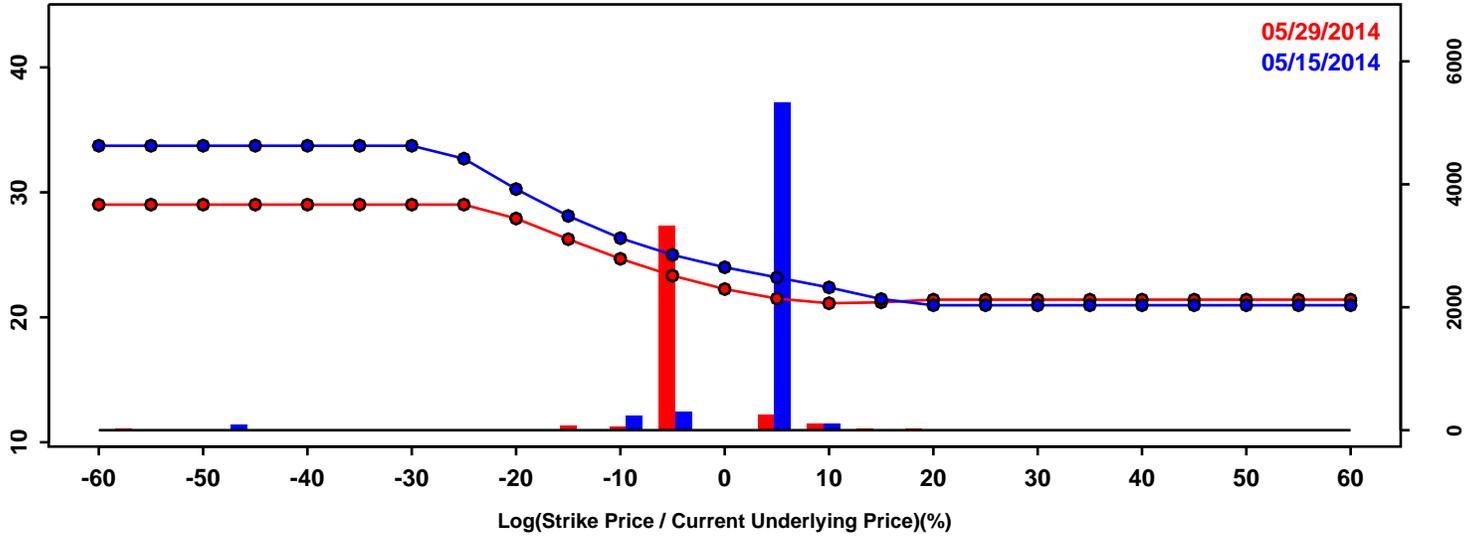
Statistics of the Log Return Distributions

	05/15/2014	05/29/2014	Change
10th Pct	-15.39%	-15.67%	-0.28%
50th Pct	0.37%	-0.24%	-0.61%
90th Pct	14.47%	12.22%	-2.24%
Mean	-0.25%	-1.07%	-0.82%
Std Dev	12.07%	11.30%	-0.77%
Skew	-0.47%	-0.46%	0.01
Kurtosis	0.76	0.70	-0.06

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- PRINCIPAL FINANCIAL

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

Implied Volatilities (lines--left axis) and Volume (bars--right axis)
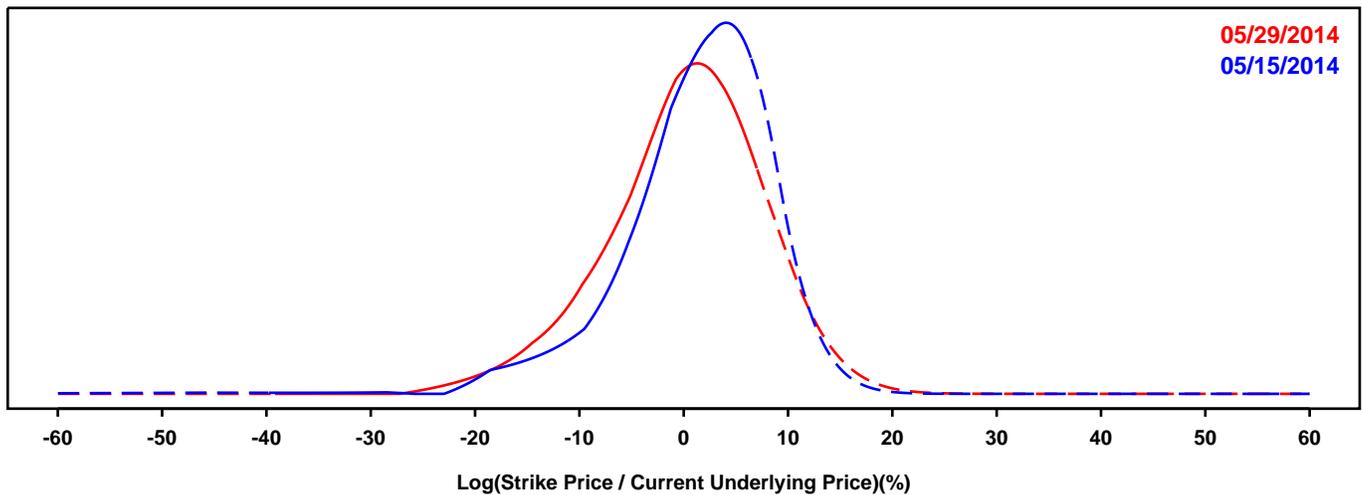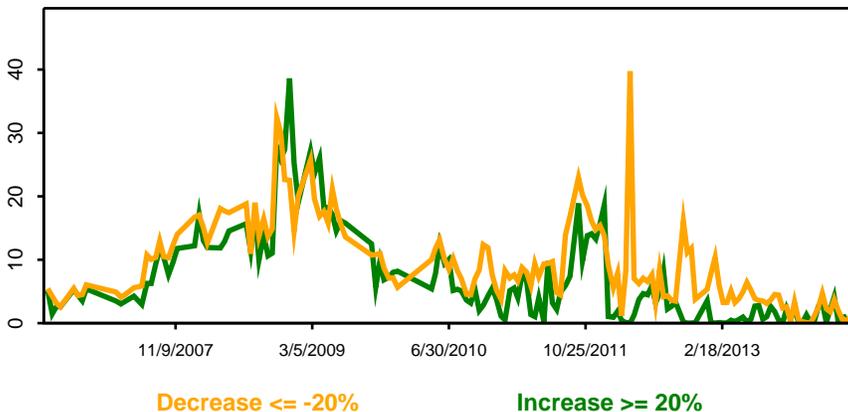

Log(Strike Price / Current Underlying Price)(%)

05/29/2014
05/15/2014

Risk Neutral PDF of the Log Return Distribution

Log(Strike Price / Current Underlying Price)(%)

05/29/2014
05/15/2014

Probability of a Large Change

Decrease <= -20%   Increase >= 20%
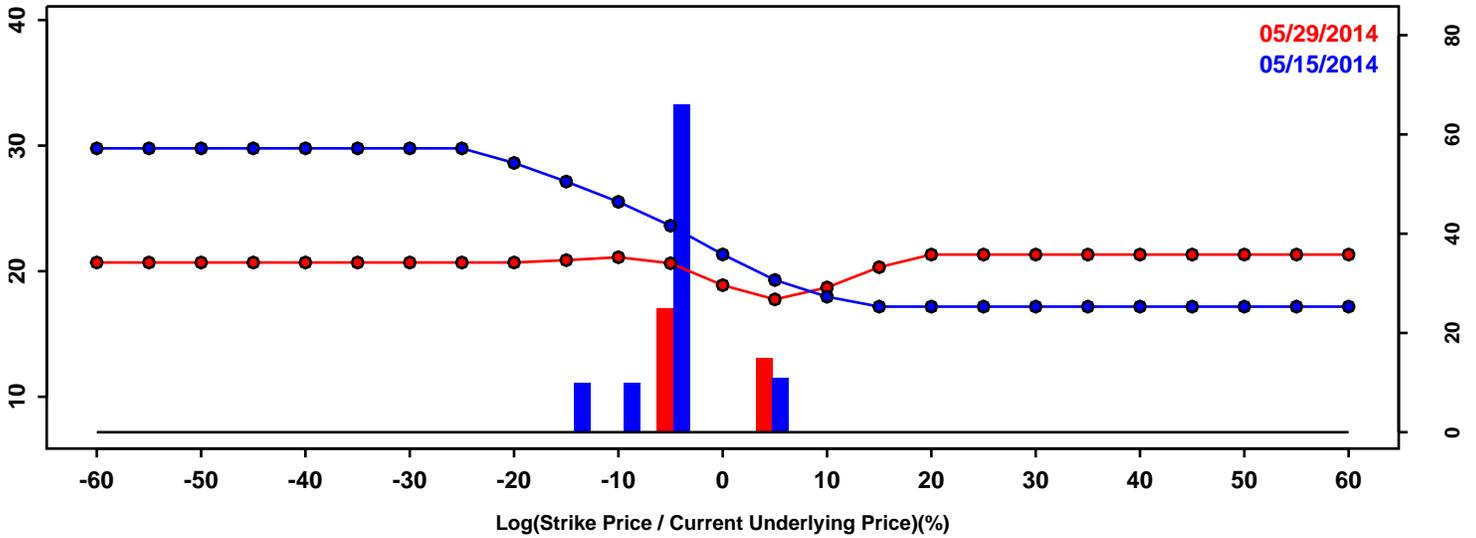
Statistics of the Log Return Distributions

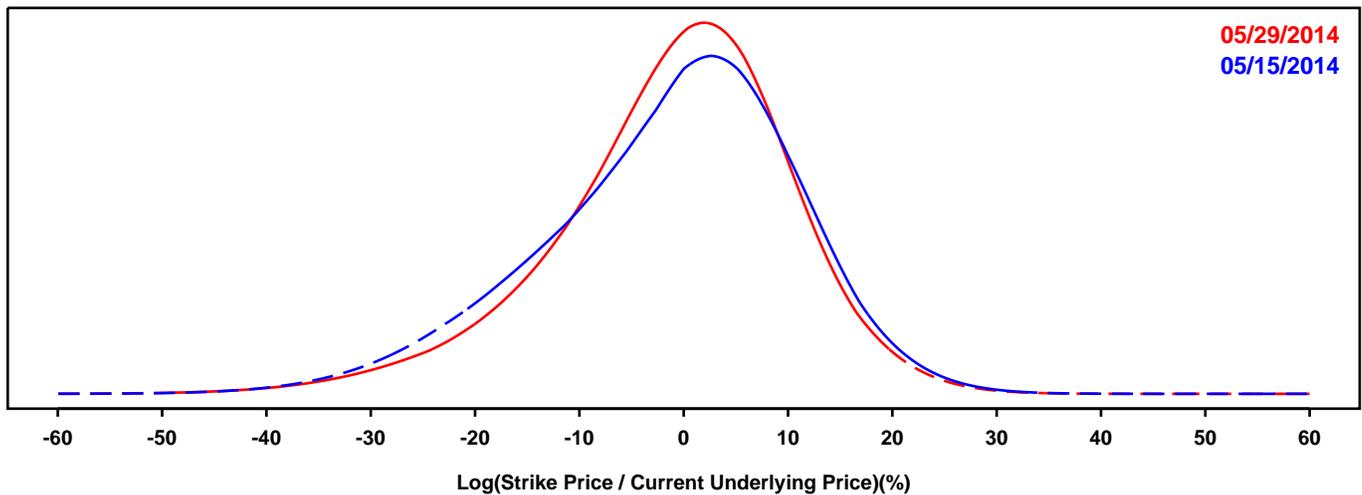|	05/15/2014	05/29/2014	Change
10th Pct	-15.57%	-14.37%	1.20%
50th Pct	1.63%	1.08%	-0.56%
90th Pct	11.81%	9.95%	-1.86%
Mean	-0.27%	-0.65%	-0.39%
Std Dev	11.01%	9.67%	-1.33%
Skew	-0.84%	-0.35	0.49
Kurtosis	1.02	0.35	-0.67

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- PROGRESSIVE

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

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
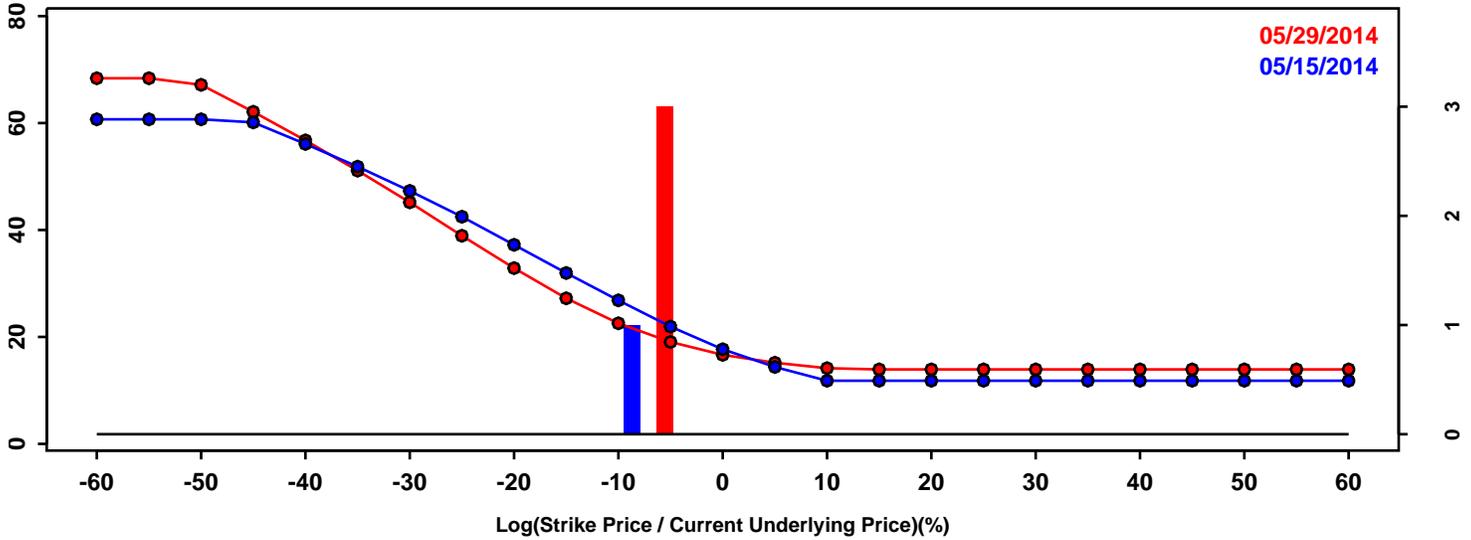
Statistics of the Log Return Distributions

	05/15/2014	05/29/2014	Change
10th Pct	-7.87%	-9.87%	-2.00%
50th Pct	2.24%	0.72%	-1.52%
90th Pct	9.30%	9.35%	0.06%
Mean	1.19%	0.23%	-0.96%
Std Dev	8.03%	7.56%	-0.47%
Skew	-2.37	-0.35	2.01
Kurtosis	15.26	0.22	-15.04

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- PRUDENTIAL

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

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

Risk Neutral PDF of the Log Return Distribution
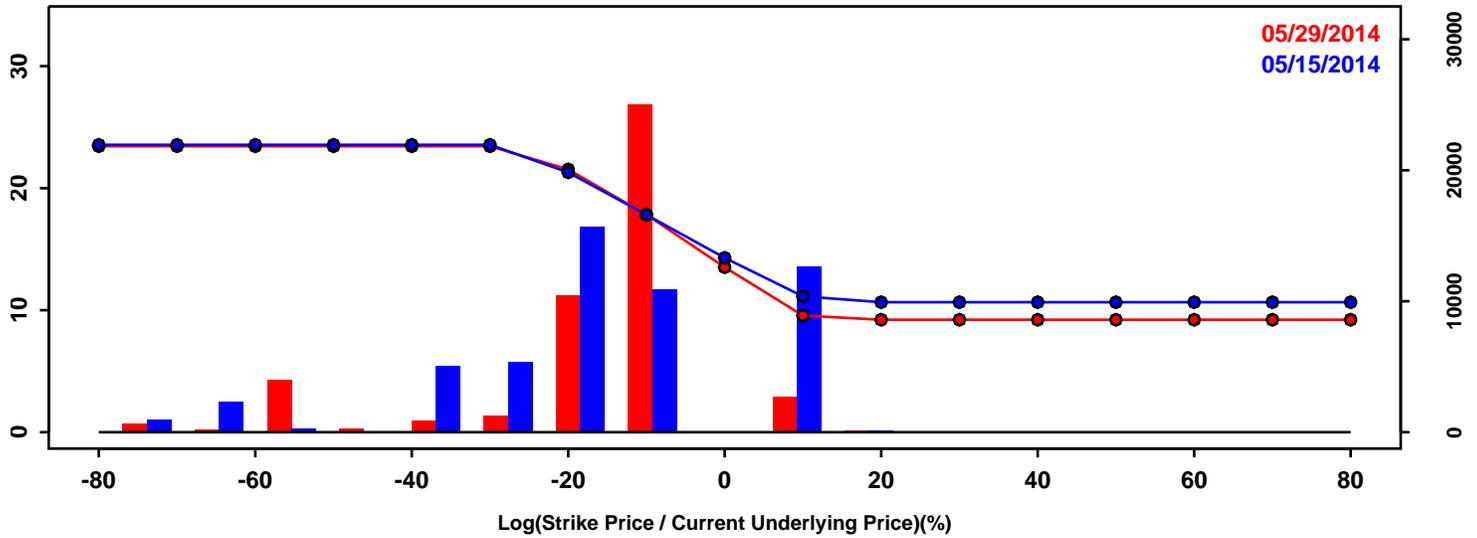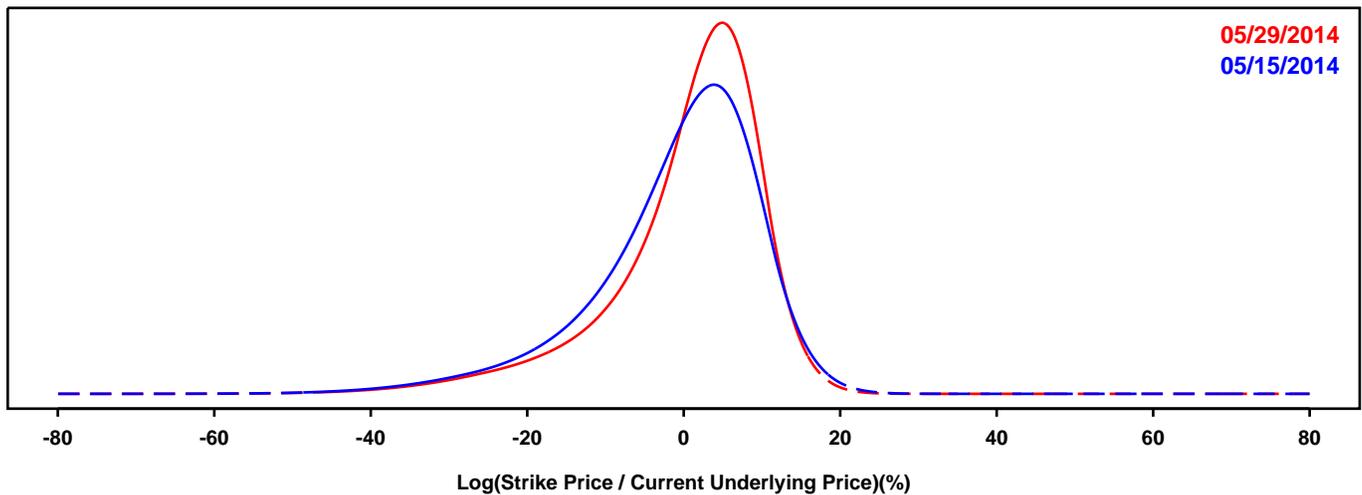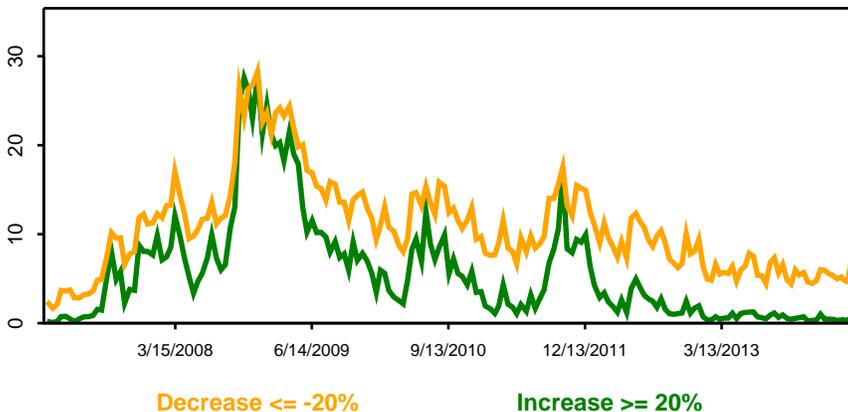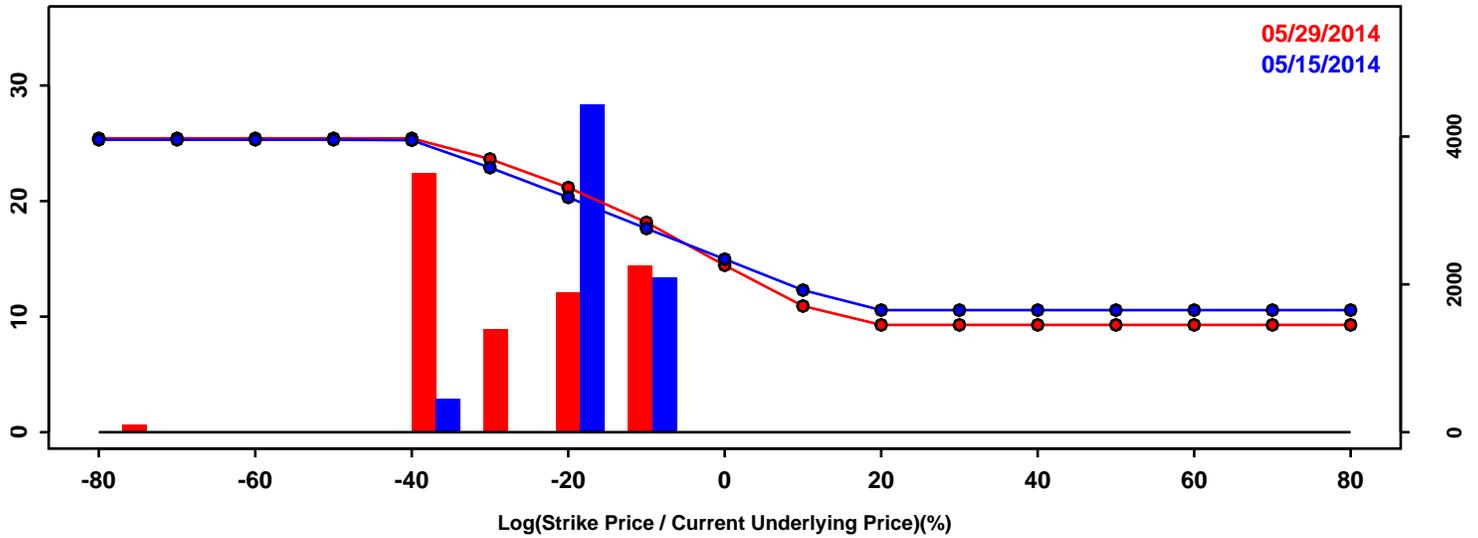

Probability of a Large Change

Decrease <= -20%　　　**Increase >= 20%**
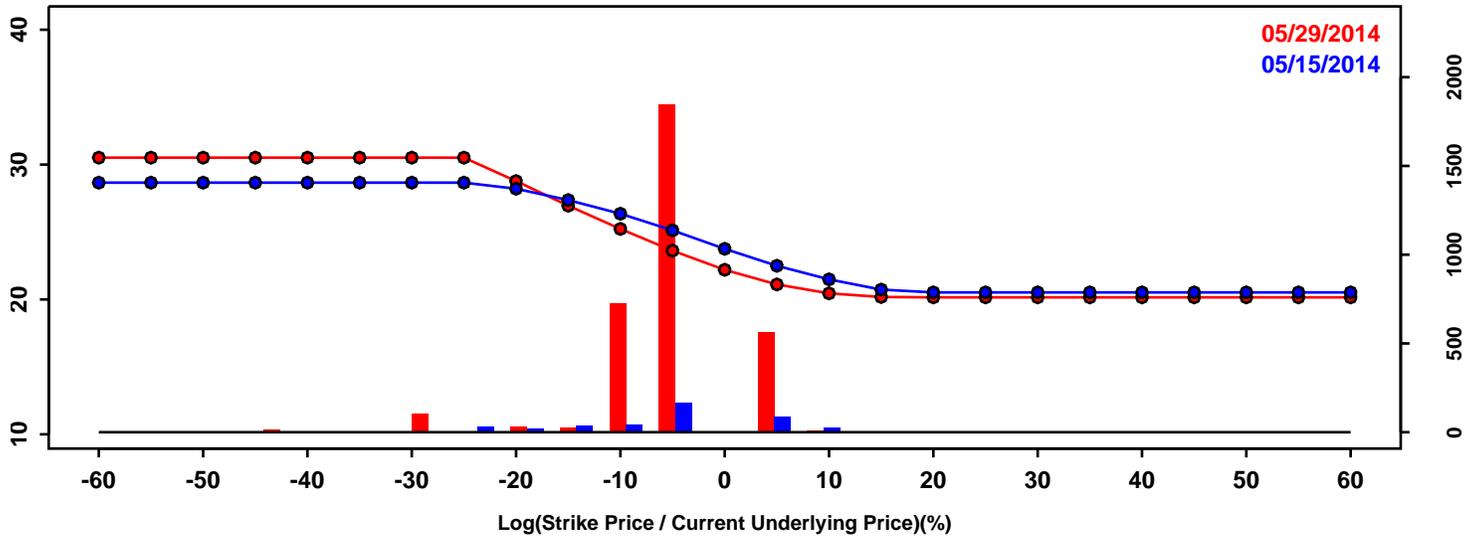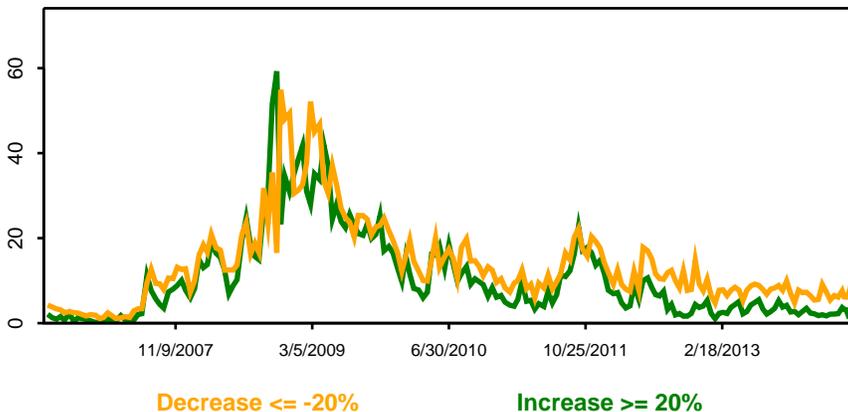
Statistics of the Log Return Distributions

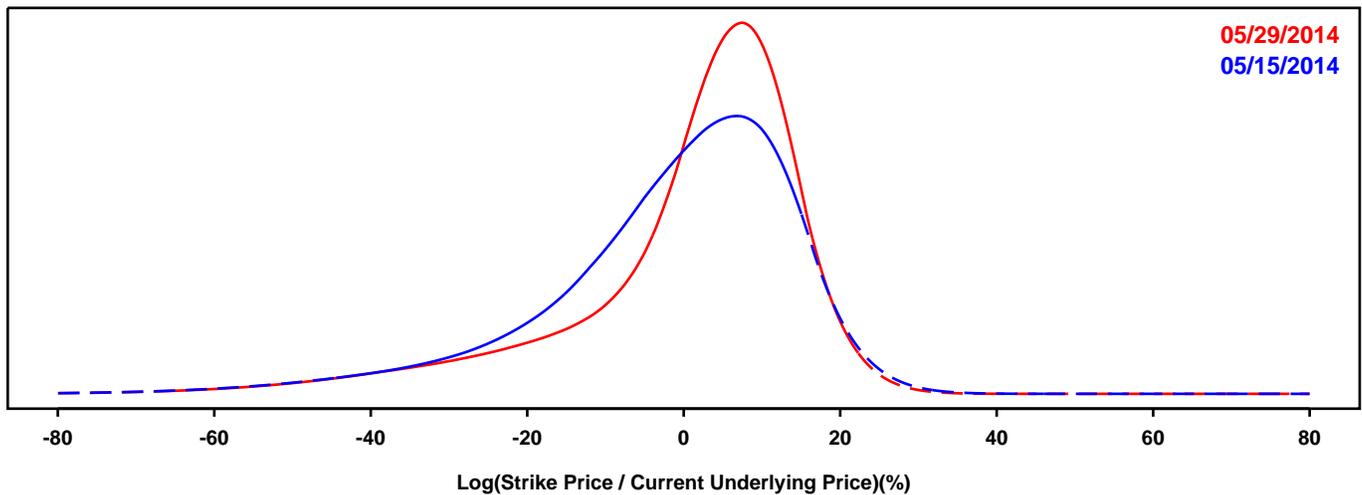|	05/15/2014	05/29/2014	Change
10th Pct	-18.27%	-16.10%	2.17%
50th Pct	0.04%	0.08%	0.04%
90th Pct	13.03%	12.12%	-0.91%
Mean	-1.40%	-1.08%	0.32%
Std Dev	12.29%	11.44%	-0.85%
Skew	-0.50	-0.60	-0.10
Kurtosis	0.29	0.85	0.56

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- S&P 500

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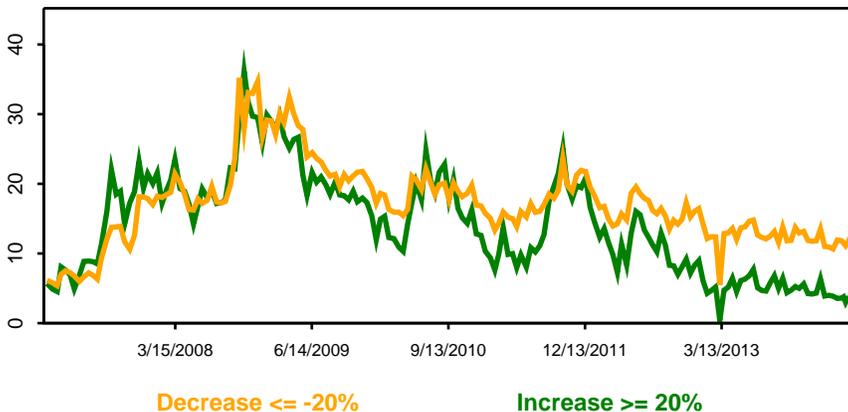derived from options that expire in approximately 6 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**

Statistics of the Log Return Distributions

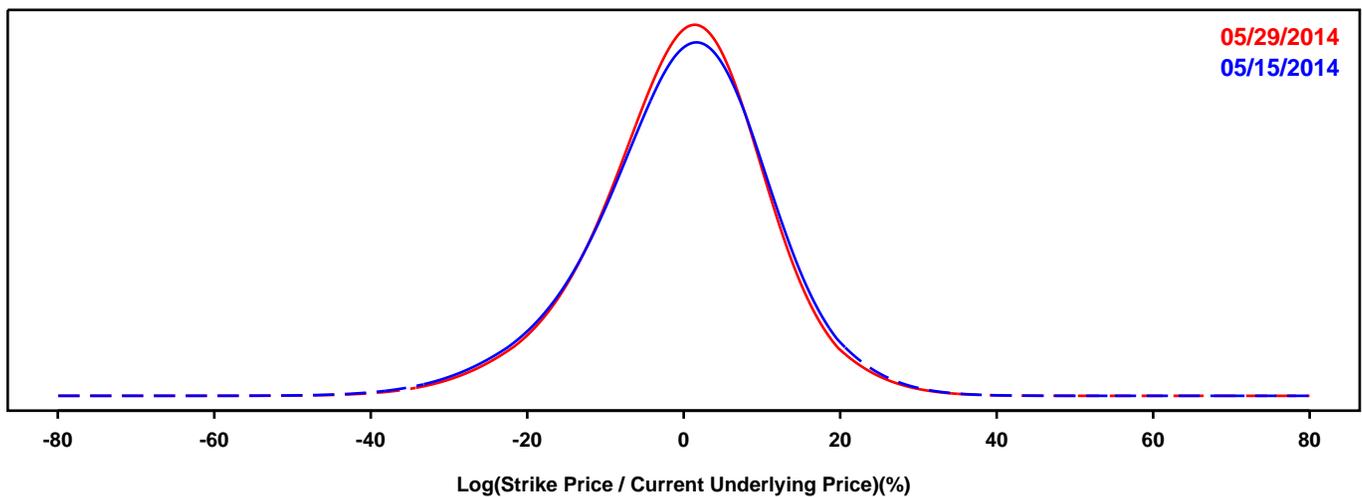|	05/15/2014	05/29/2014	Change
10th Pct	-15.05%	-12.95%	2.09%
50th Pct	1.02%	2.51%	1.49%
90th Pct	10.58%	10.49%	-0.09%
Mean	-0.85%	0.38%	1.23%
Std Dev	10.76%	10.10%	-0.66%
Skew	-1.10	-1.39	-0.28
Kurtosis	1.92	2.77	0.85

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- S&P 500

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

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   Increase >= 20%

Statistics of the Log Return Distributions

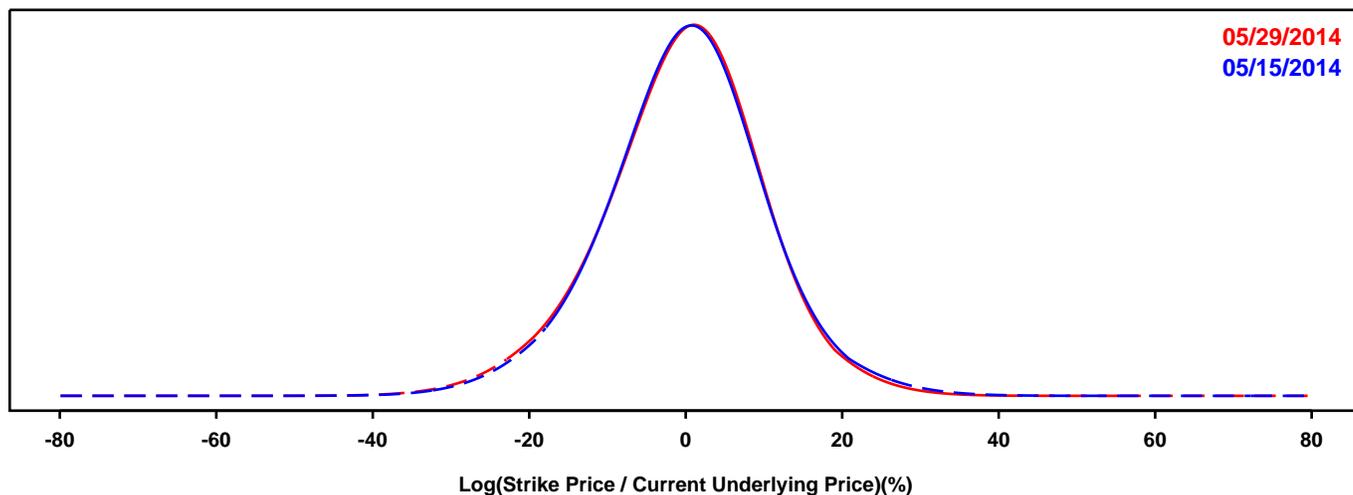|	05/15/2014	05/29/2014	Change
10th Pct	-23.05%	-21.34%	1.72%
50th Pct	1.40%	4.30%	2.90%
90th Pct	15.34%	15.17%	-0.17%
Mean	-1.65%	0.40%	2.05%
Std Dev	16.23%	15.72%	-0.51%
Skew	-1.20	-1.57	-0.38
Kurtosis	2.12	3.14	1.01

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CRUDE OIL FUTURES (WTI)

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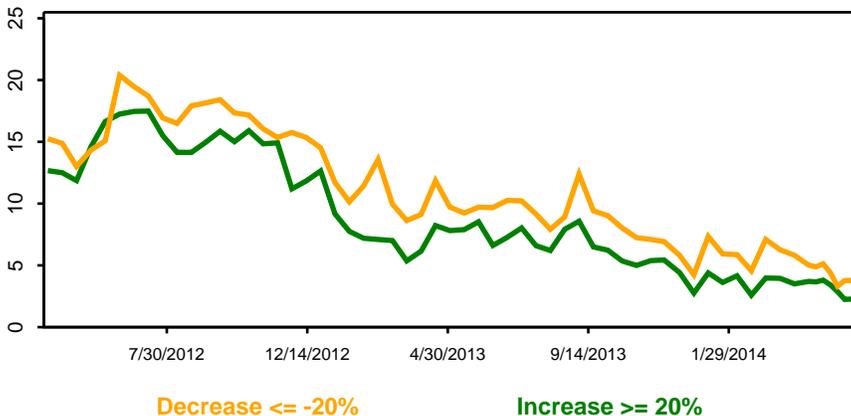*derived from options that expire in approximately 6 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   Increase >= 20%
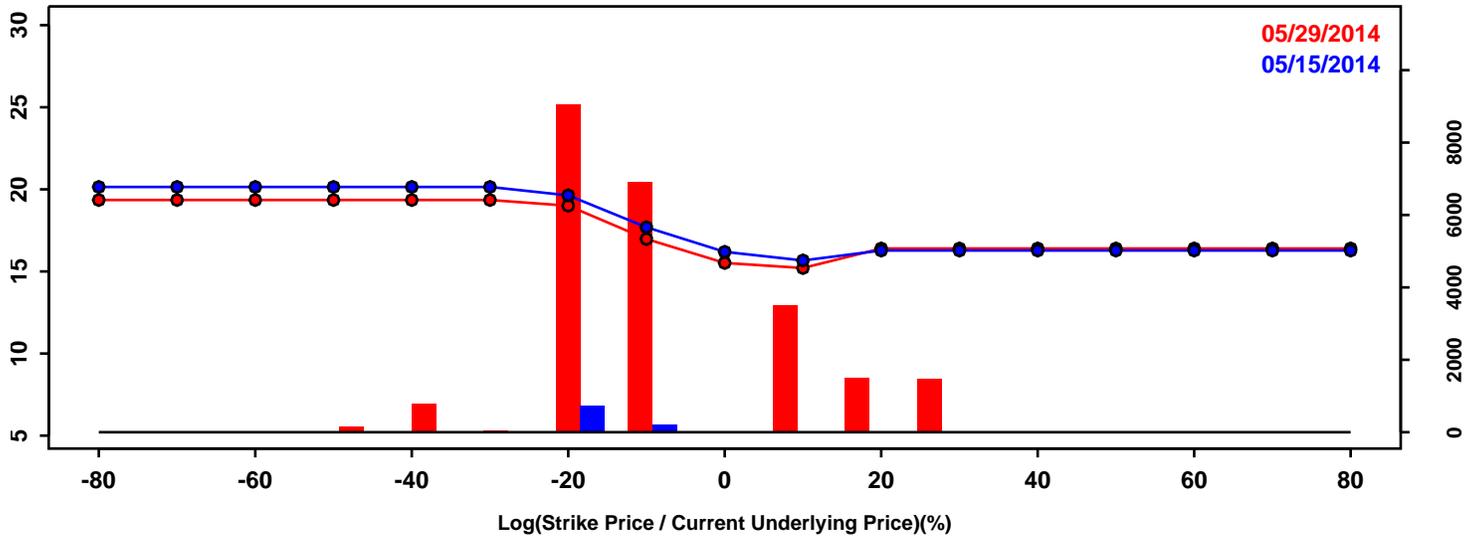
Statistics of the Log Return Distributions

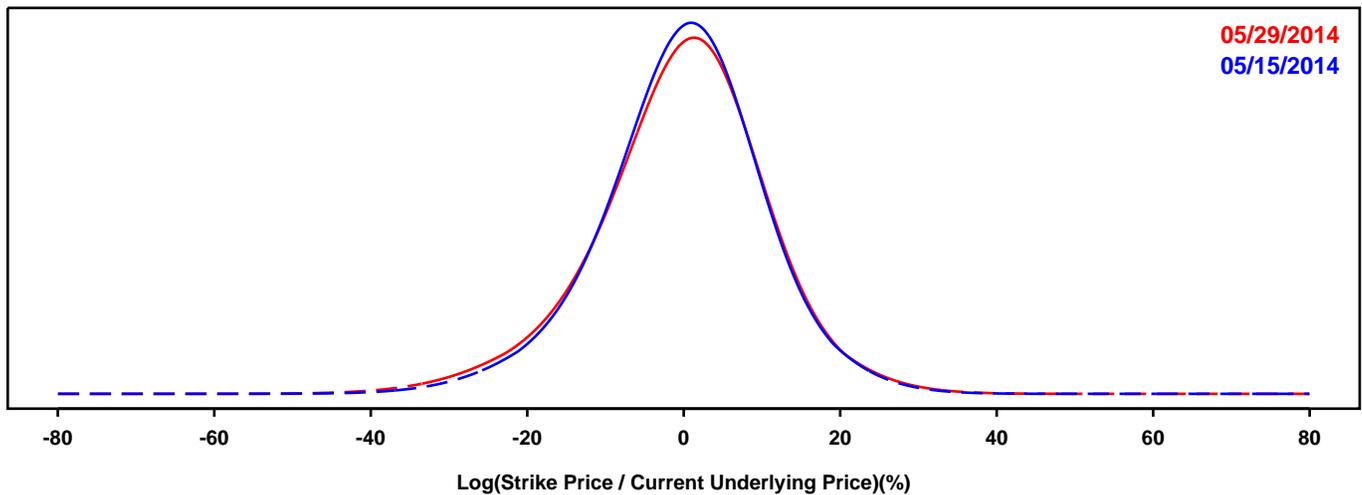|	05/15/2014	05/29/2014	Change
10th Pct	-15.06%	-14.44%	0.62%
50th Pct	0.44%	0.28%	-0.16%
90th Pct	13.41%	12.75%	-0.66%
Mean	-0.24%	-0.31%	-0.07%
Std Dev	11.48%	11.00%	-0.48%
Skew	-0.35	-0.32	0.03
Kurtosis	0.61	0.66	0.05

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CRUDE OIL FUTURES (Brent)

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

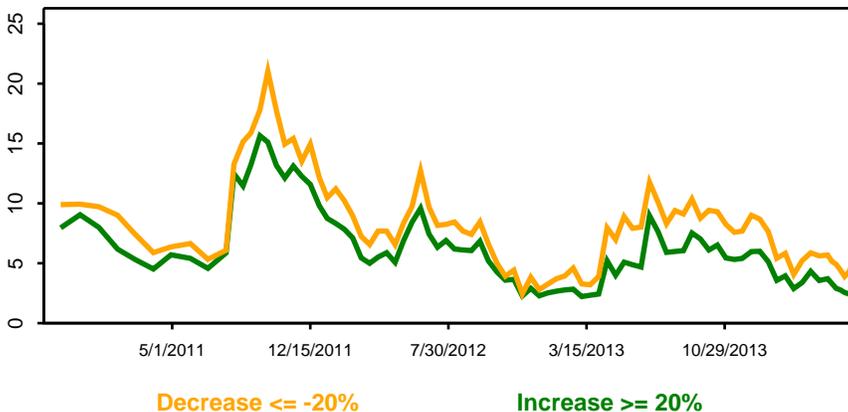### Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
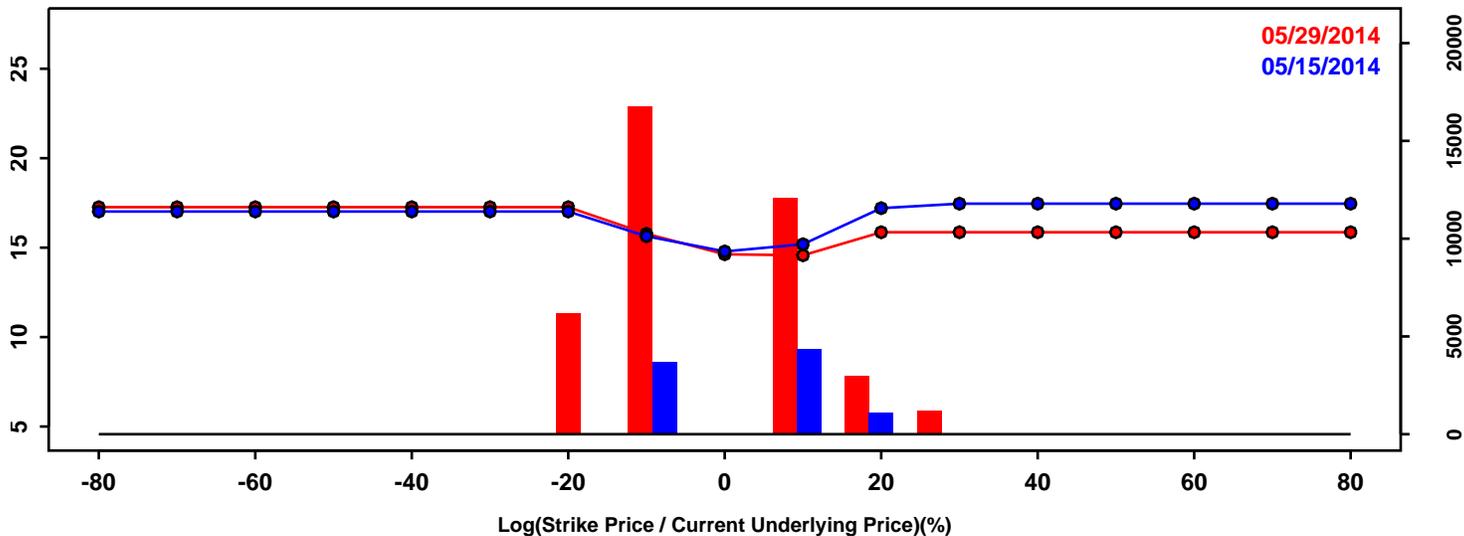
Statistics of the Log Return Distributions

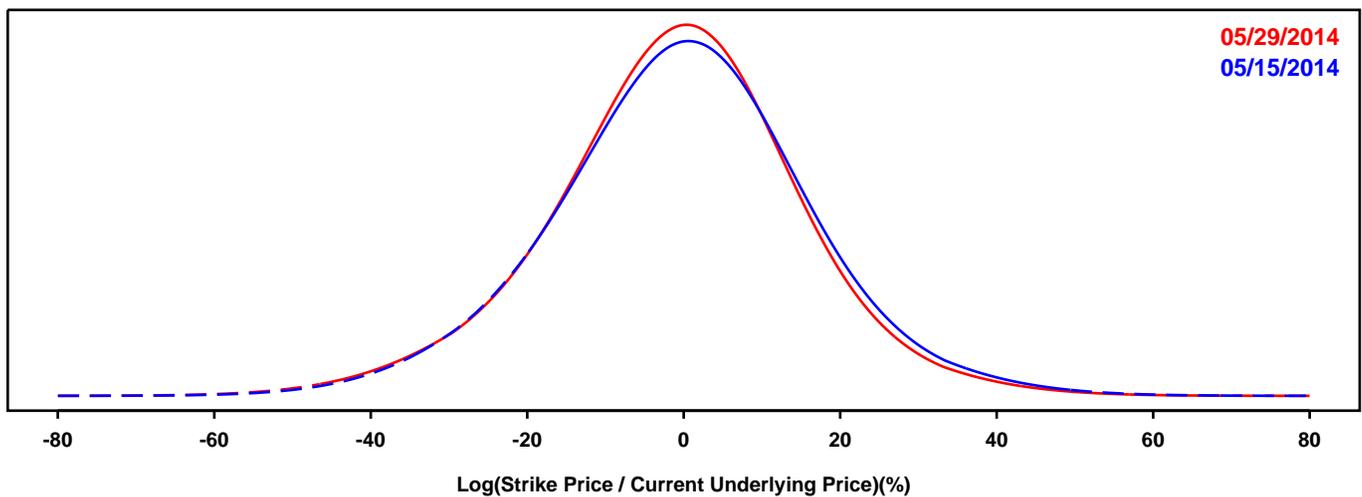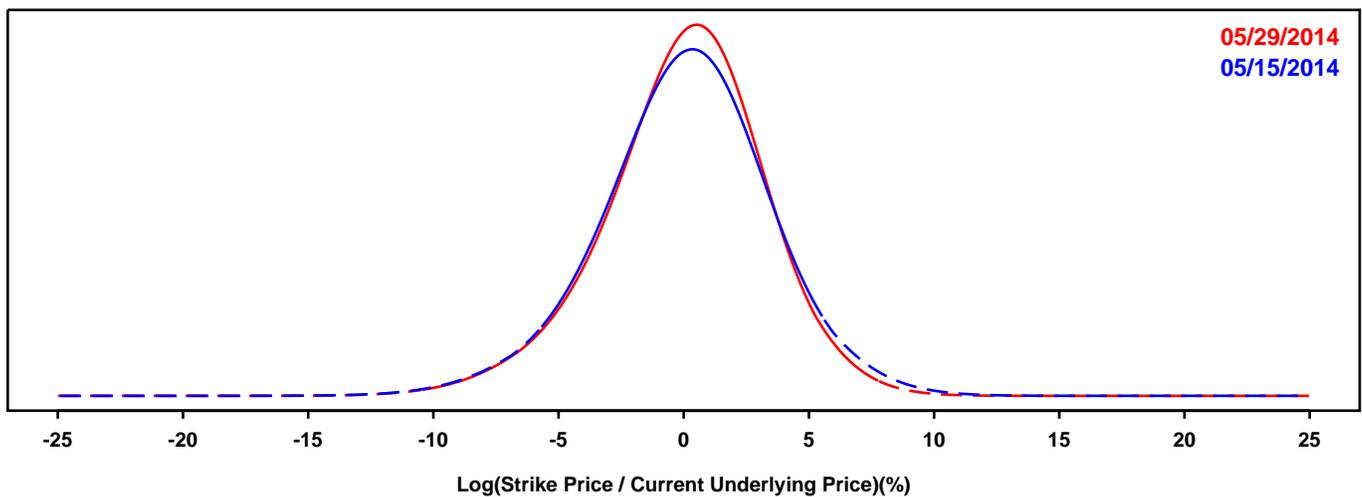|	05/15/2014	05/29/2014	Change
10th Pct	-13.13%	-13.61%	-0.48%
50th Pct	0.26%	0.14%	-0.12%
90th Pct	12.70%	12.14%	-0.55%
Mean	0.05%	-0.30%	-0.35%
Std Dev	10.44%	10.36%	-0.08%
Skew	-0.07	-0.22	-0.15
Kurtosis	0.61	0.52	-0.09

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- GOLD FUTURES

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

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
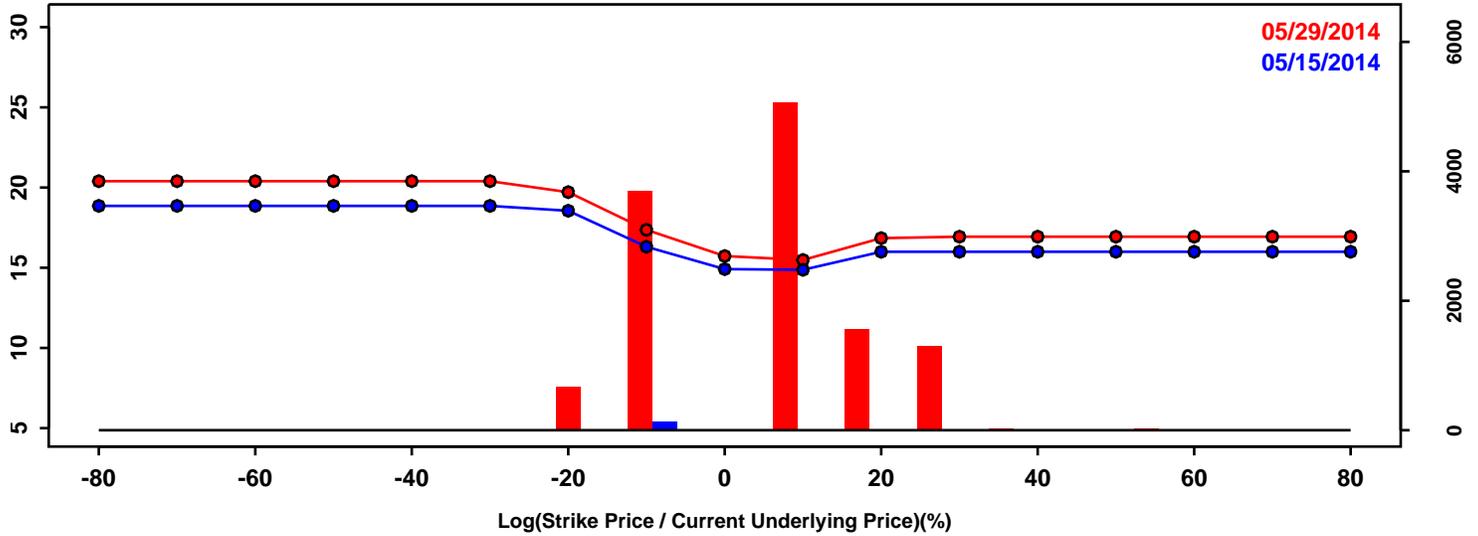
Statistics of the Log Return Distributions

	05/15/2014	05/29/2014	Change
10th Pct	-13.36%	-14.51%	-1.15%
50th Pct	0.32%	0.27%	-0.04%
90th Pct	12.52%	12.81%	0.29%
Mean	-0.10%	-0.34%	-0.24%
Std Dev	10.53%	11.16%	0.63%
Skew	-0.26%	-0.35%	-0.09%
Kurtosis	0.73	0.83	0.11

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- SILVER FUTURES

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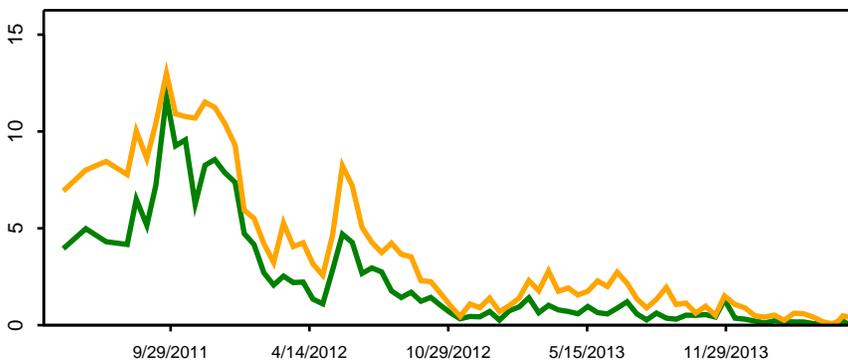derived from options that expire in approximately 6 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
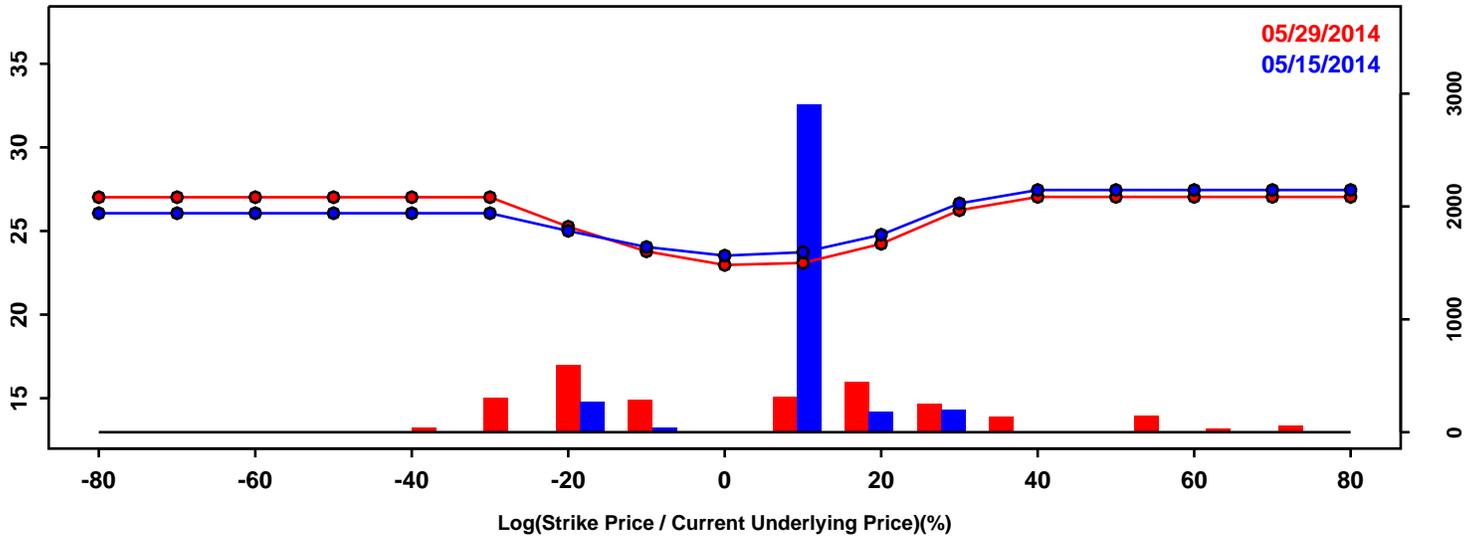
Statistics of the Log Return Distributions

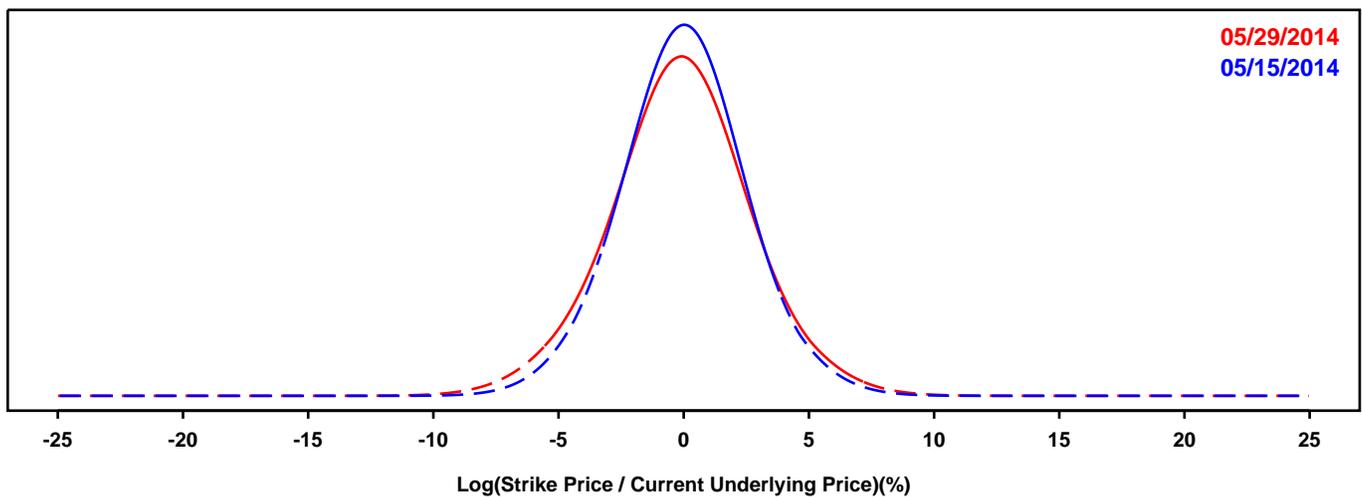|	05/15/2014	05/29/2014	Change
10th Pct	-21.32%	-21.61%	-0.29%
50th Pct	-0.06%	-0.64%	-0.58%
90th Pct	19.99%	18.34%	-1.65%
Mean	-0.30%	-1.13%	-0.84%
Std Dev	16.61%	16.22%	-0.39%
Skew	-0.03	-0.14	-0.10
Kurtosis	0.50	0.66	0.16

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- DOLLAR-EURO EXCHANGE RATE FUTURES

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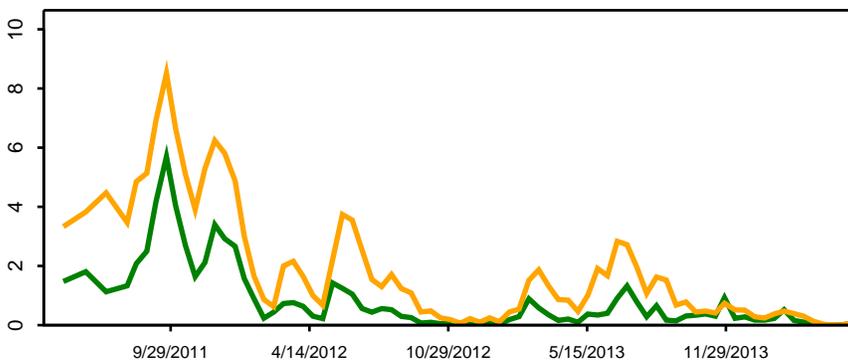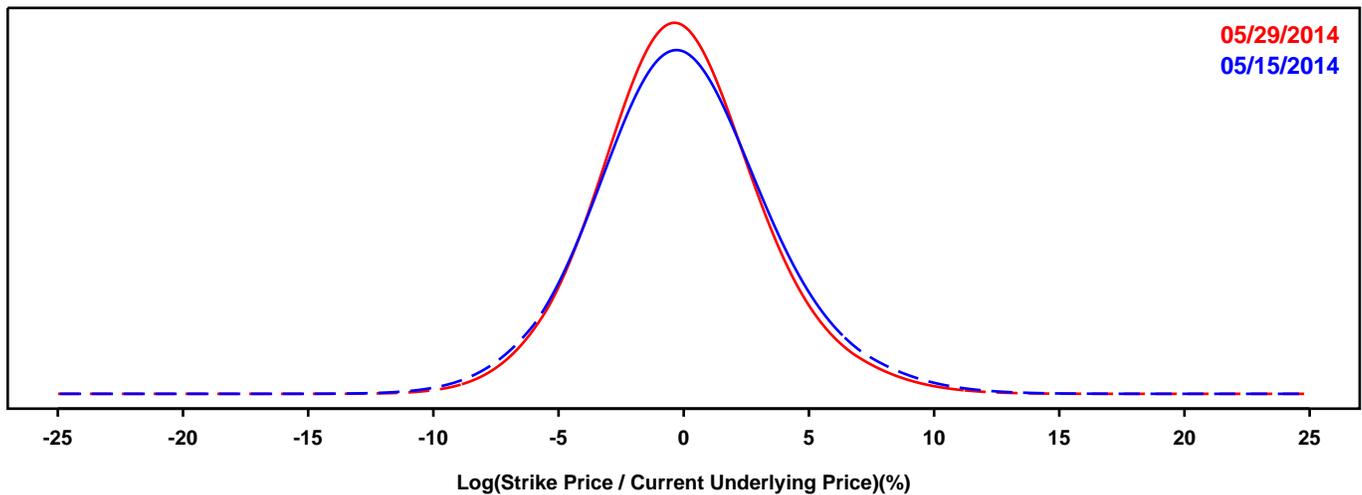derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)
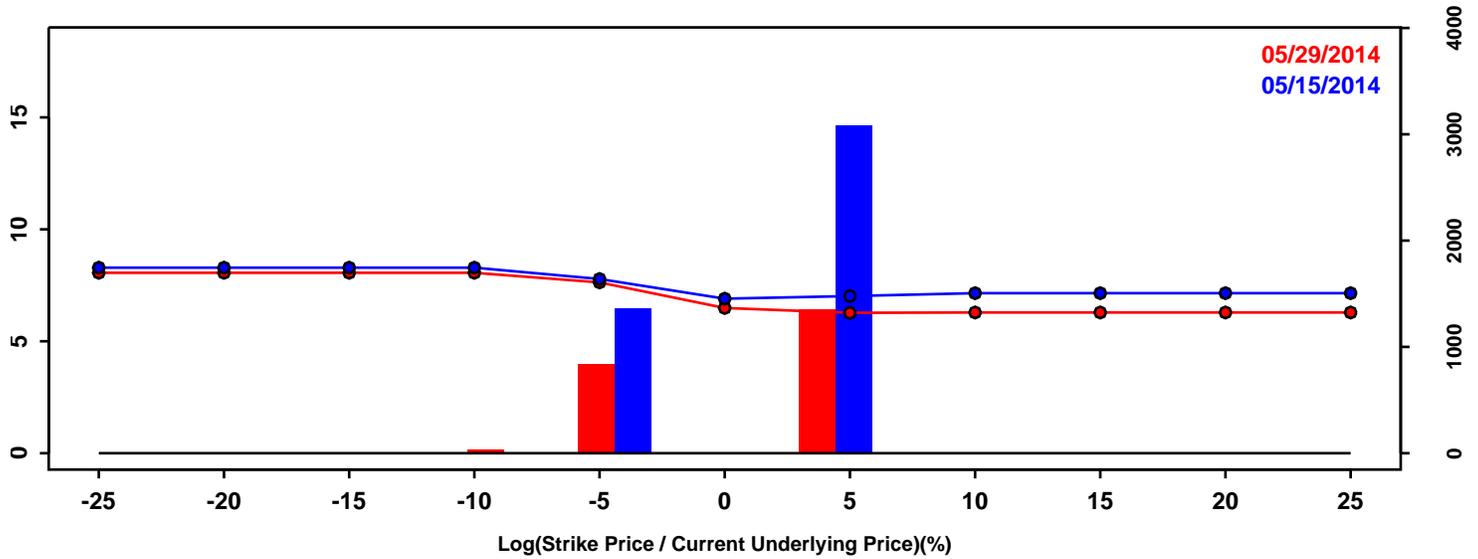
Probability of a Large Change

Decrease <= -10% [stronger $]　　　**Increase >= 10% [weaker $]**

Statistics of the Log Return Distributions

	05/15/2014	05/29/2014	Change
10th Pct	-4.30%	-4.16%	0.14%
50th Pct	0.19%	0.22%	0.03%
90th Pct	4.31%	3.95%	-0.36%
Mean	0.12%	0.04%	-0.08%
Std Dev	3.44%	3.25%	-0.19%
Skew	-0.19%	-0.34%	-0.15%
Kurtosis	0.49	0.54	0.05

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- DOLLAR-POUND EXCHANGE RATE FUTURES

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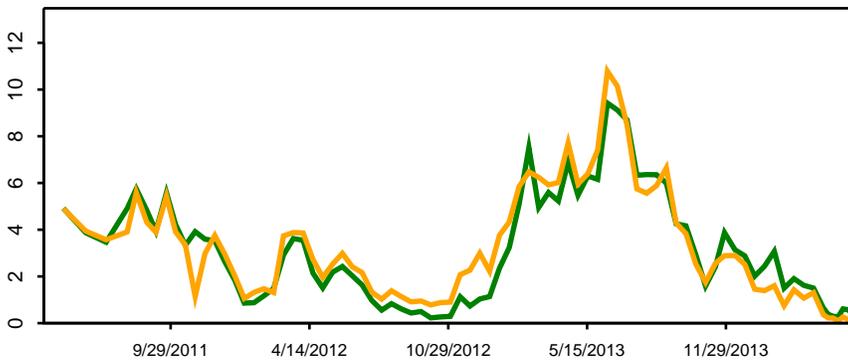*derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)
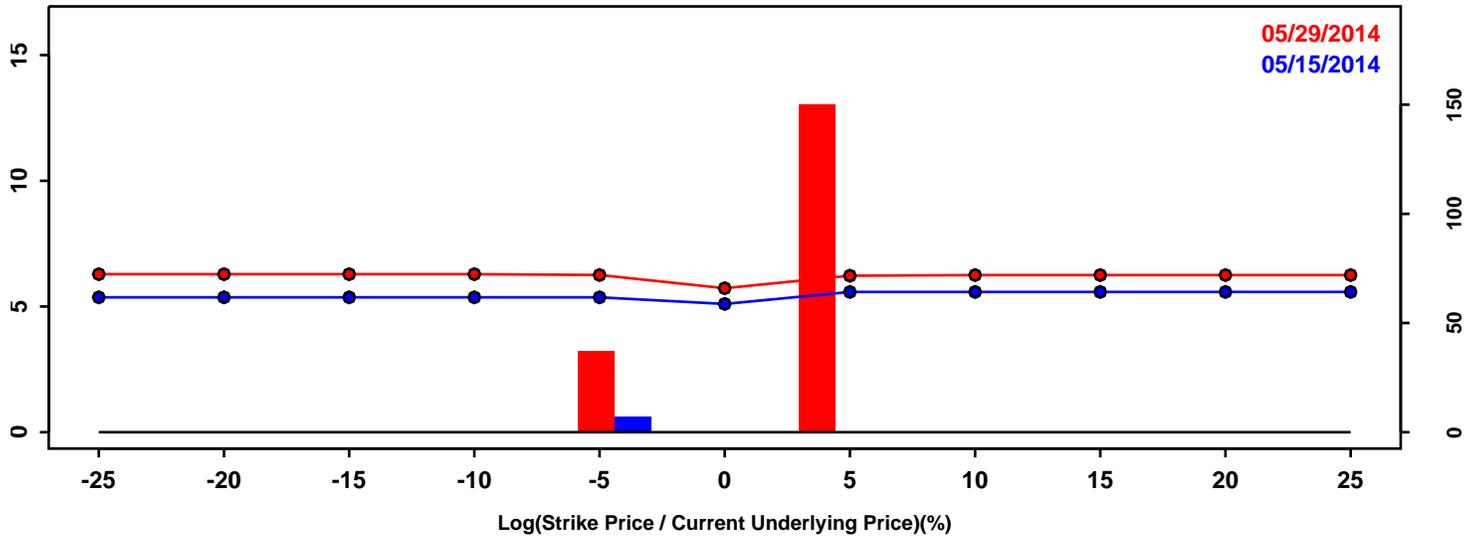
Probability of a Large Change

Decrease <= -10% [stronger $]   **Increase >= 10% [weaker $]**

Statistics of the Log Return Distributions

	05/15/2014	05/29/2014	Change
10th Pct	-3.17%	-3.71%	-0.54%
50th Pct	0.00%	-0.09%	-0.09%
90th Pct	3.22%	3.45%	0.23%
Mean	0.05%	-0.10%	-0.15%
Std Dev	2.55%	2.86%	0.31%
Skew	0.02	-0.03	-0.05
Kurtosis	0.27	0.38	0.11

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- DOLLAR-YEN EXCHANGE RATE FUTURES

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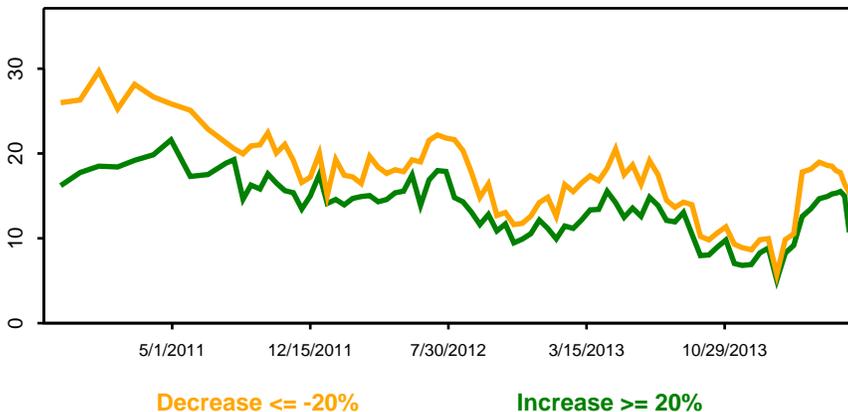derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)
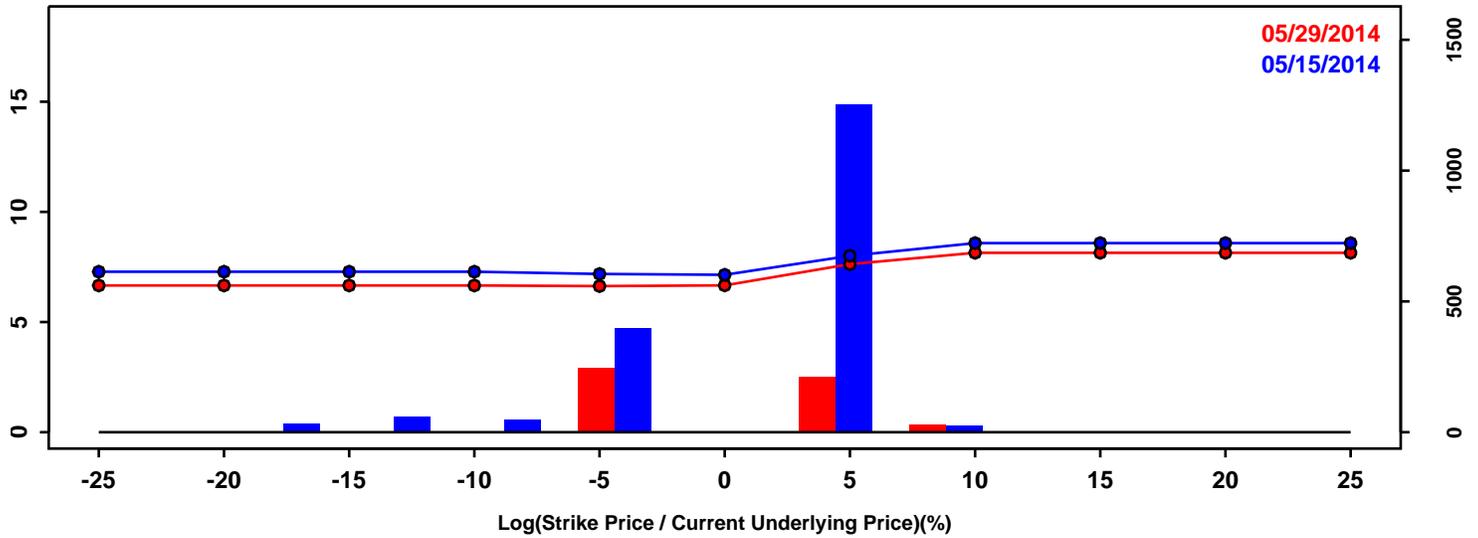
Probability of a Large Change

Decrease <= -10% [stronger $]　　**Increase >= 10% [weaker $]**

Statistics of the Log Return Distributions

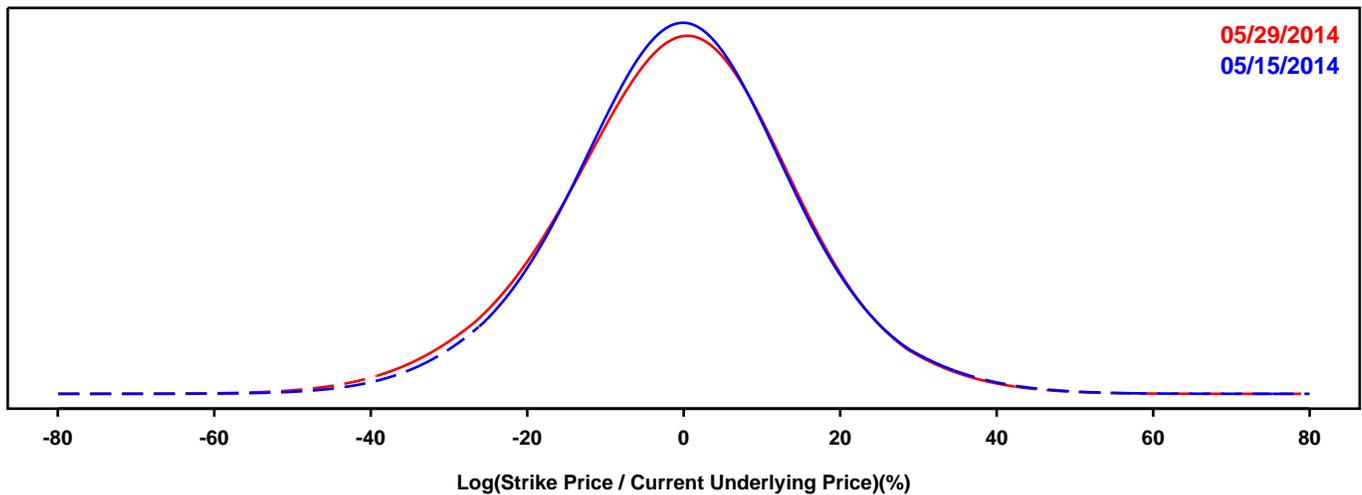|	05/15/2014	05/29/2014	Change
10th Pct	-4.40%	-4.20%	0.19%
50th Pct	-0.09%	-0.22%	-0.13%
90th Pct	4.49%	4.07%	-0.42%
Mean	0.03%	-0.10%	-0.13%
Std Dev	3.57%	3.32%	-0.25%
Skew	0.20	0.22	0.03
Kurtosis	0.46	0.49	0.03

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CORN FUTURES

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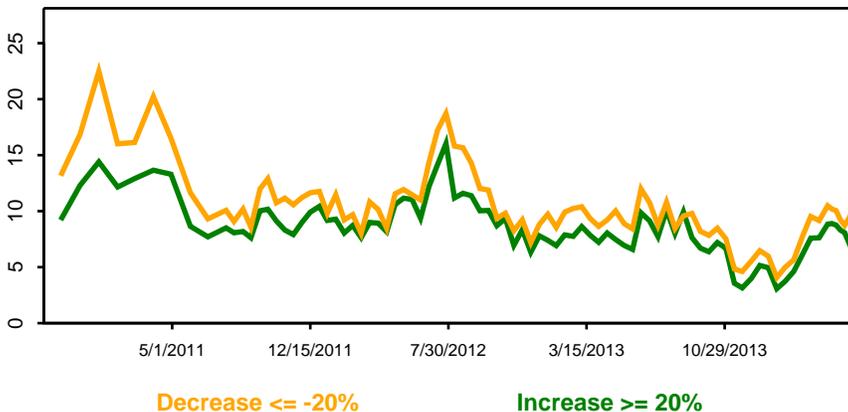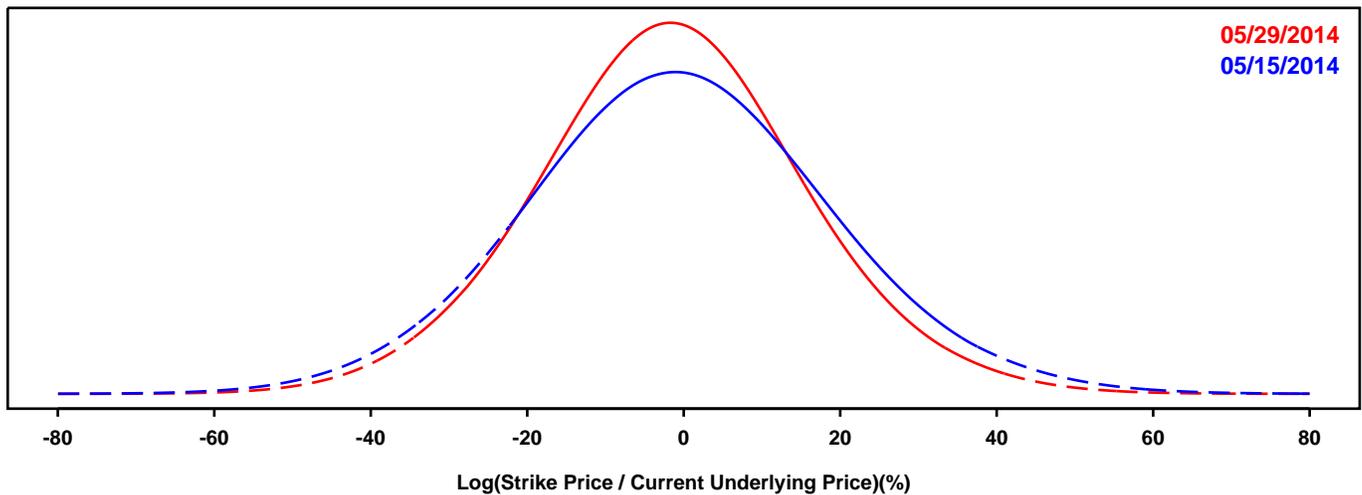derived from options that expire in approximately 6 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
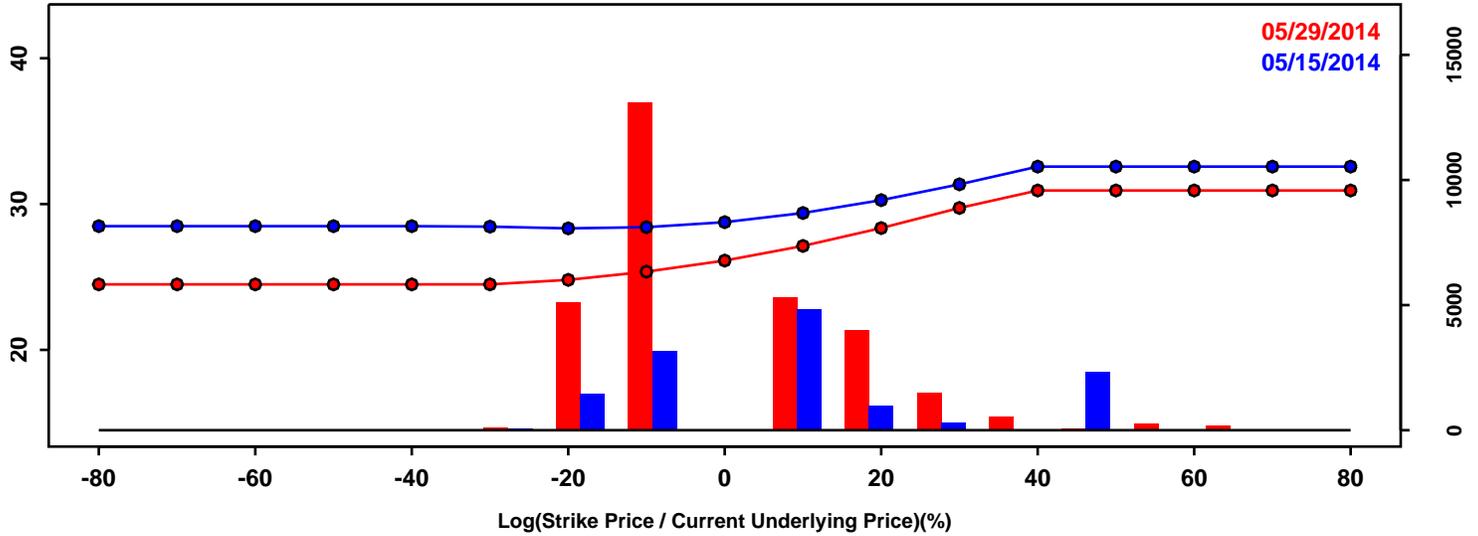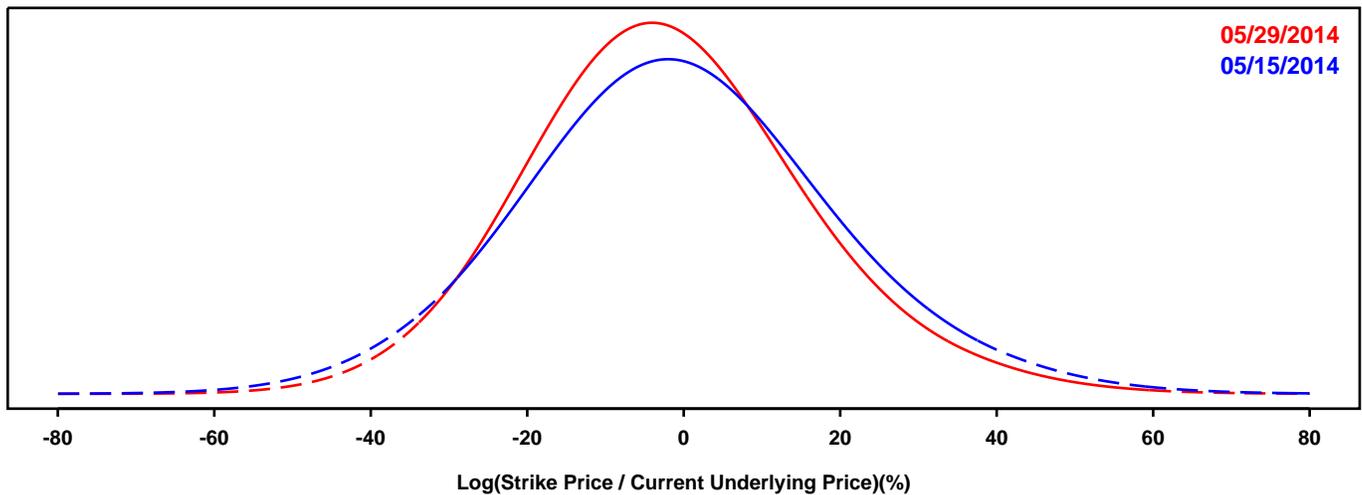
Statistics of the Log Return Distributions

	05/15/2014	05/29/2014	Change
10th Pct	-25.97%	-24.55%	1.42%
50th Pct	-1.16%	-2.74%	-1.57%
90th Pct	25.44%	21.62%	-3.82%
Mean	-0.58%	-1.95%	-1.37%
Std Dev	20.33%	18.31%	-2.02%
Skew	0.16	0.26	0.11
Kurtosis	0.26	0.32	0.05

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- SOYBEAN FUTURES

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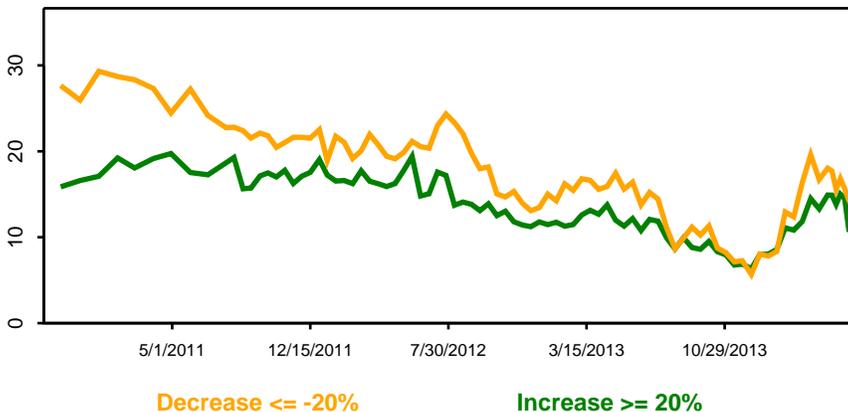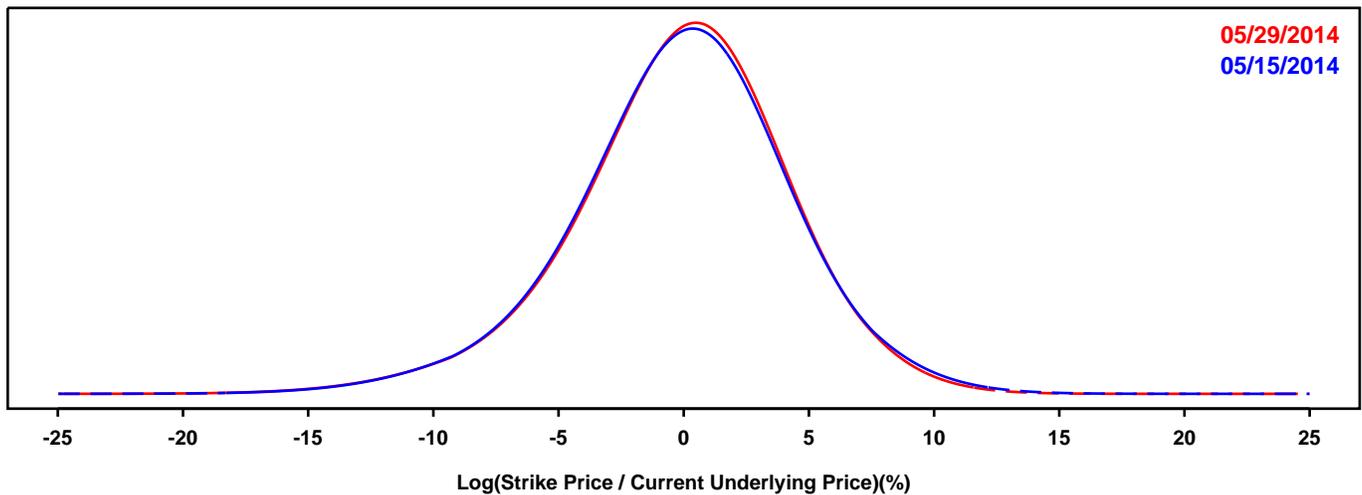derived from options that expire in approximately 6 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   Increase >= 20%
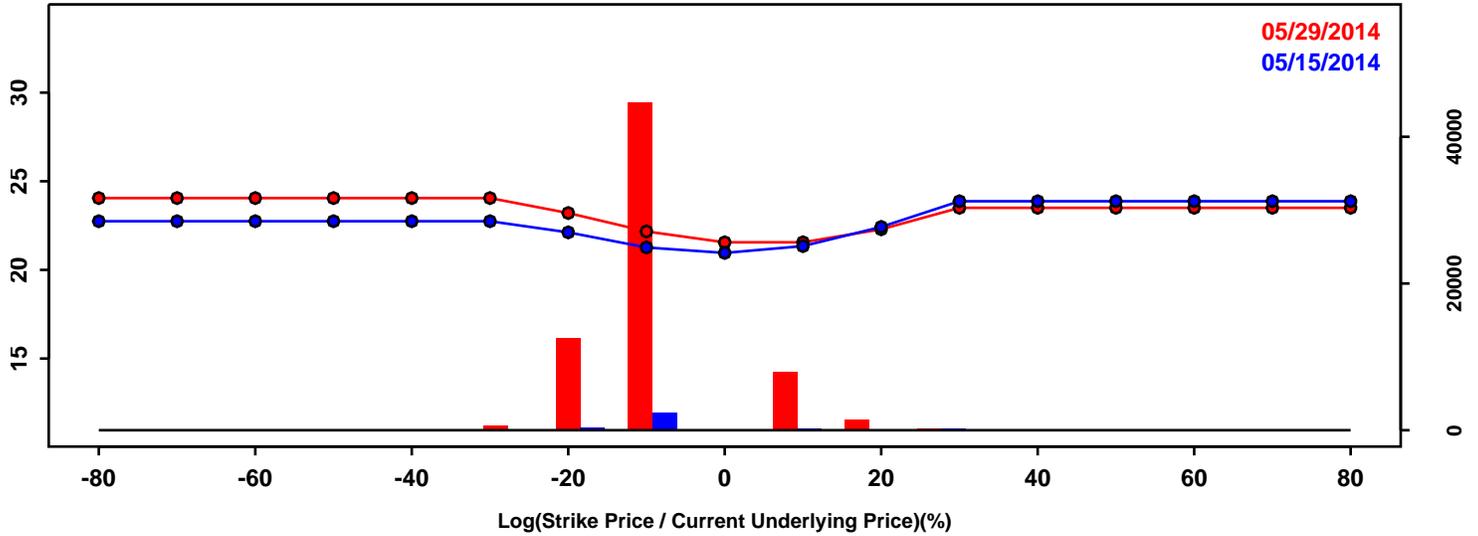
Statistics of the Log Return Distributions

	05/15/2014	05/29/2014	Change
10th Pct	-18.79%	-20.16%	-1.37%
50th Pct	-0.24%	-0.35%	-0.11%
90th Pct	18.12%	18.00%	-0.12%
Mean	-0.22%	-0.70%	-0.48%
Std Dev	14.77%	15.22%	0.46%
Skew	0.02	-0.10	-0.12
Kurtosis	0.43	0.39	-0.04

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- WHEAT FUTURES

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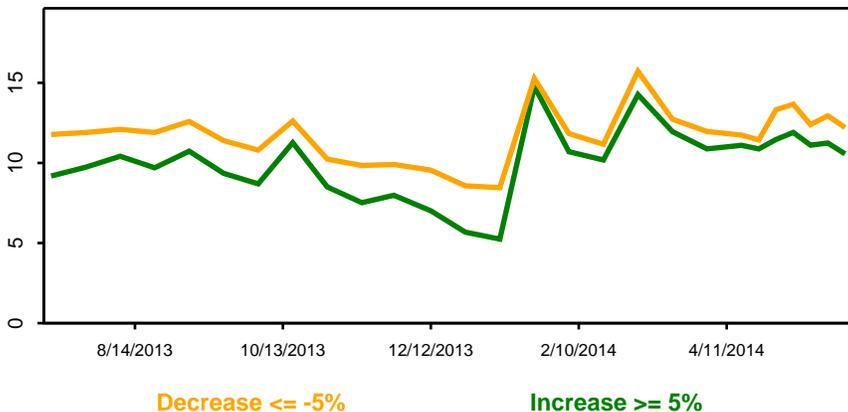*derived from options that expire in approximately 6 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)
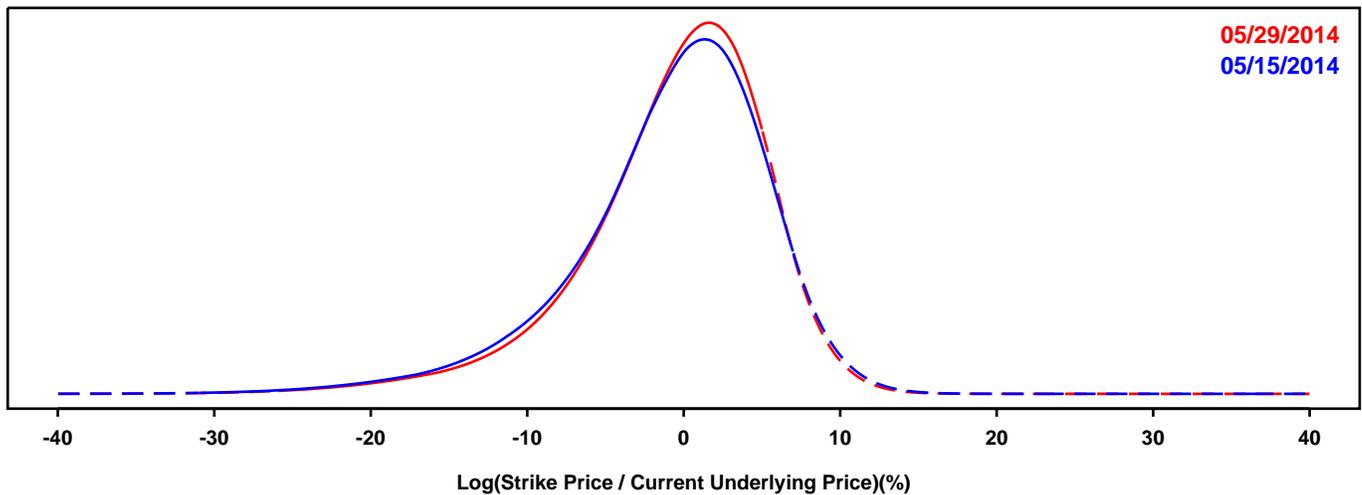

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
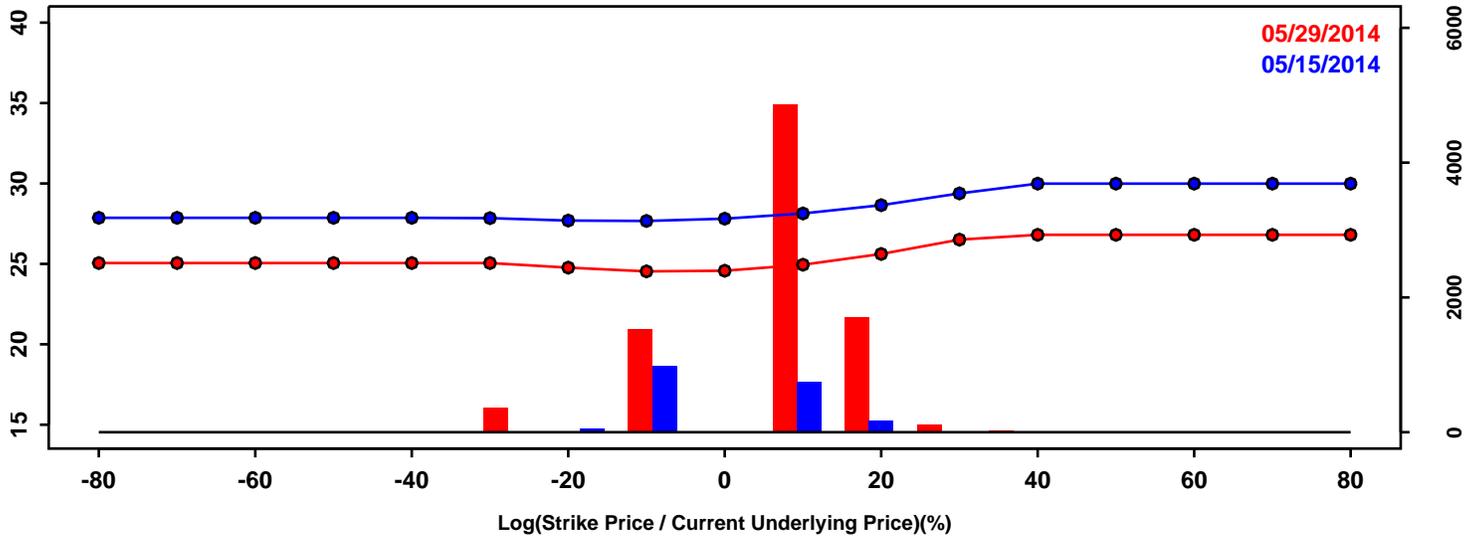
Statistics of the Log Return Distributions

	05/15/2014	05/29/2014	Change
10th Pct	-25.31%	-23.40%	1.91%
50th Pct	-0.73%	-1.57%	-0.84%
90th Pct	24.58%	20.50%	-4.08%
Mean	-0.46%	-1.46%	-1.00%
Std Dev	19.64%	17.33%	-2.31%
Skew	0.07	0.05	-0.02
Kurtosis	0.15	0.22	0.06

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CATTLE FUTURES

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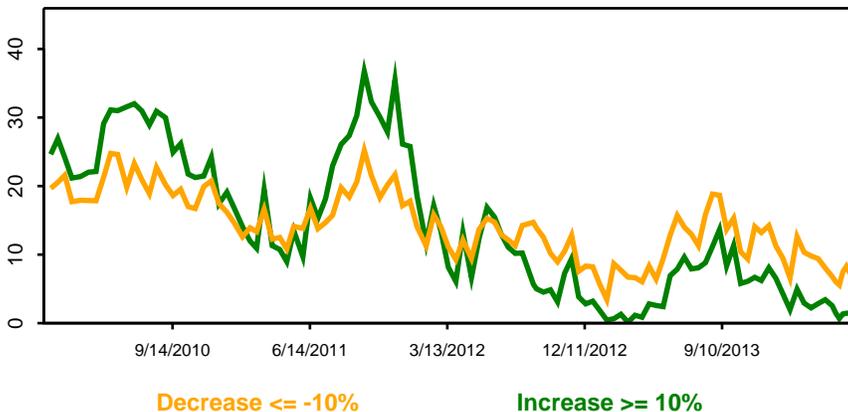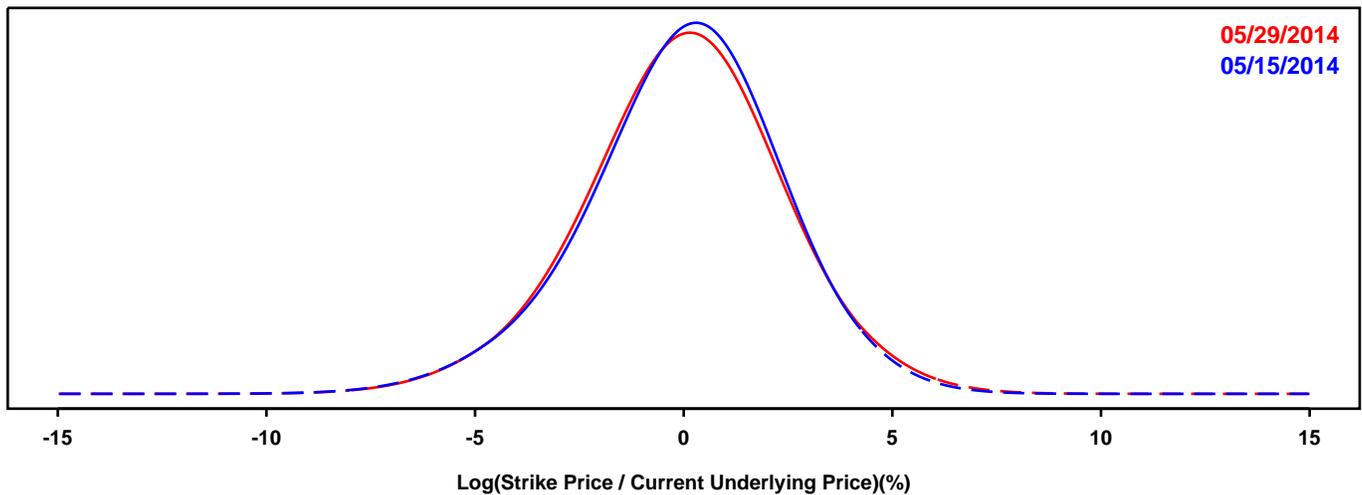derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -5%   **Increase >= 5%**
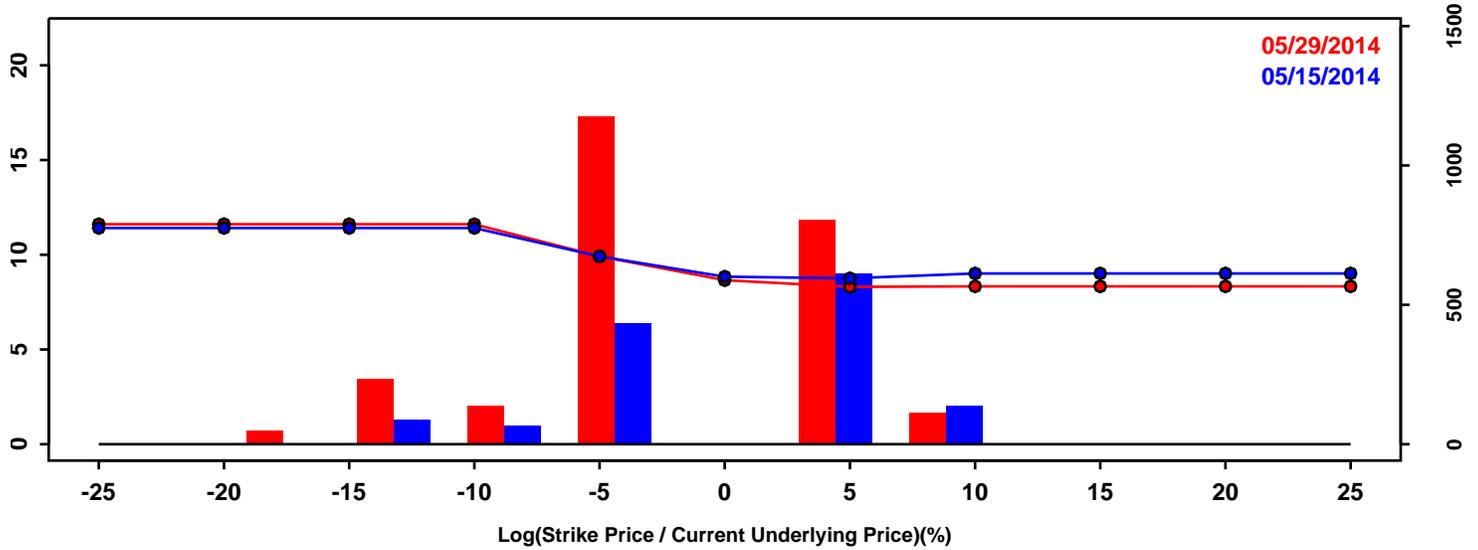
Statistics of the Log Return Distributions

	05/15/2014	05/29/2014	Change
10th Pct	-5.65%	-5.60%	0.04%
50th Pct	0.11%	0.16%	0.05%
90th Pct	5.28%	5.13%	-0.15%
Mean	-0.06%	-0.08%	-0.02%
Std Dev	4.42%	4.36%	-0.06%
Skew	-0.30	-0.40	-0.11
Kurtosis	0.70	0.76	0.06

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- iSHARES DOW JONES US REAL ESTATE

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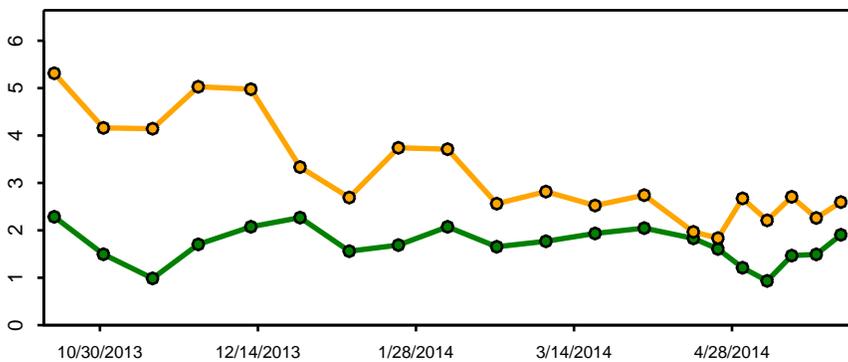*derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -10%   **Increase >= 10%**
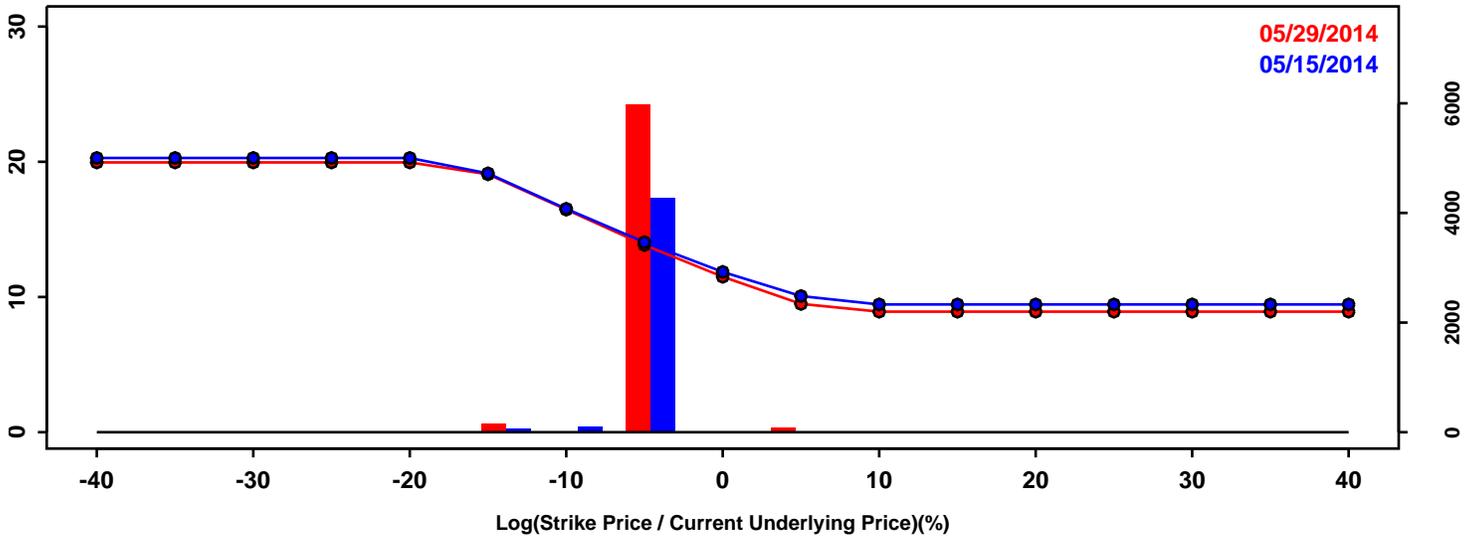
Statistics of the Log Return Distributions

	05/15/2014	05/29/2014	Change
10th Pct	-9.00%	-8.31%	0.69%
50th Pct	0.04%	0.24%	0.20%
90th Pct	6.08%	5.96%	-0.12%
Mean	-0.85%	-0.62%	0.23%
Std Dev	6.31%	6.03%	-0.28%
Skew	-0.99%	-1.06%	-0.07%
Kurtosis	1.86	2.12	0.26

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- TEN YEAR TREASURY

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

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

05/29/2014
05/15/2014

Log(Strike Price / Current Underlying Price)(%)
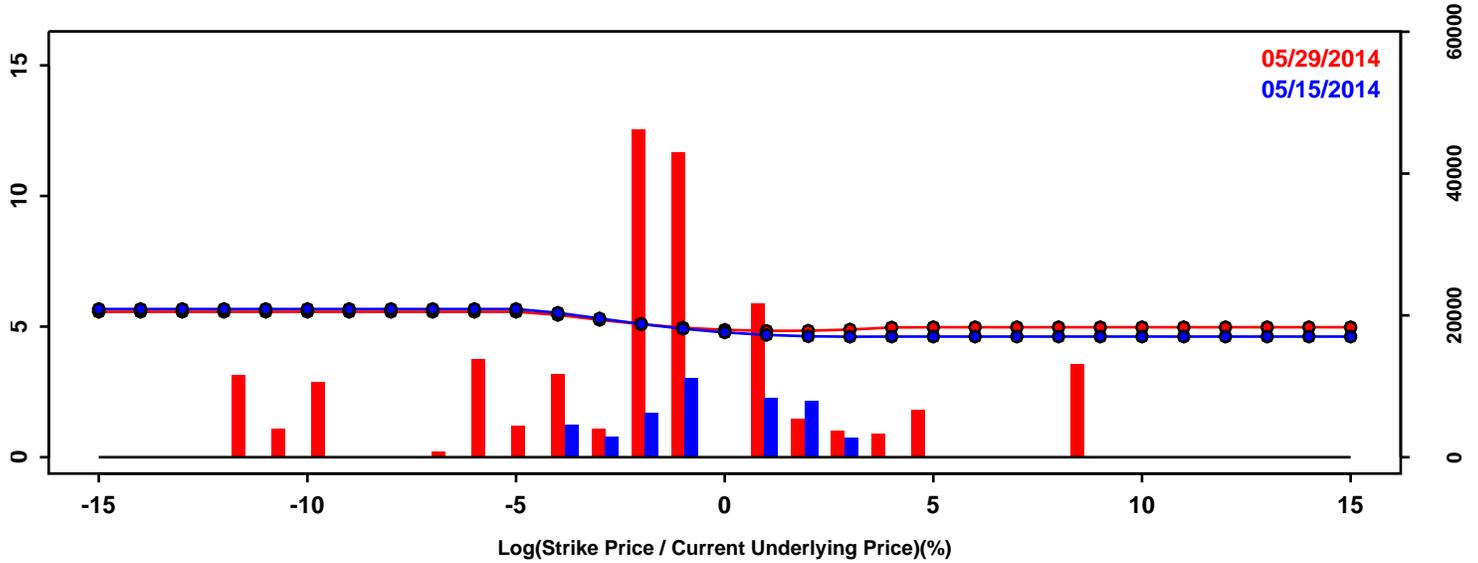
Probability of a Large Change

Decrease <= -5%   **Increase >= 5%**

Statistics of the Log Return Distributions

	05/15/2014	05/29/2014	Change
10th Pct	-3.06%	-3.12%	-0.06%
50th Pct	0.13%	0.05%	-0.08%
90th Pct	2.93%	3.03%	0.10%
Mean	0.03%	0.02%	-0.01%
Std Dev	2.39%	2.43%	0.04%
Skew	-0.27	-0.14	0.13
Kurtosis	0.39	0.34	-0.05

MARKET PROBABILITY DENSITY FUNCTIONS –– Interest Rate Caps & Floors

Risk–Neutral Probability of Large Moves for 3–Month LIBOR,
2 Years Out, 5–Day Rolling Average
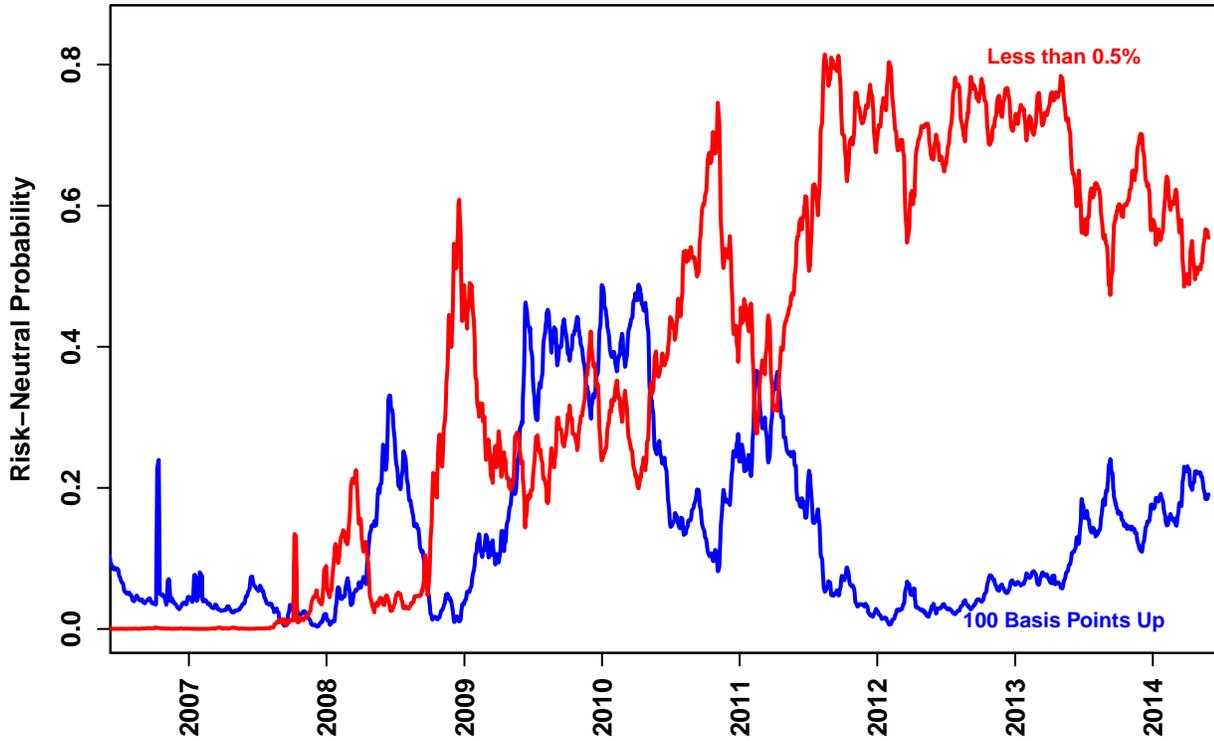
Distribution for LIBOR over 2 Years
5–Day Rolling Average
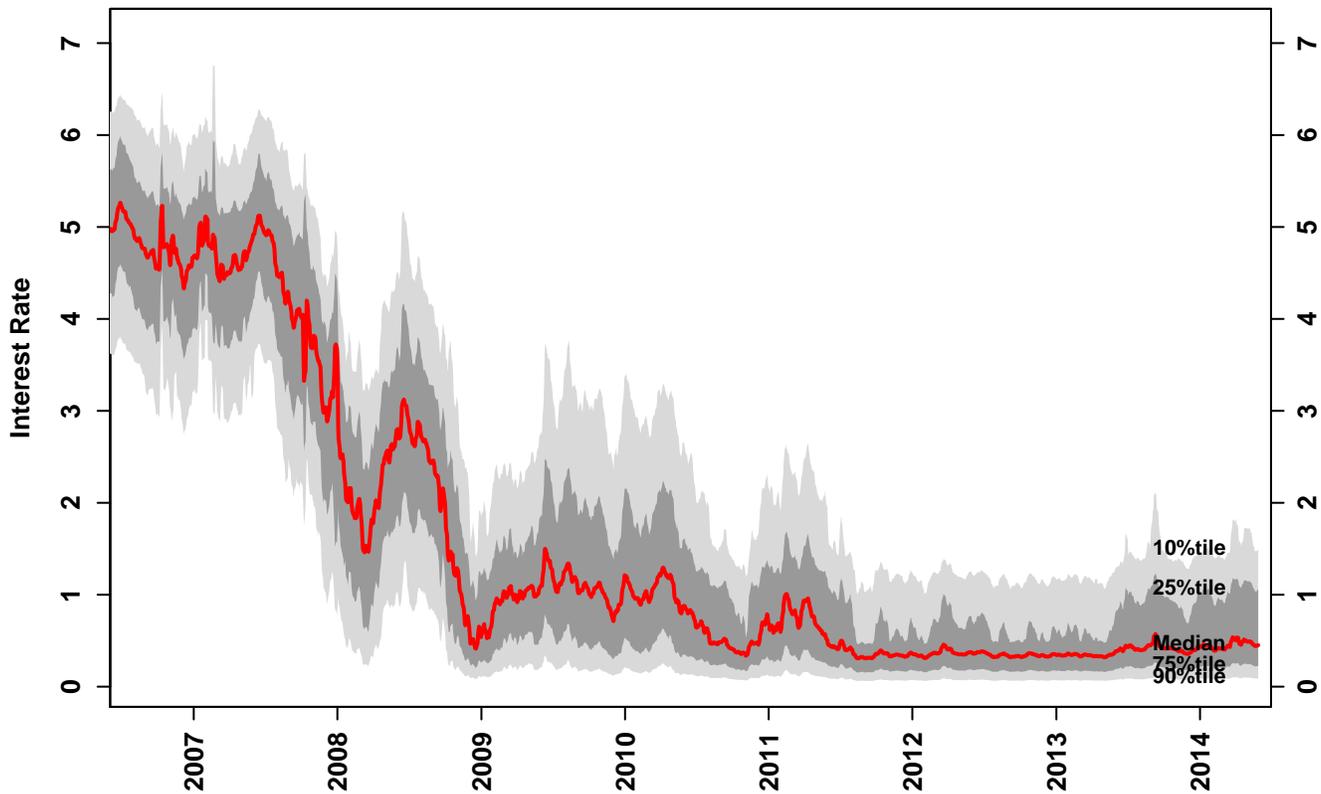
MARKET PROBABILITY DENSITY FUNCTIONS –– Interest Rate Caps & Floors

Dispersion and Skew for LIBOR over 2 Years
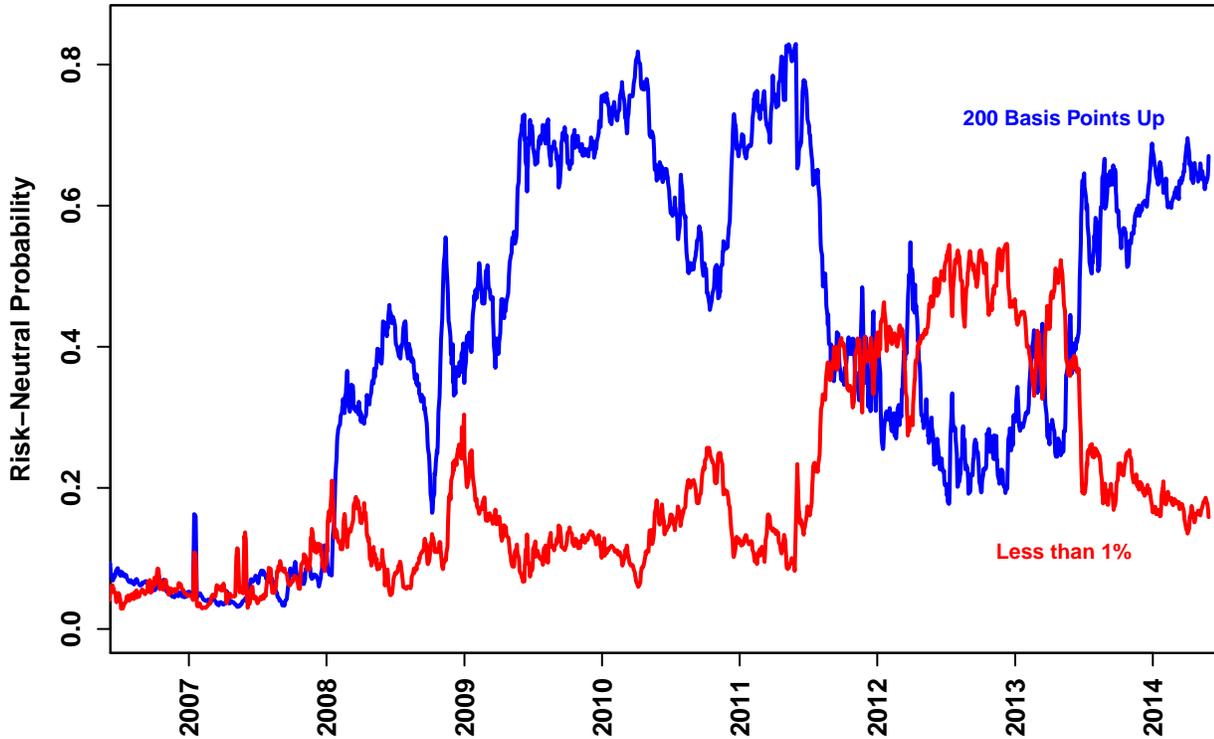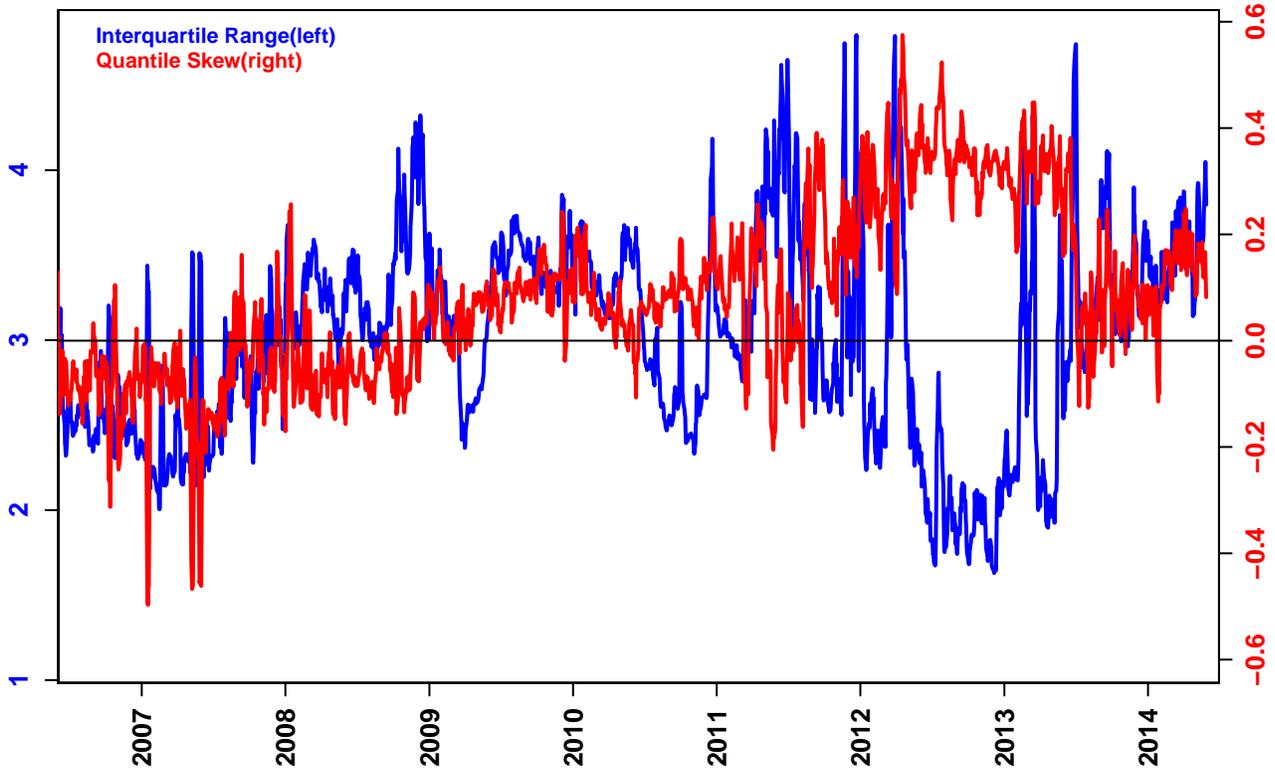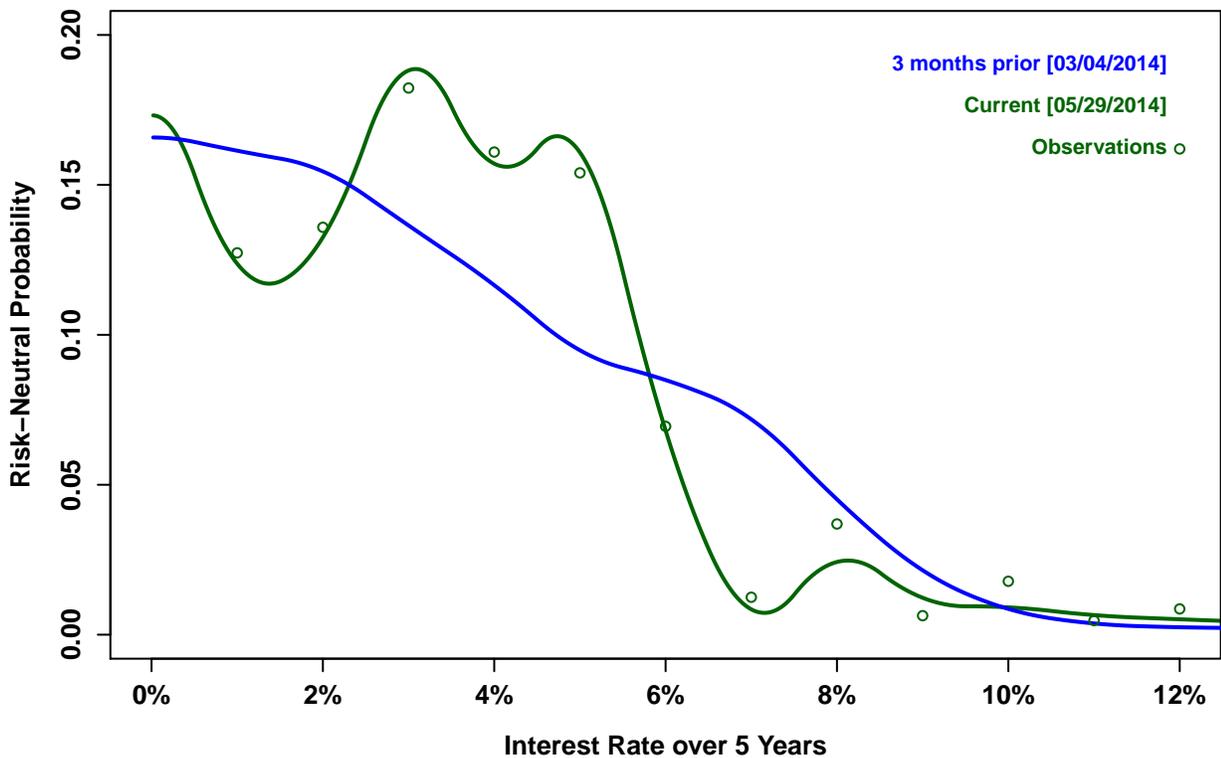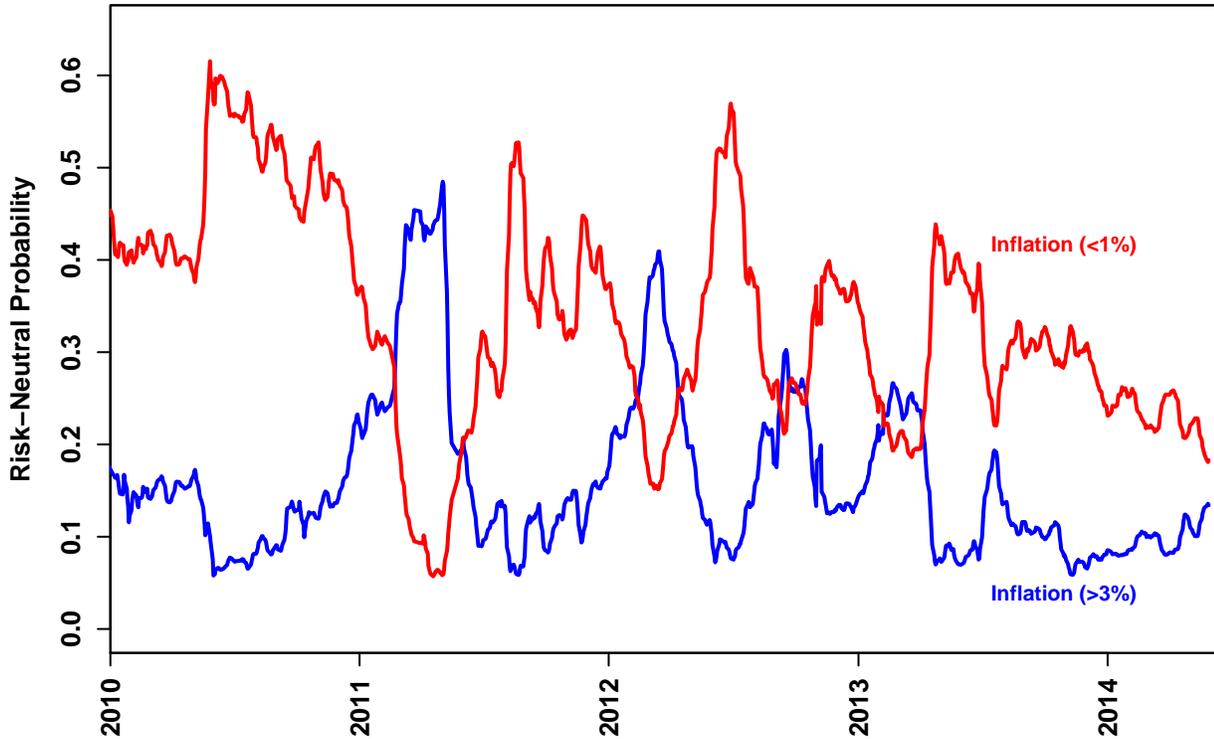## 5–Day Rolling Average
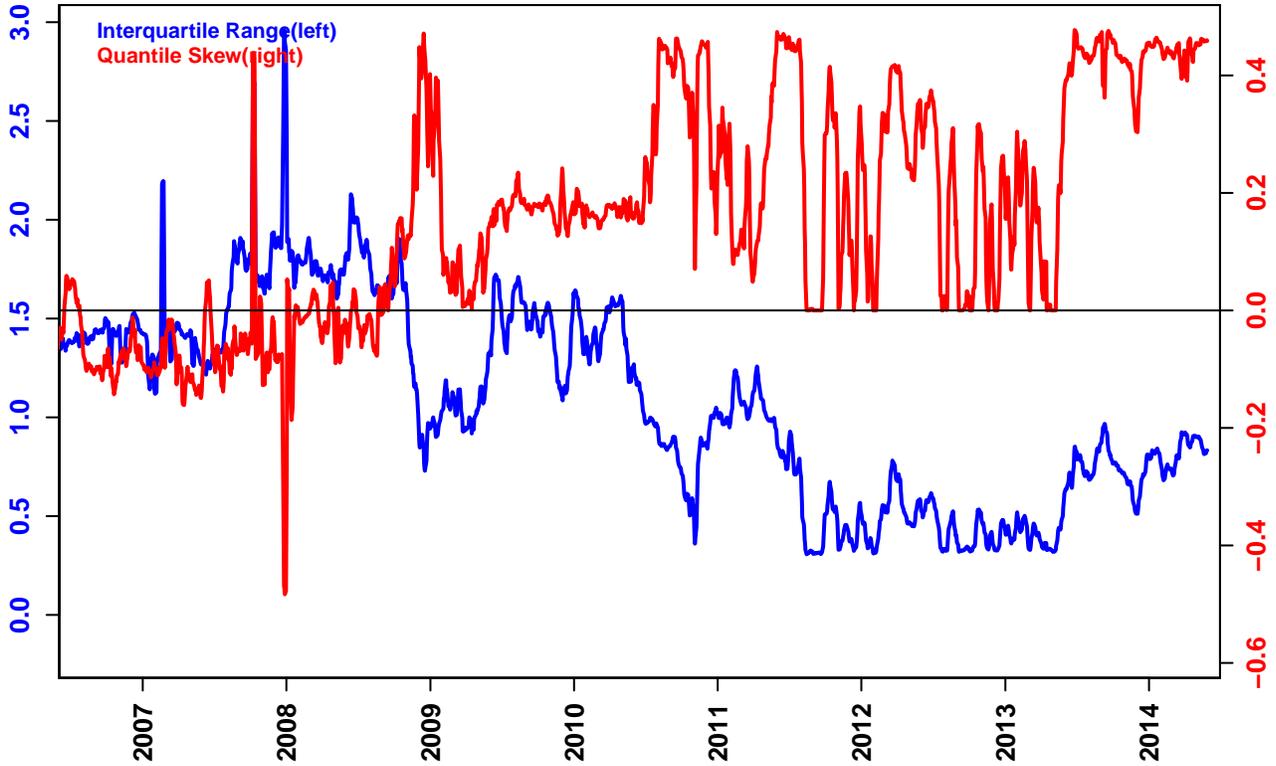
Interquartile Range(left)
Quantile Skew(right)

Note: Quantile skew is defined here as [(75th pctile – median) – (median – 25th pctile)] / (75th – 25th pctile)

Market Probability Density Function for LIBOR over the Next 2 Years

3 months prior [03/04/2014]

Current [05/29/2014]

Observations o

Risk–Neutral Probability

Interest Rate over 2 Years
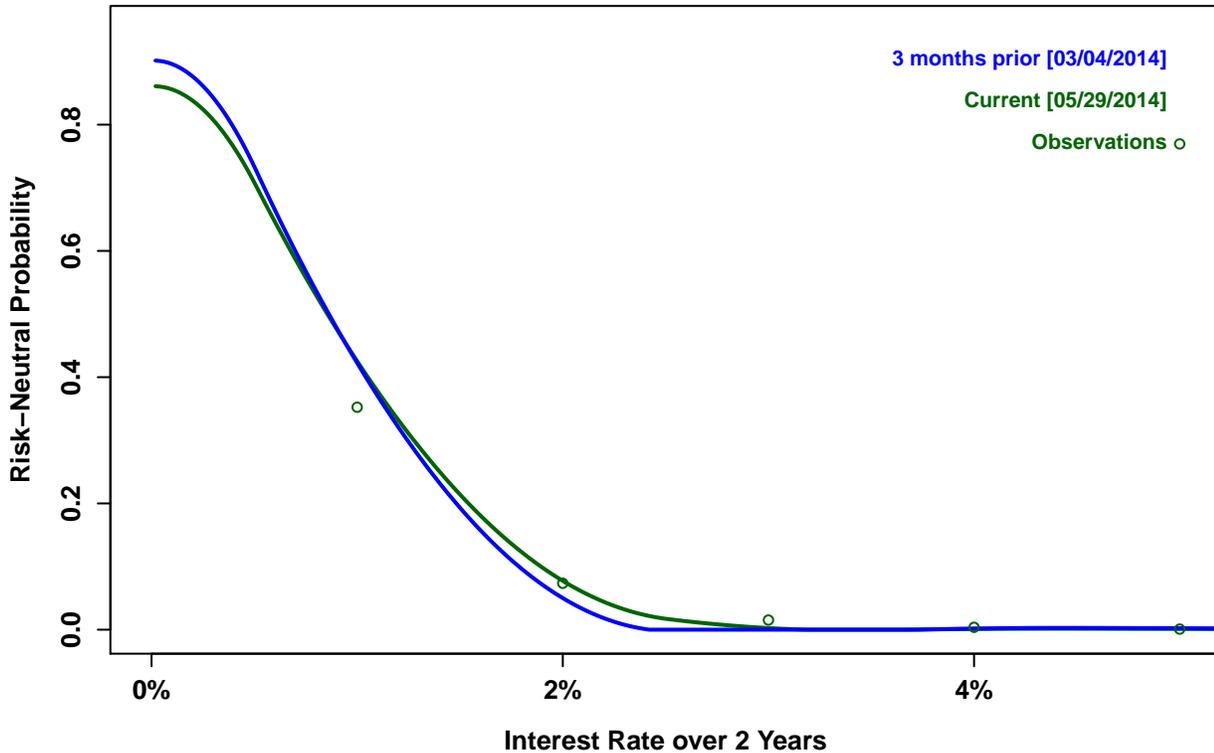
MARKET PROBABILITY DENSITY FUNCTIONS –– Interest Rate Caps & Floors

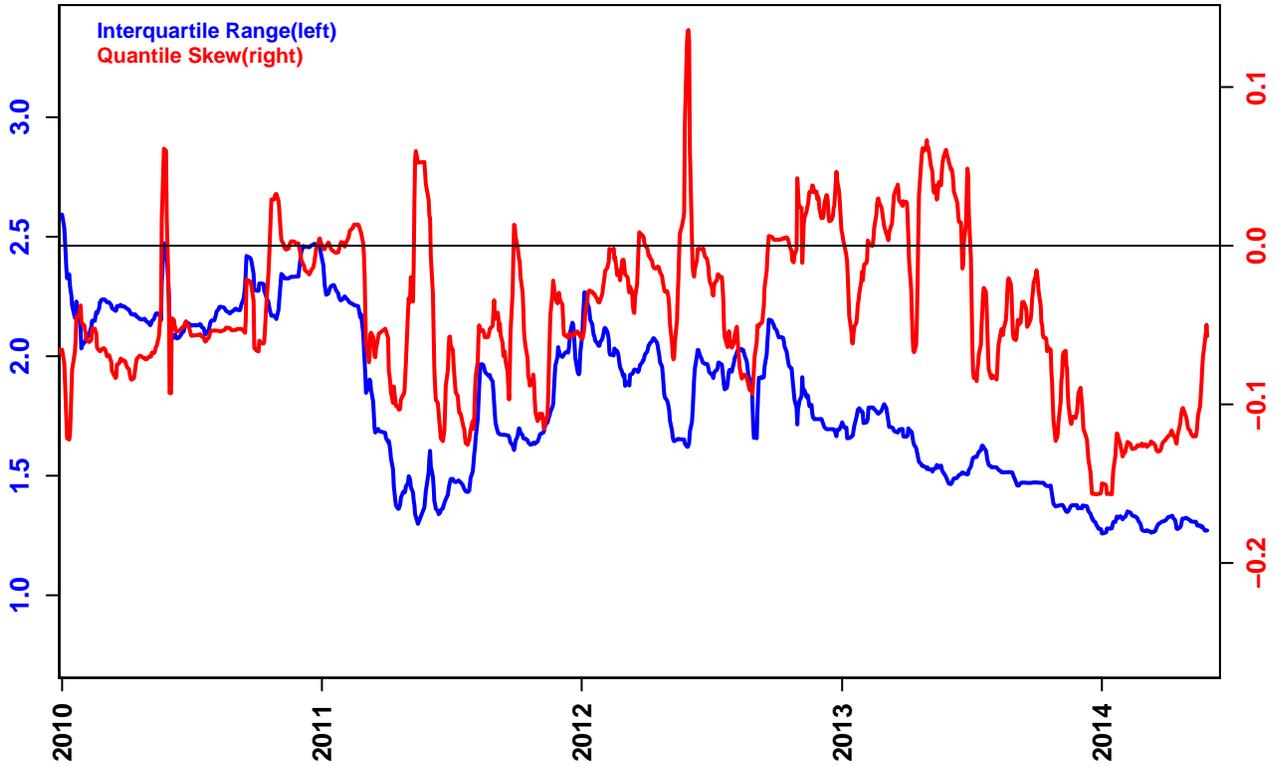### Probability of 200 Basis Point Moves for 3–Month LIBOR, 5 Years Out, 5–Day Rolling Average

Distribution for LIBOR over 5 Years 5–Day Rolling Average

MARKET PROBABILITY DENSITY FUNCTIONS –– Interest Rate Caps & Floors

Dispersion and Skew for LIBOR over 5 Years
5–Day Rolling Average

Interquartile Range(left)
Quantile Skew(right)

Note: Quantile skew is defined here as [(75th pctile – median) – (median – 25th pctile)] / (75th – 25th pctile)

Market Probability Density Function for LIBOR over the Next 5 Years

3 months prior [03/04/2014]

Current [05/29/2014]

Observations o

Risk–Neutral Probability

Interest Rate over 5 Years

MARKET PROBABILITY DENSITY FUNCTIONS –– Inflation Rate Caps & Floors

Risk–Neutral Probability of Elevated Inflation or Deflation over 12 Months
5–Day Rolling Average

Distribution for Inflation over 12 Months
5–Day Rolling Average

MARKET PROBABILITY DENSITY FUNCTIONS –– Inflation Rate Caps & Floors

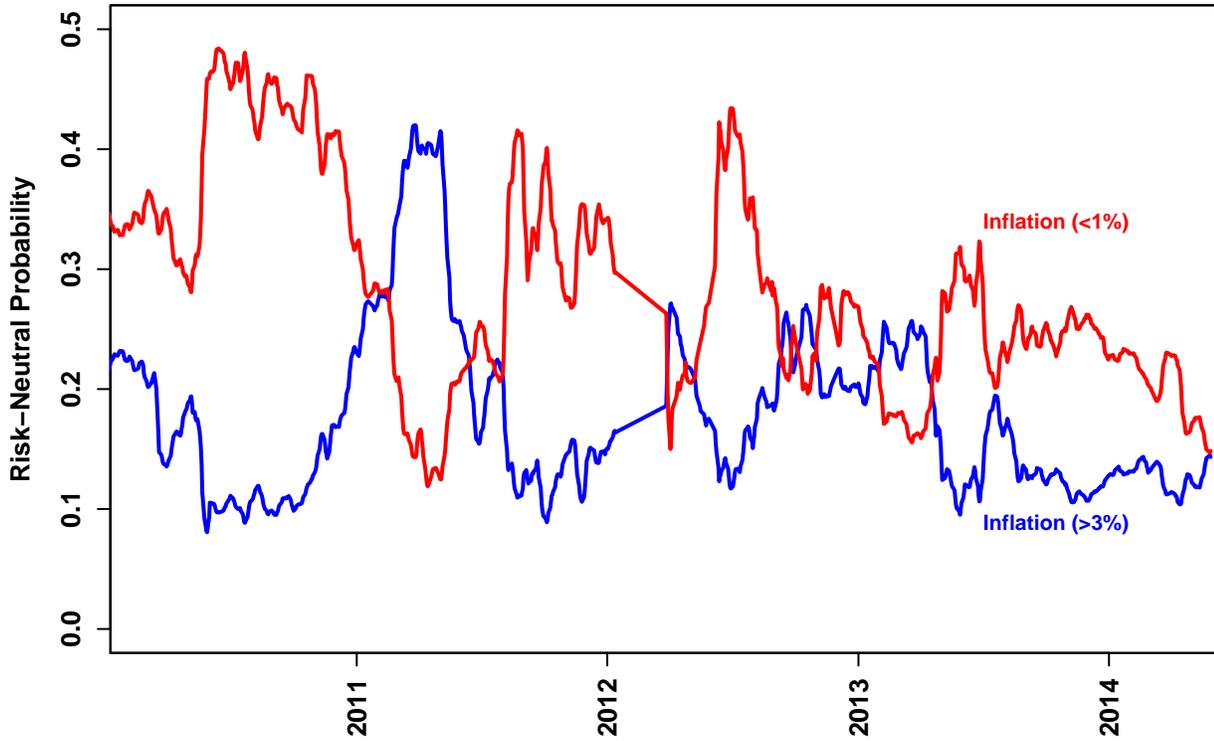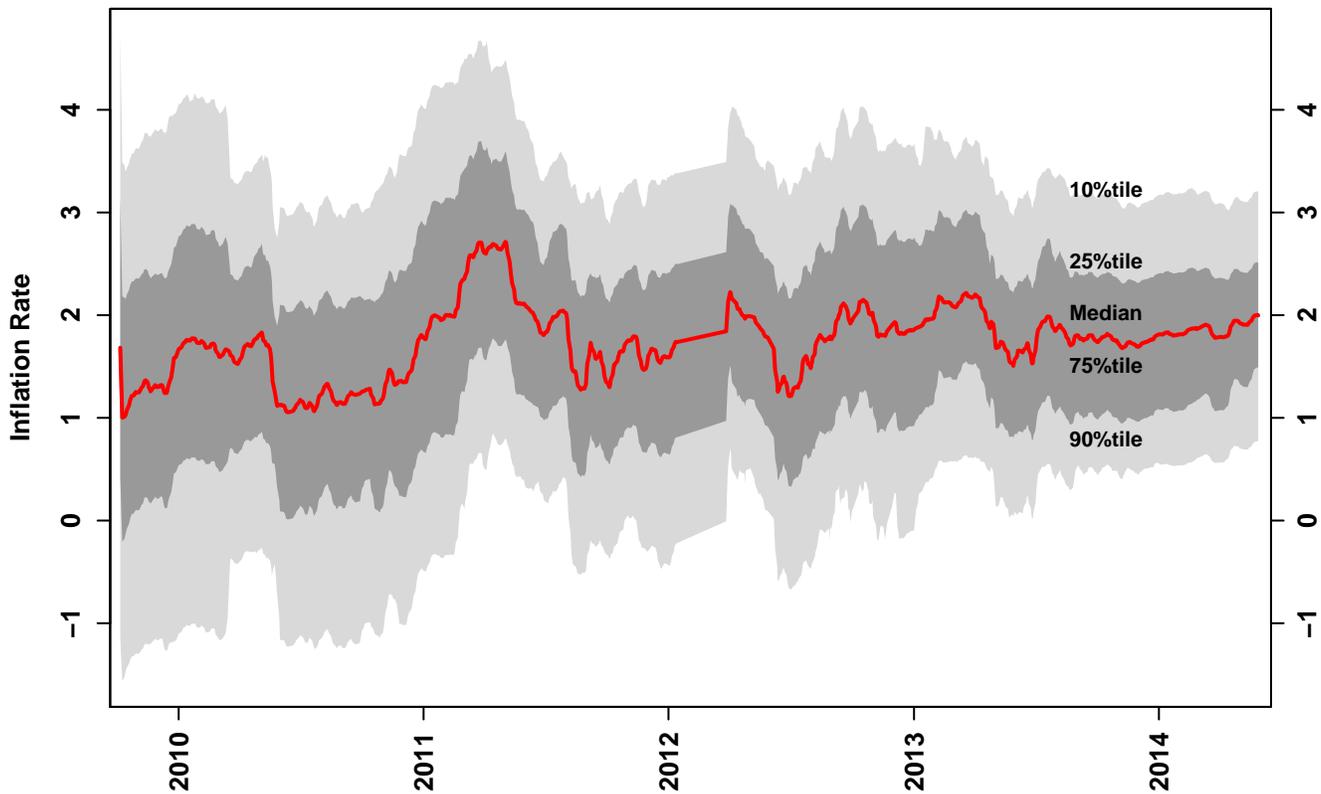## Dispersion and Skew for Inflation over 12 Months
5–Day Rolling Average

Interquartile Range(left)
Quantile Skew(right)

Note: Quantile skew is defined here as [(75th pctile – median) – (median – 25th pctile)] / (75th – 25th pctile)

Market Probability Density Function for Inflation over the Next 12 Months
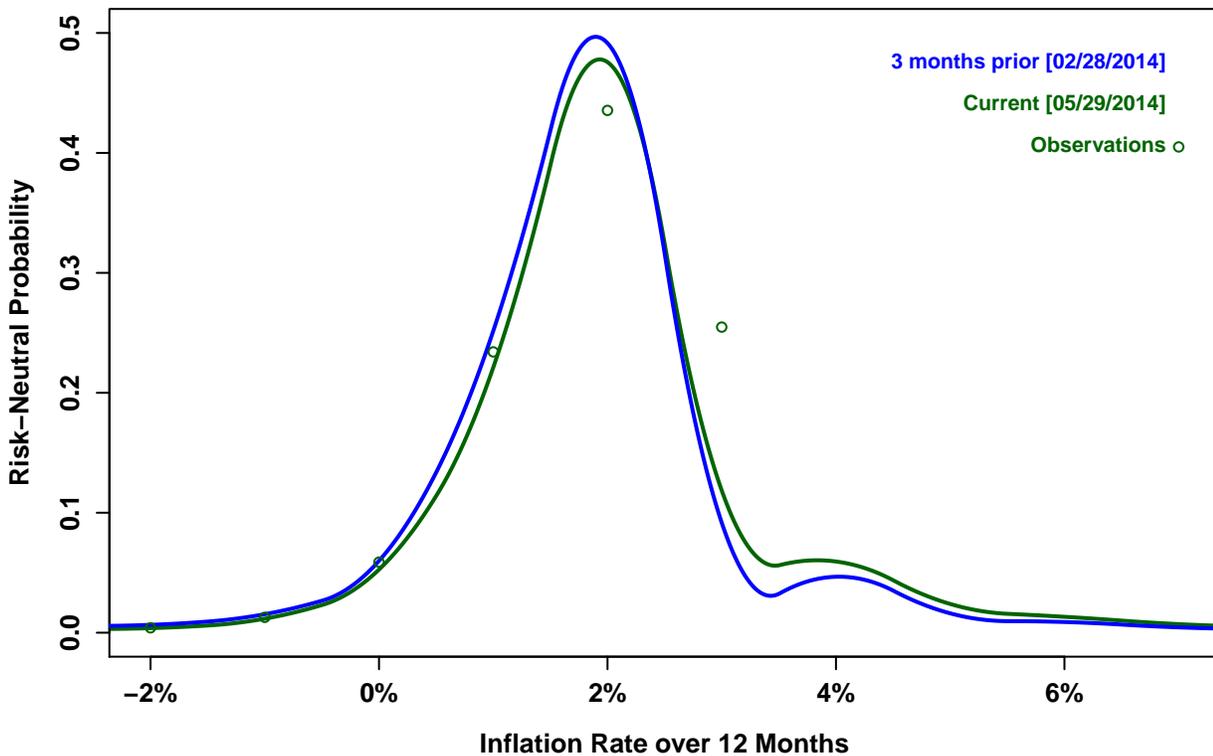
3 months prior [02/28/2014]
Current [05/29/2014]
Observations o

Risk–Neutral Probability

Inflation Rate over 12 Months

MARKET PROBABILITY DENSITY FUNCTIONS –– Inflation Rate Caps & Floors

Risk–Neutral Probability of Elevated Inflation or Deflation over 2 Years, 5–Day Rolling Average
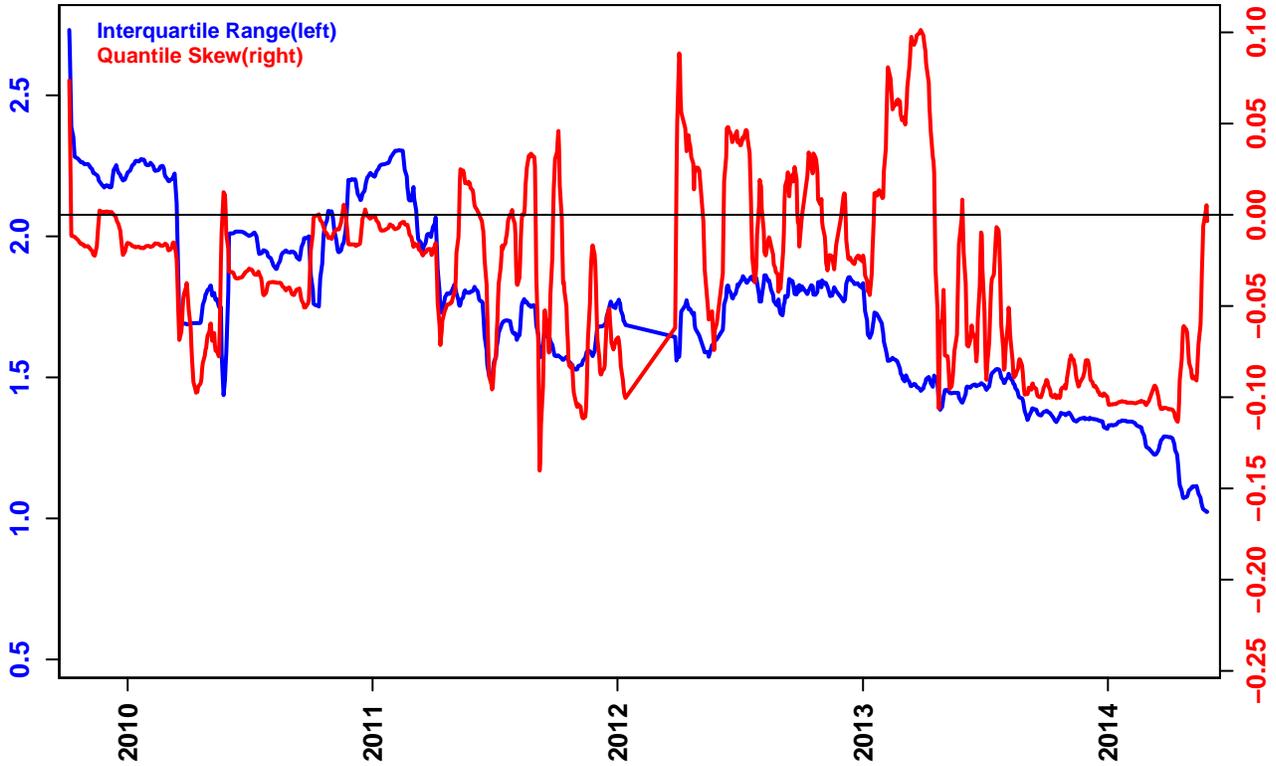

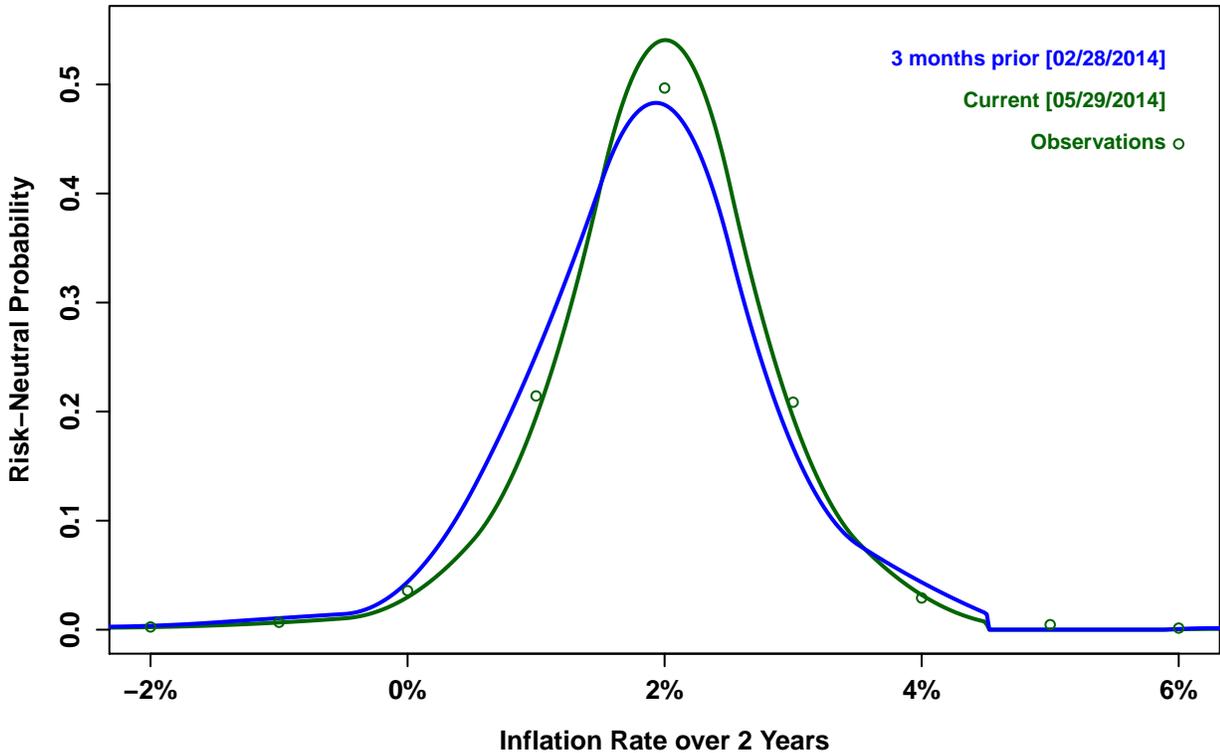### Distribution for Inflation over 2 Years 5–Day Rolling Average

MARKET PROBABILITY DENSITY FUNCTIONS –– Inflation Rate Caps & Floors

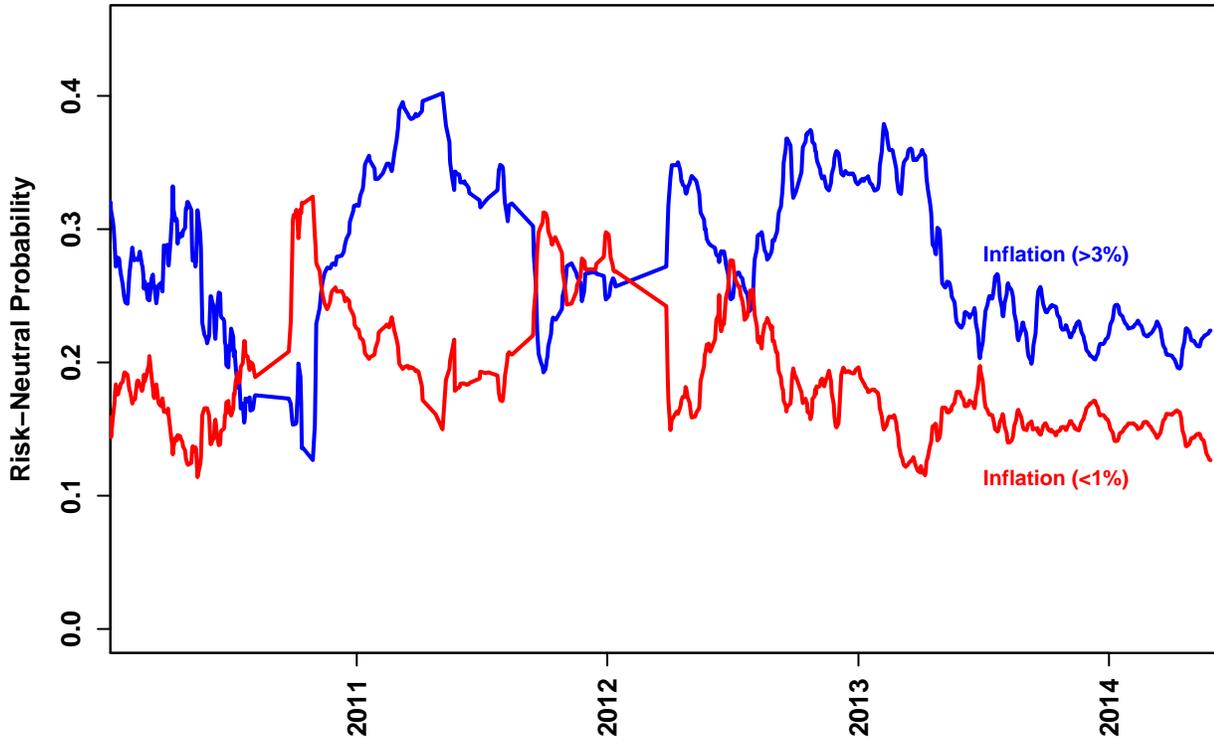**Dispersion and Skew for Inflation over 2 Years**
5–Day Rolling Average

Note: Quantile skew is defined here as [(75th pctile – median) – (median – 25th pctile)] / (75th – 25th pctile)

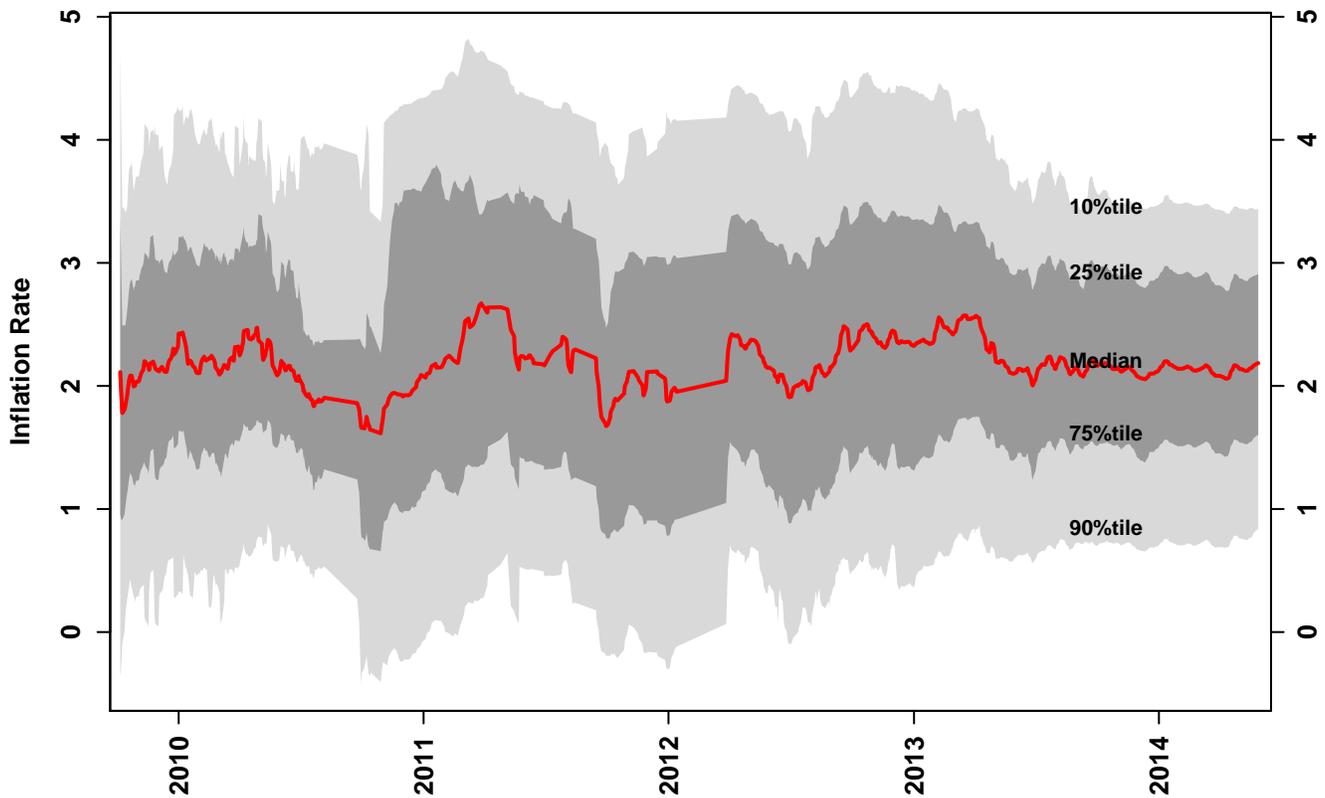**Market Probability Density Function for Inflation over the Next 2 Years**

MARKET PROBABILITY DENSITY FUNCTIONS –– Inflation Rate Caps & Floors

**Risk–Neutral Probability of Elevated Inflation or Deflation over
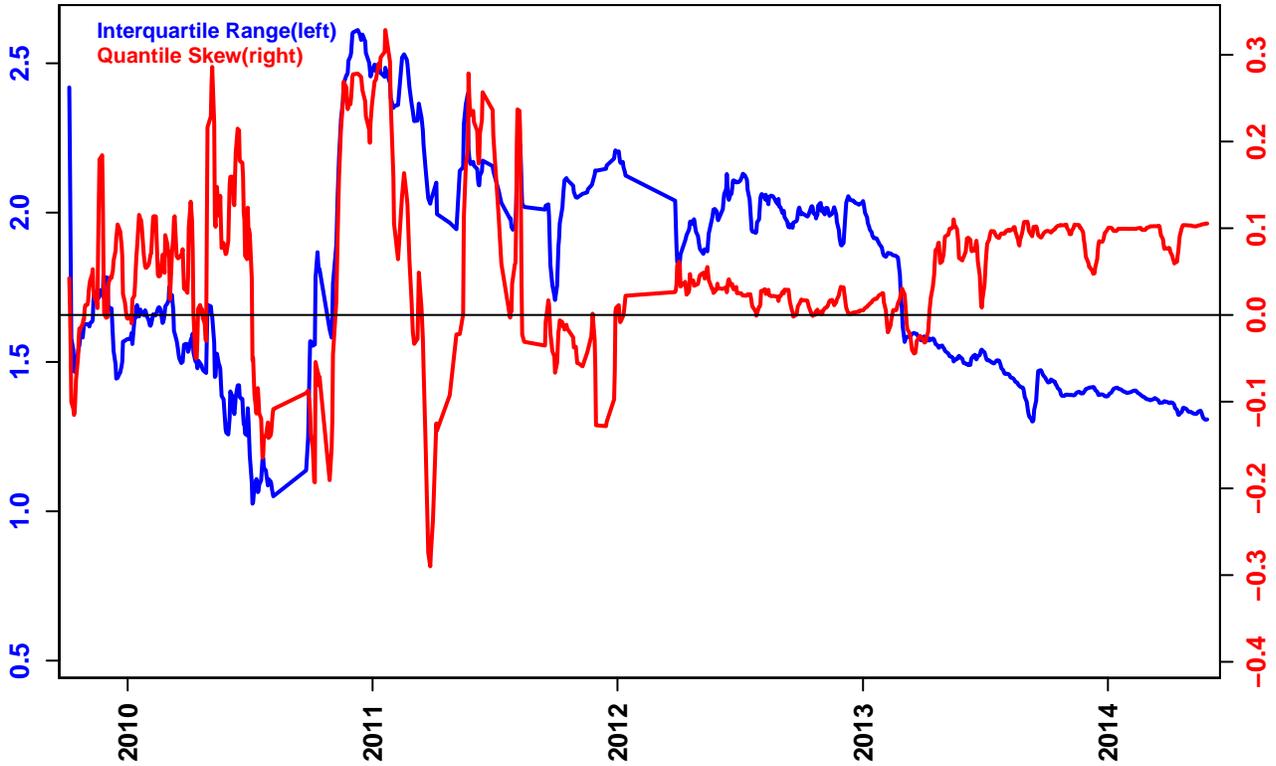5 Years, 5–Day Rolling Average**

**Distribution for Inflation over 5 Years
5–Day Rolling Average**

MARKET PROBABILITY DENSITY FUNCTIONS –– Inflation Rate Caps & Floors

Dispersion and Skew for Inflation over 5 Years
5–Day Rolling Average

Note: Quantile skew is defined here as [(75th pctile – median) – (median – 25th pctile)] / (75th – 25th pctile)

Market Probability Density Function for Inflation over the Next 5 Years