

FEDERAL RESERVE BANK OF MINNEAPOLIS
BANKING AND POLICY STUDIES

Minneapolis Options Report – August 7th

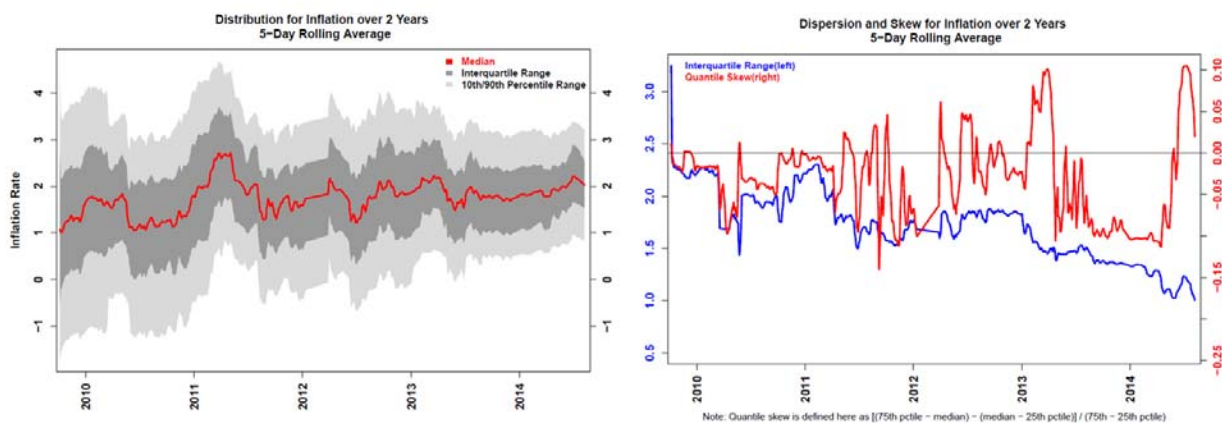
Risk-neutral expectations for inflation rates dropped again last week and the market bias toward higher short-term rates (LIBOR) two and five years ahead remains in place. Equity markets were weak and tail risks embedded in equities rose. Most spot prices in the commodity markets we follow dropped last week with the exceptions of wheat and cattle.

Inflation

The median (risk-neutral) expected inflation rate over the next twelve months, as derived from caps and floors on the CPI, continued the decline since our last report and is now below 2%. Trends are similar for the two year horizon where the median risk-neutral expectation is 2% (left chart below).

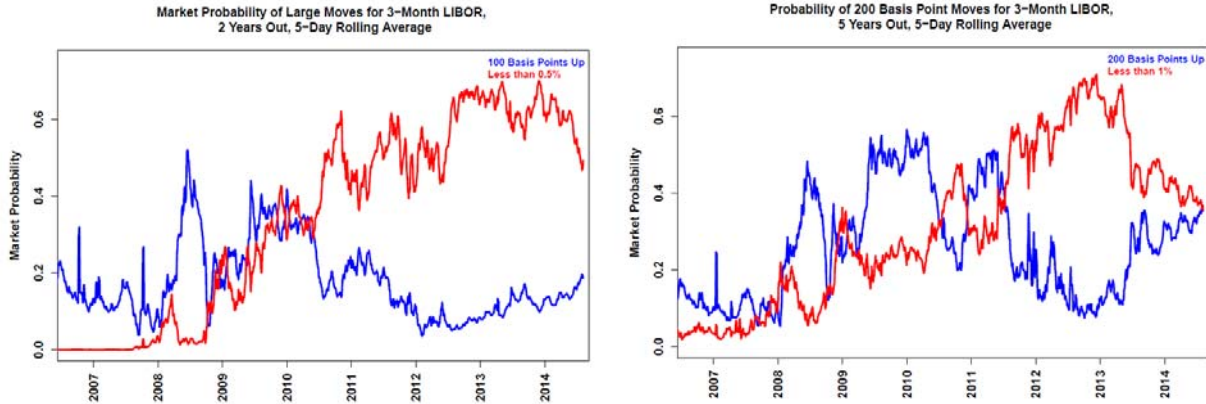
Market participants' uncertainty about these expectations is decreasing. The dispersion of potential outcomes continues to narrow as shown by the trends in the interquartile ranges of the MPDs (blue line in the right chart below).

Finally, at the one and two year horizons, the recent increase in bias towards higher inflation expectations has subsided. This is shown by the change in the quantile skew which measures the difference in risk-neutral probability above and below the mean (red line in the right chart below). One year horizon data is included in the chart package.



LIBOR Rates

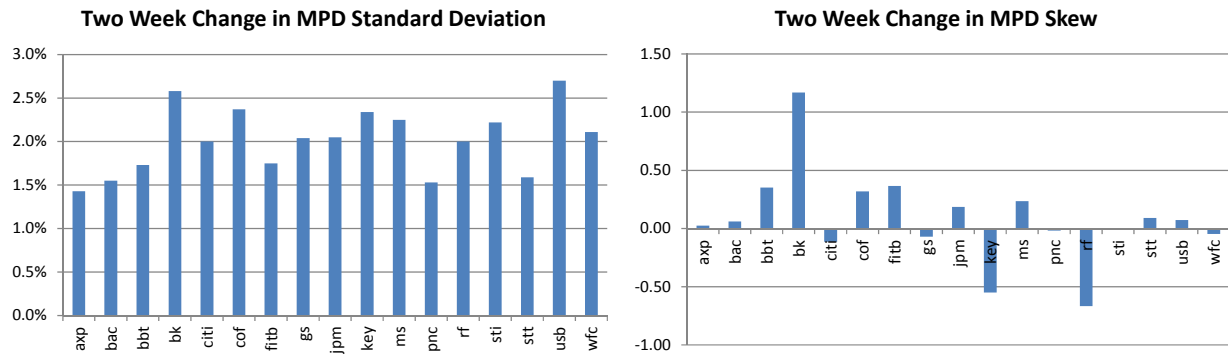
A bias remains toward higher rates as measured by MPD skew. Risk-neutral probabilities for a 100 basis point increase two years out continue to rise slowly (left chart below). Risk-neutral probabilities for large rate changes five years hence remain relatively stable (right chart below).



Banks & Insurance Companies

Over the past two weeks the equity market experienced a significant selloff with the S&P 500 dropping approximately -4%. The average share price of our CCAR 17 banks fell -4.9% and the average of our eleven insurance companies fell -4.8%. Trading was relatively active last week for options on the S&P 500 index as well as for the banks and insurance companies.

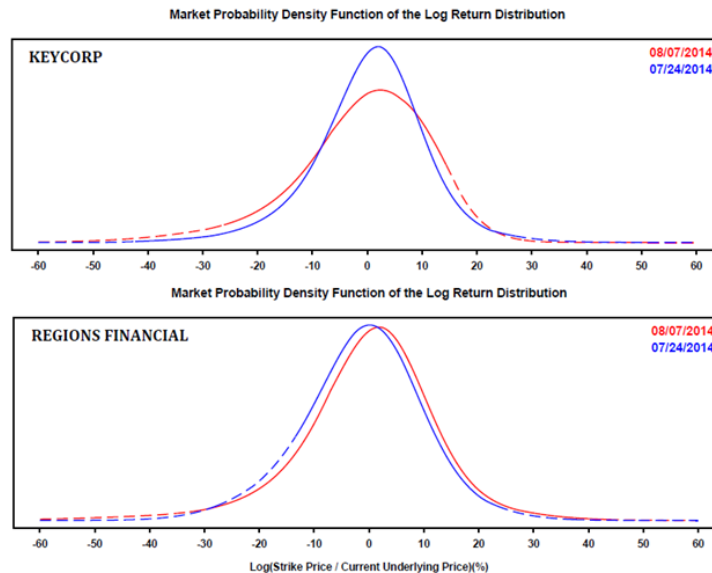
MPD standard deviations spiked since our last report. In particular, bank MPD standard deviations are at the high end of their 20 week ranges. MPD skews, which measure risk-neutral expectational bias toward higher or lower prices, generally increased suggesting increased expectation for a bounce-back in prices. This was true for both bank and insurance company MPDs.



Additional Details:

- While trading in options on shares of KEY was light, its MPD skew became more negative as its share price fell indicating increased risk-neutral expectation for continued downside price moves. (See KEY report)

- Trading in options on shares of RF led to similar changes in its MPD. Different from KEY was that trading activity was relatively strong for options on RF shares. (See *RF report*)

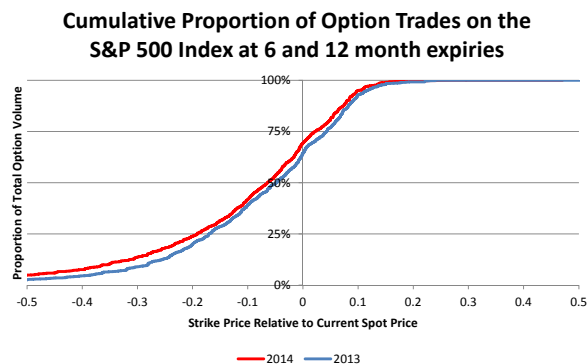


Other Commodity Markets

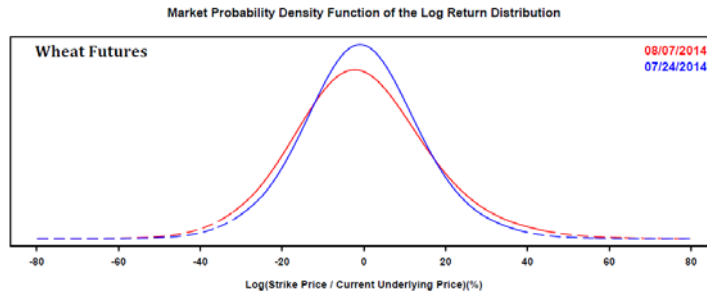
Spot prices were generally lower with the exceptions of wheat (+5.2%) and gold (+1.6%). Trading was strong for options on futures for wheat, silver, and each of the exchange rates. Trading in options on the S&P 500 index was also strong and equity market tail risks jumped.

Additional Details:

- Since the beginning of the year, the demand for downside protection on the S&P 500 has increased relative to last year. The proportion of options trades at lower strike prices is higher and continues to grow as the year progresses. The chart below accumulates volumes for trades occurring at each strike price for 2013 and 2014.



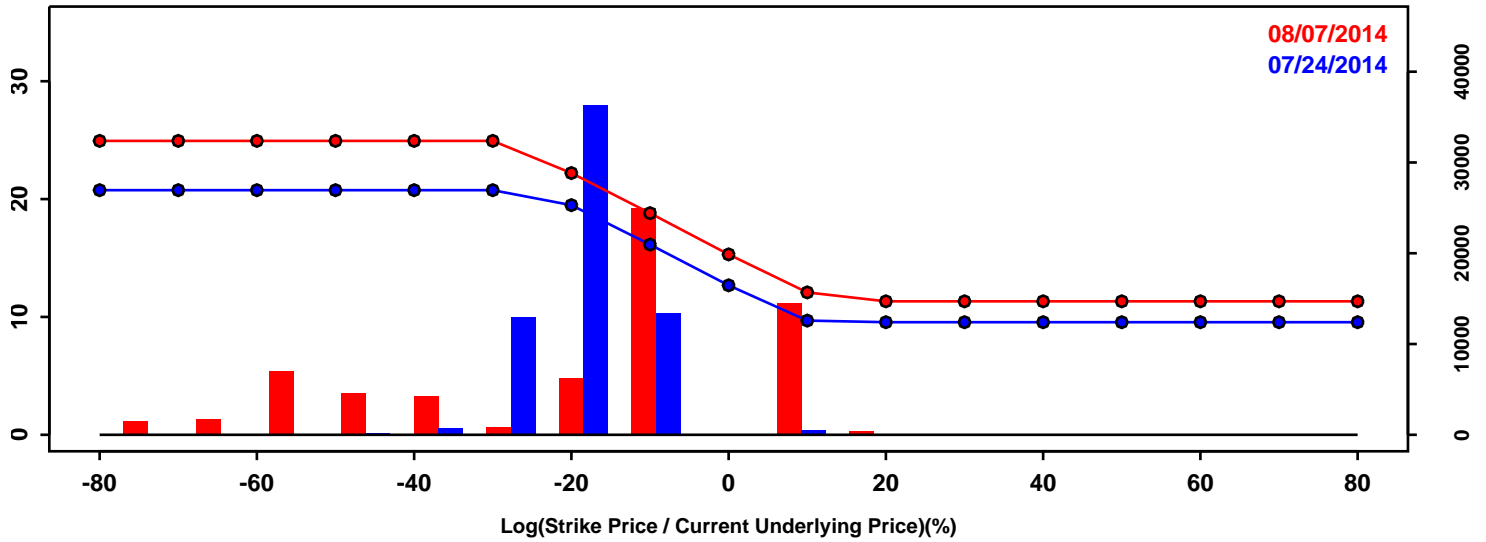
- Tail risks, as measured MPD standard deviations derived from options on futures prices, were higher relative to two weeks ago for wheat and cattle. Notably, the MPD skew for wheat, which indicates the market participants' price bias, also jumped. (See *wheat and cattle reports*)



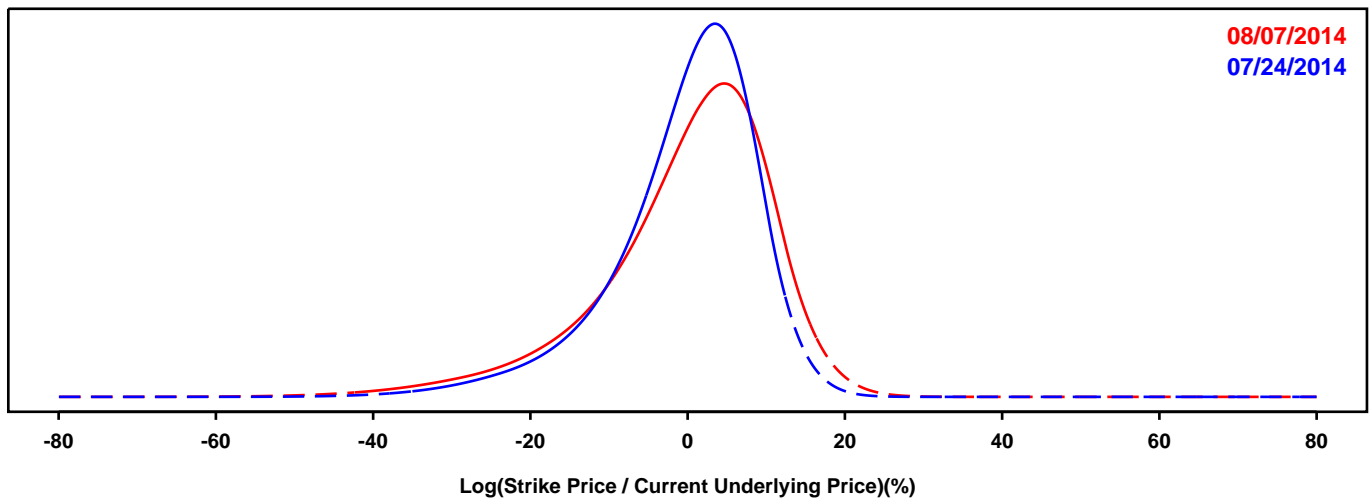
MARKET PROBABILITY DENSITY FUNCTIONS -- S&P 500

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

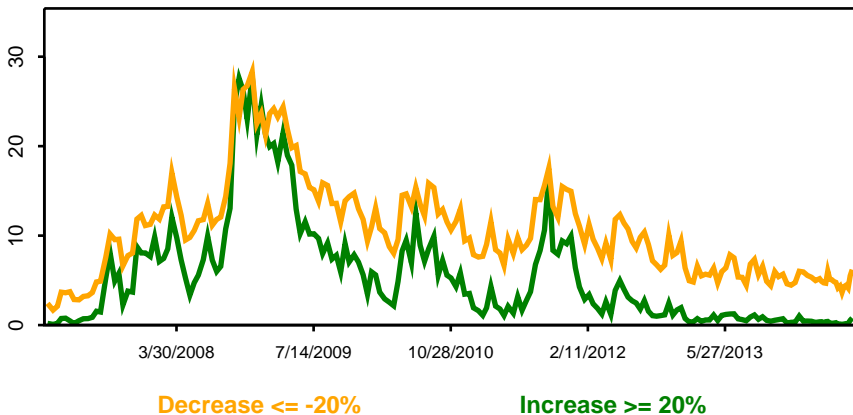
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

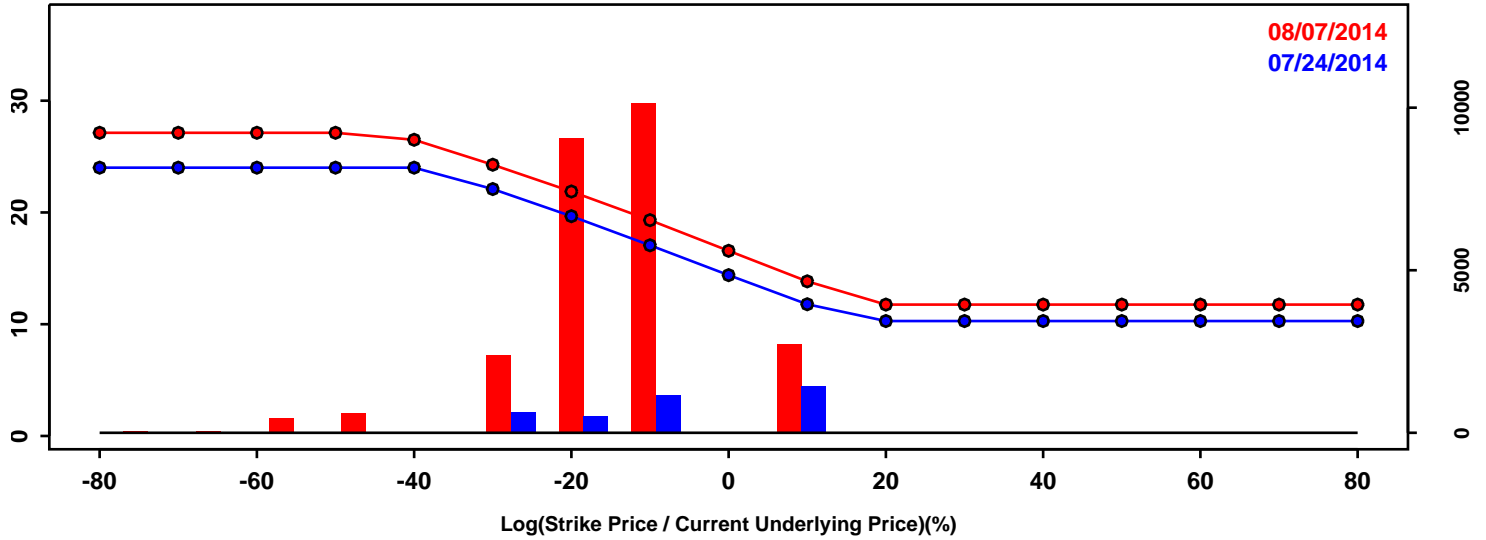


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-12.67%	-15.15%	-2.49%
50th Pct	1.19%	1.66%	0.47%
90th Pct	9.65%	11.73%	2.07%
Mean	-0.37%	-0.27%	0.10%
Std Dev	9.36%	11.27%	1.91%
Skew	-1.07	-1.09	-0.02
Kurtosis	1.91	1.91	0.00

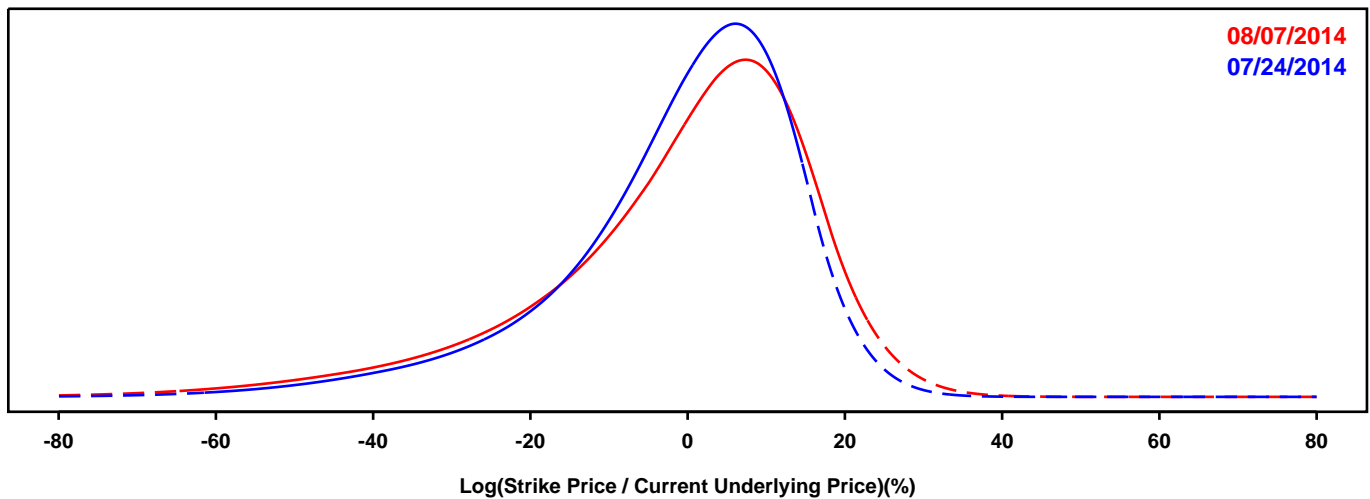
MARKET PROBABILITY DENSITY FUNCTIONS -- S&P 500

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

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



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

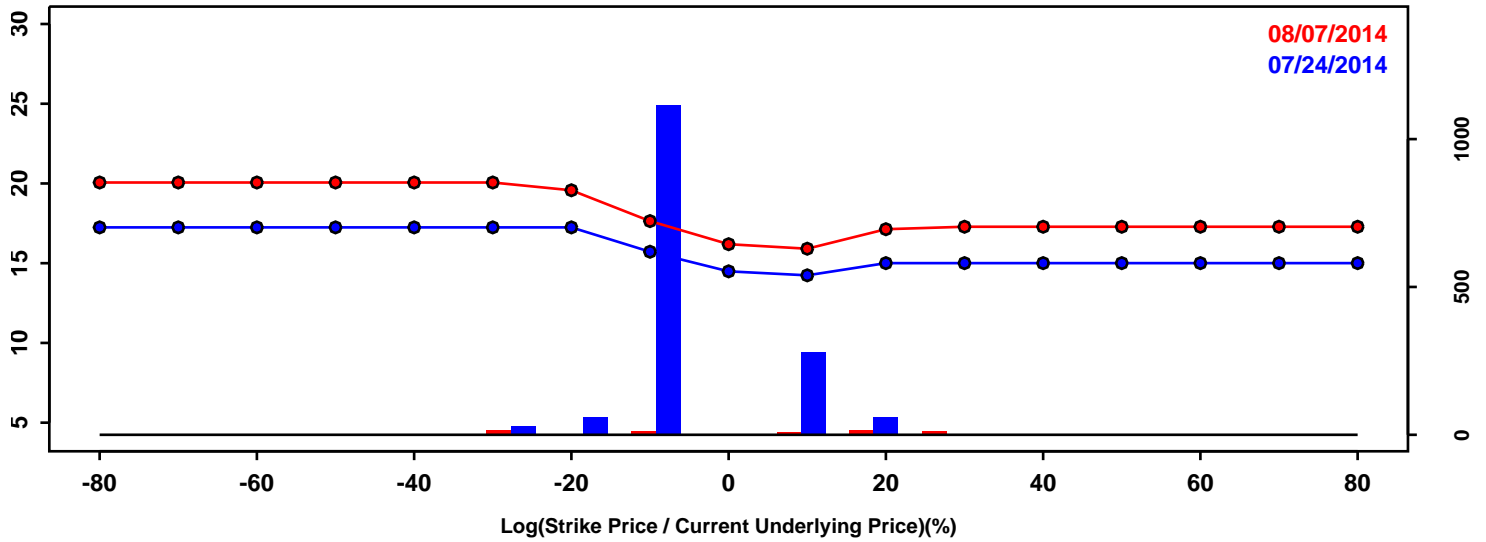


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-21.67%	-25.23%	-3.56%
50th Pct	1.73%	2.28%	0.55%
90th Pct	14.94%	17.07%	2.13%
Mean	-1.19%	-1.32%	-0.13%
Std Dev	15.42%	17.73%	2.31%
Skew	-1.18	-1.18	0.00
Kurtosis	2.06	1.96	-0.10

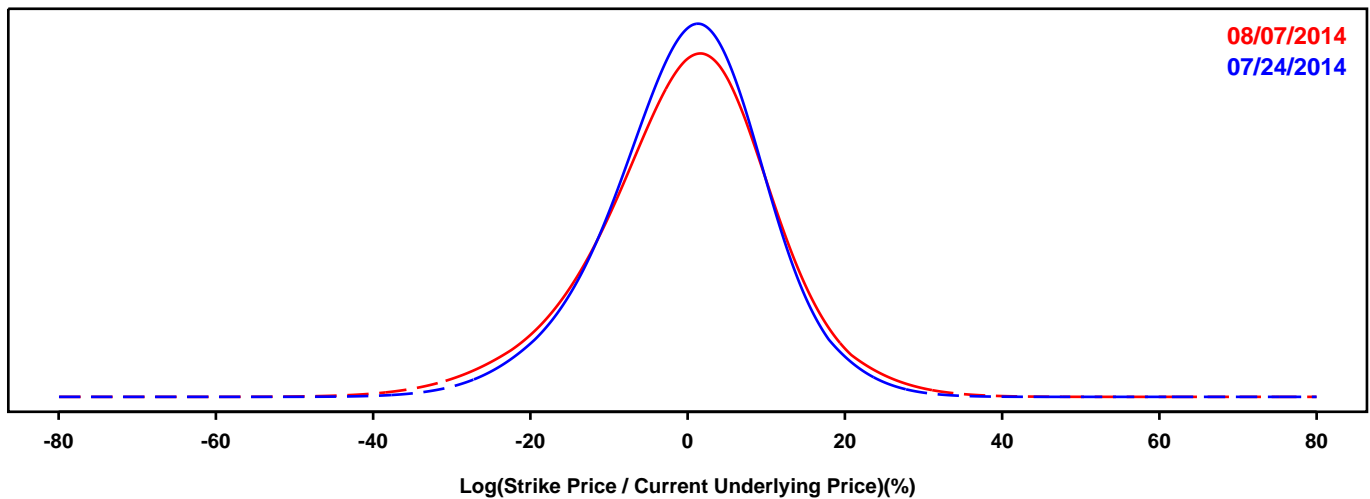
MARKET PROBABILITY DENSITY FUNCTIONS -- CRUDE OIL FUTURES (WTI)

Log returns are based on the market probability 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)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

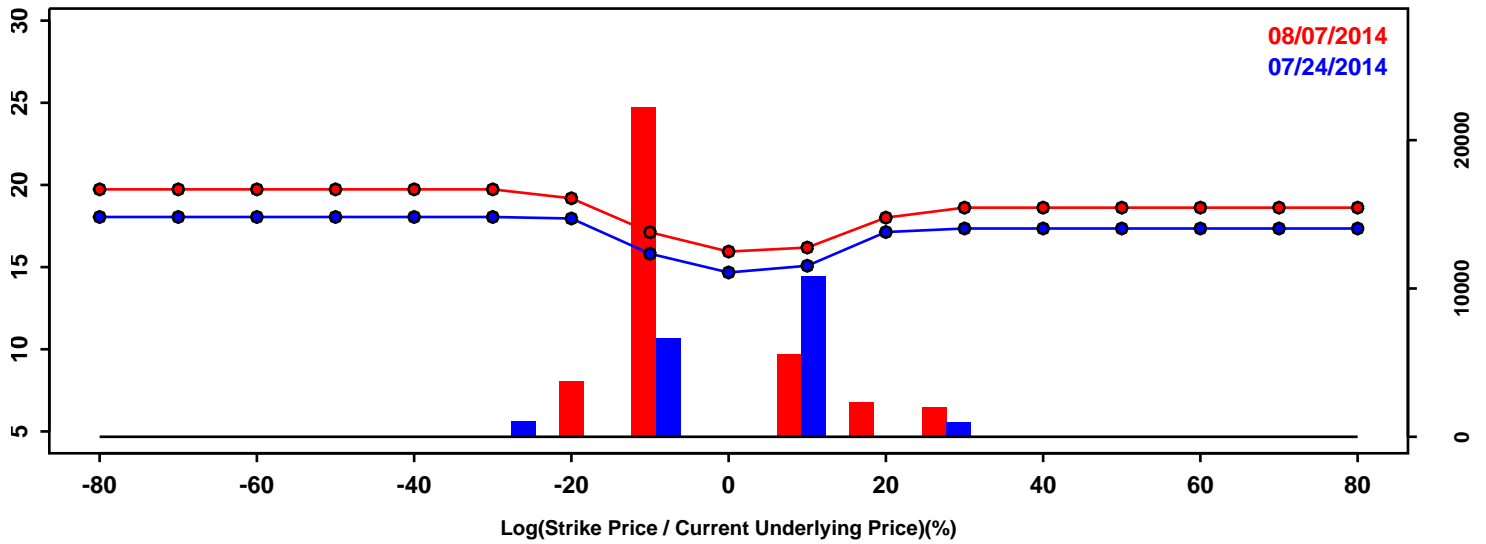


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-13.41%	-15.10%	-1.69%
50th Pct	0.30%	0.34%	0.03%
90th Pct	12.12%	13.23%	1.11%
Mean	-0.18%	-0.32%	-0.15%
Std Dev	10.25%	11.47%	1.22%
Skew	-0.26	-0.31	-0.05
Kurtosis	0.49	0.67	0.18

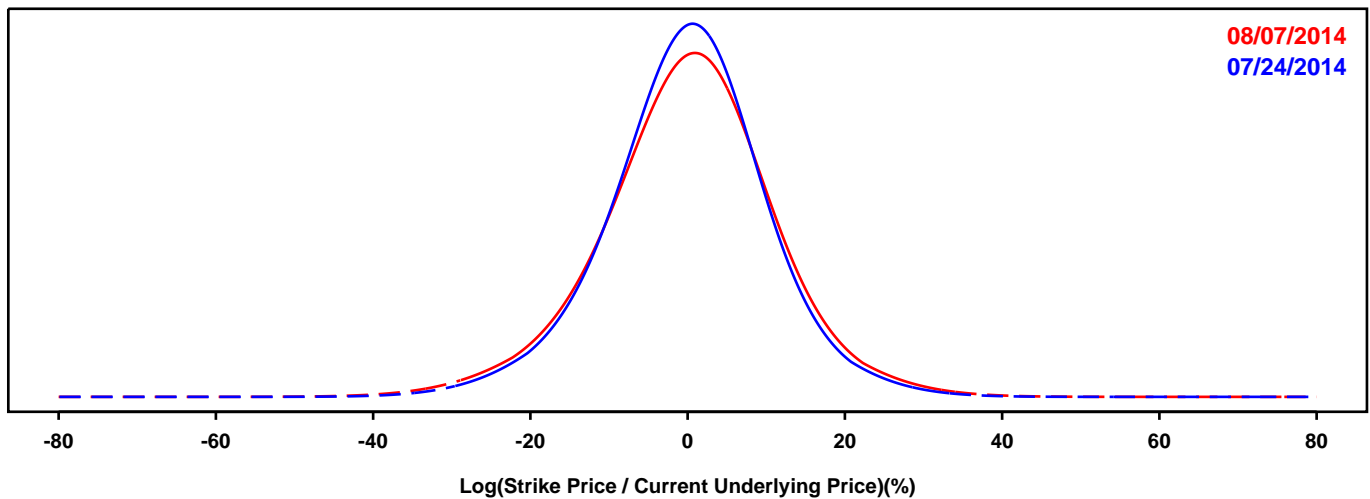
MARKET PROBABILITY DENSITY FUNCTIONS -- CRUDE OIL FUTURES (Brent)

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

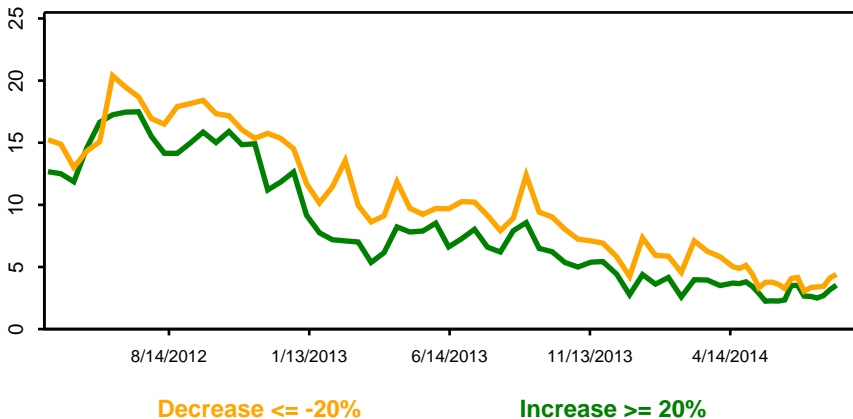
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

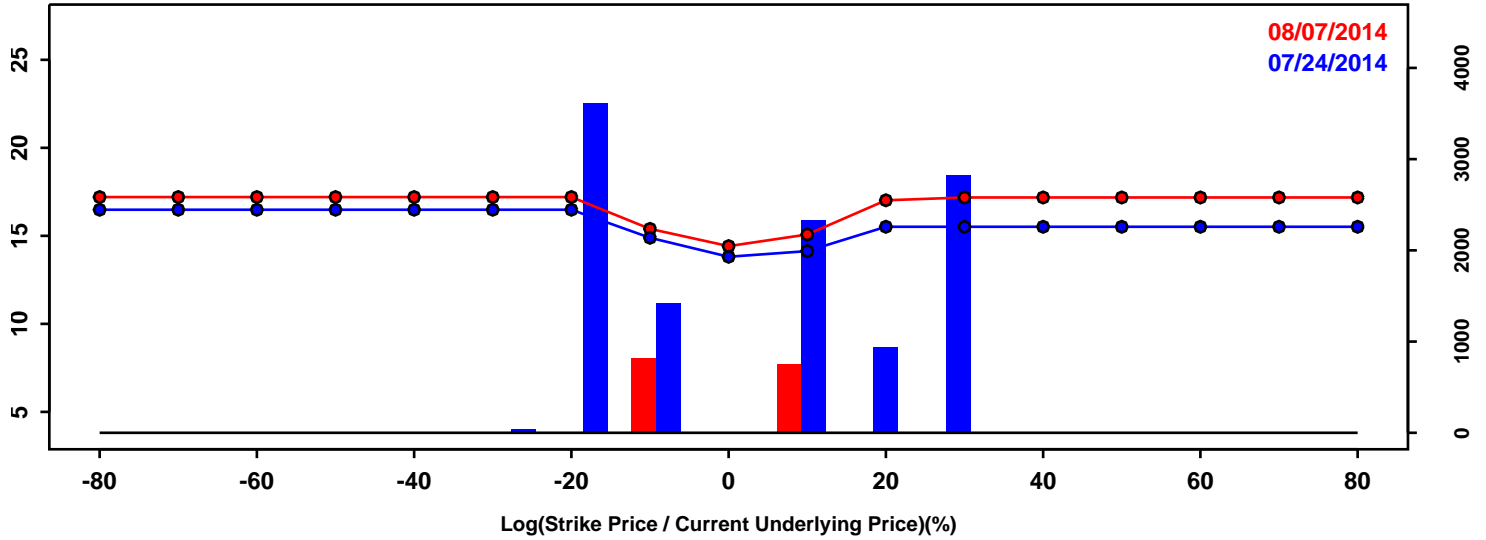


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-12.92%	-14.00%	-1.08%
50th Pct	0.18%	0.37%	0.20%
90th Pct	12.39%	13.51%	1.12%
Mean	-0.04%	0.06%	0.10%
Std Dev	10.35%	11.25%	0.89%
Skew	-0.13	-0.15	-0.03
Kurtosis	0.78	0.78	-0.00

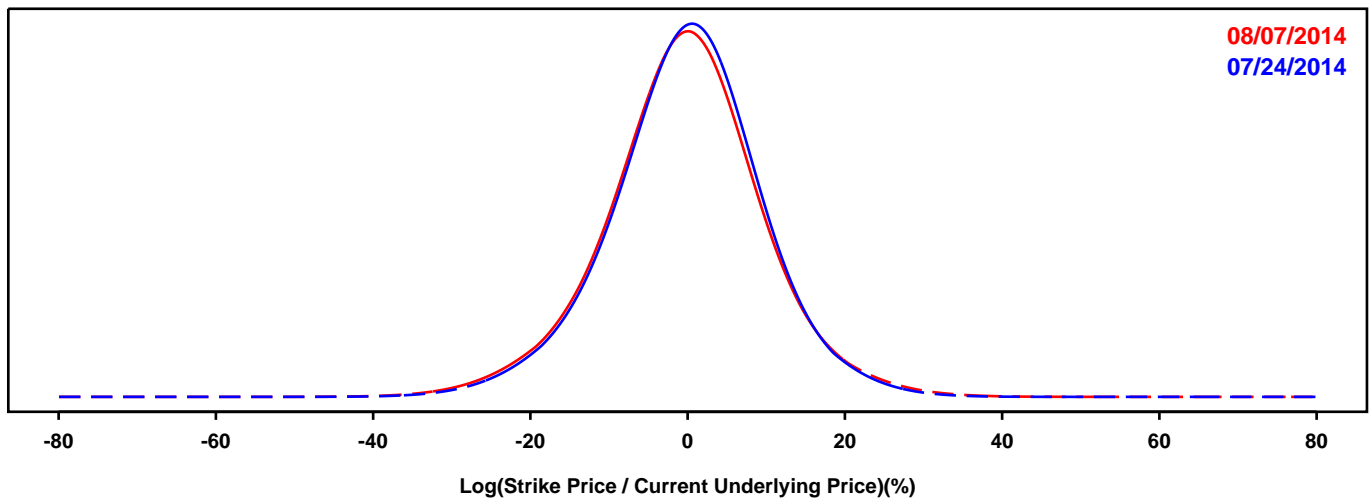
MARKET PROBABILITY DENSITY FUNCTIONS -- GOLD FUTURES

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

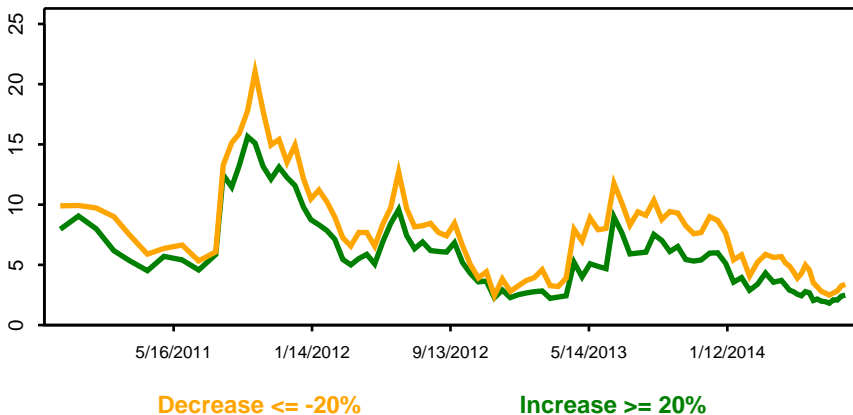
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

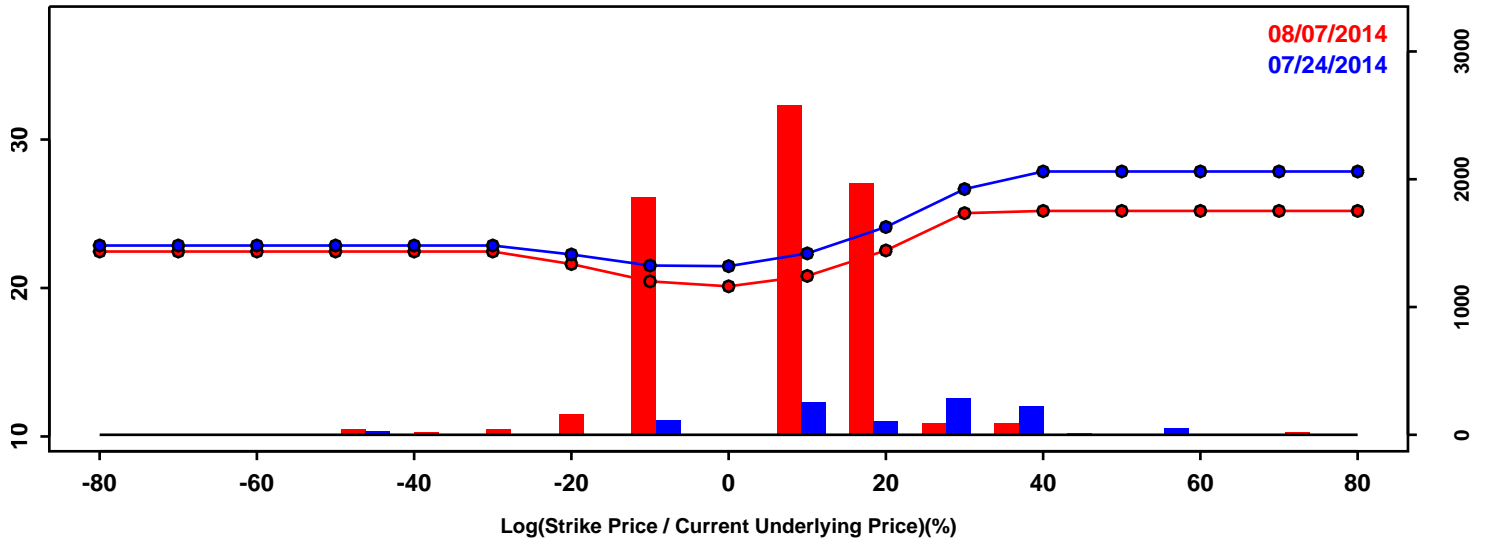


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-12.38%	-13.04%	-0.65%
50th Pct	0.11%	-0.28%	-0.39%
90th Pct	11.70%	11.86%	0.16%
Mean	-0.11%	-0.41%	-0.31%
Std Dev	9.74%	10.16%	0.42%
Skew	-0.14	-0.08	0.06
Kurtosis	0.63	0.76	0.13

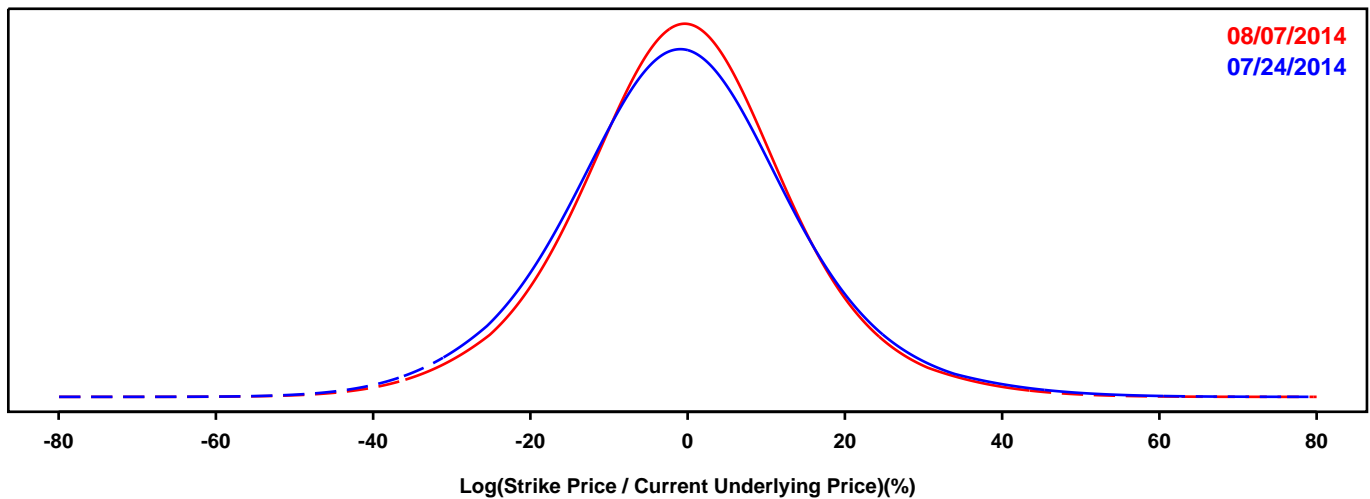
MARKET PROBABILITY DENSITY FUNCTIONS -- SILVER FUTURES

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

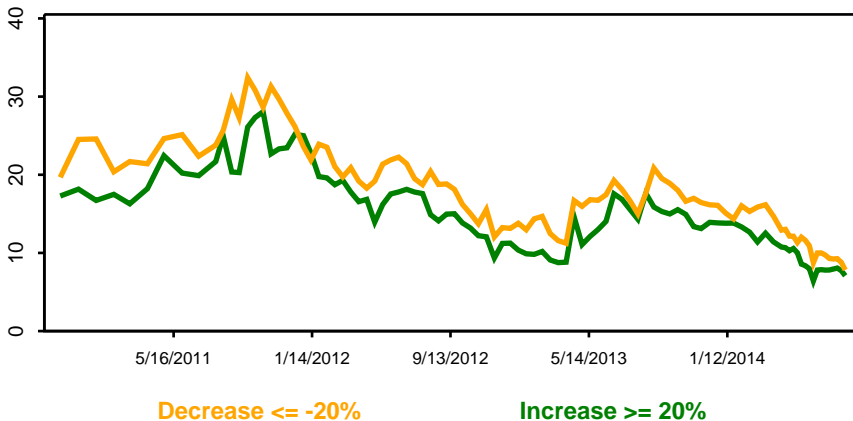
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

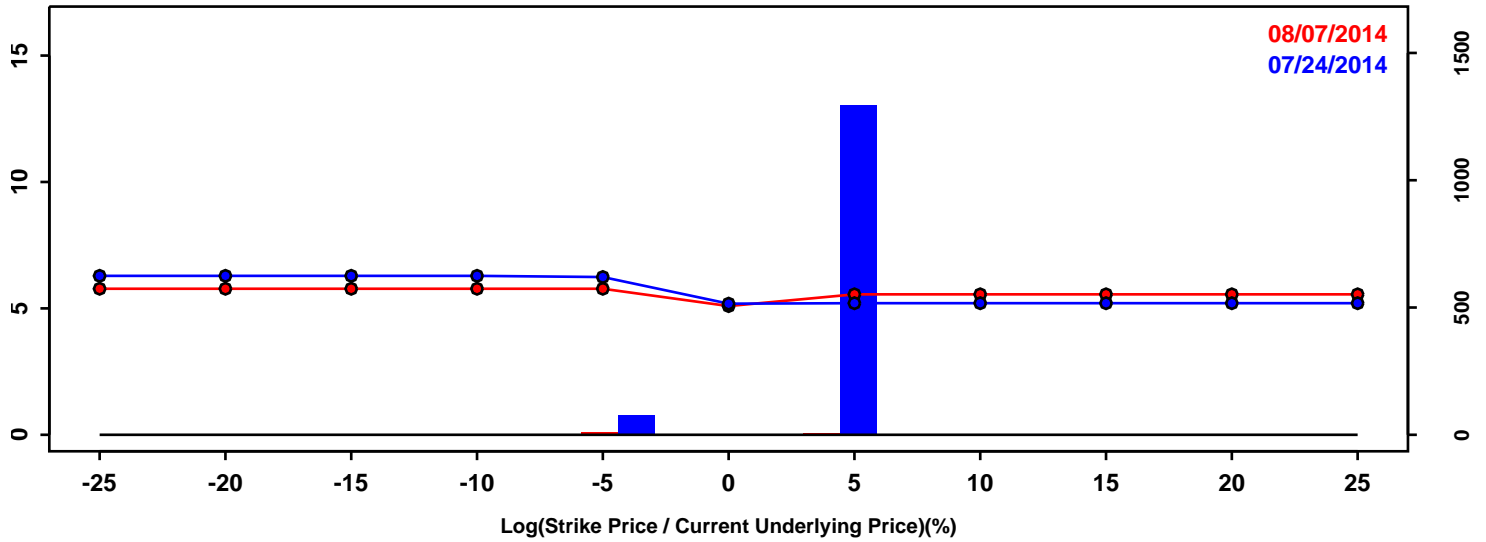


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-19.31%	-17.89%	1.42%
50th Pct	-0.82%	-0.41%	0.42%
90th Pct	17.96%	17.00%	-0.96%
Mean	-0.65%	-0.35%	0.30%
Std Dev	15.11%	14.18%	-0.93%
Skew	0.14	0.07	-0.07
Kurtosis	0.68	0.69	0.01

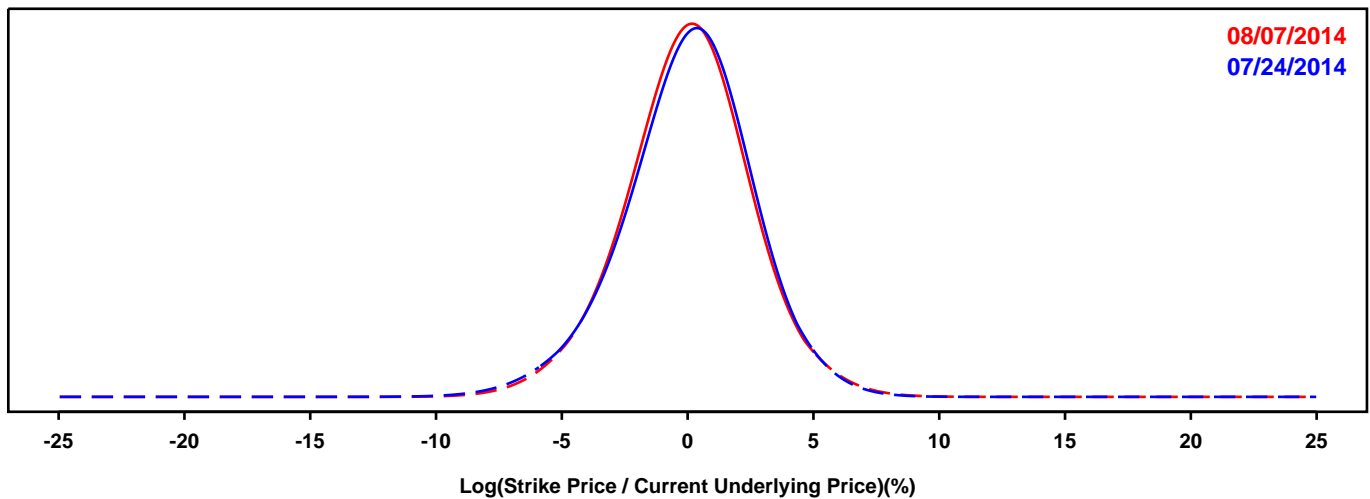
MARKET PROBABILITY DENSITY FUNCTIONS -- DOLLAR-EURO EXCHANGE RATE FUTURES

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

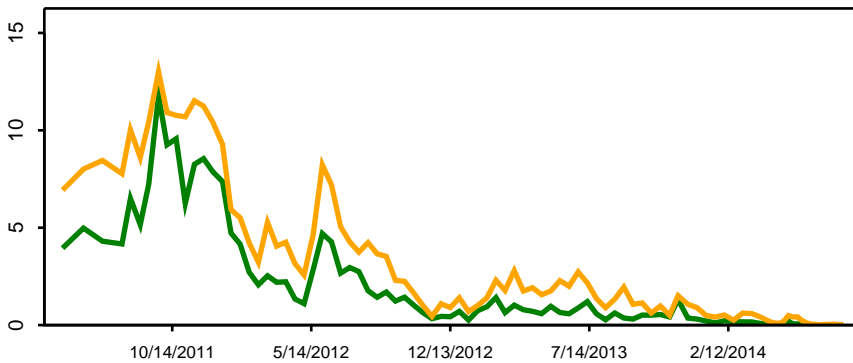
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change



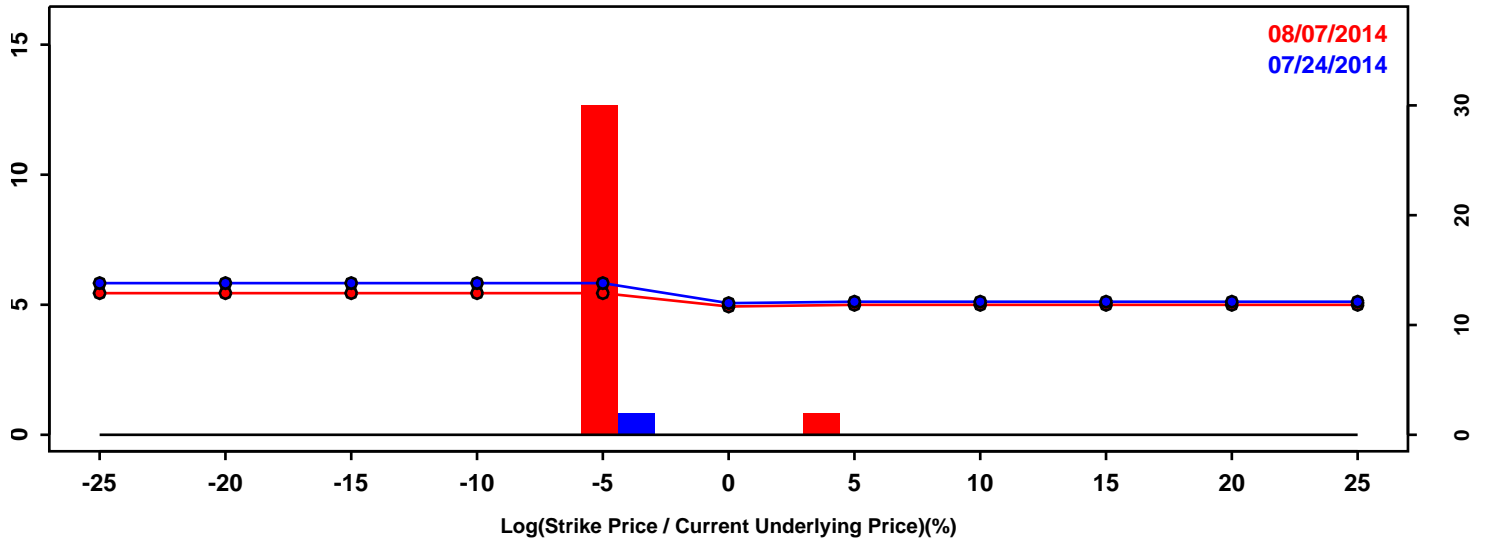
Decrease \leq -10% [stronger \$] Increase \geq 10% [weaker \$]

Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-3.28%	-3.15%	0.13%
50th Pct	0.13%	0.08%	-0.05%
90th Pct	3.21%	3.18%	-0.03%
Mean	0.08%	0.07%	-0.01%
Std Dev	2.59%	2.54%	-0.05%
Skew	-0.26	-0.09	0.17
Kurtosis	0.49	0.43	-0.06

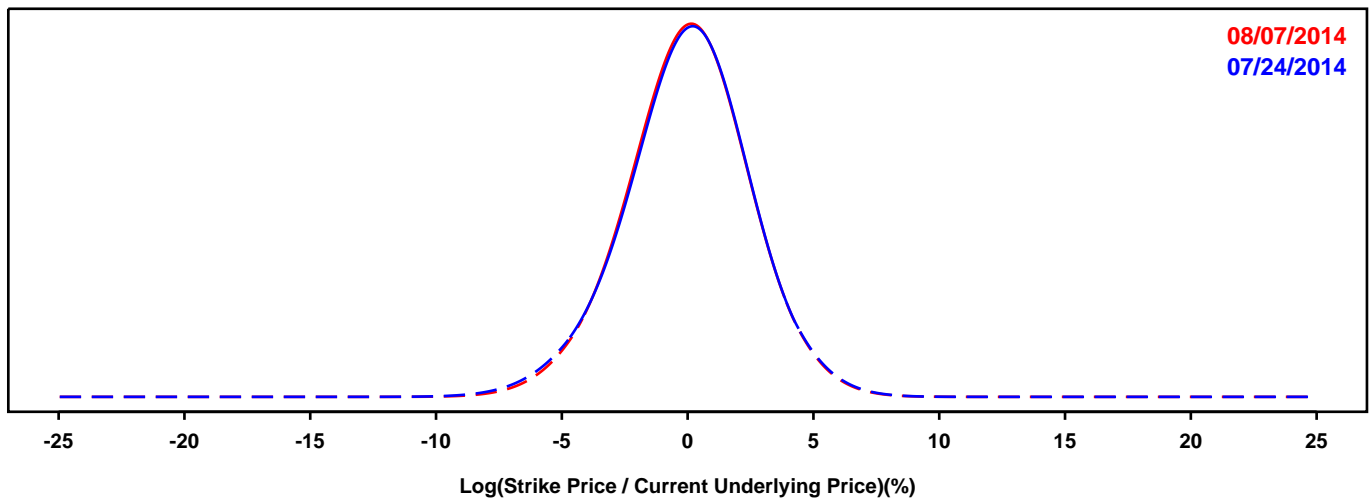
MARKET PROBABILITY DENSITY FUNCTIONS -- DOLLAR-POUND EXCHANGE RATE FUTURES

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

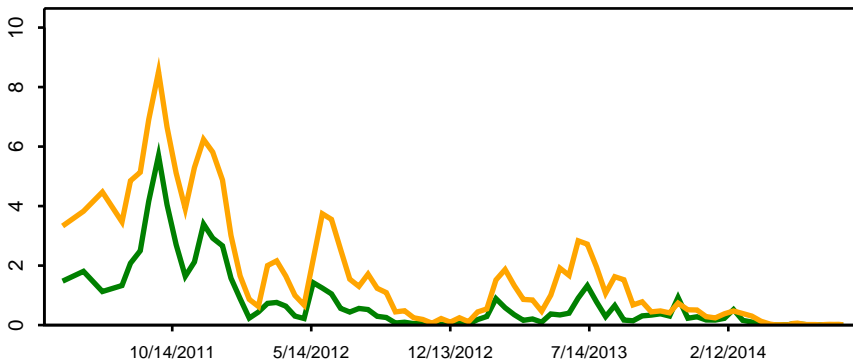
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change



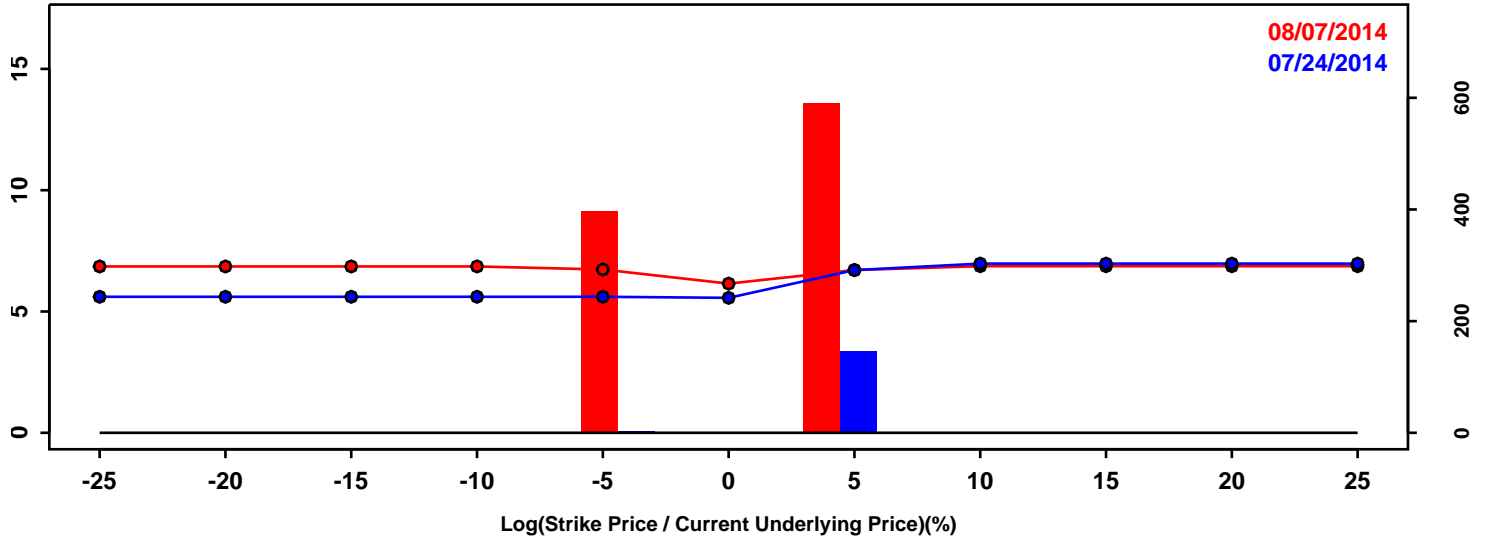
Decrease <= -10% [stronger \$] Increase >= 10% [weaker \$]

Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-3.21%	-3.15%	0.06%
50th Pct	0.07%	0.08%	0.01%
90th Pct	3.15%	3.10%	-0.05%
Mean	0.04%	0.06%	0.02%
Std Dev	2.53%	2.46%	-0.06%
Skew	-0.17	-0.11	0.07
Kurtosis	0.35	0.24	-0.12

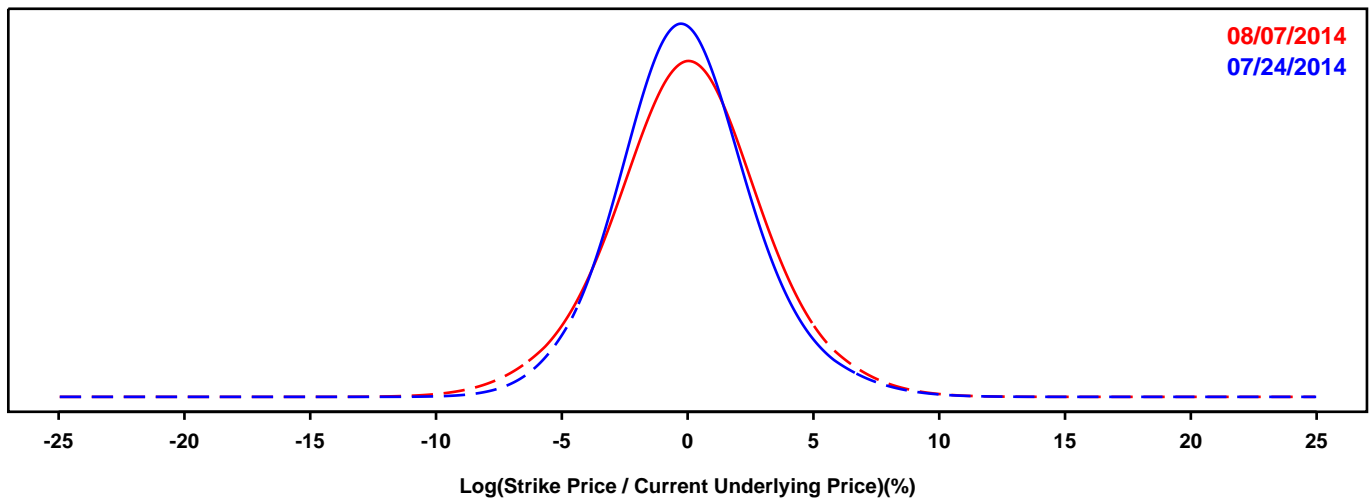
MARKET PROBABILITY DENSITY FUNCTIONS -- DOLLAR-YEN EXCHANGE RATE FUTURES

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

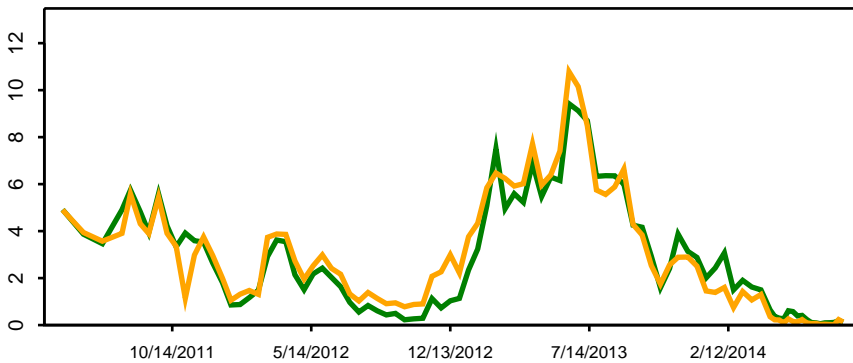
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change



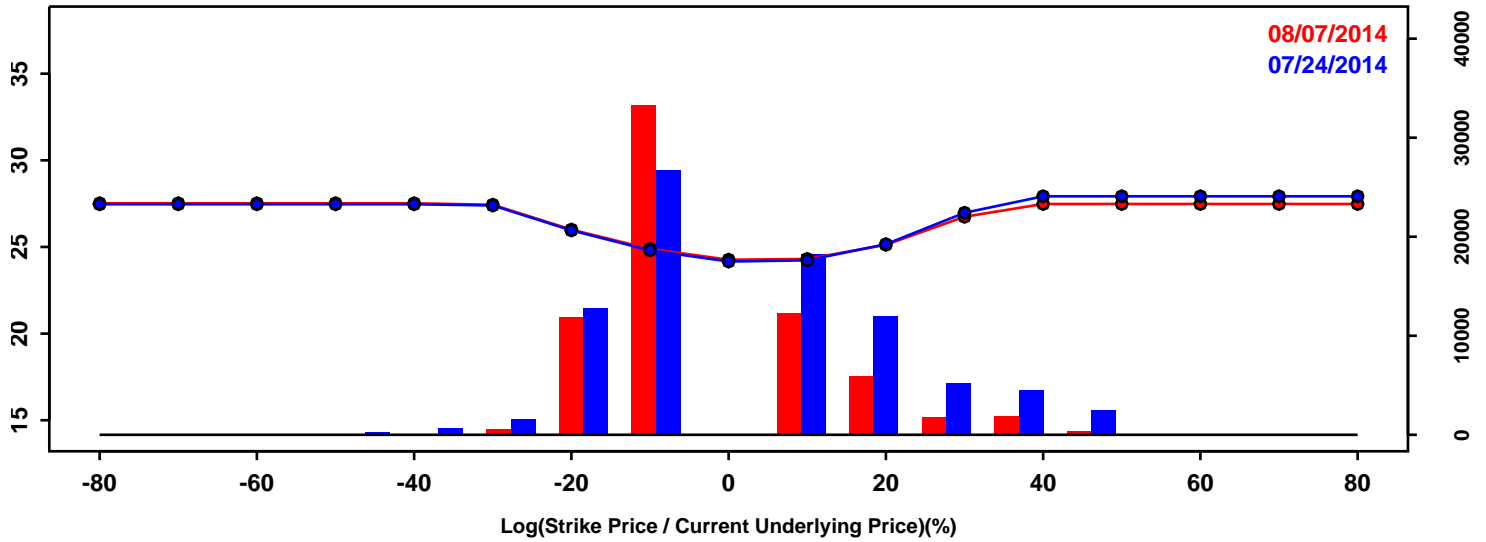
Decrease <= -10% [stronger \$] Increase >= 10% [weaker \$]

Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-3.42%	-3.81%	-0.39%
50th Pct	-0.13%	0.00%	0.13%
90th Pct	3.47%	3.81%	0.34%
Mean	-0.01%	0.06%	0.07%
Std Dev	2.78%	3.06%	0.29%
Skew	0.24	-0.01	-0.25
Kurtosis	0.57	0.45	-0.12

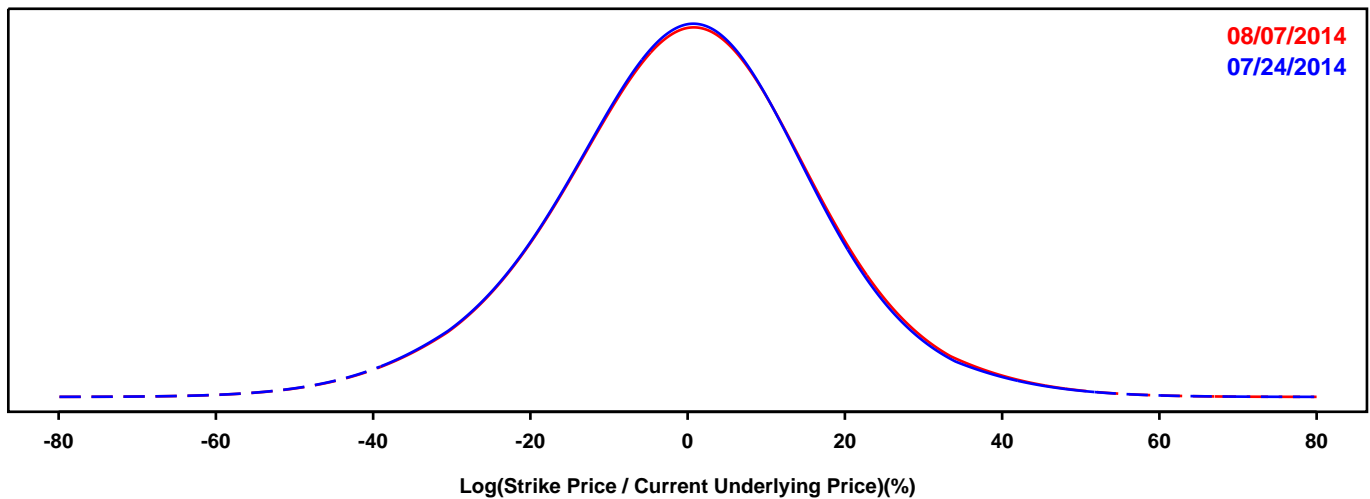
MARKET PROBABILITY DENSITY FUNCTIONS -- CORN FUTURES

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

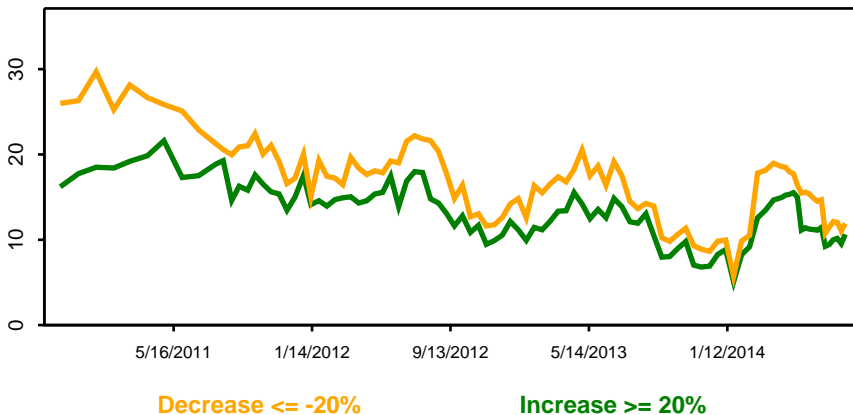
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

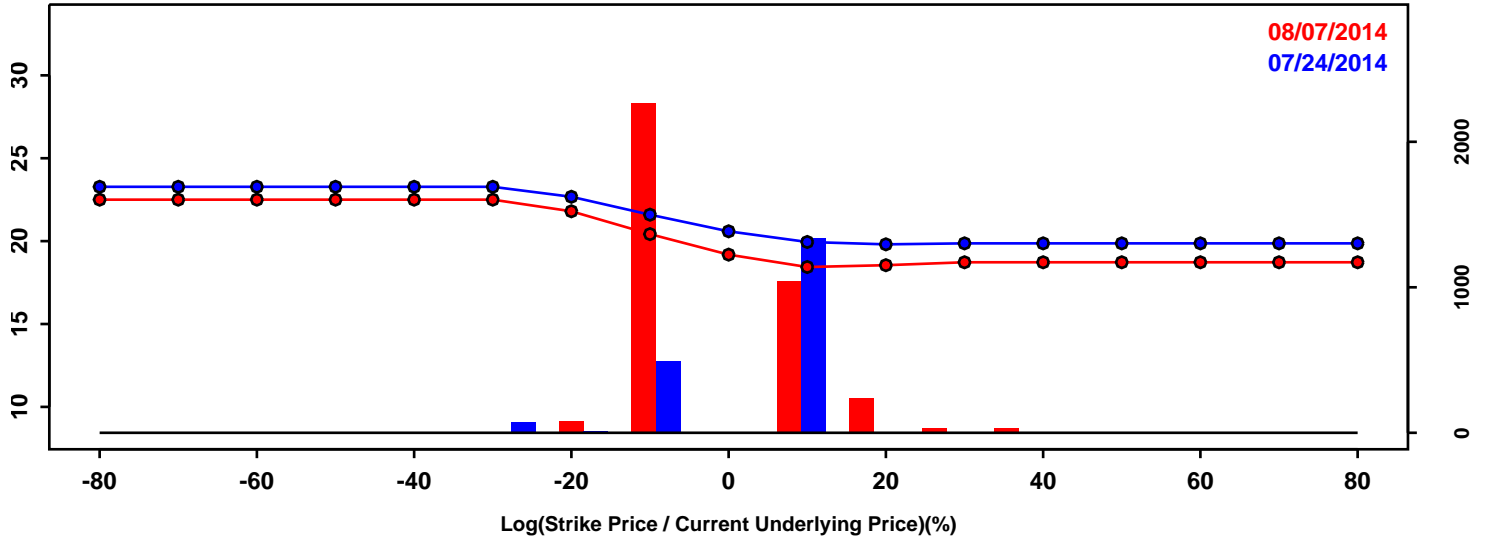


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-22.11%	-21.91%	0.20%
50th Pct	-0.17%	0.06%	0.23%
90th Pct	20.14%	20.61%	0.47%
Mean	-0.52%	-0.28%	0.24%
Std Dev	17.01%	17.11%	0.10%
Skew	-0.09	-0.08	0.01
Kurtosis	0.53	0.50	-0.04

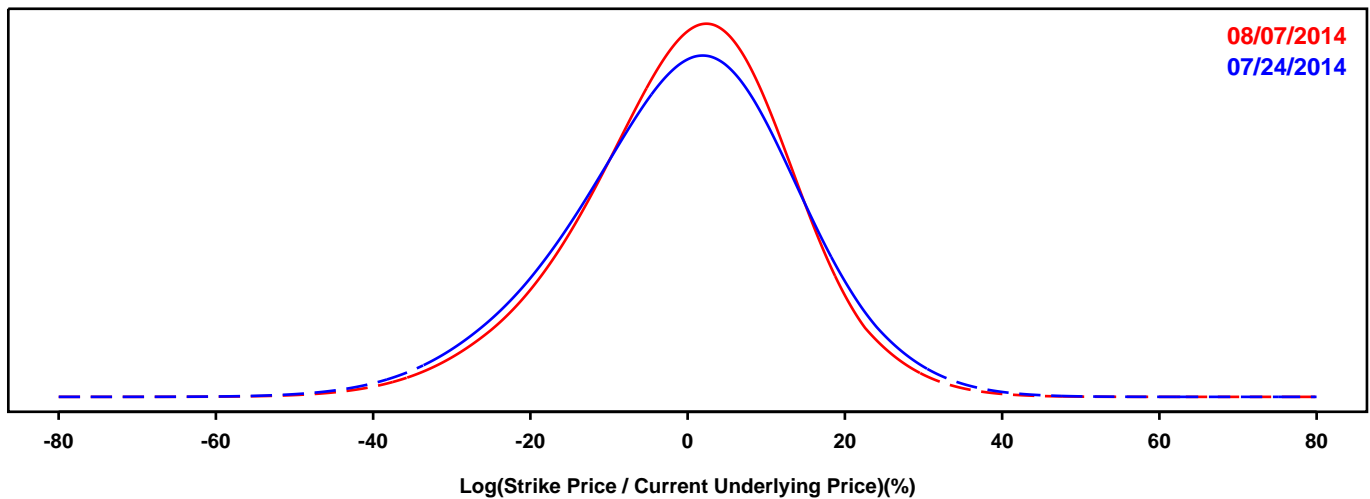
MARKET PROBABILITY DENSITY FUNCTIONS -- SOYBEAN FUTURES

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

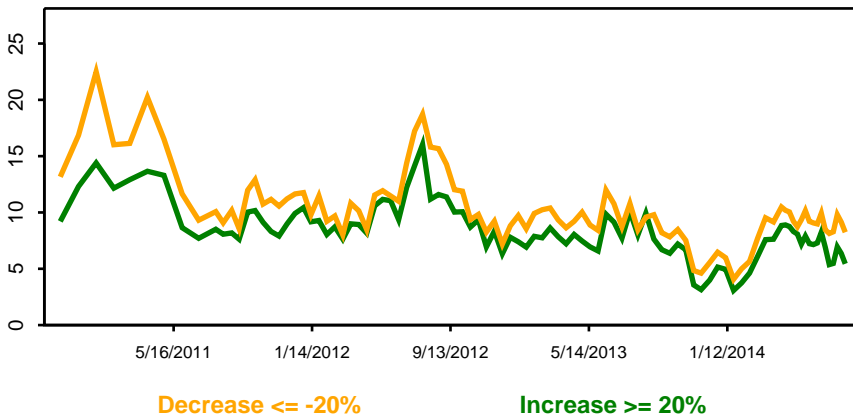
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

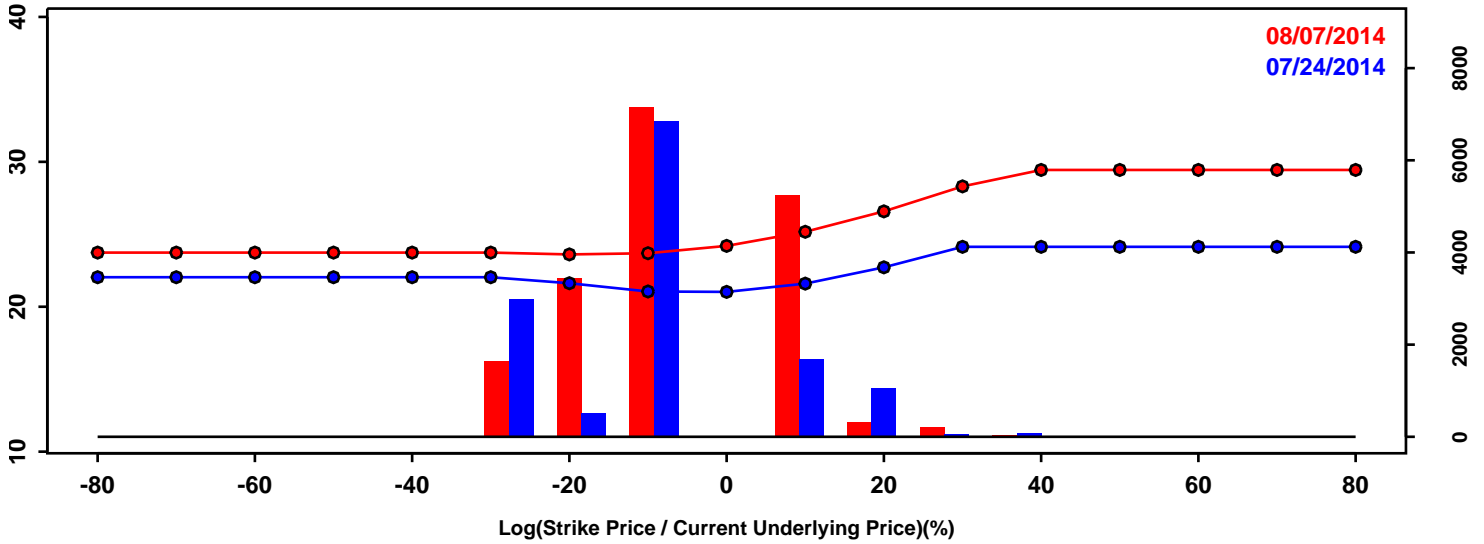


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-19.81%	-18.18%	1.63%
50th Pct	0.20%	0.51%	0.31%
90th Pct	17.34%	15.98%	-1.35%
Mean	-0.56%	-0.33%	0.22%
Std Dev	14.64%	13.60%	-1.04%
Skew	-0.25	-0.31	-0.06
Kurtosis	0.24	0.37	0.13

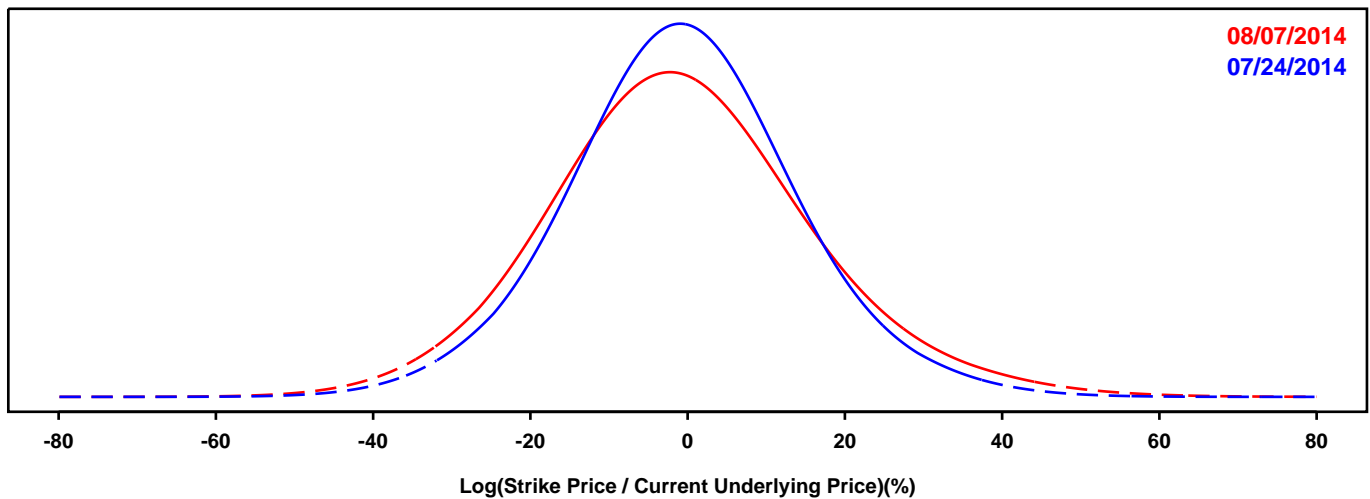
MARKET PROBABILITY DENSITY FUNCTIONS -- WHEAT FUTURES

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

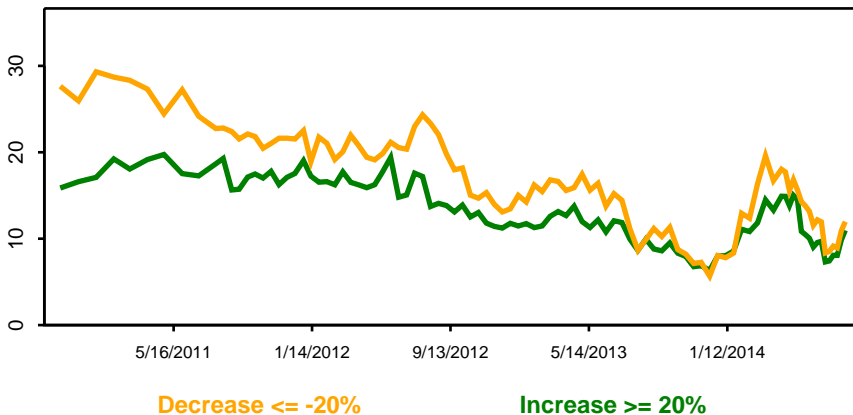
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

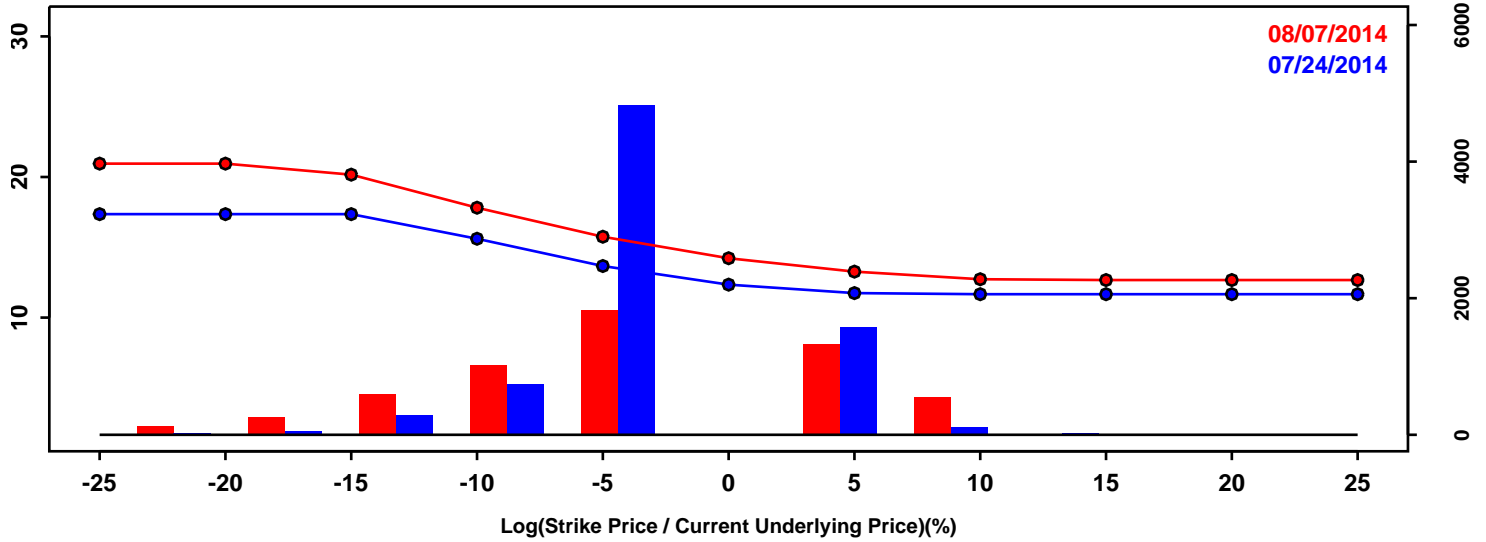


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-19.03%	-21.71%	-2.67%
50th Pct	-0.72%	-1.30%	-0.58%
90th Pct	18.04%	21.06%	3.01%
Mean	-0.53%	-0.67%	-0.13%
Std Dev	14.81%	17.08%	2.27%
Skew	0.08	0.24	0.16
Kurtosis	0.38	0.44	0.06

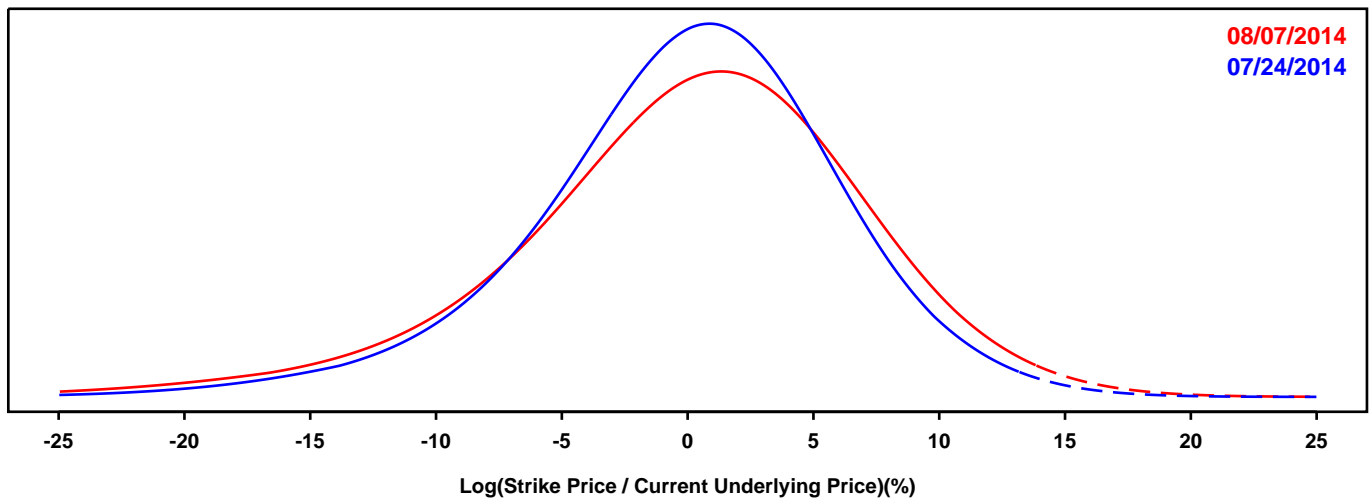
MARKET PROBABILITY DENSITY FUNCTIONS -- CATTLE FUTURES

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

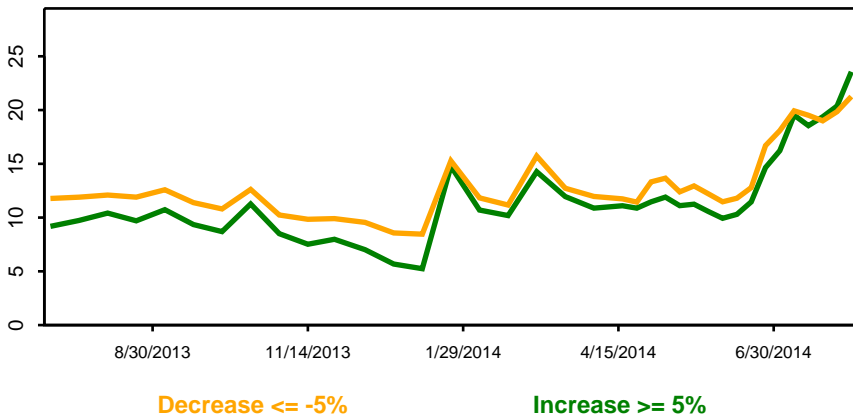
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

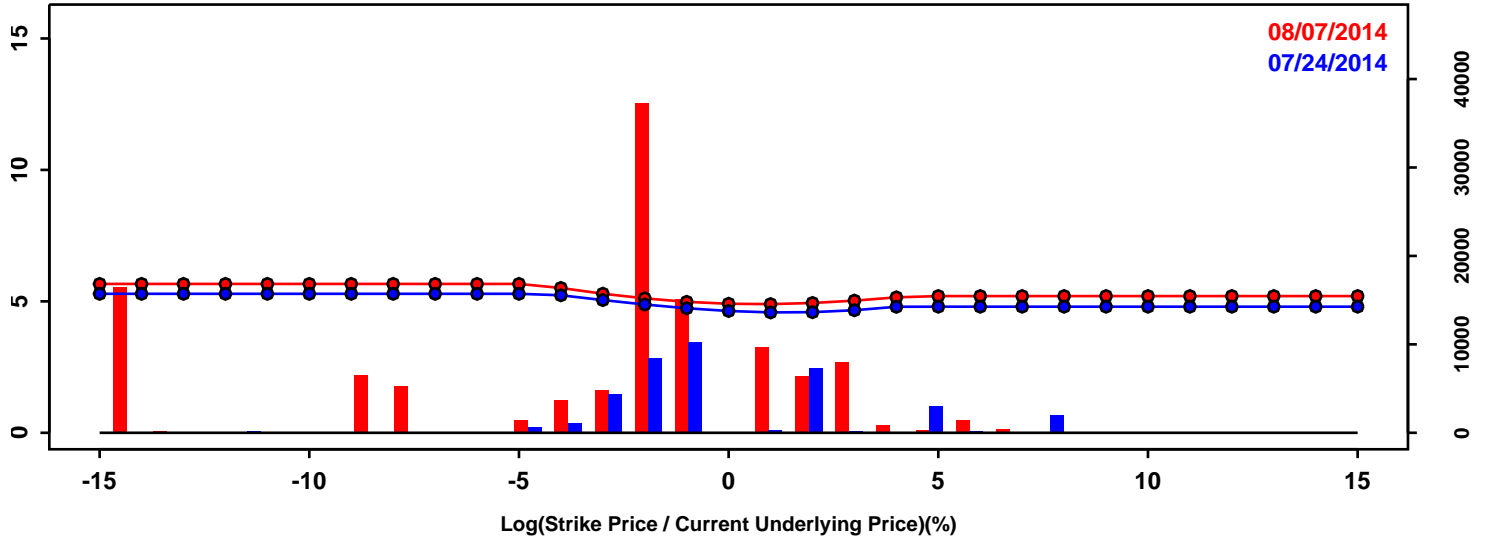


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-7.93%	-9.13%	-1.20%
50th Pct	0.30%	0.59%	0.29%
90th Pct	7.27%	8.38%	1.10%
Mean	-0.08%	-0.01%	0.07%
Std Dev	6.22%	7.19%	0.97%
Skew	-0.49	-0.62	-0.13
Kurtosis	0.95	1.15	0.20

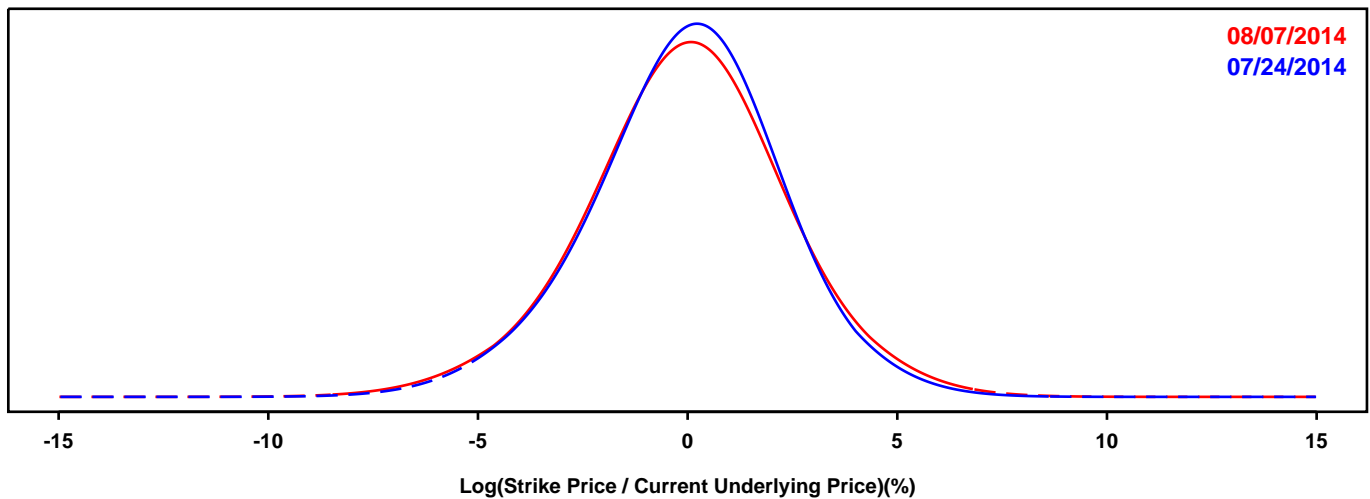
MARKET PROBABILITY DENSITY FUNCTIONS -- TEN YEAR TREASURY

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

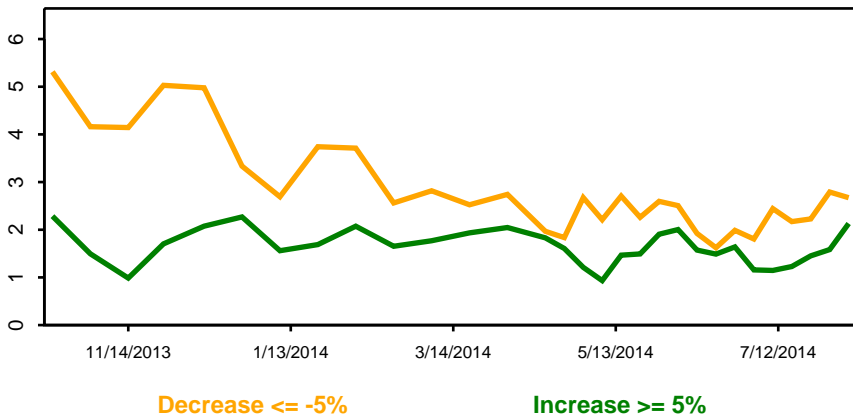
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

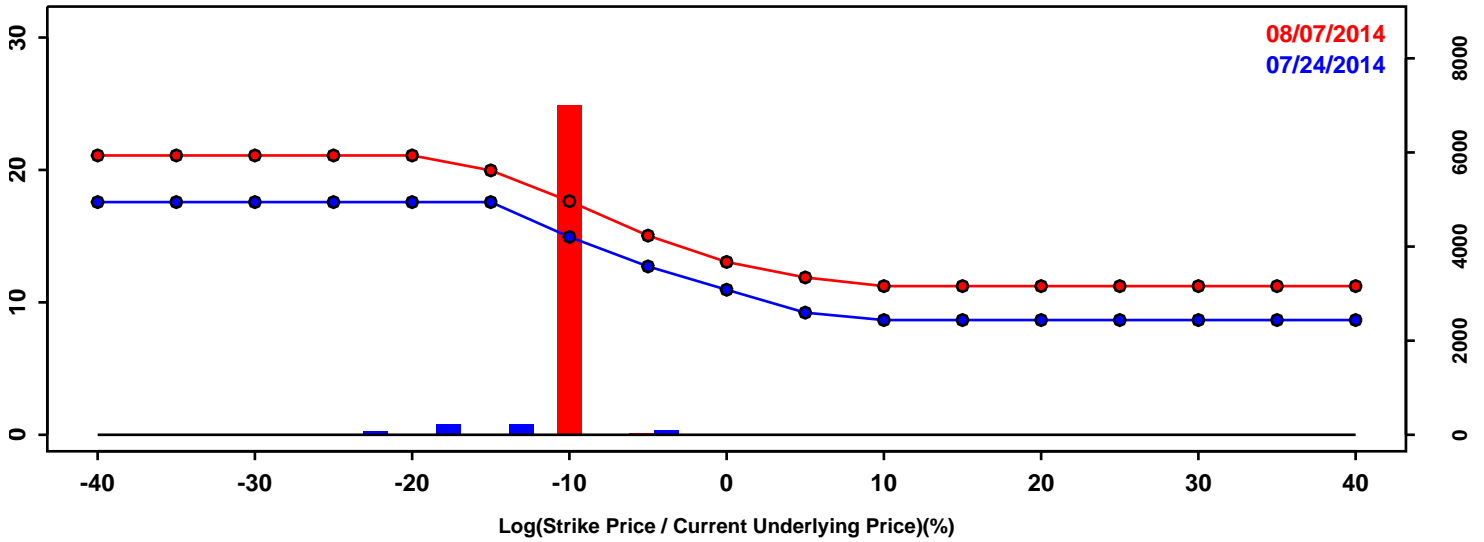


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-2.99%	-3.09%	-0.10%
50th Pct	0.08%	0.00%	-0.08%
90th Pct	2.82%	3.03%	0.21%
Mean	0.00%	0.00%	-0.00%
Std Dev	2.32%	2.45%	0.13%
Skew	-0.17	-0.11	0.07
Kurtosis	0.37	0.43	0.06

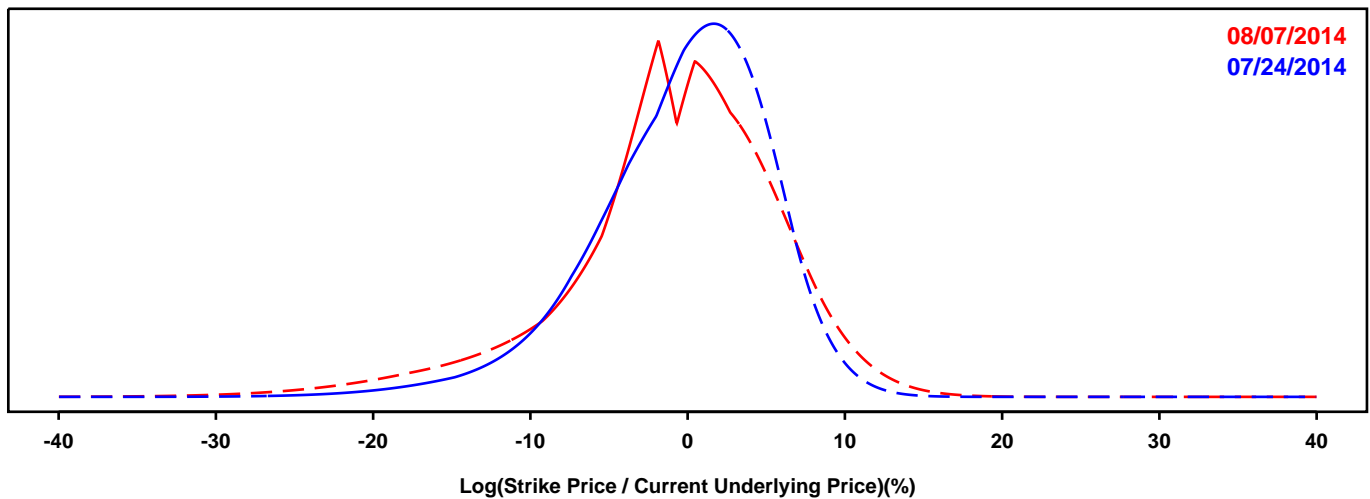
MARKET PROBABILITY DENSITY FUNCTIONS -- iSHARES DOW JONES US REAL ESTATE

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

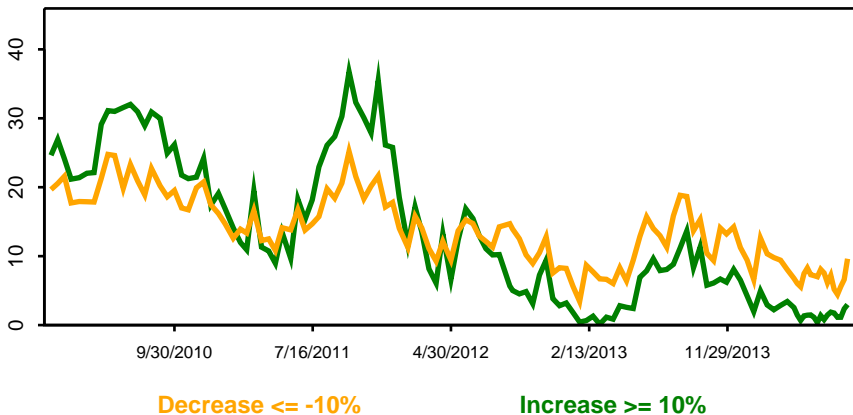
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

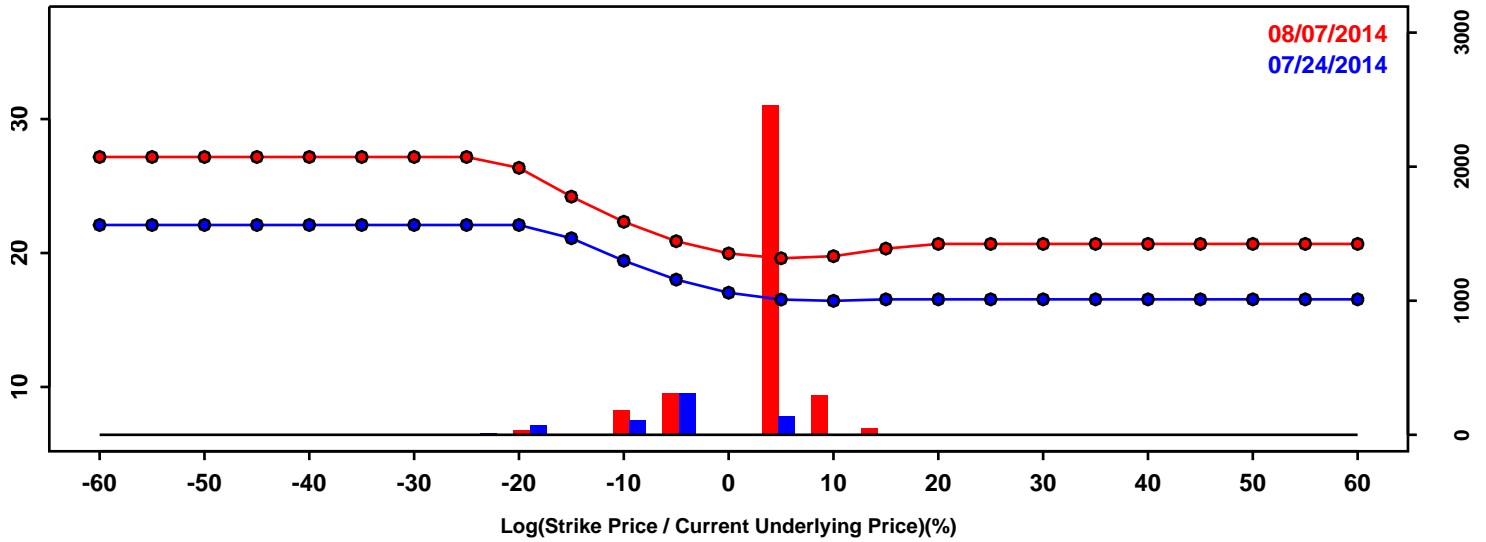


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-7.65%	-9.76%	-2.10%
50th Pct	0.34%	-0.26%	-0.60%
90th Pct	6.04%	6.81%	0.78%
Mean	-0.35%	-0.97%	-0.62%
Std Dev	5.62%	6.94%	1.32%
Skew	-0.80	-0.92	-0.12
Kurtosis	1.30	1.82	0.52

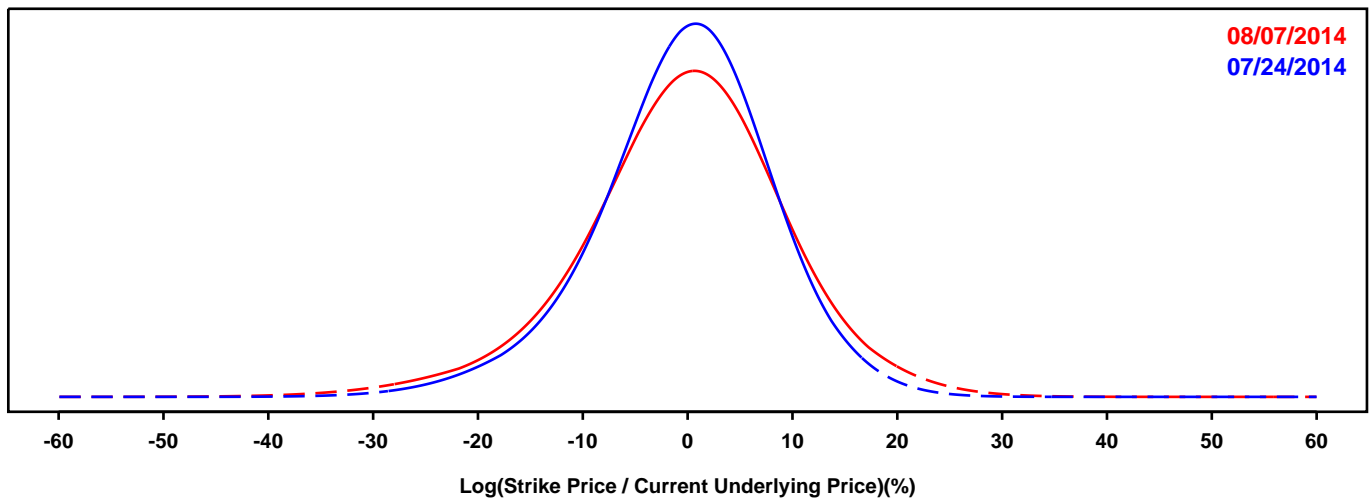
MARKET PROBABILITY DENSITY FUNCTIONS -- AMERICAN EXPRESS

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

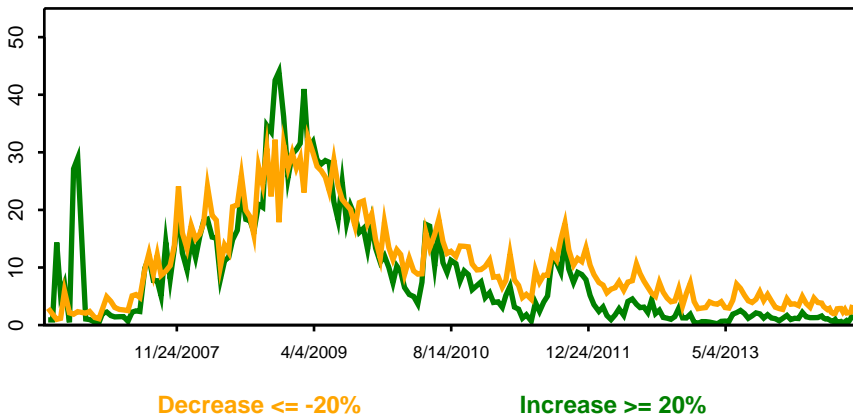
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

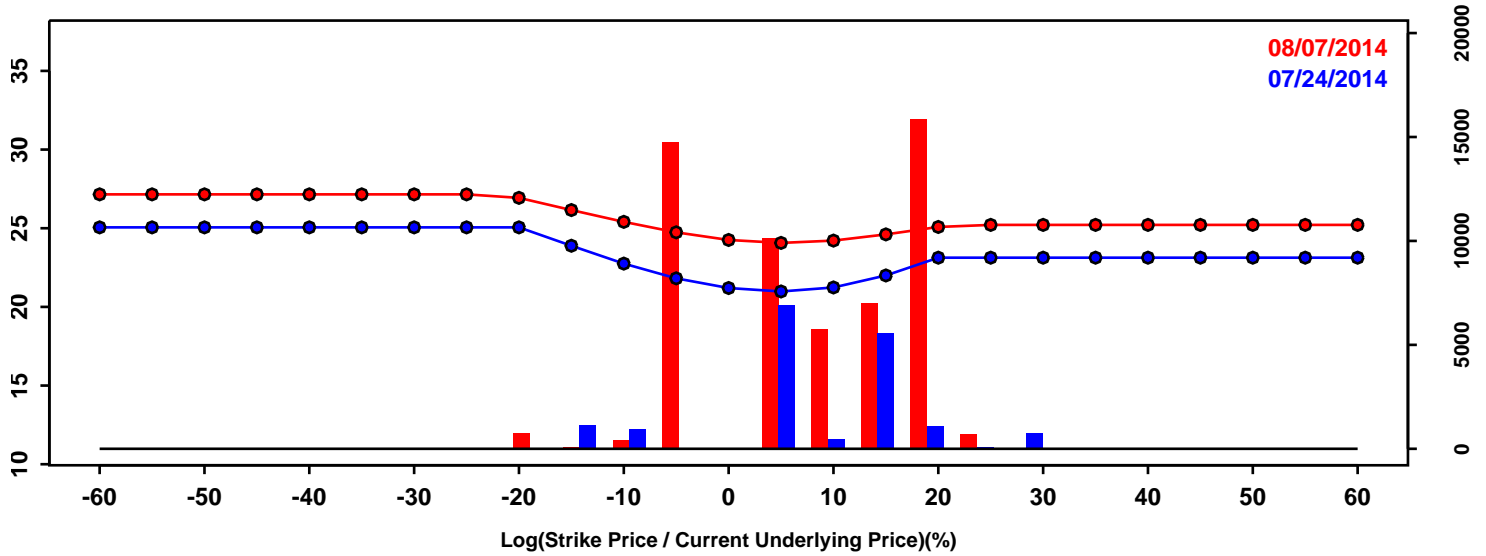


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-11.19%	-12.73%	-1.54%
50th Pct	0.14%	0.10%	-0.04%
90th Pct	9.97%	11.62%	1.65%
Mean	-0.30%	-0.31%	-0.01%
Std Dev	8.56%	9.99%	1.43%
Skew	-0.37	-0.35	0.03
Kurtosis	0.68	0.91	0.23

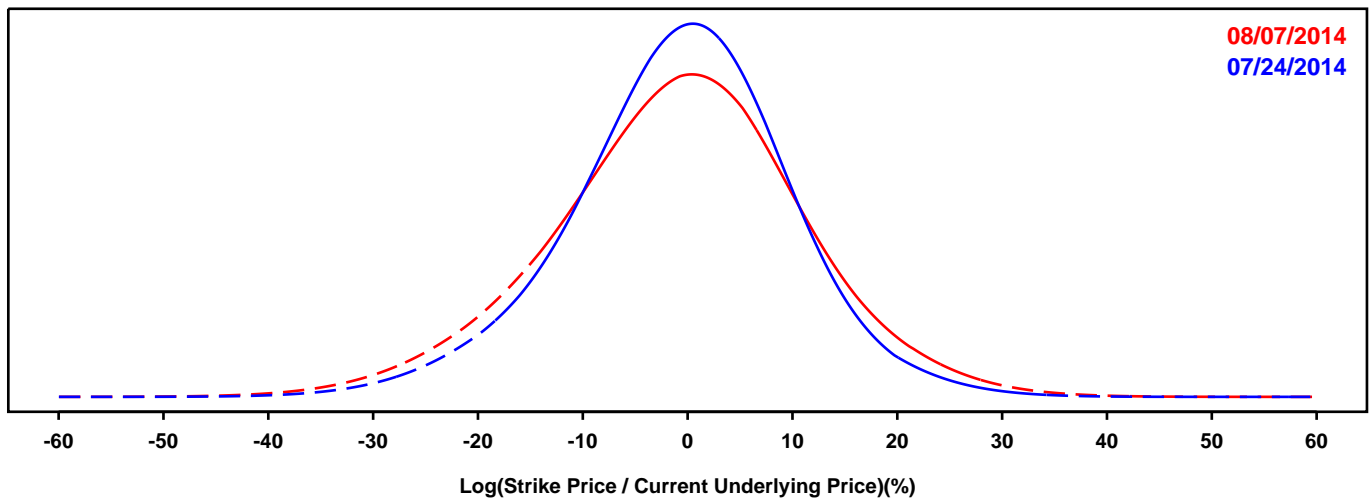
MARKET PROBABILITY DENSITY FUNCTIONS -- BANK OF AMERICA

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

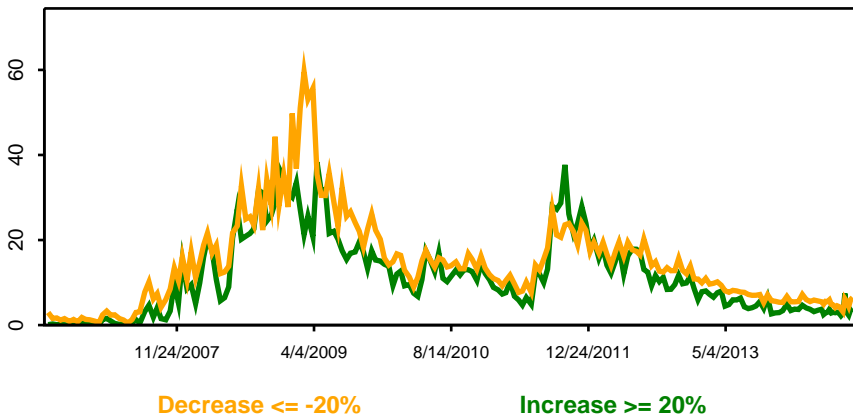
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

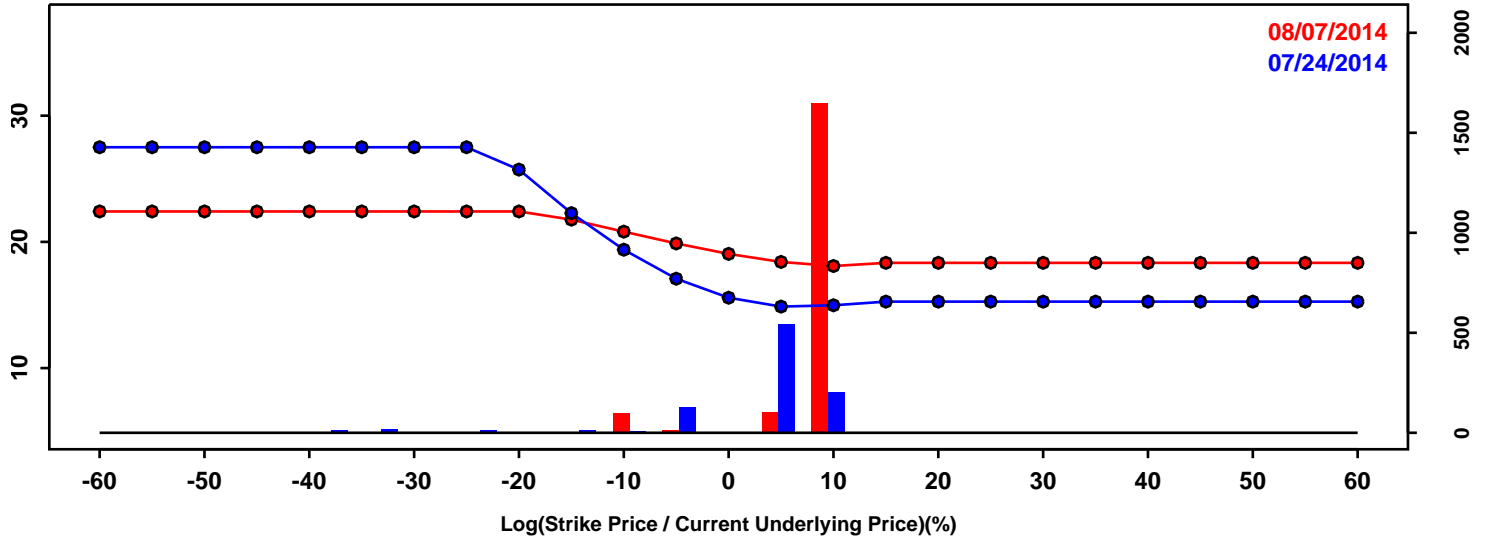


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-14.36%	-16.65%	-2.29%
50th Pct	-0.31%	-0.50%	-0.19%
90th Pct	12.03%	14.00%	1.98%
Mean	-0.75%	-0.91%	-0.16%
Std Dev	10.62%	12.17%	1.55%
Skew	-0.22	-0.15	0.06
Kurtosis	0.54	0.34	-0.20

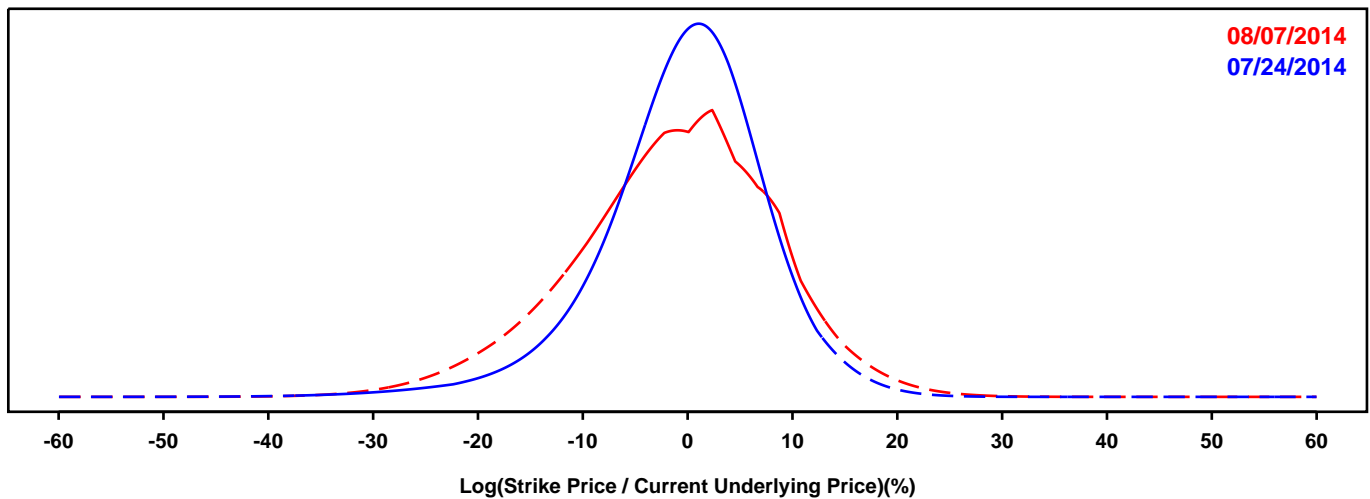
MARKET PROBABILITY DENSITY FUNCTIONS -- BB&T

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

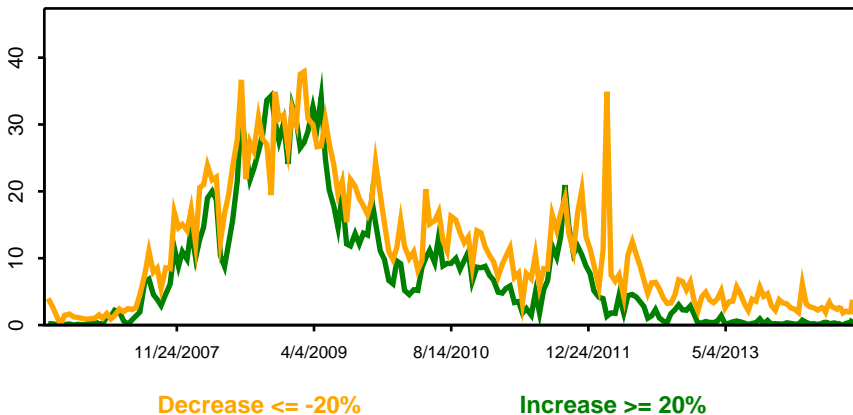
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

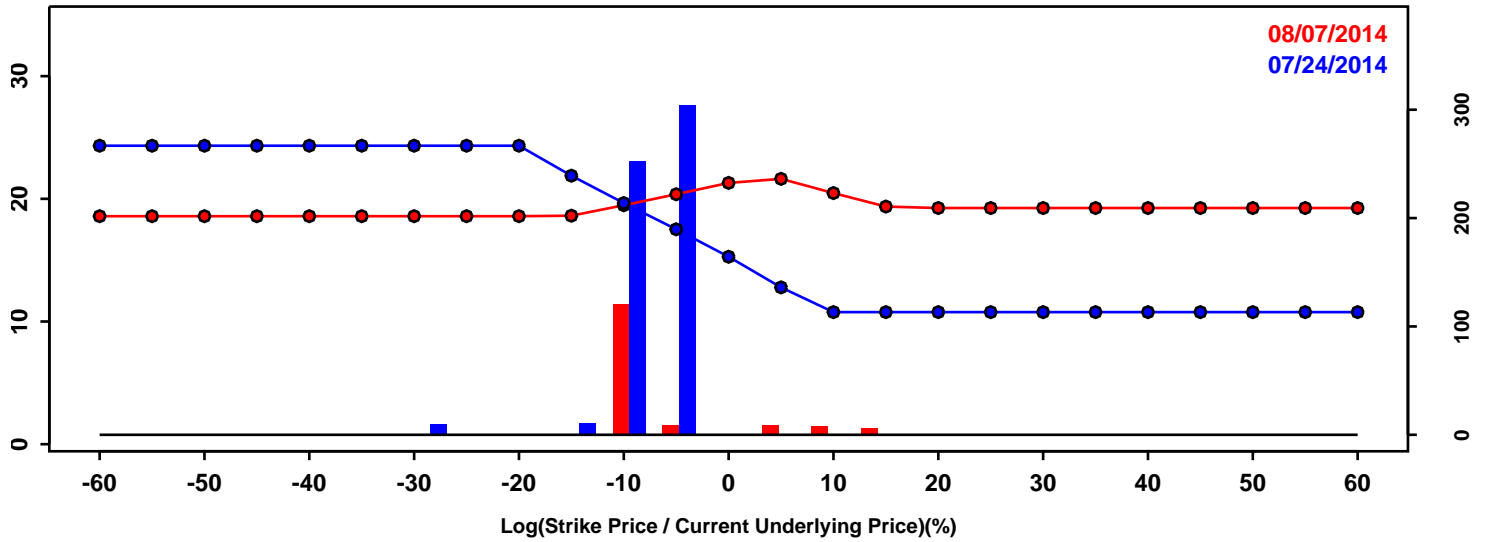


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-10.03%	-14.09%	-4.07%
50th Pct	0.23%	-0.70%	-0.93%
90th Pct	8.71%	10.17%	1.45%
Mean	-0.34%	-1.33%	-1.00%
Std Dev	7.93%	9.66%	1.73%
Skew	-0.69	-0.34	0.35
Kurtosis	1.87	0.31	-1.55

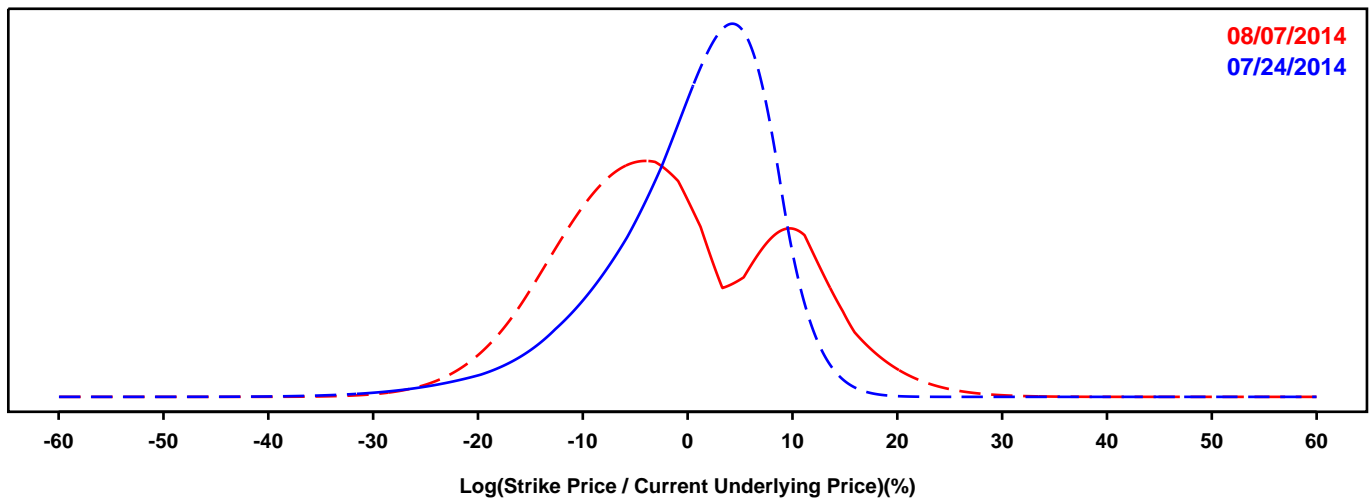
MARKET PROBABILITY DENSITY FUNCTIONS -- BANK OF NEW YORK MELLON

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

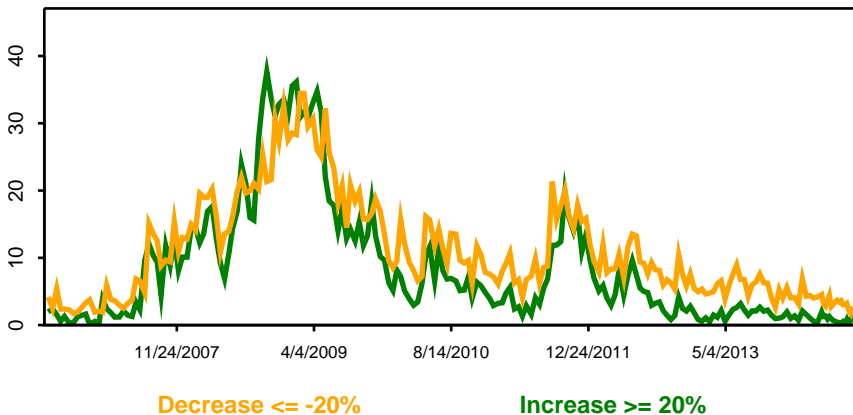
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

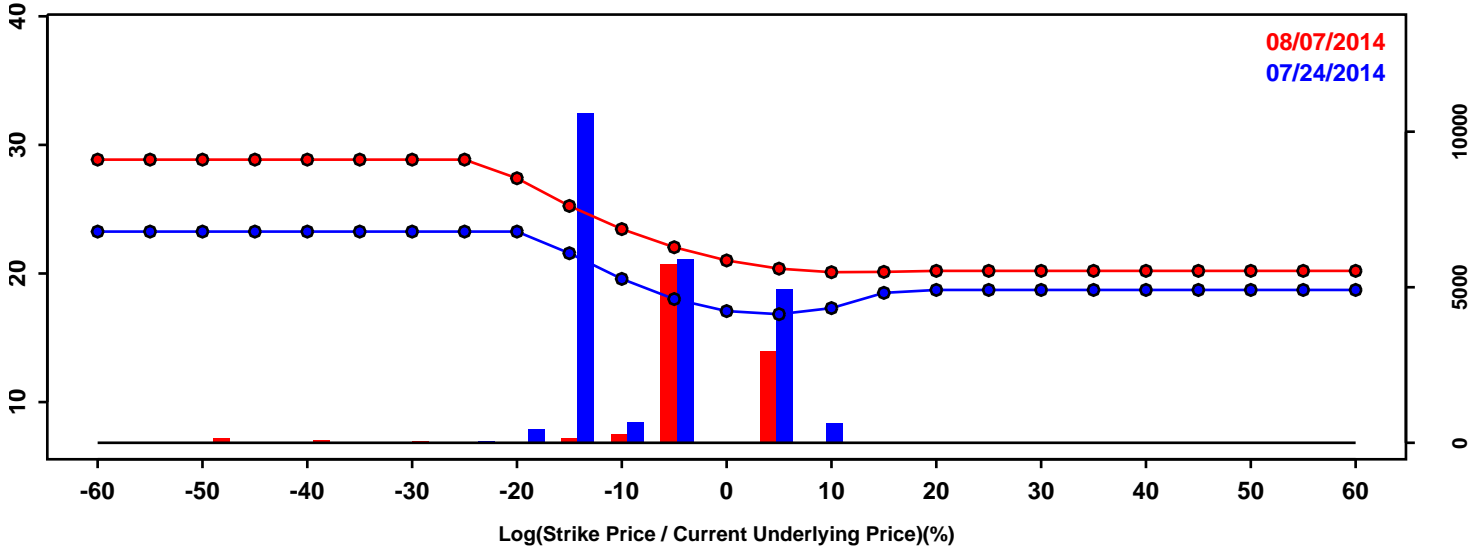


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-10.46%	-14.31%	-3.86%
50th Pct	1.58%	-2.35%	-3.93%
90th Pct	8.61%	12.70%	4.09%
Mean	0.17%	-1.34%	-1.51%
Std Dev	7.88%	10.46%	2.58%
Skew	-1.03	0.14	1.17
Kurtosis	1.55	-0.43	-1.98

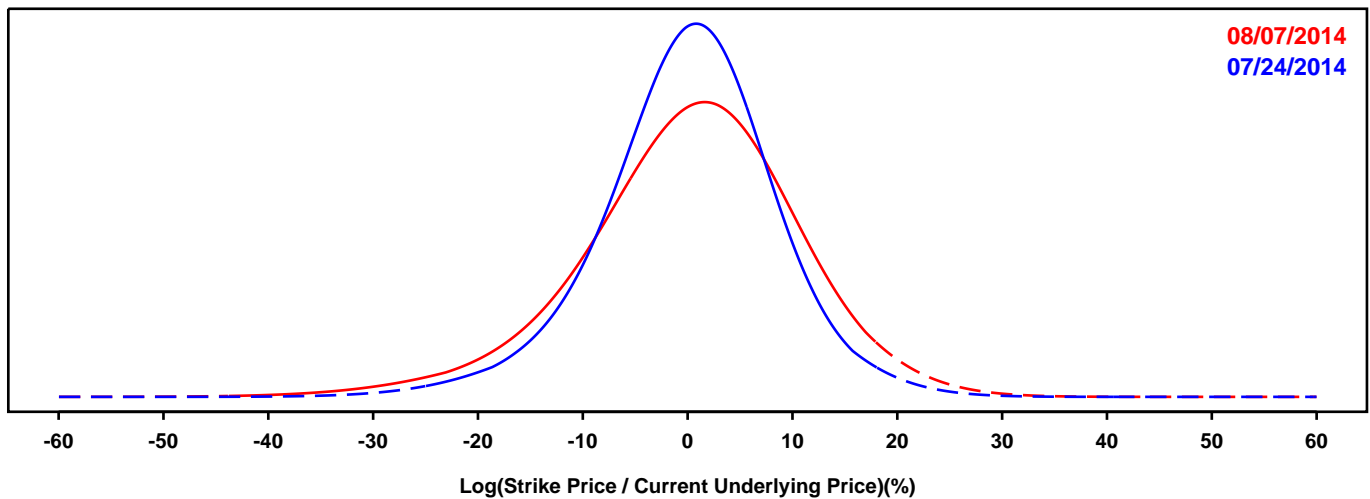
MARKET PROBABILITY DENSITY FUNCTIONS -- CITIGROUP

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

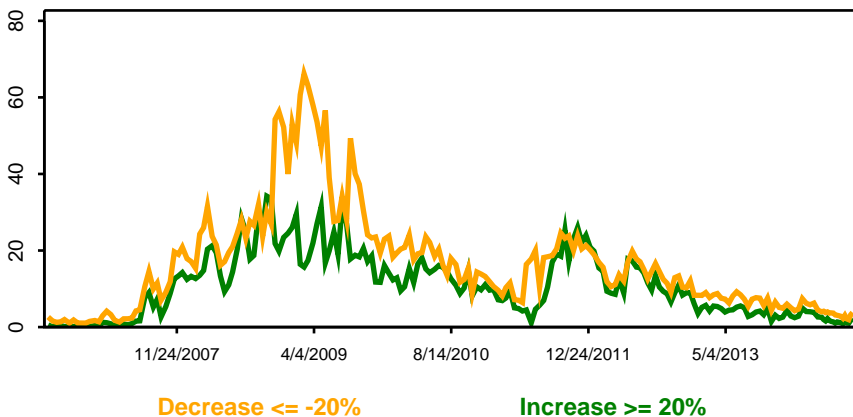
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

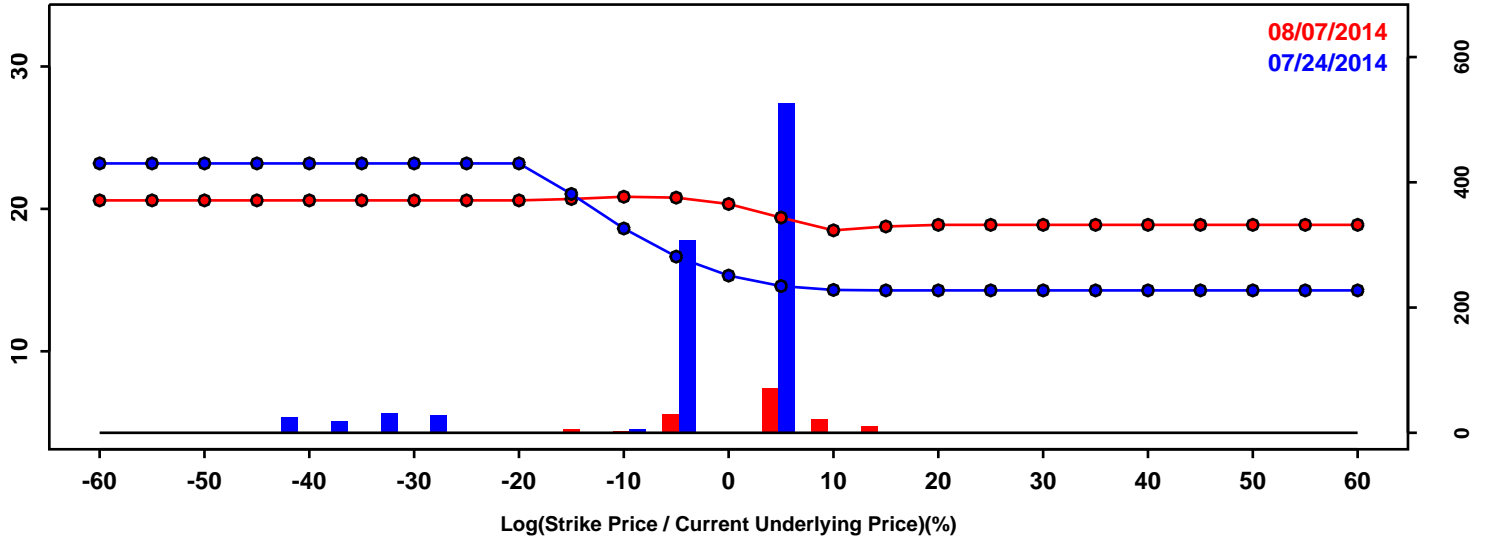


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-10.52%	-13.06%	-2.54%
50th Pct	0.34%	0.78%	0.43%
90th Pct	10.19%	12.82%	2.63%
Mean	0.05%	0.24%	0.19%
Std Dev	8.52%	10.52%	2.00%
Skew	-0.30	-0.41	-0.11
Kurtosis	0.96	0.82	-0.14

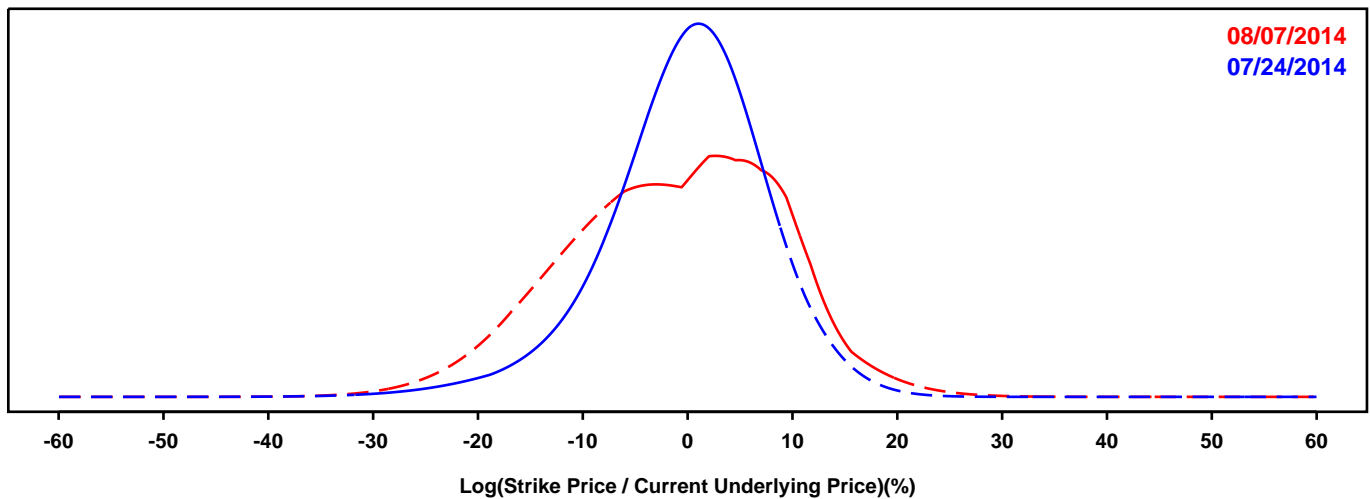
MARKET PROBABILITY DENSITY FUNCTIONS -- CAPITAL ONE

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

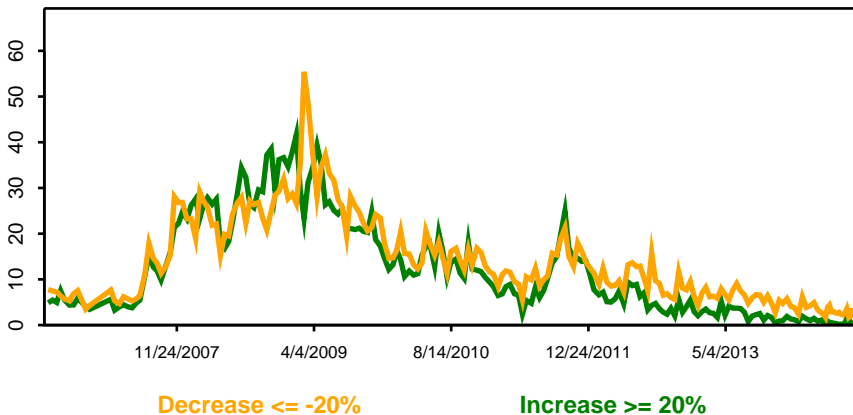
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

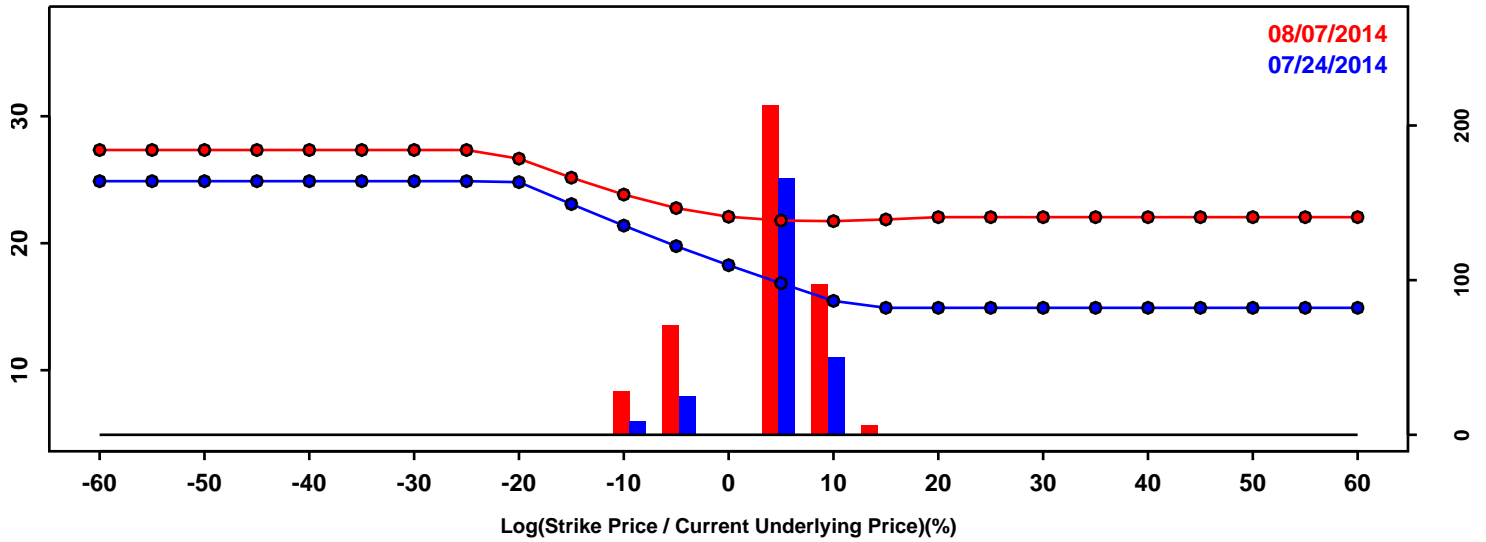


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-9.78%	-14.88%	-5.10%
50th Pct	0.40%	-0.63%	-1.02%
90th Pct	8.98%	10.88%	1.90%
Mean	-0.10%	-1.31%	-1.21%
Std Dev	7.72%	10.09%	2.37%
Skew	-0.55	-0.24	0.32
Kurtosis	1.17	-0.20	-1.37

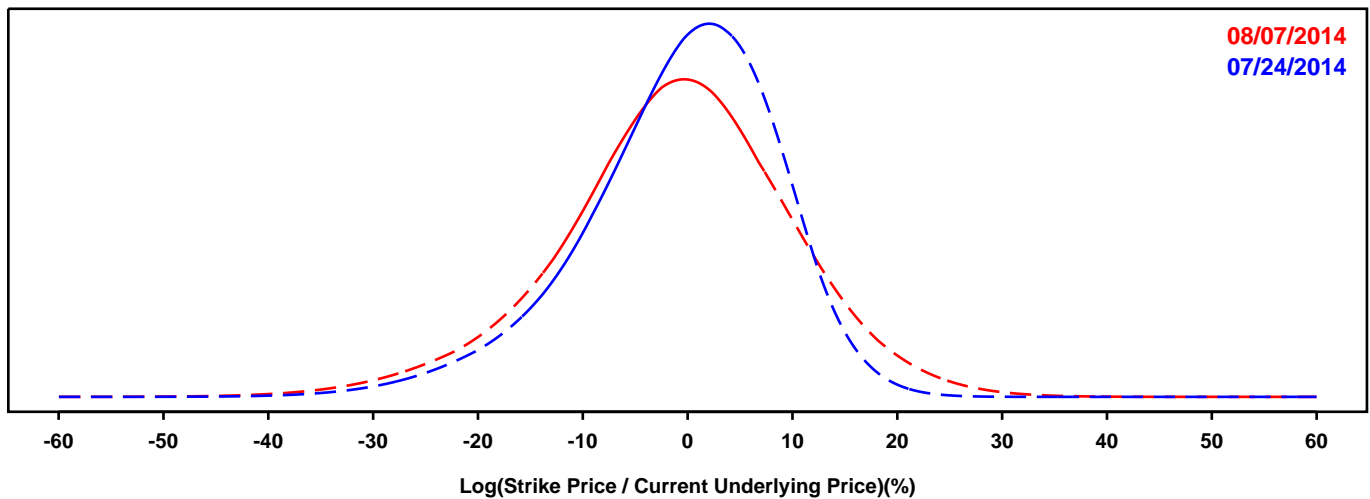
MARKET PROBABILITY DENSITY FUNCTIONS -- FIFTH THIRD

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

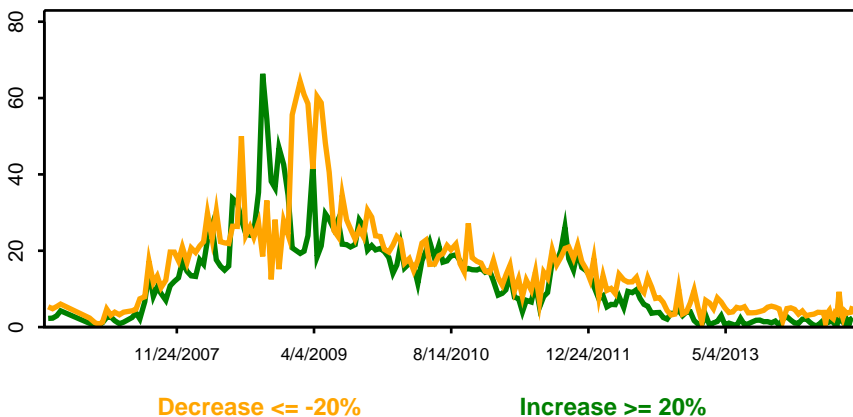
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

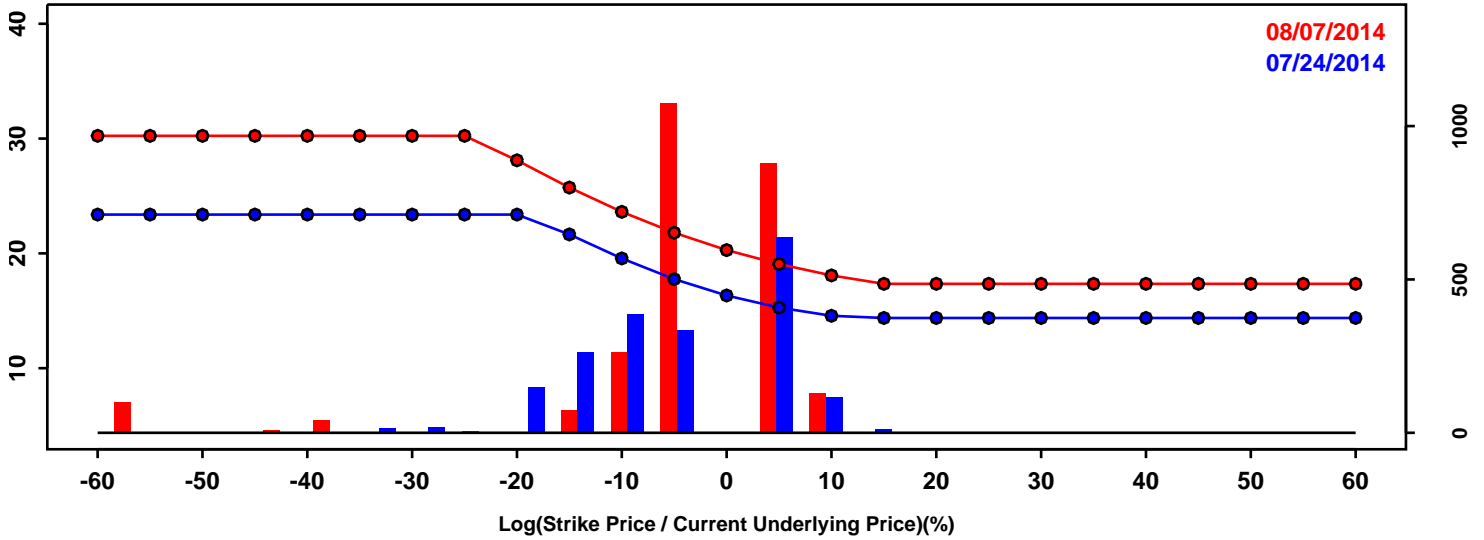


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-13.26%	-15.42%	-2.16%
50th Pct	0.27%	-0.75%	-1.02%
90th Pct	10.17%	12.46%	2.29%
Mean	-0.76%	-1.16%	-0.40%
Std Dev	9.43%	11.17%	1.75%
Skew	-0.65	-0.29	0.37
Kurtosis	0.73	0.54	-0.19

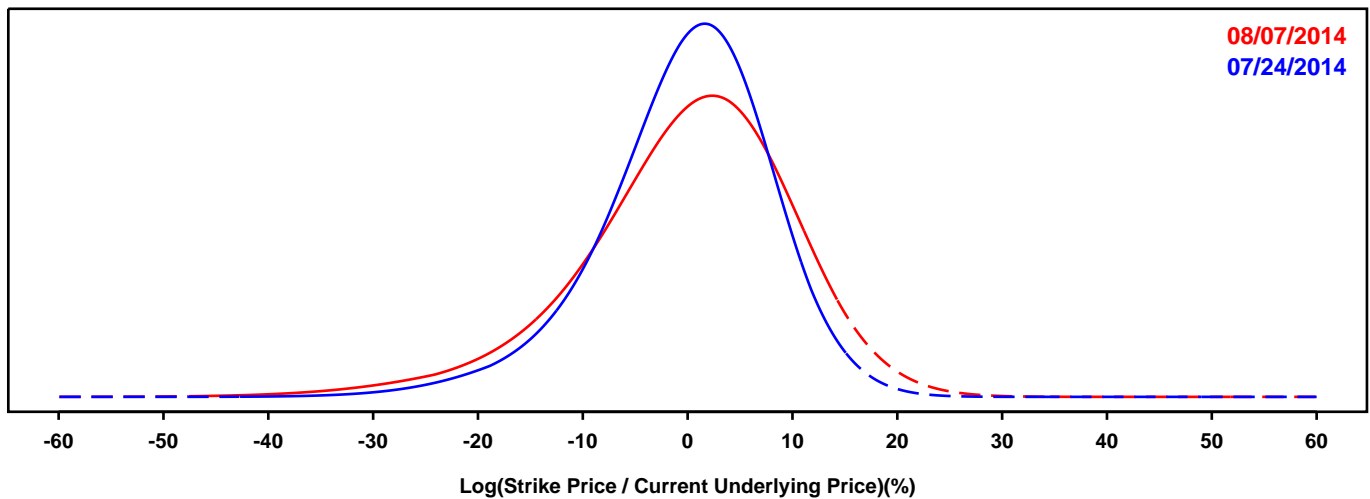
MARKET PROBABILITY DENSITY FUNCTIONS -- GOLDMAN SACHS

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

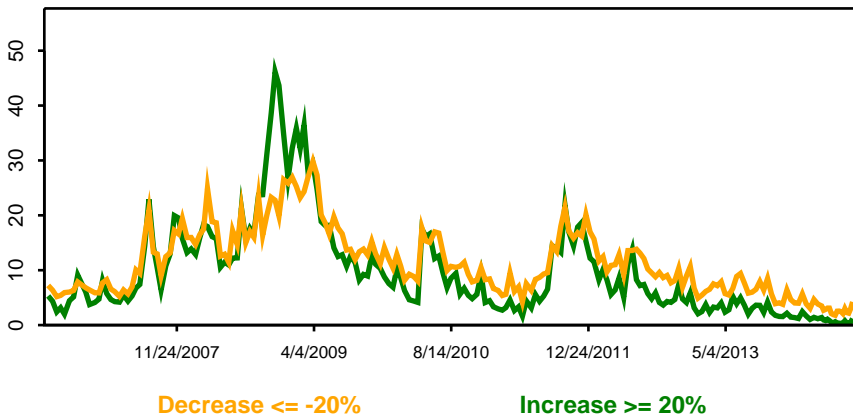
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

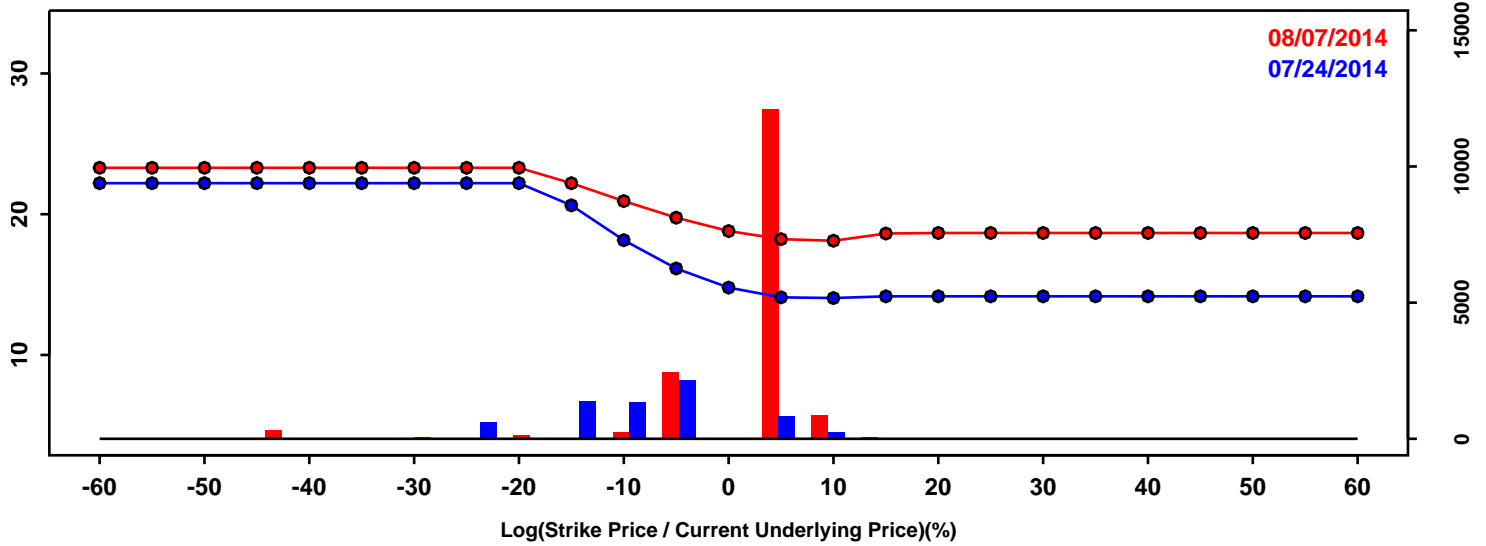


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-10.83%	-13.35%	-2.53%
50th Pct	0.51%	0.85%	0.35%
90th Pct	9.47%	11.85%	2.38%
Mean	-0.21%	-0.13%	0.07%
Std Dev	8.27%	10.32%	2.04%
Skew	-0.60	-0.67	-0.07
Kurtosis	0.98	1.12	0.15

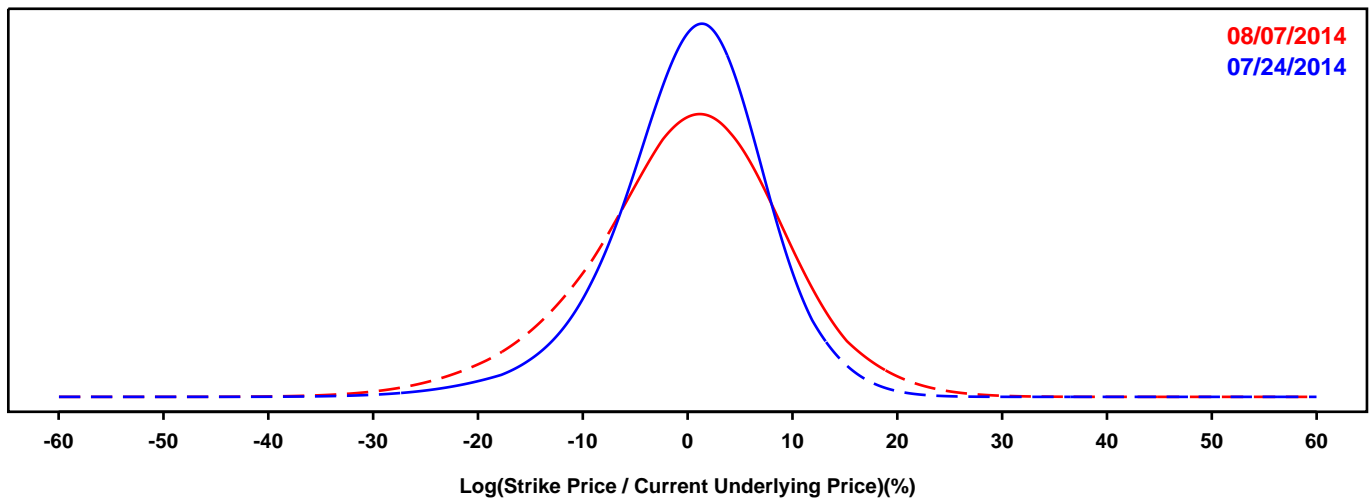
MARKET PROBABILITY DENSITY FUNCTIONS -- JP MORGAN

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

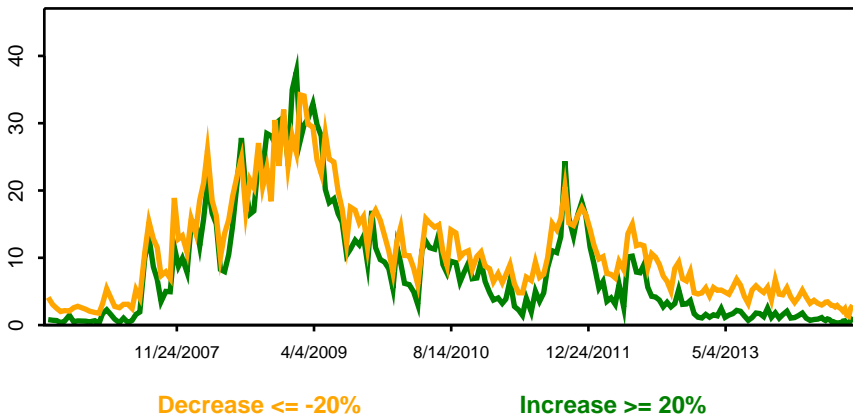
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

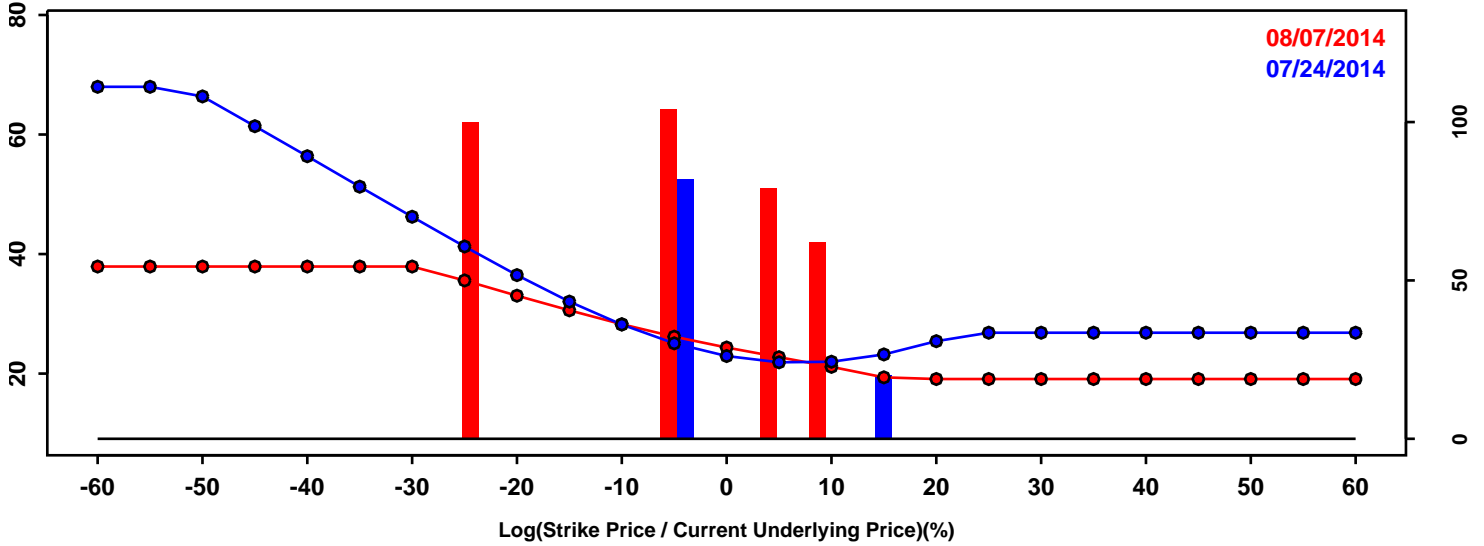


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-9.11%	-12.50%	-3.39%
50th Pct	0.62%	0.33%	-0.30%
90th Pct	8.82%	11.09%	2.27%
Mean	0.16%	-0.23%	-0.39%
Std Dev	7.41%	9.46%	2.05%
Skew	-0.53	-0.35	0.19
Kurtosis	1.18	0.55	-0.63

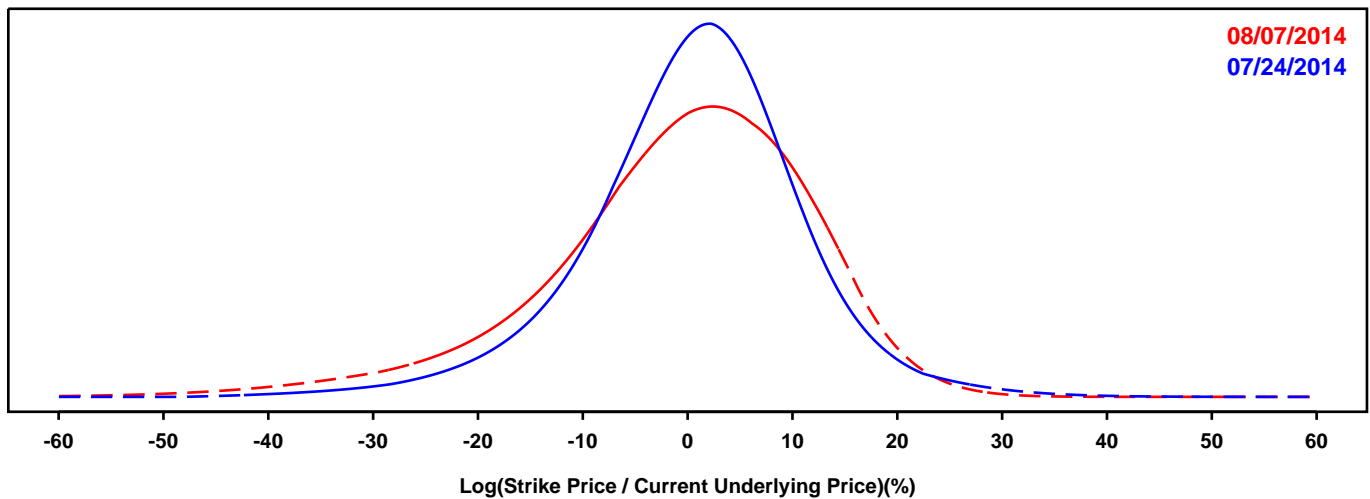
MARKET PROBABILITY DENSITY FUNCTIONS -- KEYCORP

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

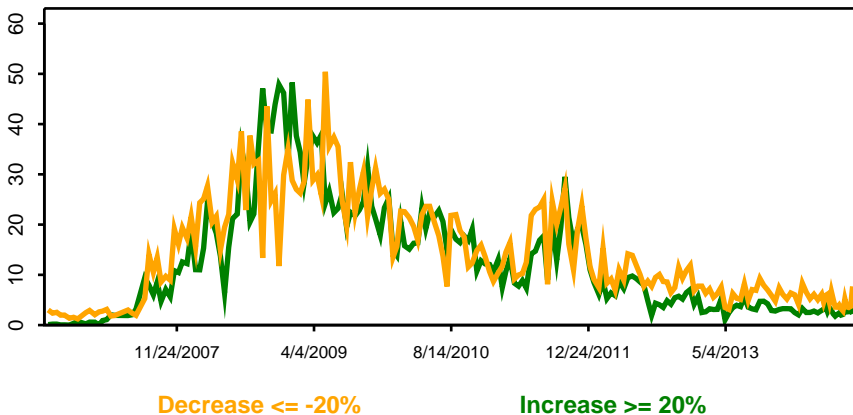
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

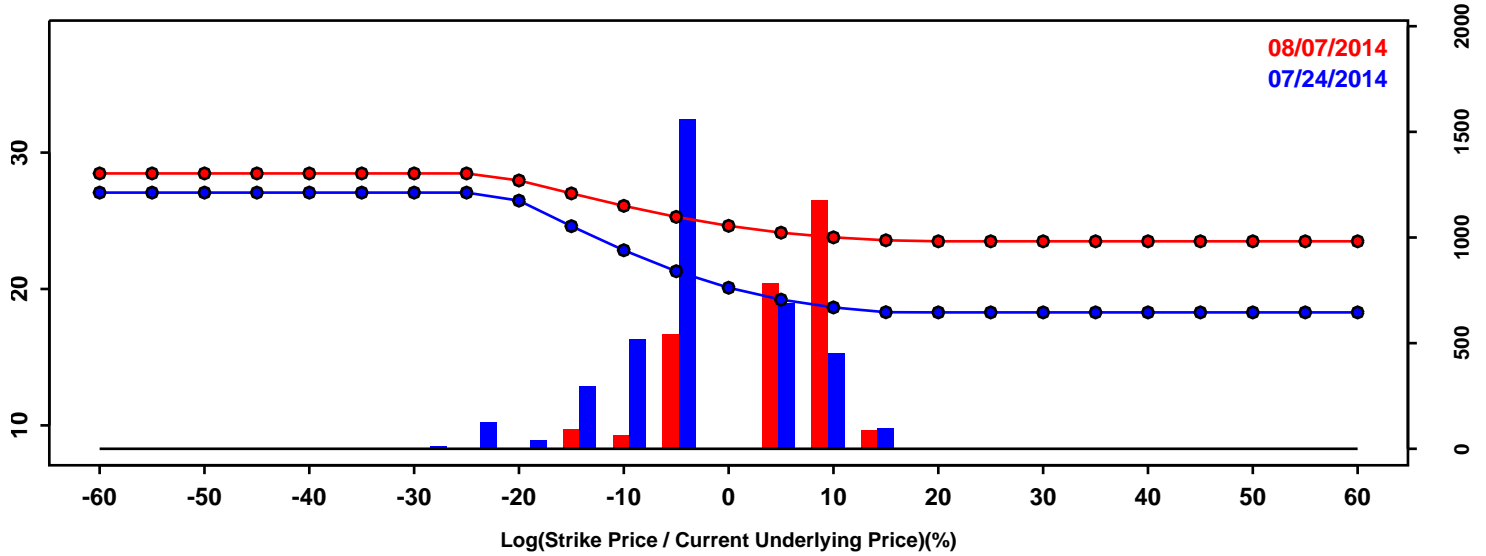


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-12.26%	-17.26%	-5.00%
50th Pct	1.13%	0.62%	-0.51%
90th Pct	12.57%	13.64%	1.06%
Mean	0.60%	-0.87%	-1.46%
Std Dev	10.41%	12.75%	2.34%
Skew	-0.31	-0.86	-0.55
Kurtosis	1.28	1.42	0.14

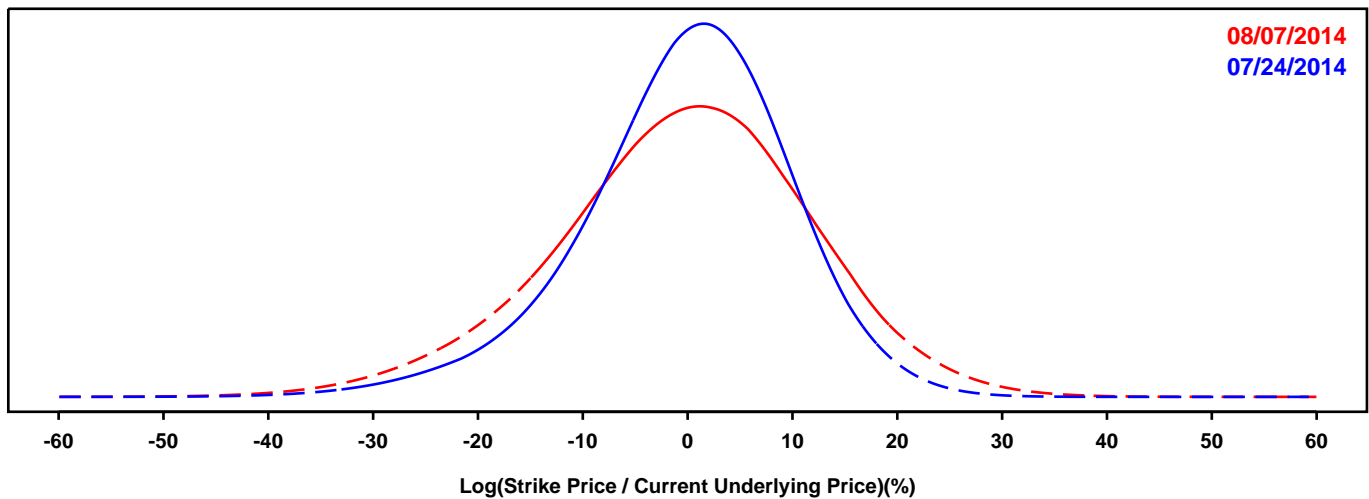
MARKET PROBABILITY DENSITY FUNCTIONS -- MORGAN STANLEY

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

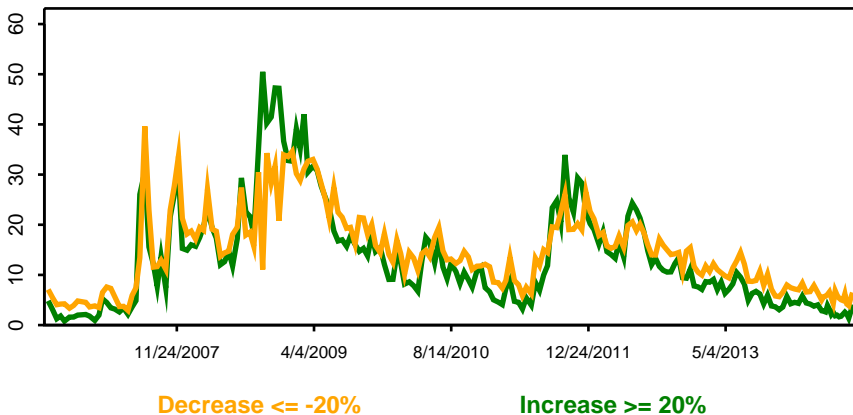
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

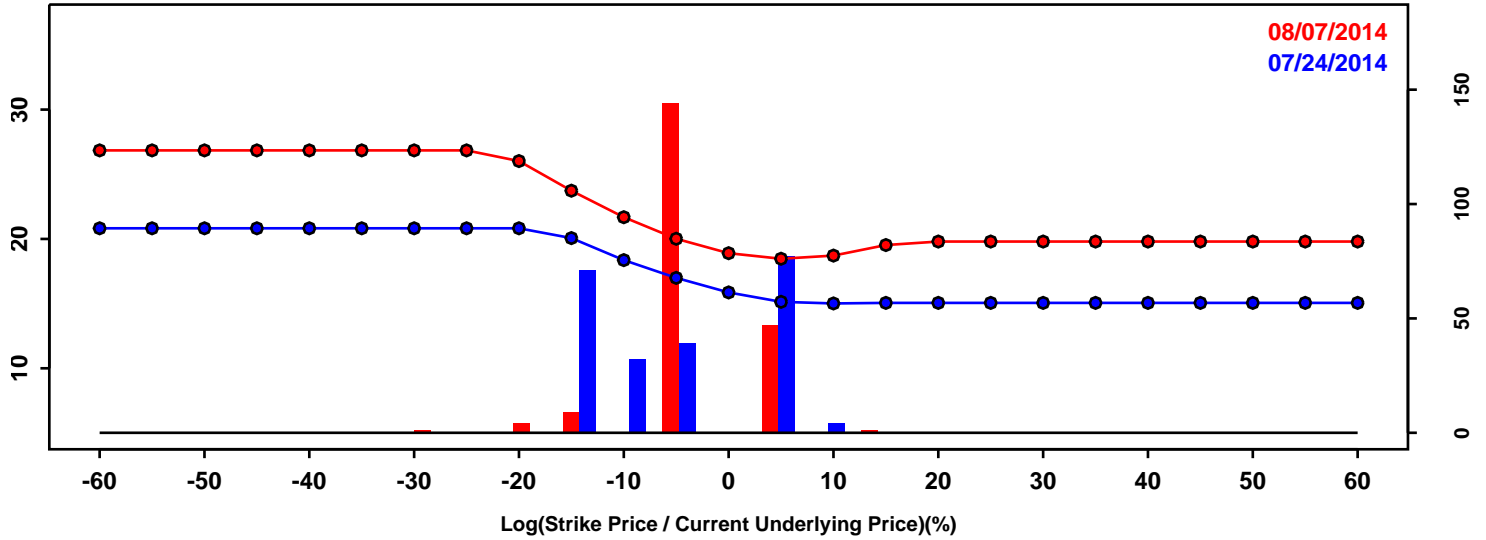


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-13.17%	-16.52%	-3.35%
50th Pct	0.51%	0.15%	-0.36%
90th Pct	11.81%	14.76%	2.95%
Mean	-0.20%	-0.42%	-0.22%
Std Dev	10.11%	12.36%	2.25%
Skew	-0.50	-0.26	0.24
Kurtosis	0.78	0.29	-0.49

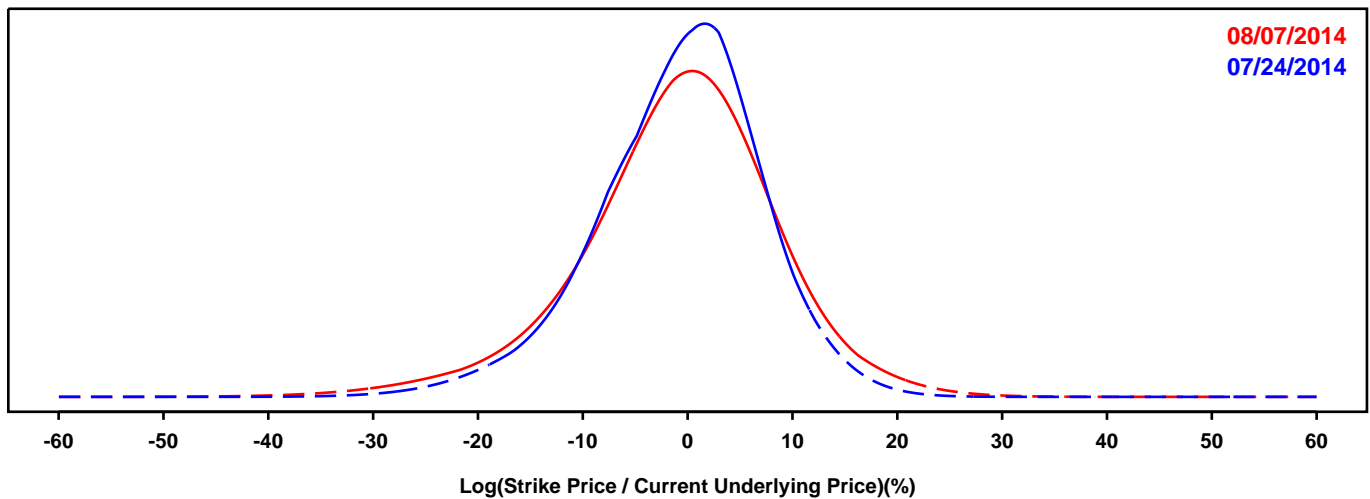
MARKET PROBABILITY DENSITY FUNCTIONS -- PNC FINANCIAL

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

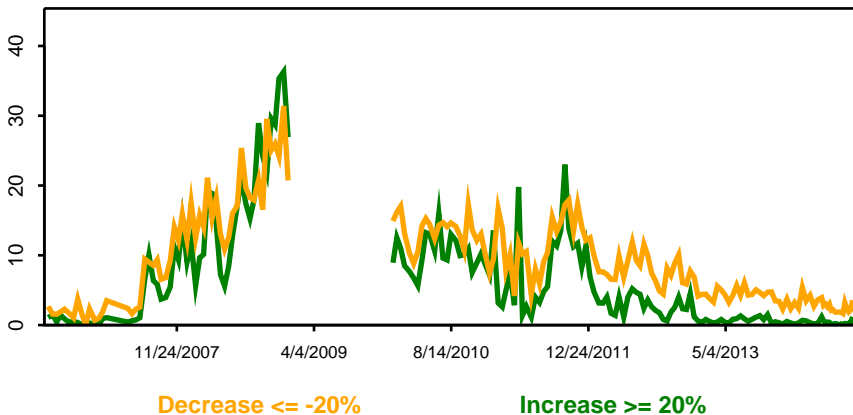
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

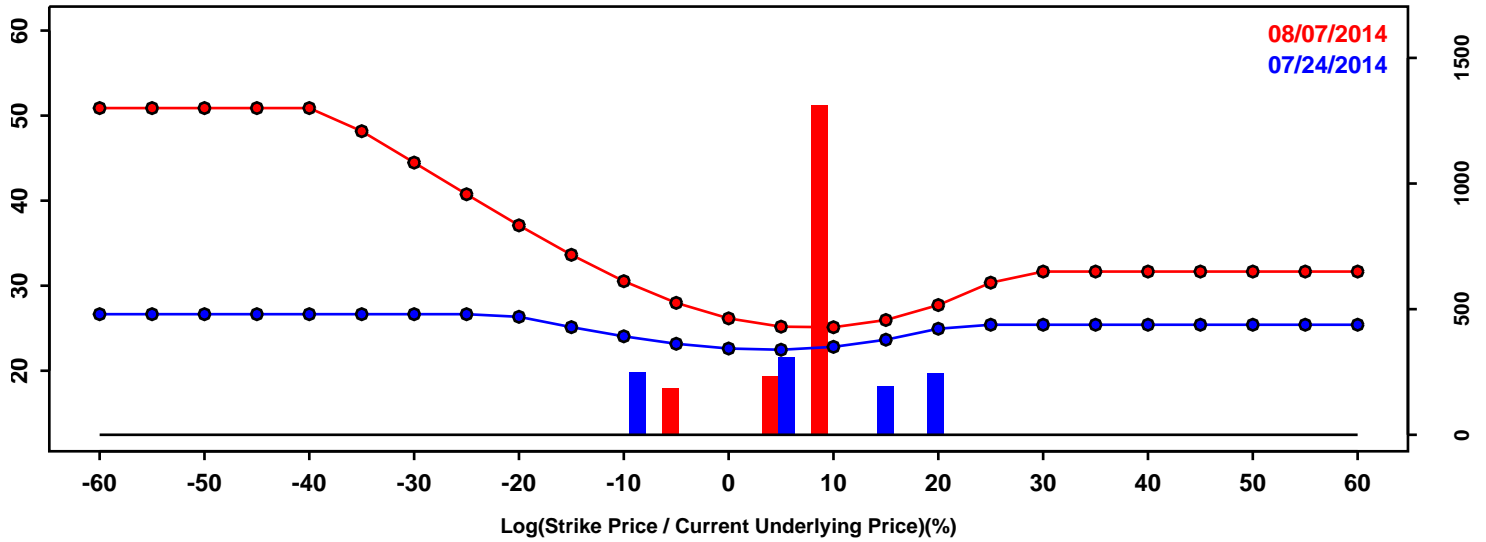


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-11.11%	-12.82%	-1.71%
50th Pct	-0.16%	-0.29%	-0.13%
90th Pct	8.66%	10.30%	1.64%
Mean	-0.79%	-0.86%	-0.07%
Std Dev	8.02%	9.55%	1.53%
Skew	-0.44	-0.46	-0.02
Kurtosis	0.67	1.12	0.45

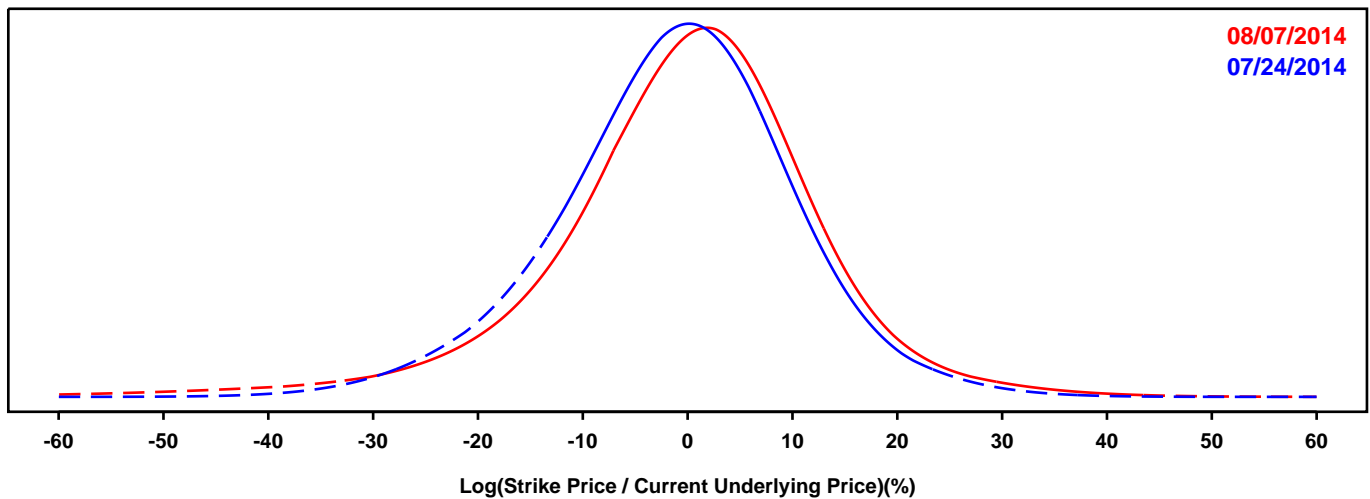
MARKET PROBABILITY DENSITY FUNCTIONS -- REGIONS FINANCIAL

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

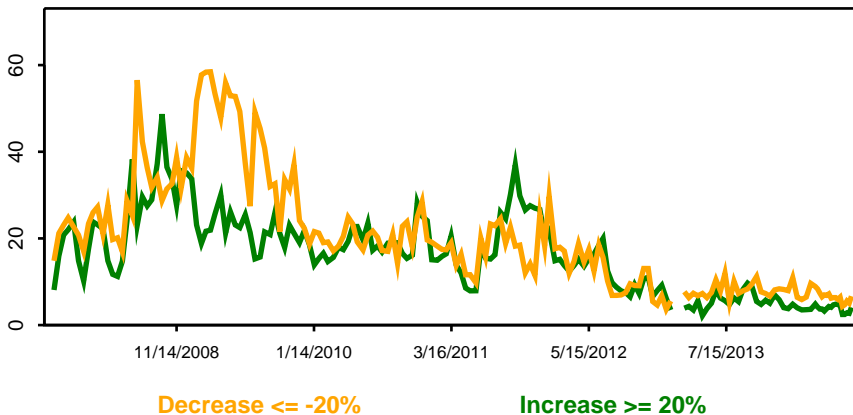
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

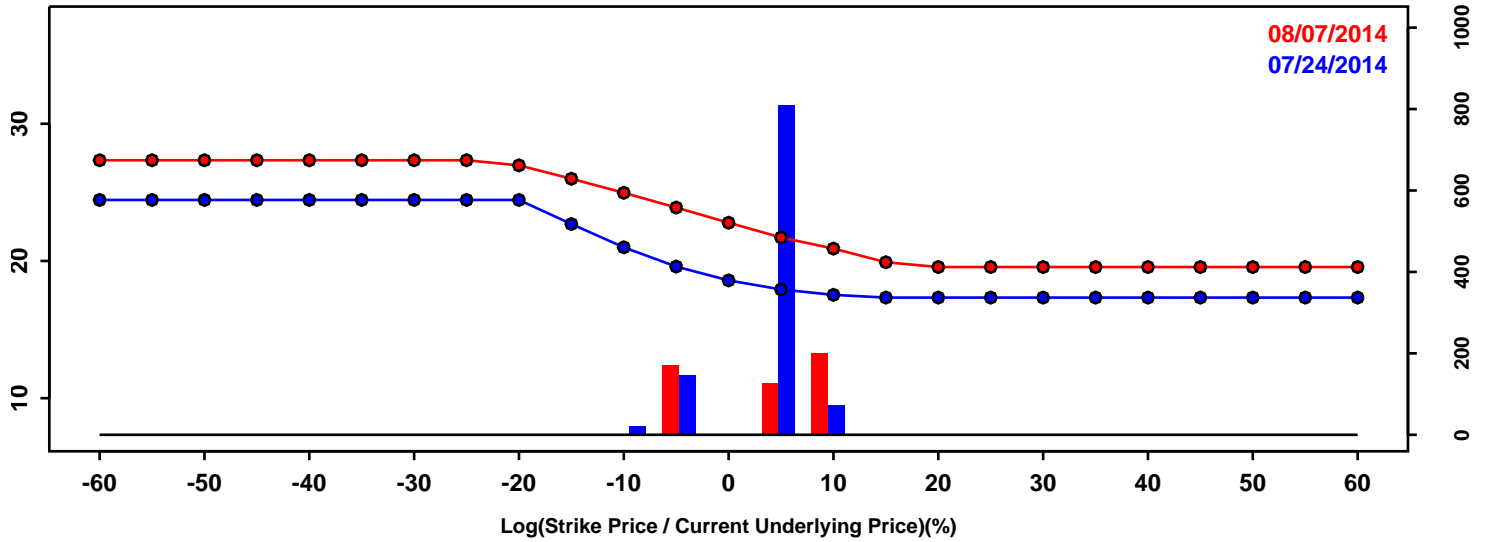


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-15.66%	-15.81%	-0.15%
50th Pct	-0.71%	0.62%	1.33%
90th Pct	12.50%	14.08%	1.57%
Mean	-1.13%	-0.43%	0.71%
Std Dev	11.35%	13.35%	2.00%
Skew	-0.19	-0.86	-0.67
Kurtosis	0.56	3.21	2.65

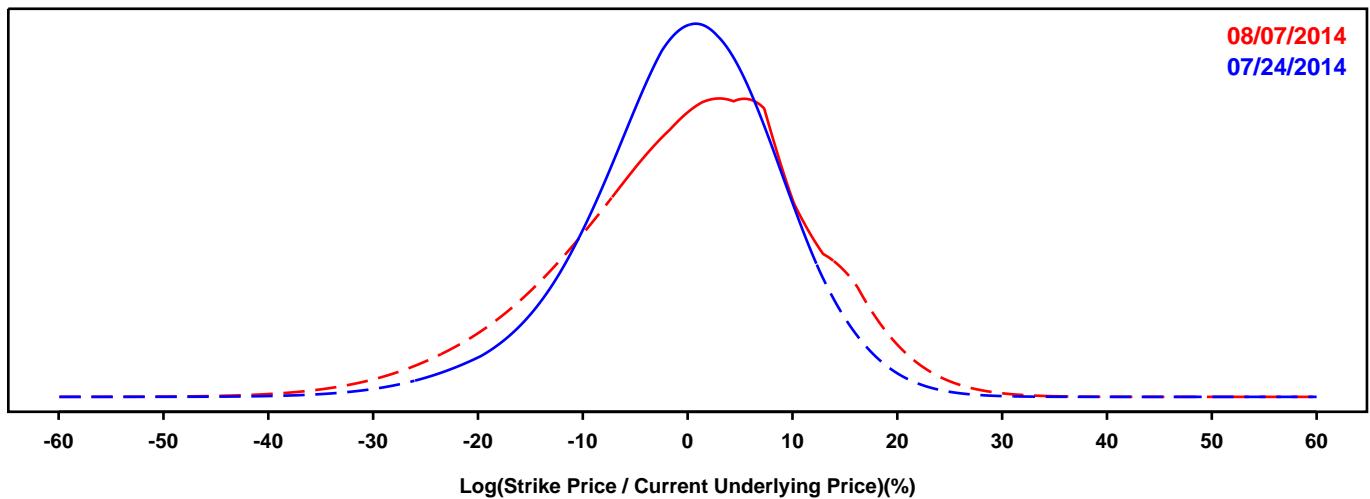
MARKET PROBABILITY DENSITY FUNCTIONS -- SUNTRUST

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

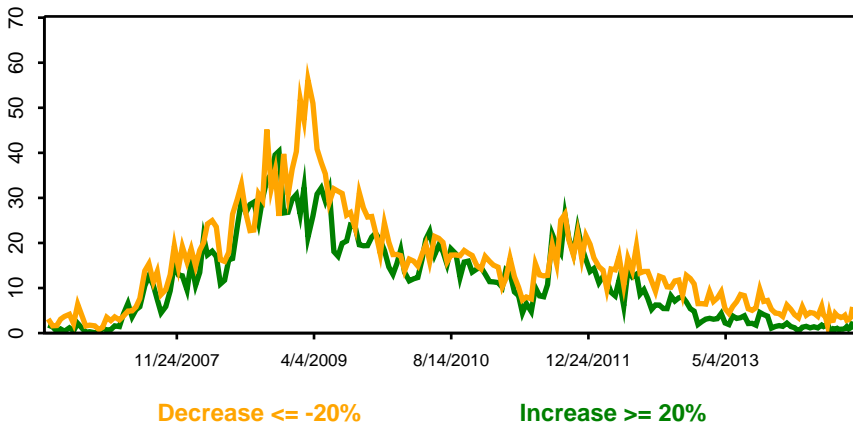
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

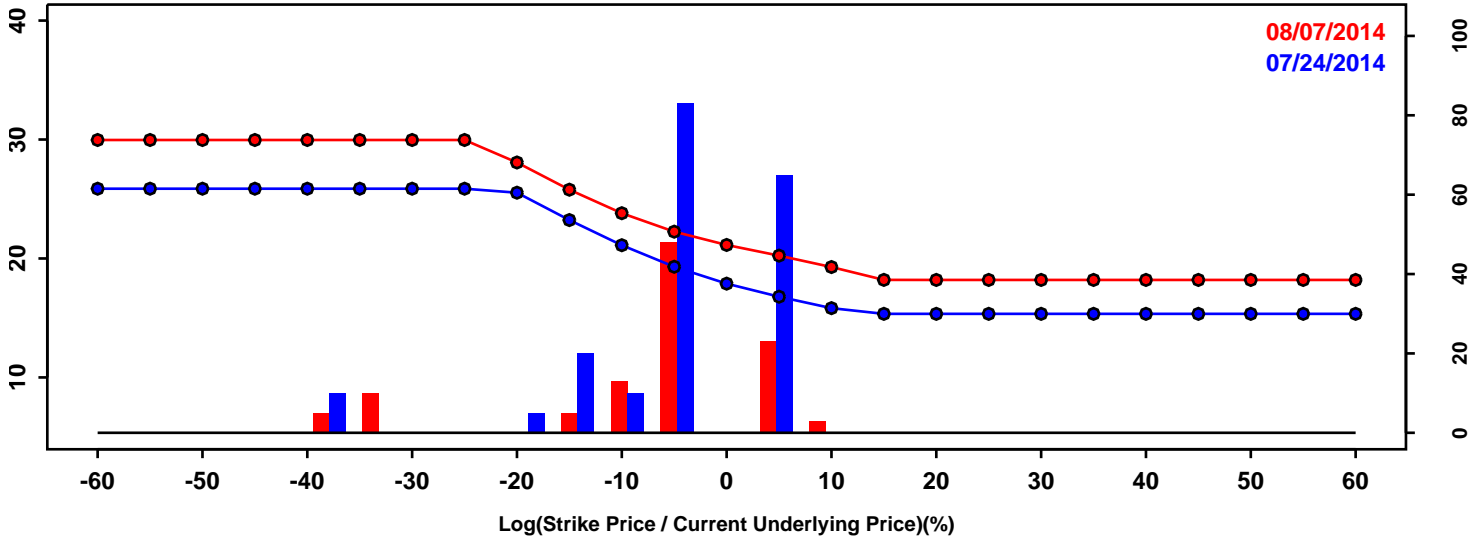


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-12.33%	-15.76%	-3.43%
50th Pct	0.14%	0.70%	0.56%
90th Pct	10.89%	13.78%	2.89%
Mean	-0.36%	-0.30%	0.06%
Std Dev	9.36%	11.58%	2.22%
Skew	-0.42	-0.42	-0.01
Kurtosis	0.67	0.30	-0.36

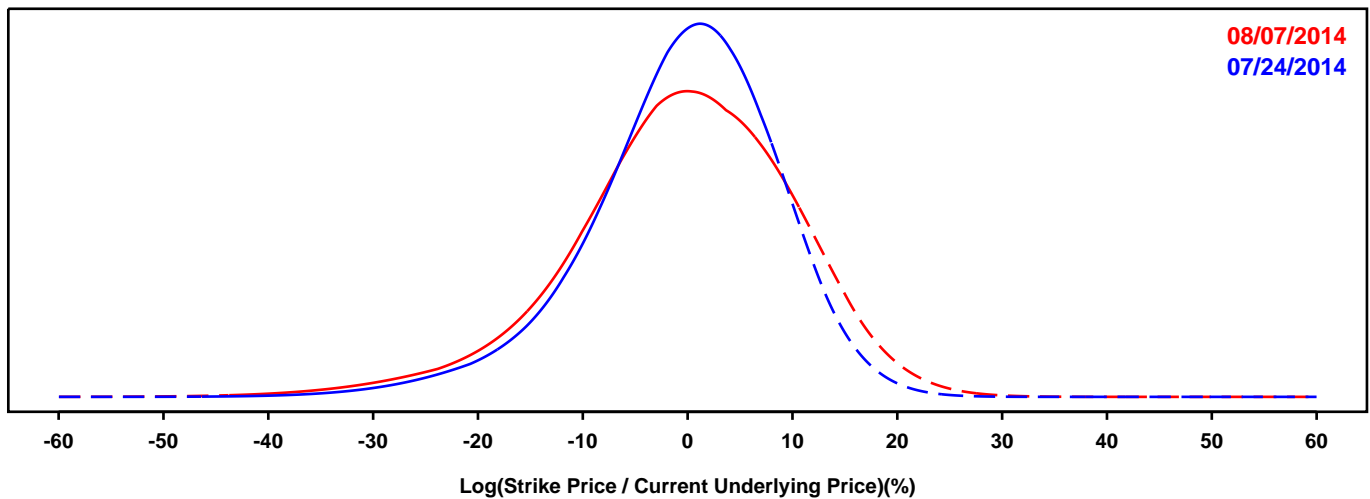
MARKET PROBABILITY DENSITY FUNCTIONS -- STATE STREET

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

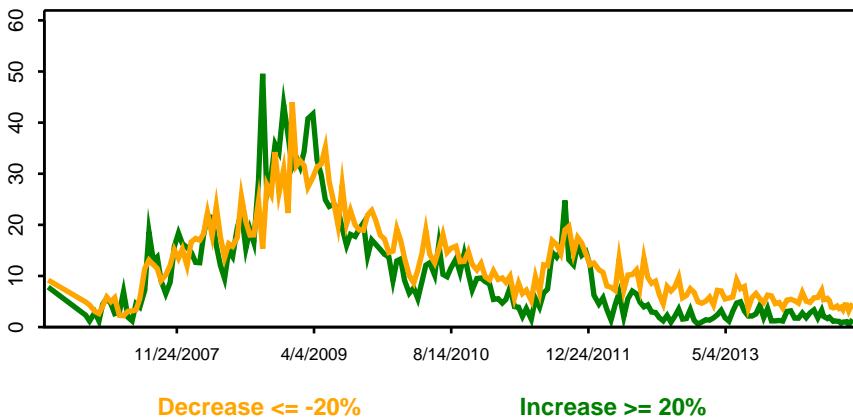
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

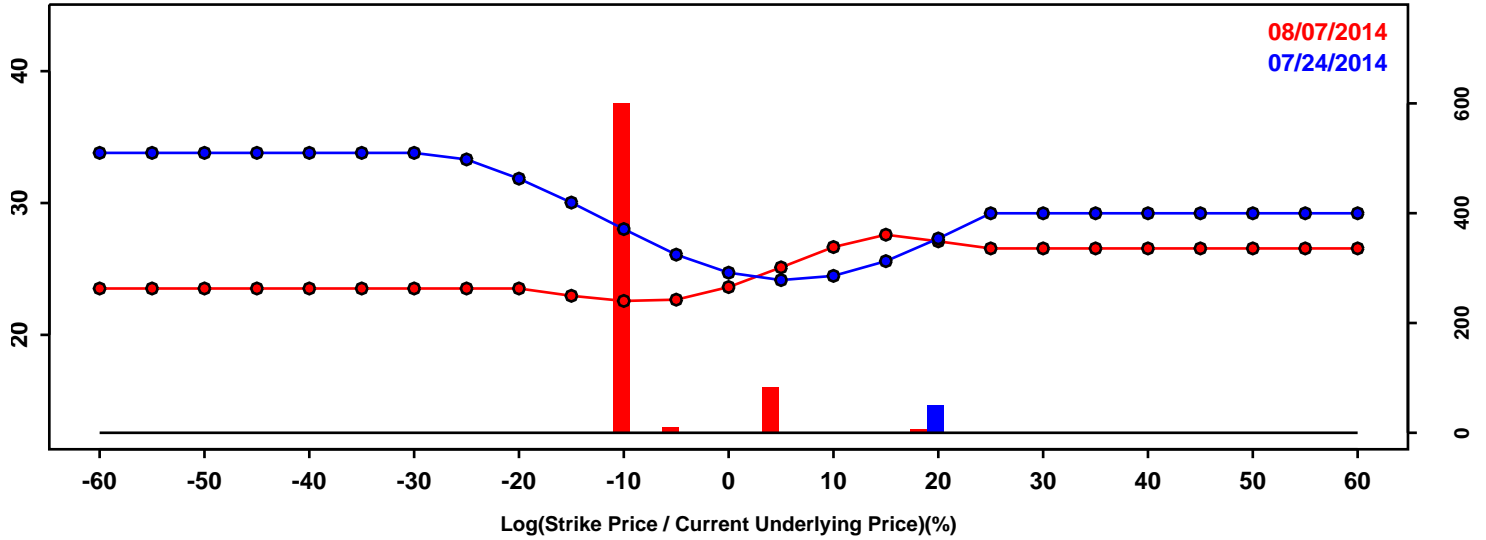


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-12.22%	-14.06%	-1.84%
50th Pct	0.27%	0.08%	-0.19%
90th Pct	10.24%	12.39%	2.15%
Mean	-0.52%	-0.54%	-0.02%
Std Dev	9.15%	10.73%	1.59%
Skew	-0.63	-0.54	0.09
Kurtosis	1.00	0.85	-0.15

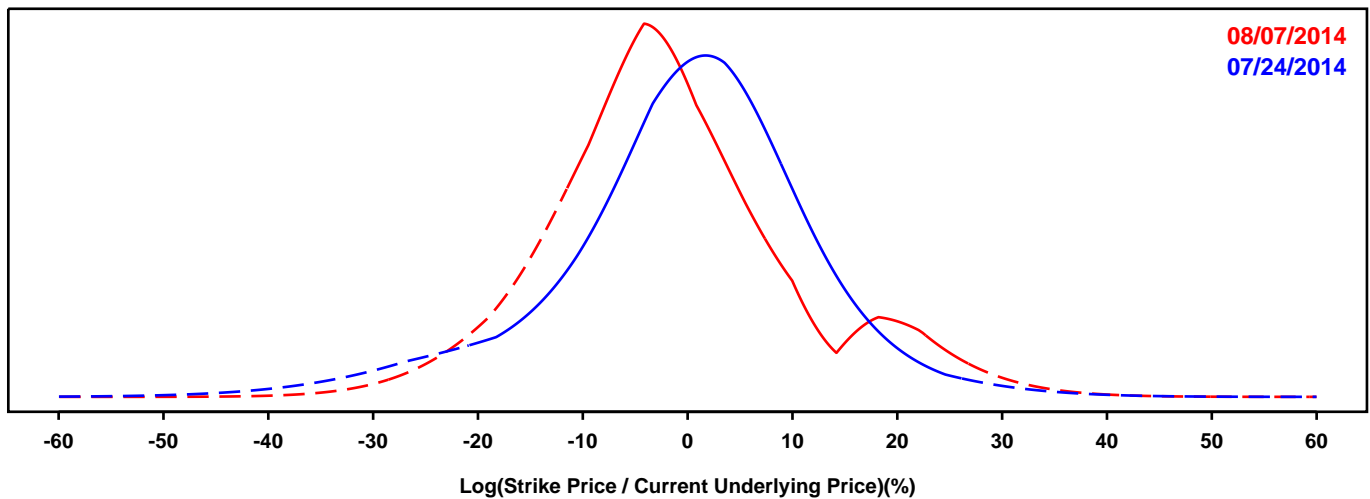
MARKET PROBABILITY DENSITY FUNCTIONS -- UBS

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

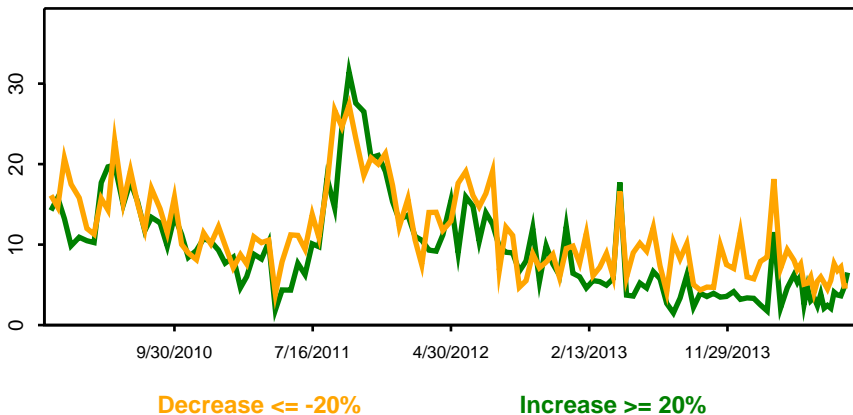
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

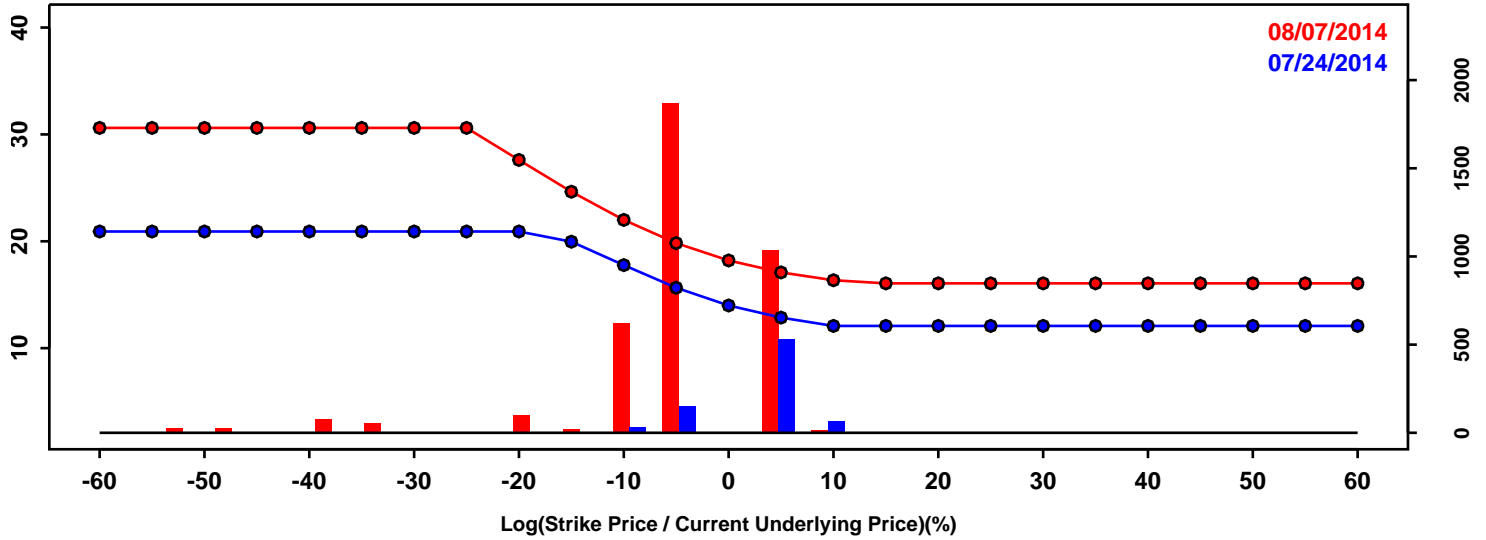


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-16.19%	-15.50%	0.68%
50th Pct	0.62%	-2.62%	-3.24%
90th Pct	13.60%	16.09%	2.50%
Mean	-0.37%	-1.47%	-1.10%
Std Dev	12.49%	12.07%	-0.42%
Skew	-0.53	0.45	0.98
Kurtosis	1.38	0.60	-0.78

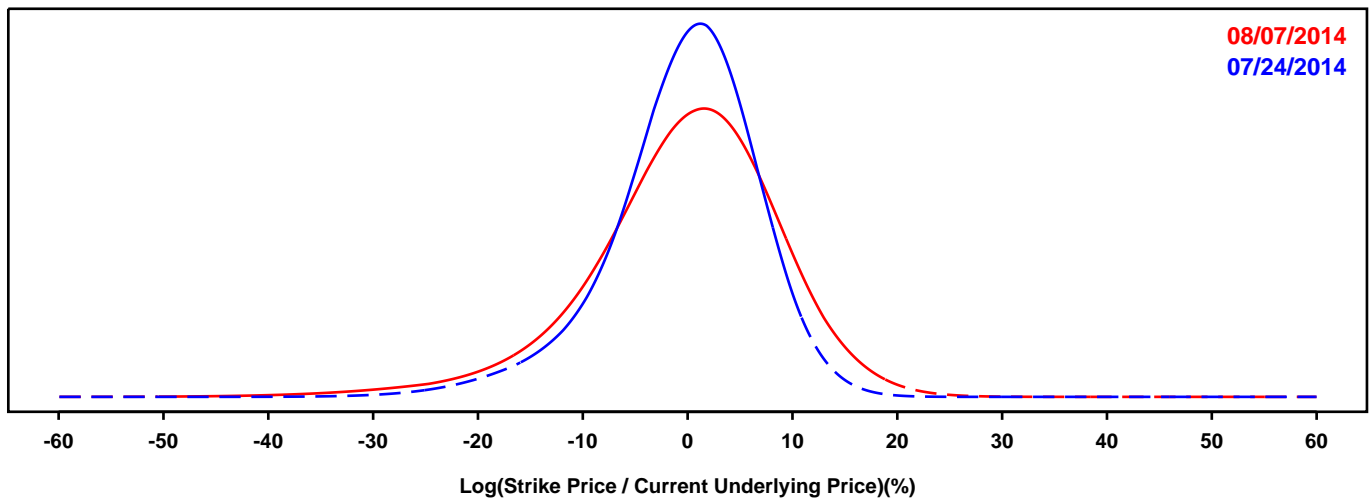
MARKET PROBABILITY DENSITY FUNCTIONS -- WELLS FARGO

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

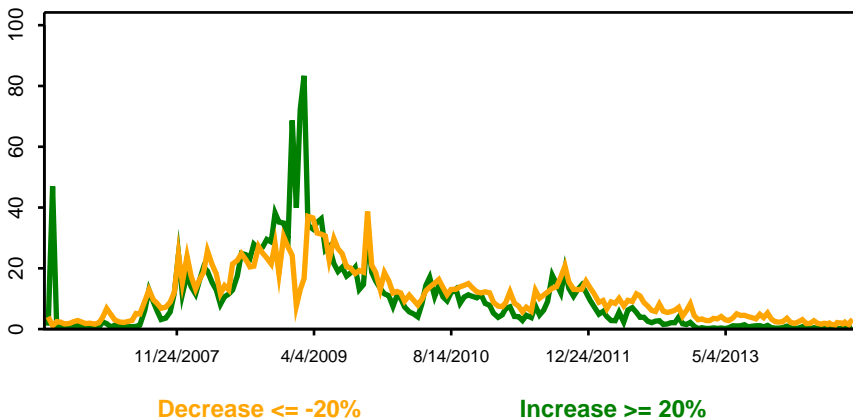
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

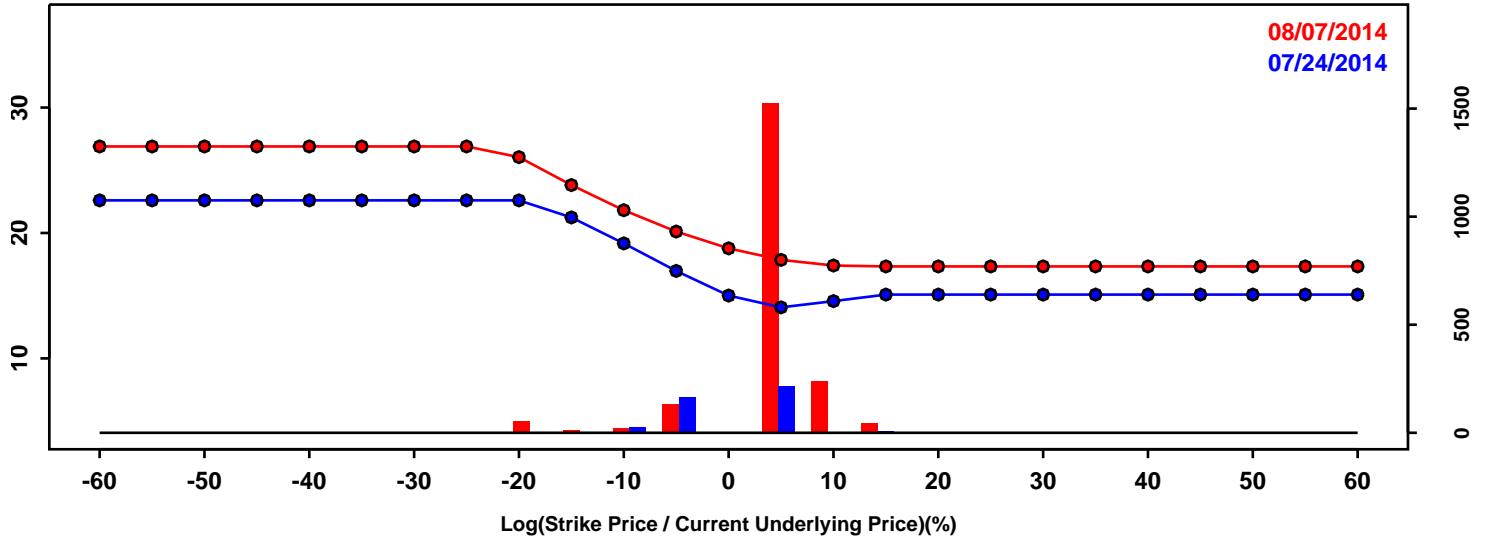


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-9.50%	-11.89%	-2.39%
50th Pct	0.28%	0.45%	0.18%
90th Pct	7.89%	10.30%	2.41%
Mean	-0.39%	-0.35%	0.05%
Std Dev	7.16%	9.28%	2.11%
Skew	-0.71	-0.76	-0.05
Kurtosis	1.25	1.68	0.44

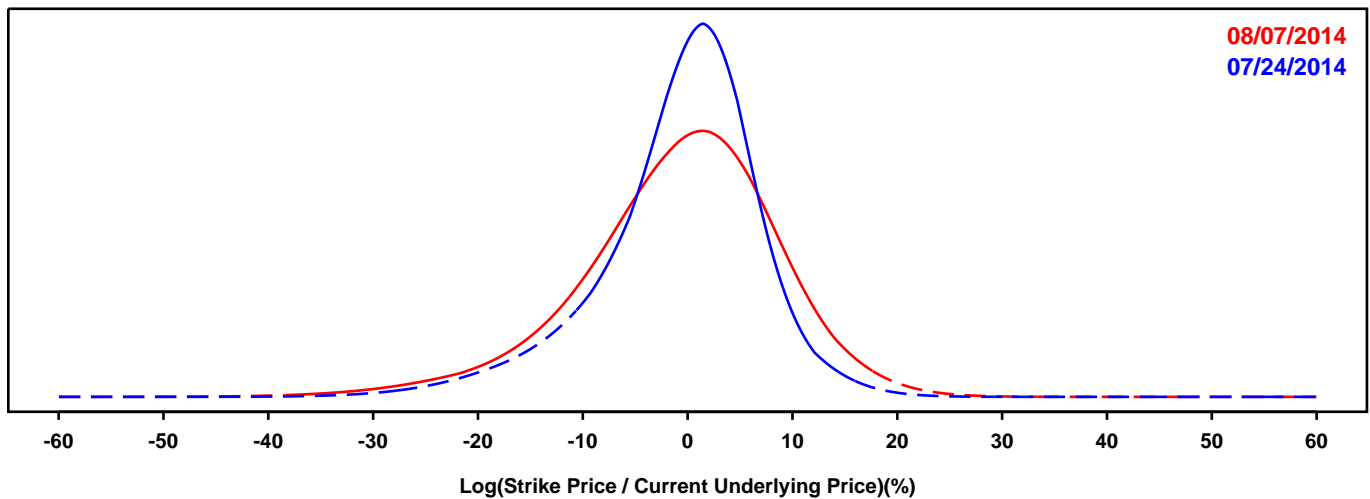
MARKET PROBABILITY DENSITY FUNCTIONS -- AFLAC

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

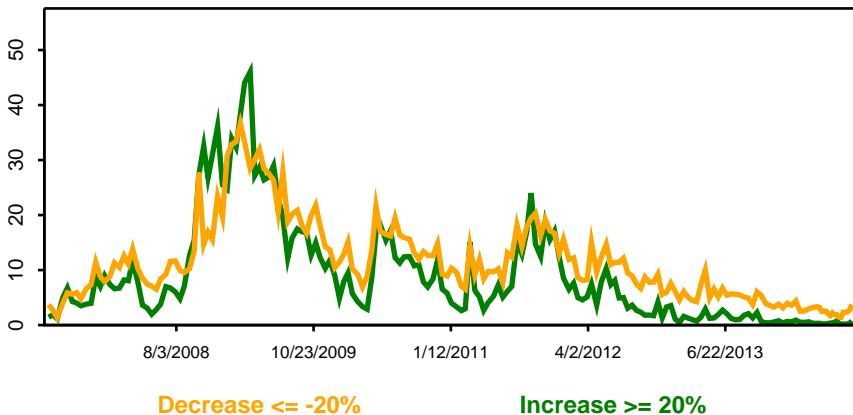
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

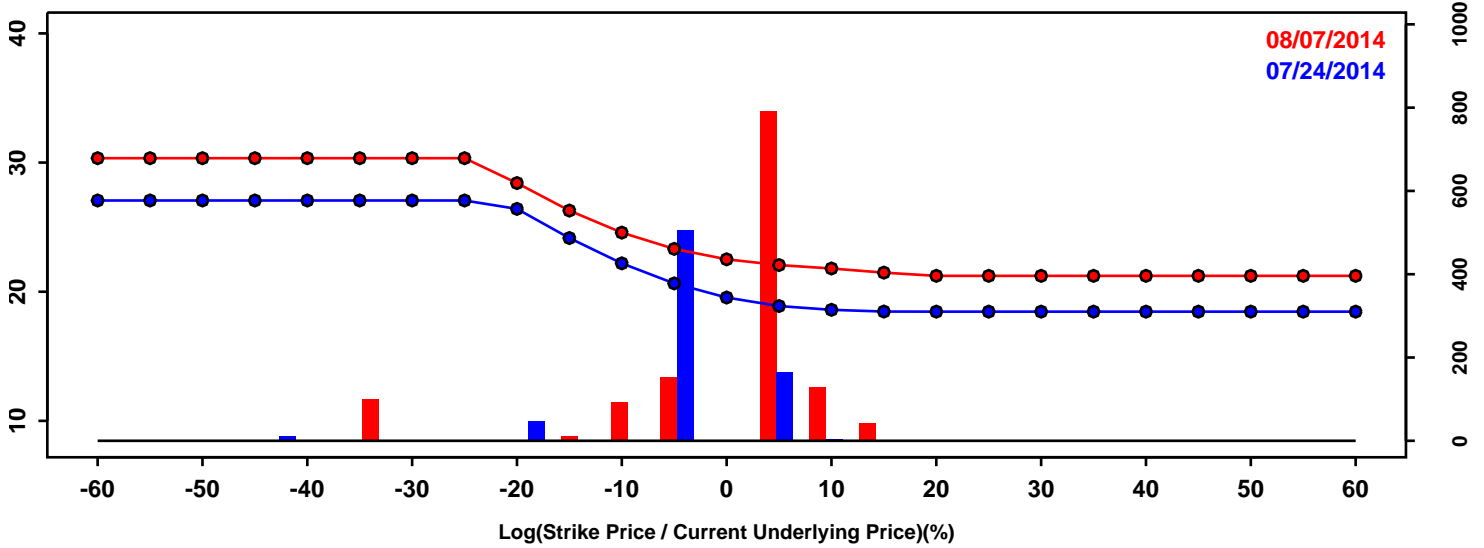


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-10.98%	-13.05%	-2.08%
50th Pct	0.20%	0.00%	-0.20%
90th Pct	7.66%	10.30%	2.64%
Mean	-0.79%	-0.83%	-0.03%
Std Dev	7.79%	9.56%	1.78%
Skew	-0.79	-0.58	0.21
Kurtosis	1.53	1.01	-0.52

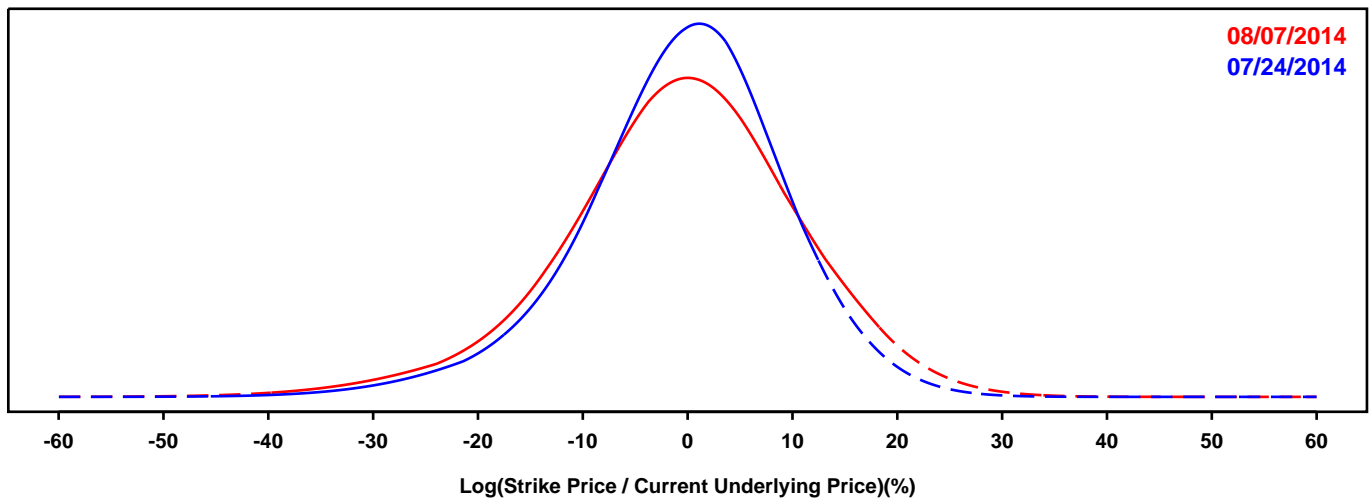
MARKET PROBABILITY DENSITY FUNCTIONS -- AIG

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

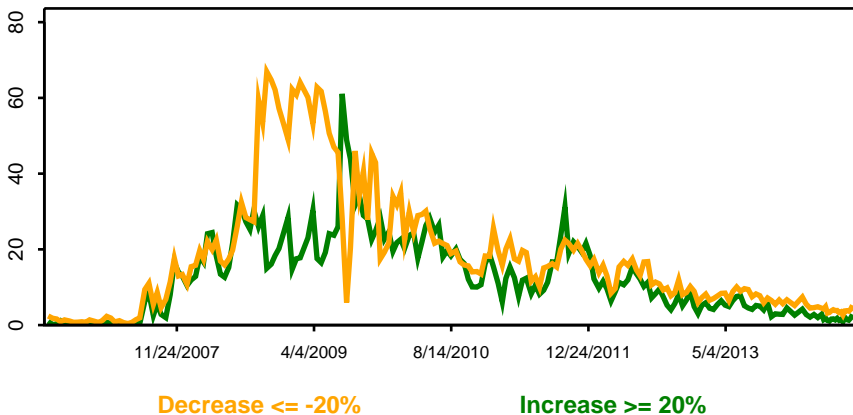
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

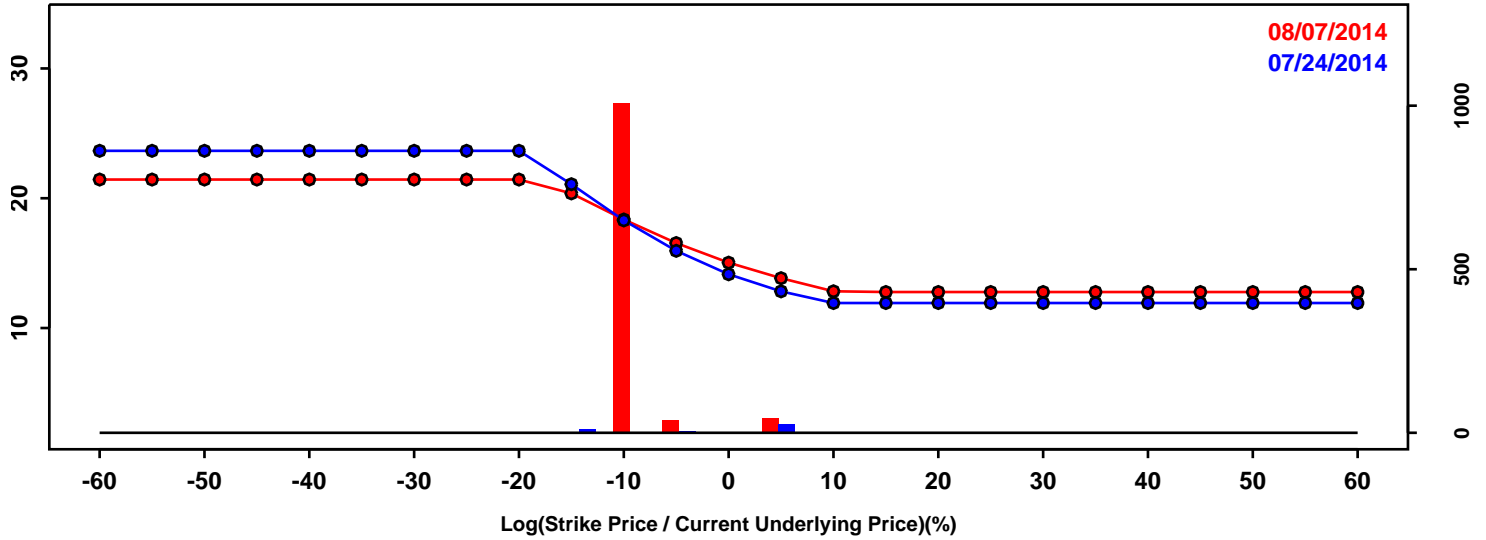


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-12.99%	-14.93%	-1.94%
50th Pct	0.12%	-0.25%	-0.37%
90th Pct	11.34%	13.36%	2.02%
Mean	-0.49%	-0.66%	-0.17%
Std Dev	9.91%	11.42%	1.52%
Skew	-0.46	-0.37	0.10
Kurtosis	0.87	0.71	-0.16

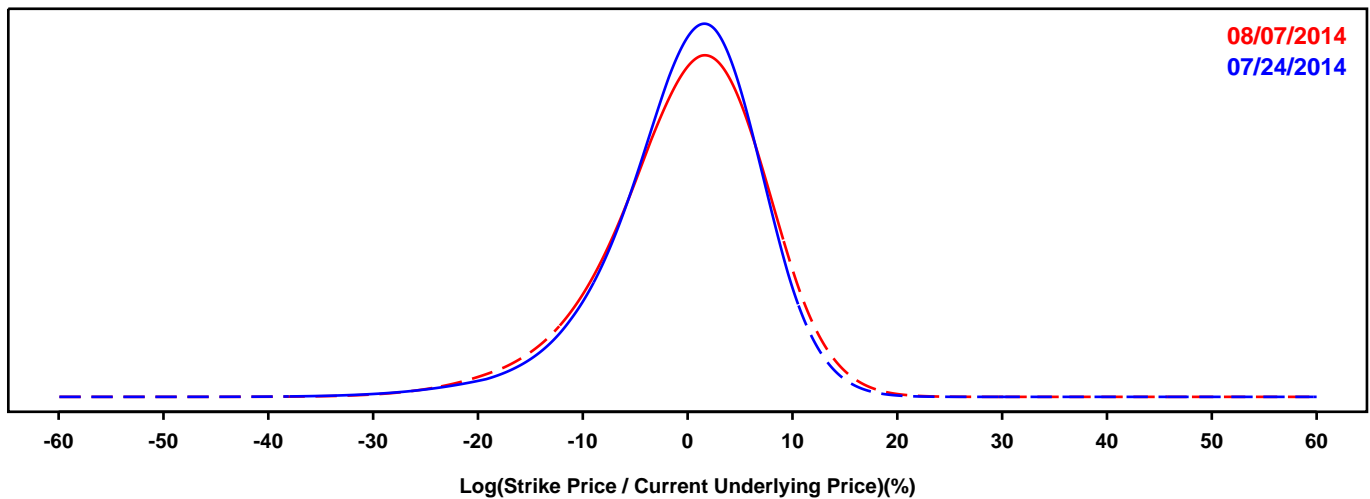
MARKET PROBABILITY DENSITY FUNCTIONS -- ALLSTATE

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

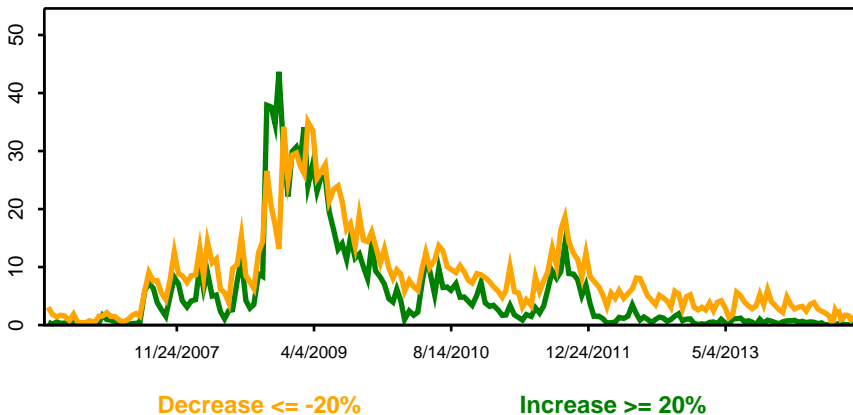
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

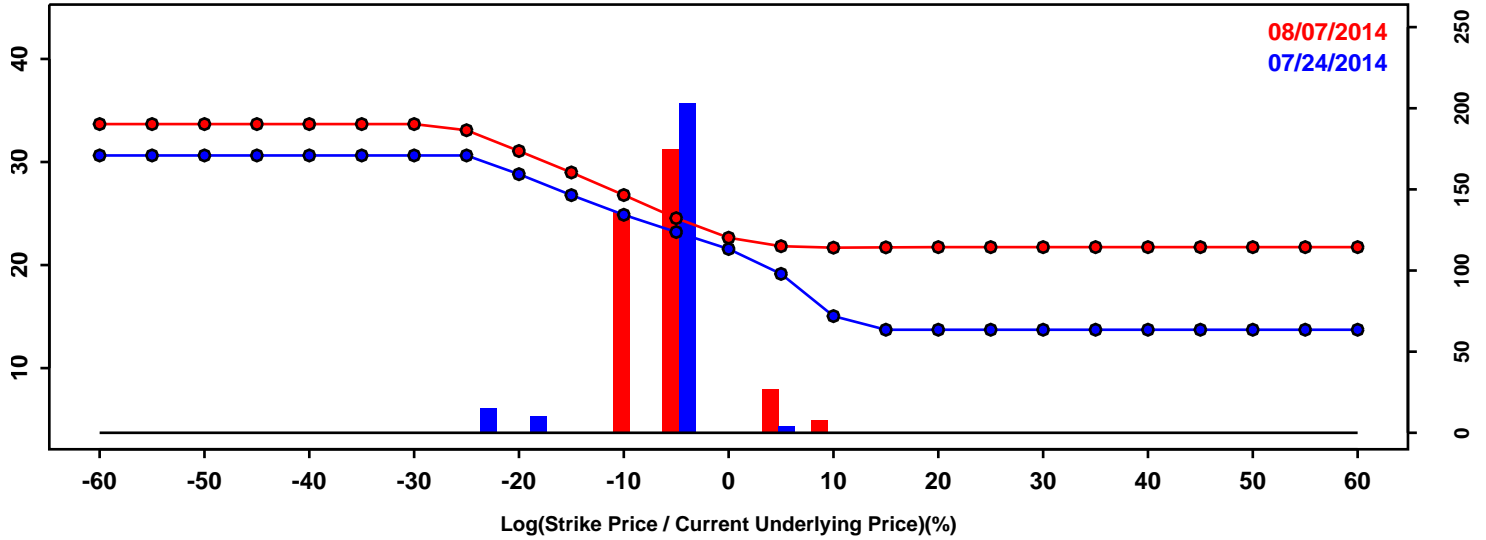


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-9.40%	-10.11%	-0.71%
50th Pct	0.51%	0.50%	-0.01%
90th Pct	8.02%	8.72%	0.70%
Mean	-0.24%	-0.19%	0.05%
Std Dev	7.25%	7.64%	0.39%
Skew	-0.82	-0.65	0.17
Kurtosis	1.66	0.95	-0.71

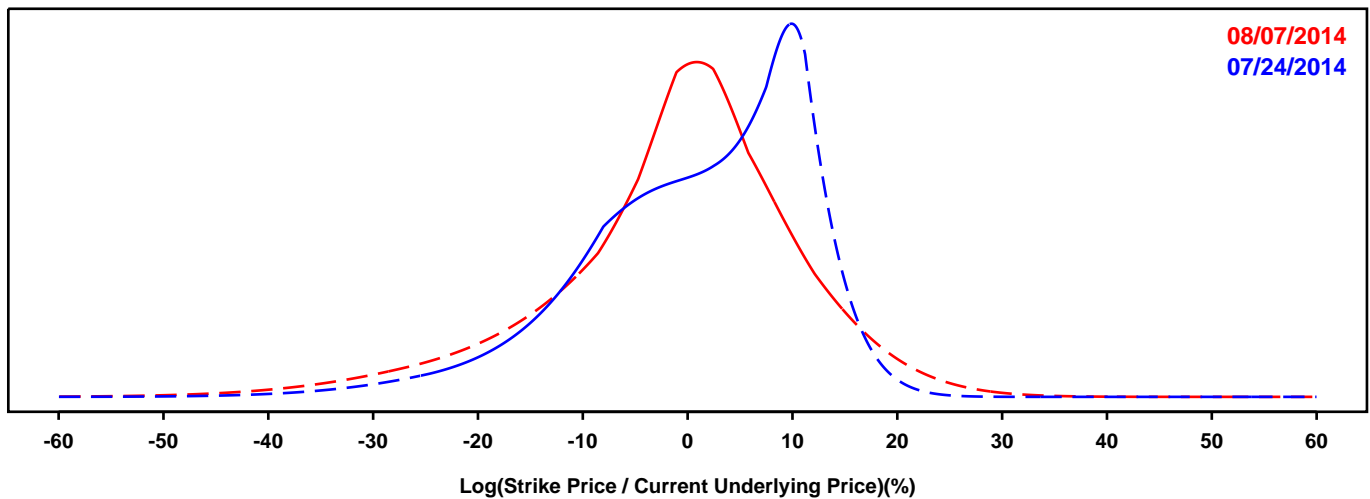
MARKET PROBABILITY DENSITY FUNCTIONS -- AMERIPRISE

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

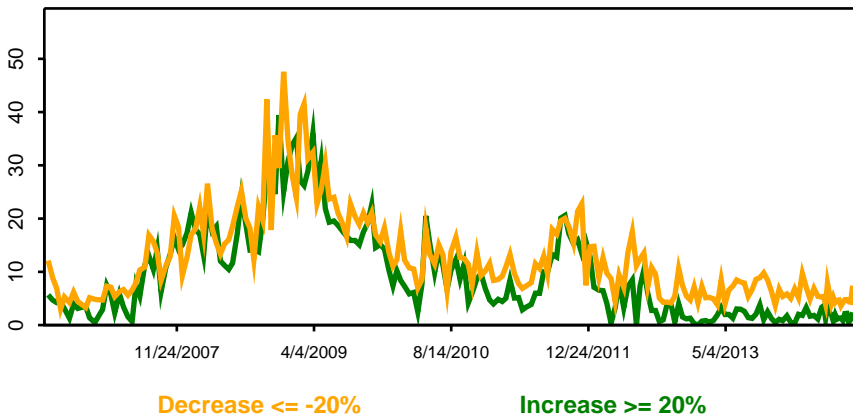
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

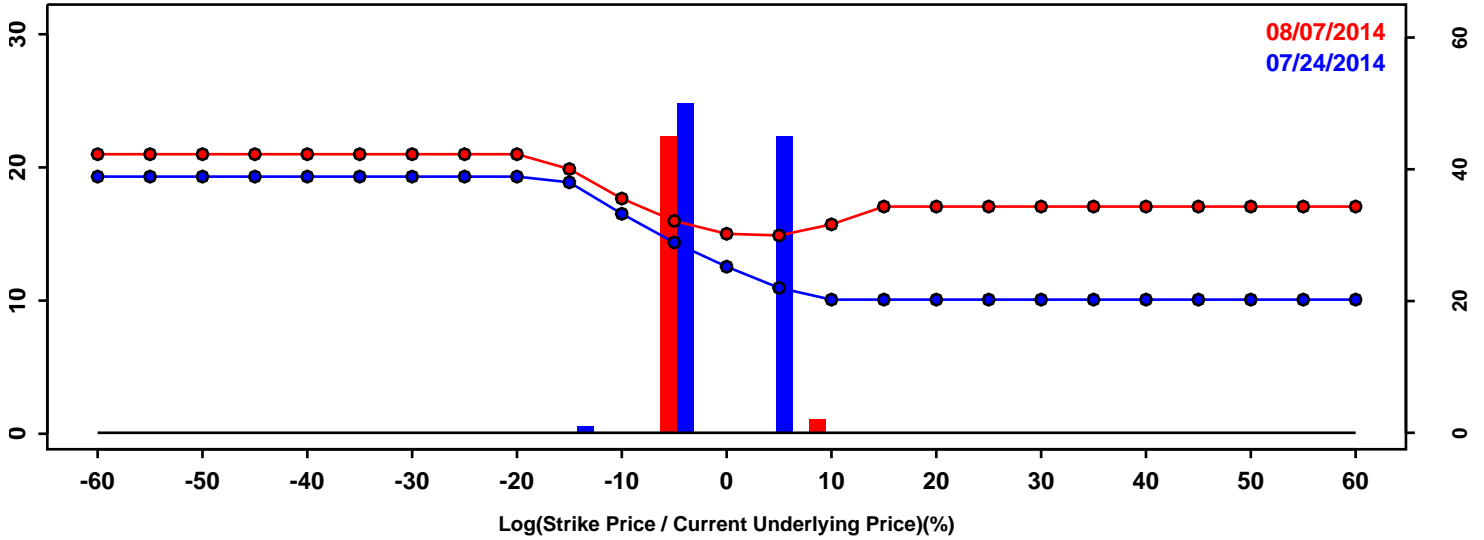


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-13.32%	-16.85%	-3.53%
50th Pct	2.86%	0.15%	-2.71%
90th Pct	12.52%	12.44%	-0.08%
Mean	0.96%	-1.17%	-2.13%
Std Dev	10.72%	11.99%	1.27%
Skew	-0.89	-0.73	0.16
Kurtosis	0.91	1.39	0.48

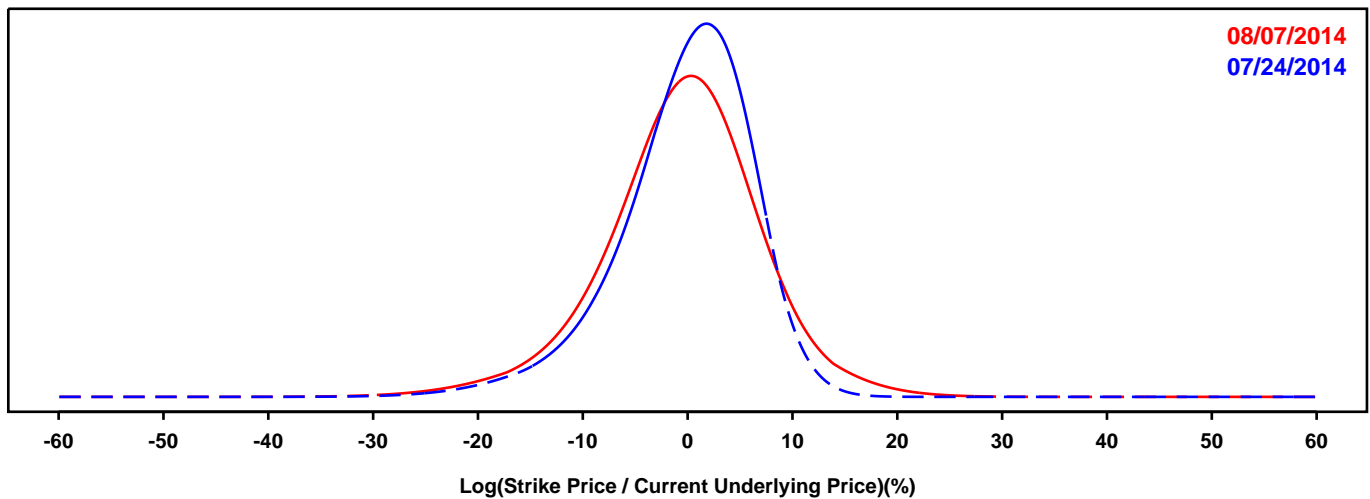
MARKET PROBABILITY DENSITY FUNCTIONS -- CHUBB

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

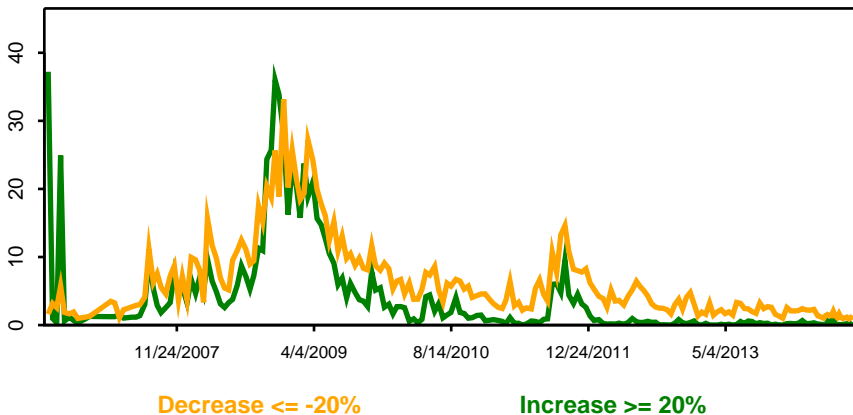
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

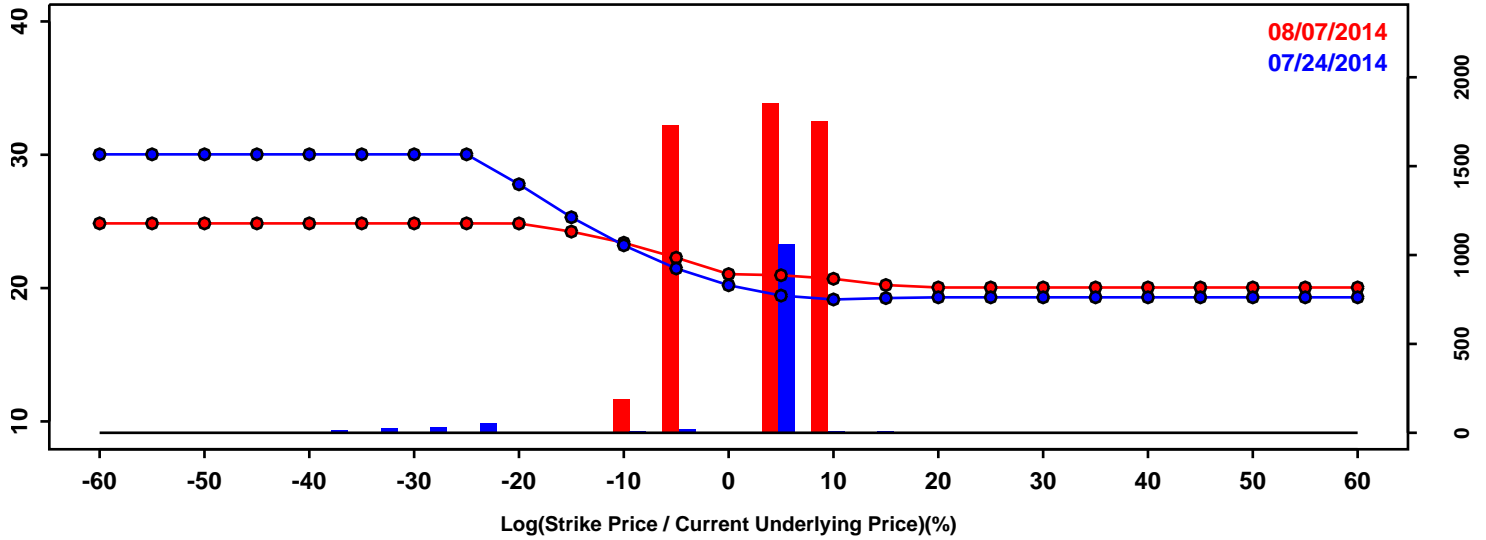


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-8.59%	-9.84%	-1.25%
50th Pct	0.51%	-0.15%	-0.66%
90th Pct	7.07%	8.39%	1.32%
Mean	-0.23%	-0.48%	-0.25%
Std Dev	6.43%	7.56%	1.13%
Skew	-0.80	-0.33	0.48
Kurtosis	1.30	1.07	-0.23

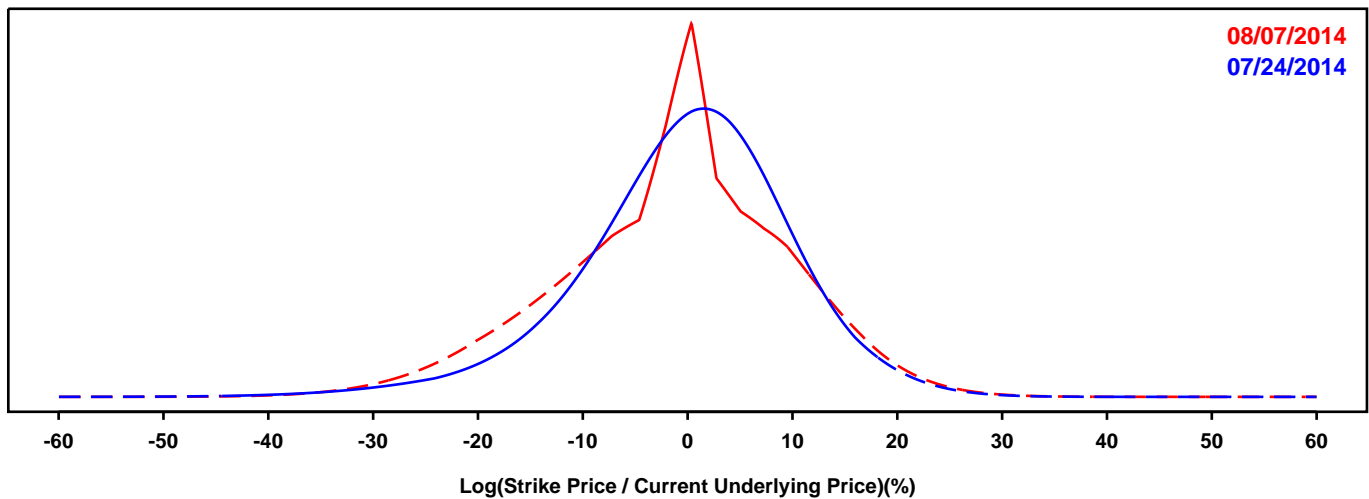
MARKET PROBABILITY DENSITY FUNCTIONS -- HARTFORD FINANCIAL

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

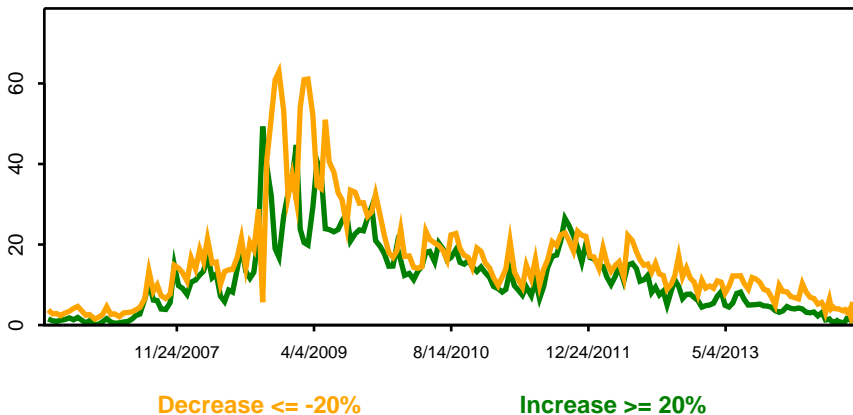
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

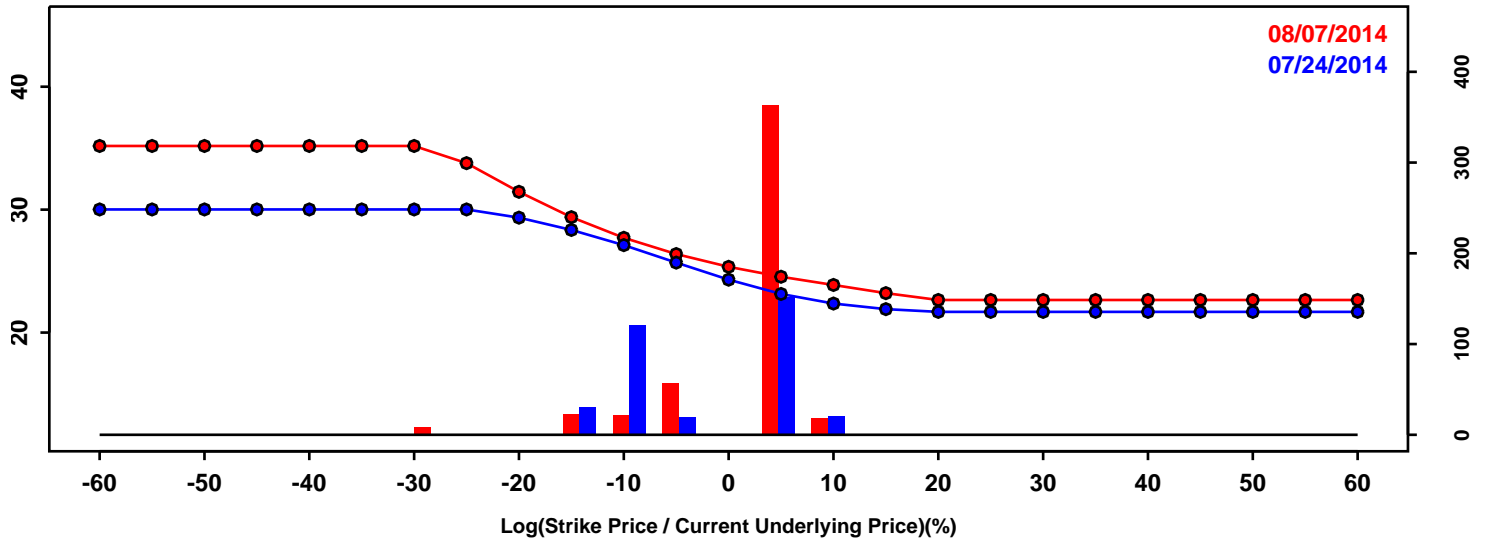


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-12.88%	-16.08%	-3.20%
50th Pct	0.57%	-0.44%	-1.01%
90th Pct	11.80%	12.35%	0.55%
Mean	-0.13%	-1.24%	-1.11%
Std Dev	10.16%	11.01%	0.85%
Skew	-0.53	-0.32	0.21
Kurtosis	1.14	0.32	-0.82

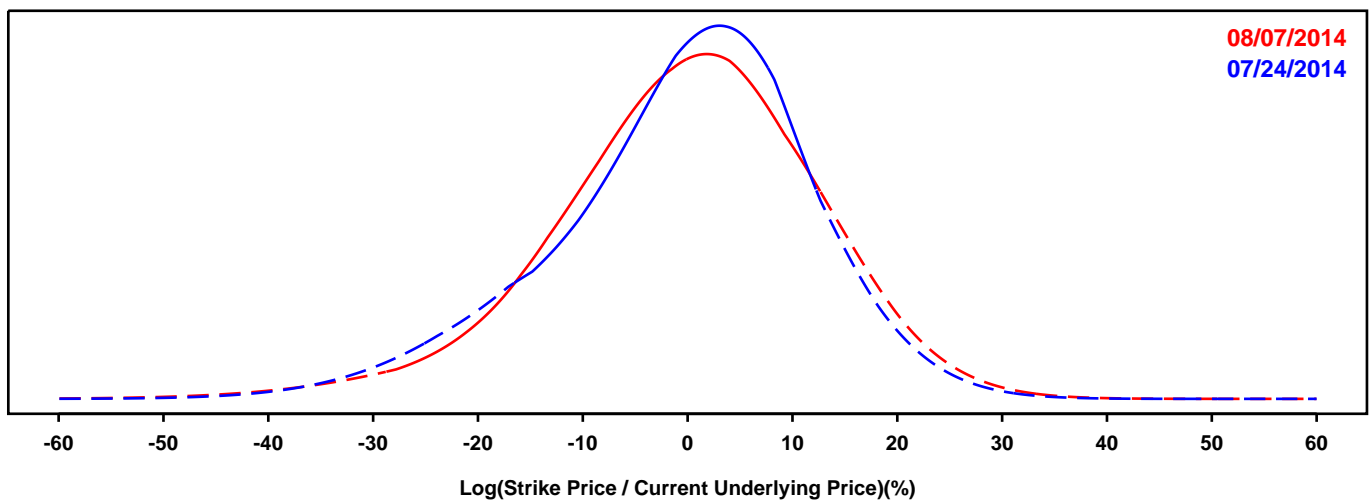
MARKET PROBABILITY DENSITY FUNCTIONS -- LINCOLN NATIONAL

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

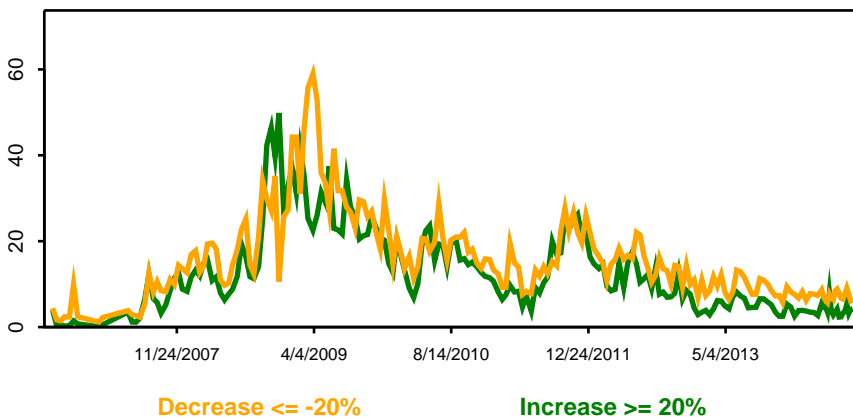
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

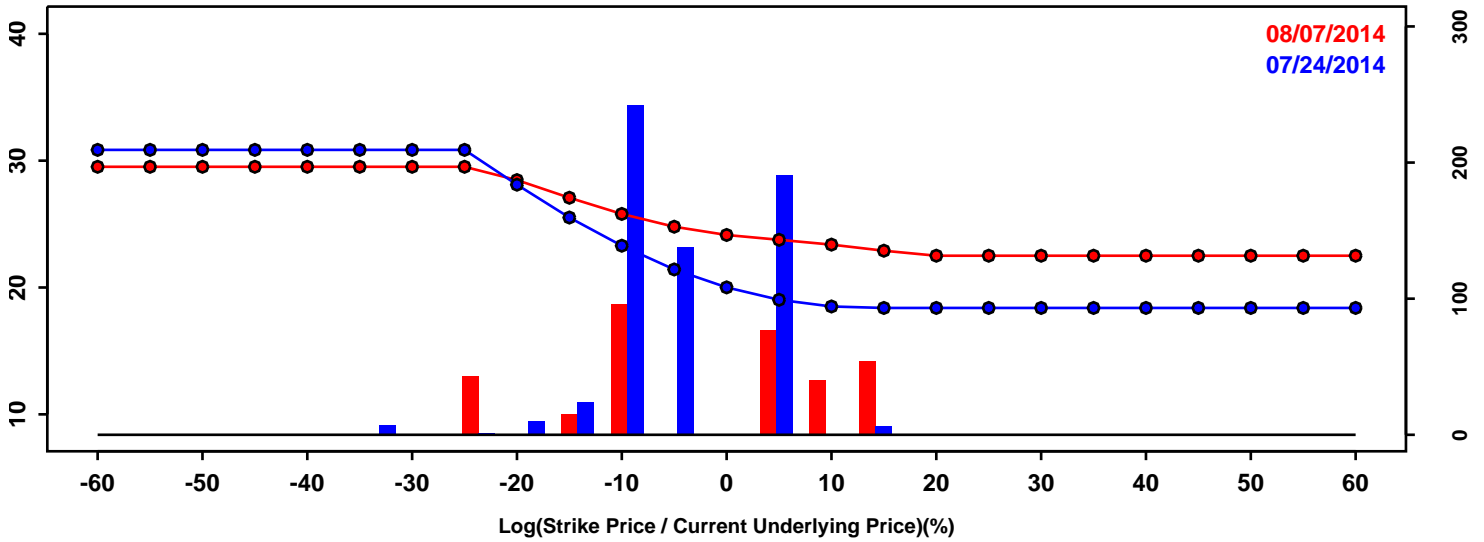


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-17.57%	-16.17%	1.40%
50th Pct	0.79%	0.50%	-0.28%
90th Pct	13.93%	15.20%	1.27%
Mean	-0.56%	-0.18%	0.37%
Std Dev	12.44%	12.70%	0.26%
Skew	-0.52	-0.45	0.07
Kurtosis	0.49	0.76	0.27

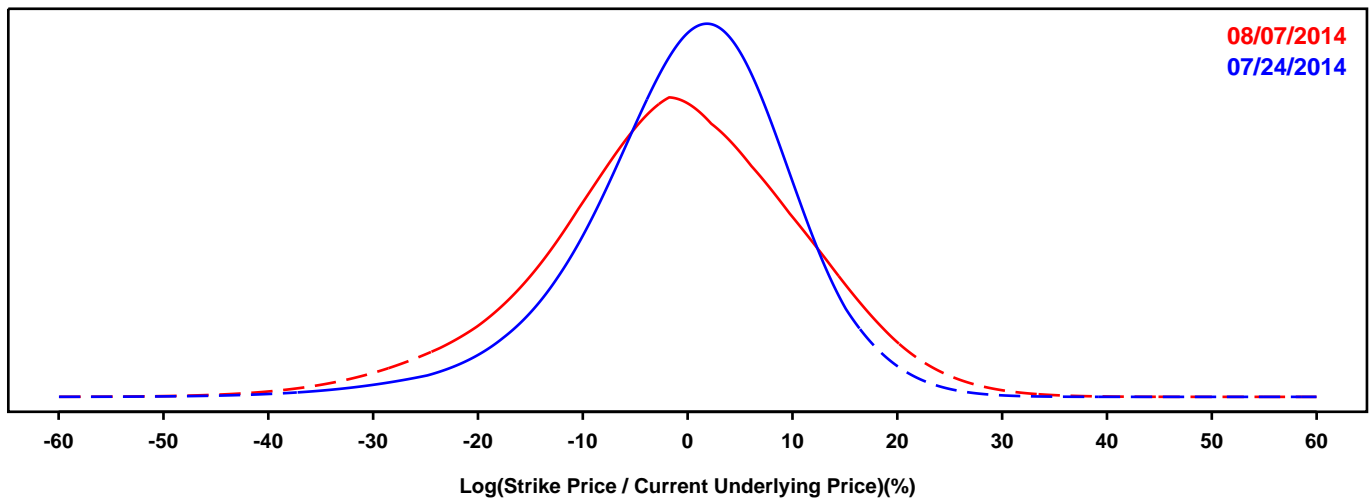
MARKET PROBABILITY DENSITY FUNCTIONS -- METLIFE

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

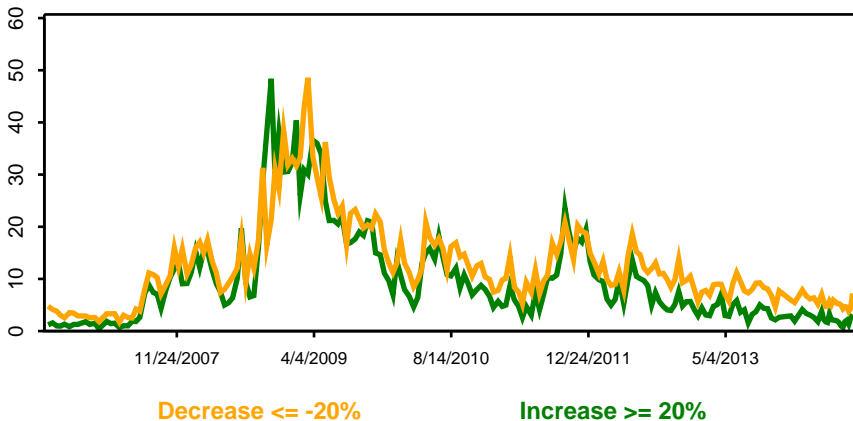
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

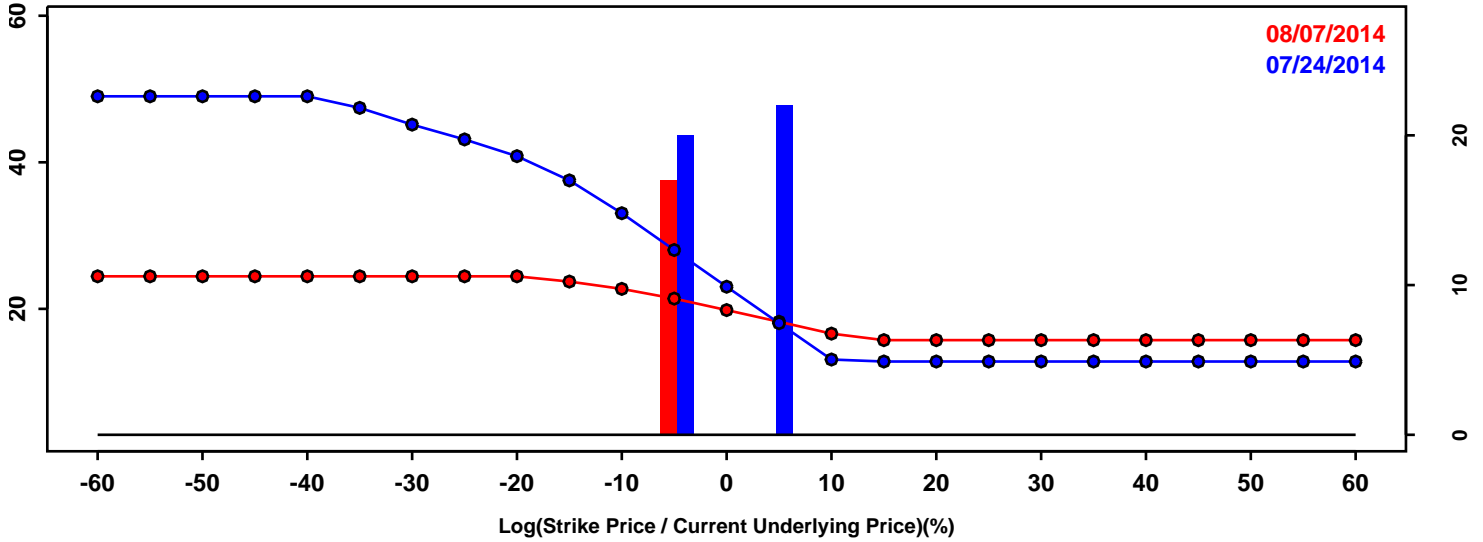


	07/24/2014	08/07/2014	Change
10th Pct	-12.82%	-17.21%	-4.39%
50th Pct	0.68%	-1.07%	-1.75%
90th Pct	11.54%	13.73%	2.19%
Mean	-0.14%	-1.48%	-1.33%
Std Dev	10.08%	12.28%	2.20%
Skew	-0.62	-0.31	0.31
Kurtosis	1.27	0.42	-0.85

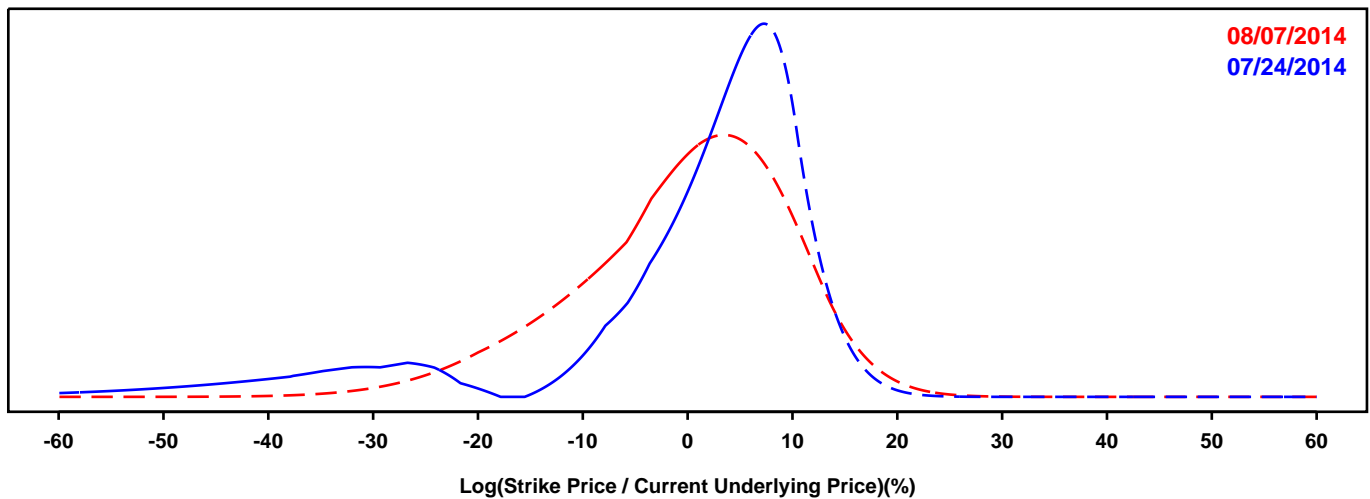
MARKET PROBABILITY DENSITY FUNCTIONS -- PRINCIPAL FINANCIAL

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

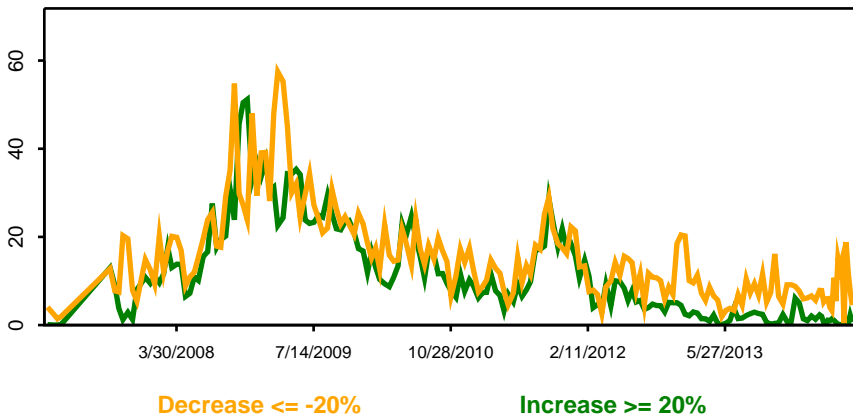
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

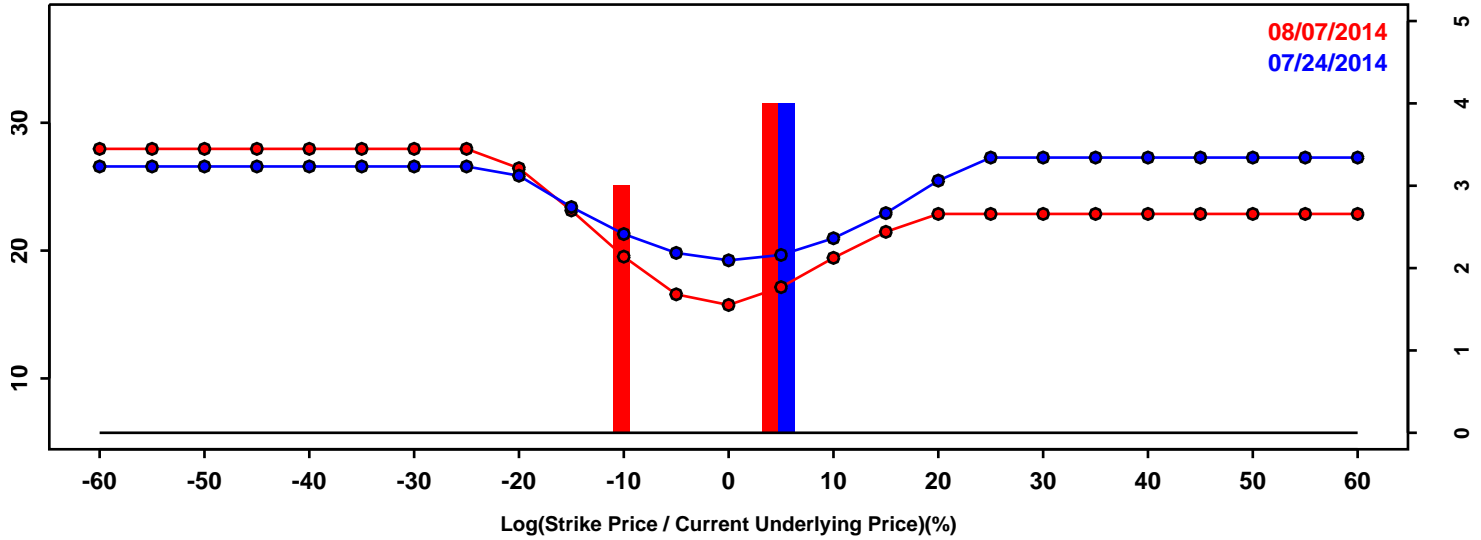


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-25.97%	-14.49%	11.48%
50th Pct	4.00%	0.95%	-3.04%
90th Pct	11.23%	11.39%	0.17%
Mean	-0.62%	-0.35%	0.27%
Std Dev	15.13%	10.17%	-4.96%
Skew	-2.04	-0.62	1.42
Kurtosis	4.25	0.39	-3.87

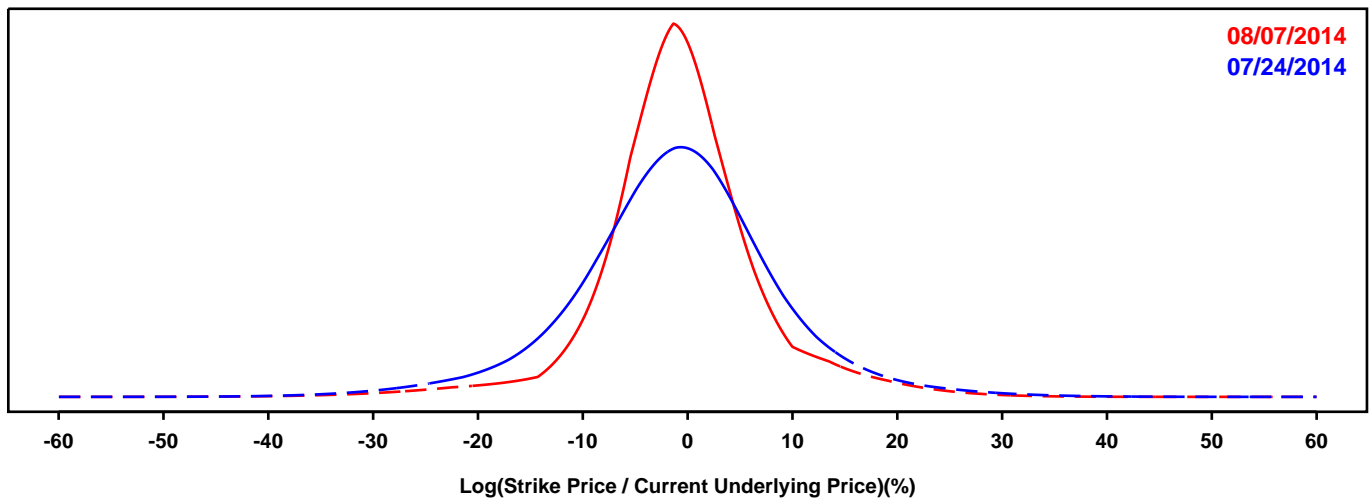
MARKET PROBABILITY DENSITY FUNCTIONS -- PROGRESSIVE

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

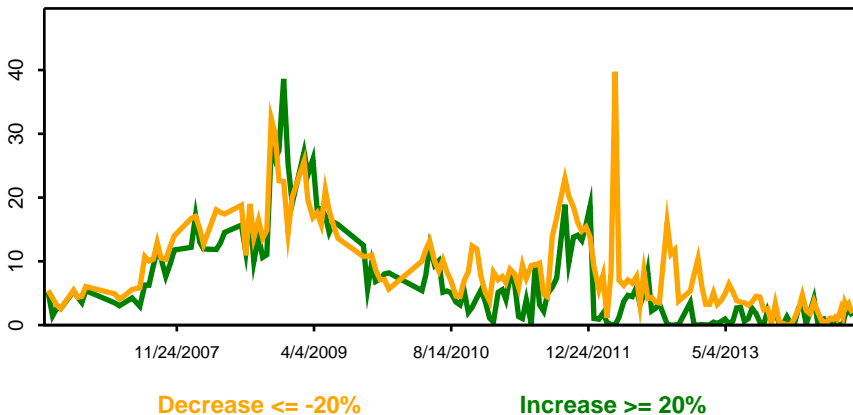
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



Probability of a Large Change

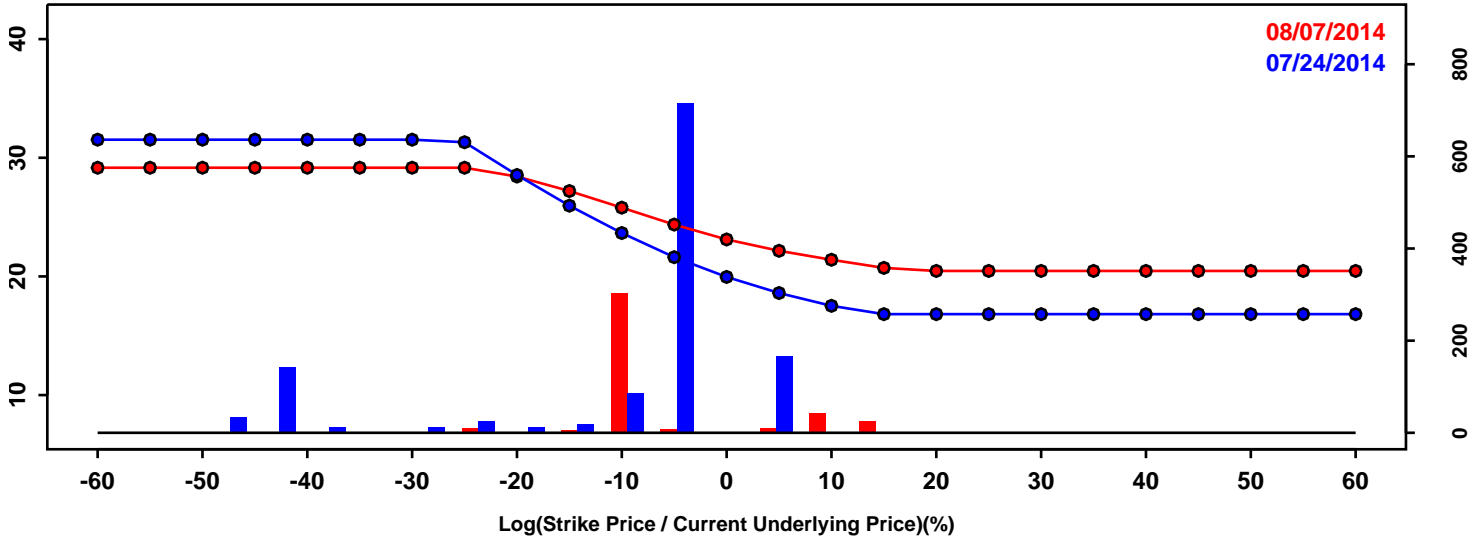


Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-12.59%	-8.59%	4.00%
50th Pct	-0.82%	-0.87%	-0.05%
90th Pct	10.38%	8.01%	-2.37%
Mean	-0.98%	-0.63%	0.35%
Std Dev	9.77%	7.86%	-1.91%
Skew	-0.10	-0.11	-0.02
Kurtosis	1.50	3.38	1.88

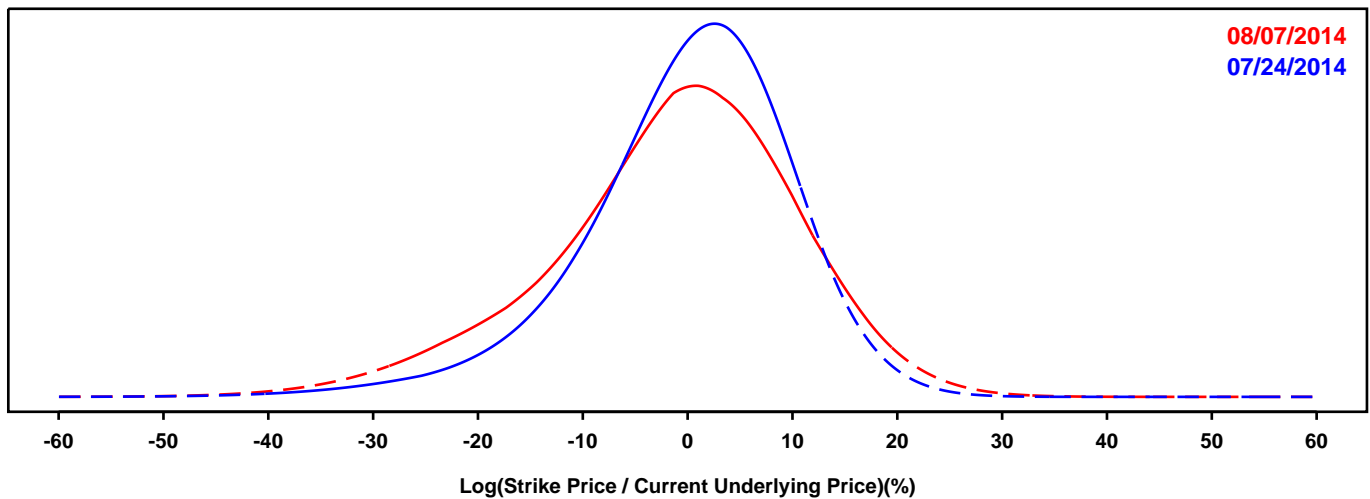
MARKET PROBABILITY DENSITY FUNCTIONS -- PRUDENTIAL

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

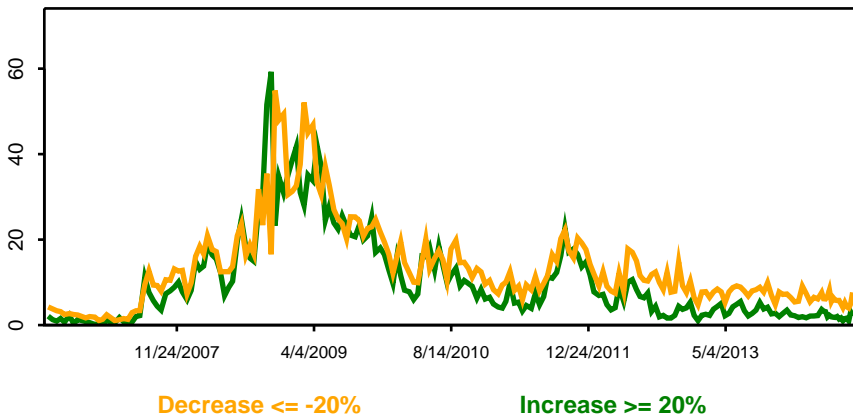
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Market Probability Density Function of the Log Return Distribution



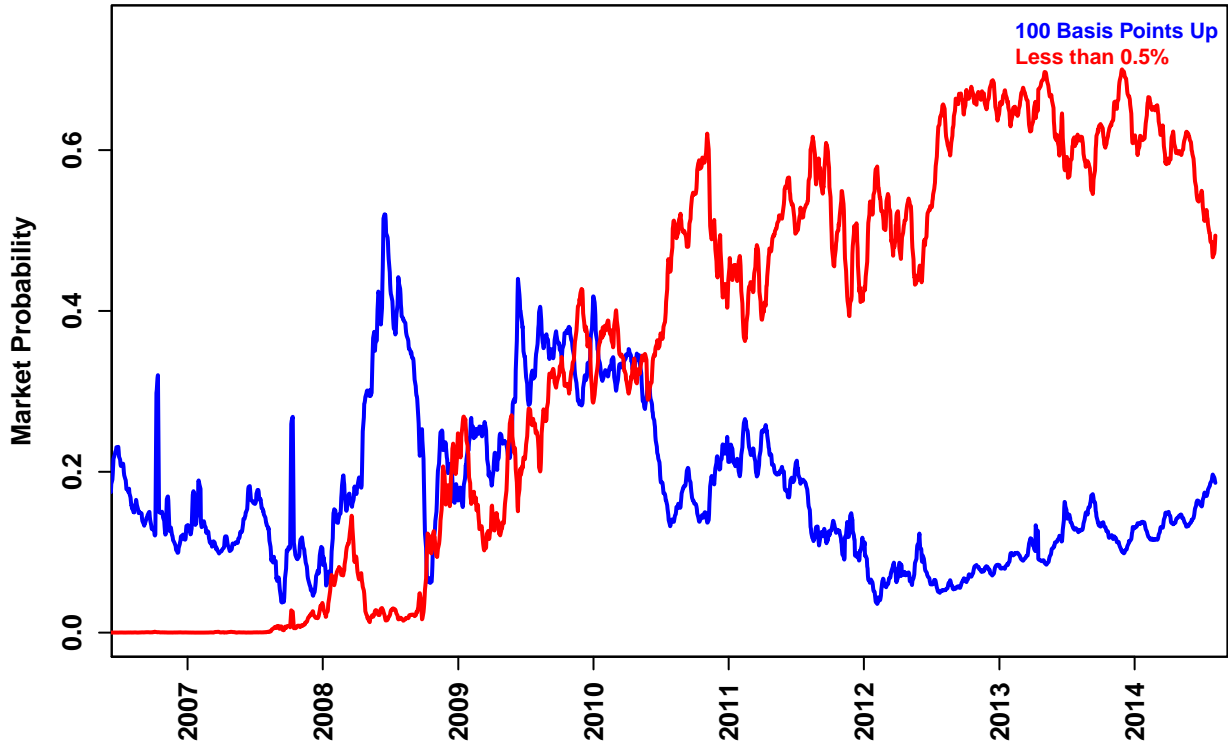
Probability of a Large Change



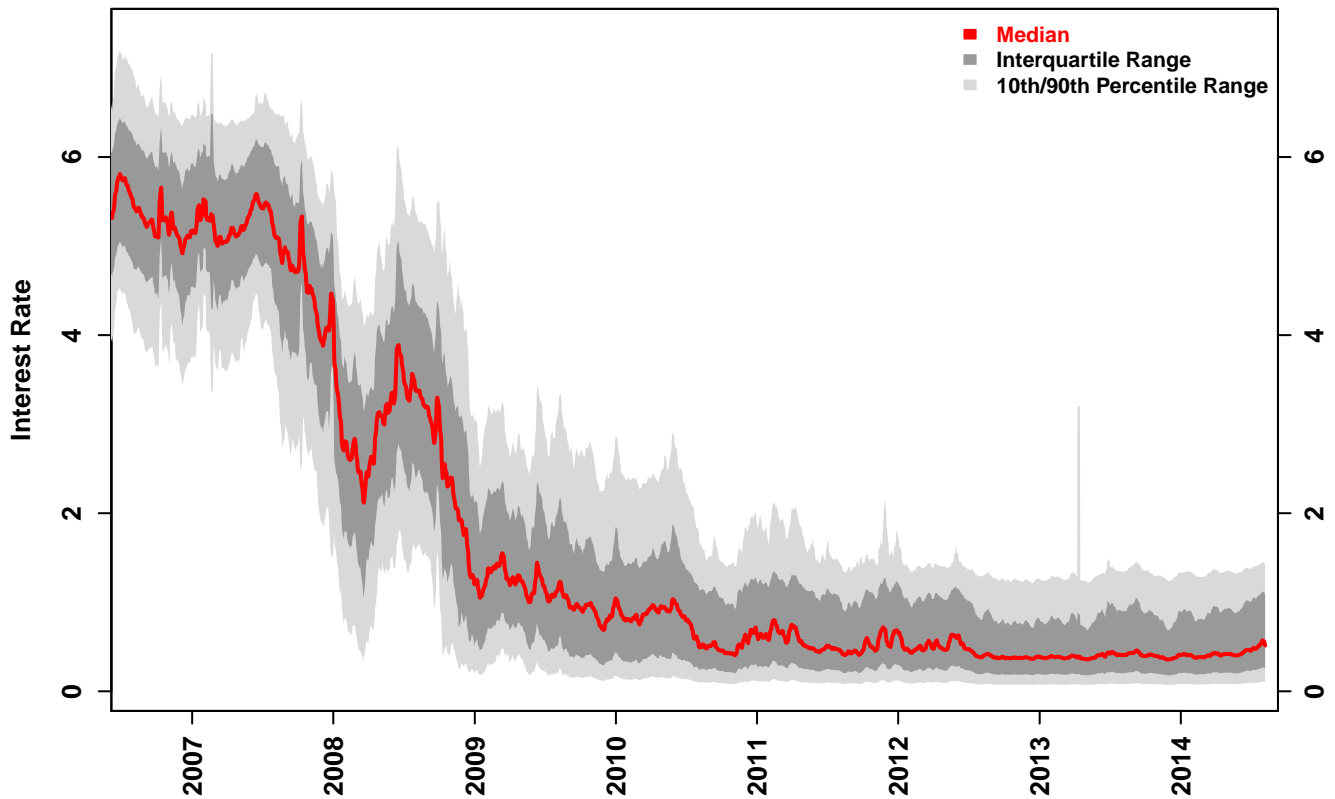
Statistics of the Log Return Distributions			
	07/24/2014	08/07/2014	Change
10th Pct	-12.88%	-17.53%	-4.65%
50th Pct	0.96%	-0.29%	-1.26%
90th Pct	11.59%	12.82%	1.23%
Mean	-0.02%	-1.39%	-1.37%
Std Dev	10.11%	11.99%	1.88%
Skew	-0.76	-0.51	0.24
Kurtosis	1.41	0.51	-0.90

MARKET PROBABILITY DENSITY FUNCTIONS -- Interest Rate Caps & Floors

Market Probability of Large Moves for 3-Month LIBOR, 2 Years Out, 5-Day Rolling Average

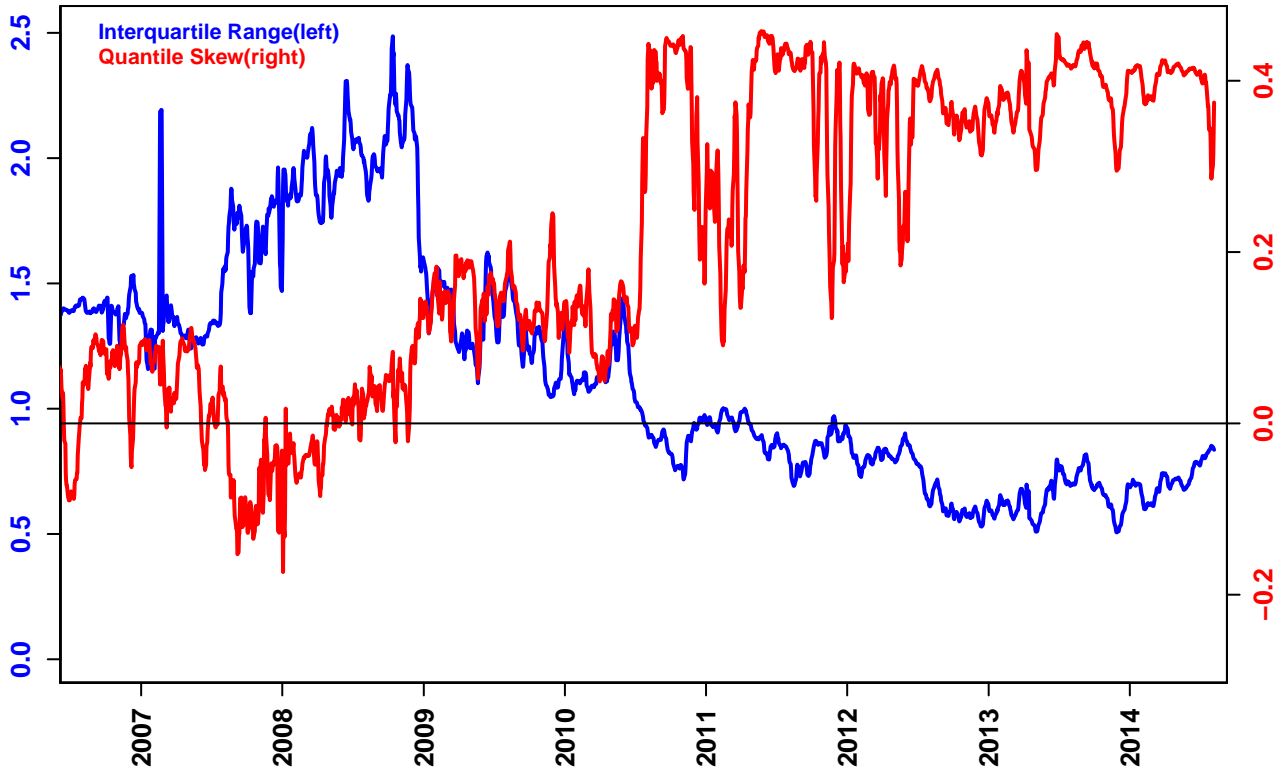


Distribution for LIBOR over 2 Years 5-Day Rolling Average



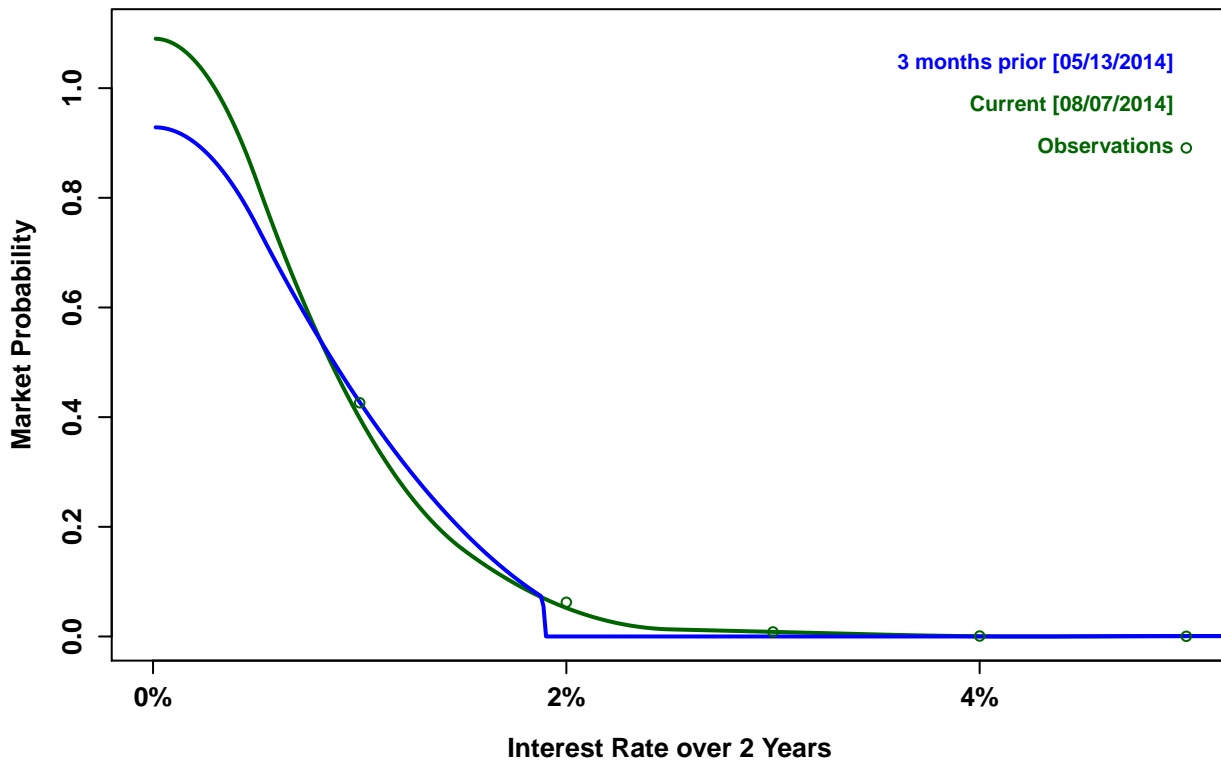
MARKET PROBABILITY DENSITY FUNCTIONS -- Interest Rate Caps & Floors

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



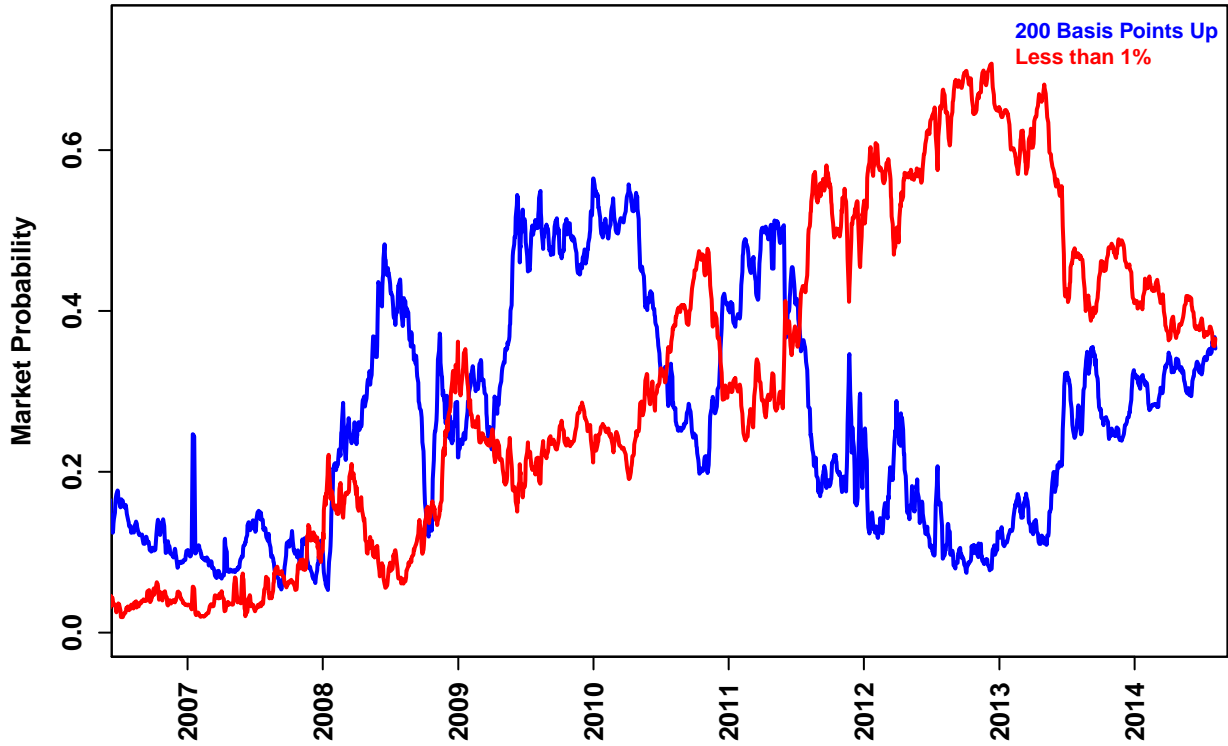
Note: Quantile skew is defined here as $[(75\text{th pctile} - \text{median}) - (\text{median} - 25\text{th pctile})] / (75\text{th} - 25\text{th pctile})$

Market Probability Density Function for LIBOR over the Next 2 Years

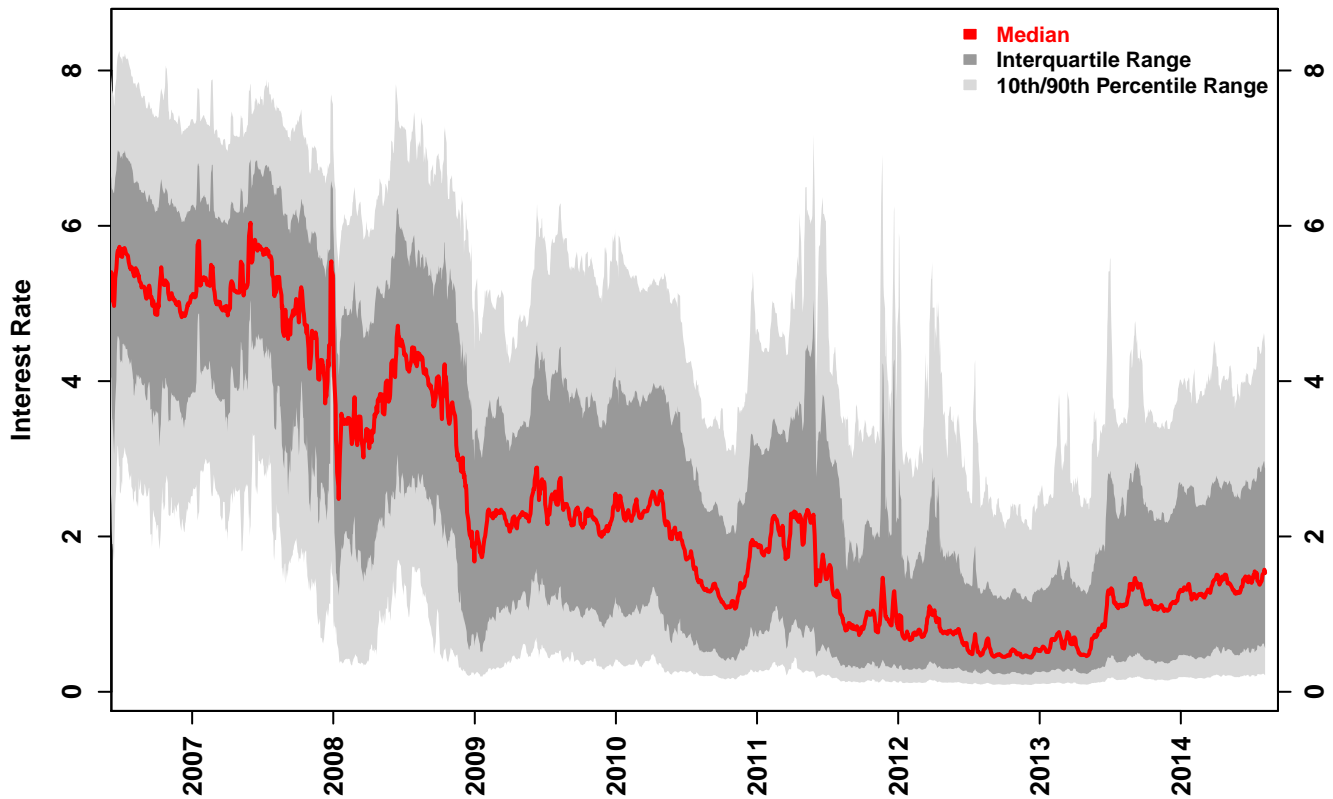


MARKET PROBABILITY DENSITY FUNCTIONS -- Interest Rate Caps & Floors

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

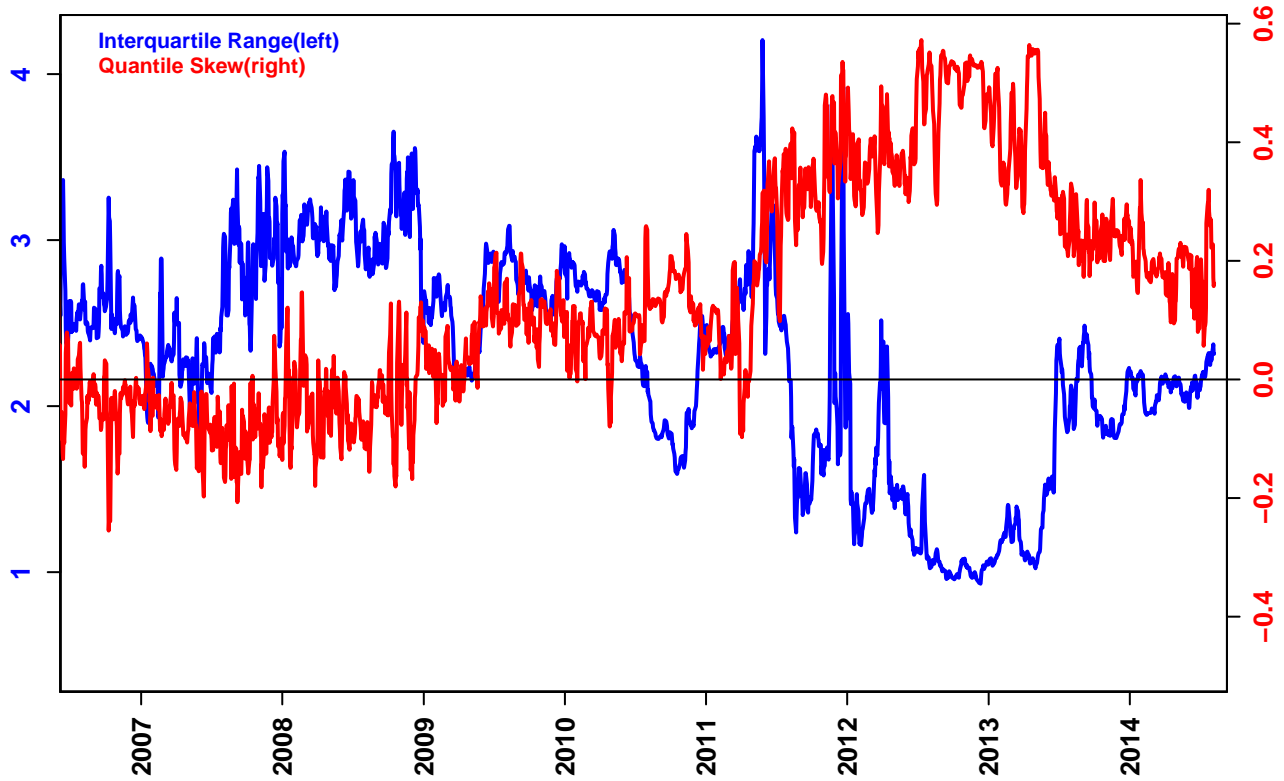


Distribution for LIBOR over 5 Years 5-Day Rolling Average



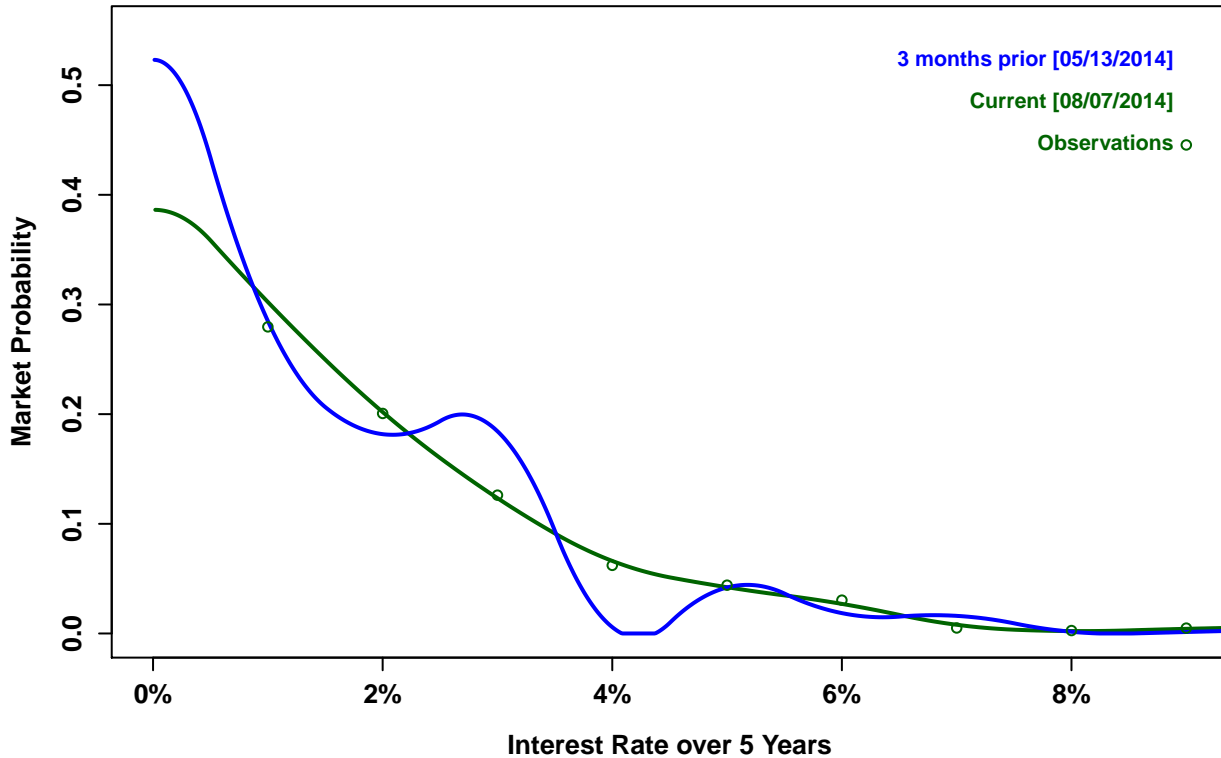
MARKET PROBABILITY DENSITY FUNCTIONS -- Interest Rate Caps & Floors

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



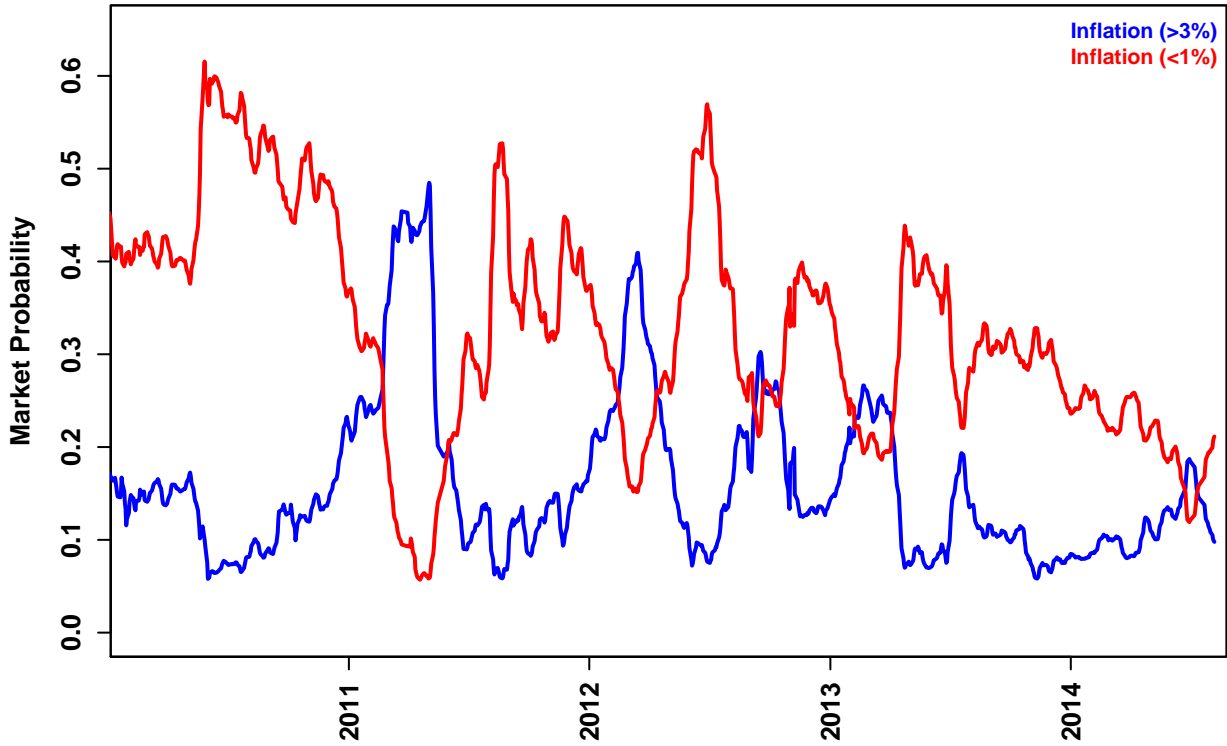
Note: Quantile skew is defined here as $[(75\text{th pctile} - \text{median}) - (\text{median} - 25\text{th pctile})] / (75\text{th} - 25\text{th pctile})$

Market Probability Density Function for LIBOR over the Next 5 Years

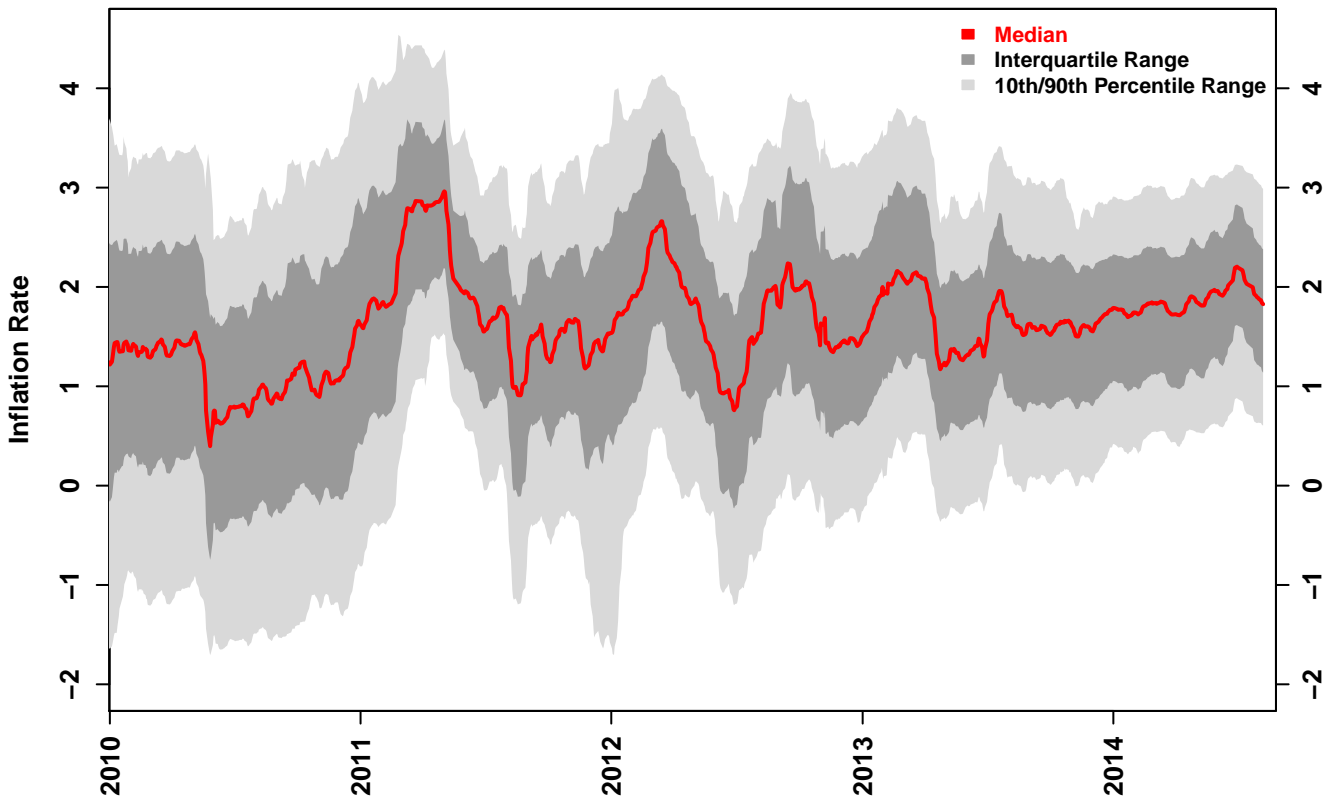


MARKET PROBABILITY DENSITY FUNCTIONS -- Inflation Rate Caps & Floors

Market Probability of Elevated Inflation or Deflation over 12 Months 5-Day Rolling Average

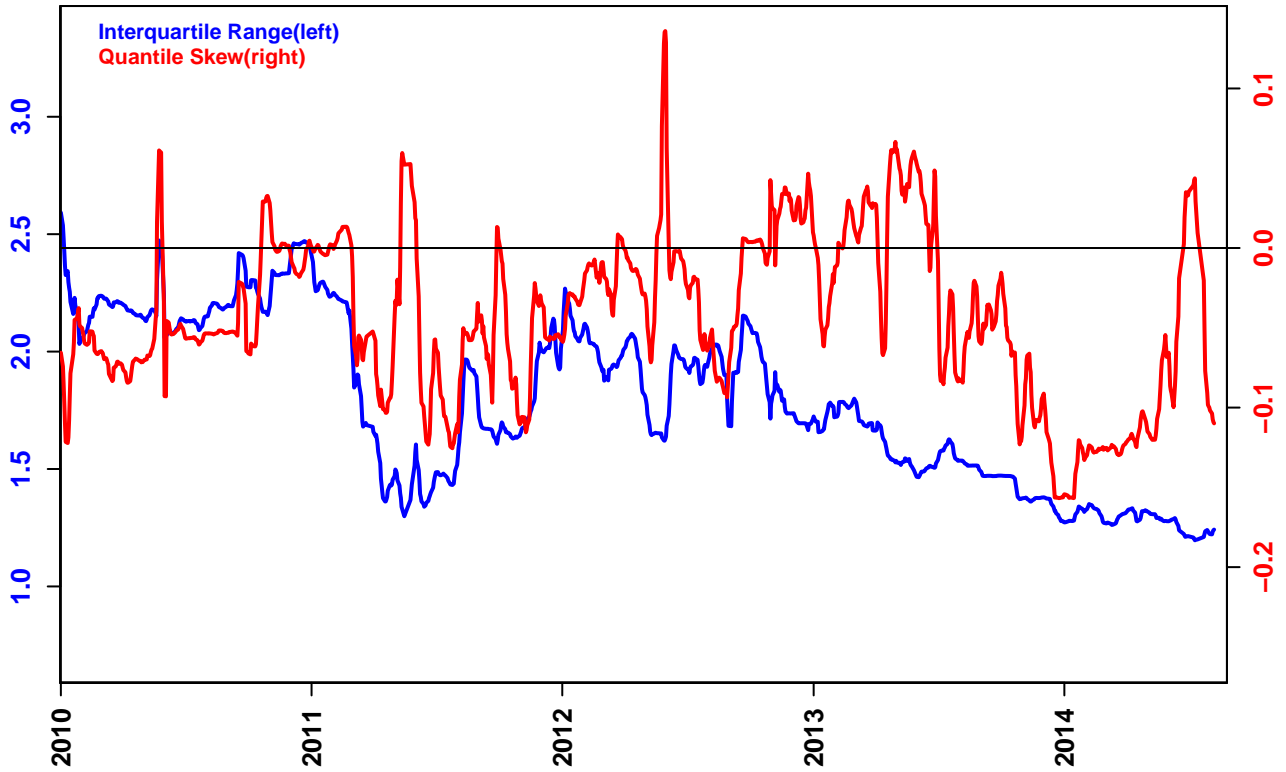


Distribution for Inflation over 12 Months 5-Day Rolling Average



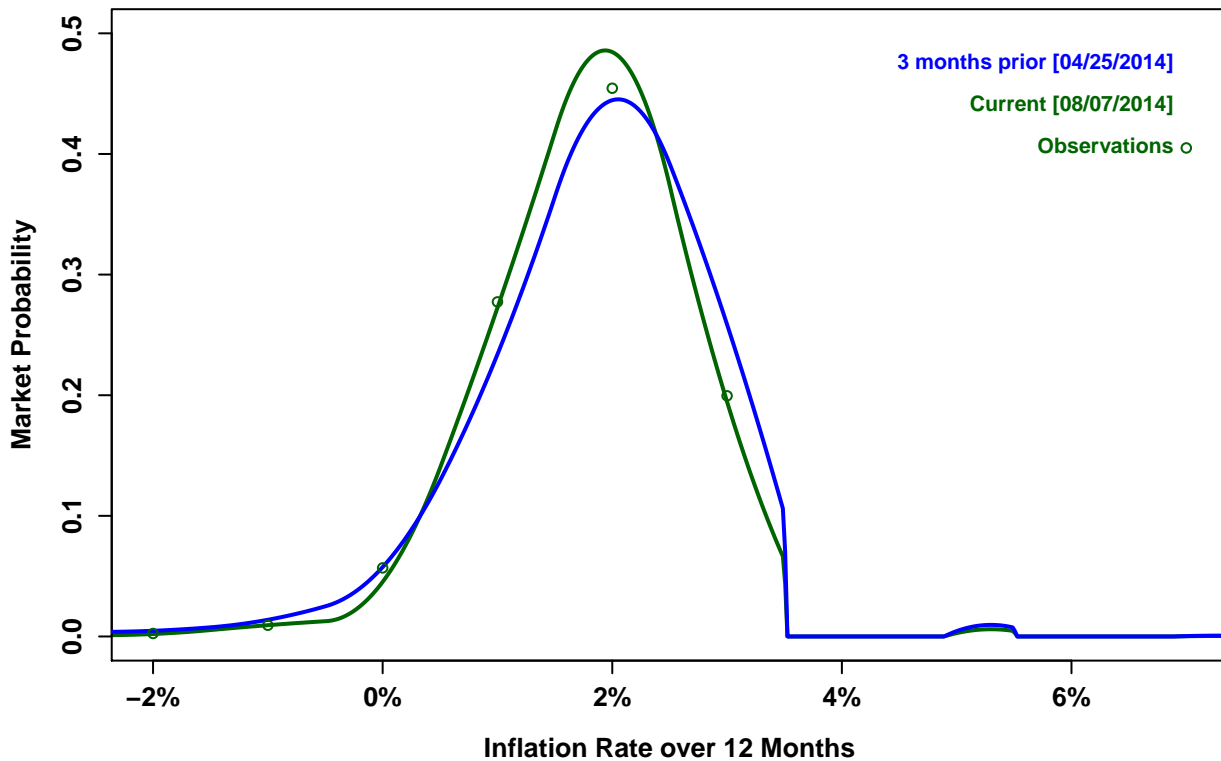
MARKET PROBABILITY DENSITY FUNCTIONS -- Inflation Rate Caps & Floors

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



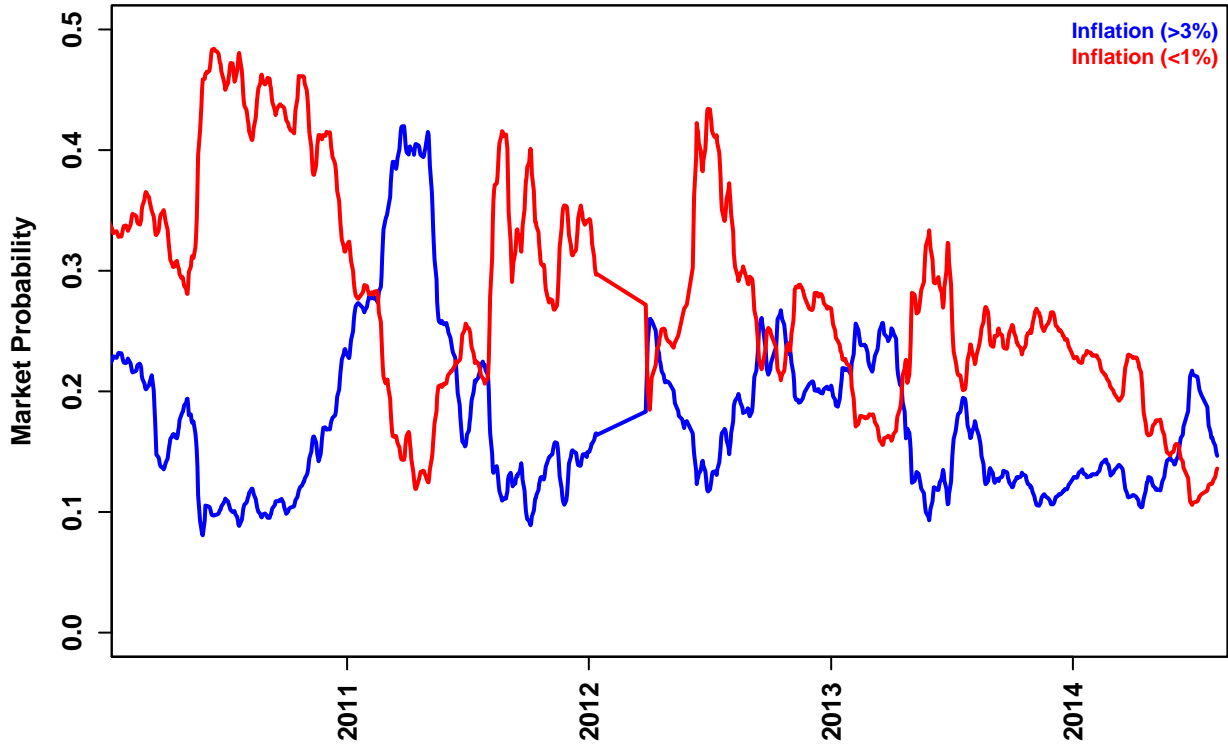
Note: Quantile skew is defined here as $[(75\text{th pctile} - \text{median}) - (\text{median} - 25\text{th pctile})] / (75\text{th} - 25\text{th pctile})$

Market Probability Density Function for Inflation over the Next 12 Months

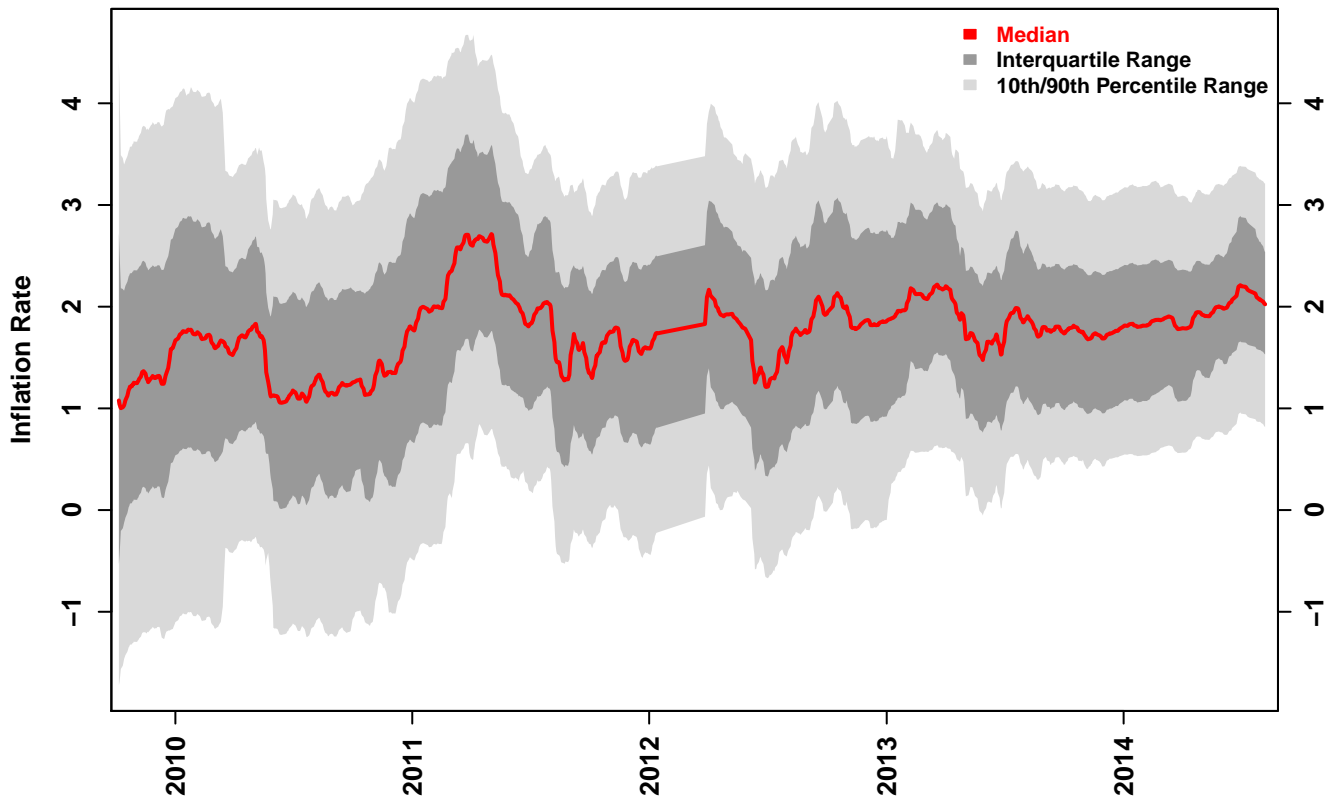


MARKET PROBABILITY DENSITY FUNCTIONS -- Inflation Rate Caps & Floors

Market Probability of Elevated Inflation or Deflation over 2 Years, 5-Day Rolling Average

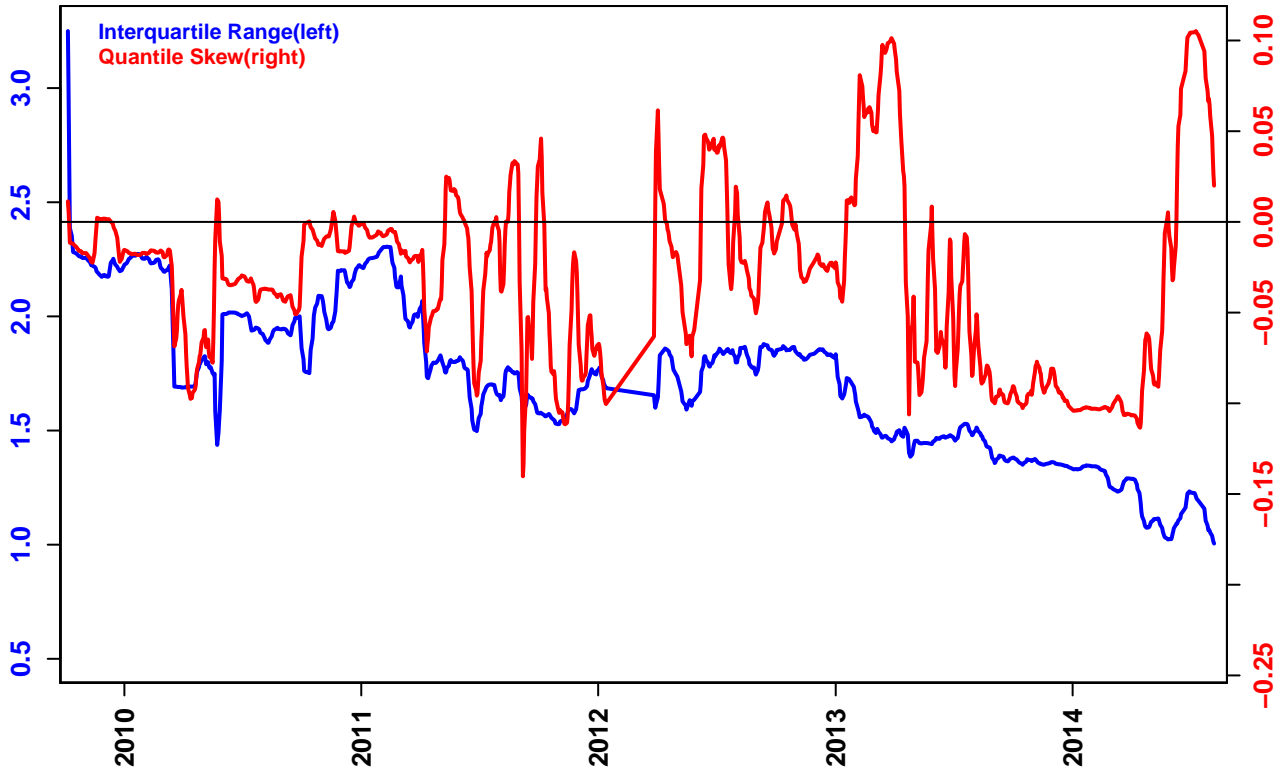


Distribution for Inflation over 2 Years 5-Day Rolling Average



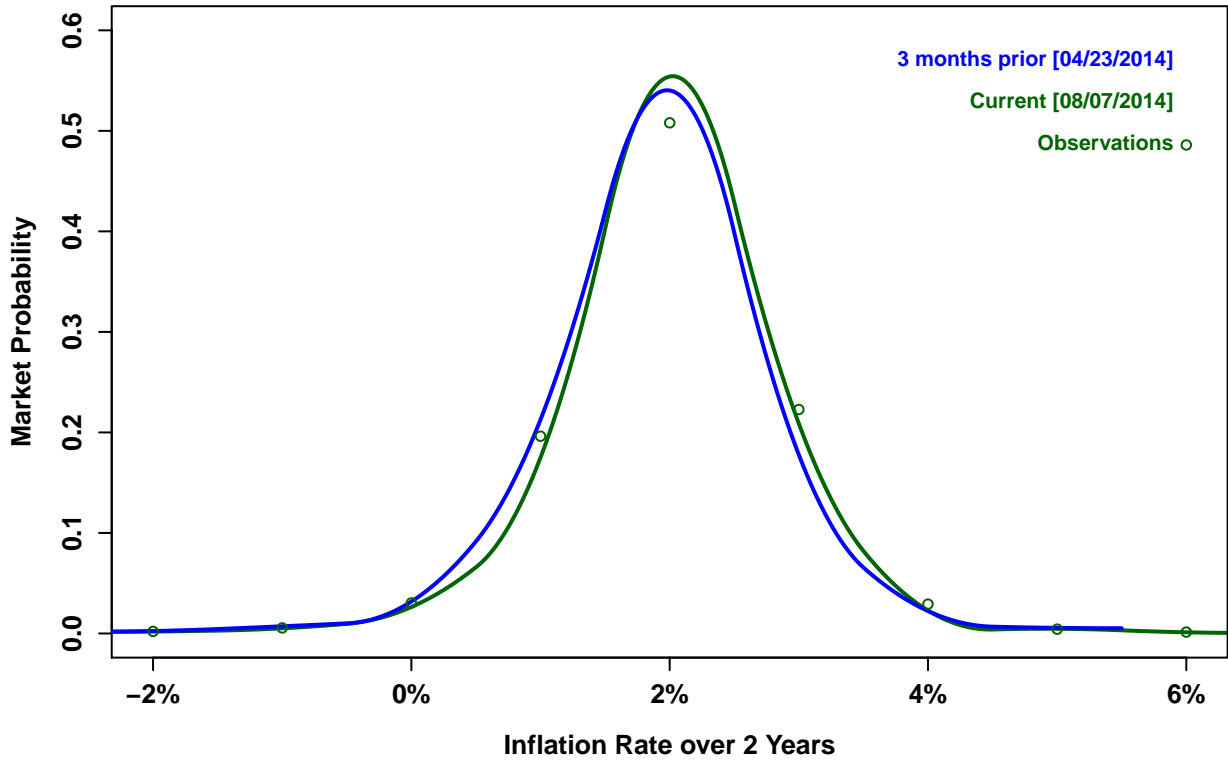
MARKET PROBABILITY DENSITY FUNCTIONS -- Inflation Rate Caps & Floors

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



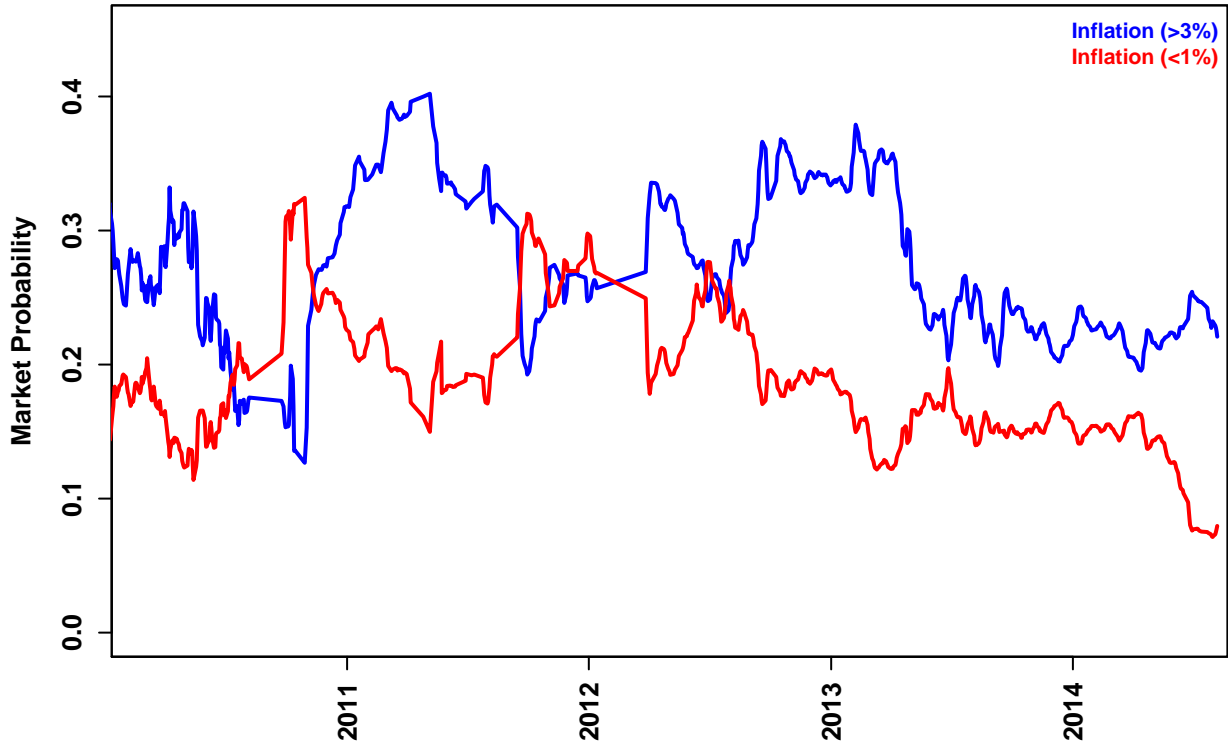
Note: Quantile skew is defined here as $[(75\text{th pctile} - \text{median}) - (\text{median} - 25\text{th pctile})] / (75\text{th} - 25\text{th pctile})$

Market Probability Density Function for Inflation over the Next 2 Years

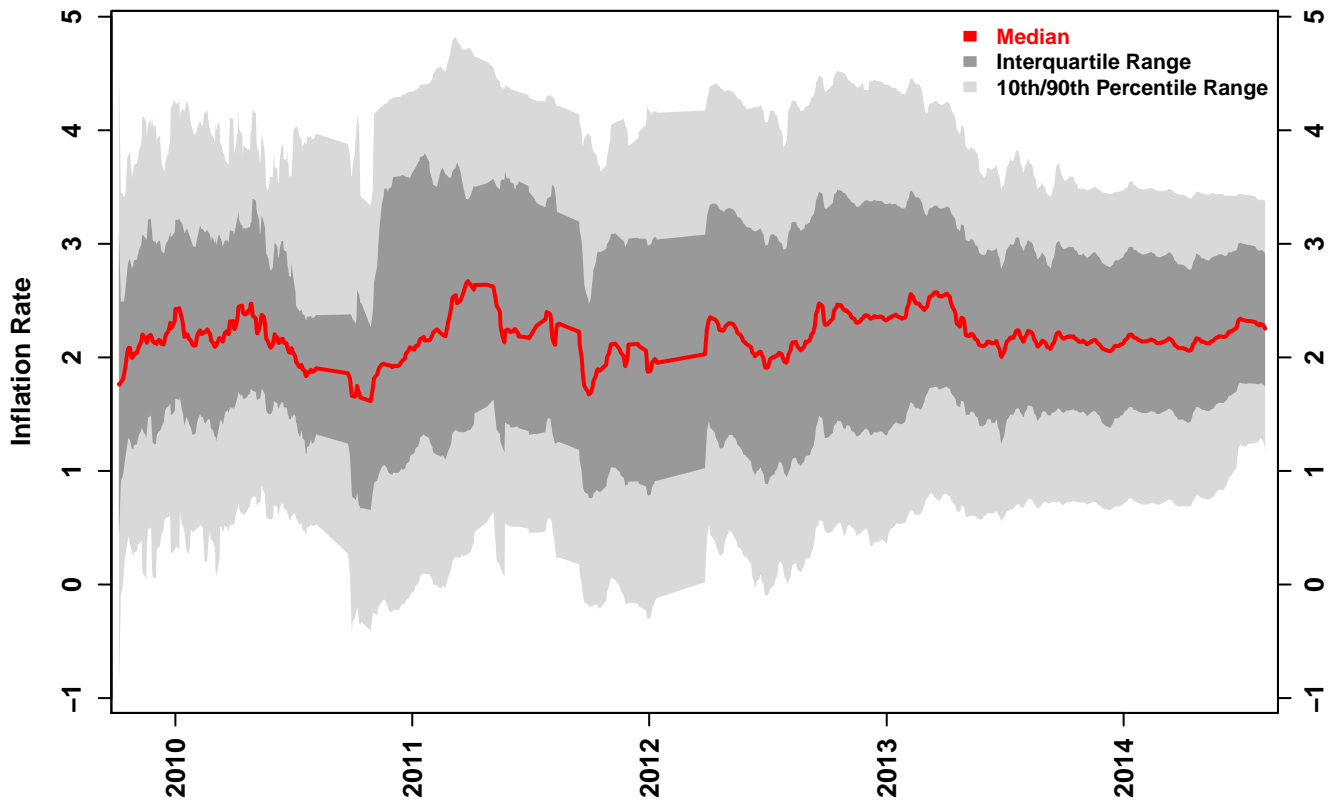


MARKET PROBABILITY DENSITY FUNCTIONS -- Inflation Rate Caps & Floors

Market Probability of Elevated Inflation or Deflation over 5 Years, 5-Day Rolling Average

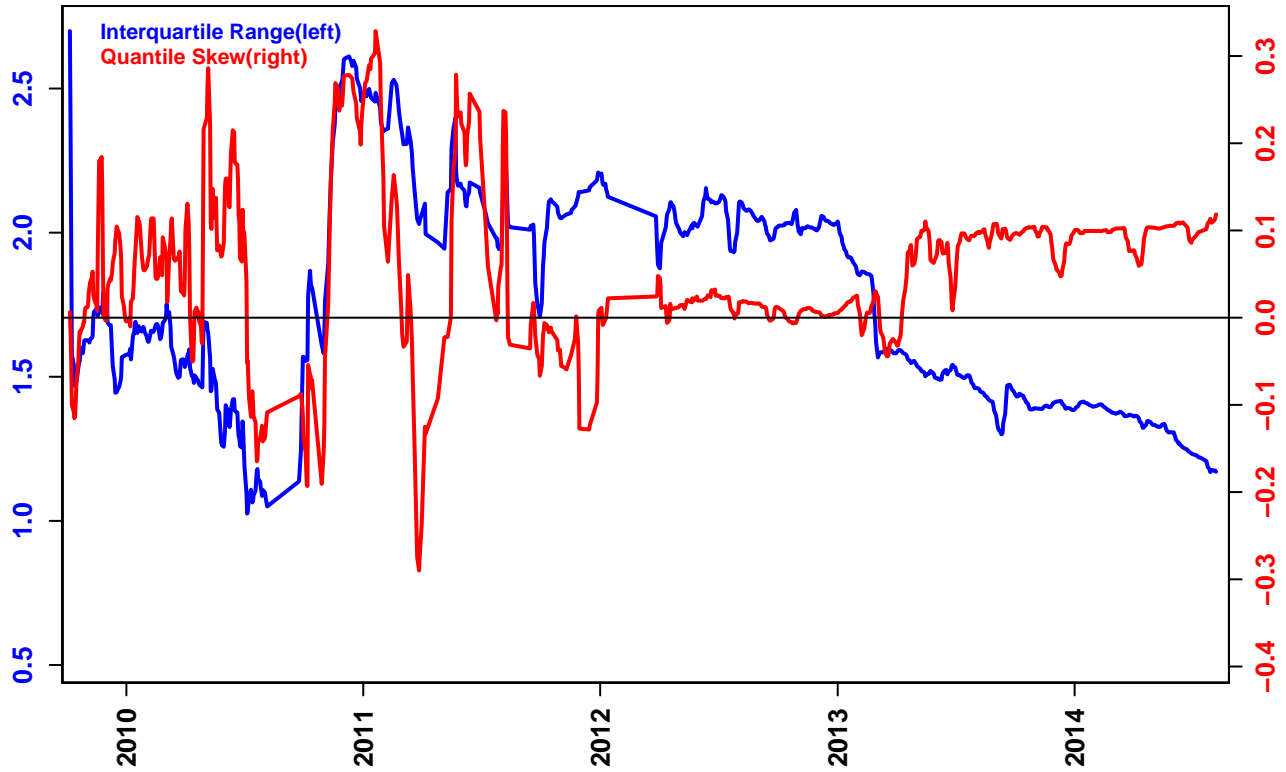


Distribution for Inflation over 5 Years 5-Day Rolling Average



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 $[(75\text{th pctile} - \text{median}) - (\text{median} - 25\text{th pctile})] / (75\text{th} - 25\text{th pctile})$

Market Probability Density Function for Inflation over the Next 5 Years

