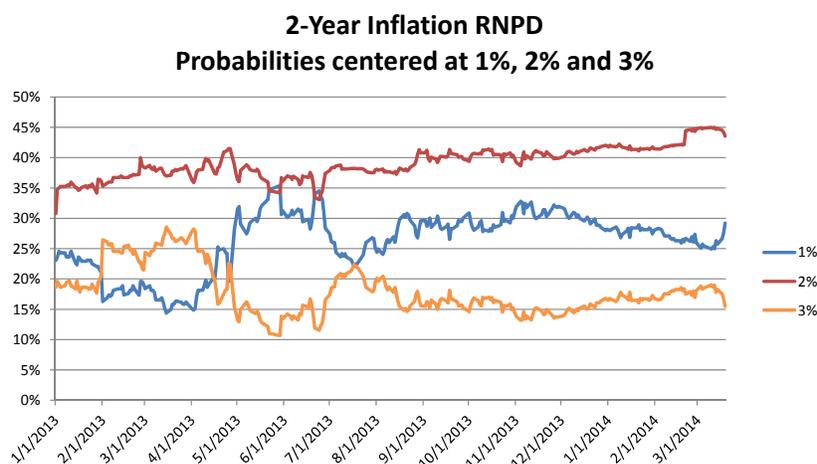


## Minneapolis Options Report – March 20<sup>th</sup>

The S&P 500 was down -30 basis points over the past two weeks. Options trading on the S&P 500 index was strong. The average CCAR bank price rose 260 basis points and the average insurance company price fell -70 basis points. Equity market related RNPD standard deviations (tail risks) generally rose and RNPD skews ticked lower (more negative). These measures do NOT incorporate stress test related information. We intend to follow up with separate analysis of RNPD CCAR reactions.

This time period *DOES include market reaction to recent FOMC decisions and guidance*. Our standard reports of RNPDs derived from inflation caps and floors show only small changes in the tails. In particular, the reports show the risk neutral probability of deflation changing very little.

We also looked more carefully at risk neutral probabilities in the middle of the distribution. Specifically, we examined changes in risk neutral probabilities at 1%, 2%, and 3% outcomes. The chart below presents the time series of risk neutral probabilities for these outcomes over the subsequent 2 years.



We point out the interesting changes from March 17<sup>th</sup> to March 19<sup>th</sup>. The risk neutral probability of a 1% inflation rate over the next two years rose 345 basis points while the probabilities of 2% and 3% inflation fell 120 and 277 basis points respectively. For more information on the methodology for making these estimations see Kitsul and Wright.<sup>1</sup>

<sup>1</sup> Kitsul, Yuriy and Jonathan H. Wright (2012): The Economics of Option-implied Inflation Probability Density Functions, NBER Working Paper 18195. We note that K-W have updated their methodology in the more recent version of the paper appearing the *Journal of Financial Economics* (2013).

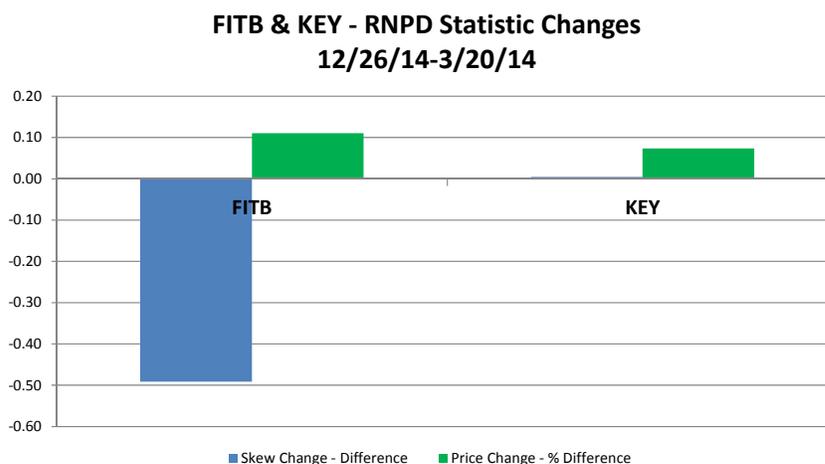
### *Banks & Insurance Companies*

Options trading was also relatively brisk for the insurance companies we follow. Volumes were about average in the broader CCAR universe of banks. RNP standard deviations and skews were mixed.

Banks with above average and increasing trading volume were BK, KEY, and FITB. Insurance companies with above average and increasing trading volume were HIG, LNC, and MET.

Additional Notes:

- Shares of KEY rallied 5.3%. The RNP skew derived from options on KEY share became *less* negative. (See *KEY* report)
- The behavior of FITB shares and its RNP was similar to that of KEY. The share price rose 4.8% while its RNP standard deviation and skew fell. This generally the short term relationship we observe between RNP skew and price. (See *FITB* report)



- Despite the volume, RNPDs were relatively unchanged for the insurance firms listed above. (See *detail reports*)
- AMP and PFG skew changes were large but occurred on very light trading (See *AMP and PFG reports*)

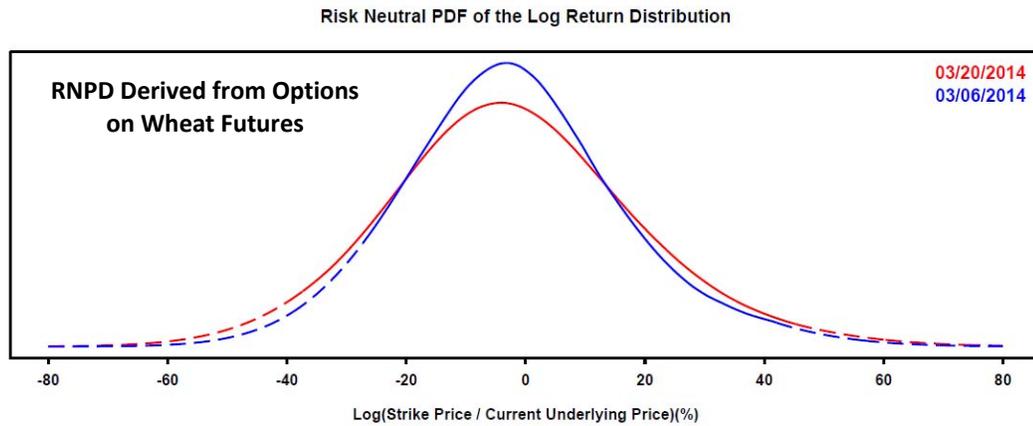
### *Other Commodity Markets*

With the exception of wheat, spot prices in the other commodity markets we follow generally fell over the past two weeks. Corn fell -1.8%, gold fell -1.6%, WTI crude fell -2.0%, and the real estate ETF fell -2.1%. The dollar was stronger. Options trading volumes were light. Consistent with the direction of spot prices, RNP standard deviations rose slightly.

Additional notes:

- Trading in options on wheat futures was active. The RNP for wheat shifted noticeably from two weeks ago. Wheat prices rose 8.4% and tail risks in as measured by RNP

standard deviation increased by 240 basis points. RNPD skews for all of the grains remain positive. (See *Corn, Wheat, and Soybean reports*)

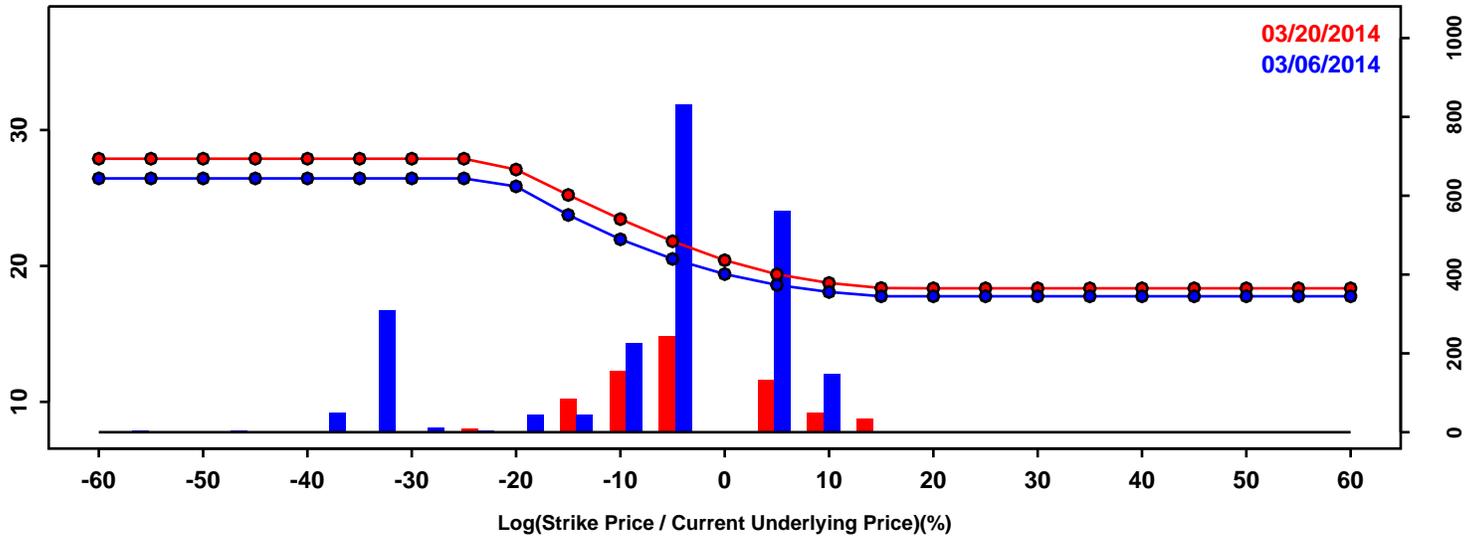


- The RNPD standard deviation derived from options on cattle futures continues to increase. The RNPD skew is negative. (See *cattle report*)
- The RNPD skews derived from options on soybeans, gold, and WTI crude, are at the highest levels we have measured in the past 20 two week periods. (See *soybeans, gold and oil reports*)

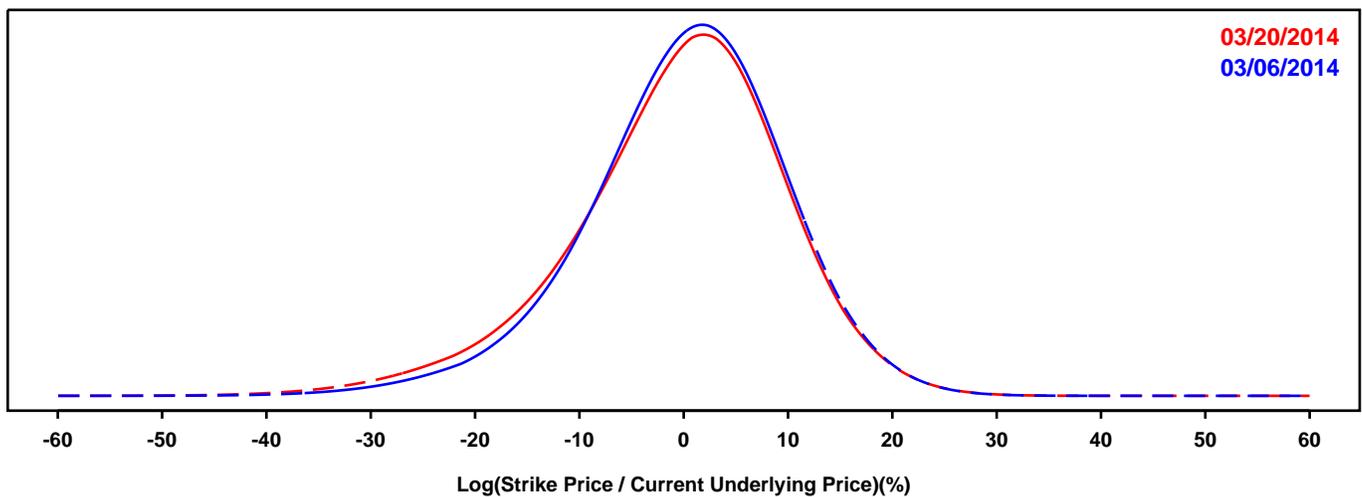
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- AMERICAN EXPRESS

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

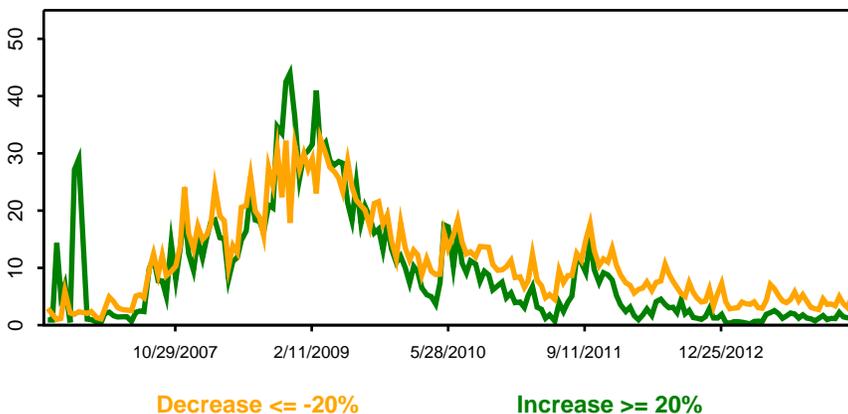
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

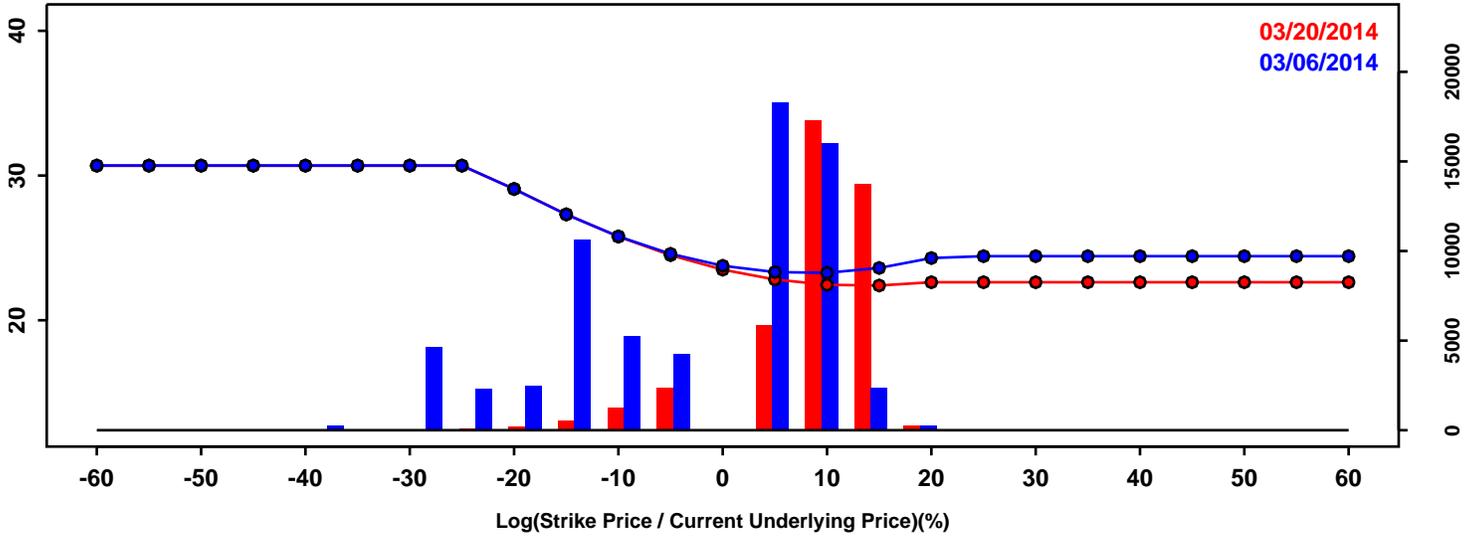


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-12.29%	-14.17%	-1.88%
50th Pct	0.78%	0.39%	-0.39%
90th Pct	11.74%	11.57%	-0.18%
Mean	0.15%	-0.59%	-0.75%
Std Dev	9.71%	10.41%	0.70%
Skew	-0.46	-0.58	-0.12
Kurtosis	0.75	0.85	0.10

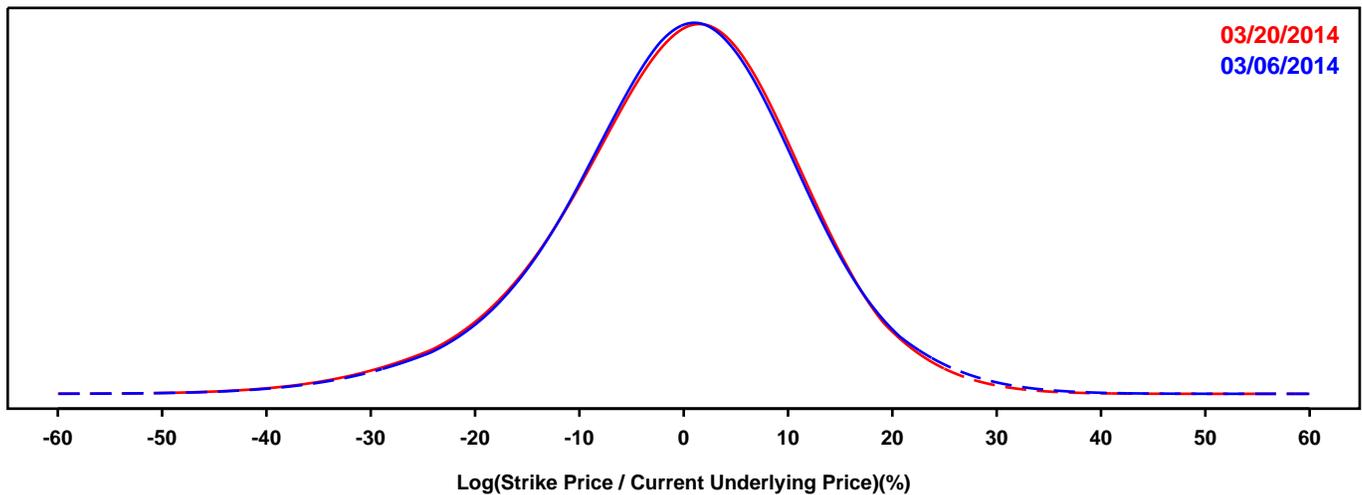
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- BANK OF AMERICA

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

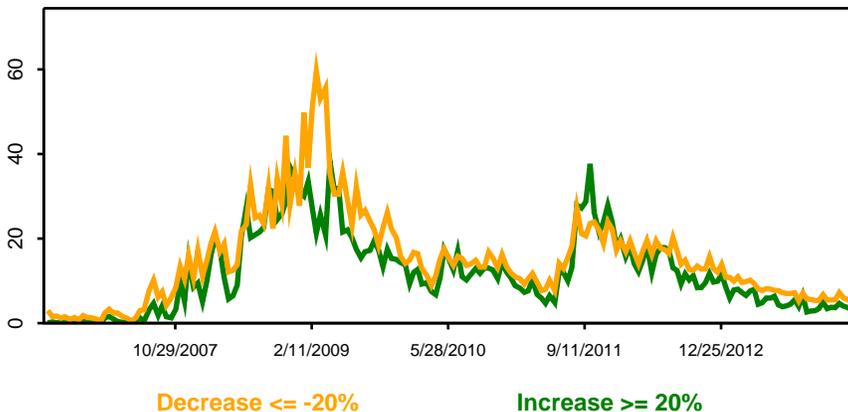
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

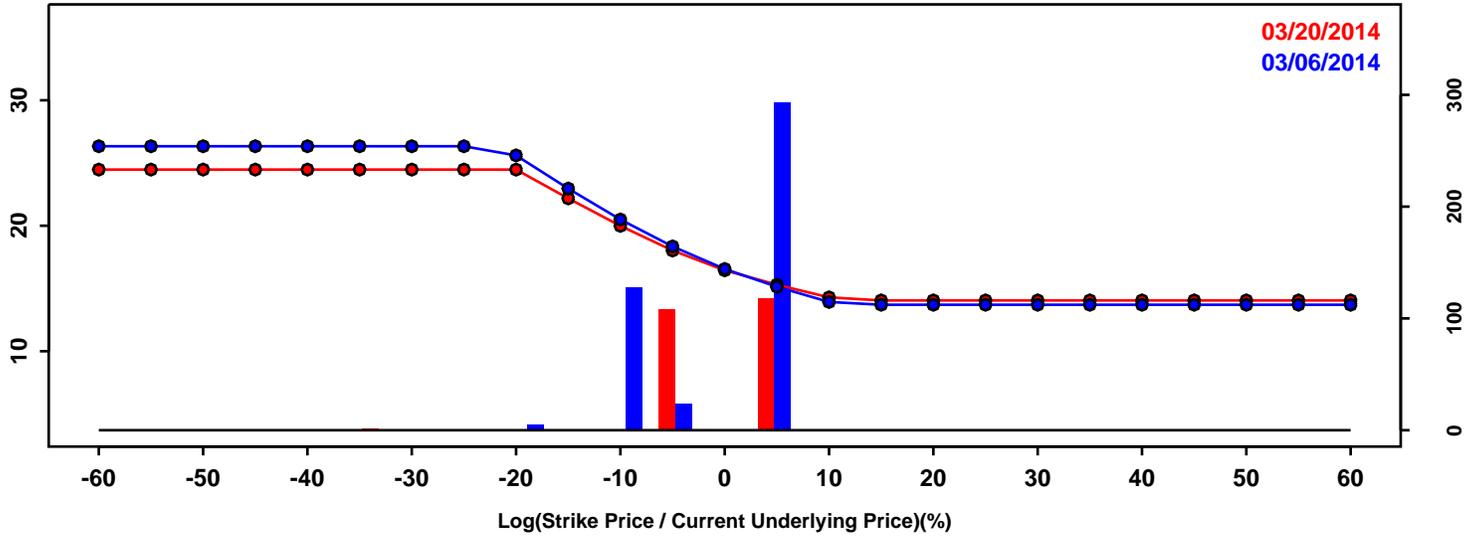


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-15.24%	-15.62%	-0.38%
50th Pct	0.30%	0.31%	0.01%
90th Pct	14.05%	13.73%	-0.31%
Mean	-0.22%	-0.41%	-0.19%
Std Dev	11.89%	11.85%	-0.04%
Skew	-0.32	-0.41	-0.10
Kurtosis	0.72	0.68	-0.04

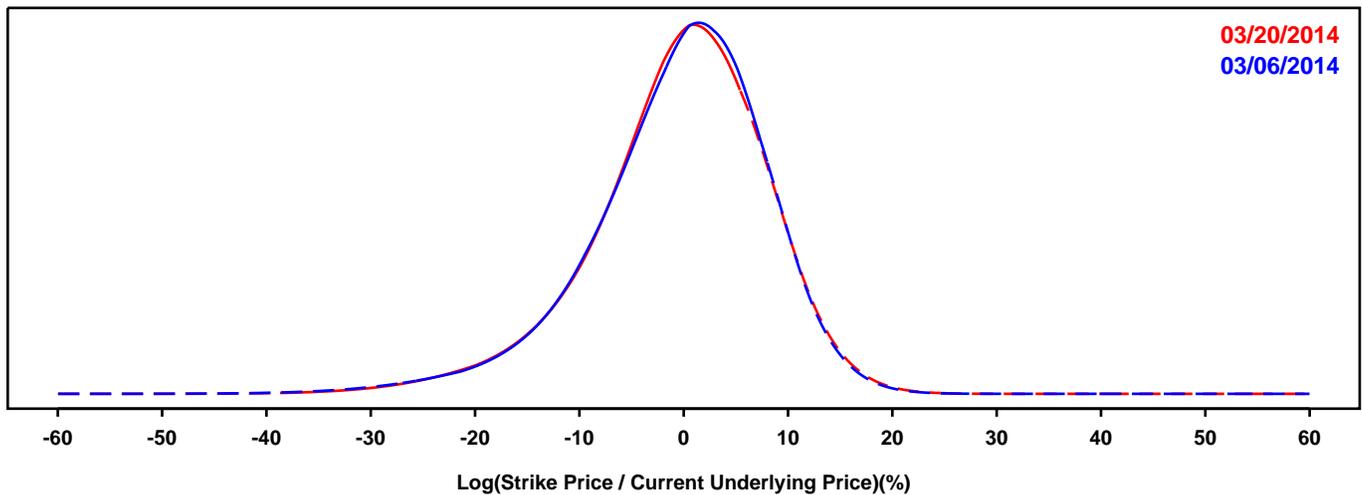
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- BB&T

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

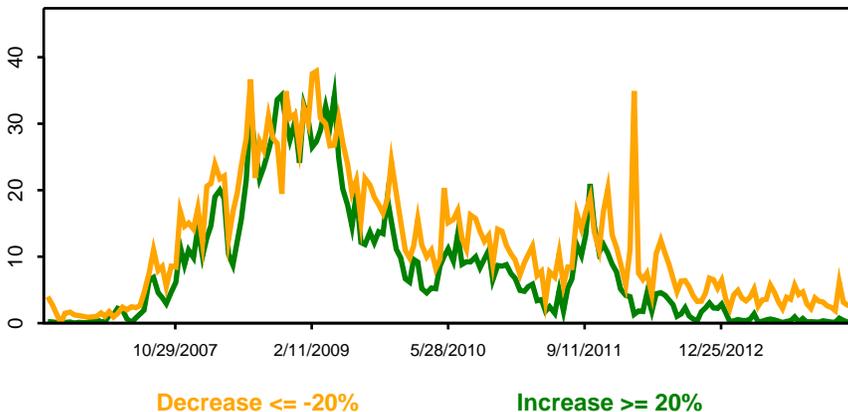
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

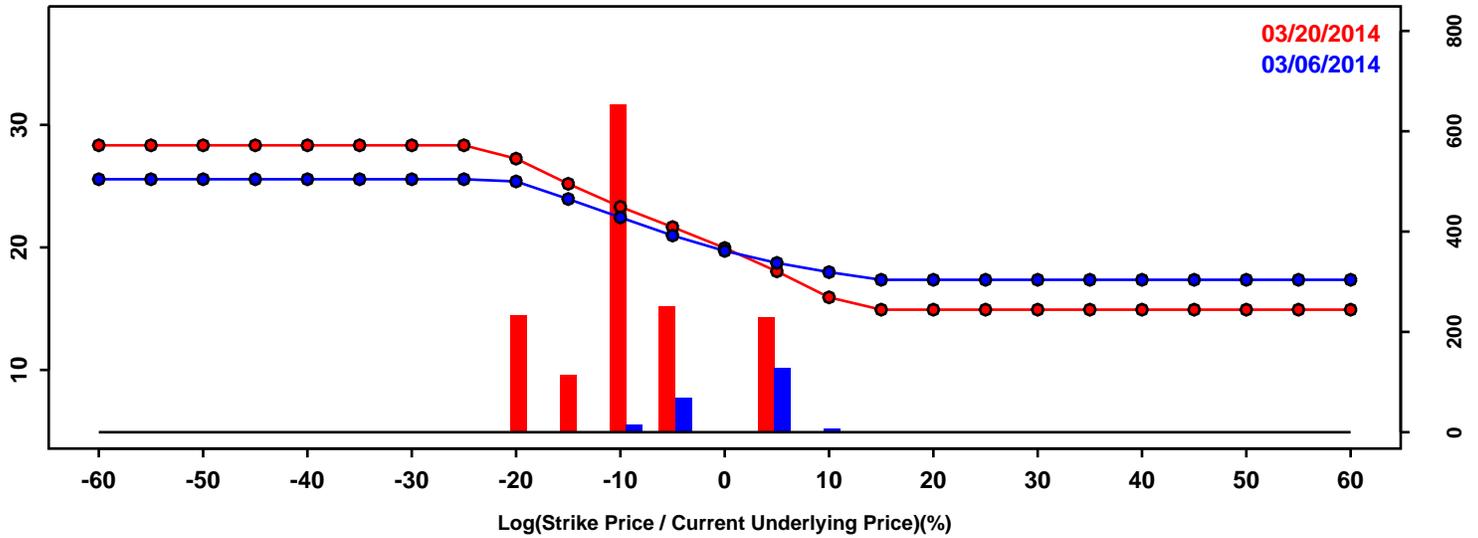


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-11.31%	-11.24%	0.06%
50th Pct	0.41%	0.31%	-0.10%
90th Pct	9.22%	9.38%	0.16%
Mean	-0.49%	-0.44%	0.04%
Std Dev	8.49%	8.43%	-0.06%
Skew	-0.80	-0.69	0.11
Kurtosis	1.46	1.15	-0.32

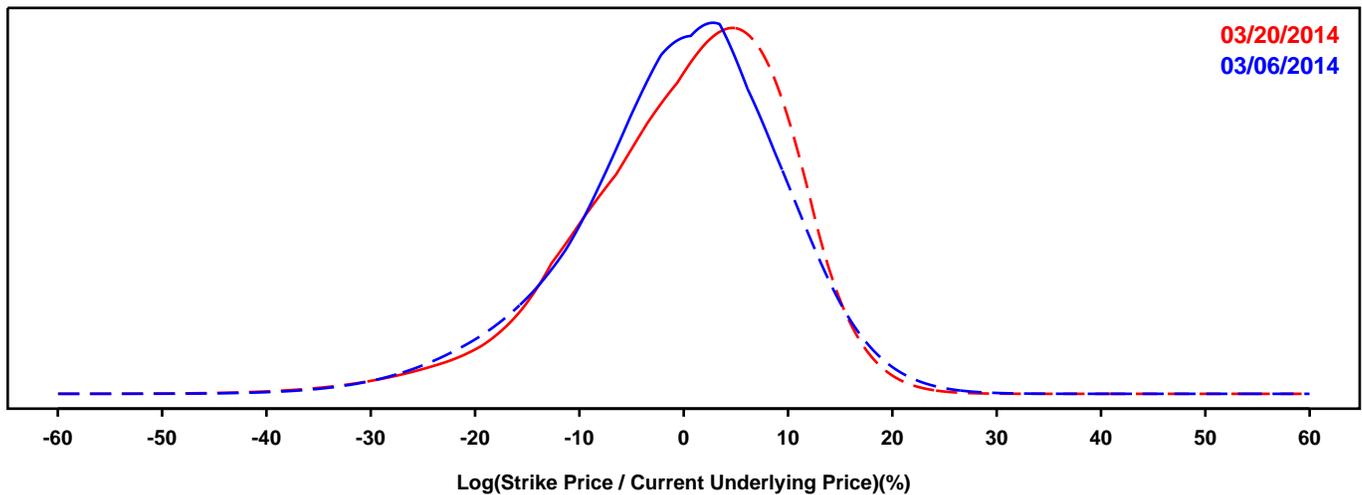
### RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- BANK OF NEW YORK MELLON

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

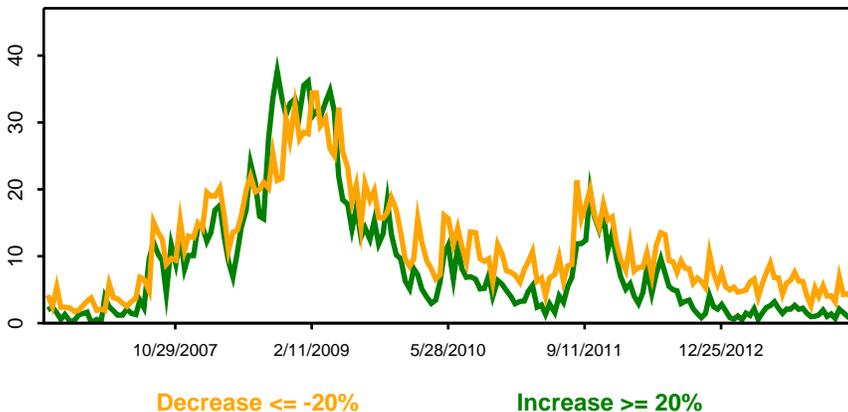
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

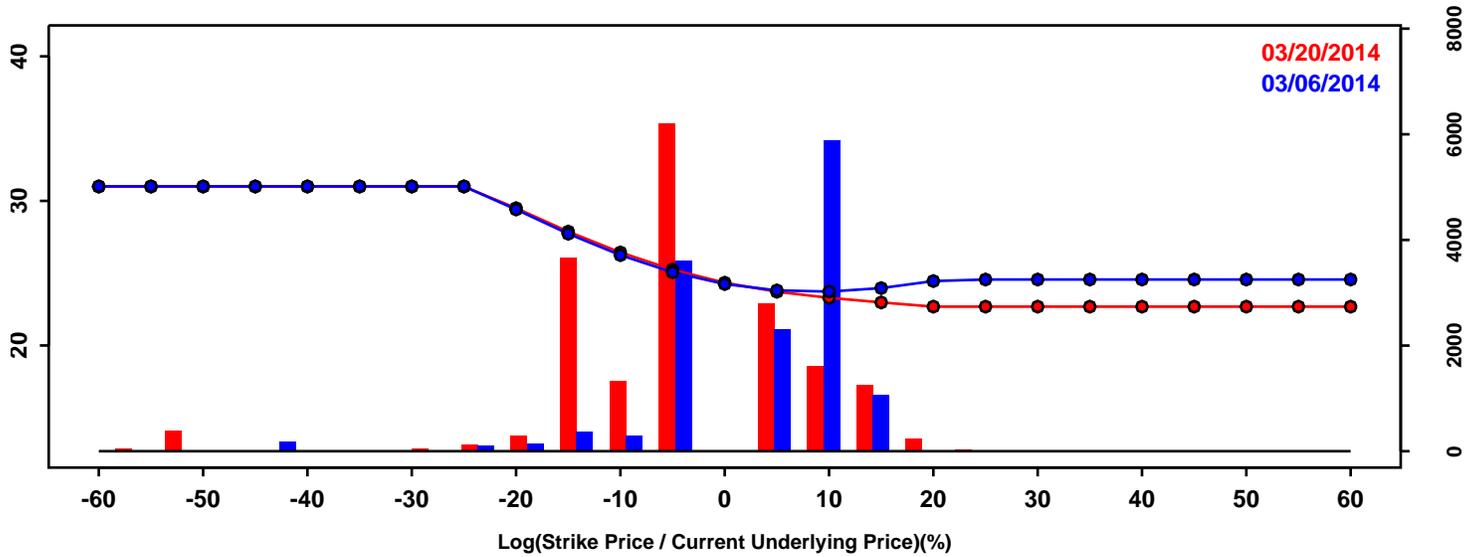


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-13.97%	-13.31%	0.66%
50th Pct	0.21%	1.28%	1.08%
90th Pct	11.33%	11.38%	0.05%
Mean	-0.66%	-0.07%	0.59%
Std Dev	10.09%	10.05%	-0.04%
Skew	-0.52	-0.75	-0.23
Kurtosis	0.62	0.89	0.27

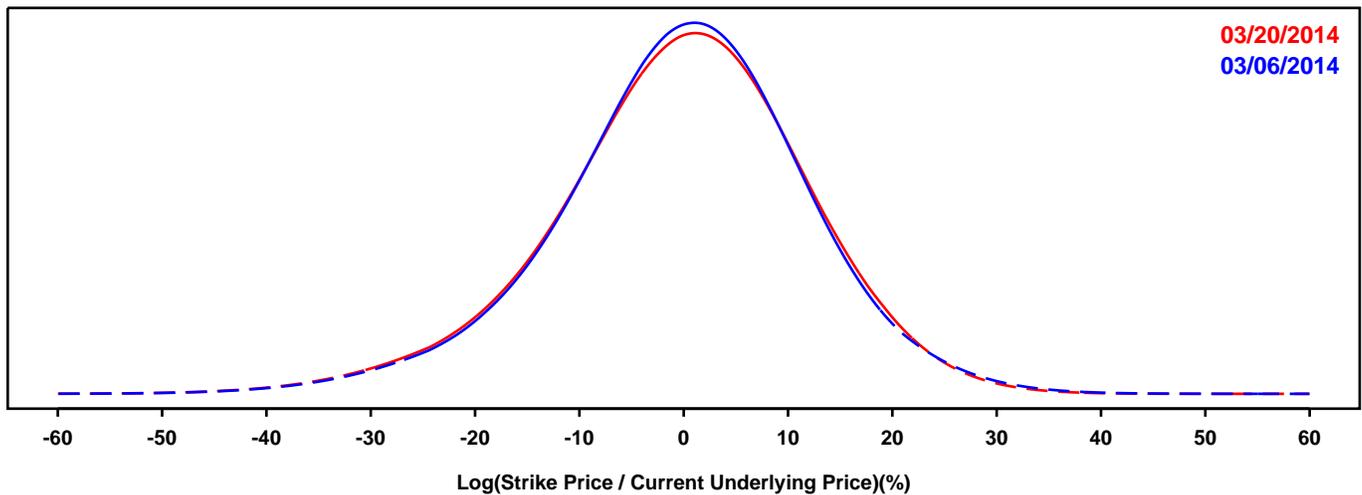
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CITIGROUP

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

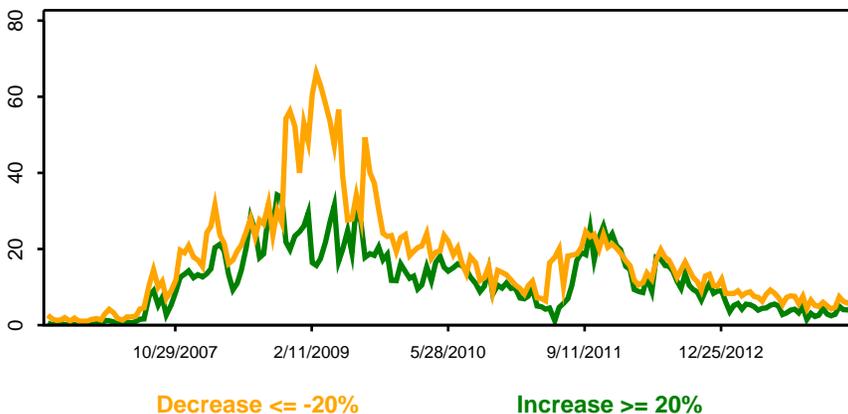
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

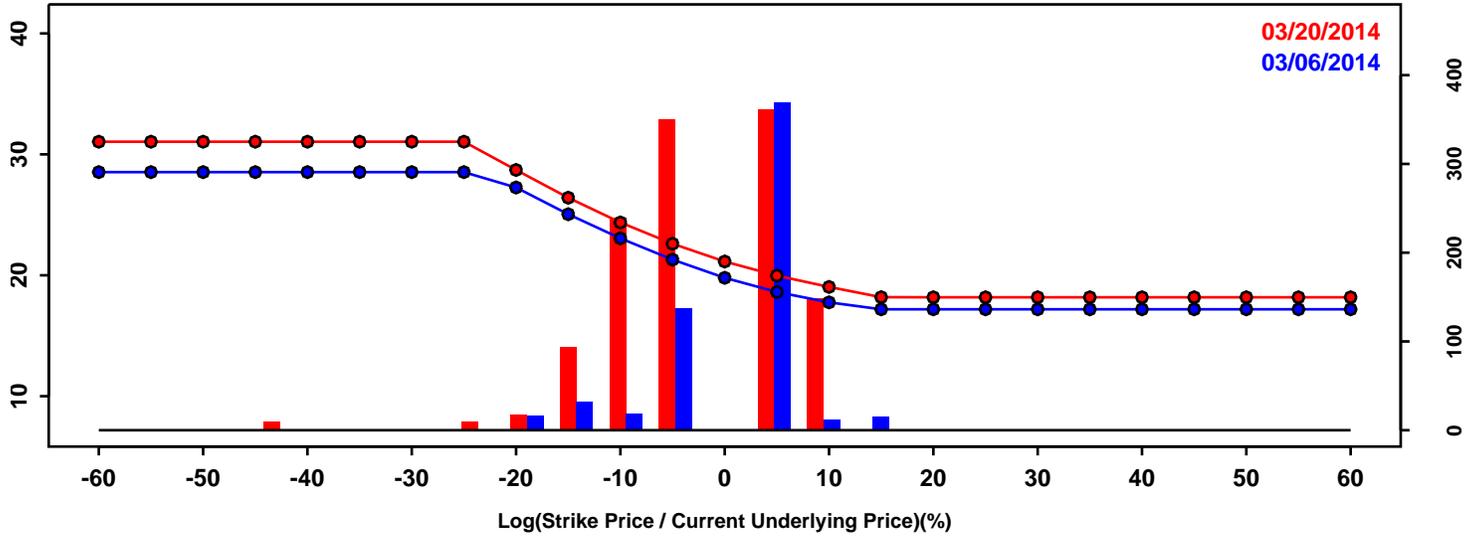


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-15.53%	-16.04%	-0.51%
50th Pct	0.30%	0.27%	-0.04%
90th Pct	14.36%	14.54%	0.19%
Mean	-0.20%	-0.34%	-0.14%
Std Dev	12.12%	12.26%	0.14%
Skew	-0.32	-0.37	-0.06
Kurtosis	0.69	0.57	-0.12

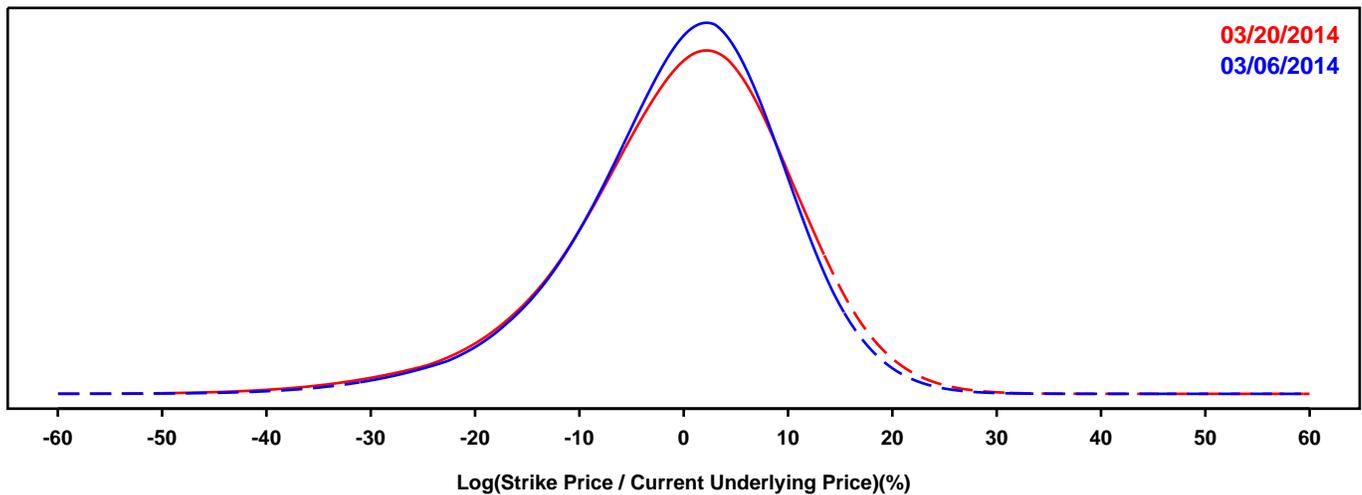
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CAPITAL ONE

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

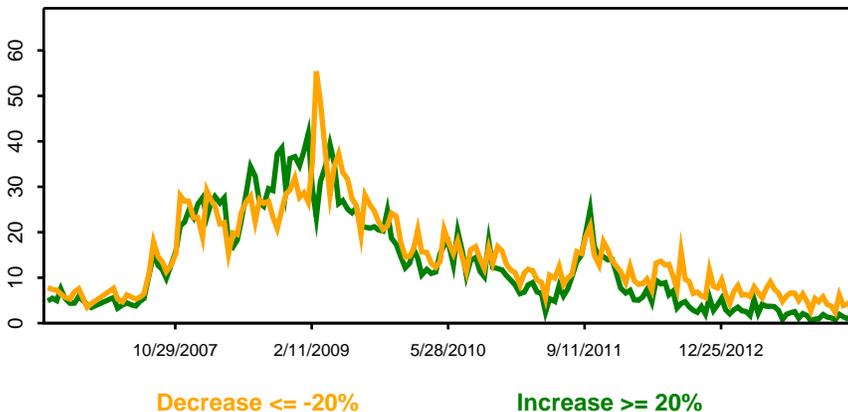
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

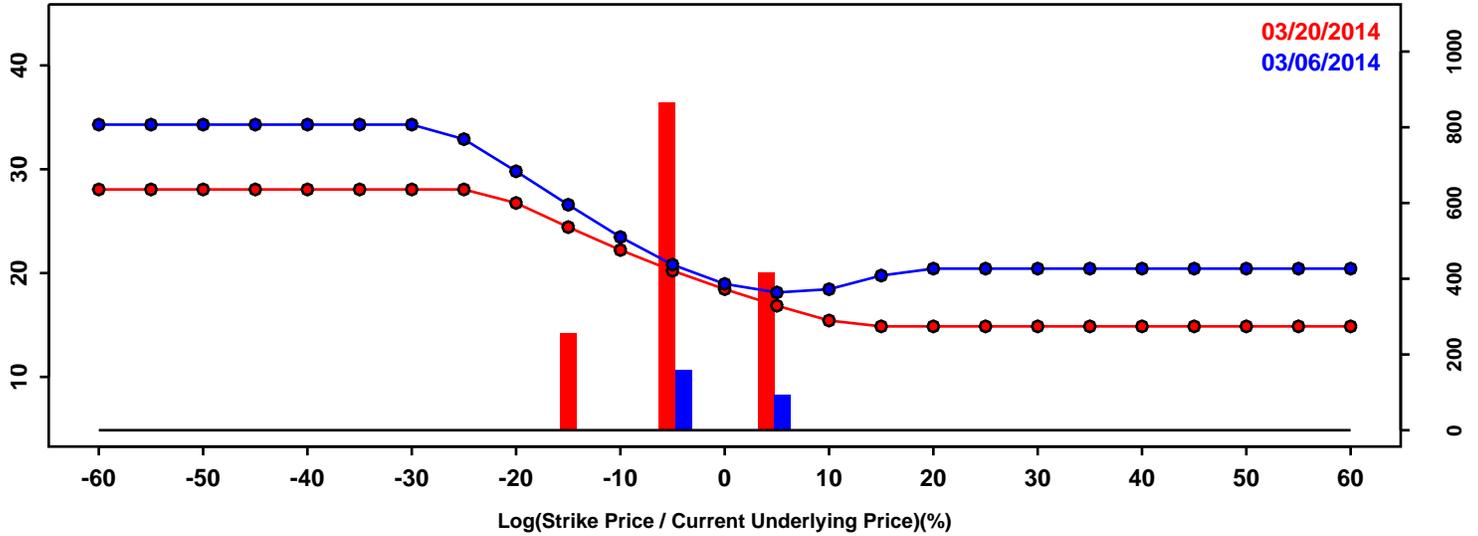


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-13.53%	-14.23%	-0.70%
50th Pct	0.50%	0.62%	0.13%
90th Pct	11.26%	12.25%	0.99%
Mean	-0.46%	-0.38%	0.09%
Std Dev	10.10%	10.81%	0.71%
Skew	-0.64	-0.65	-0.01
Kurtosis	1.01	1.06	0.05

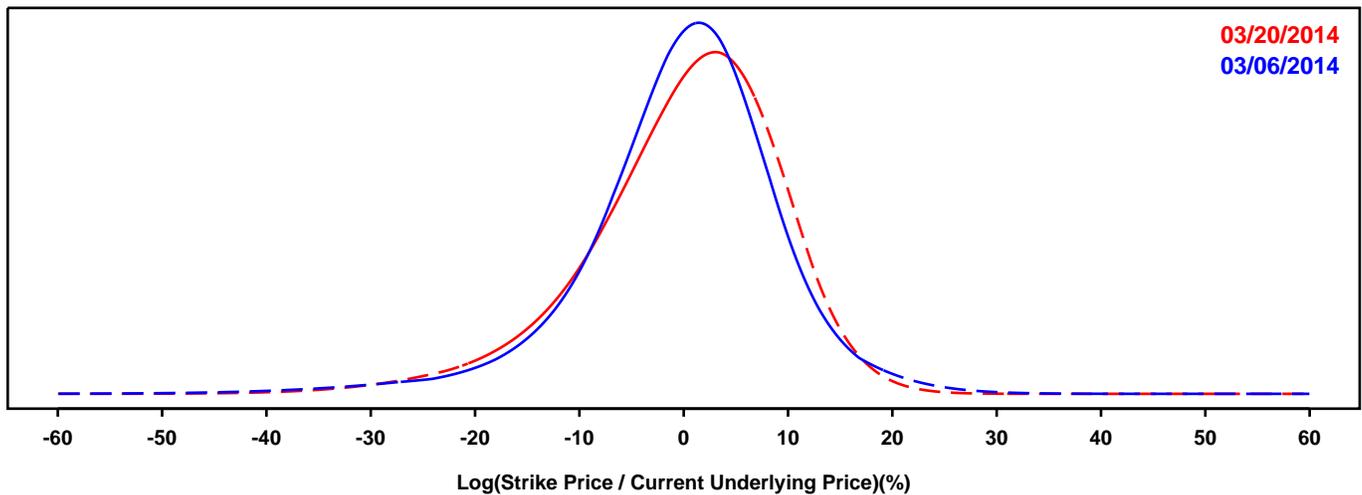
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- FIFTH THIRD

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

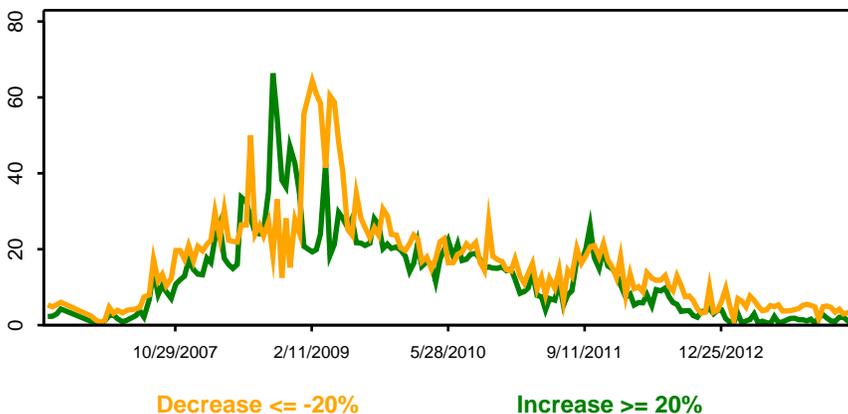
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

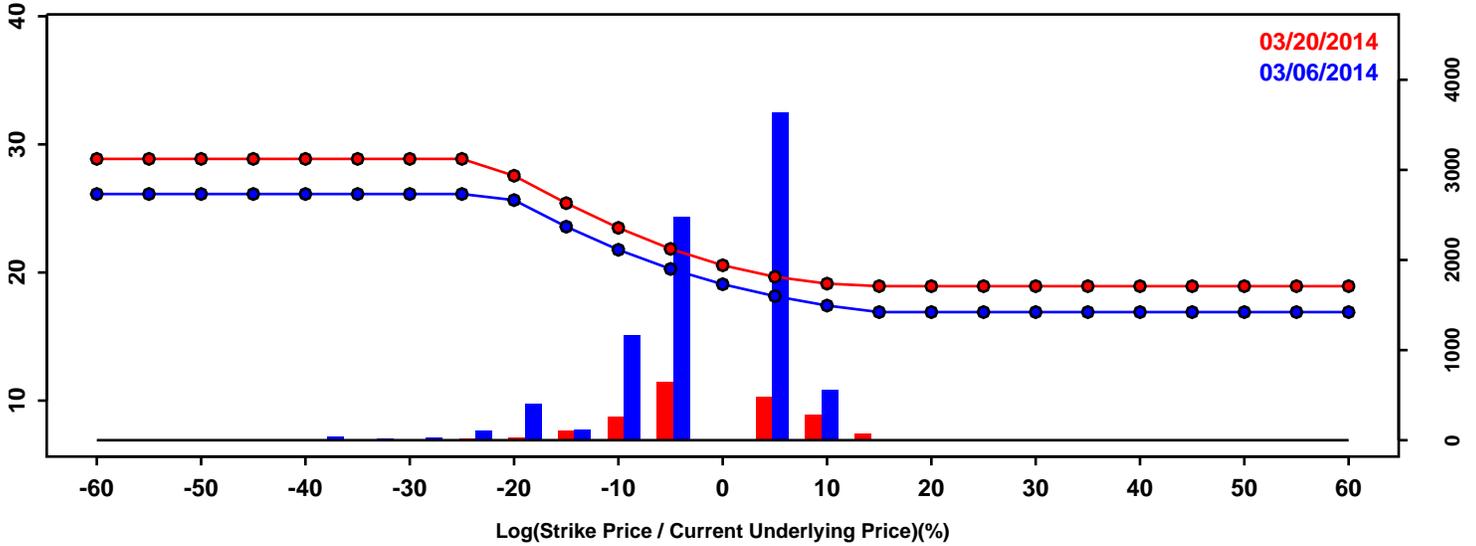


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-11.27%	-12.15%	-0.87%
50th Pct	0.55%	1.12%	0.57%
90th Pct	10.25%	10.67%	0.42%
Mean	-0.16%	0.02%	0.18%
Std Dev	9.45%	9.37%	-0.08%
Skew	-0.81	-0.79	0.02
Kurtosis	2.68	1.27	-1.41

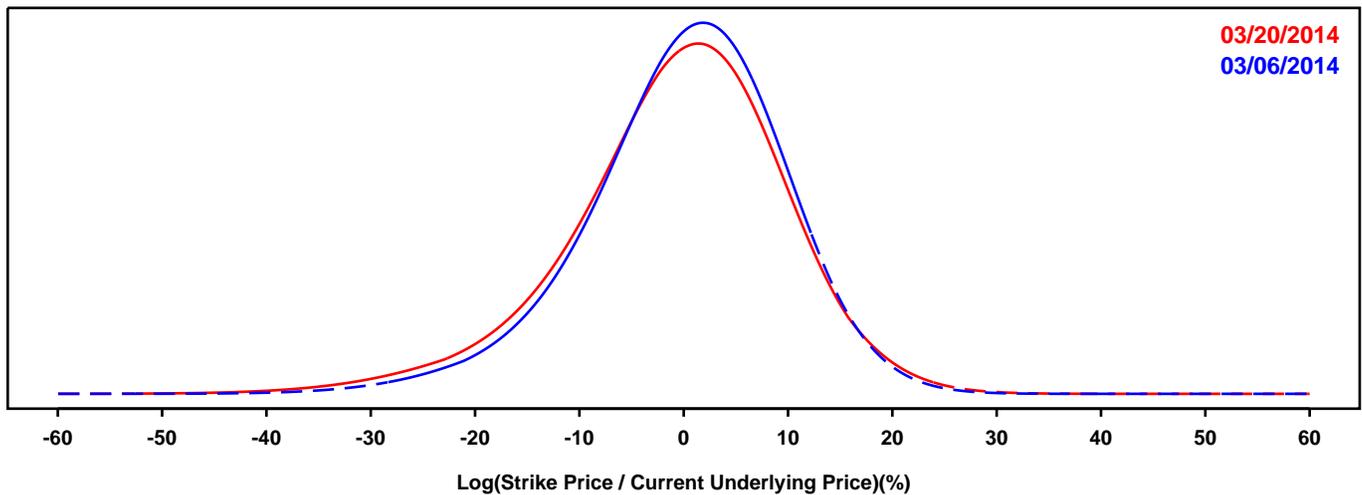
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- GOLDMAN SACHS

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

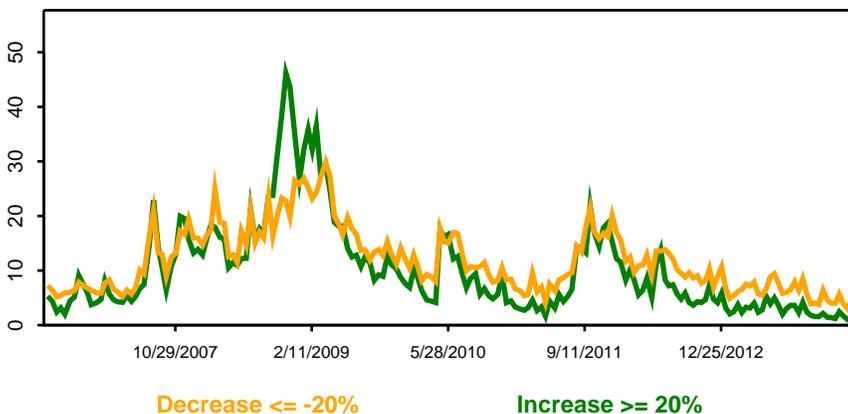
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

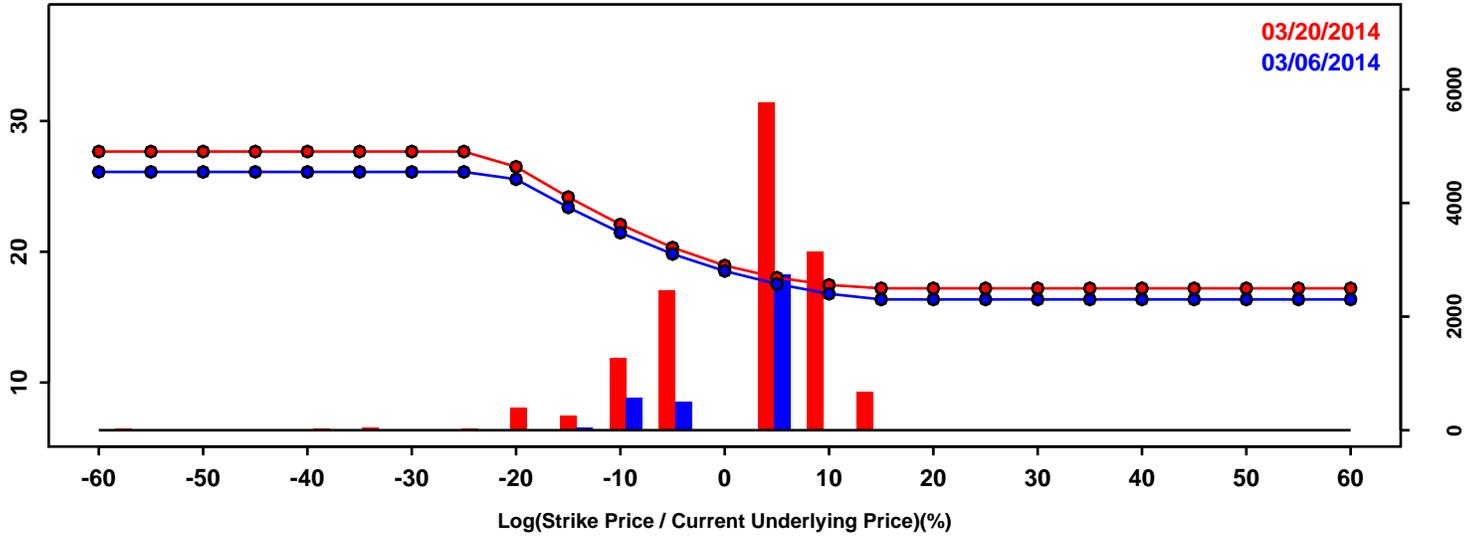


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-12.14%	-14.07%	-1.93%
50th Pct	0.84%	0.16%	-0.68%
90th Pct	11.57%	11.60%	0.04%
Mean	0.16%	-0.69%	-0.84%
Std Dev	9.57%	10.48%	0.90%
Skew	-0.50	-0.56	-0.06
Kurtosis	0.75	0.94	0.19

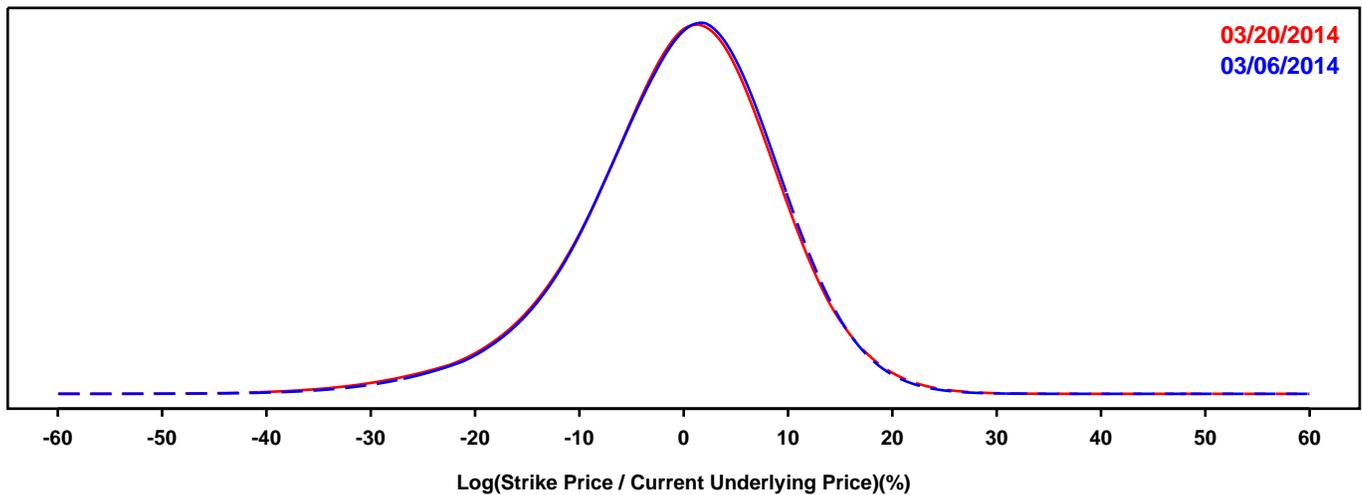
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- JP MORGAN

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)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

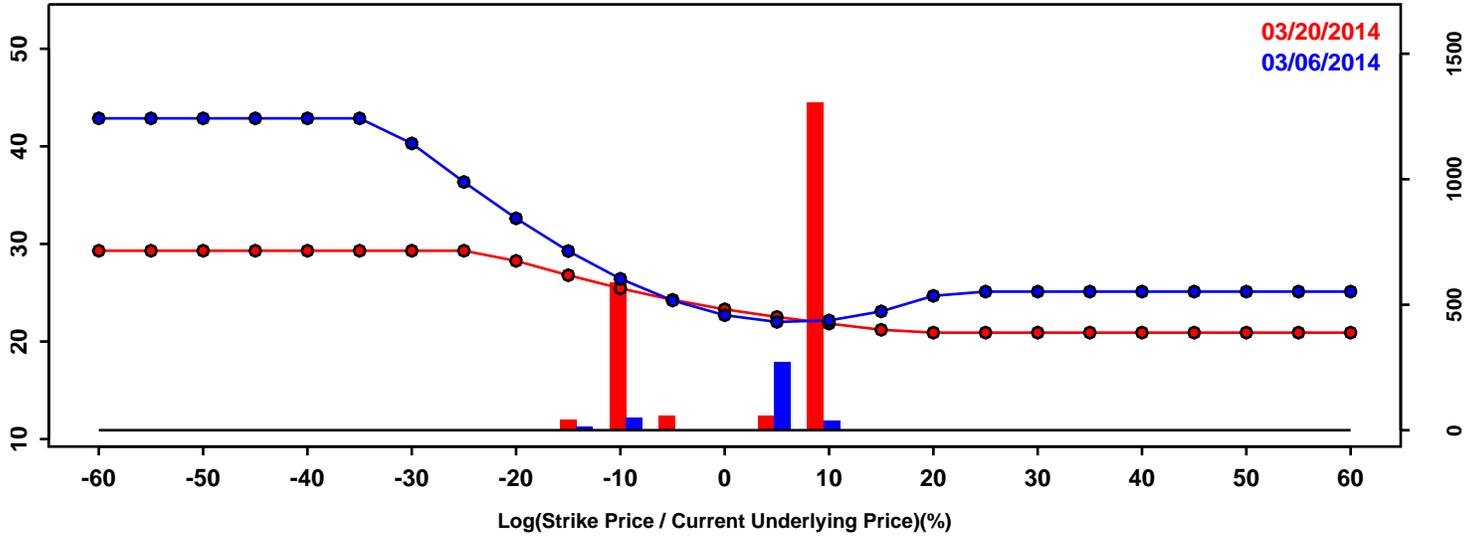


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-12.45%	-12.85%	-0.40%
50th Pct	0.35%	0.18%	-0.17%
90th Pct	10.71%	10.66%	-0.04%
Mean	-0.39%	-0.62%	-0.23%
Std Dev	9.38%	9.64%	0.25%
Skew	-0.56	-0.59	-0.04
Kurtosis	0.87	1.07	0.20

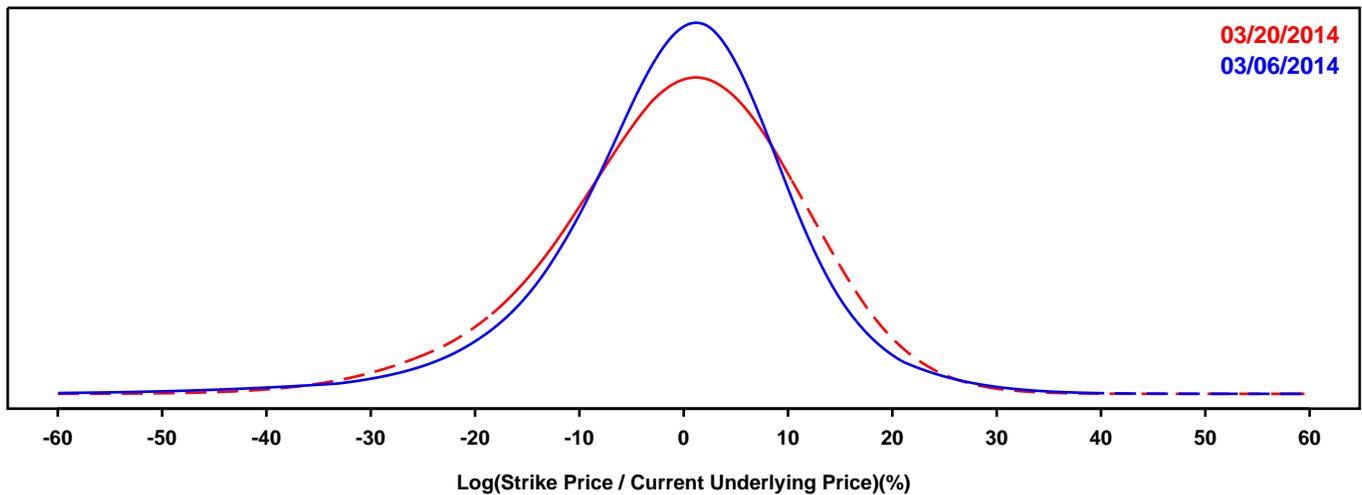
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- KEYCORP

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

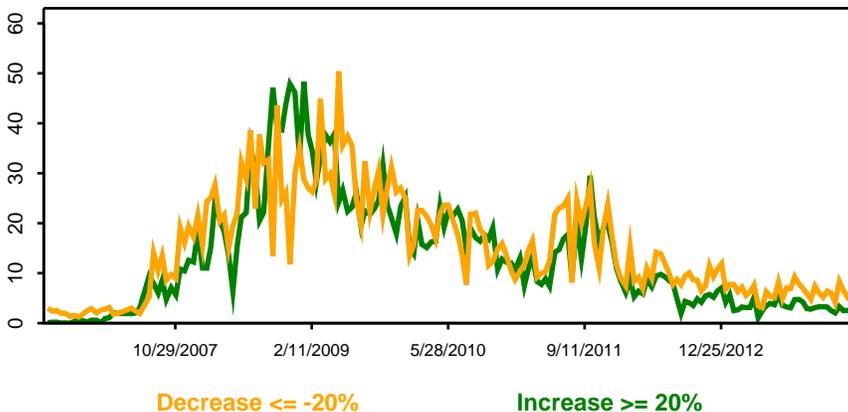
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

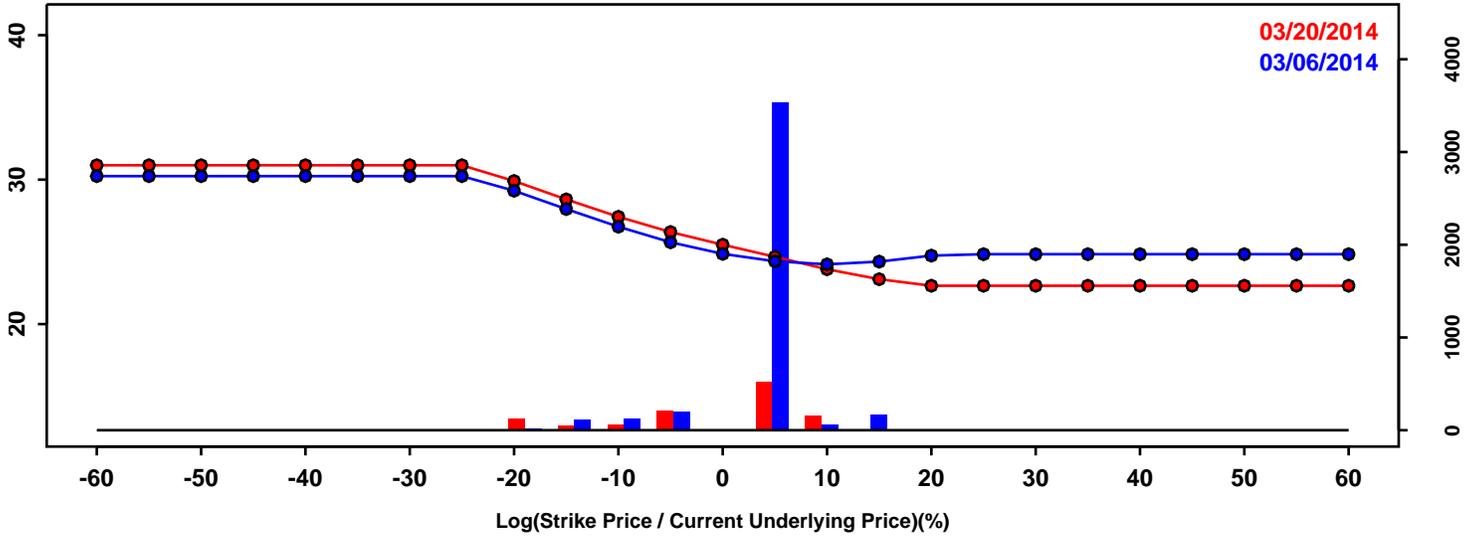


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-14.45%	-15.94%	-1.49%
50th Pct	0.13%	0.13%	0.01%
90th Pct	12.21%	13.66%	1.45%
Mean	-0.72%	-0.62%	0.10%
Std Dev	11.52%	11.80%	0.29%
Skew	-0.73	-0.42	0.32
Kurtosis	2.50	0.48	-2.02

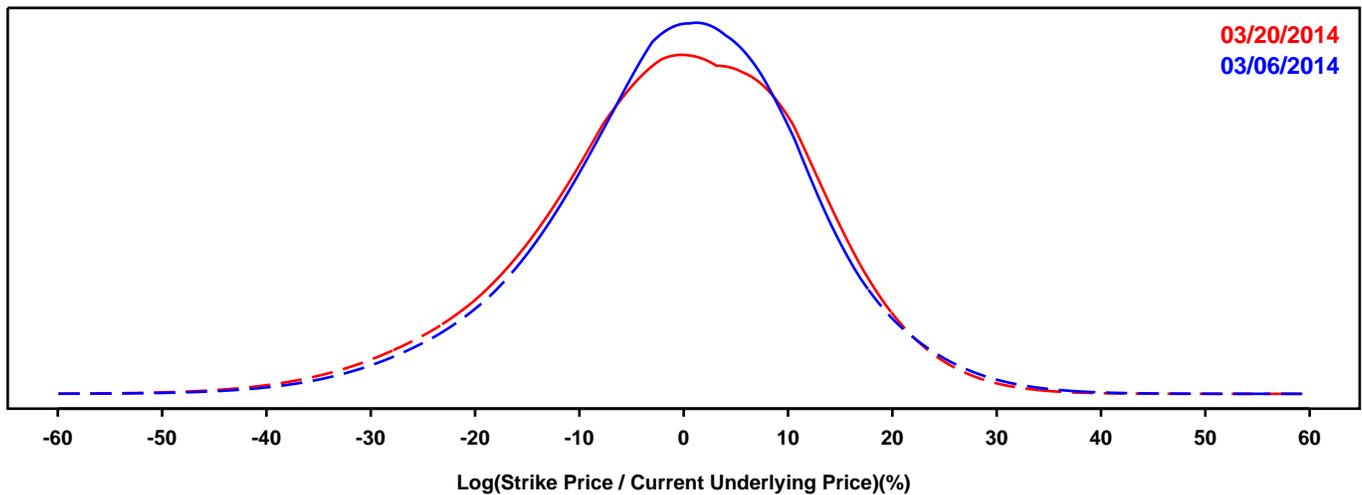
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- MORGAN STANLEY

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

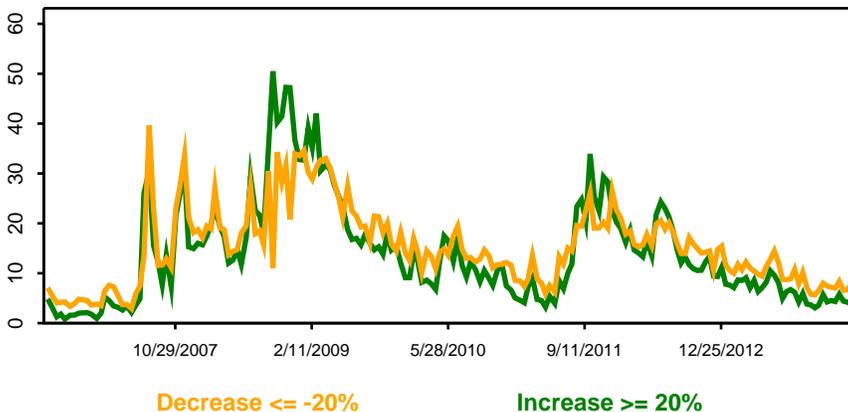
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

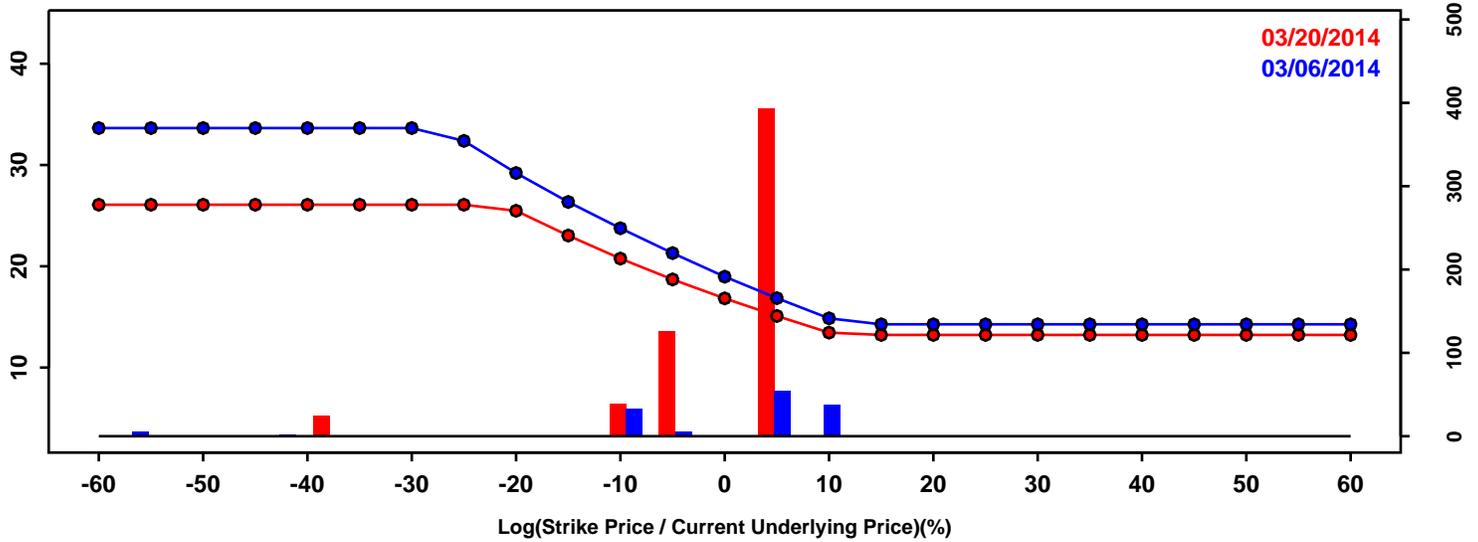


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-16.52%	-17.81%	-1.30%
50th Pct	0.25%	-0.08%	-0.33%
90th Pct	14.49%	14.61%	0.12%
Mean	-0.40%	-0.89%	-0.49%
Std Dev	12.47%	12.91%	0.44%
Skew	-0.31	-0.41	-0.09
Kurtosis	0.53	0.36	-0.17

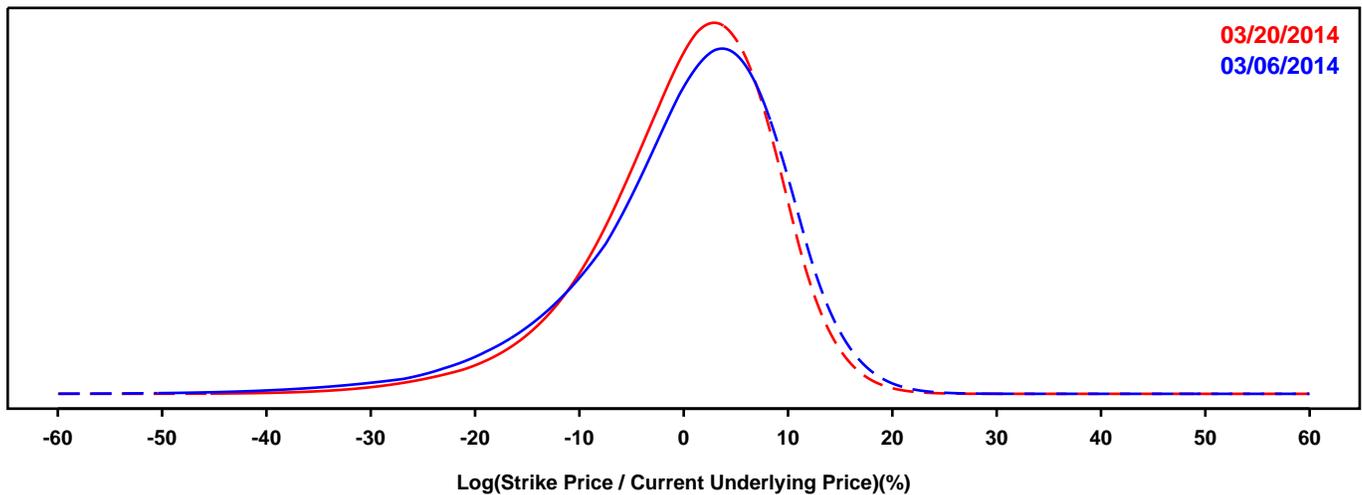
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- PNC FINANCIAL

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

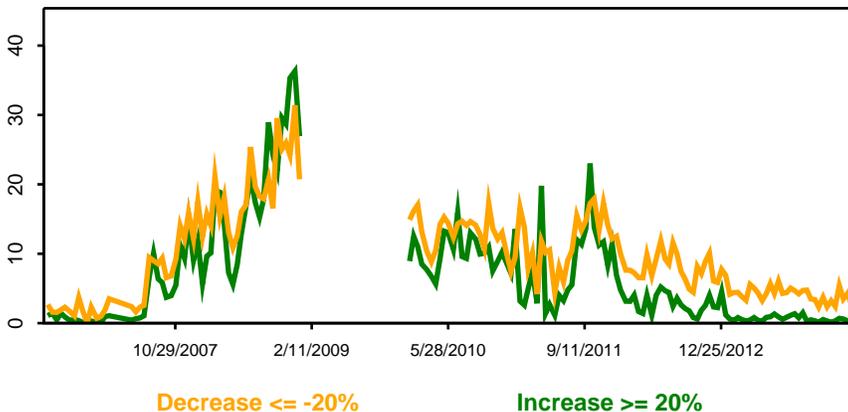
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

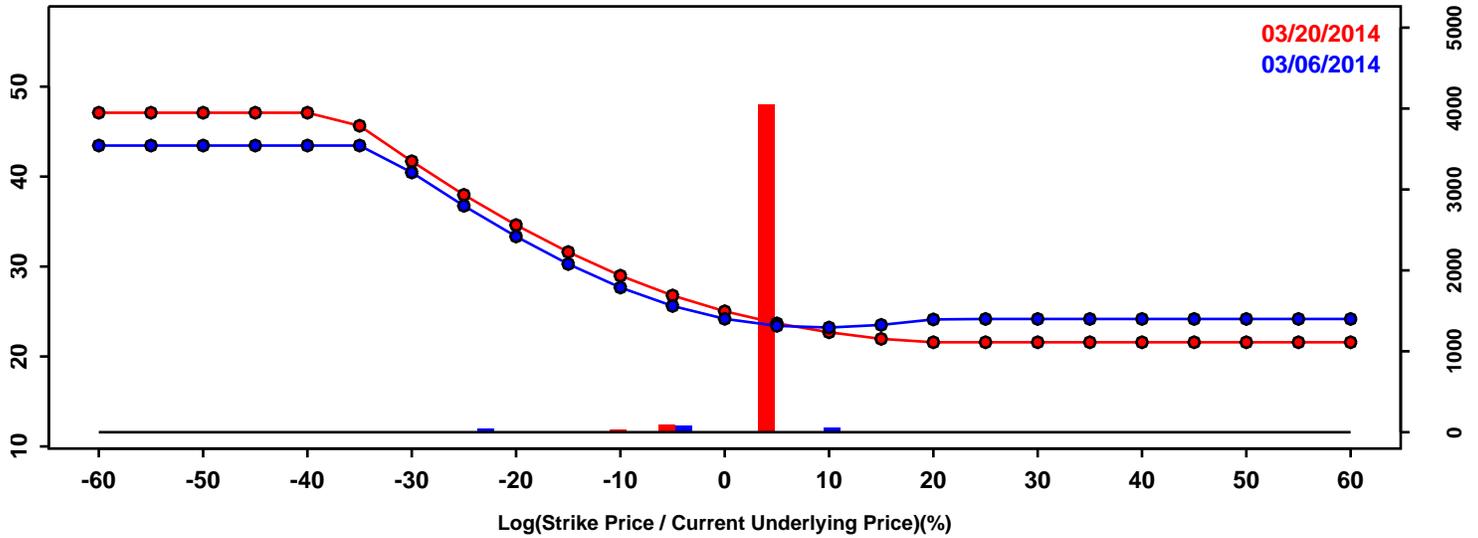


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-13.01%	-11.22%	1.79%
50th Pct	1.45%	1.12%	-0.33%
90th Pct	10.62%	9.68%	-0.93%
Mean	-0.10%	0.01%	0.12%
Std Dev	9.90%	8.60%	-1.31%
Skew	-1.07	-0.84	0.23
Kurtosis	2.10	1.35	-0.75

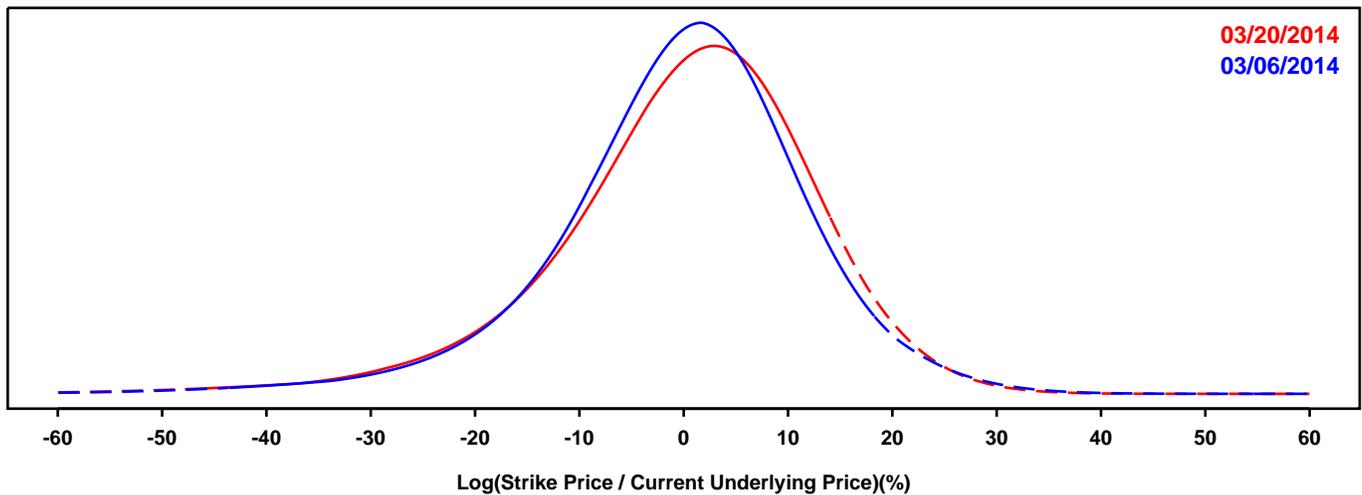
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- REGIONS FINANCIAL

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

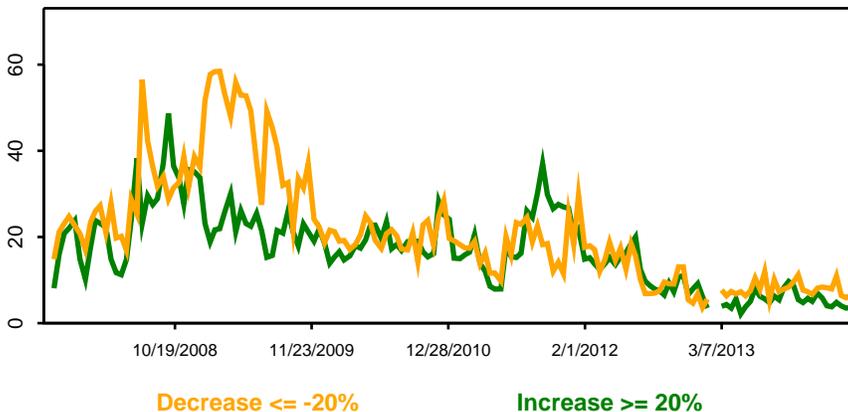
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

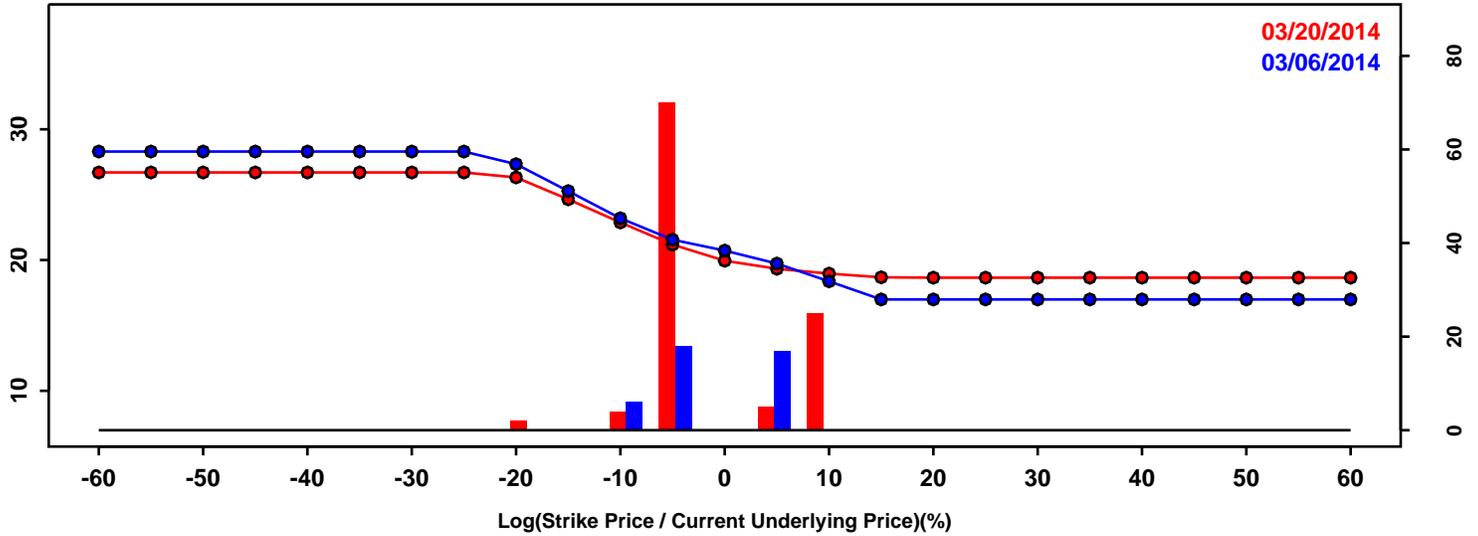


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-15.12%	-15.73%	-0.60%
50th Pct	0.55%	1.34%	0.79%
90th Pct	13.78%	14.63%	0.85%
Mean	-0.31%	0.10%	0.41%
Std Dev	12.33%	12.82%	0.49%
Skew	-0.72	-0.89	-0.17
Kurtosis	2.12	2.23	0.11

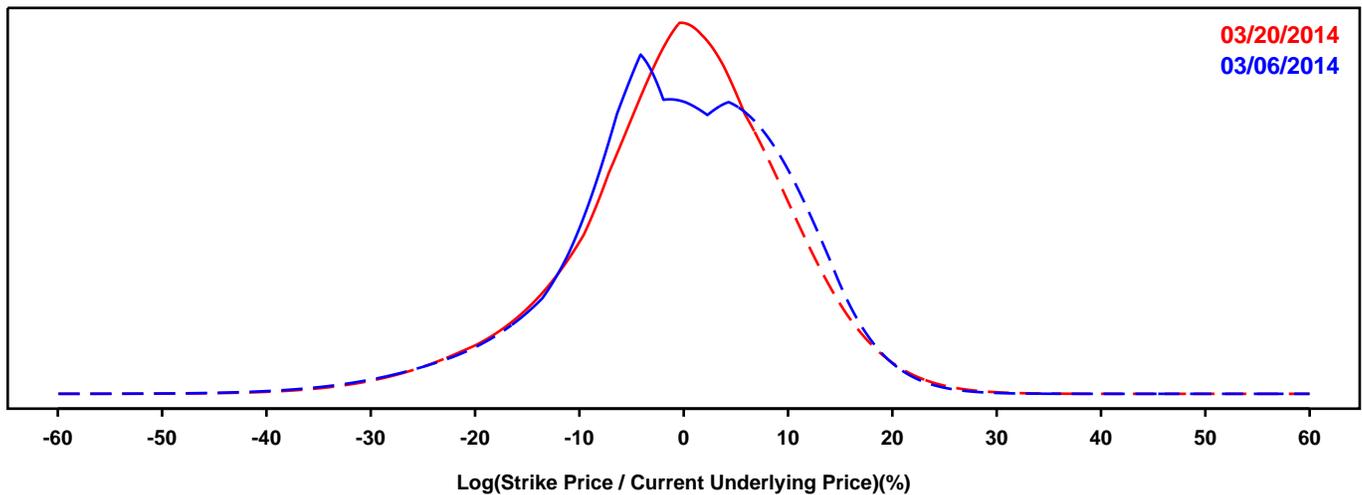
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- SUNTRUST

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

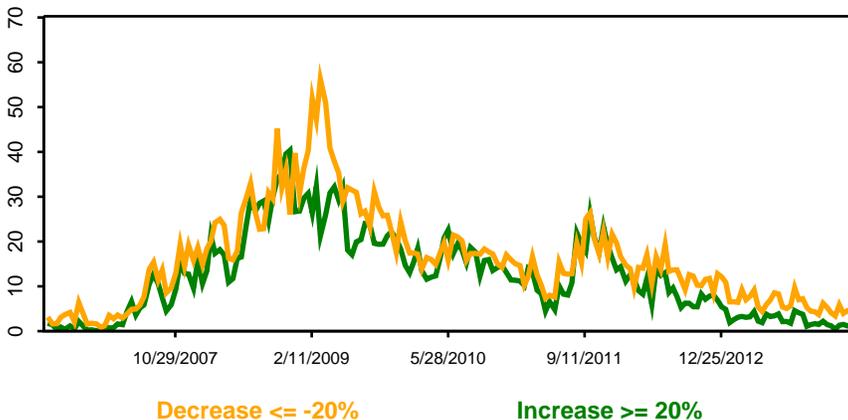
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

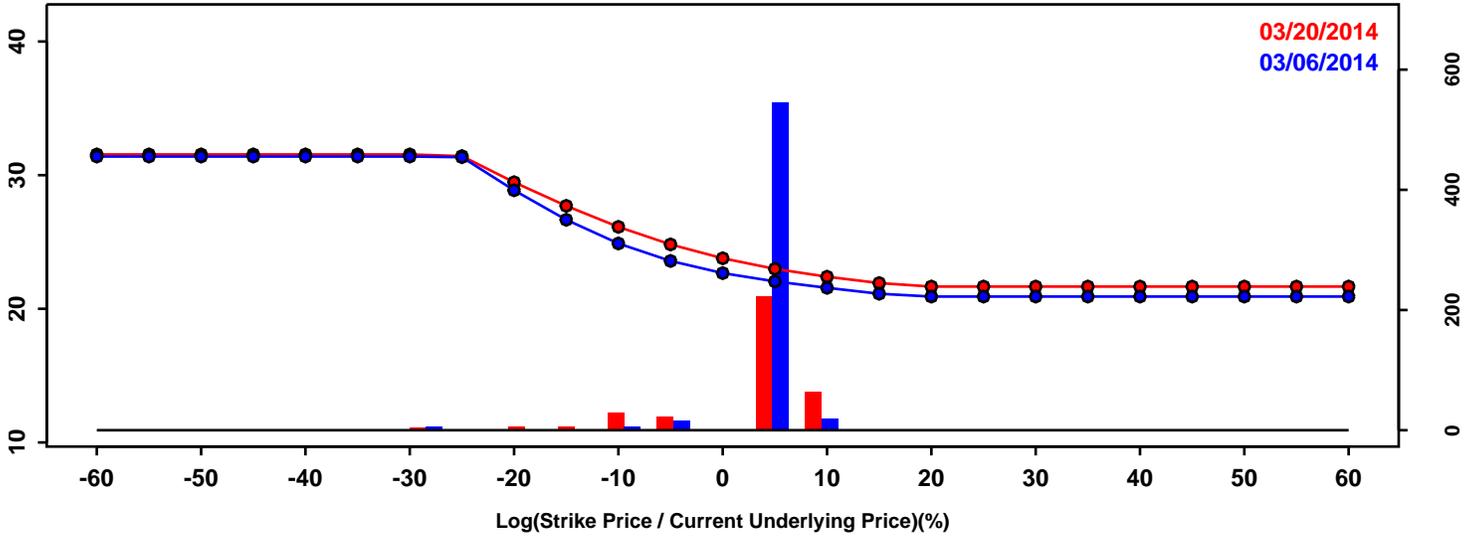


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-13.57%	-13.66%	-0.09%
50th Pct	-0.04%	0.12%	0.15%
90th Pct	12.25%	11.64%	-0.62%
Mean	-0.46%	-0.53%	-0.07%
Std Dev	10.51%	10.20%	-0.31%
Skew	-0.55	-0.50	0.05
Kurtosis	0.75	0.84	0.09

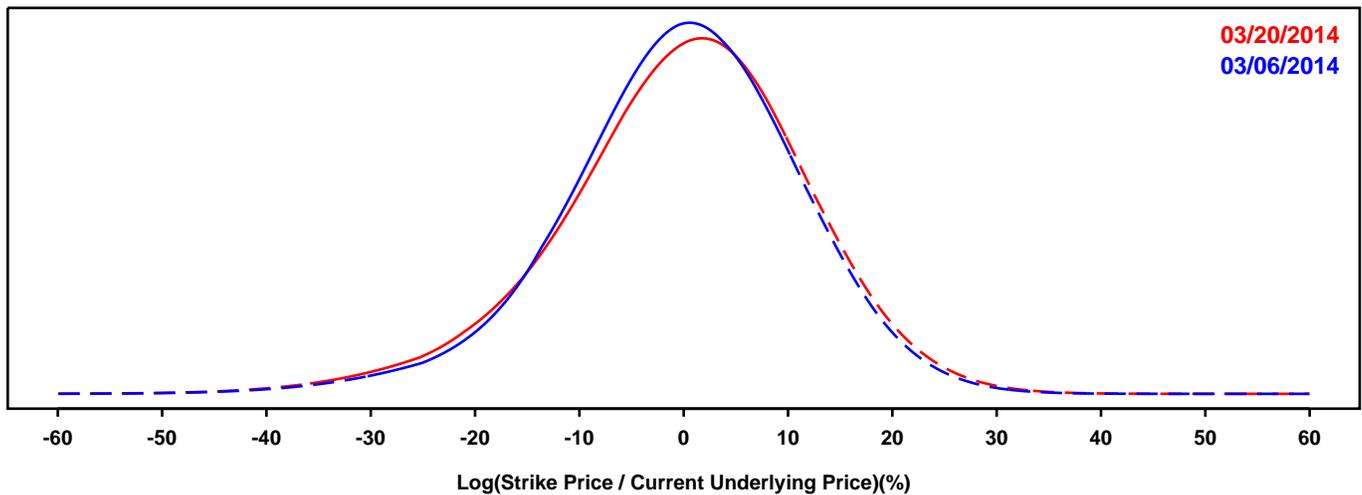
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- STATE STREET

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

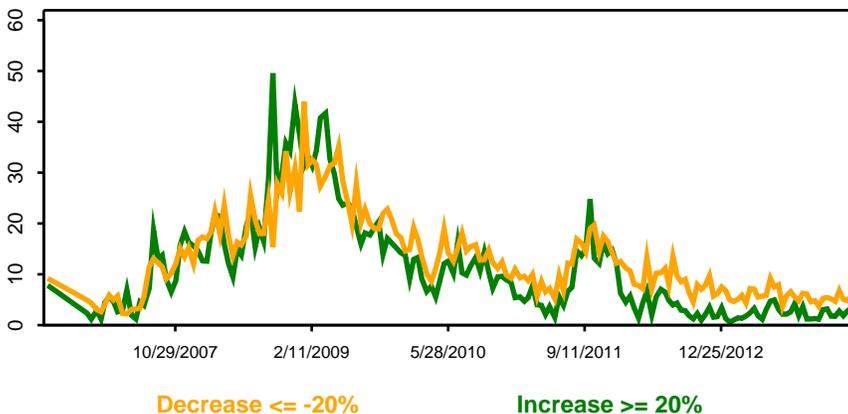
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

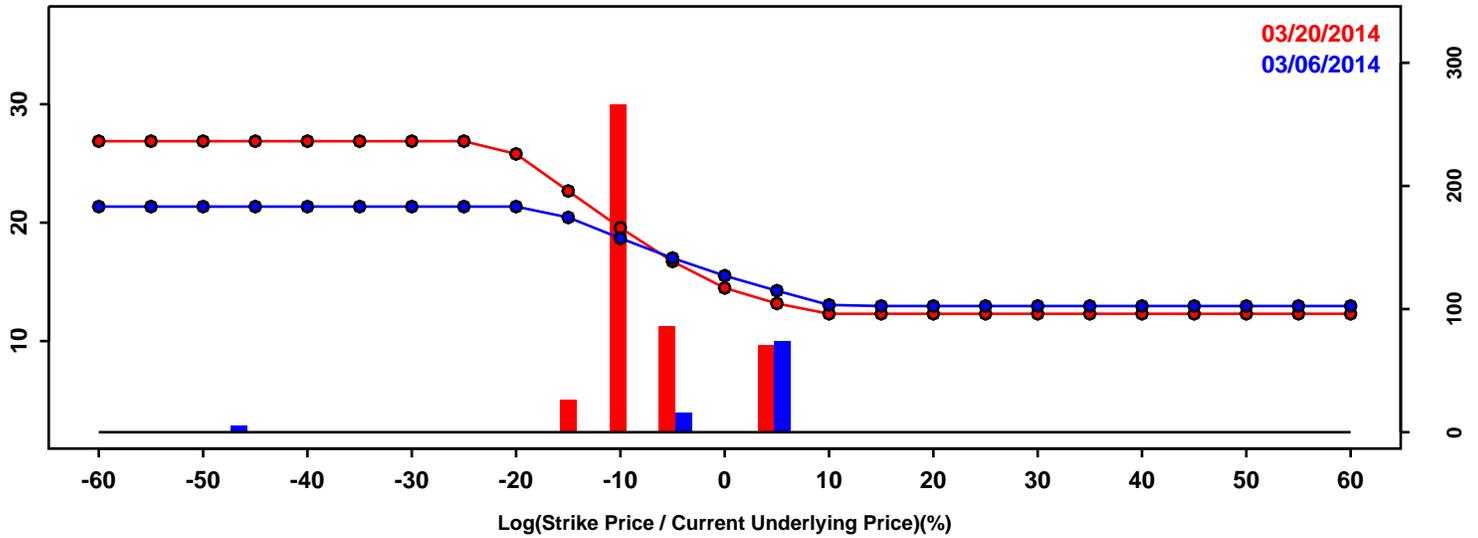


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-14.49%	-15.41%	-0.92%
50th Pct	0.20%	0.62%	0.42%
90th Pct	13.56%	14.28%	0.72%
Mean	-0.29%	-0.11%	0.17%
Std Dev	11.36%	11.94%	0.58%
Skew	-0.40	-0.44	-0.03
Kurtosis	0.76	0.66	-0.10

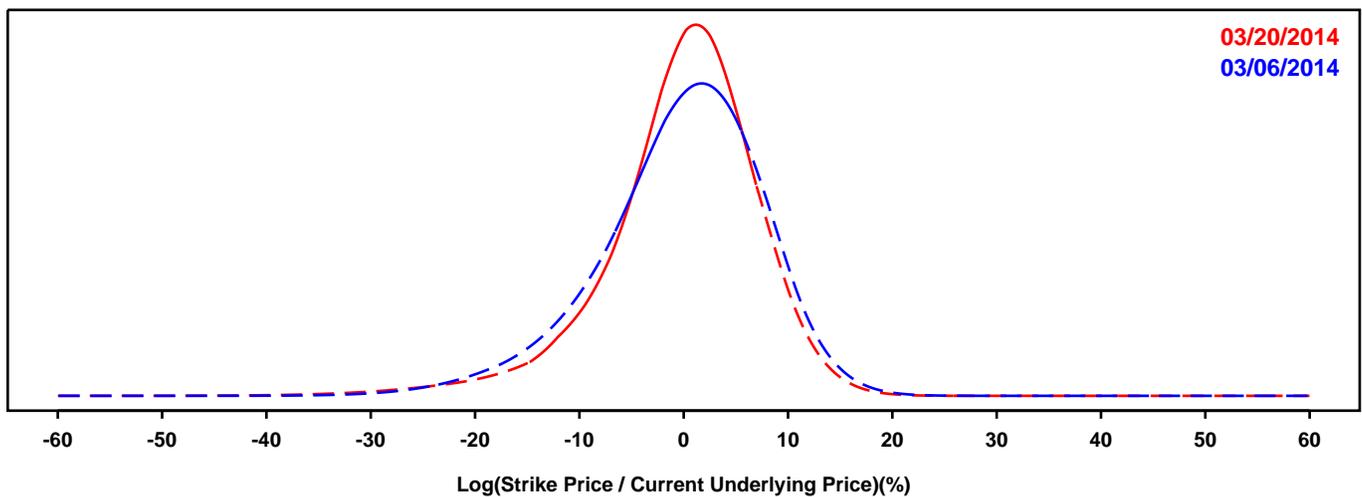
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- US BANCORP

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

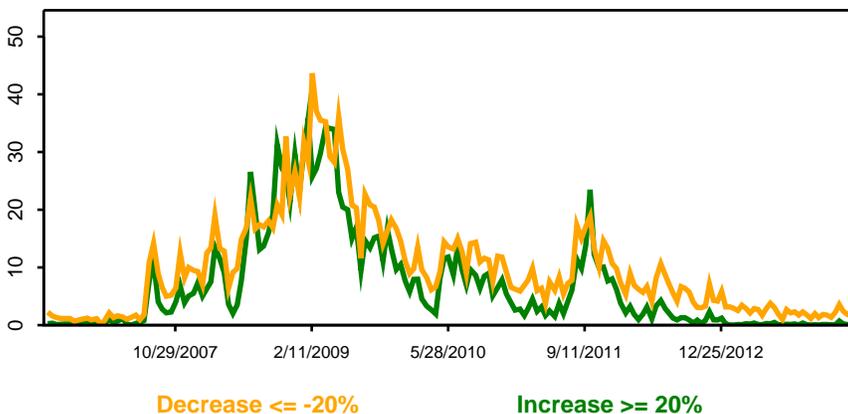
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

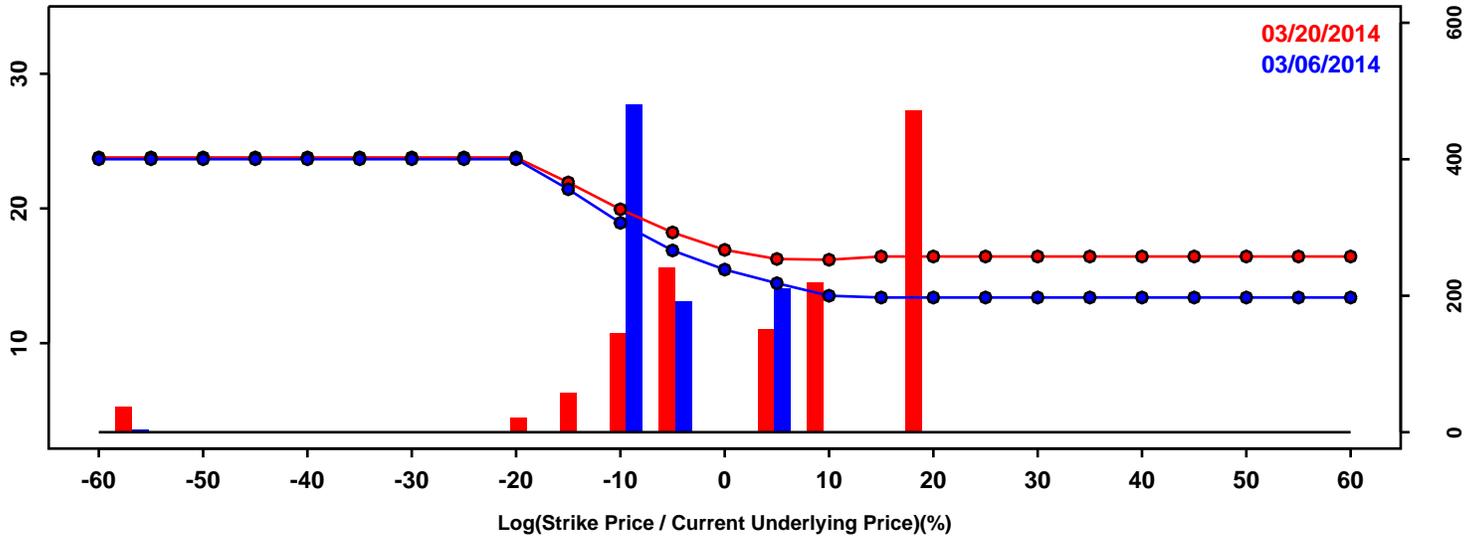


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-10.66%	-9.37%	1.29%
50th Pct	0.50%	0.53%	0.03%
90th Pct	8.95%	8.11%	-0.84%
Mean	-0.25%	-0.24%	0.01%
Std Dev	7.91%	7.50%	-0.41%
Skew	-0.63	-1.02	-0.39
Kurtosis	0.80	2.60	1.81

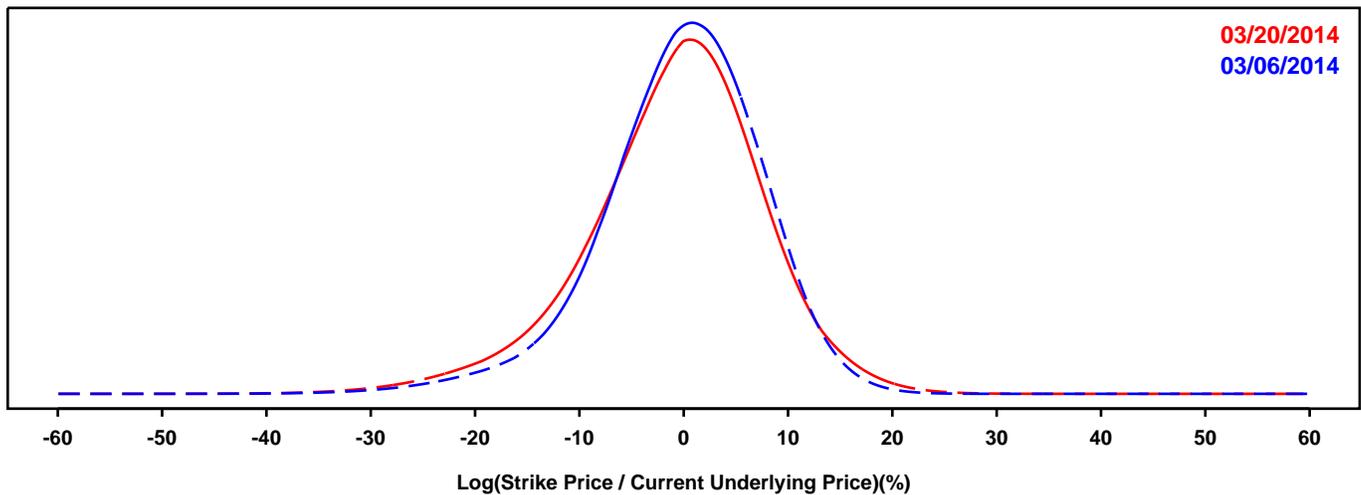
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- WELLS FARGO

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

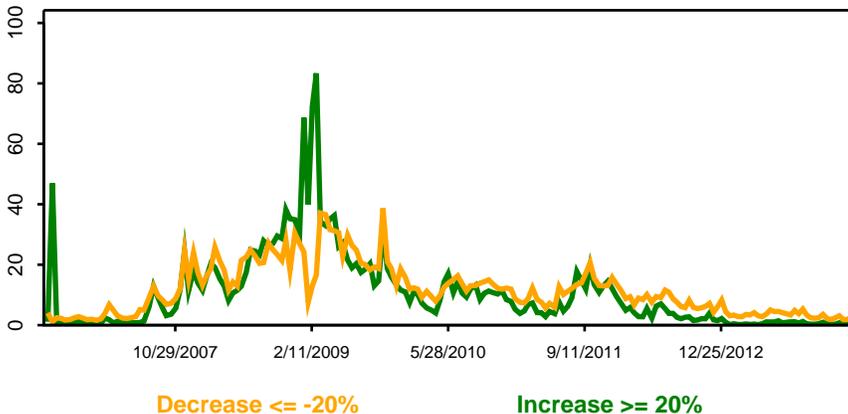
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

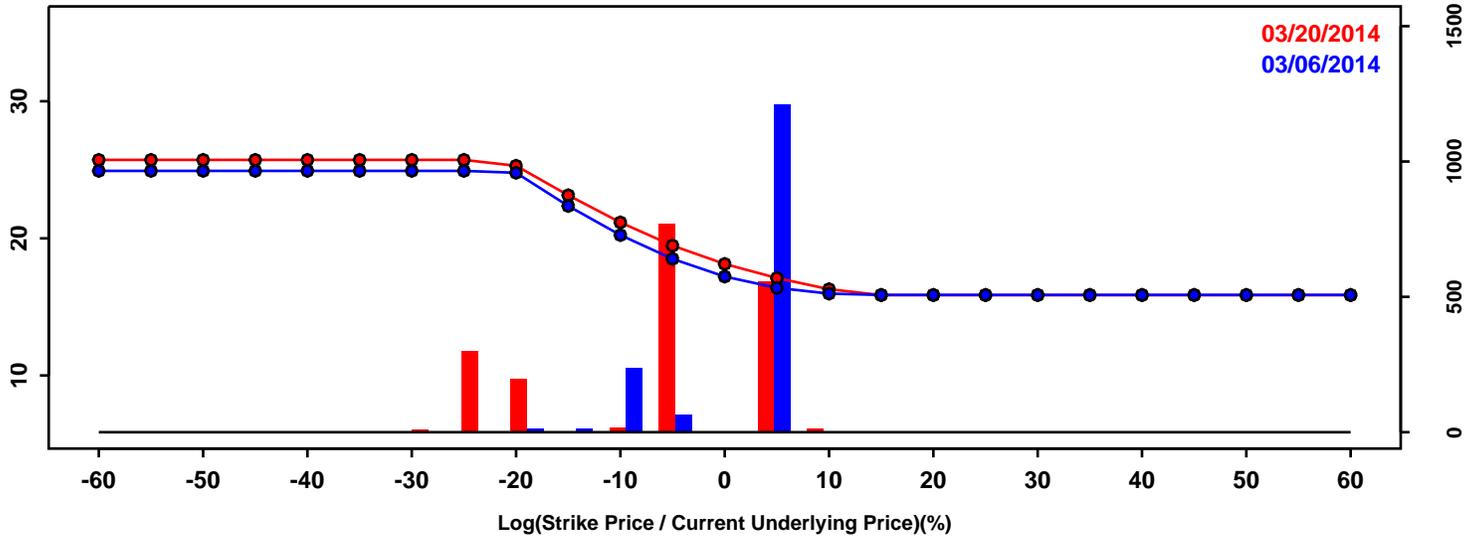


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-9.95%	-11.82%	-1.87%
50th Pct	0.30%	-0.19%	-0.50%
90th Pct	8.95%	9.19%	0.23%
Mean	-0.25%	-0.86%	-0.61%
Std Dev	7.80%	8.61%	0.81%
Skew	-0.64	-0.53	0.11
Kurtosis	1.24	1.00	-0.23

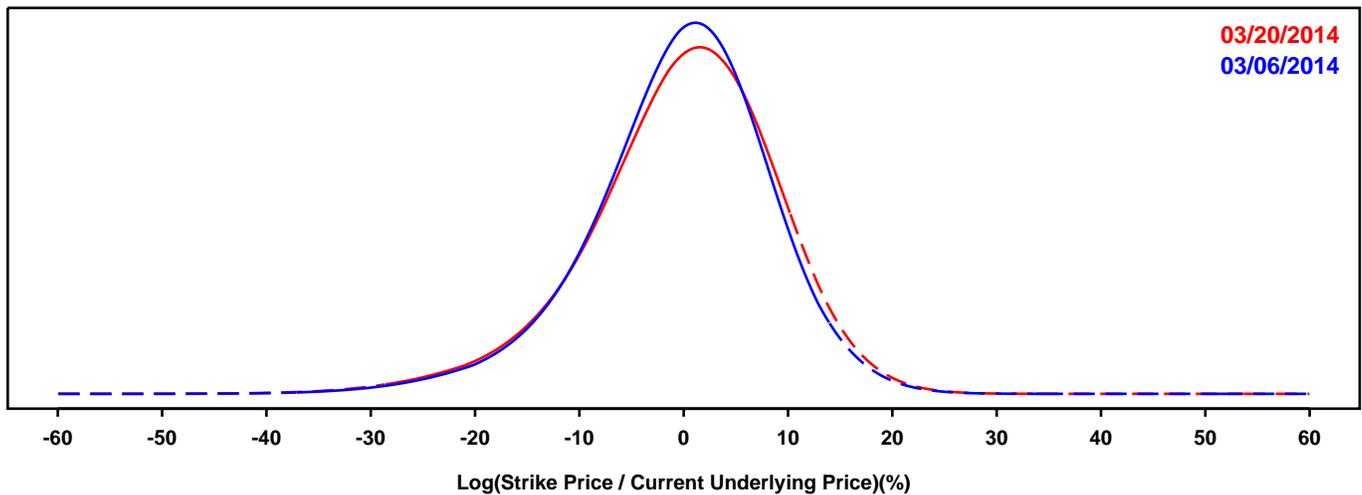
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- AFLAC

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

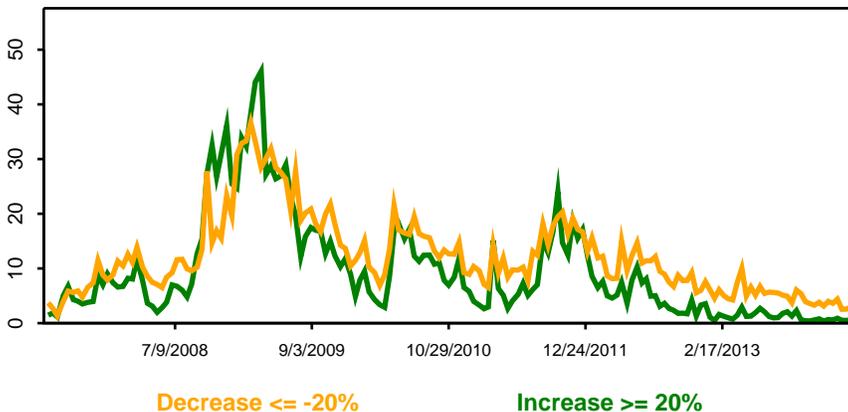
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

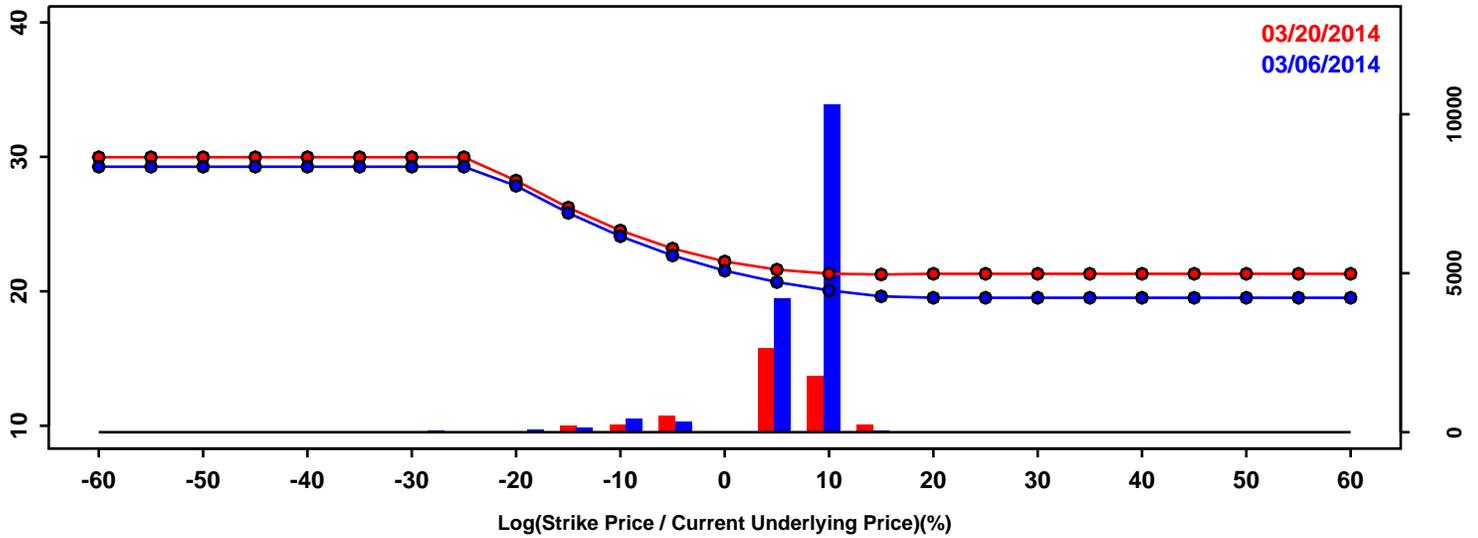


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-11.44%	-11.90%	-0.46%
50th Pct	0.25%	0.56%	0.31%
90th Pct	9.88%	10.61%	0.73%
Mean	-0.39%	-0.17%	0.22%
Std Dev	8.72%	9.16%	0.44%
Skew	-0.55	-0.58	-0.03
Kurtosis	1.01	0.91	-0.10

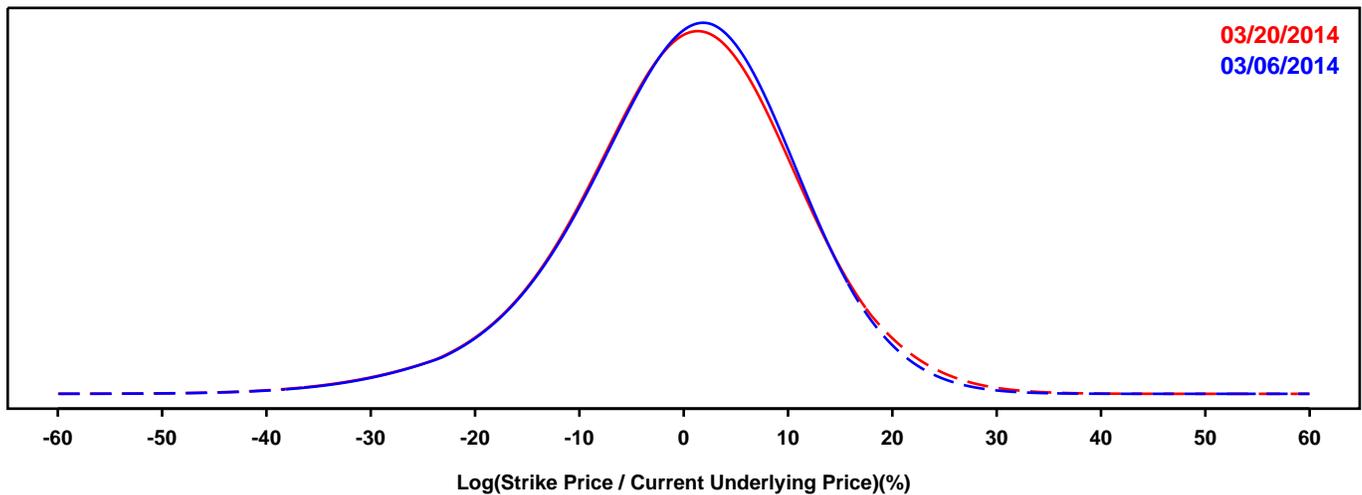
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- AIG

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

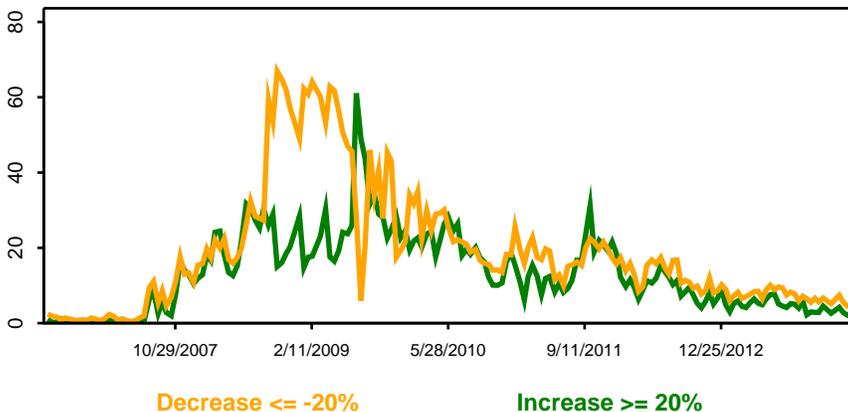
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

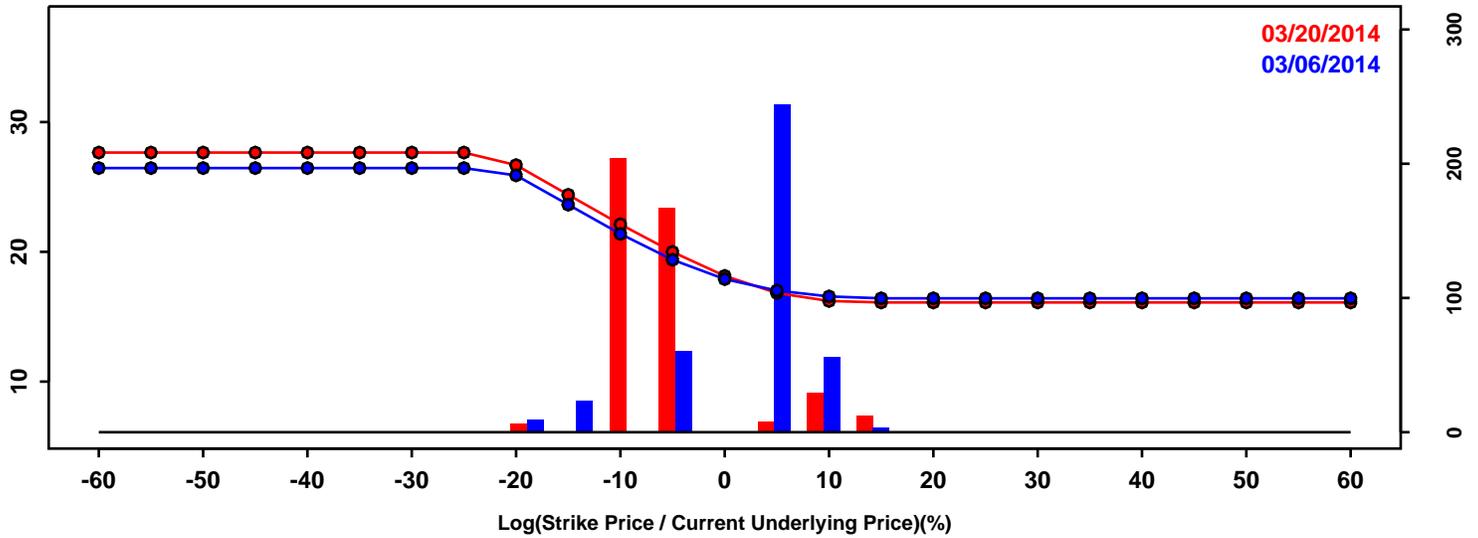


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-13.98%	-14.08%	-0.10%
50th Pct	0.65%	0.56%	-0.09%
90th Pct	12.89%	13.37%	0.49%
Mean	-0.07%	0.00%	0.08%
Std Dev	10.85%	11.15%	0.30%
Skew	-0.48	-0.40	0.08
Kurtosis	0.75	0.76	0.01

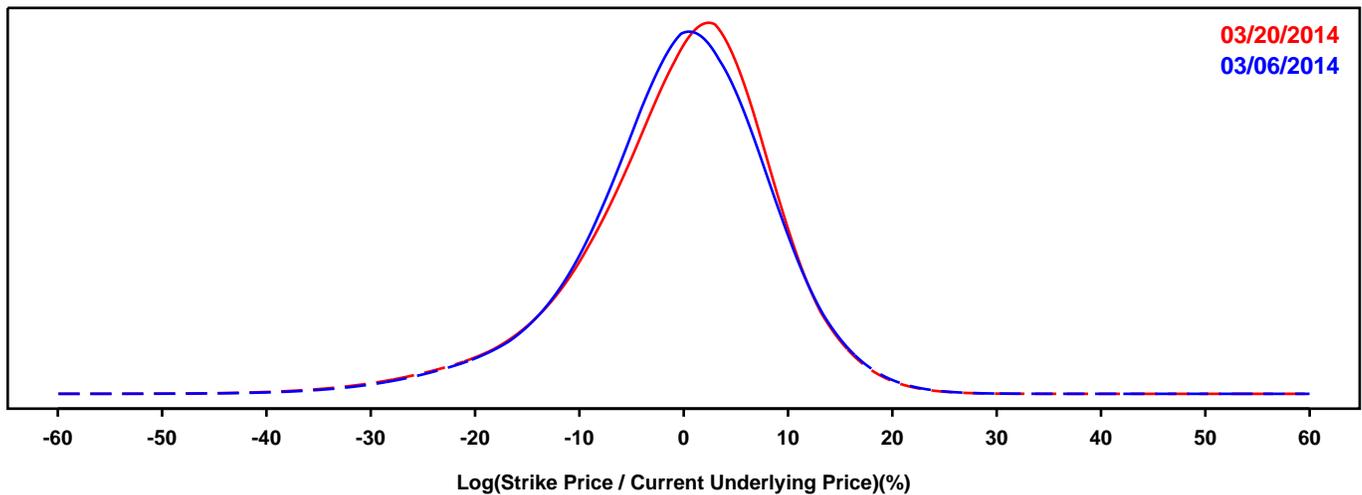
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- ALLSTATE

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

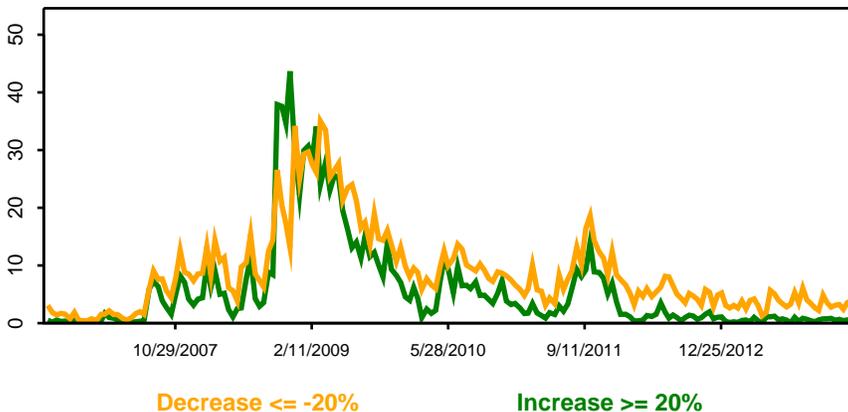
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

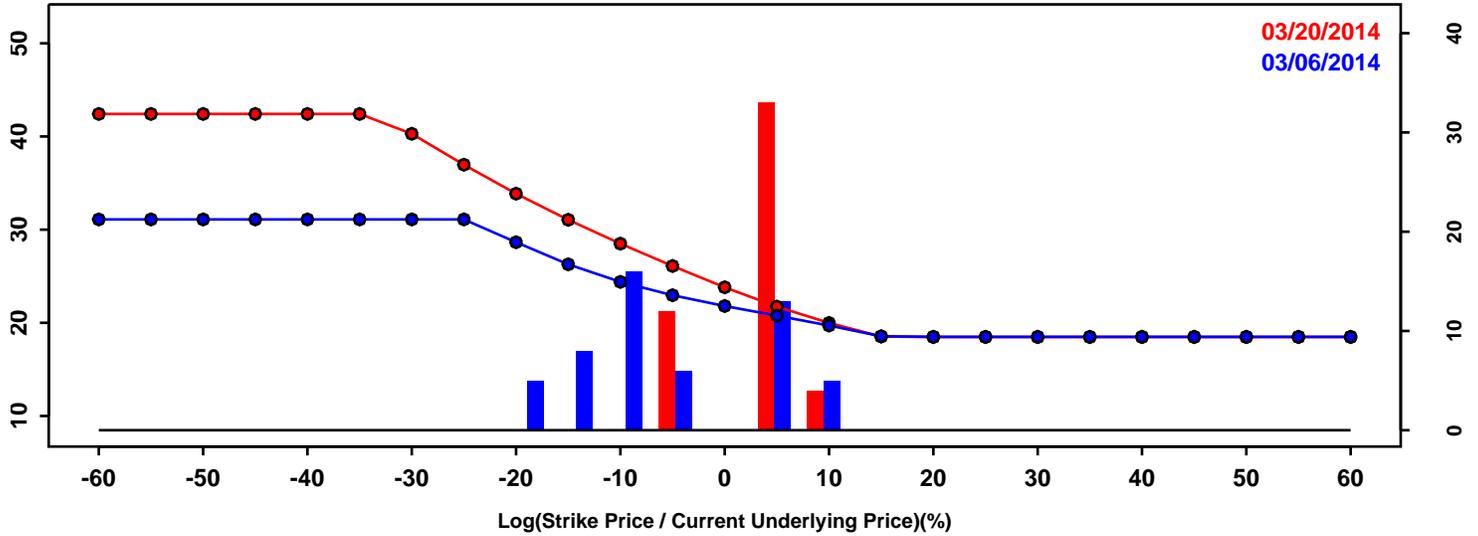


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-12.37%	-12.67%	-0.30%
50th Pct	0.00%	0.51%	0.50%
90th Pct	9.87%	9.81%	-0.06%
Mean	-0.77%	-0.65%	0.13%
Std Dev	9.20%	9.35%	0.16%
Skew	-0.66	-0.80	-0.14
Kurtosis	1.25	1.45	0.20

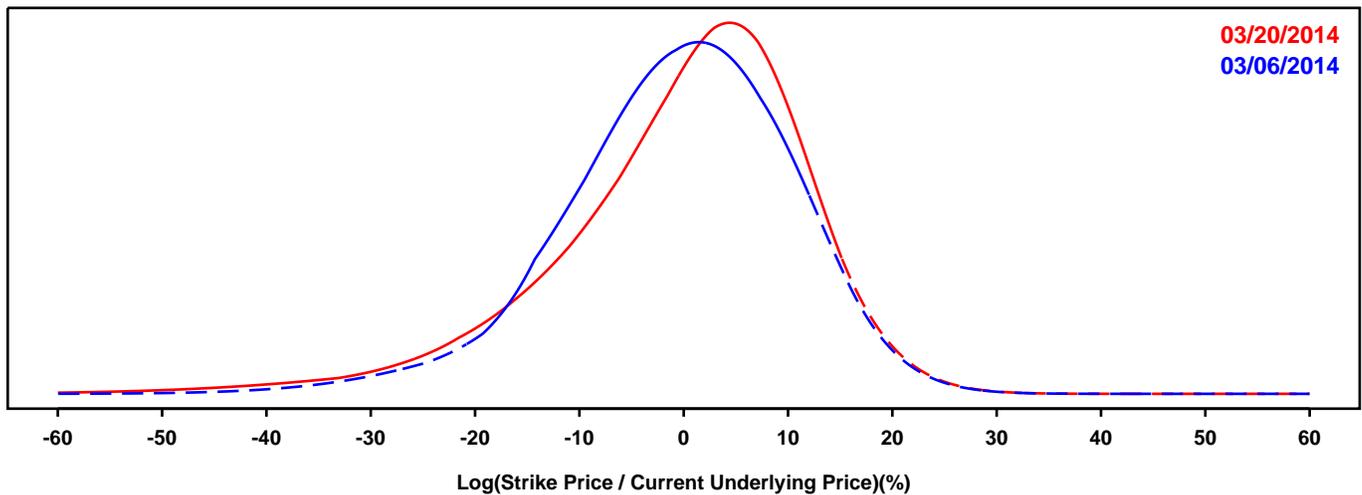
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- AMERIPRISE

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

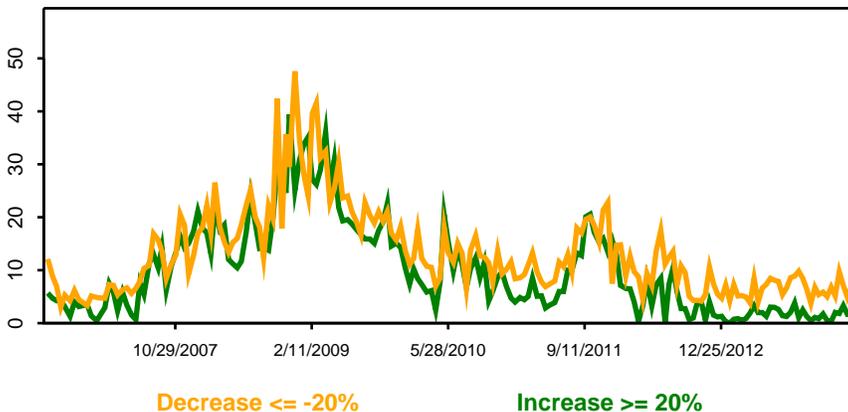
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

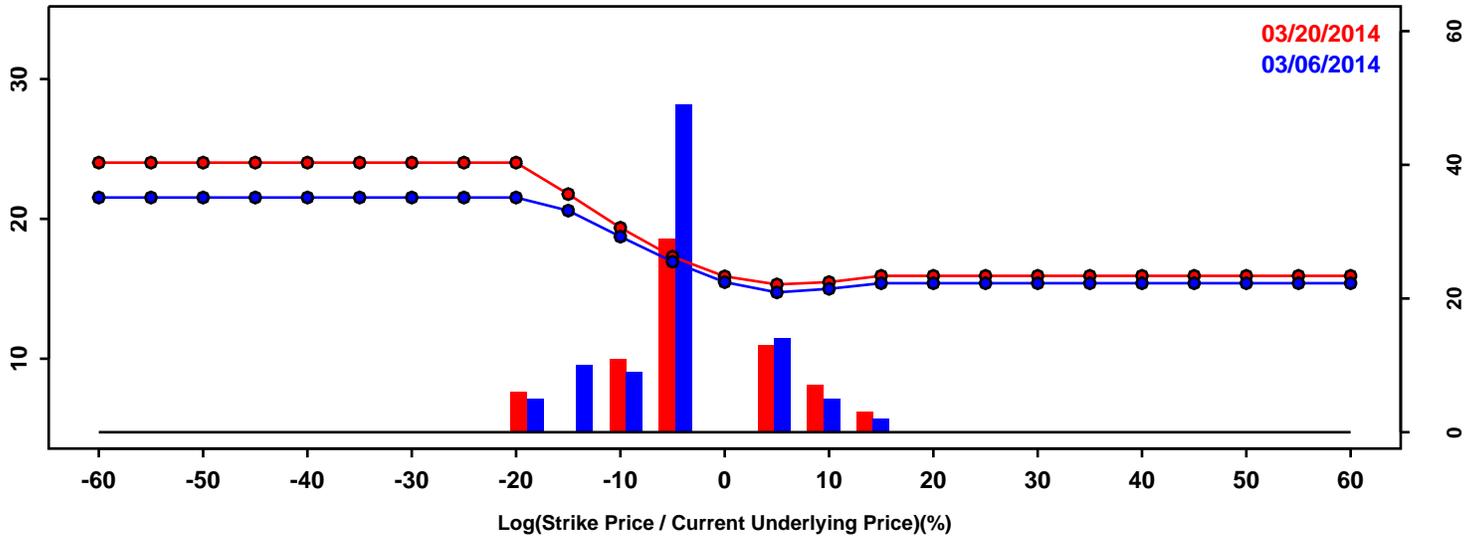


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-14.50%	-16.30%	-1.81%
50th Pct	0.17%	1.55%	1.38%
90th Pct	12.64%	13.07%	0.43%
Mean	-0.60%	-0.35%	0.25%
Std Dev	11.03%	12.36%	1.33%
Skew	-0.55	-1.05	-0.50
Kurtosis	0.83	2.15	1.32

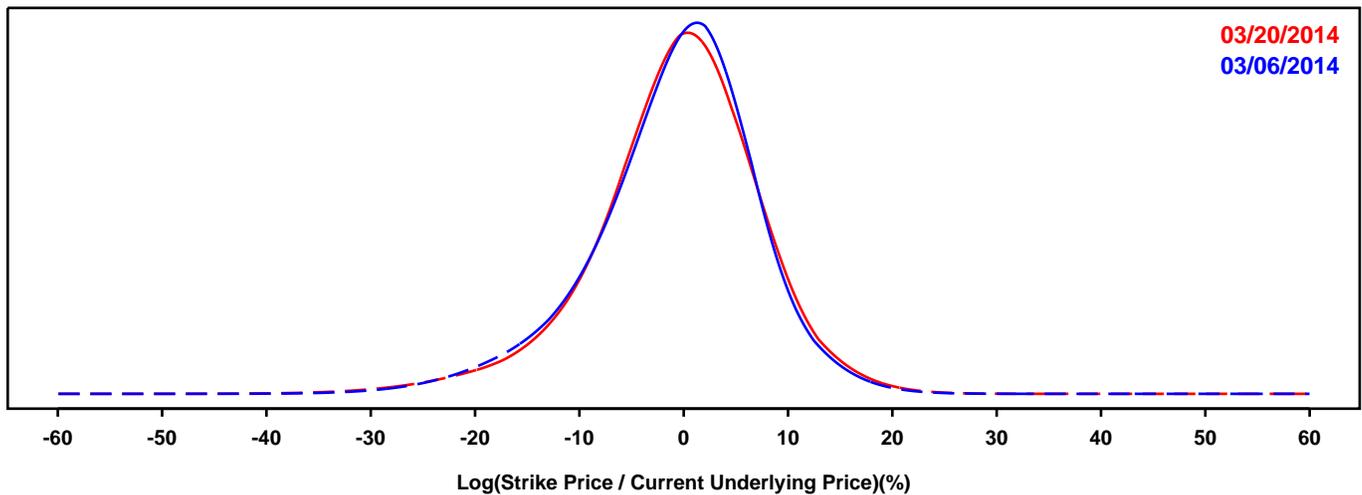
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CHUBB

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

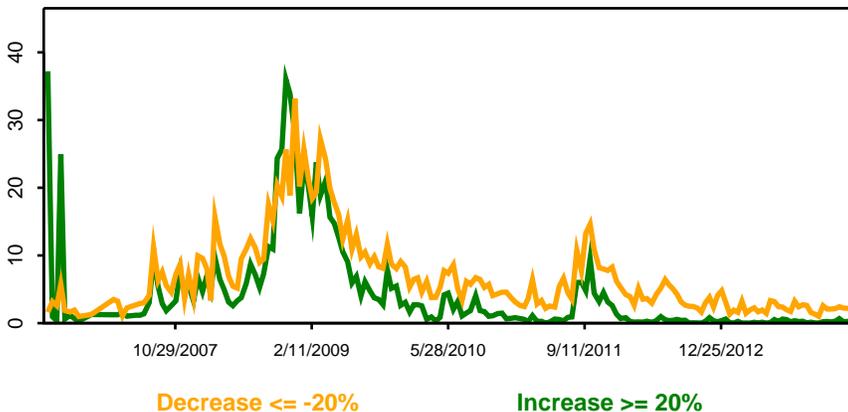
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

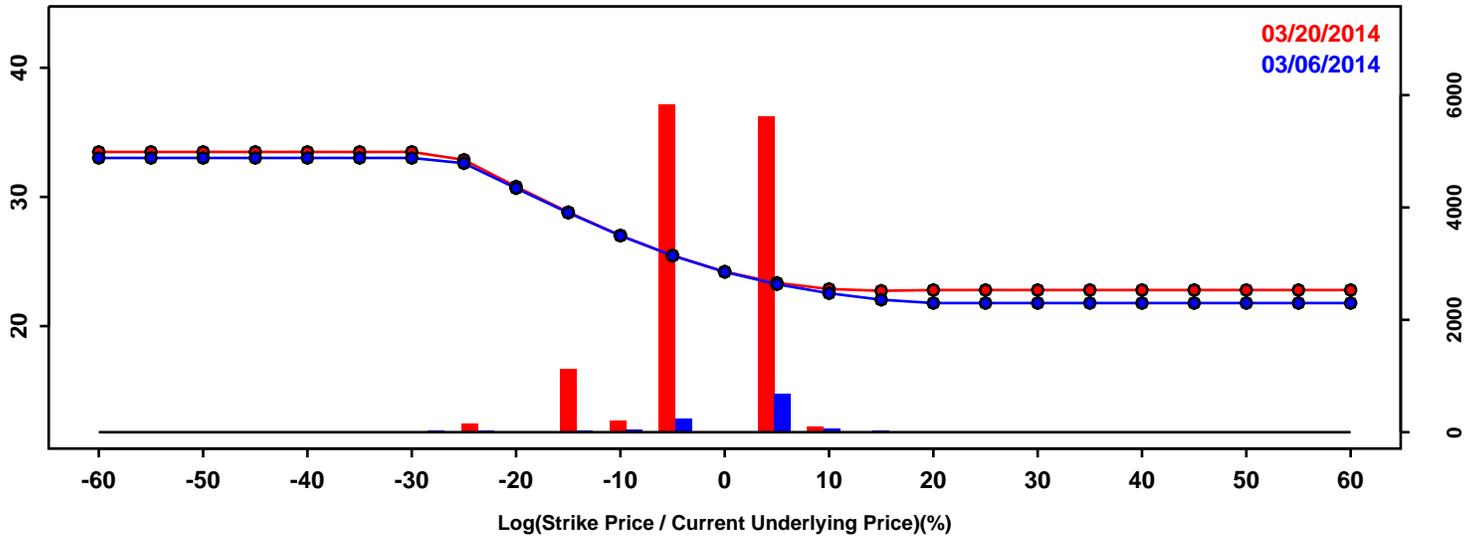


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-11.13%	-10.71%	0.43%
50th Pct	-0.07%	-0.12%	-0.04%
90th Pct	8.16%	8.66%	0.50%
Mean	-0.85%	-0.69%	0.16%
Std Dev	7.92%	8.09%	0.17%
Skew	-0.59	-0.60	-0.01
Kurtosis	1.05	1.39	0.34

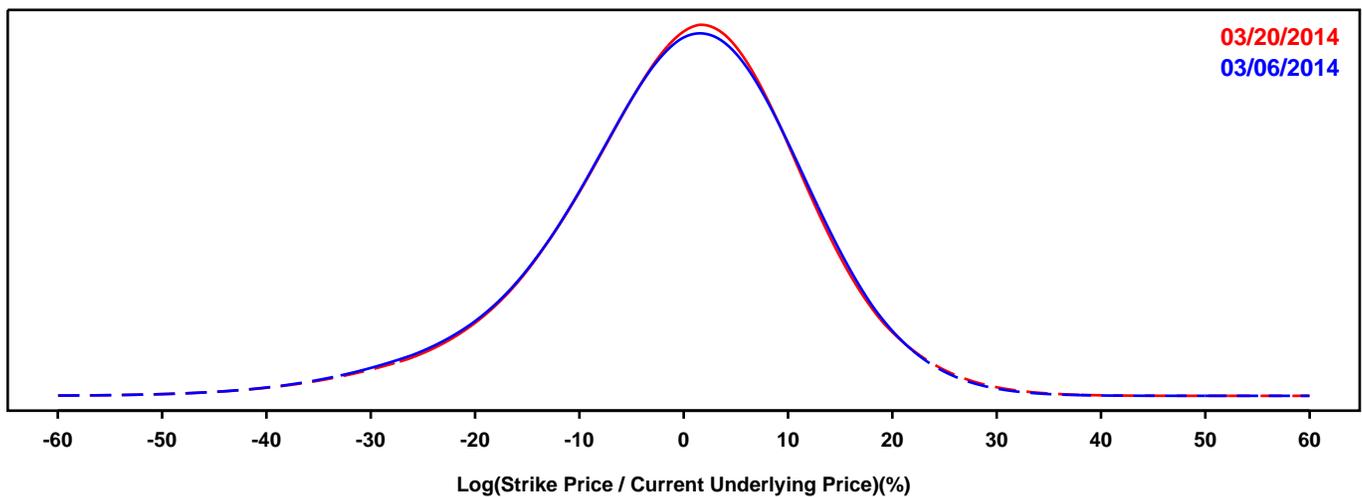
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- HARTFORD FINANCIAL

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

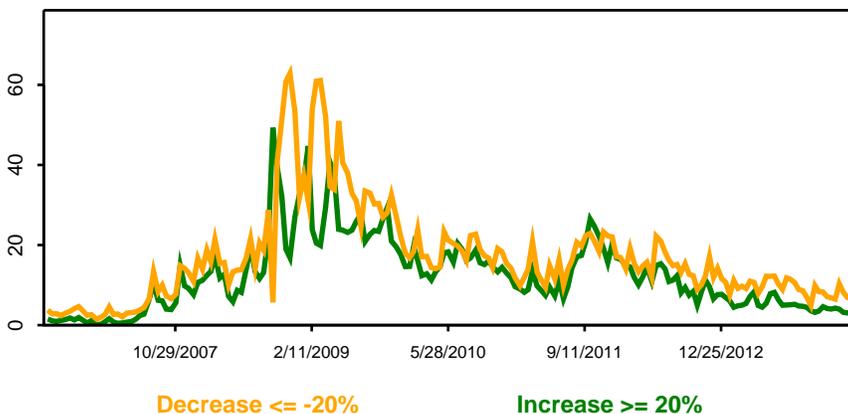
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

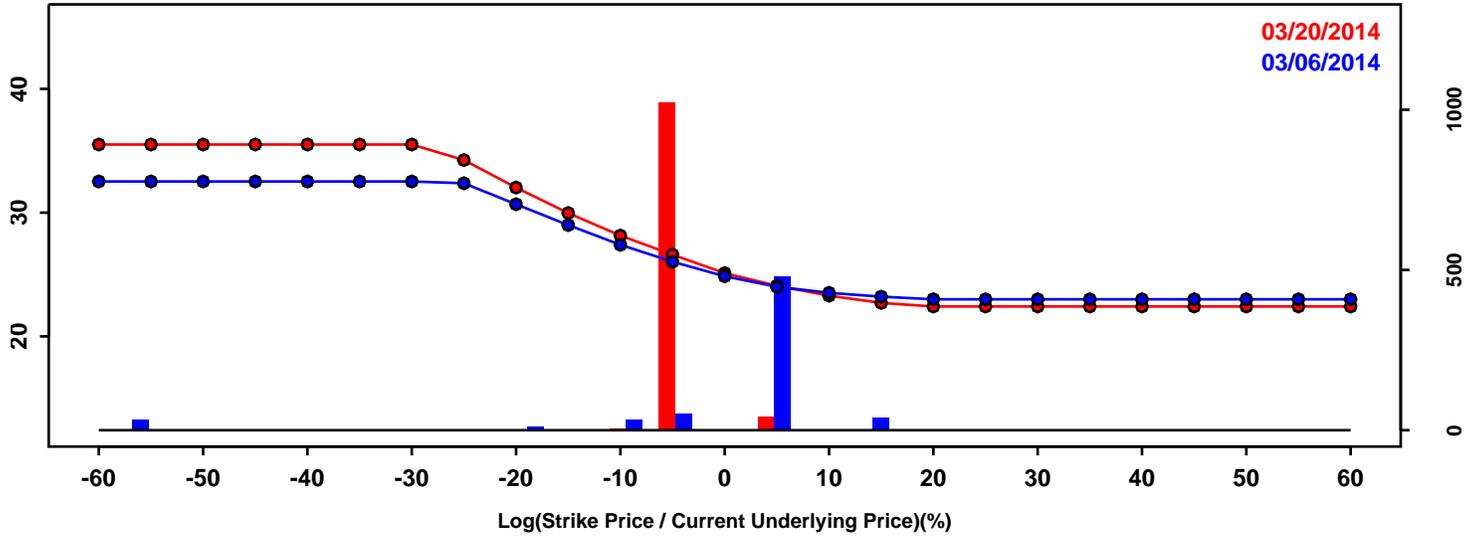


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-16.55%	-16.20%	0.36%
50th Pct	0.25%	0.36%	0.11%
90th Pct	13.79%	13.73%	-0.06%
Mean	-0.73%	-0.61%	0.12%
Std Dev	12.31%	12.24%	-0.07%
Skew	-0.55	-0.53	0.02
Kurtosis	0.85	0.94	0.09

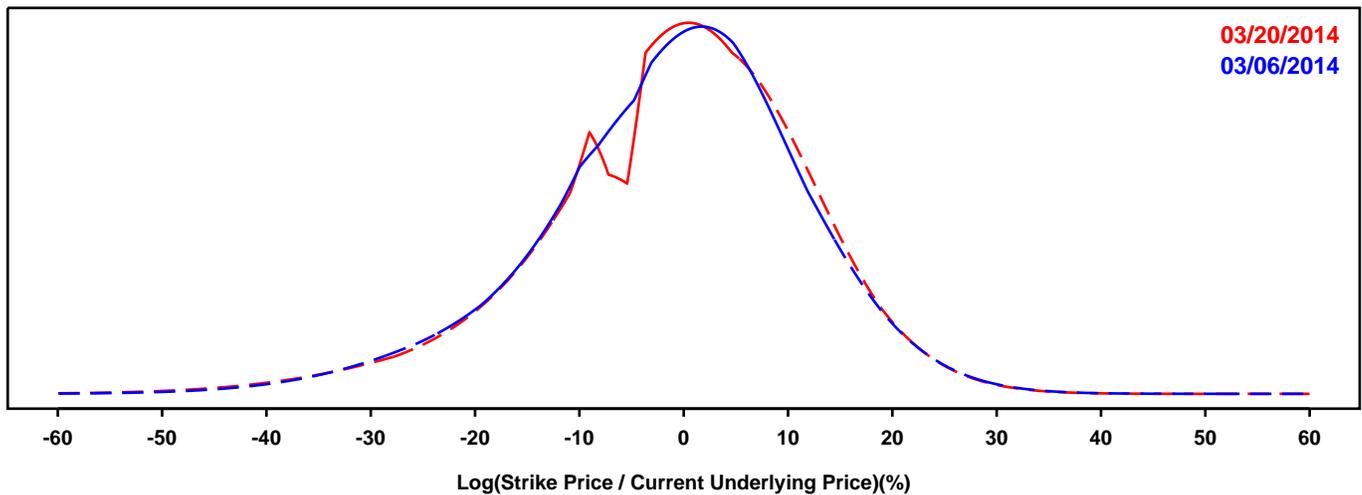
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- LINCOLN NATIONAL

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

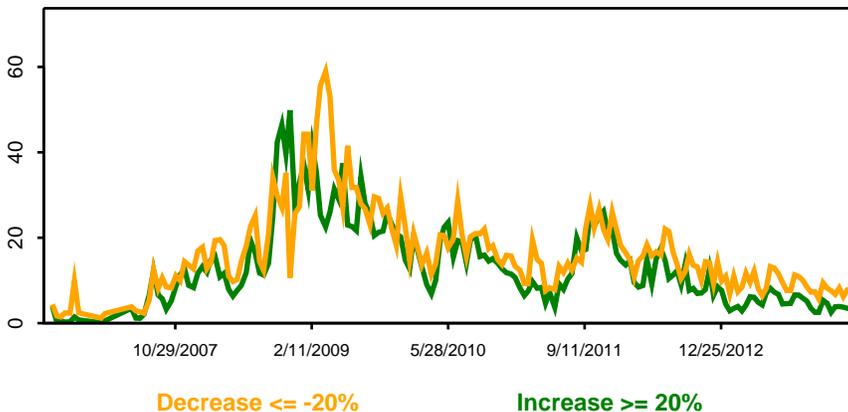
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

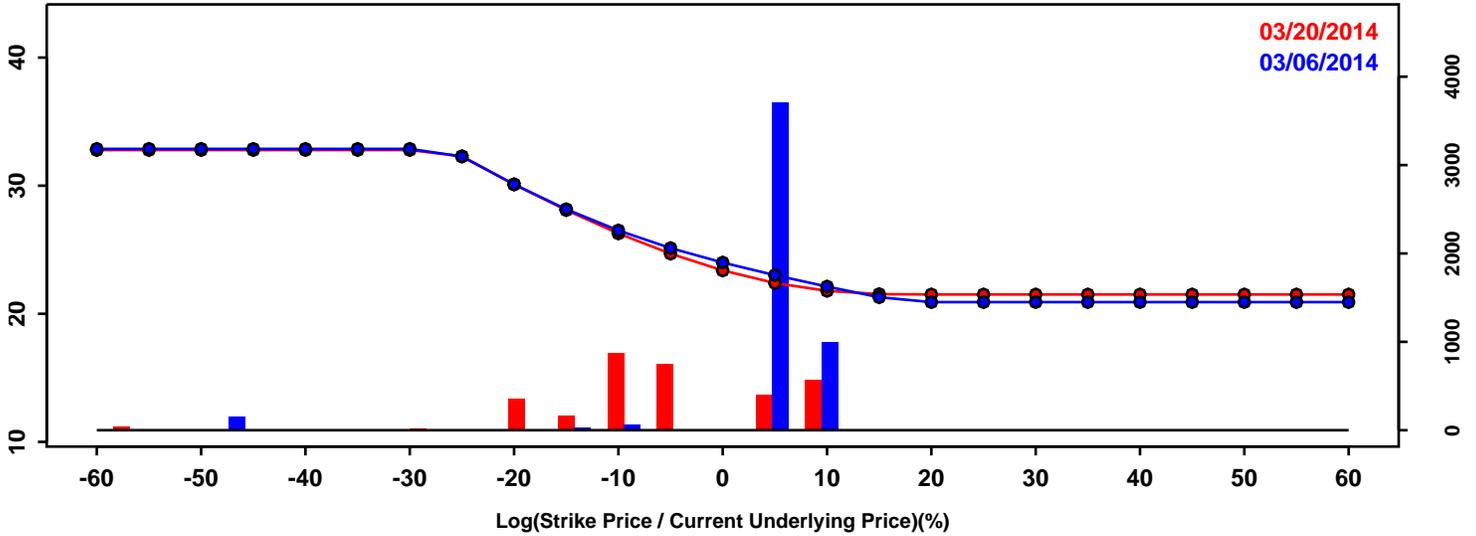


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-17.57%	-17.43%	0.14%
50th Pct	-0.07%	0.27%	0.35%
90th Pct	14.01%	14.22%	0.21%
Mean	-1.10%	-0.86%	0.24%
Std Dev	12.72%	12.90%	0.17%
Skew	-0.49	-0.60	-0.12
Kurtosis	0.70	0.94	0.24

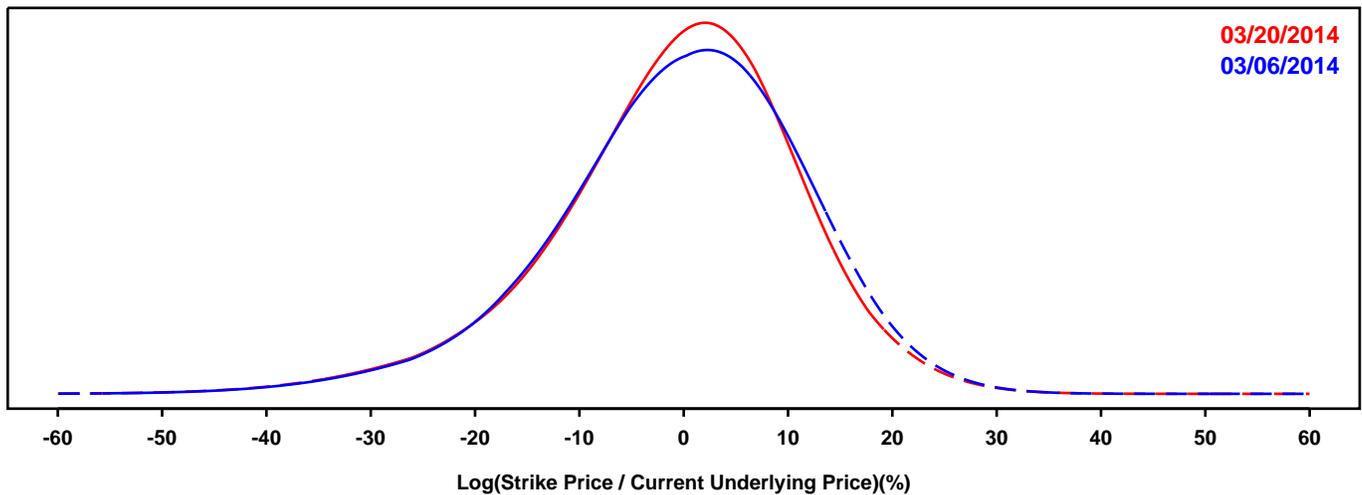
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- METLIFE

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

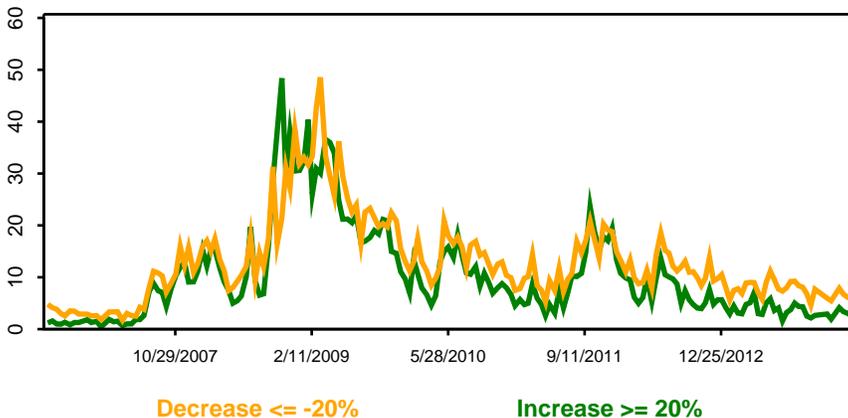
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

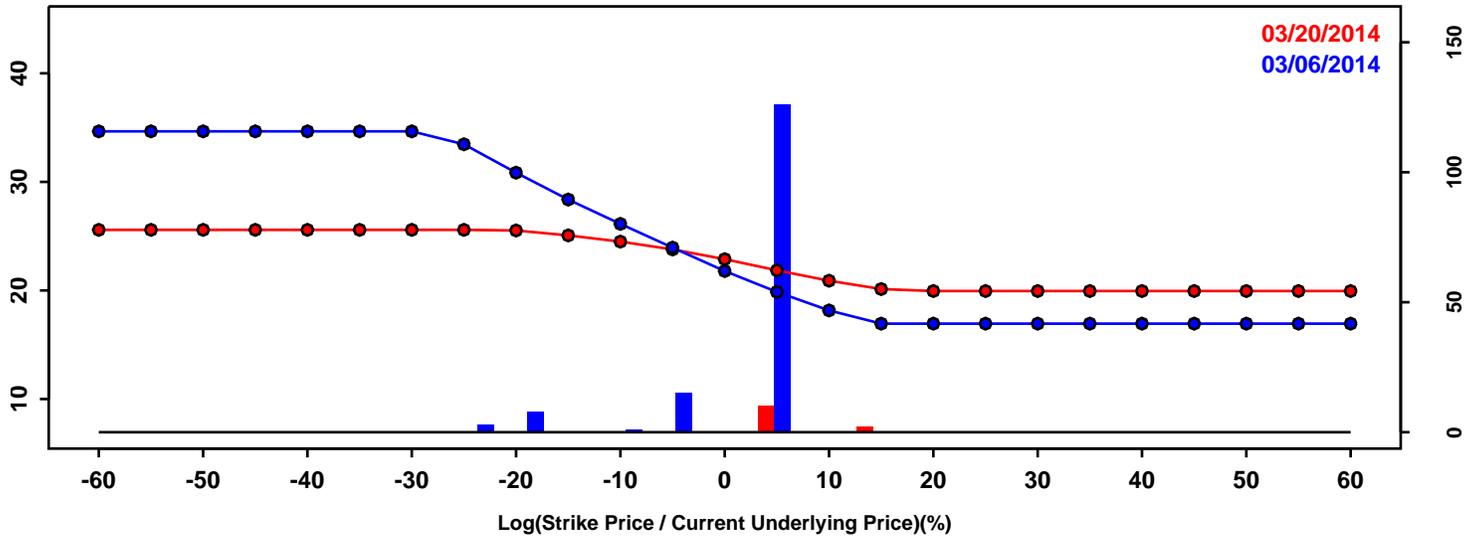


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-15.93%	-15.99%	-0.06%
50th Pct	0.50%	0.31%	-0.19%
90th Pct	14.09%	13.15%	-0.94%
Mean	-0.37%	-0.72%	-0.35%
Std Dev	12.12%	11.89%	-0.23%
Skew	-0.51	-0.57	-0.05
Kurtosis	0.72	0.93	0.21

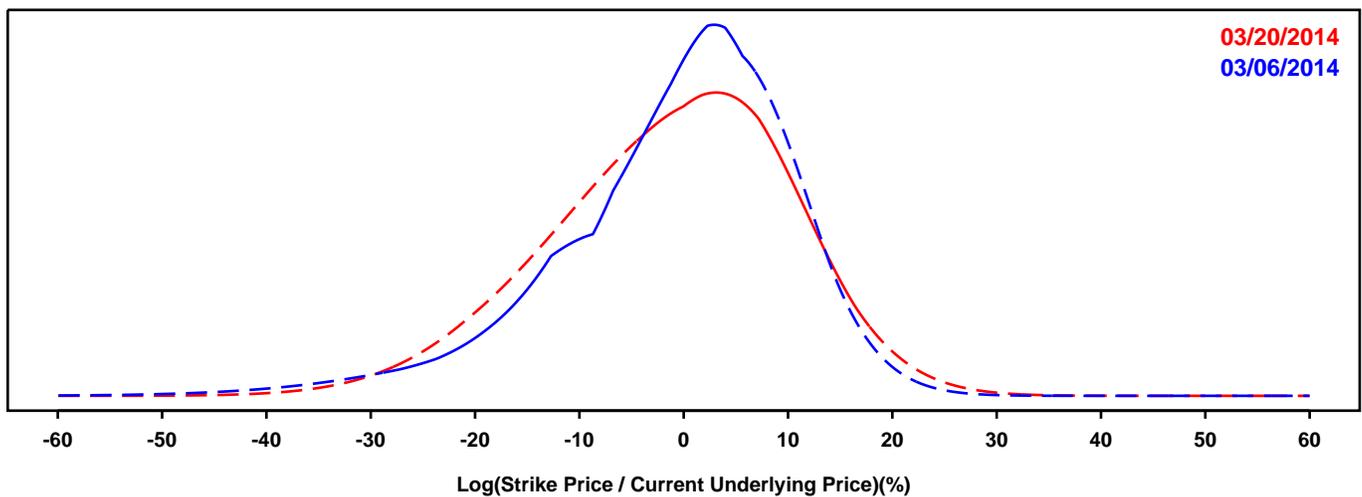
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- PRINCIPAL FINANCIAL

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

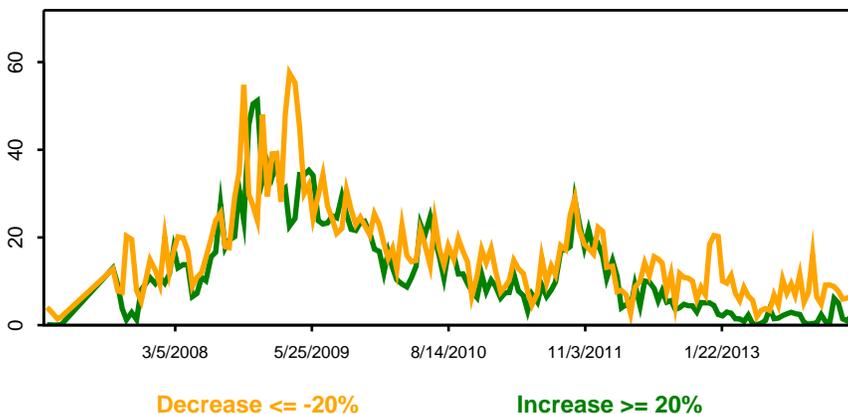
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

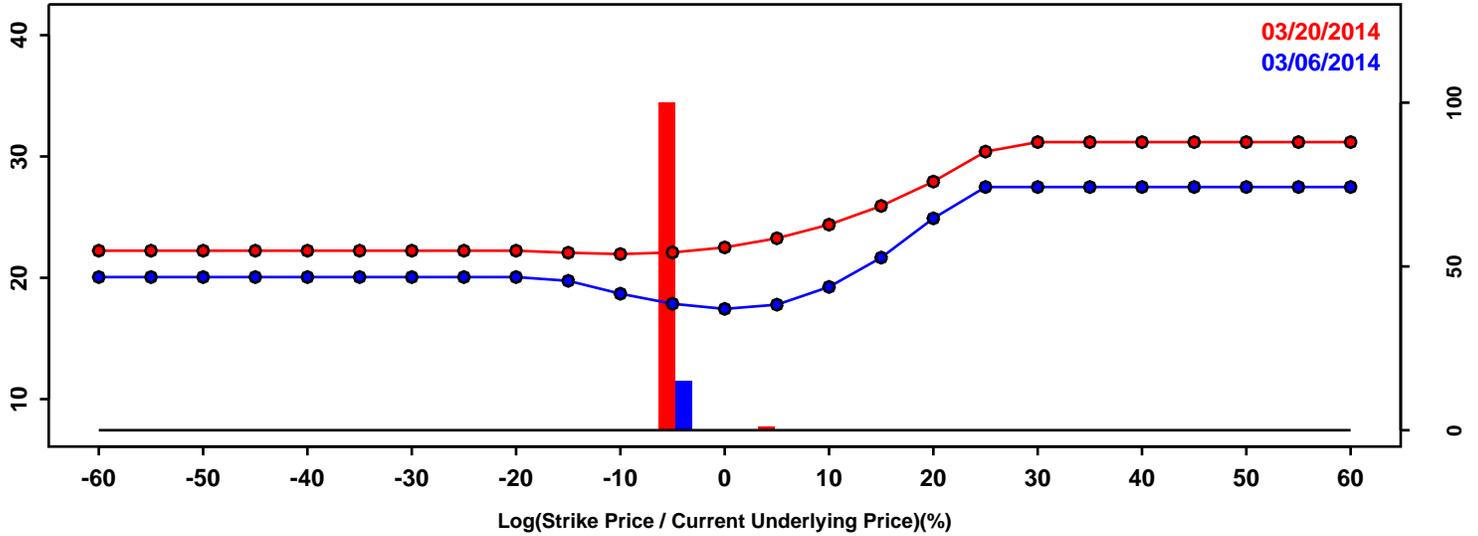


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-15.64%	-17.00%	-1.37%
50th Pct	0.92%	-0.31%	-1.23%
90th Pct	11.87%	12.75%	0.88%
Mean	-0.79%	-1.27%	-0.48%
Std Dev	11.40%	11.64%	0.24%
Skew	-0.92	-0.35	0.57
Kurtosis	1.53	0.04	-1.49

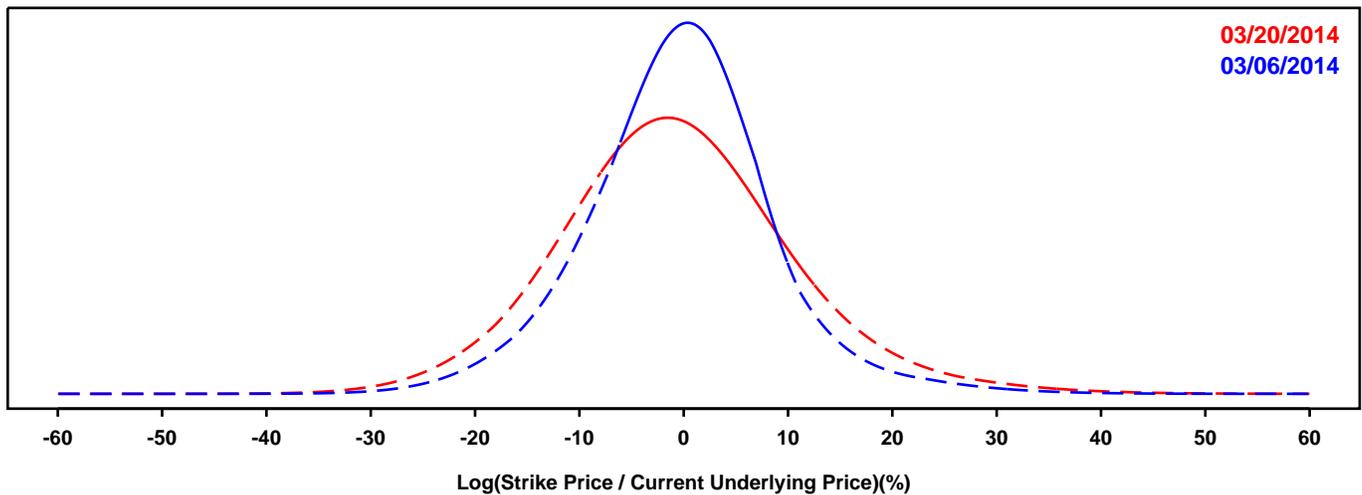
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- PROGRESSIVE

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

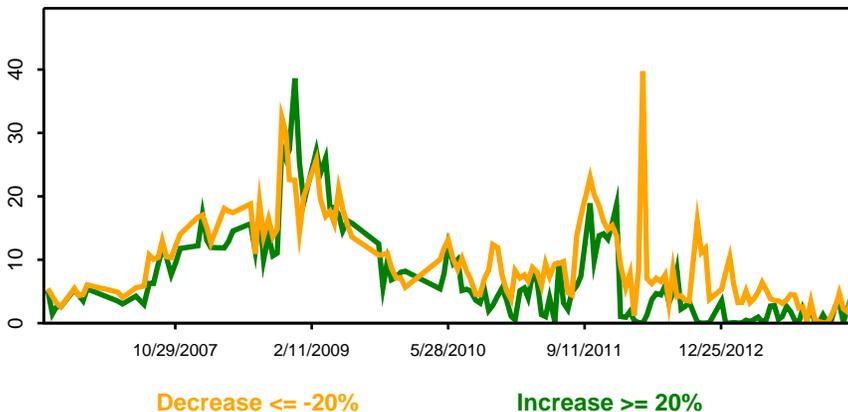
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

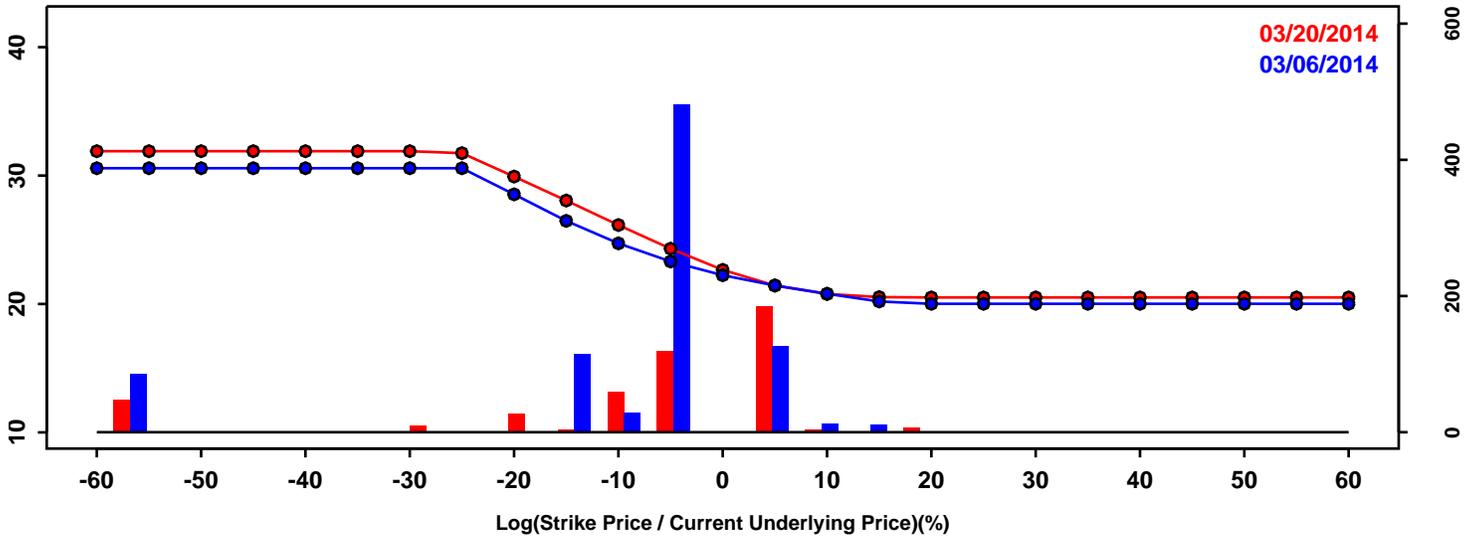


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-11.38%	-14.40%	-3.01%
50th Pct	-0.20%	-1.01%	-0.81%
90th Pct	10.16%	13.58%	3.42%
Mean	-0.27%	-0.56%	-0.29%
Std Dev	9.05%	11.32%	2.27%
Skew	0.20	0.32	0.12
Kurtosis	1.30	0.74	-0.56

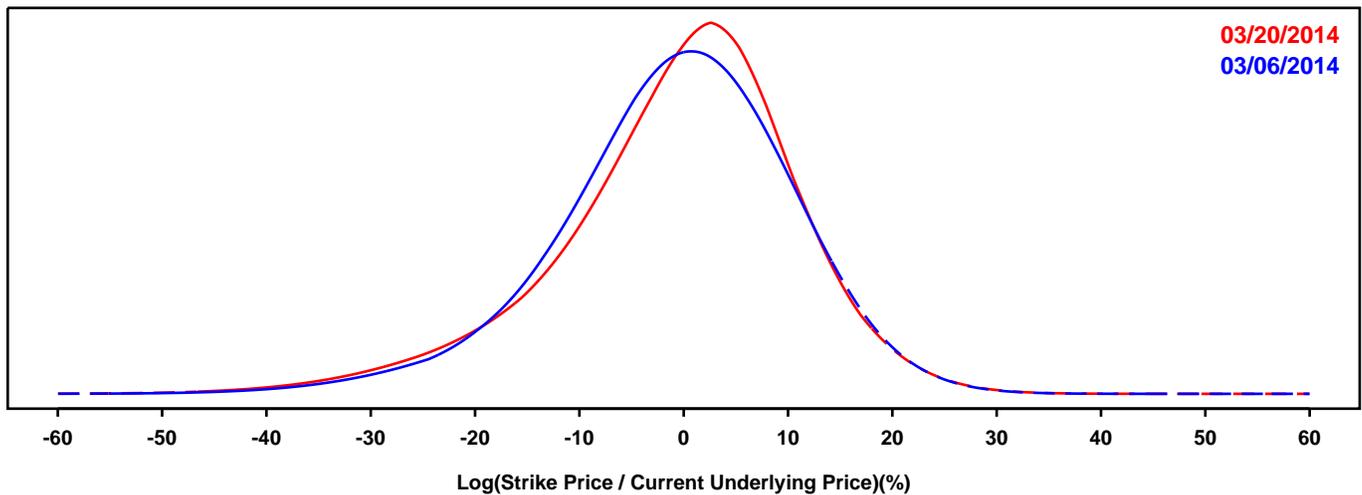
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- PRUDENTIAL

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

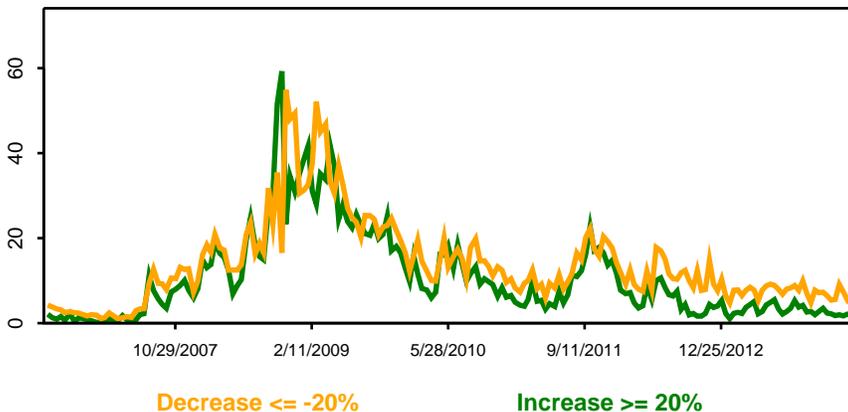
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

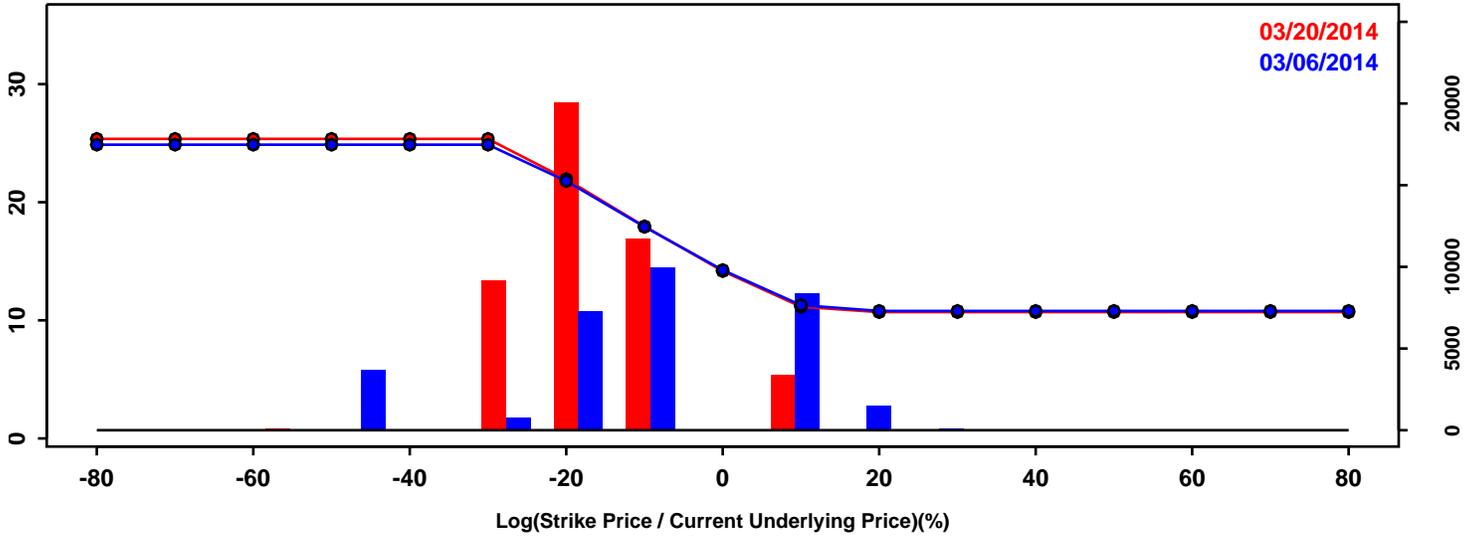


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-15.18%	-15.94%	-0.76%
50th Pct	-0.12%	0.62%	0.75%
90th Pct	12.75%	12.57%	-0.18%
Mean	-0.82%	-0.67%	0.15%
Std Dev	11.29%	11.63%	0.34%
Skew	-0.48	-0.68	-0.19
Kurtosis	0.76	1.06	0.30

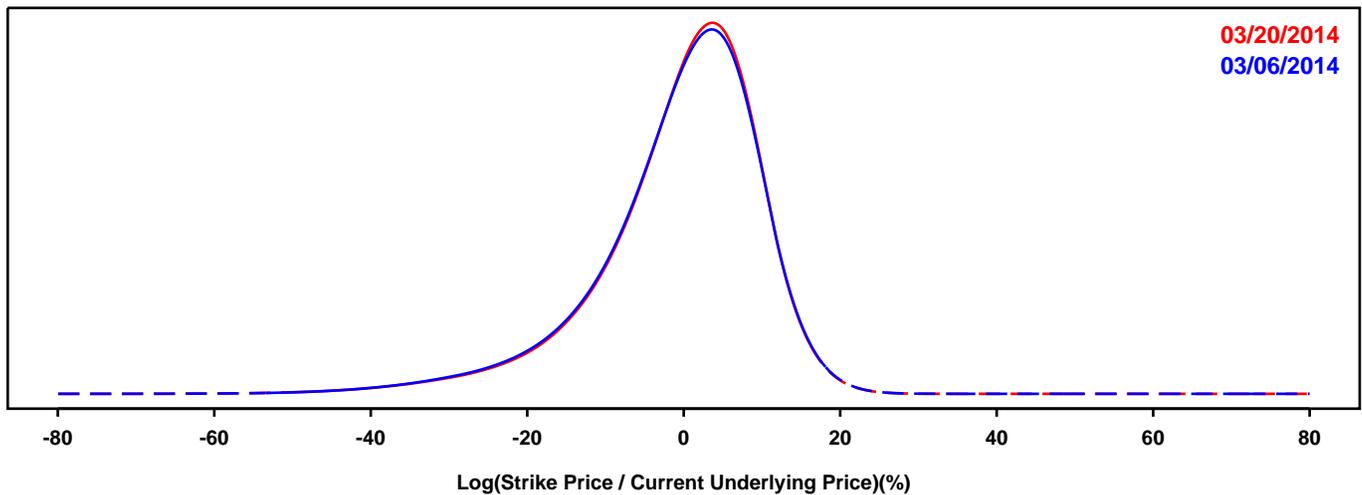
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- S&P 500

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

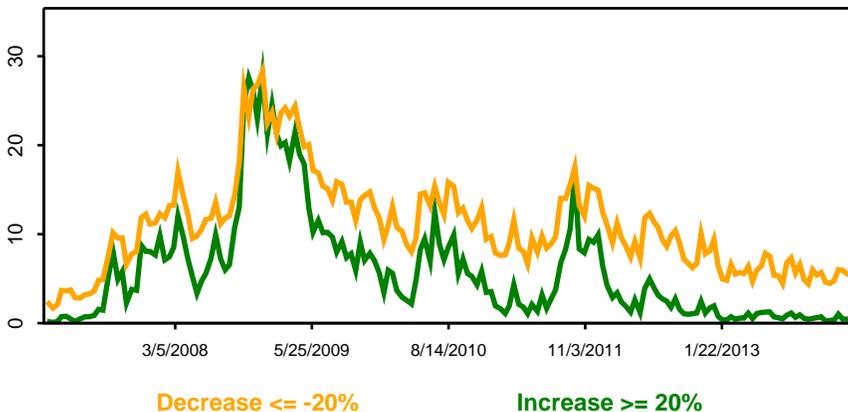
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

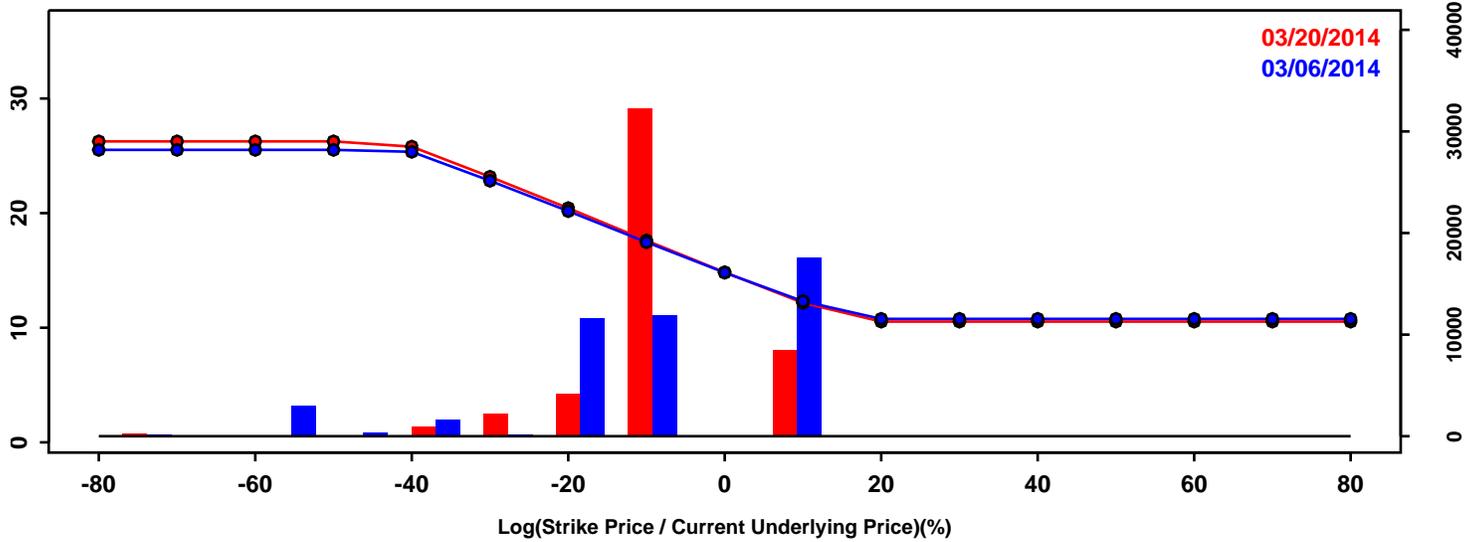


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-14.28%	-13.90%	0.38%
50th Pct	1.12%	1.25%	0.13%
90th Pct	10.68%	10.64%	-0.03%
Mean	-0.64%	-0.52%	0.12%
Std Dev	10.64%	10.55%	-0.09%
Skew	-1.16	-1.20	-0.04
Kurtosis	2.35	2.57	0.22

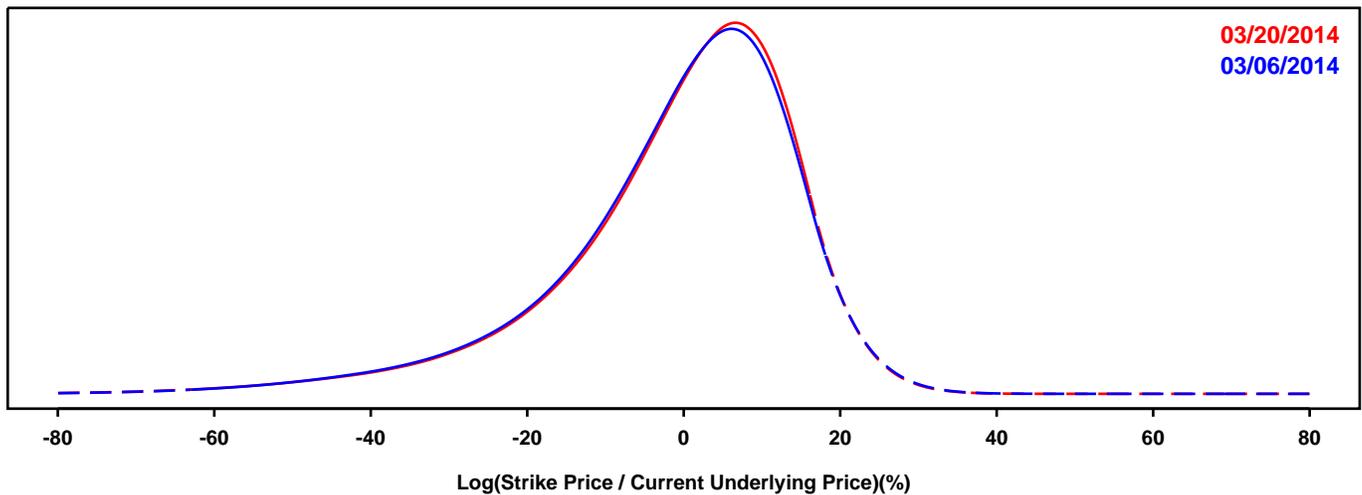
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- S&P 500

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

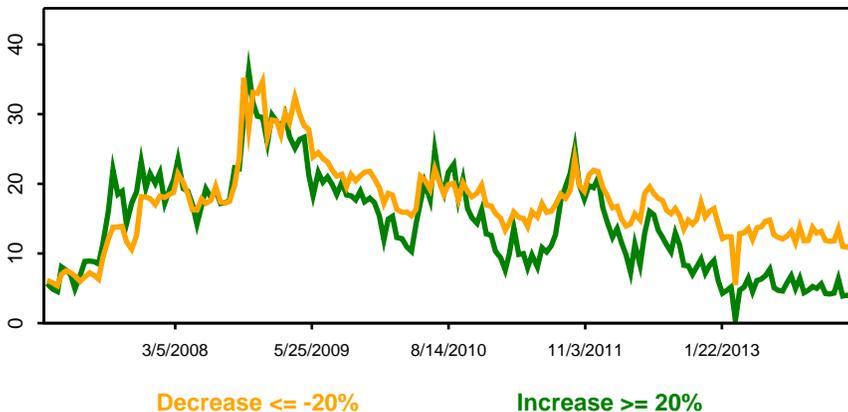
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

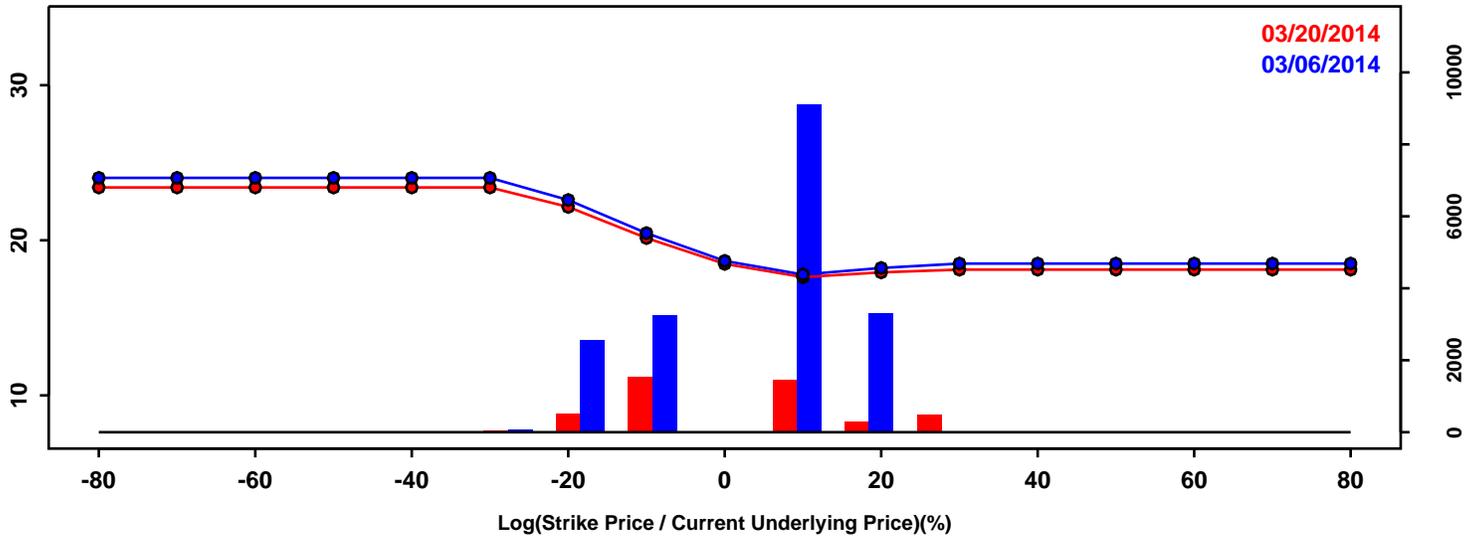


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-21.28%	-20.96%	0.33%
50th Pct	1.90%	2.25%	0.35%
90th Pct	15.55%	15.59%	0.04%
Mean	-0.93%	-0.69%	0.24%
Std Dev	15.67%	15.66%	-0.01%
Skew	-1.20	-1.26	-0.07
Kurtosis	2.30	2.55	0.25

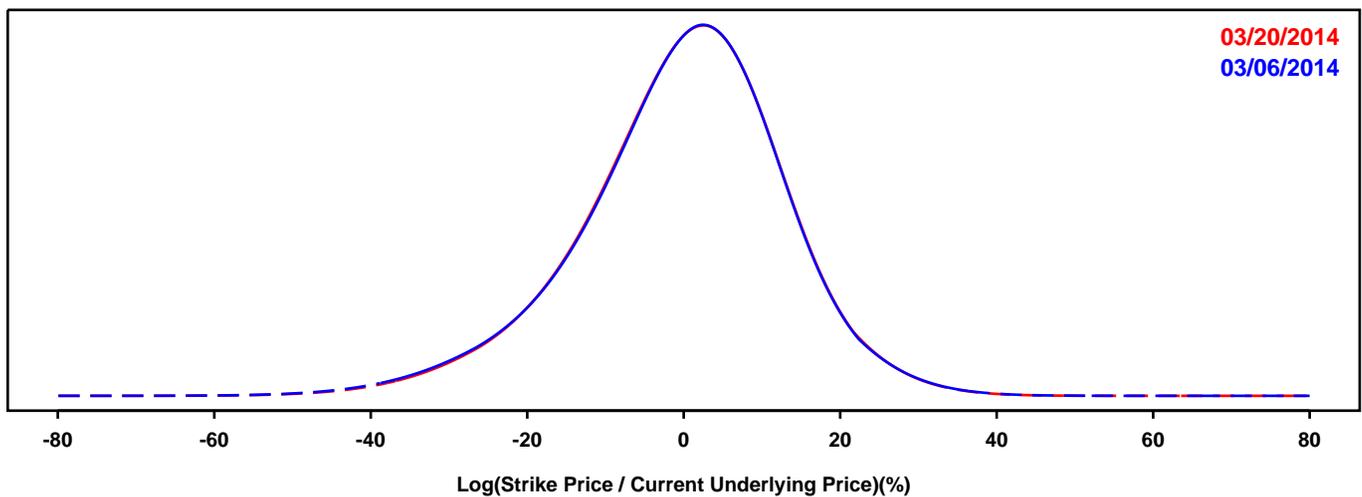
### RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CRUDE OIL FUTURES (WTI)

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

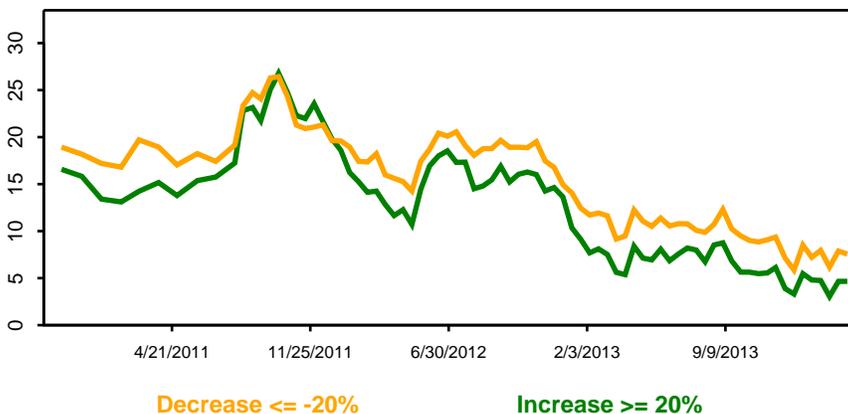
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

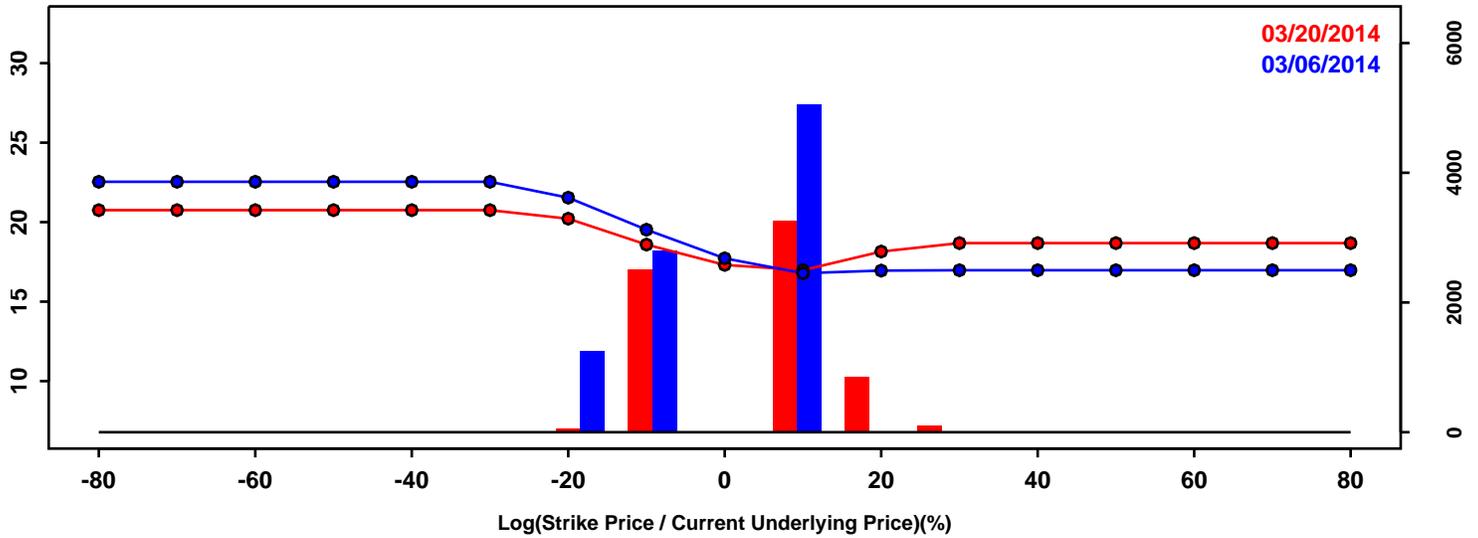


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-17.67%	-17.33%	0.34%
50th Pct	0.71%	0.75%	0.03%
90th Pct	15.19%	15.21%	0.02%
Mean	-0.35%	-0.24%	0.10%
Std Dev	13.30%	13.13%	-0.17%
Skew	-0.45	-0.42	0.03
Kurtosis	0.73	0.65	-0.08

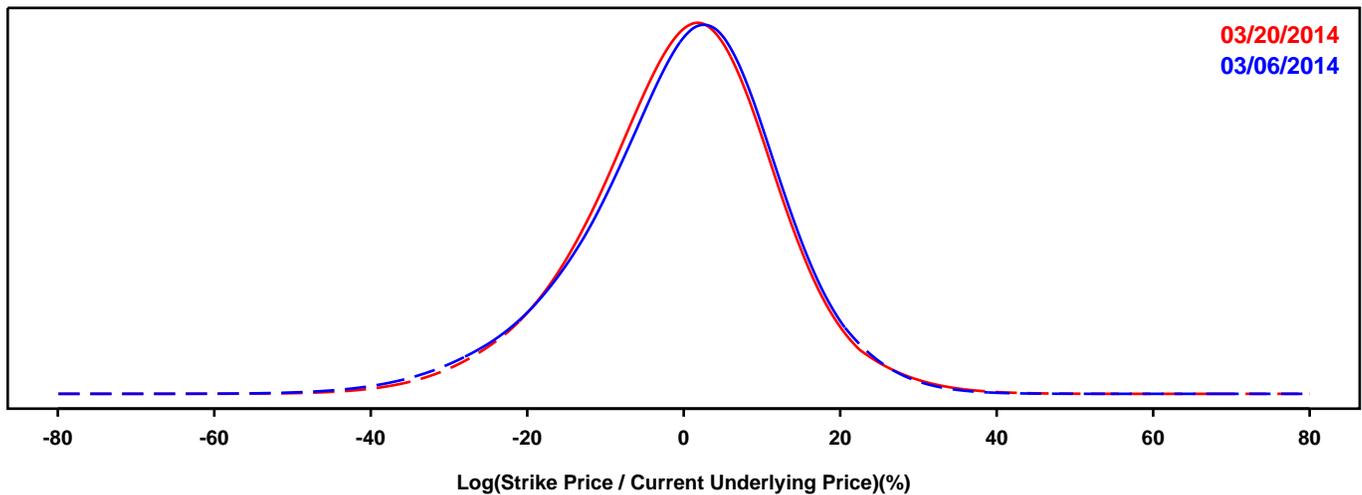
### RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CRUDE OIL FUTURES (Brent)

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

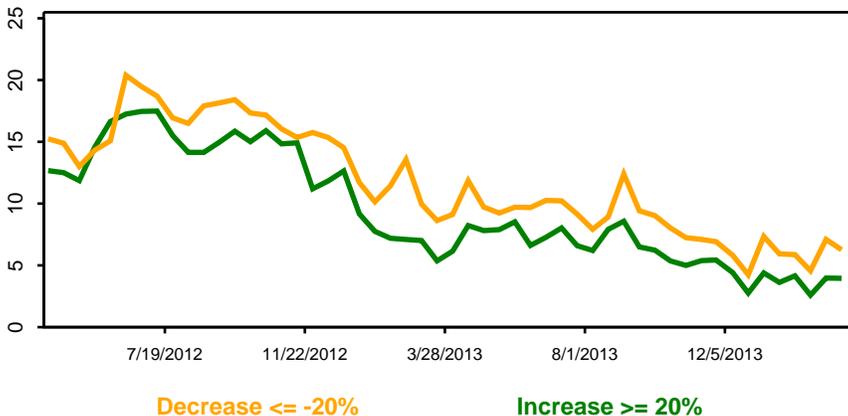
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

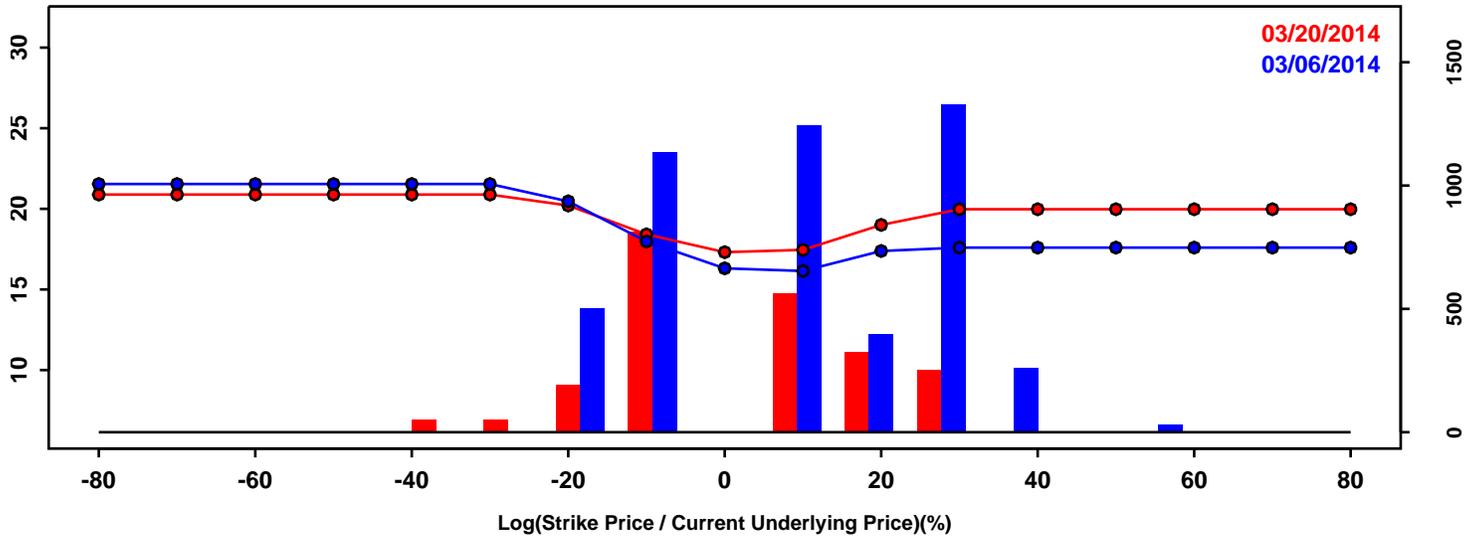


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-16.87%	-16.17%	0.71%
50th Pct	0.77%	0.35%	-0.42%
90th Pct	14.55%	14.28%	-0.27%
Mean	-0.28%	-0.30%	-0.02%
Std Dev	12.64%	12.25%	-0.38%
Skew	-0.46	-0.27	0.18
Kurtosis	0.66	0.57	-0.09

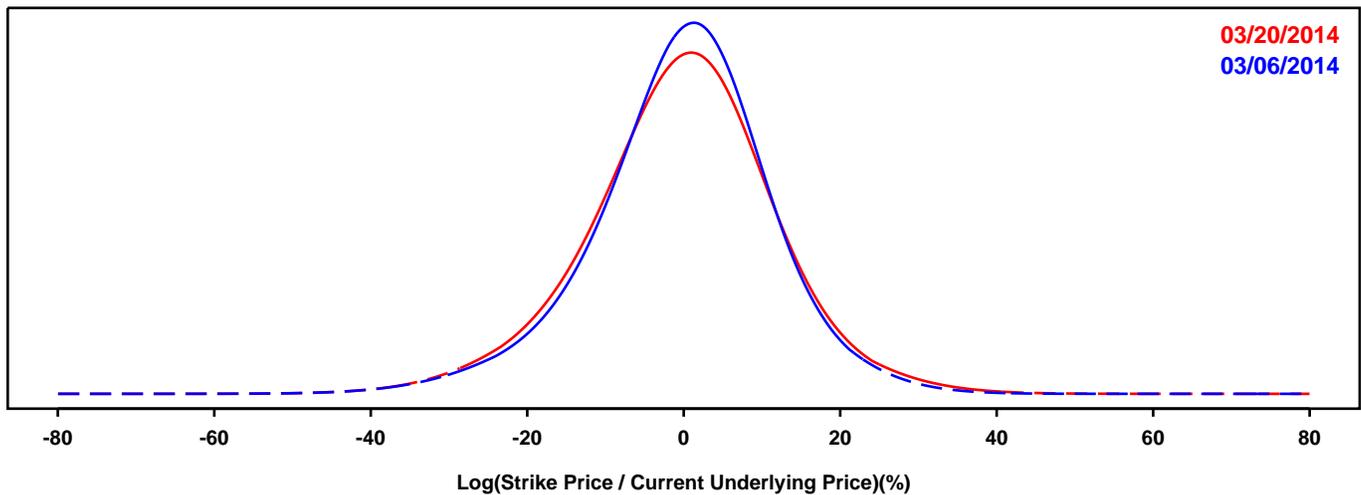
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- GOLD FUTURES

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

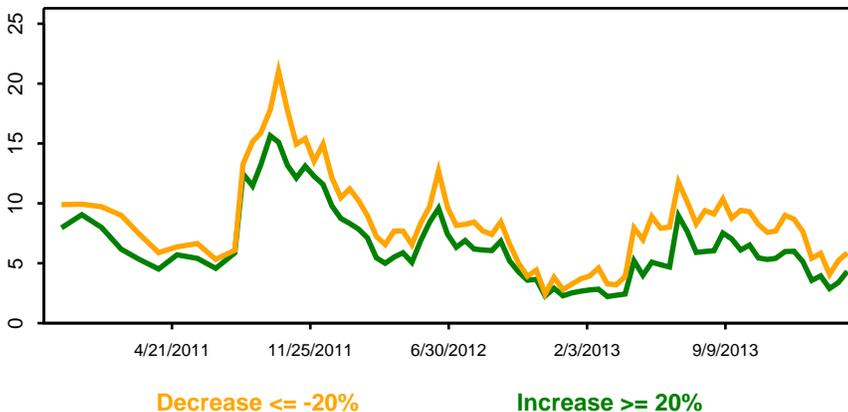
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

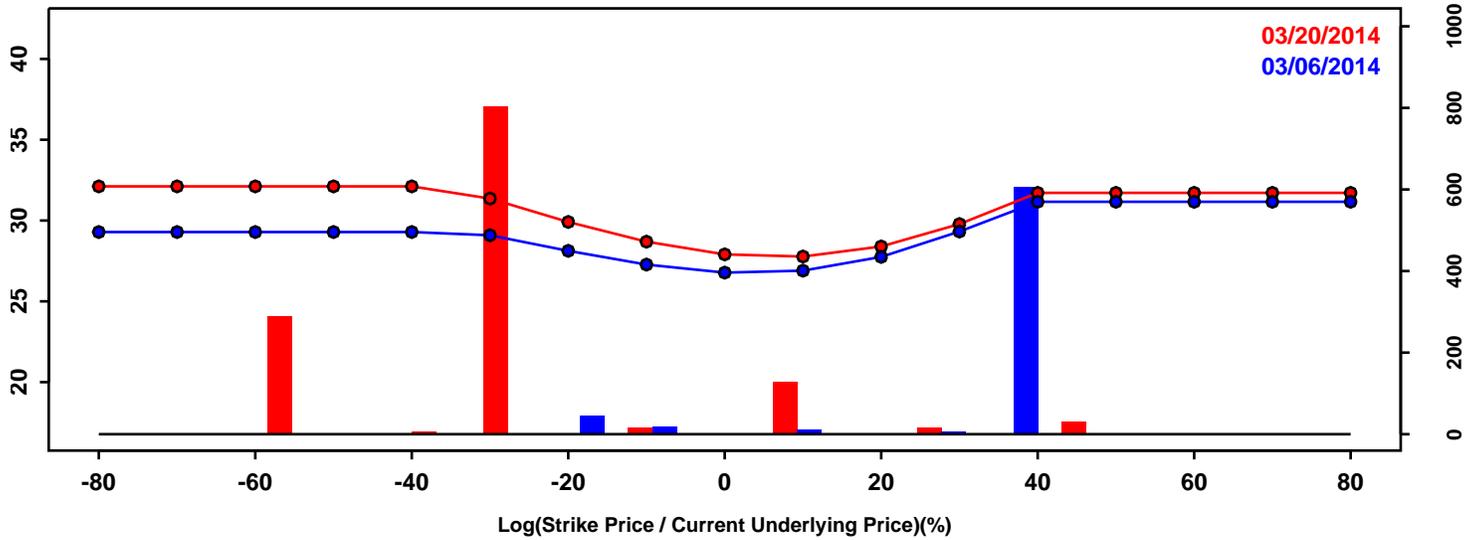


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-14.66%	-15.69%	-1.02%
50th Pct	0.40%	0.16%	-0.24%
90th Pct	13.42%	14.37%	0.95%
Mean	-0.18%	-0.25%	-0.08%
Std Dev	11.54%	12.23%	0.69%
Skew	-0.34	-0.17	0.17
Kurtosis	0.92	0.70	-0.22

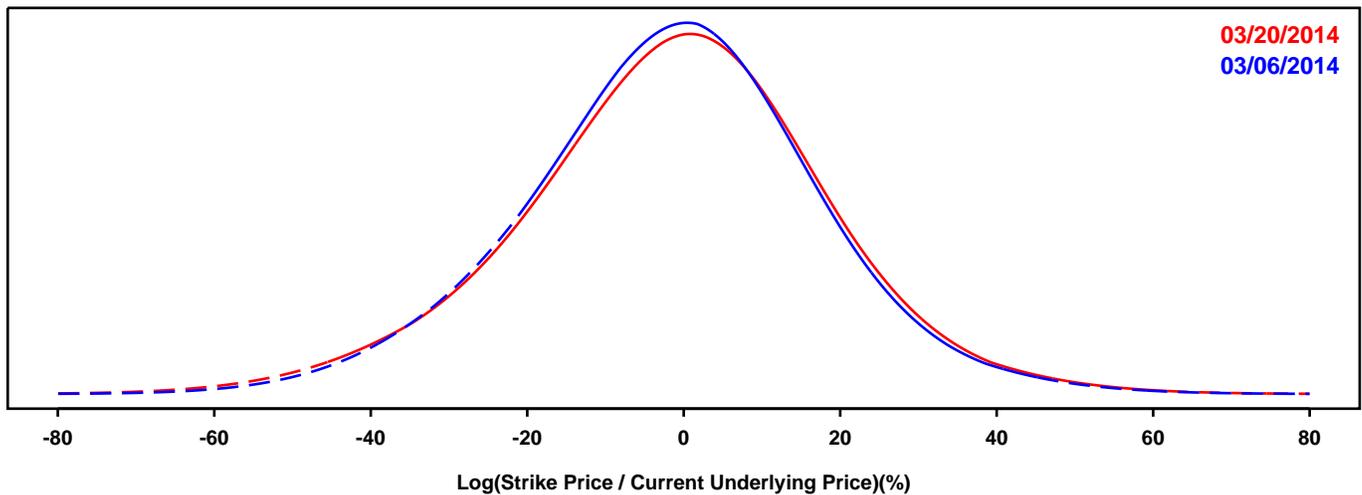
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- SILVER FUTURES

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

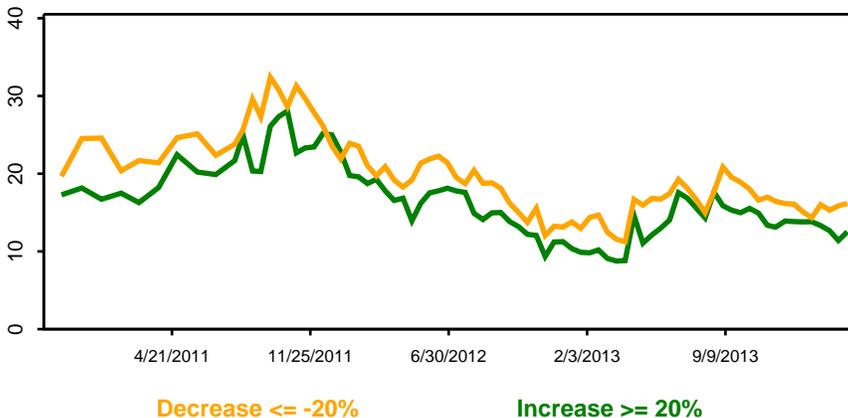
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

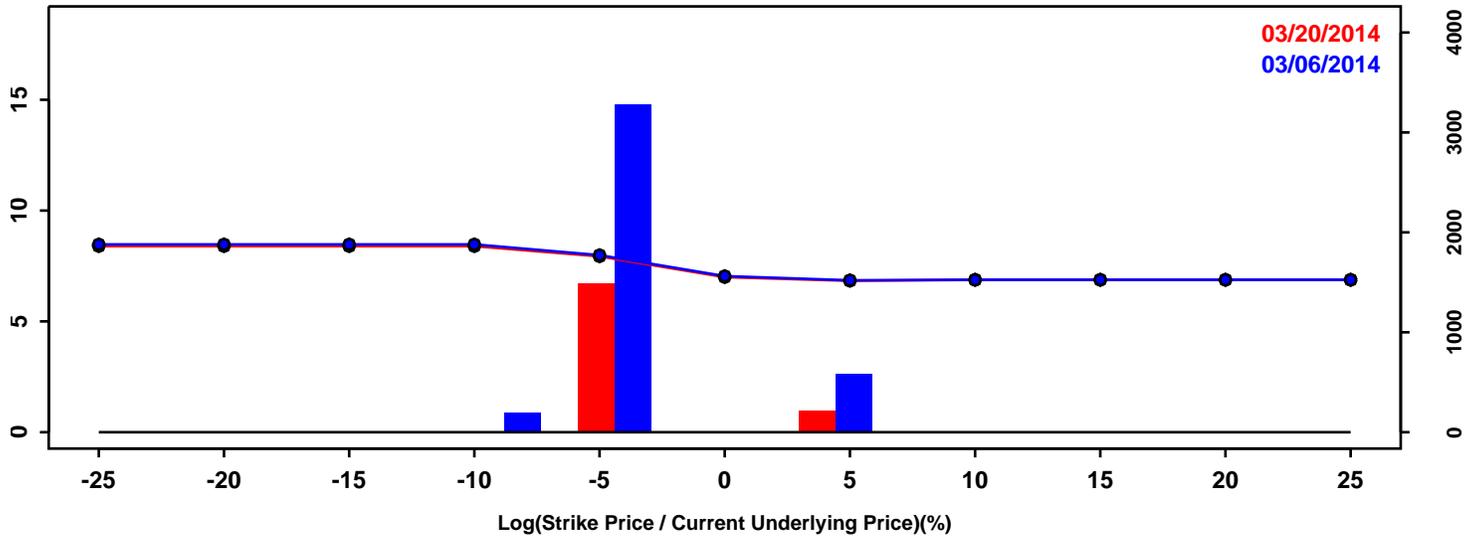


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-25.93%	-26.64%	-0.71%
50th Pct	-1.16%	-0.63%	0.53%
90th Pct	21.45%	22.51%	1.06%
Mean	-1.63%	-1.35%	0.29%
Std Dev	18.93%	19.75%	0.82%
Skew	-0.07	-0.16	-0.09
Kurtosis	0.44	0.52	0.09

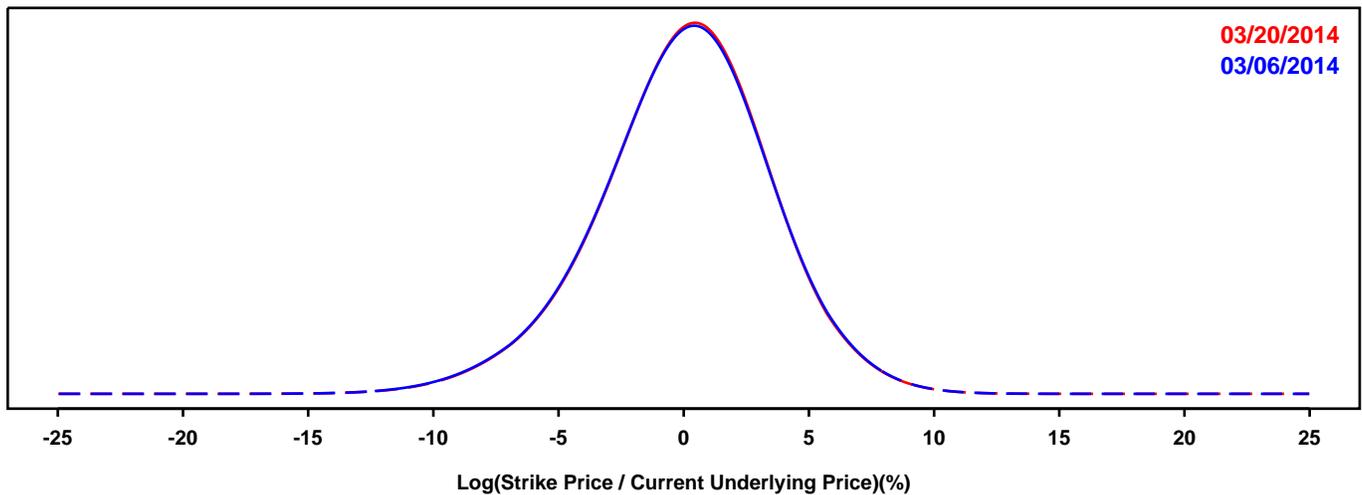
### RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- DOLLAR-EURO EXCHANGE RATE FUTURES

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

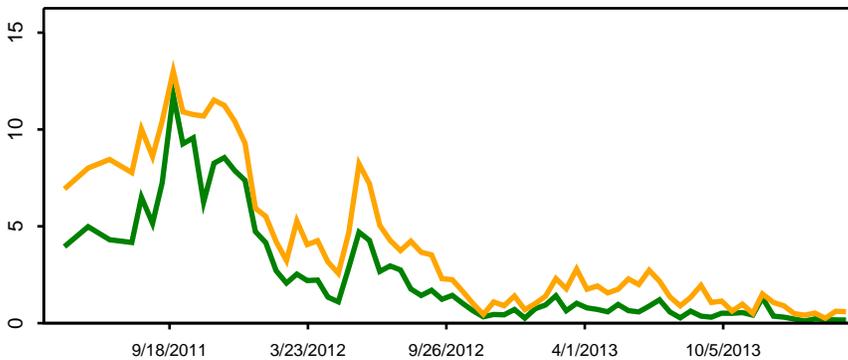
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



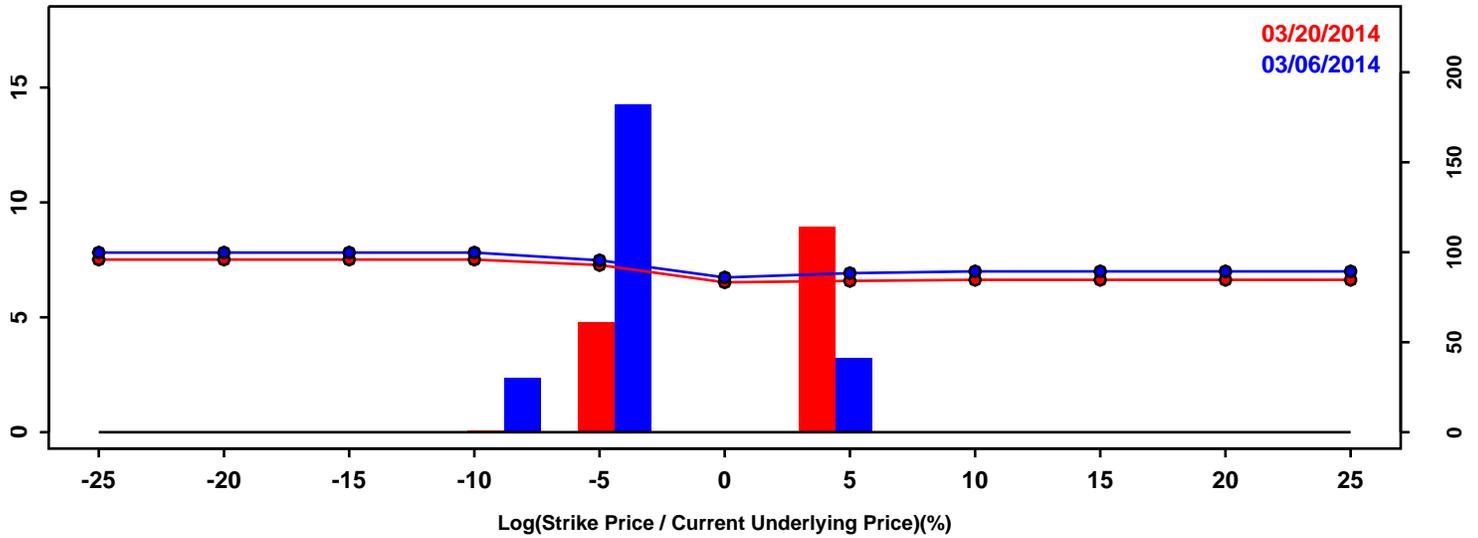
Decrease <= -10% [stronger \$]    Increase >= 10% [weaker \$]

Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-4.53%	-4.47%	0.06%
50th Pct	0.14%	0.15%	0.01%
90th Pct	4.29%	4.25%	-0.04%
Mean	0.02%	0.03%	0.01%
Std Dev	3.52%	3.50%	-0.03%
Skew	-0.27	-0.27	0.00
Kurtosis	0.43	0.43	0.00

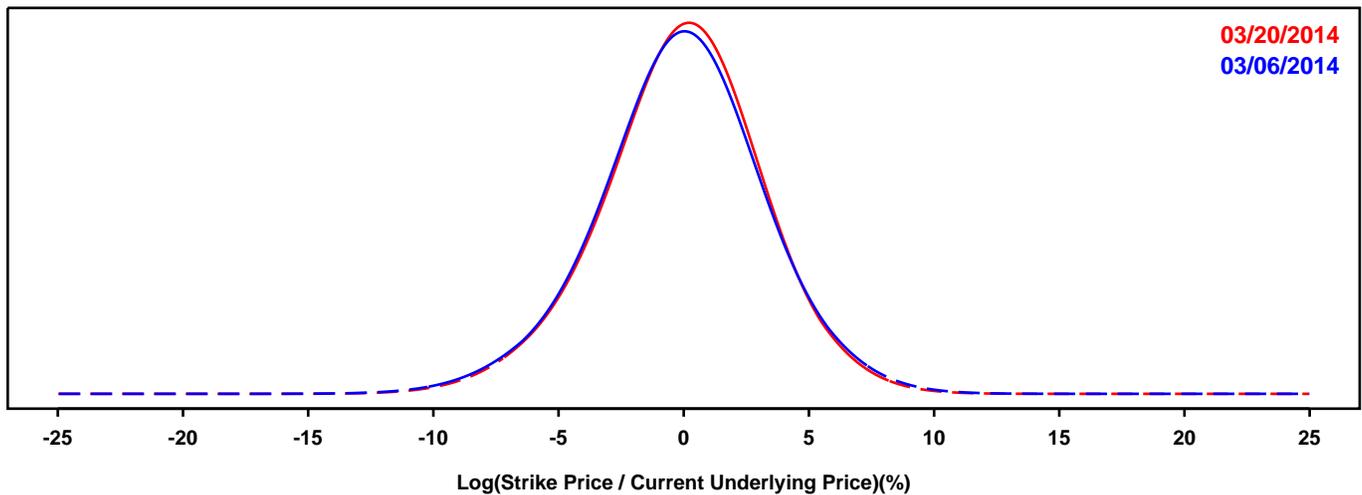
### RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- DOLLAR-POUND EXCHANGE RATE FUTURES

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

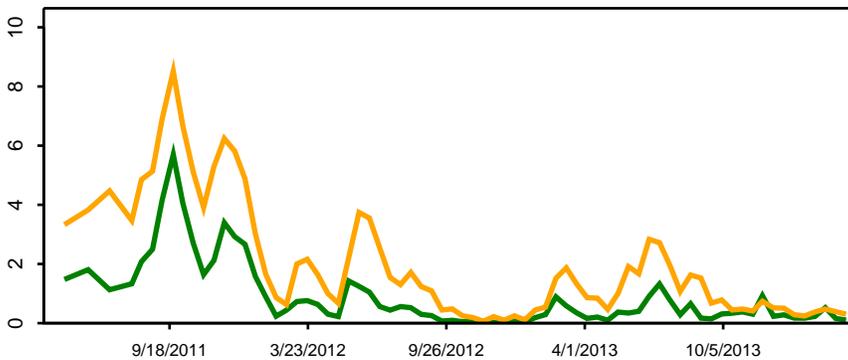
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



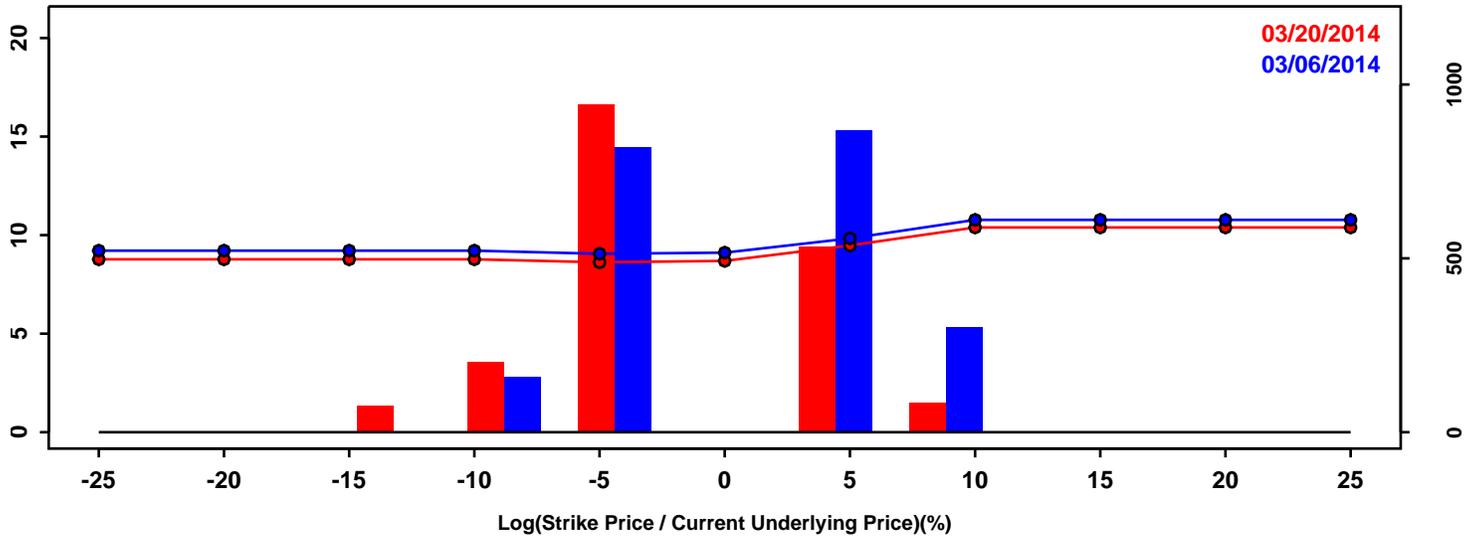
Decrease <= -10% [stronger \$]    Increase >= 10% [weaker \$]

Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-4.34%	-4.22%	0.12%
50th Pct	-0.04%	0.05%	0.09%
90th Pct	4.08%	3.97%	-0.11%
Mean	-0.08%	-0.03%	0.05%
Std Dev	3.36%	3.26%	-0.10%
Skew	-0.14	-0.18	-0.04
Kurtosis	0.42	0.37	-0.05

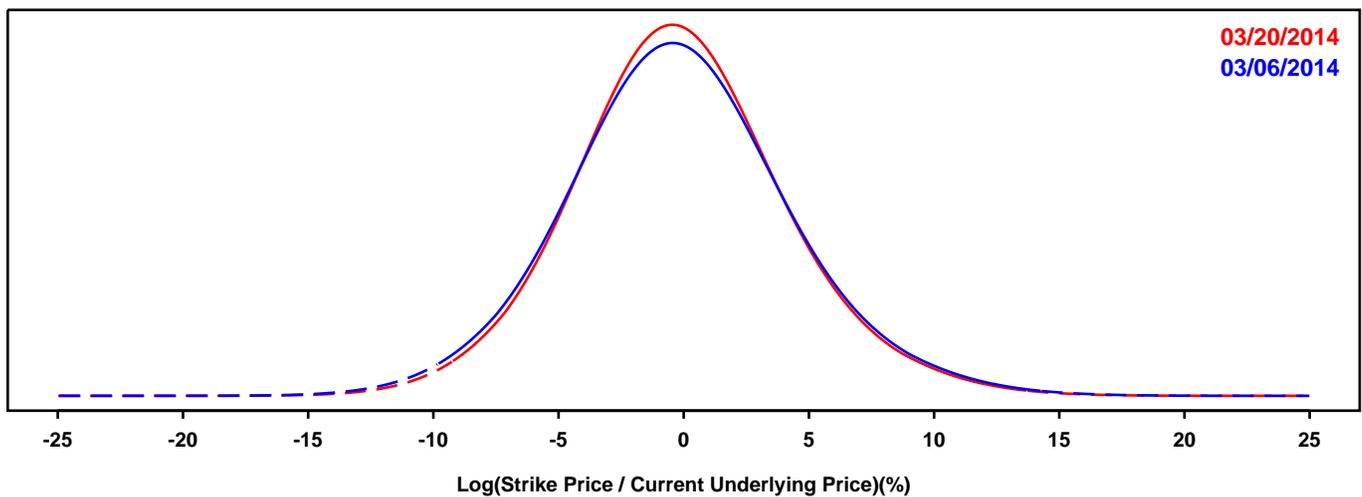
## RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- DOLLAR-YEN EXCHANGE RATE FUTURES

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

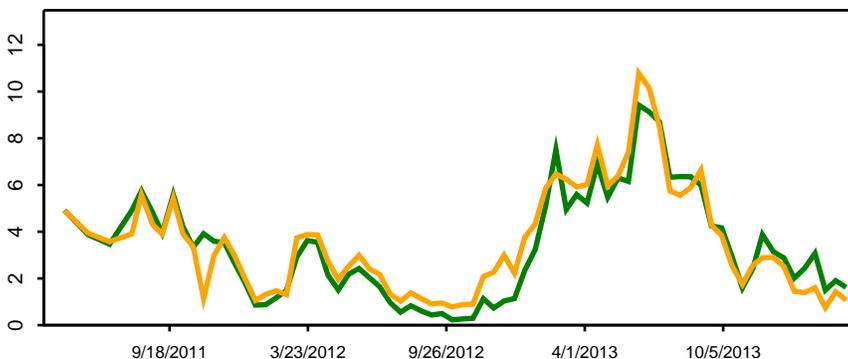
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



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

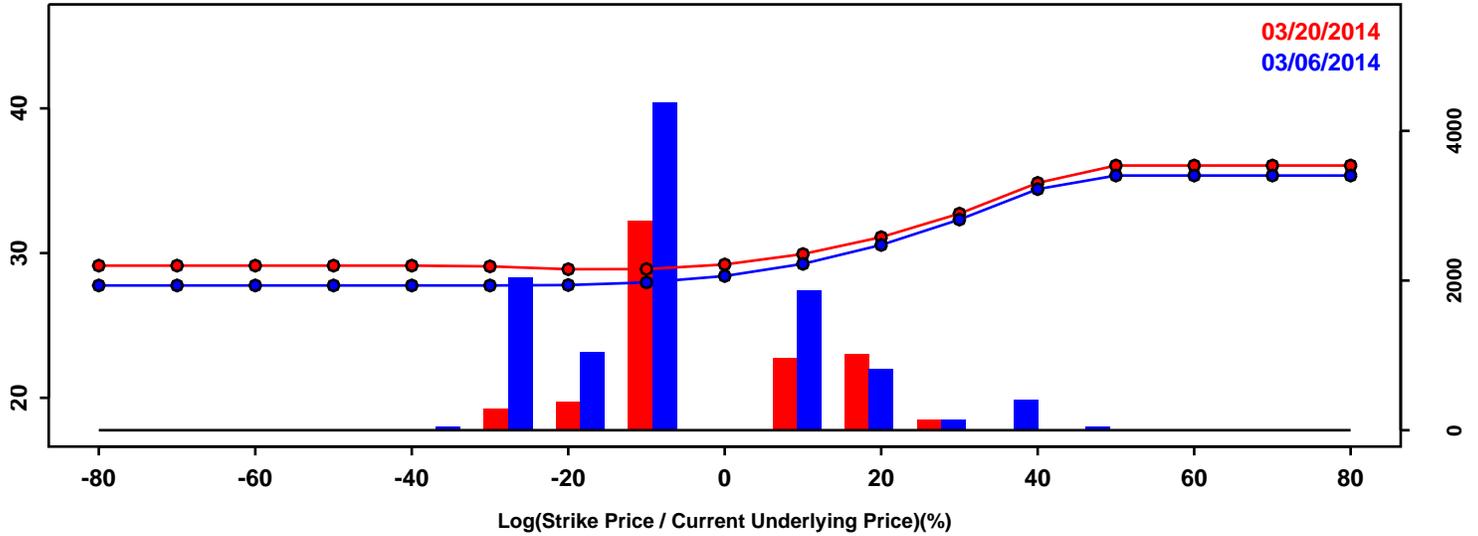
Statistics of the Log Return Distributions

	03/06/2014	03/20/2014	Change
10th Pct	-5.80%	-5.49%	0.31%
50th Pct	-0.27%	-0.24%	0.03%
90th Pct	5.57%	5.37%	-0.20%
Mean	-0.15%	-0.11%	0.04%
Std Dev	4.54%	4.33%	-0.21%
Skew	0.17	0.19	0.02
Kurtosis	0.41	0.44	0.03

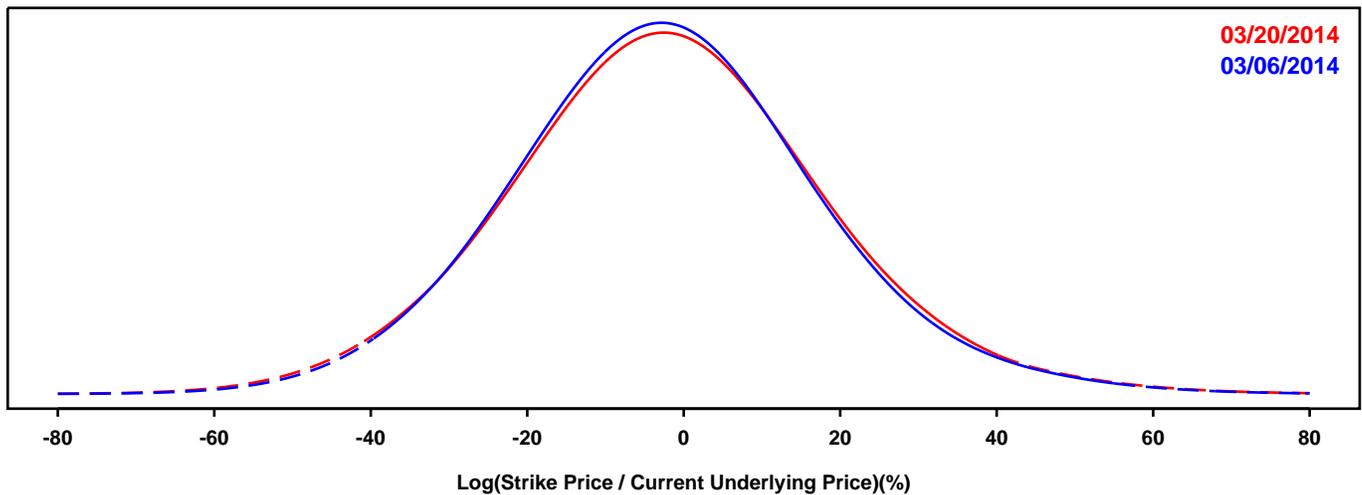
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CORN FUTURES

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

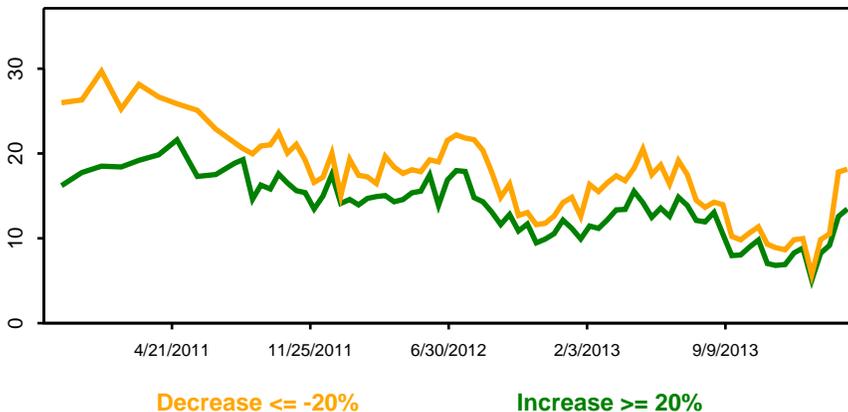
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

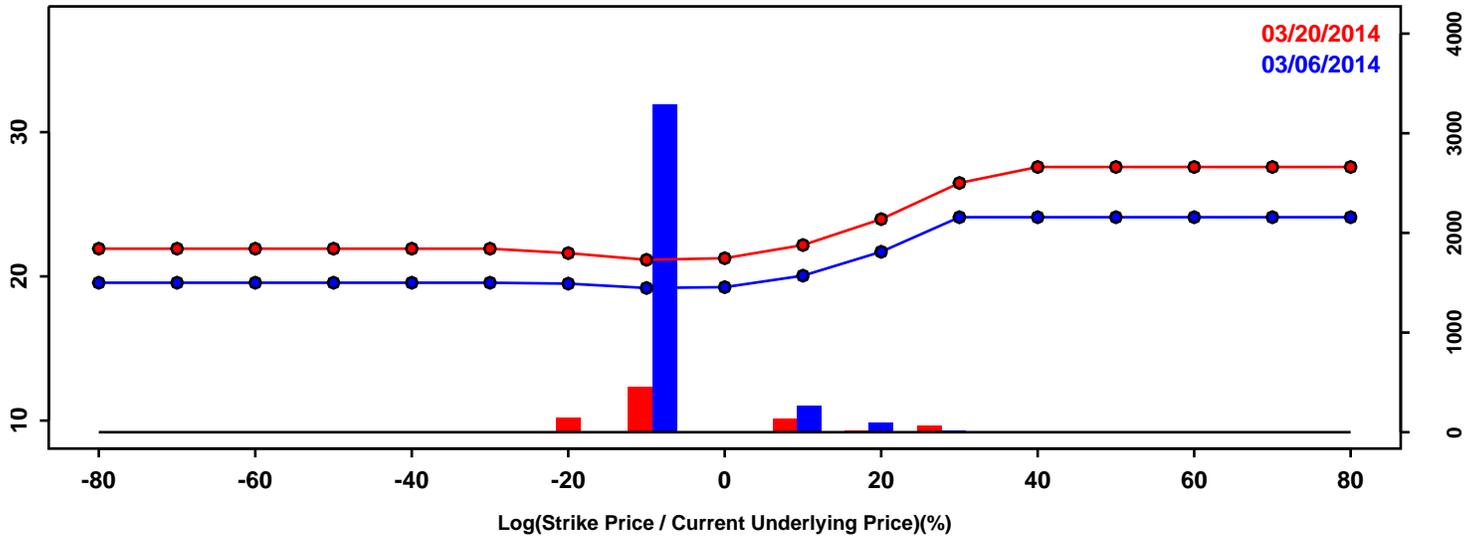


	03/06/2014	03/20/2014	Change
10th Pct	-26.97%	-27.49%	-0.52%
50th Pct	-2.59%	-2.26%	0.33%
90th Pct	22.91%	23.90%	0.99%
Mean	-2.12%	-1.87%	0.25%
Std Dev	19.92%	20.50%	0.58%
Skew	0.20	0.16	-0.04
Kurtosis	0.42	0.41	-0.01

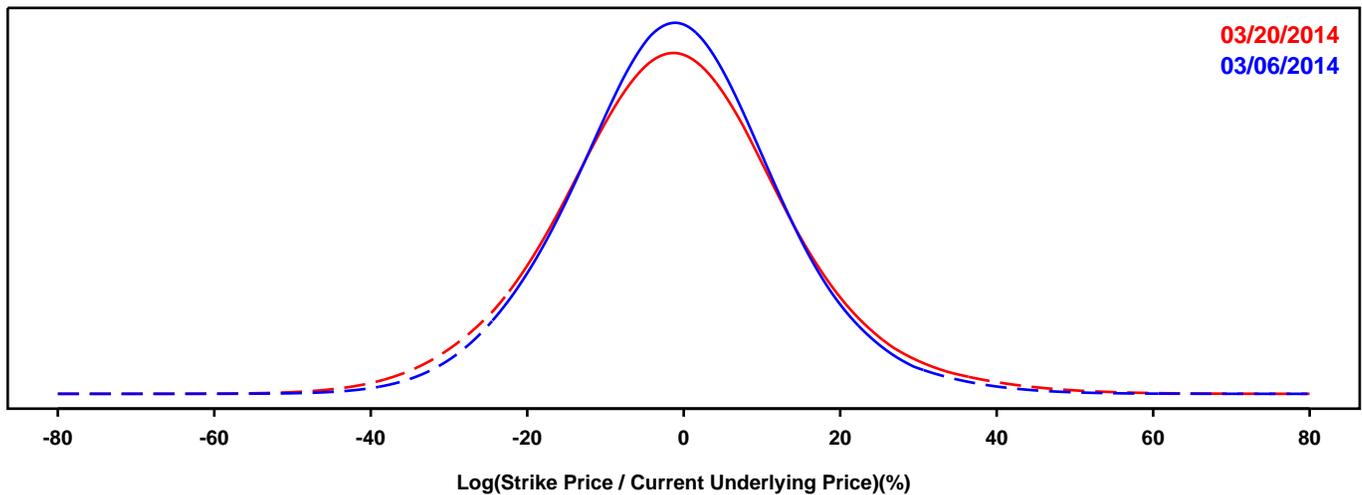
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- SOYBEAN FUTURES

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

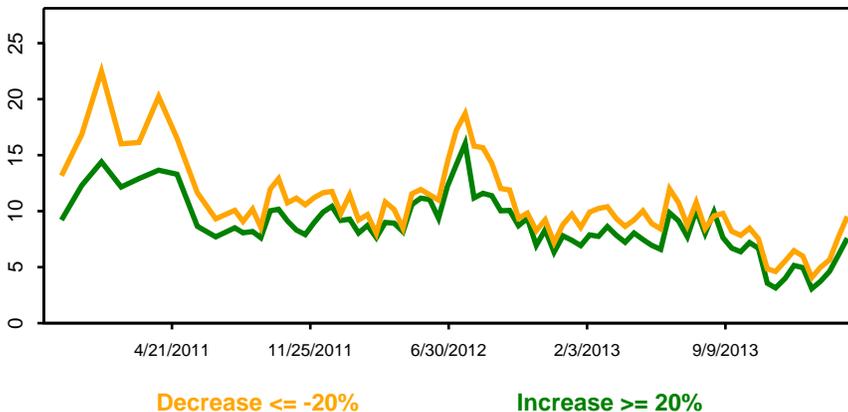
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

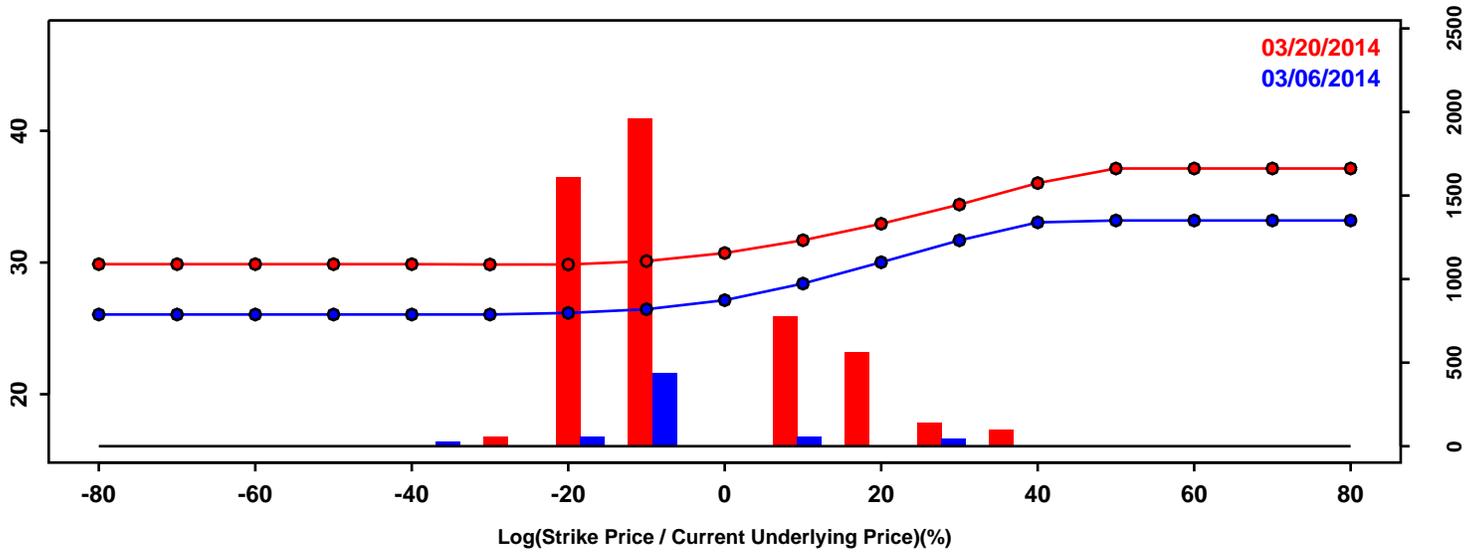


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-18.01%	-19.57%	-1.57%
50th Pct	-1.12%	-1.27%	-0.15%
90th Pct	15.95%	17.42%	1.47%
Mean	-0.95%	-1.03%	-0.07%
Std Dev	13.56%	14.94%	1.38%
Skew	0.13	0.17	0.04
Kurtosis	0.47	0.62	0.15

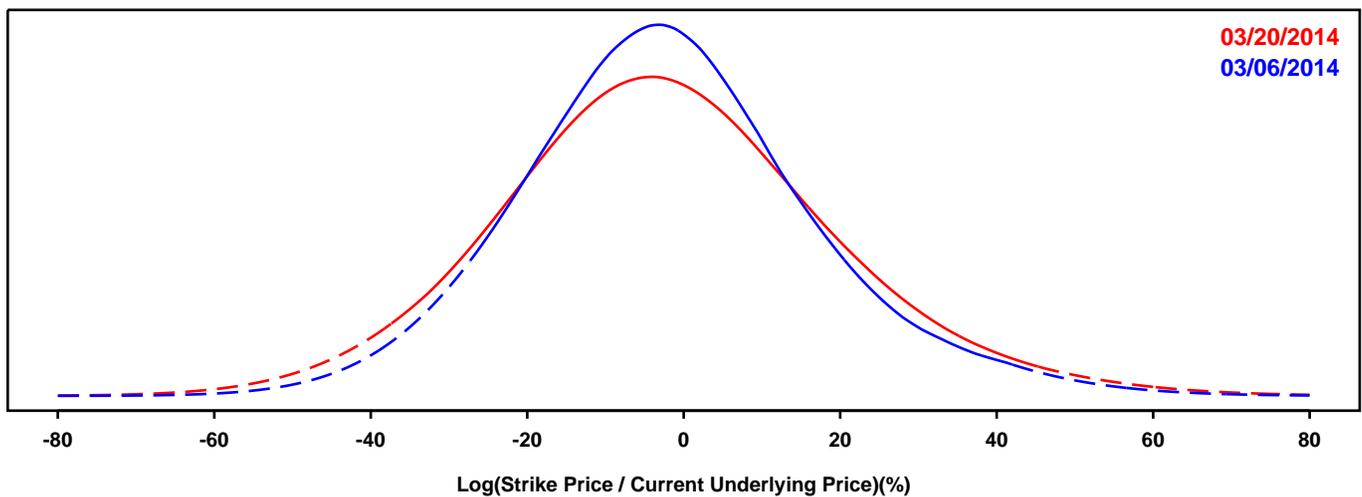
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- WHEAT FUTURES

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

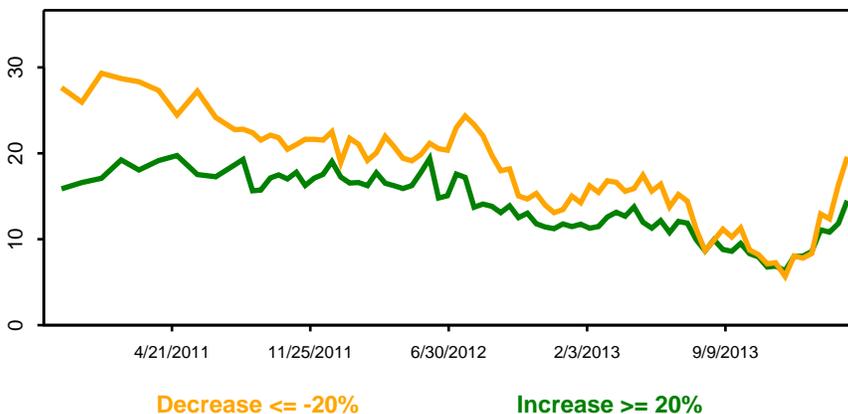
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

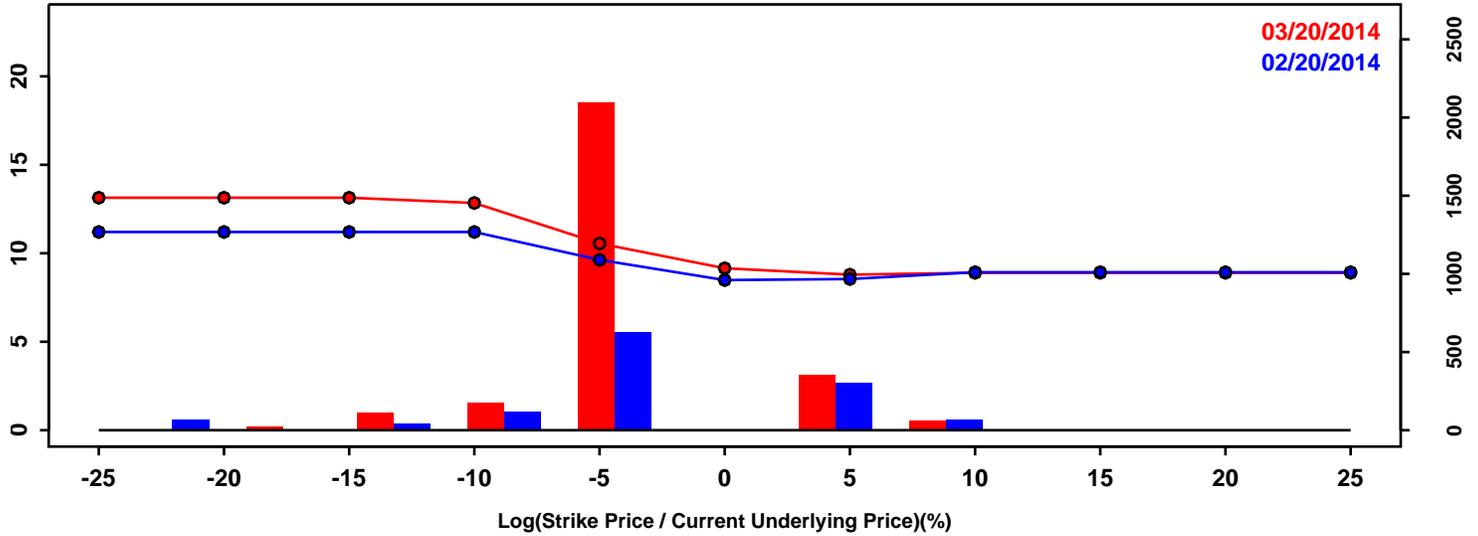


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-25.47%	-28.69%	-3.22%
50th Pct	-2.83%	-2.91%	-0.08%
90th Pct	22.23%	25.42%	3.18%
Mean	-2.02%	-2.10%	-0.09%
Std Dev	19.11%	21.56%	2.45%
Skew	0.30	0.23	-0.07
Kurtosis	0.52	0.40	-0.12

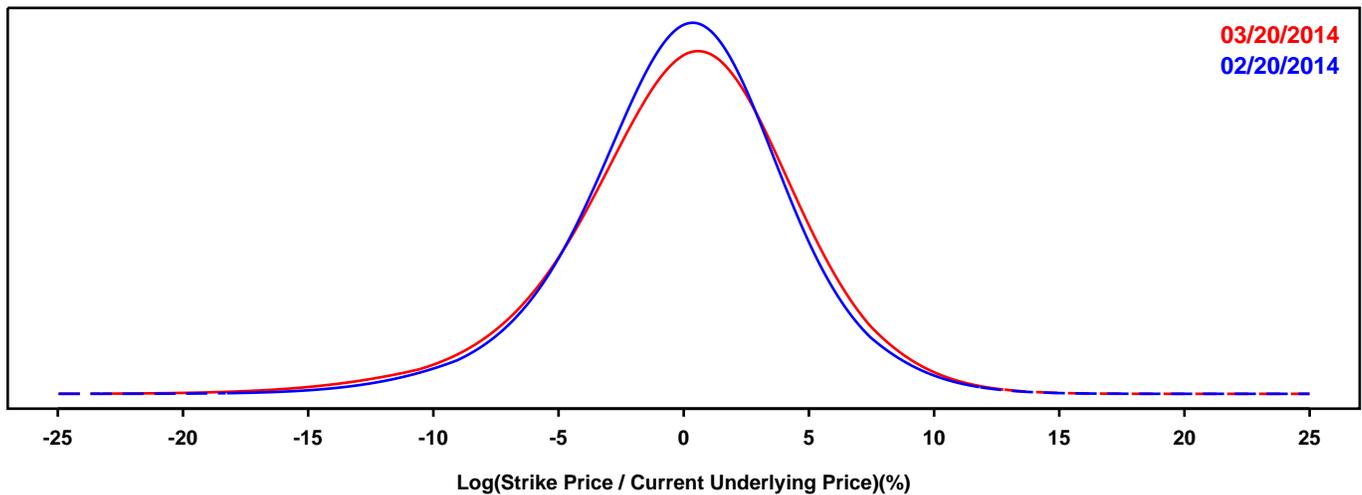
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CATTLE FUTURES

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

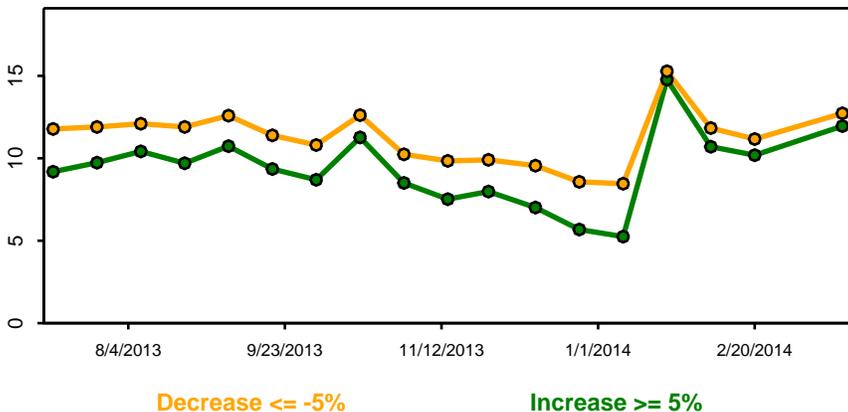
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

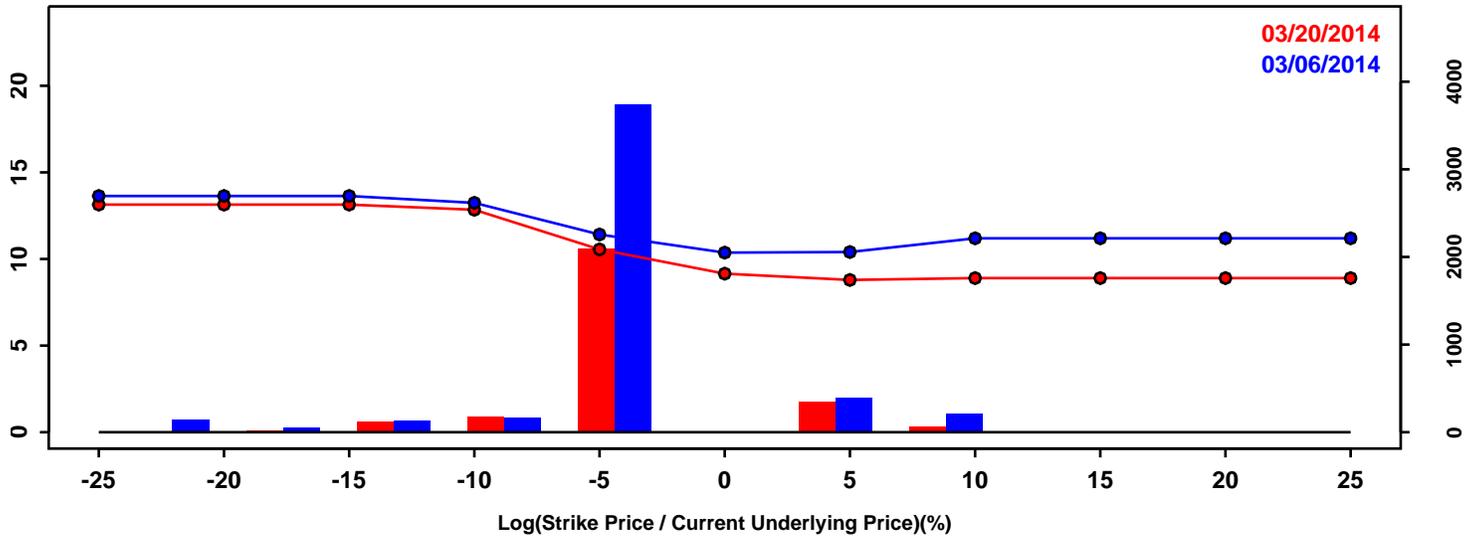


Statistics of the Log Return Distributions			
	02/20/2014	03/20/2014	Change
10th Pct	-5.30%	-5.80%	-0.49%
50th Pct	0.12%	0.22%	0.10%
90th Pct	5.05%	5.45%	0.40%
Mean	-0.01%	-0.02%	-0.01%
Std Dev	4.24%	4.60%	0.37%
Skew	-0.29	-0.46	-0.17
Kurtosis	0.81	1.01	0.19

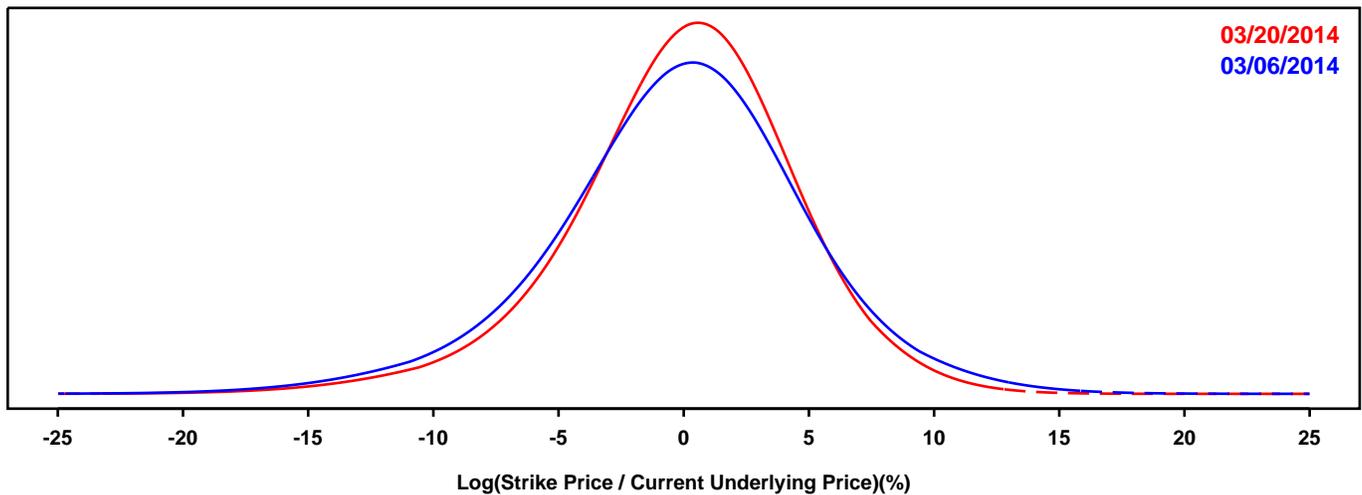
# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CATTLE FUTURES

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

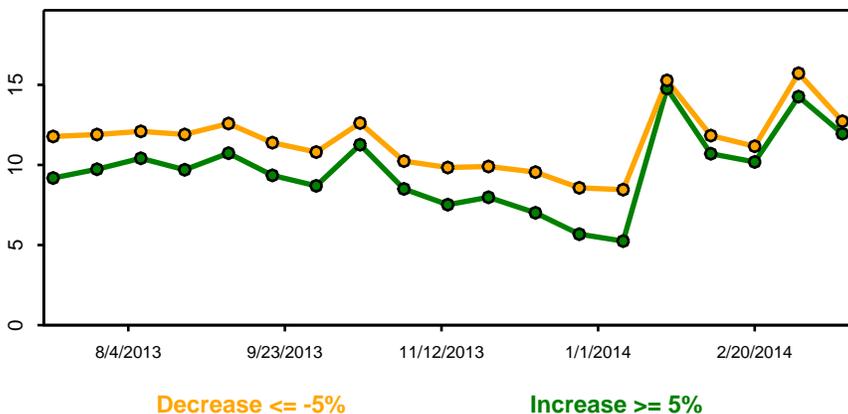
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

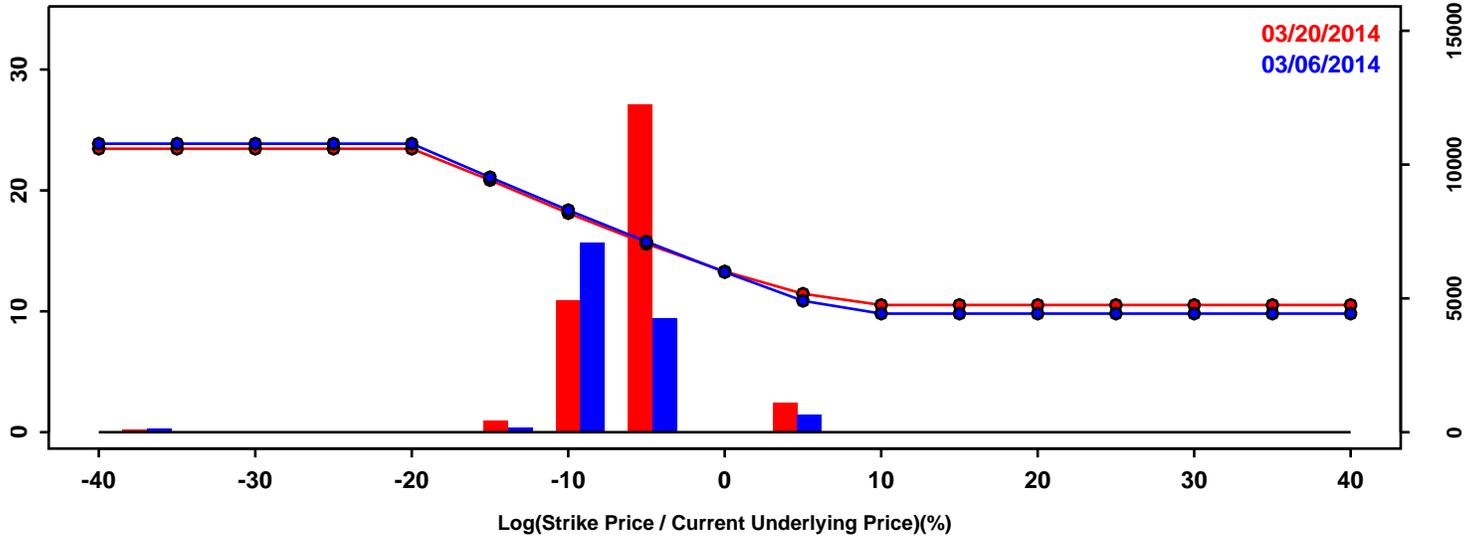


Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-6.61%	-5.80%	0.82%
50th Pct	0.04%	0.22%	0.19%
90th Pct	6.04%	5.45%	-0.58%
Mean	-0.14%	-0.02%	0.12%
Std Dev	5.19%	4.60%	-0.58%
Skew	-0.29	-0.46	-0.18
Kurtosis	0.85	1.01	0.15

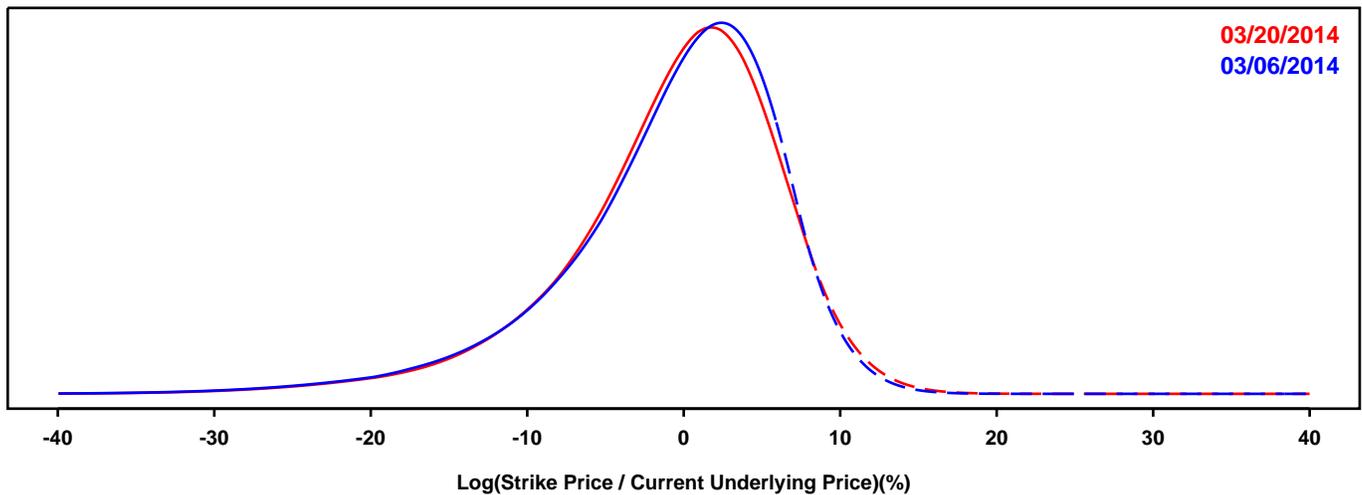
### RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- iSHARES DOW JONES US REAL ESTATE

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

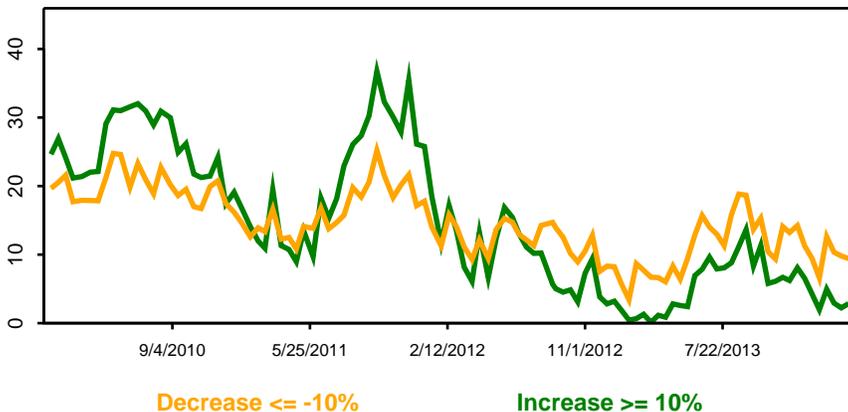
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



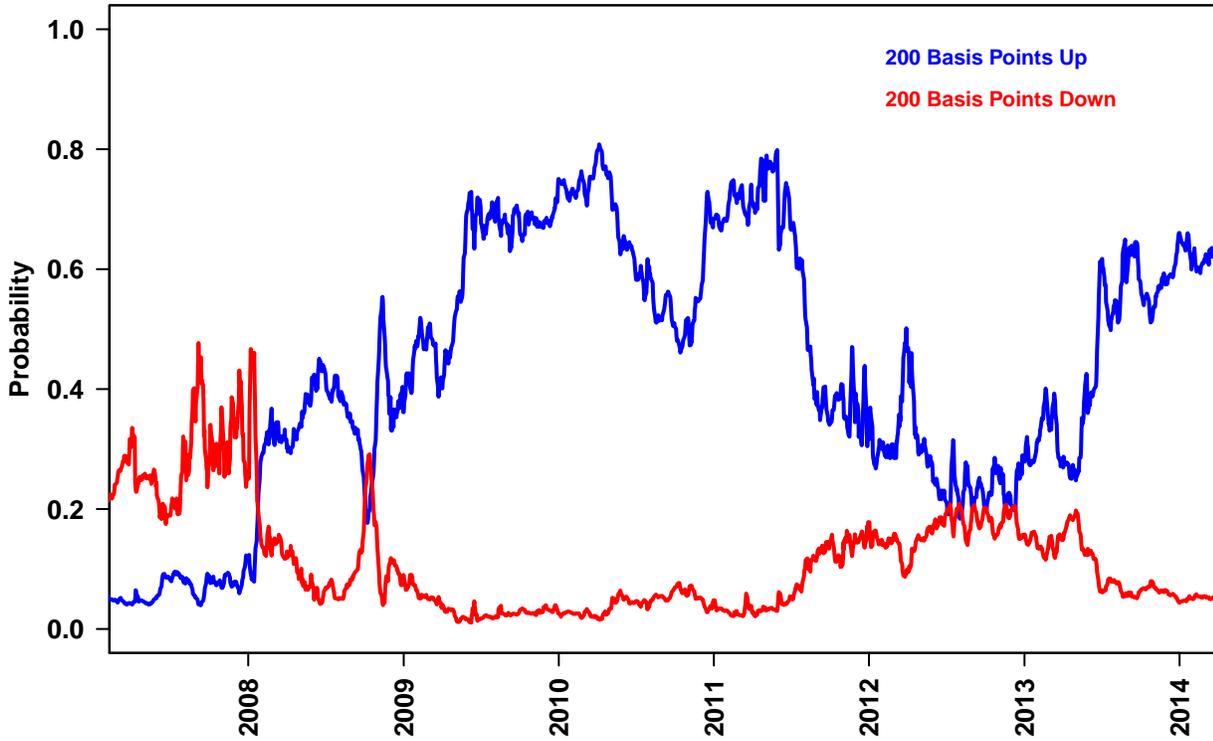
Probability of a Large Change



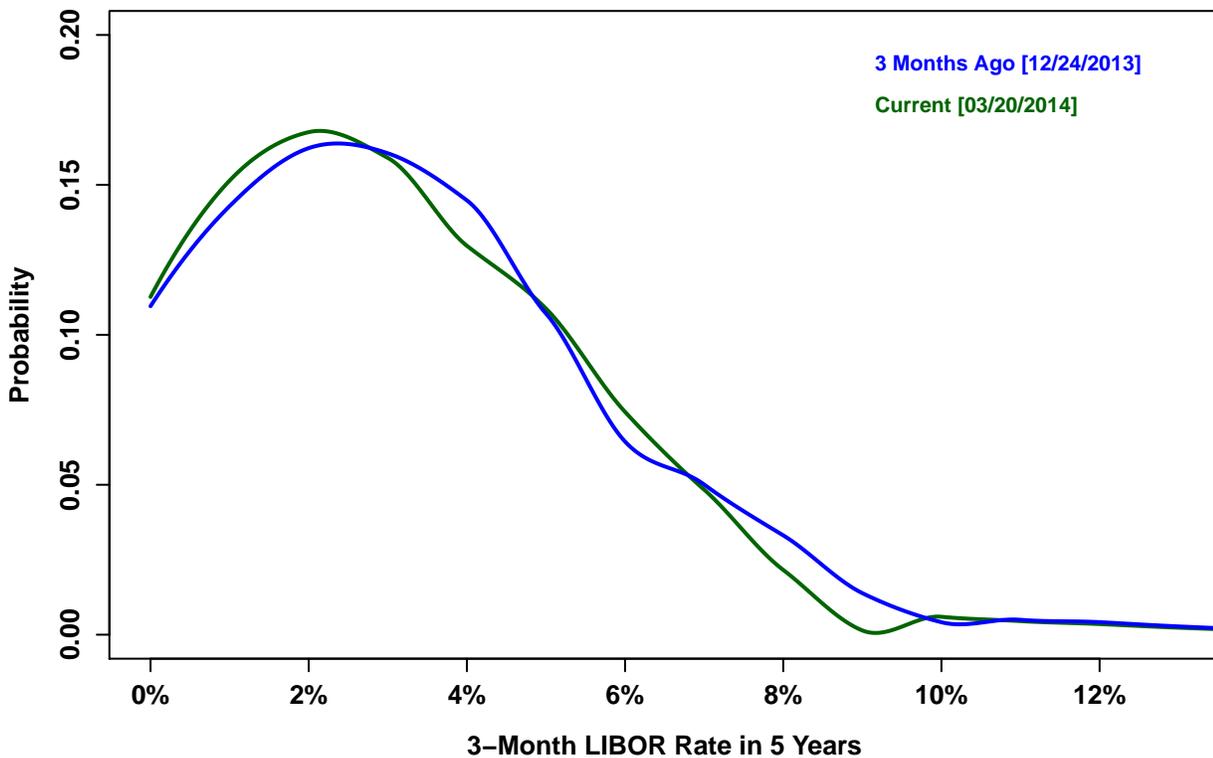
Statistics of the Log Return Distributions			
	03/06/2014	03/20/2014	Change
10th Pct	-9.87%	-9.66%	0.20%
50th Pct	0.54%	0.36%	-0.18%
90th Pct	6.83%	7.00%	0.18%
Mean	-0.68%	-0.66%	0.02%
Std Dev	7.07%	7.00%	-0.07%
Skew	-1.15	-1.04	0.12
Kurtosis	2.27	2.10	-0.17

# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- Interest Rate Caps & Floors

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

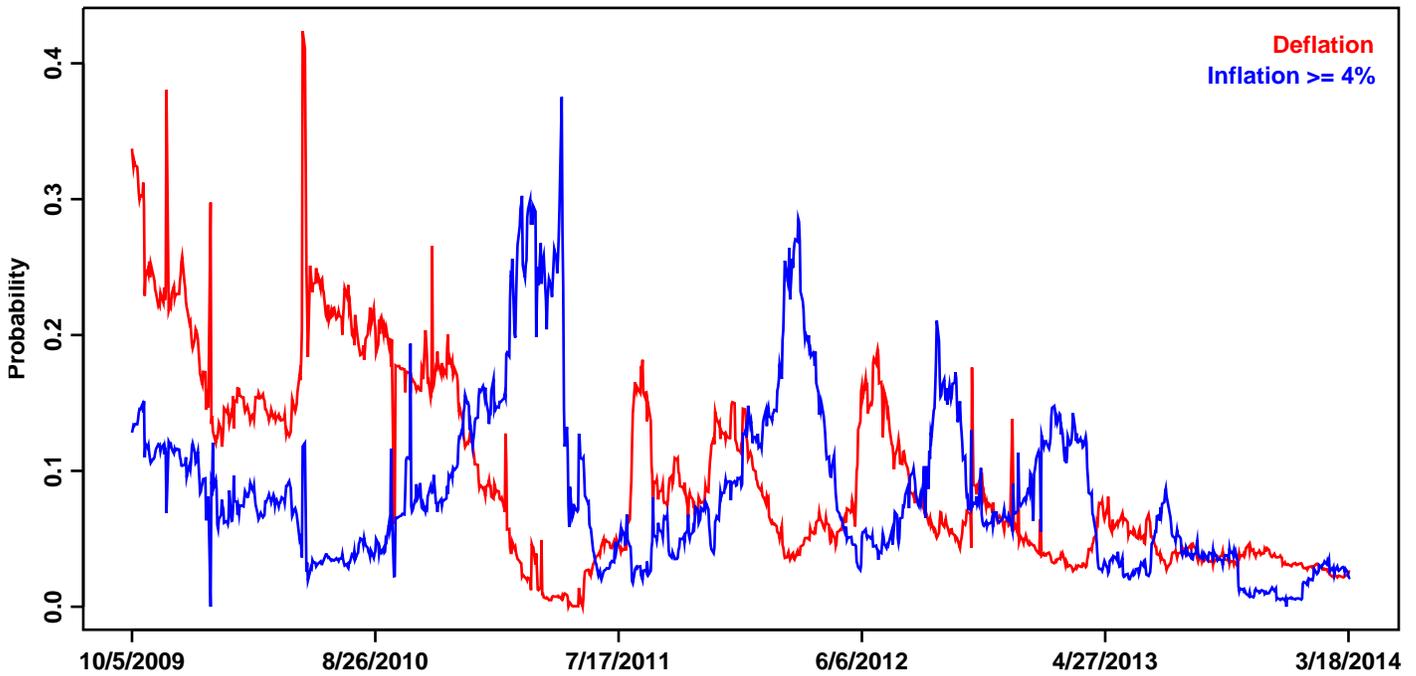


### Risk Neutral Density Function for 3-Month LIBOR, 5 Years Out

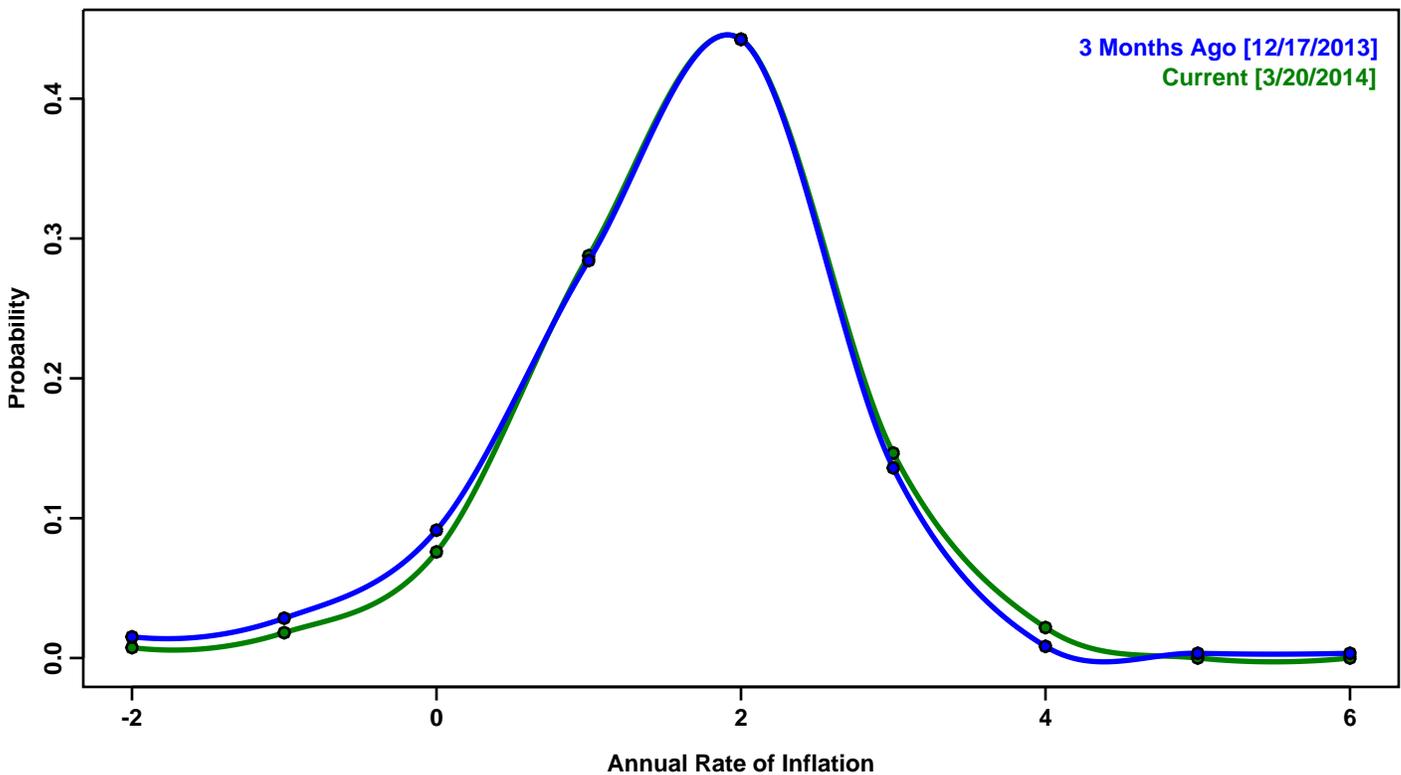


# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- Inflation Caps & Floors

## Probability of Deflation and High Inflation over the next 12 Months



## Risk Neutral Density Function for Inflation over the next 12 Months



# RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- Inflation Caps & Floors

## Probability of Deflation and High Inflation over the next 5 Years

