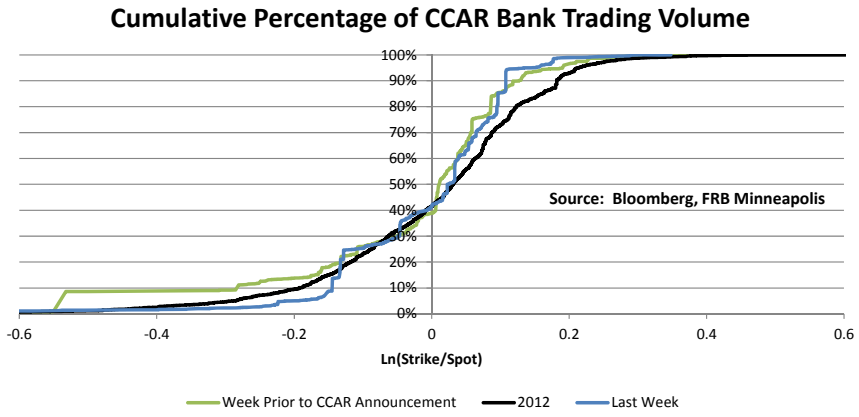
Minneapolis Options Report – March 22nd

Banks

The data for this week's report encompasses the five trading days subsequent to the CCAR results announcement on March 14th. Option volumes were higher relative to last period though not particularly high relative to history. The three traded firms receiving negative news were BBT, GS, and JPM. Notably, trading in GS and JPM options did not rank as above average when measured back to the beginning of 2010 or over the past 20 bi-weekly periods. Options on BBT stock traded actively relative to the past 20 periods but, as with GS and JPM, did not trade at above average volumes relative to longer history.

RNPD standard deviations fell 6 of the 17 traded CCAR firms. The median RNPD standard deviation fell 35 basis points among CCAR participants.

The trading that took place two weeks ago at strike prices deeply out of the money below current spot prices receded over the past 5 days (note the difference in the blue line from the green line for returns less than -.20 in the chart). Indeed, for the CCAR universe, trading was largely on the call side of the current spot price.



Additional notes:

- Despite the rejection of its capital plan the RNPD derived from options on shares of BBT remain largely unchanged.
- Out of the money trades below the spot are evident in the volume histograms in the GS and JPM reports.
- The RNPD standard deviations derived from options on GS and JPM shares increased nearly 100 basis points. The risk neutral probability of a -20% price move also ticked higher for both firms.

Other Commodity Markets
We continue to see active trading in the options we follow on exchange rate futures. Trading in options on WTI crude oil futures was also active. RNPD standard deviations remain at two year lows across the markets we follow save for the Yen-Dollar futures market.

- The rising RNPD standard deviation trend in the grain markets remains in place. (*see individual reports*)

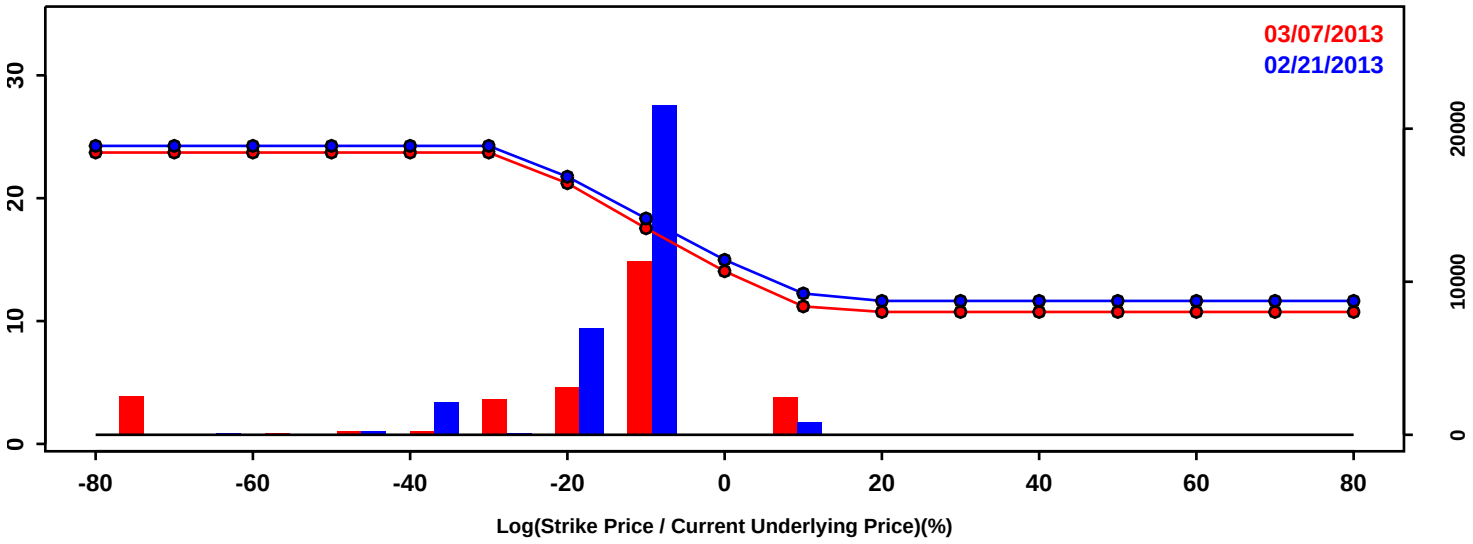
- Tail risks continue their decline in the oil markets. Large change probabilities declined again and RNPD standard deviations dropped over 150 basis points. (*See WTI and Brent reports*)

- Trading in options on exchange rate futures last week was unchanged from two weeks ago in options on Yen-Dollar and Dollar-Pound futures. Trading was higher in options on Euro-Dollar futures as was the risk neutral probability of a large price decrease.

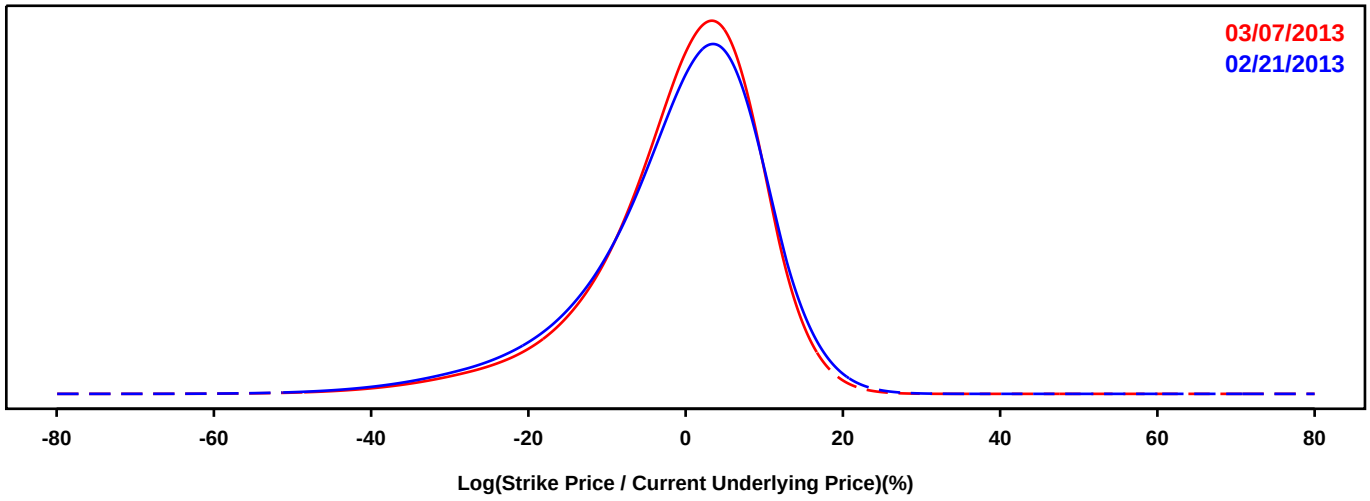
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- S&P 500

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

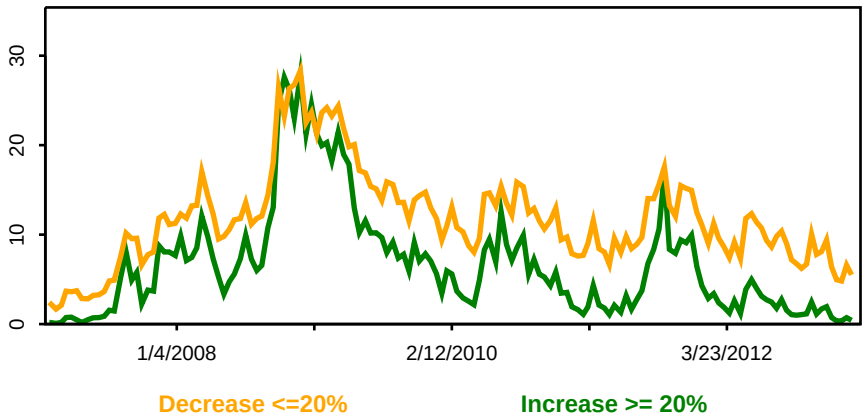
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



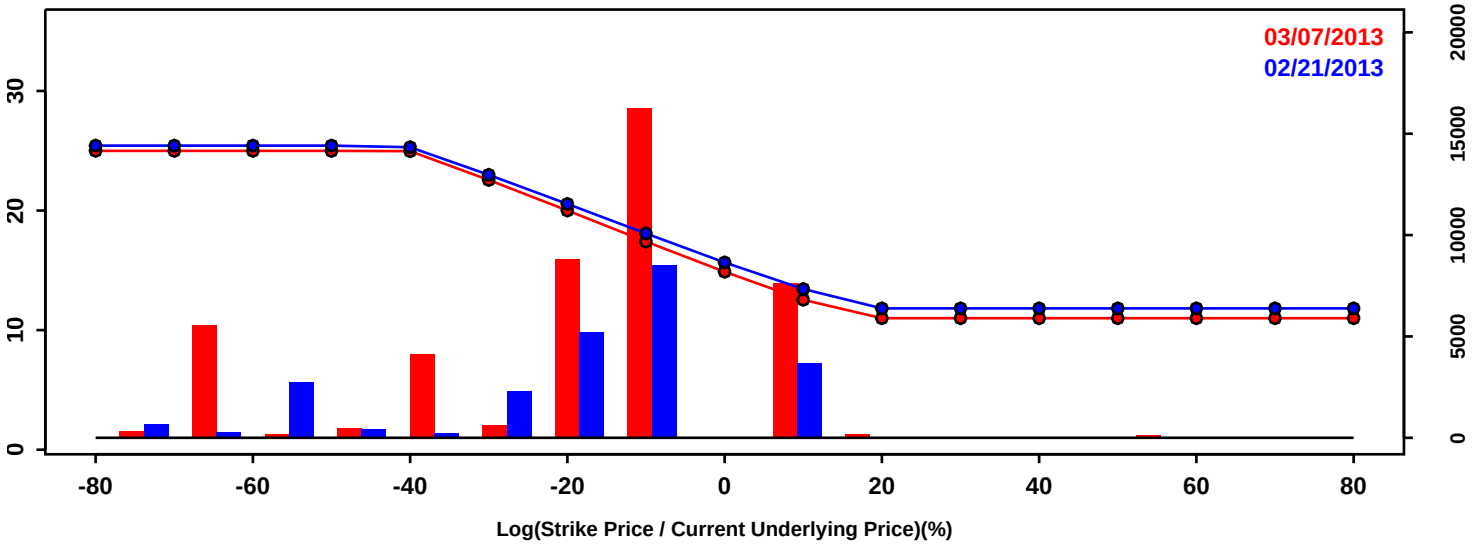
Statistics of the Log Return Distributions

	02/21/2013	03/07/2013	Change
10th Pct	-15.76%	-14.33%	1.44%
50th Pct	0.83%	0.90%	0.08%
90th Pct	11.11%	10.52%	-0.59%
Mean	-0.99%	-0.76%	0.23%
Std Dev	11.24%	10.50%	-0.74%
Skew	-1.04	-1.10	-0.06
Kurtosis	1.78	2.08	0.30

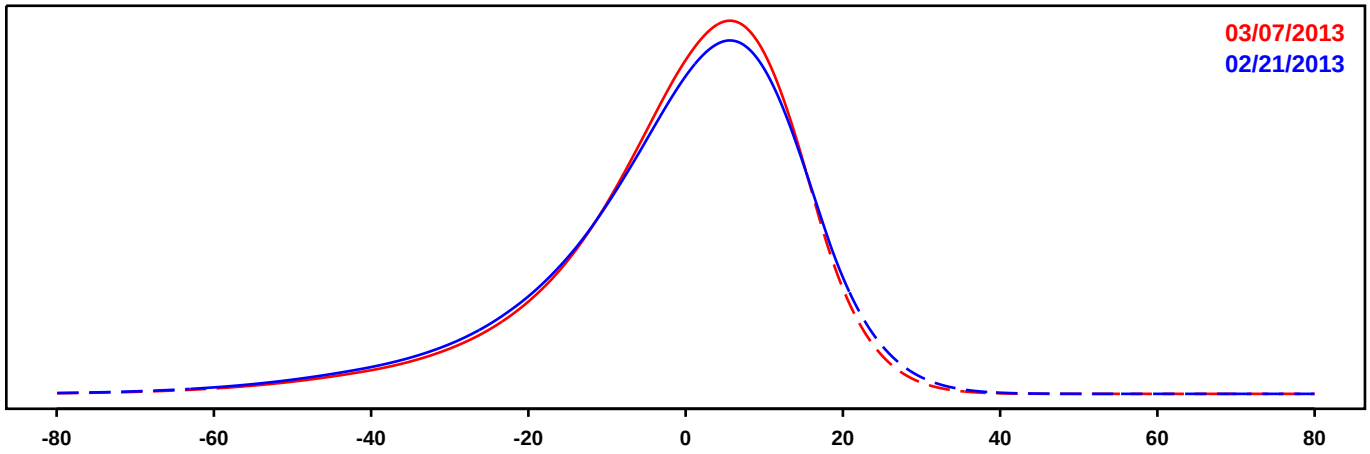
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- S&P 500

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

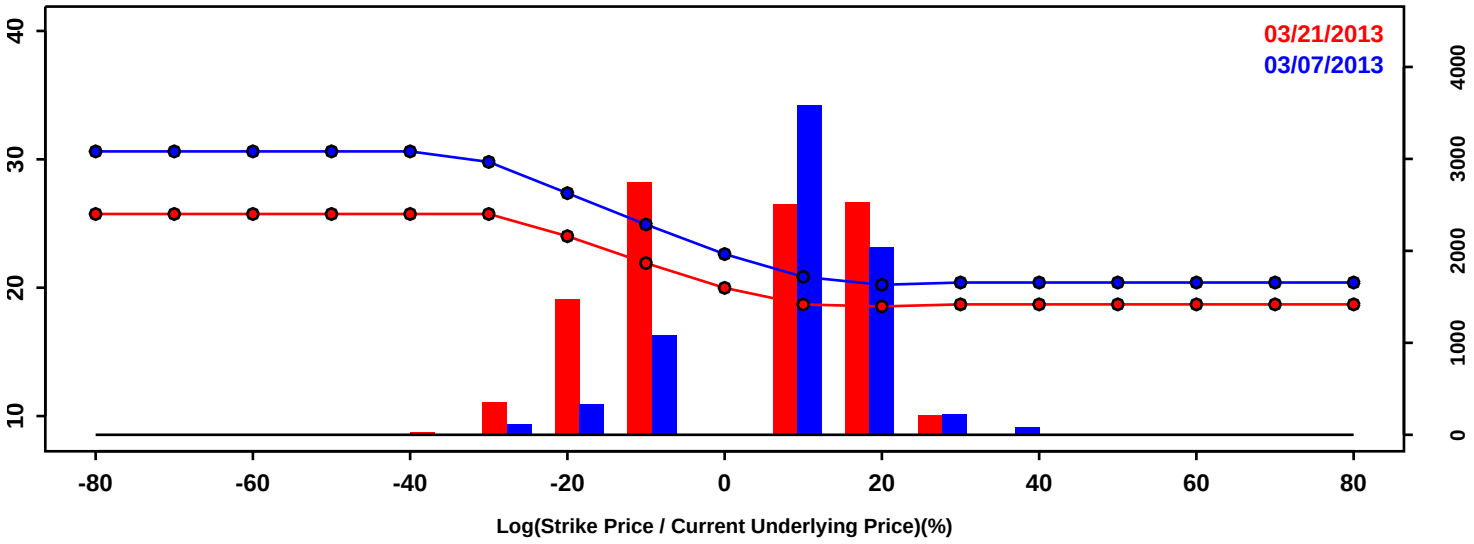
Statistics of the Log Return Distributions

	02/21/2013	03/07/2013	Change
10th Pct	-23.16%	-21.53%	1.64%
50th Pct	1.41%	1.55%	0.14%
90th Pct	16.40%	15.64%	-0.77%
Mean	-1.38%	-1.09%	0.29%
Std Dev	16.54%	15.69%	-0.86%
Skew	-1.06	-1.13	-0.06
Kurtosis	1.83	2.07	0.24

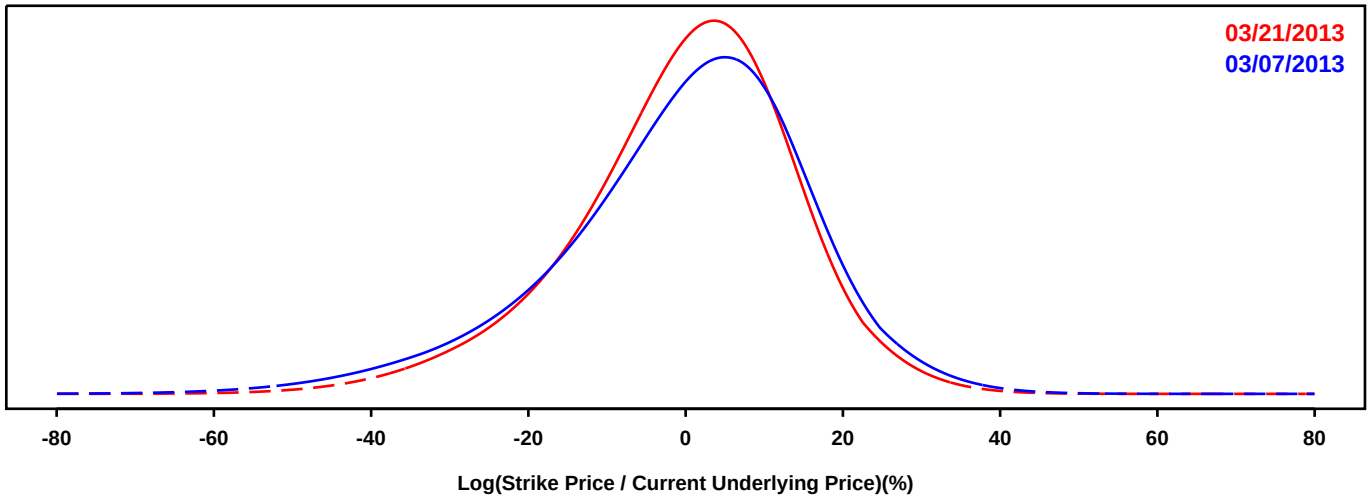
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CRUDE OIL FUTURES (WTI)

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

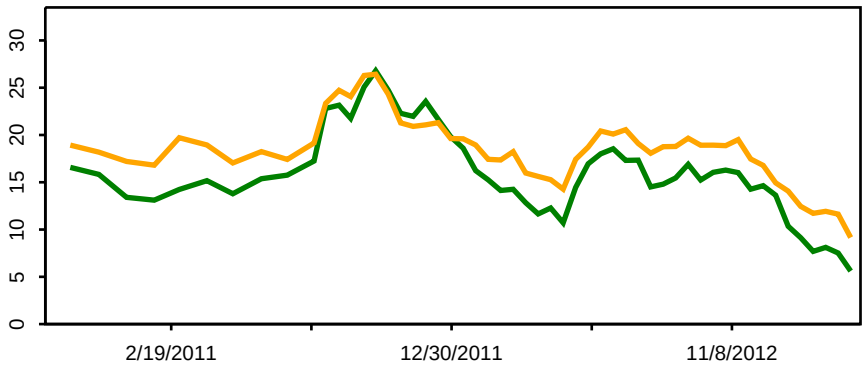
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



Decrease <=20% Increase >= 20%

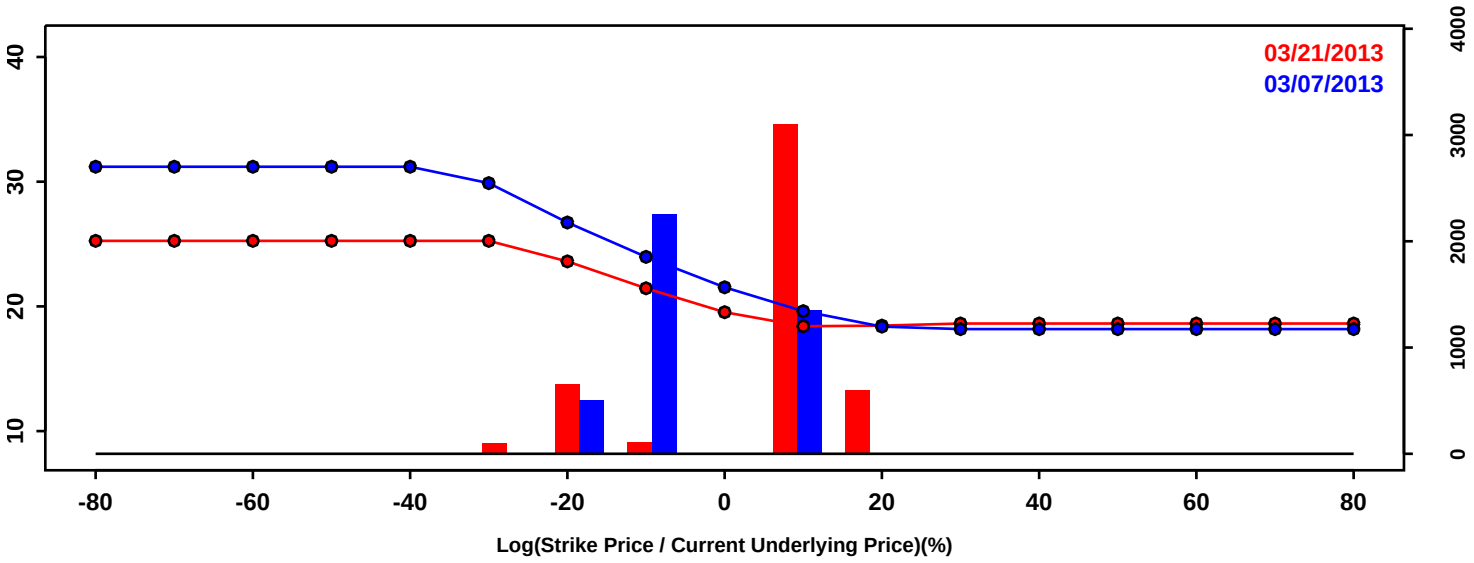
Statistics of the Log Return Distributions

	03/07/2013	03/21/2013	Change
10th Pct	-21.98%	-19.04%	2.94%
50th Pct	1.52%	1.15%	-0.37%
90th Pct	18.02%	16.27%	-1.75%
Mean	-0.41%	-0.23%	0.18%
Std Dev	16.25%	14.25%	-2.00%
Skew	-0.65	-0.52	0.13
Kurtosis	0.89	0.70	-0.20

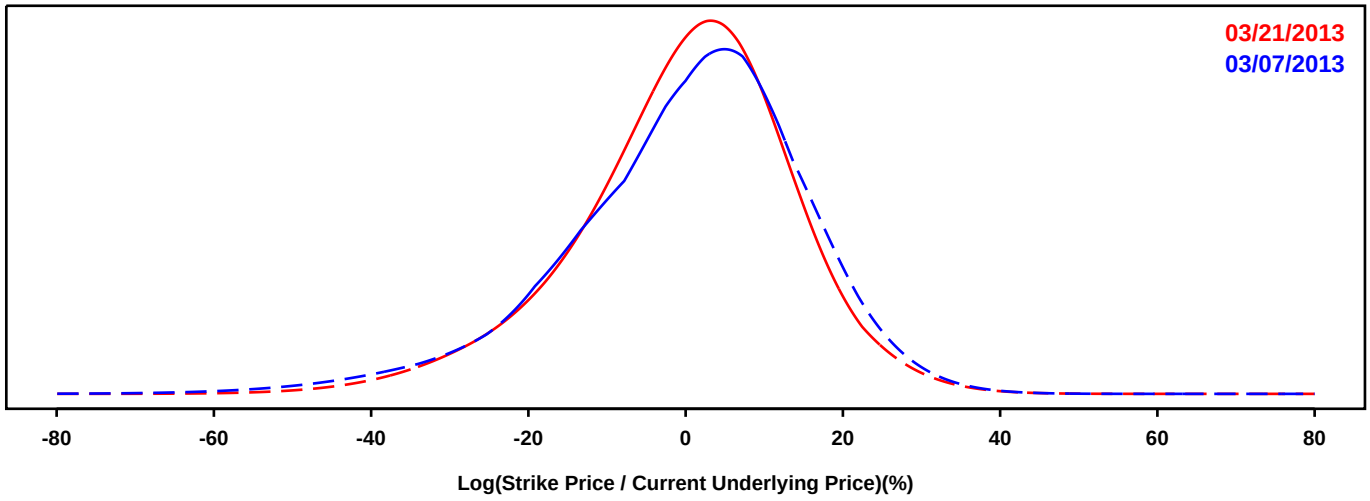
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CRUDE OIL FUTURES (Brent)

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

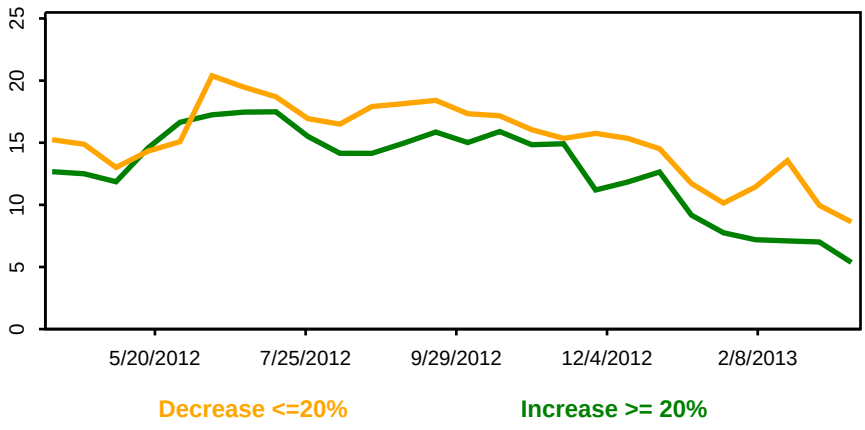
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



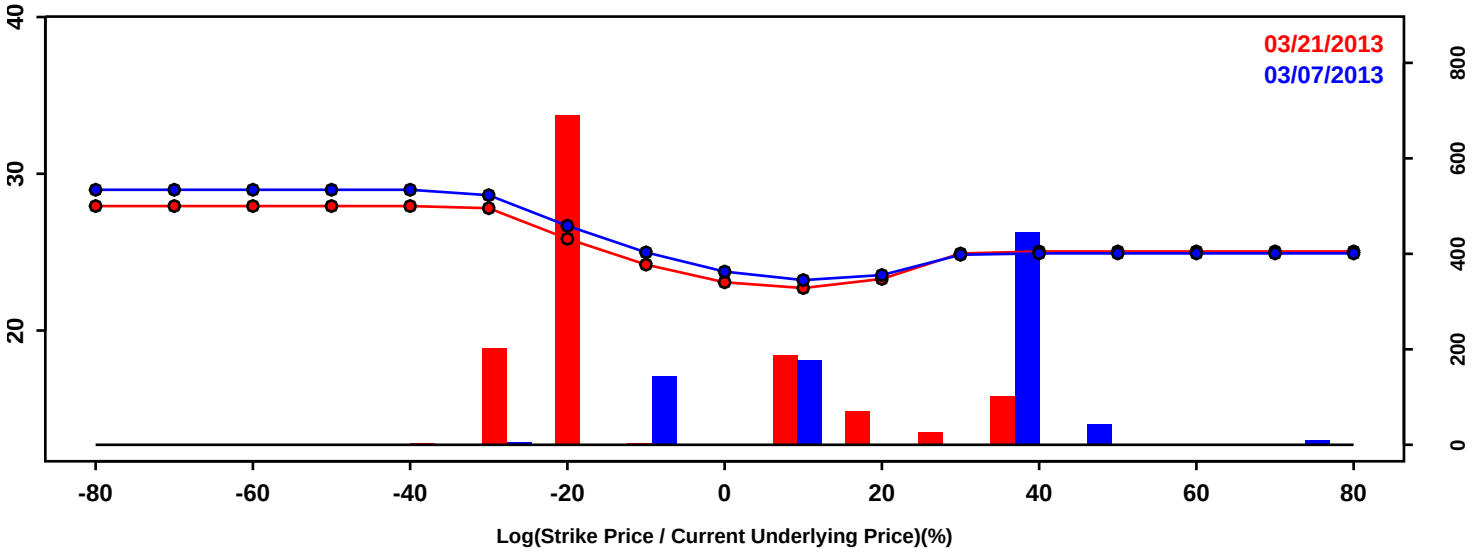
Statistics of the Log Return Distributions

	03/07/2013	03/21/2013	Change
10th Pct	-19.96%	-18.46%	1.50%
50th Pct	1.72%	1.06%	-0.67%
90th Pct	17.66%	15.96%	-1.70%
Mean	-0.07%	-0.20%	-0.13%
Std Dev	15.43%	13.92%	-1.52%
Skew	-0.71	-0.50	0.21
Kurtosis	1.11	0.74	-0.37

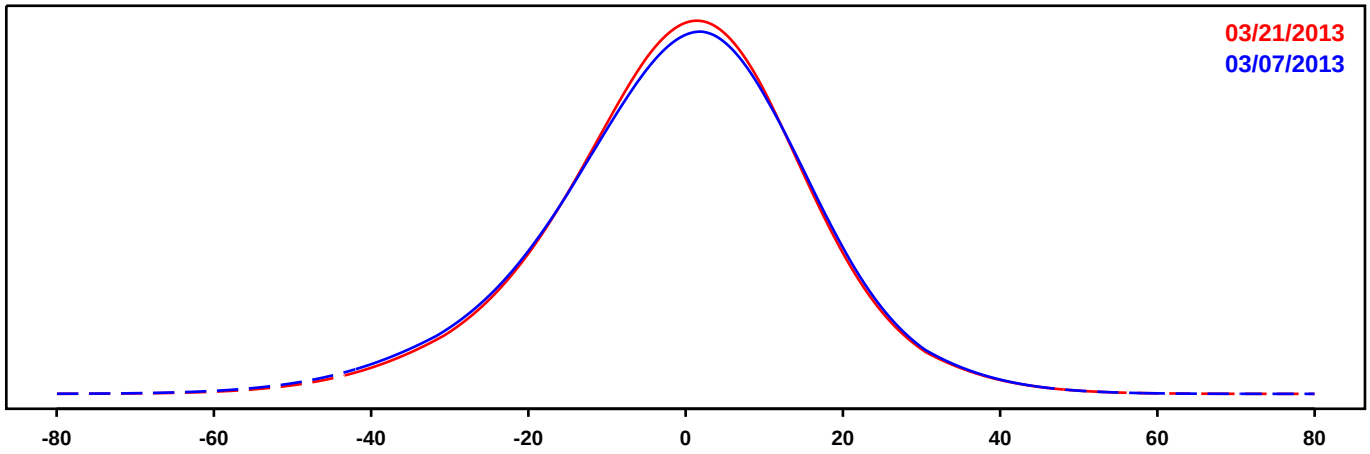
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- SILVER FUTURES

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

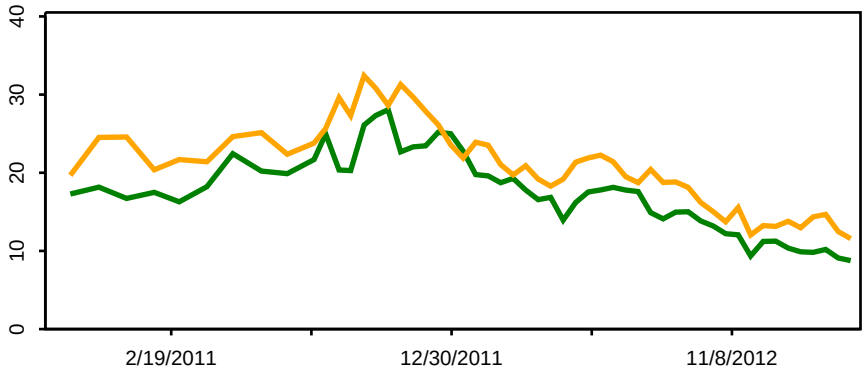
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



Decrease <=20% Increase >= 20%

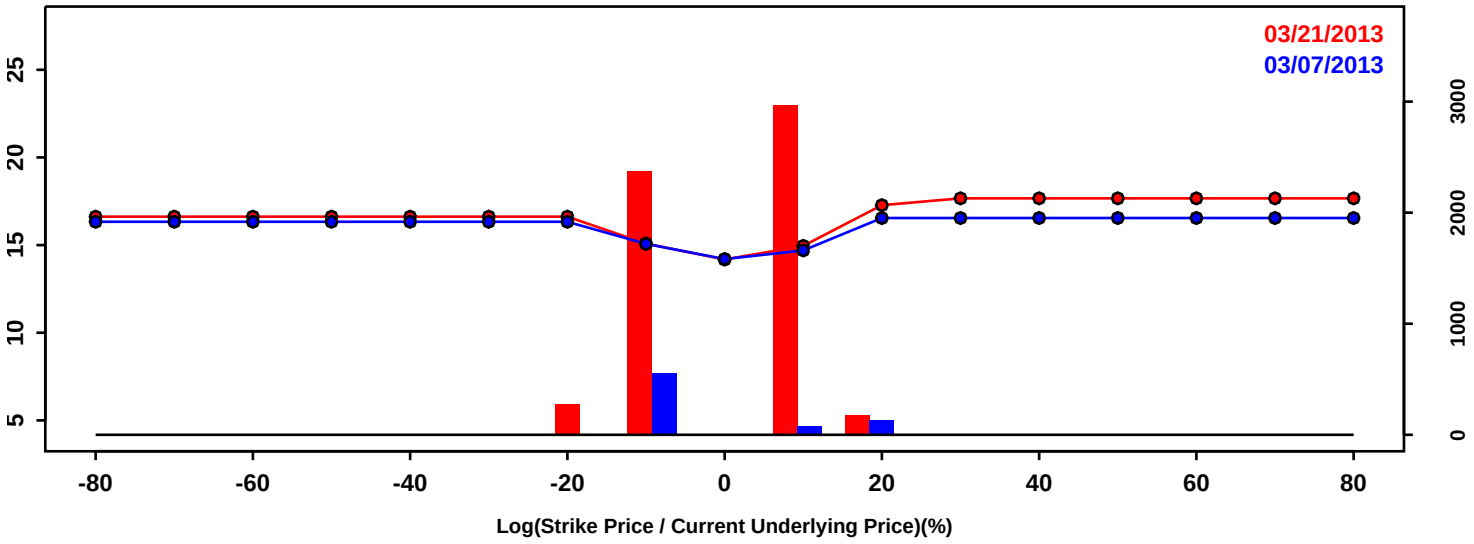
Statistics of the Log Return Distributions

	03/07/2013	03/21/2013	Change
10th Pct	-22.67%	-21.65%	1.02%
50th Pct	0.00%	0.00%	0.00%
90th Pct	19.18%	18.82%	-0.36%
Mean	-0.95%	-0.75%	0.20%
Std Dev	16.87%	16.36%	-0.51%
Skew	-0.30	-0.25	0.05
Kurtosis	0.57	0.59	0.02

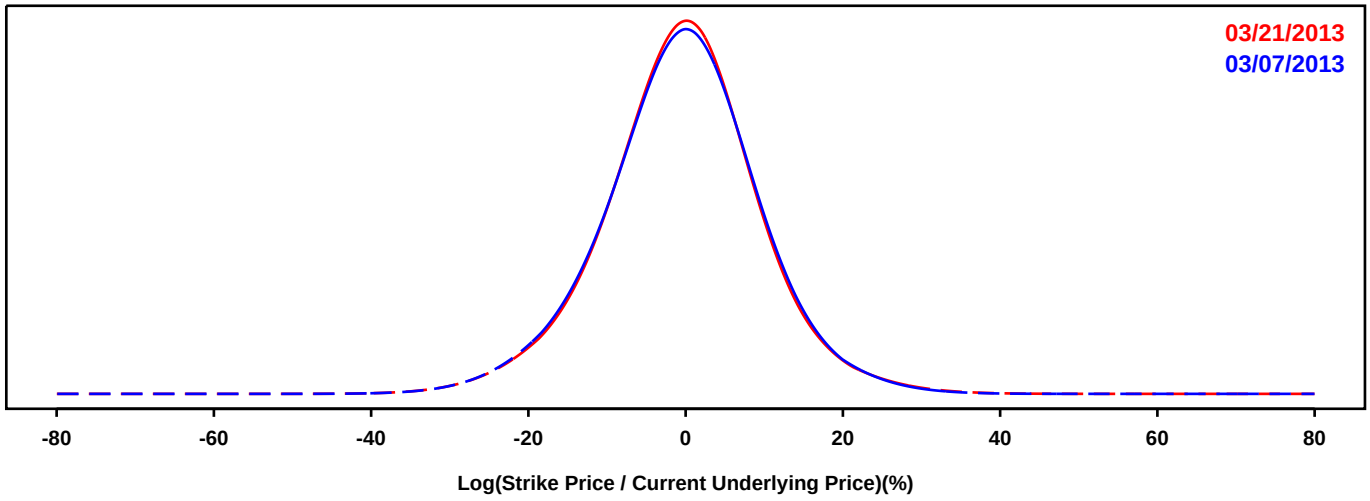
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- GOLD FUTURES

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

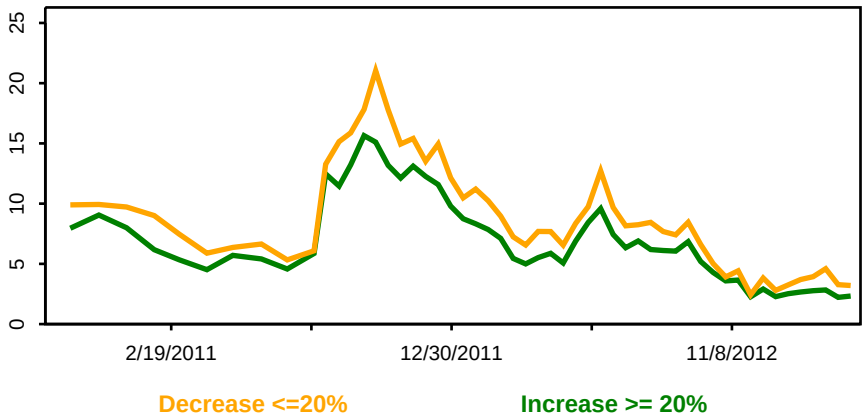
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



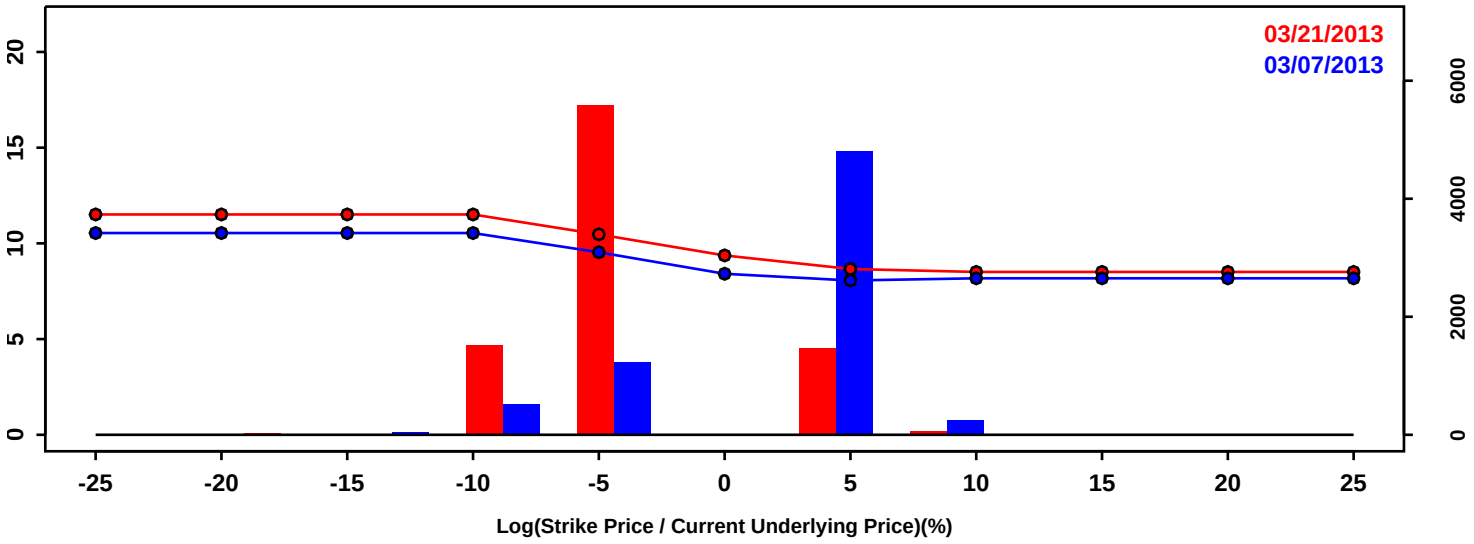
Statistics of the Log Return Distributions

	03/07/2013	03/21/2013	Change
10th Pct	-13.20%	-12.93%	0.27%
50th Pct	-0.30%	-0.31%	-0.01%
90th Pct	11.67%	11.52%	-0.15%
Mean	-0.51%	-0.48%	0.03%
Std Dev	10.04%	10.00%	-0.04%
Skew	-0.09	-0.05	0.04
Kurtosis	0.59	0.78	0.19

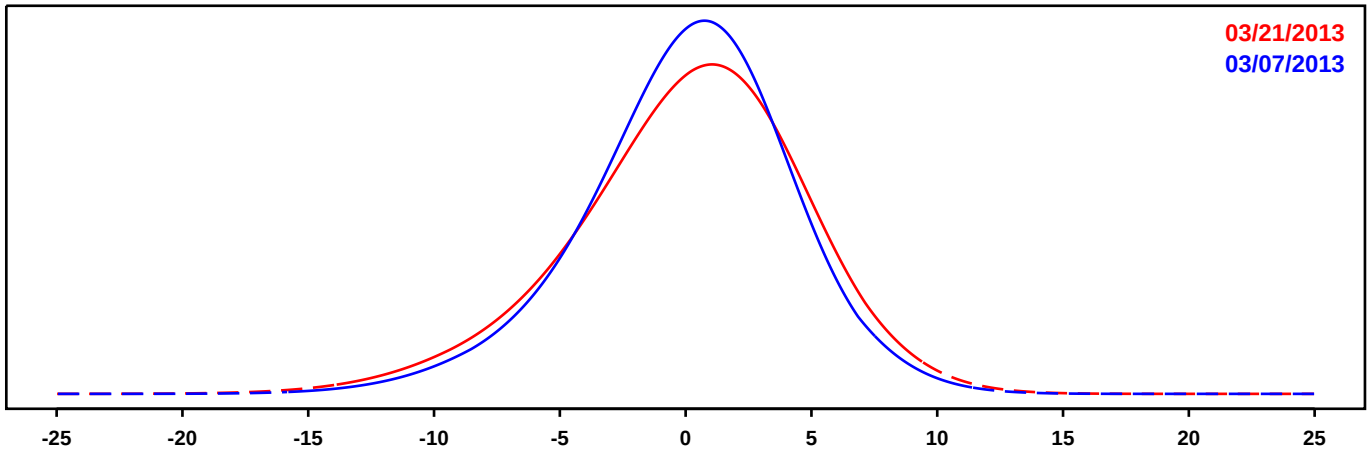
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- DOLLAR-EURO EXCHANGE RATE FUTURES

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

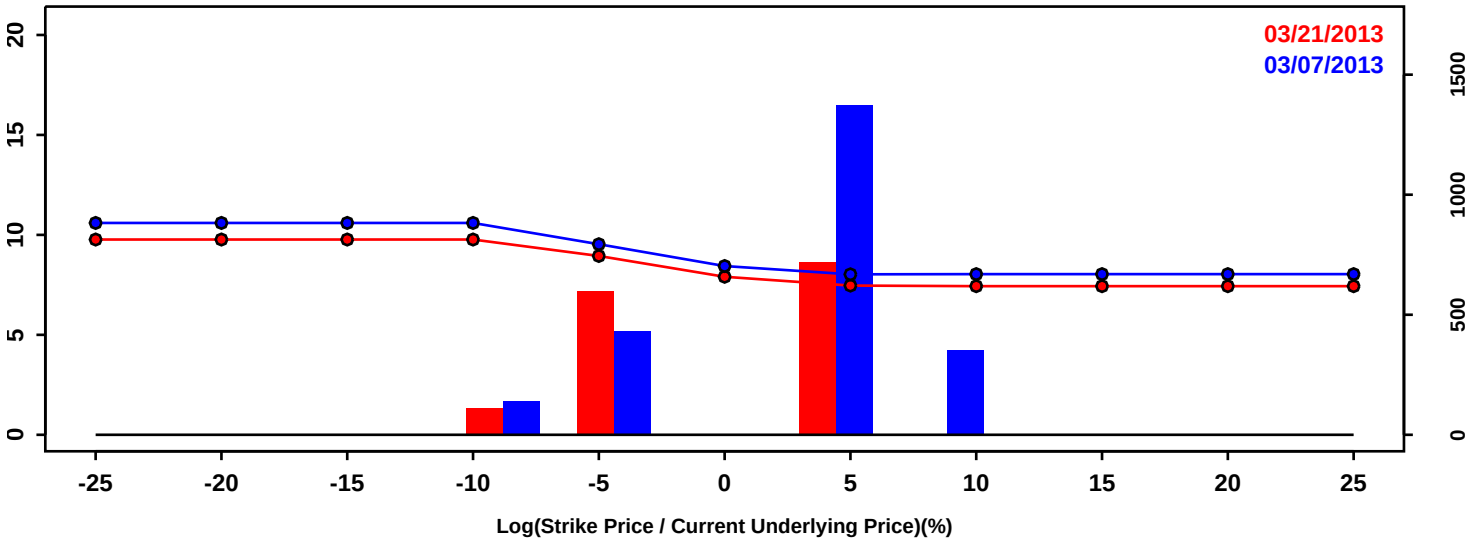
Statistics of the Log Return Distributions

	03/07/2013	03/21/2013	Change
10th Pct	-5.38%	-6.11%	-0.73%
50th Pct	0.31%	0.44%	0.12%
90th Pct	5.06%	5.69%	0.63%
Mean	0.06%	0.09%	0.03%
Std Dev	4.21%	4.70%	0.49%
Skew	-0.36	-0.41	-0.05
Kurtosis	0.57	0.45	-0.13

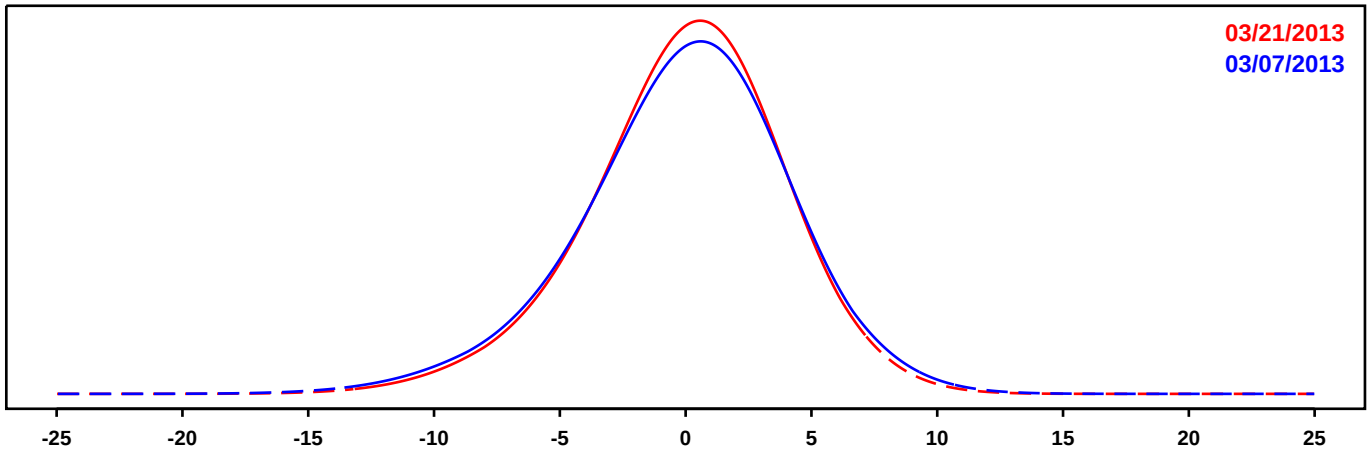
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- DOLLAR-POUND EXCHANGE RATE FUTURES

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

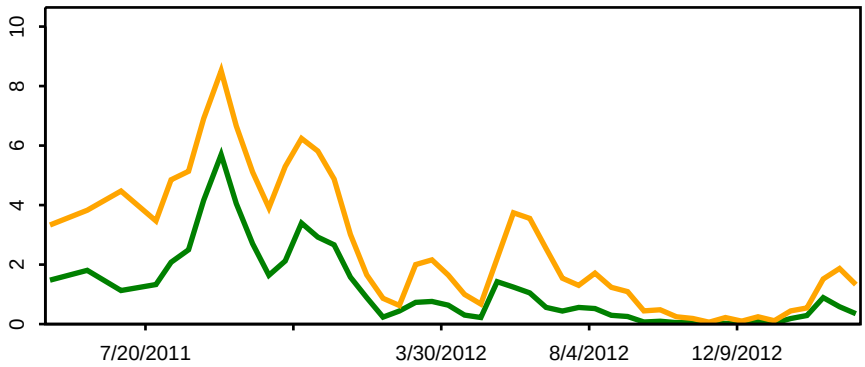
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



Decrease <=10% Increase >= 10%

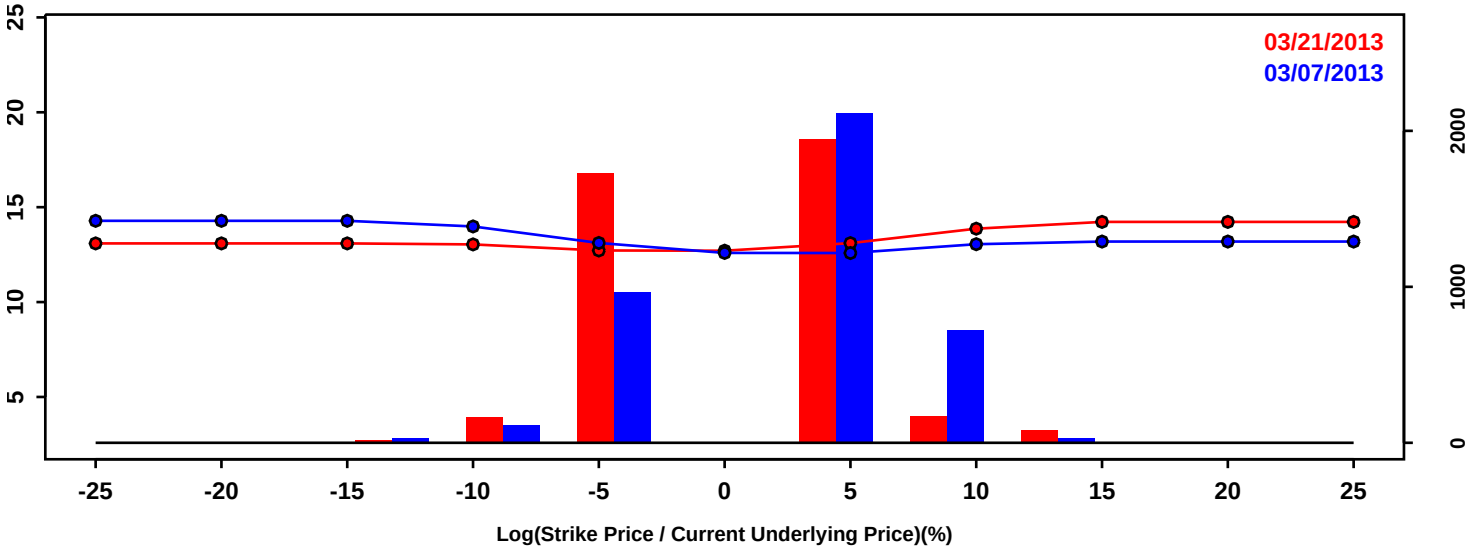
Statistics of the Log Return Distributions

	03/07/2013	03/21/2013	Change
10th Pct	-5.47%	-5.13%	0.34%
50th Pct	0.18%	0.20%	0.02%
90th Pct	5.06%	4.81%	-0.25%
Mean	-0.02%	0.02%	0.04%
Std Dev	4.23%	3.96%	-0.27%
Skew	-0.36	-0.34	0.02
Kurtosis	0.54	0.47	-0.07

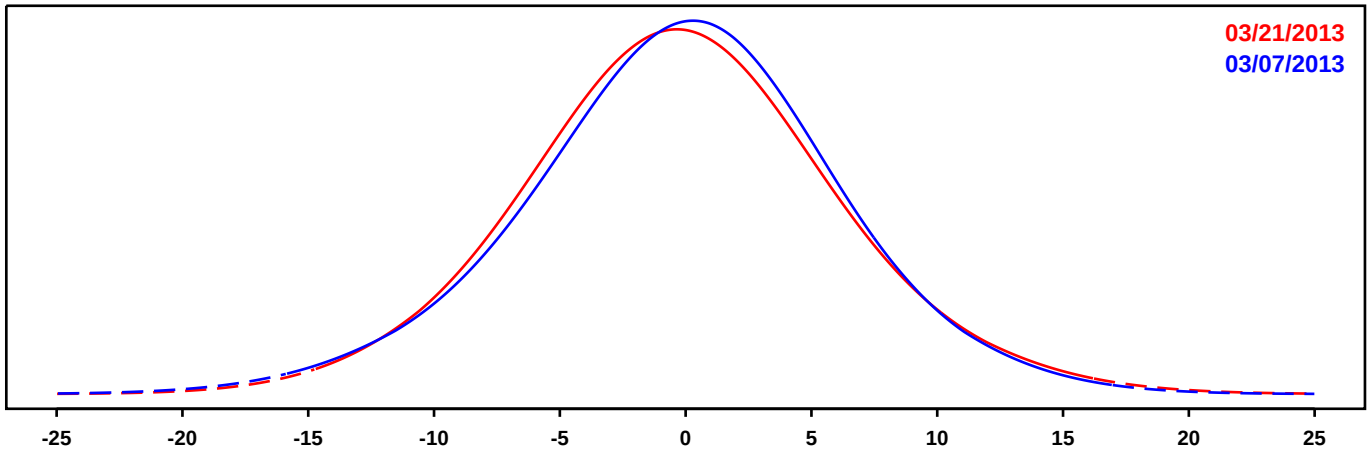
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- YEN-DOLLAR EXCHANGE RATE FUTURES

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

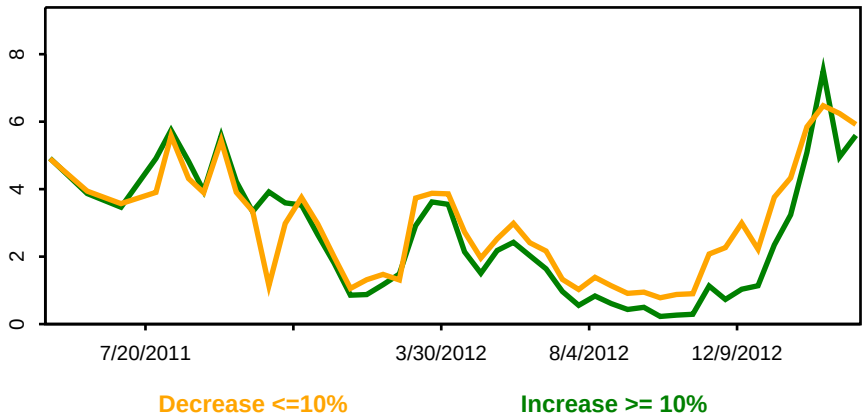
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



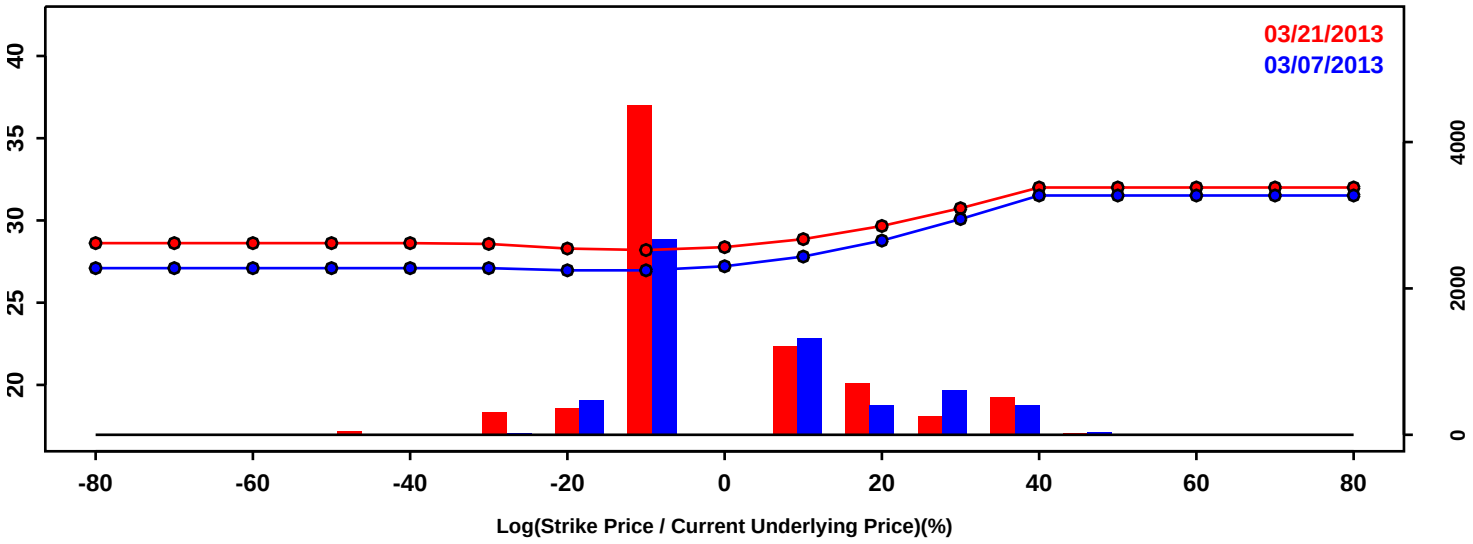
Statistics of the Log Return Distributions

	03/07/2013	03/21/2013	Change
10th Pct	-8.15%	-8.13%	0.02%
50th Pct	0.00%	-0.29%	-0.29%
90th Pct	7.62%	7.80%	0.17%
Mean	-0.14%	-0.18%	-0.04%
Std Dev	6.29%	6.33%	0.05%
Skew	-0.13	0.08	0.21
Kurtosis	0.38	0.30	-0.07

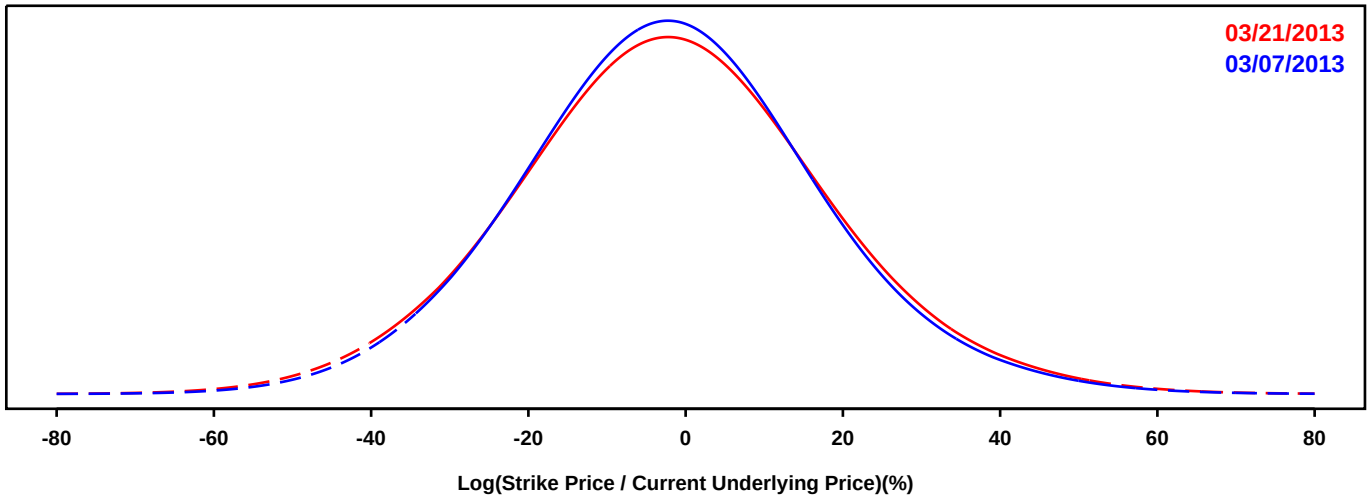
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CORN FUTURES

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

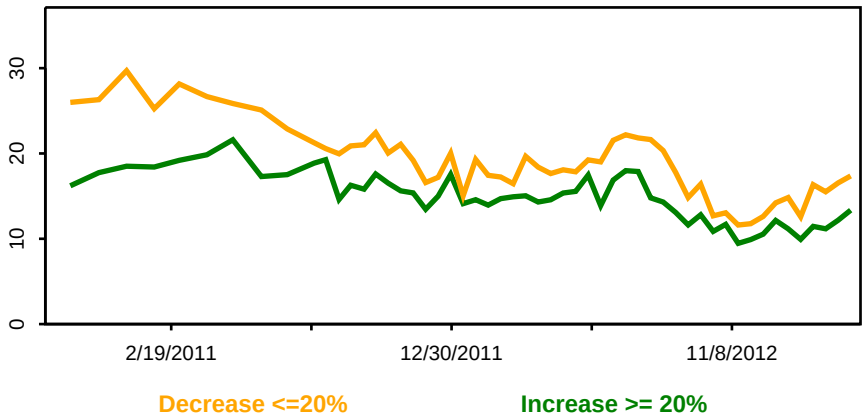
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



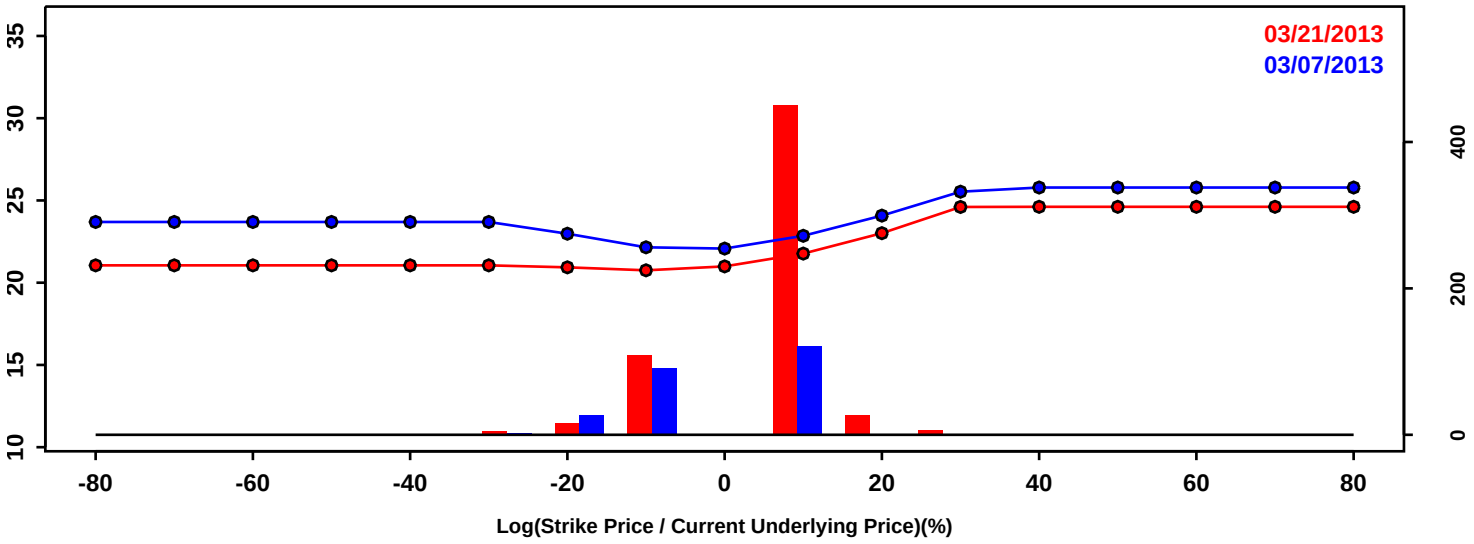
Statistics of the Log Return Distributions

	03/07/2013	03/21/2013	Change
10th Pct	-25.89%	-26.80%	-0.92%
50th Pct	-2.12%	-1.91%	0.20%
90th Pct	22.38%	23.67%	1.28%
Mean	-1.82%	-1.65%	0.17%
Std Dev	19.15%	19.98%	0.84%
Skew	0.13	0.10	-0.03
Kurtosis	0.30	0.26	-0.03

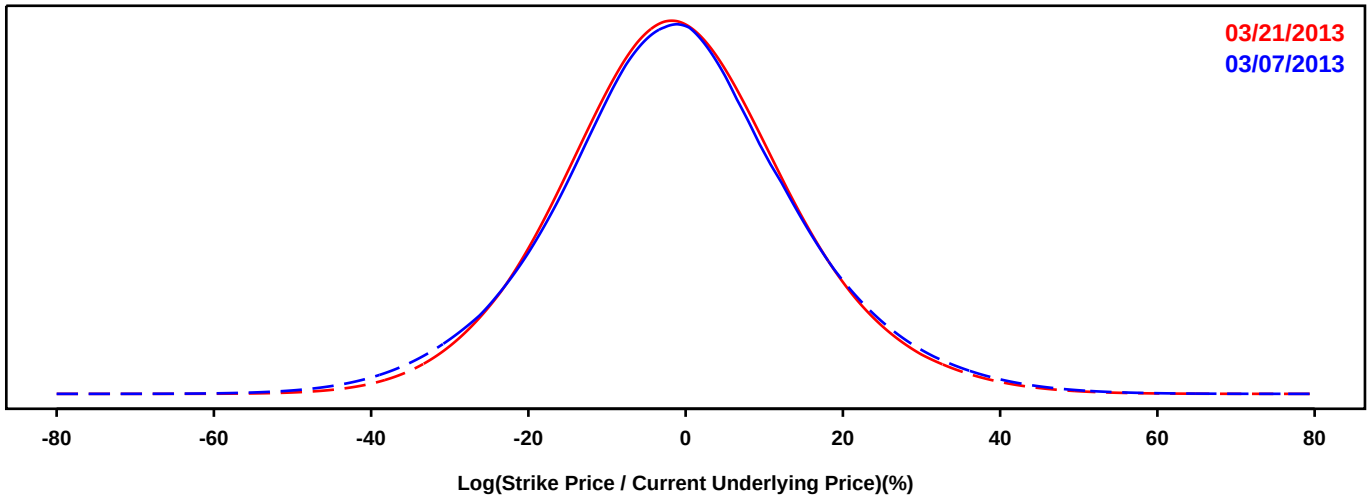
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- SOYBEAN FUTURES

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

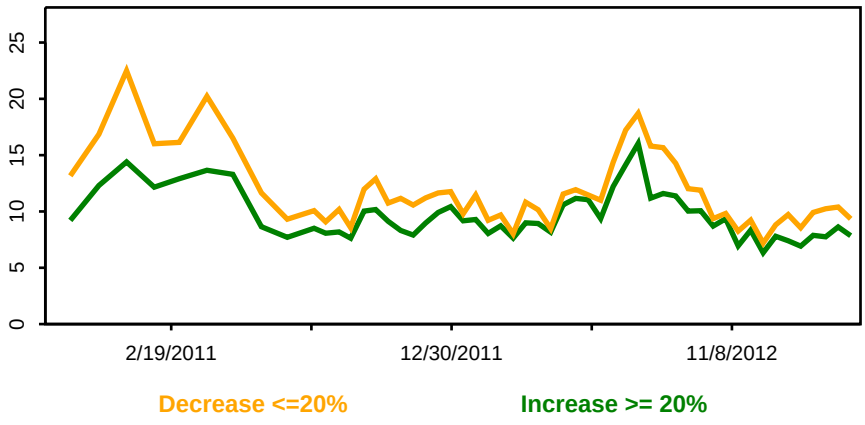
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



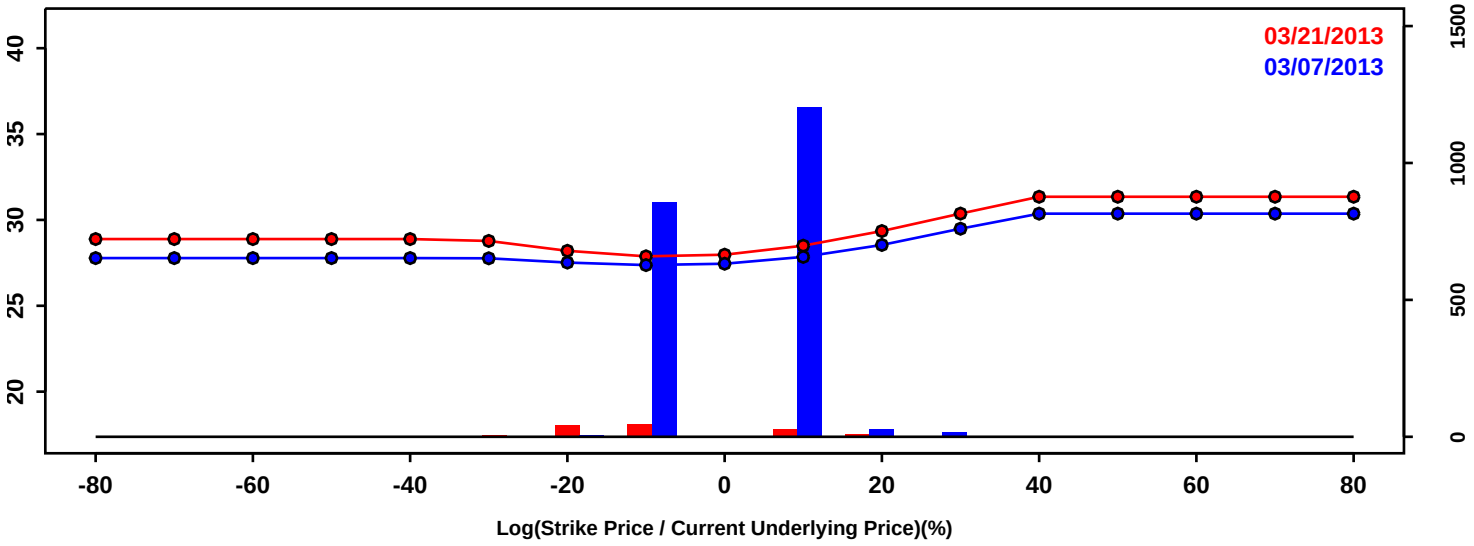
Statistics of the Log Return Distributions

	03/07/2013	03/21/2013	Change
10th Pct	-20.42%	-19.40%	1.02%
50th Pct	-1.31%	-1.32%	-0.01%
90th Pct	18.52%	17.75%	-0.77%
Mean	-1.07%	-0.97%	0.10%
Std Dev	15.58%	14.79%	-0.80%
Skew	0.09	0.15	0.07
Kurtosis	0.50	0.36	-0.14

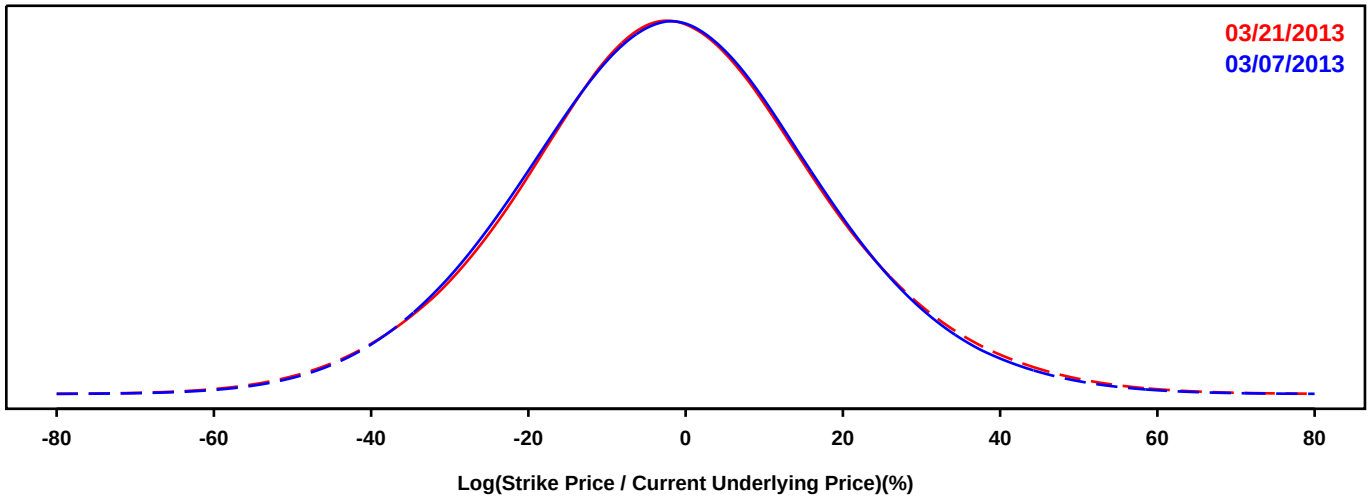
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- WHEAT FUTURES

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

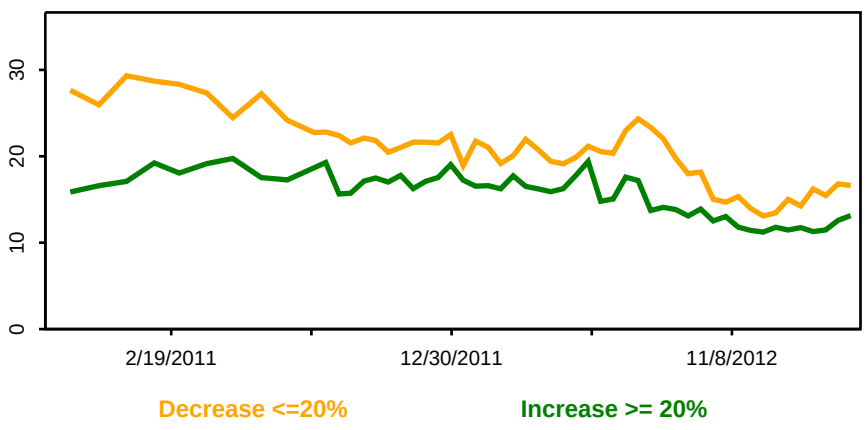
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



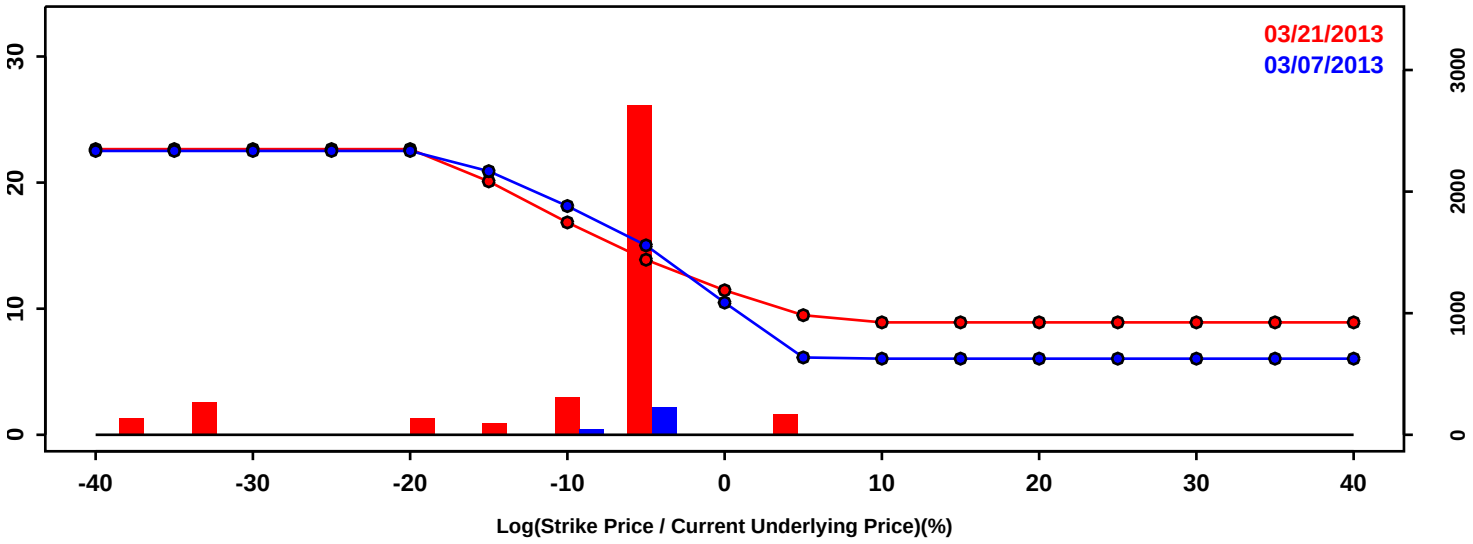
Statistics of the Log Return Distributions

	03/07/2013	03/21/2013	Change
10th Pct	-26.31%	-26.24%	0.06%
50th Pct	-1.88%	-1.82%	0.06%
90th Pct	22.76%	23.47%	0.71%
Mean	-1.75%	-1.52%	0.23%
Std Dev	19.36%	19.73%	0.37%
Skew	0.07	0.08	0.02
Kurtosis	0.22	0.32	0.10

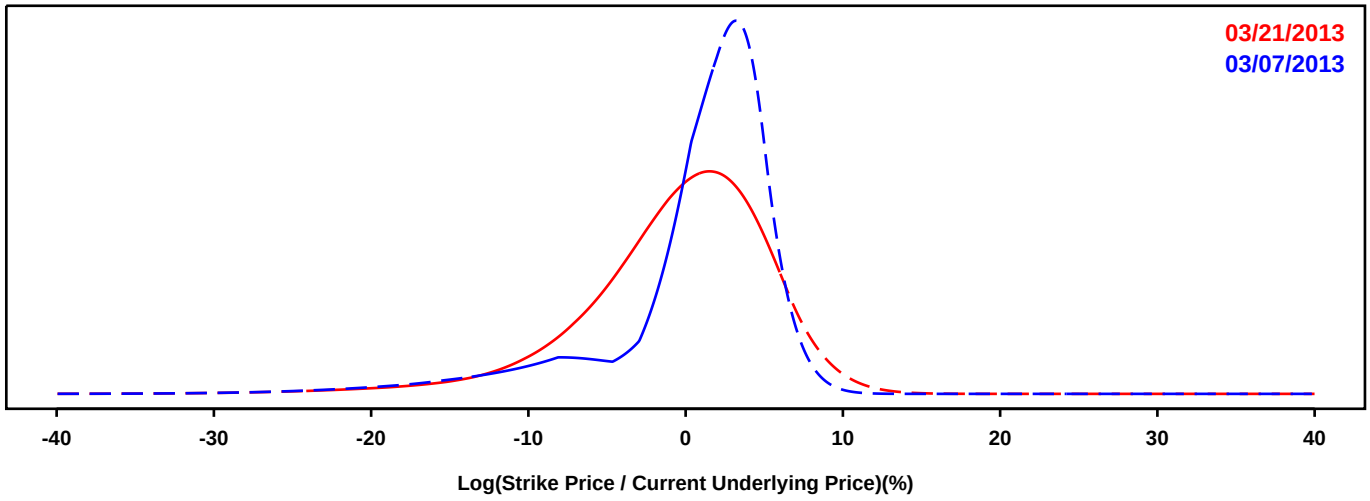
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- iSHARES DOW JONES US REAL ESTATE

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

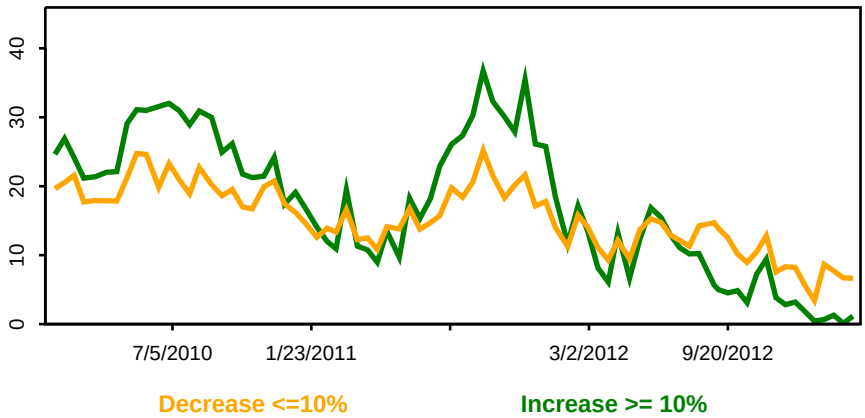
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



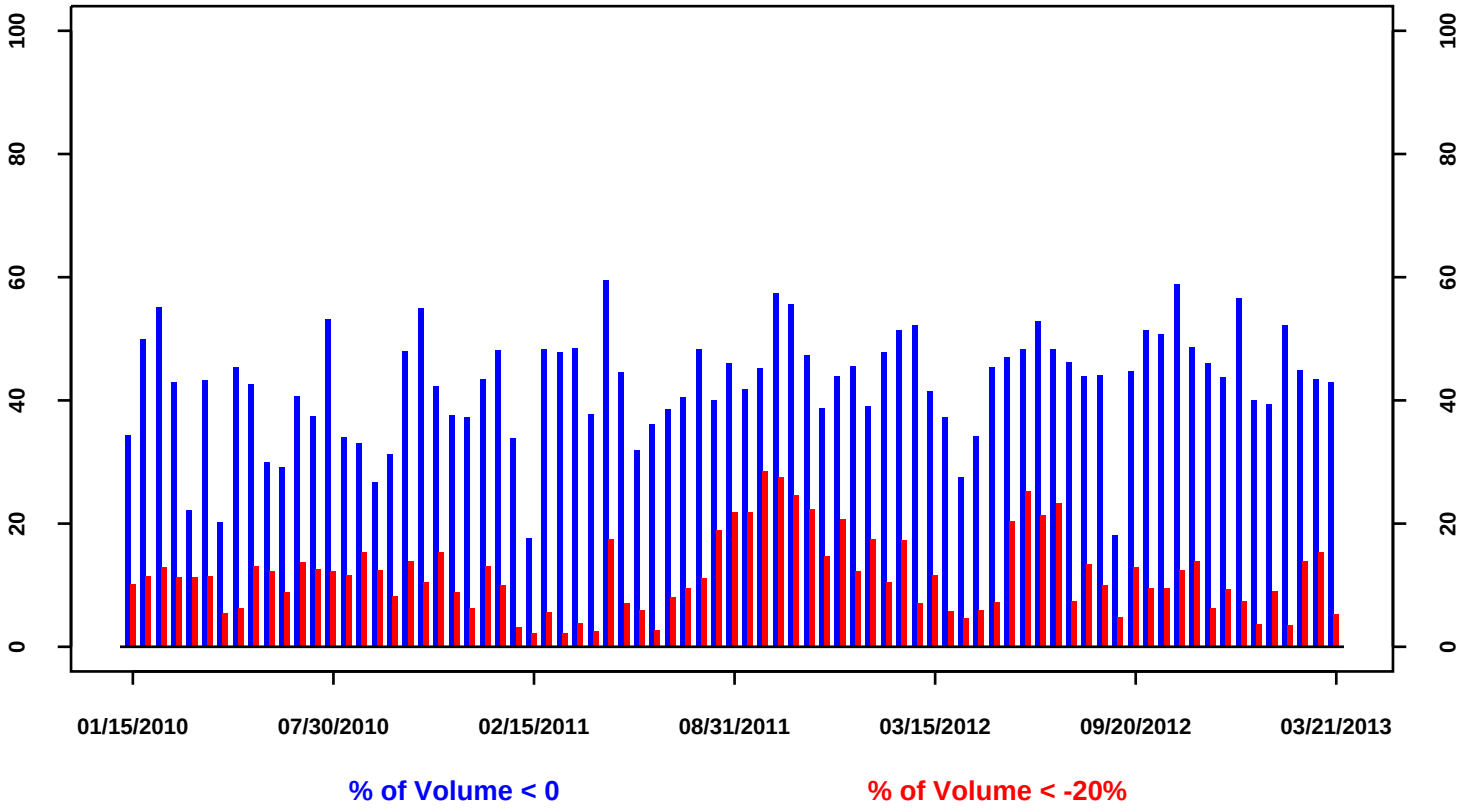
Probability of a Large Change



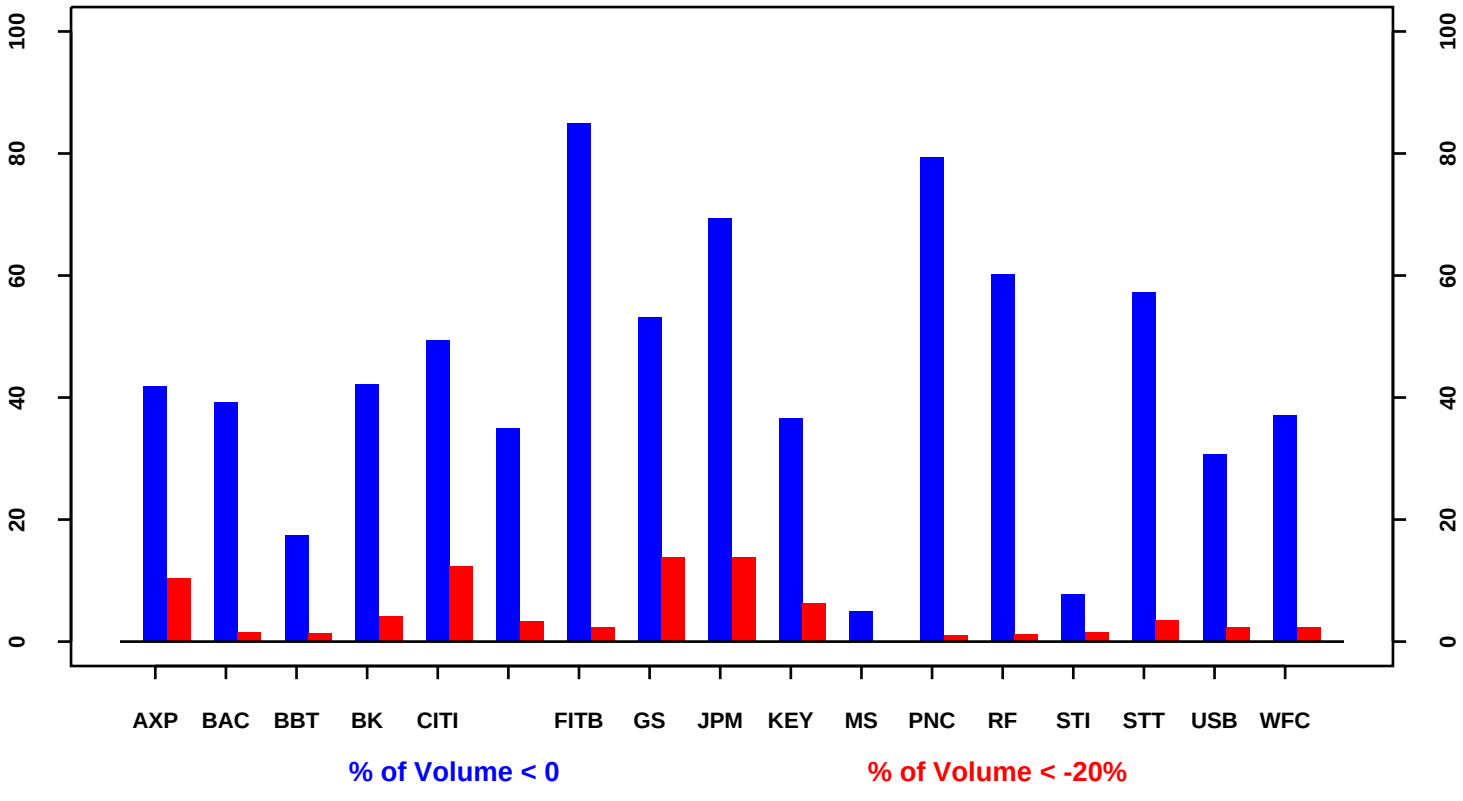
Statistics of the Log Return Distributions

	03/07/2013	03/21/2013	Change
10th Pct	-7.28%	-8.01%	-0.73%
50th Pct	2.00%	0.27%	-1.73%
90th Pct	5.36%	5.96%	0.60%
Mean	0.55%	-0.57%	-1.12%
Std Dev	5.73%	6.02%	0.28%
Skew	-2.09	-1.17	0.93
Kurtosis	5.64	2.88	-2.76

Aggregate Volumes for Options on CCAR Banks

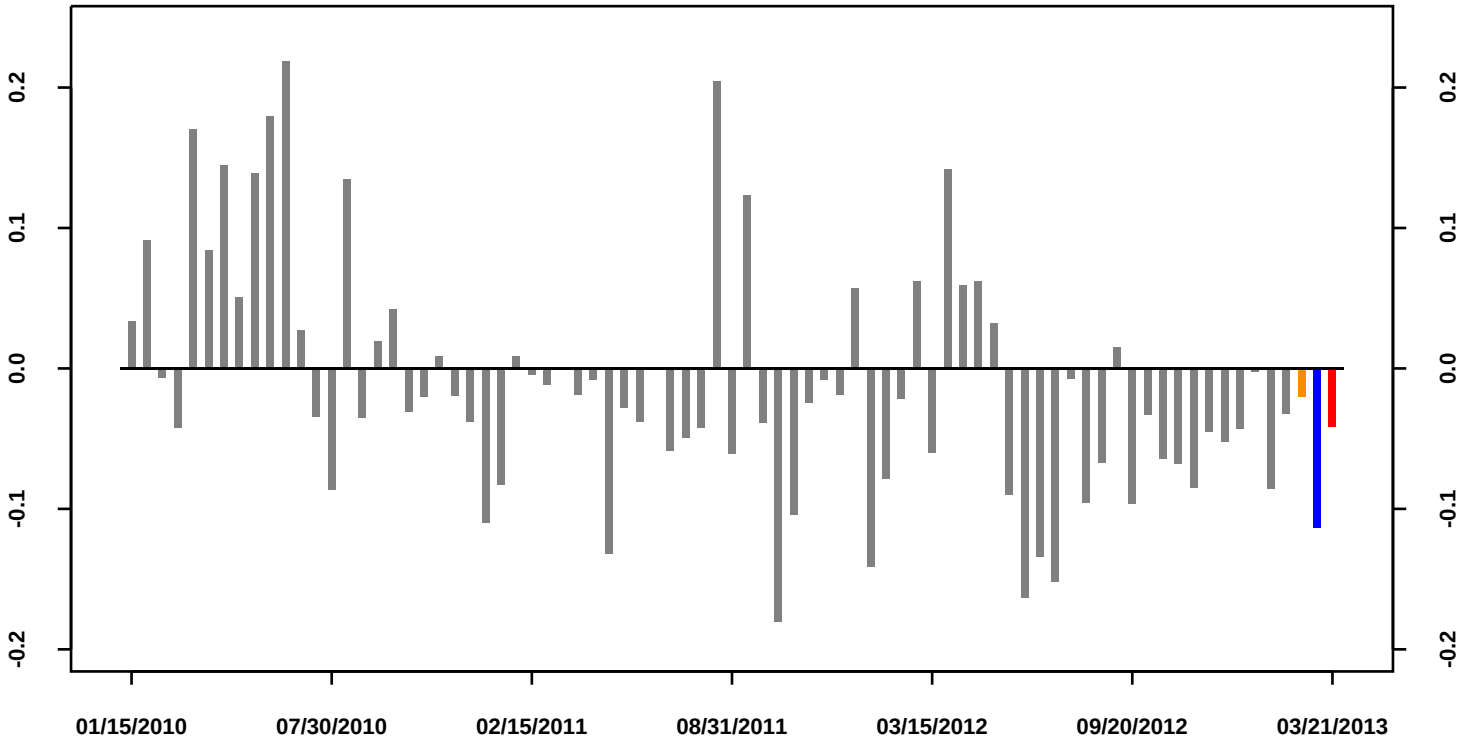


Volumes for Options on CCAR Banks

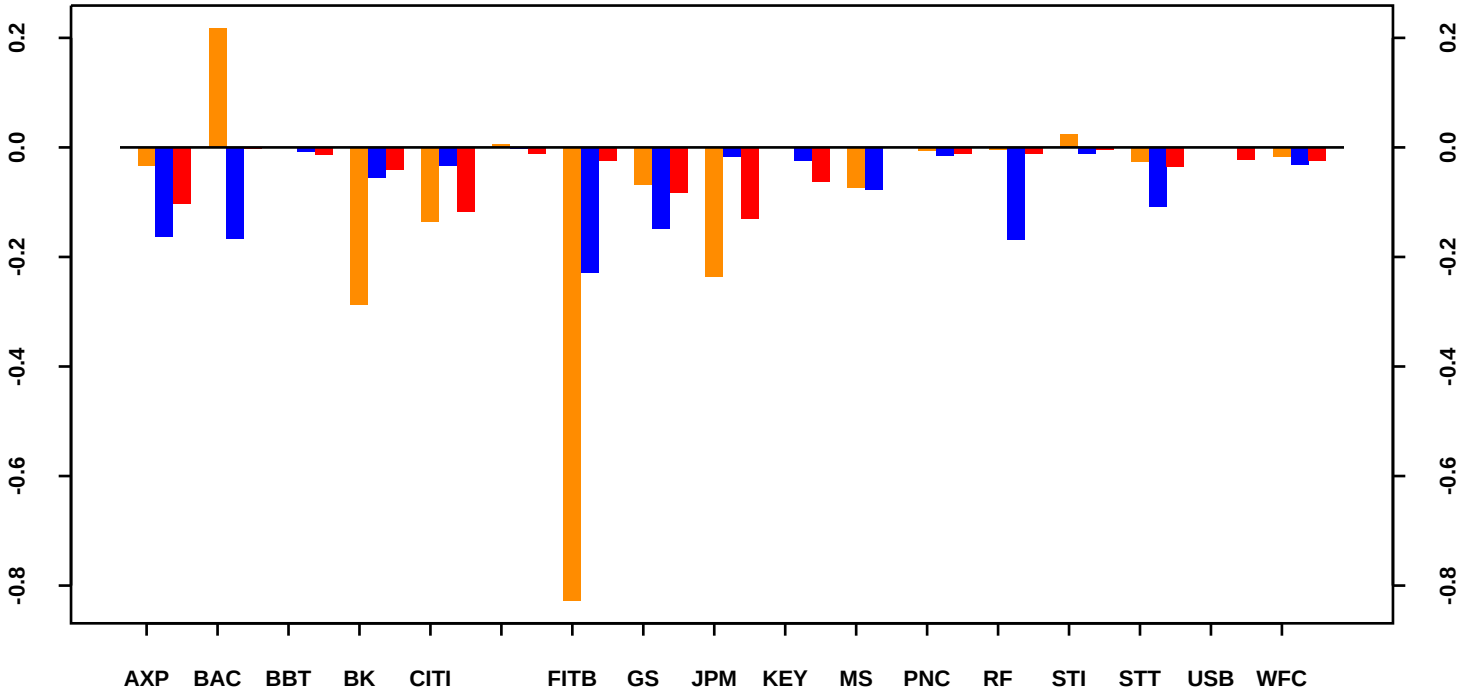


Aggregate Volume Skew--CCAR Banks

(% of volume traded in deep out-of-the-money calls LESS % of volume traded in deep out-of-the-money puts)



CCAR Bank Volume Skew -- Last Three Periods

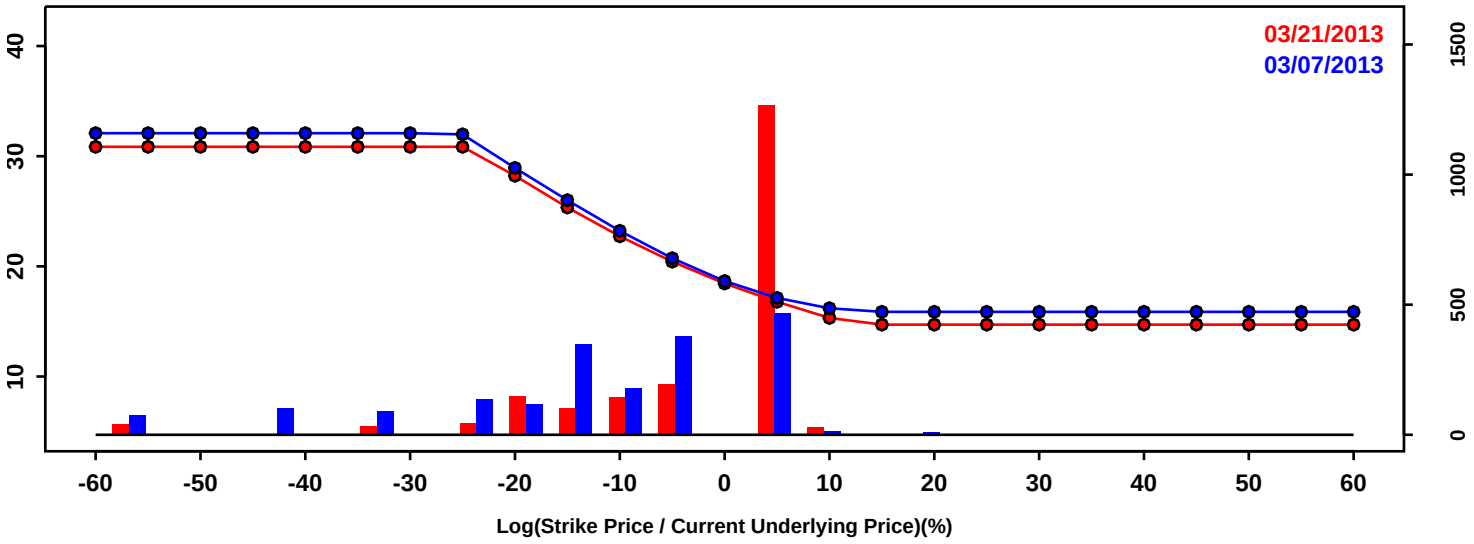


02/21/2013 03/07/2013 03/21/2013

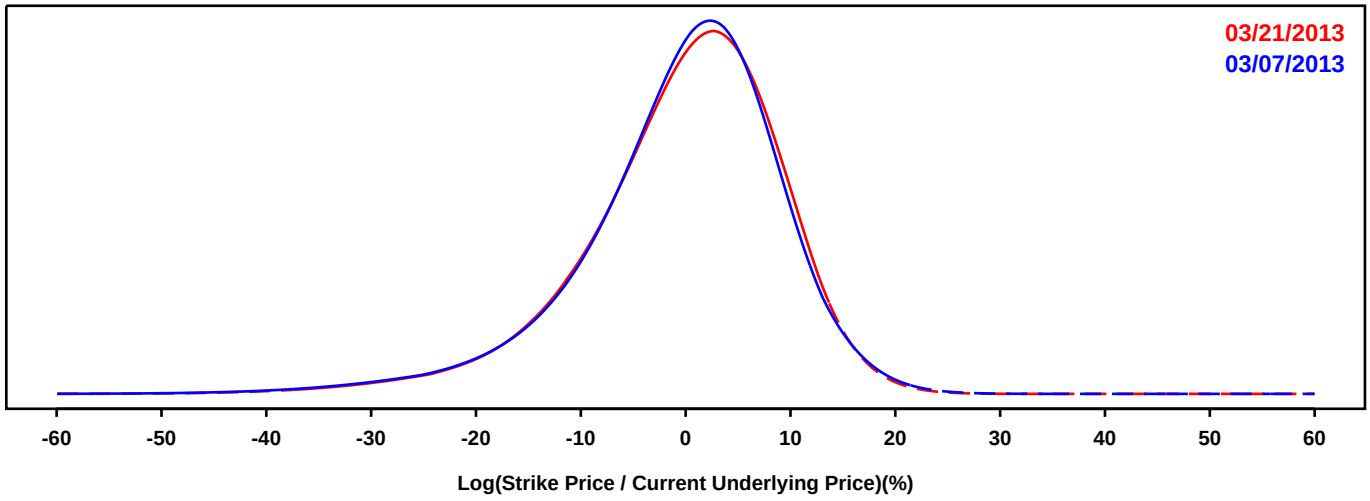
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- AMERICAN EXPRESS

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

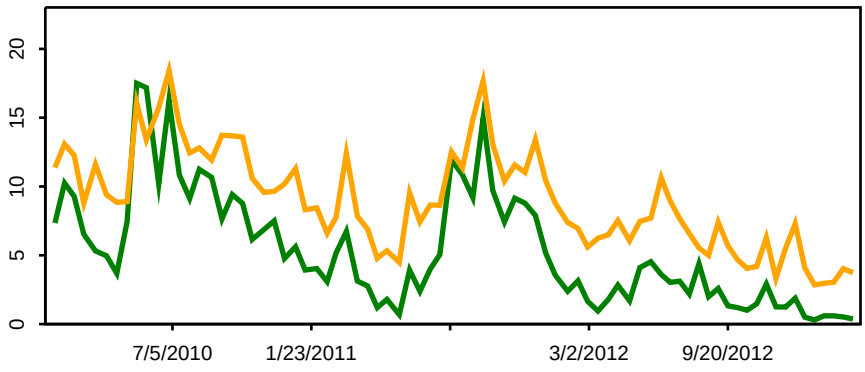
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



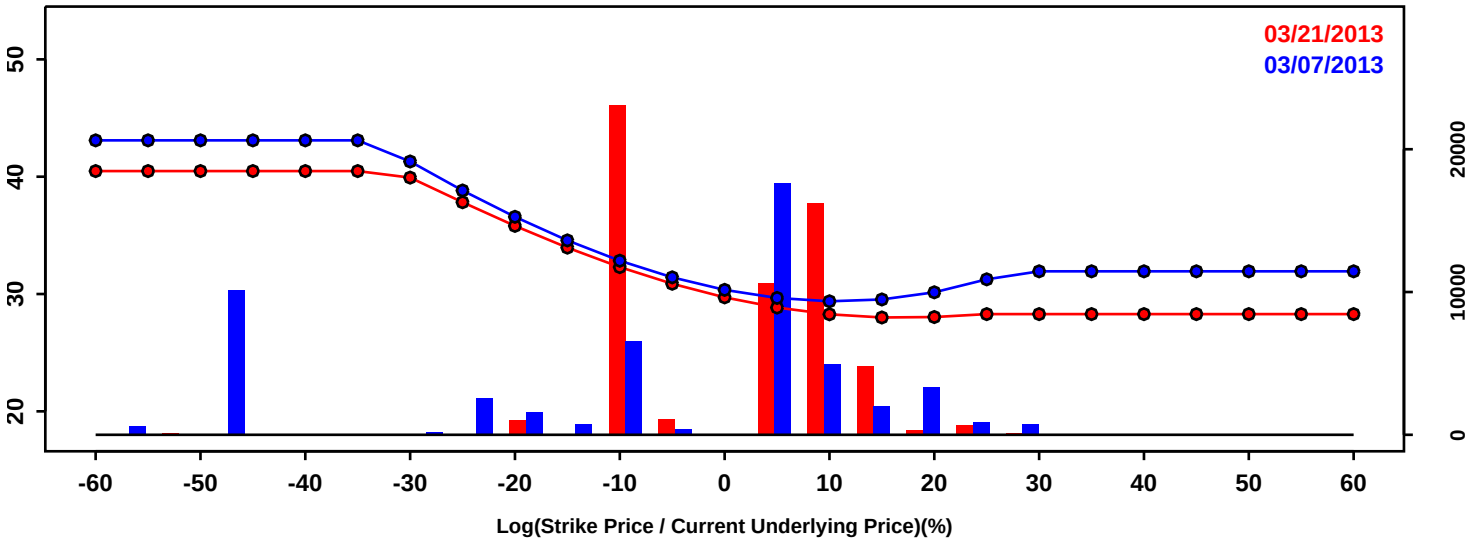
Statistics of the Log Return Distributions

	03/07/2013	03/21/2013	Change
10th Pct	-12.58%	-12.44%	0.14%
50th Pct	0.73%	0.89%	0.16%
90th Pct	10.23%	10.40%	0.17%
Mean	-0.47%	-0.30%	0.17%
Std Dev	9.67%	9.54%	-0.14%
Skew	-0.96	-0.91	0.05
Kurtosis	2.10	1.77	-0.33

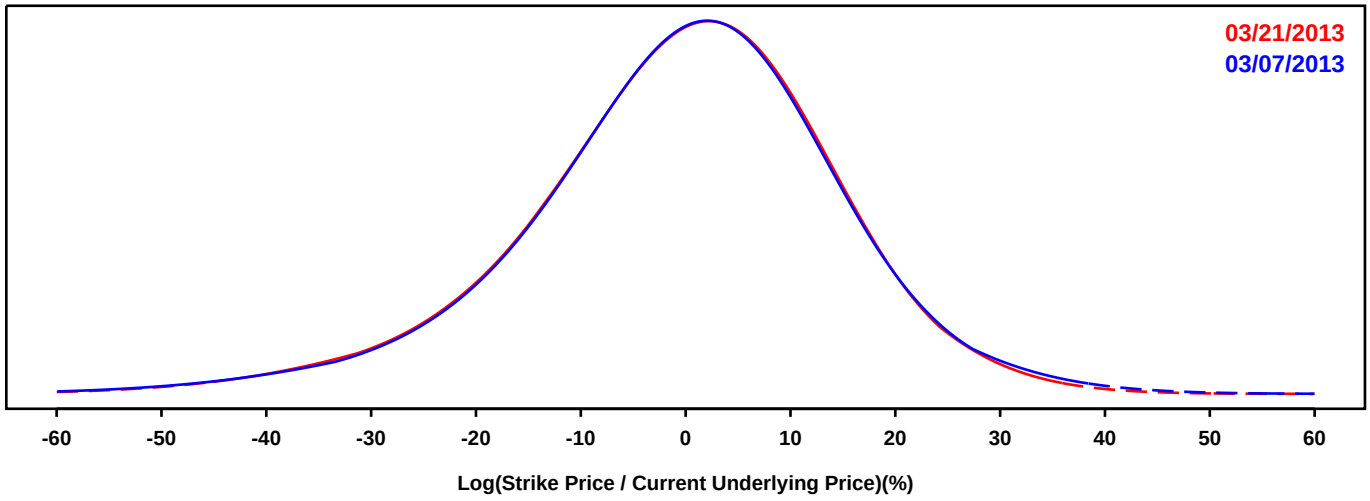
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- BANK OF AMERICA

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

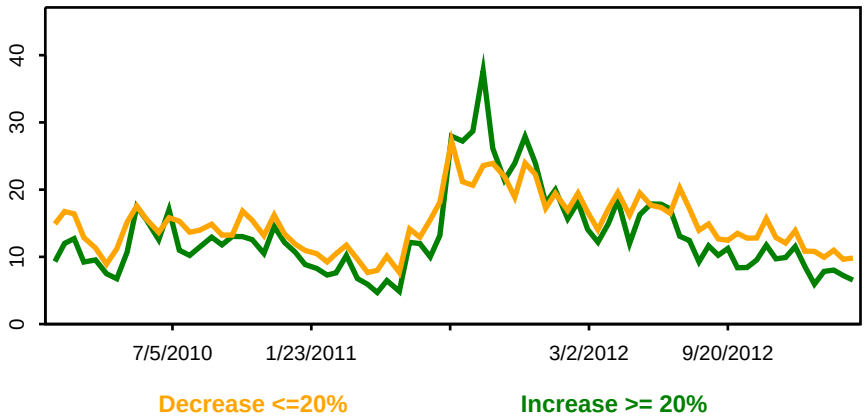
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



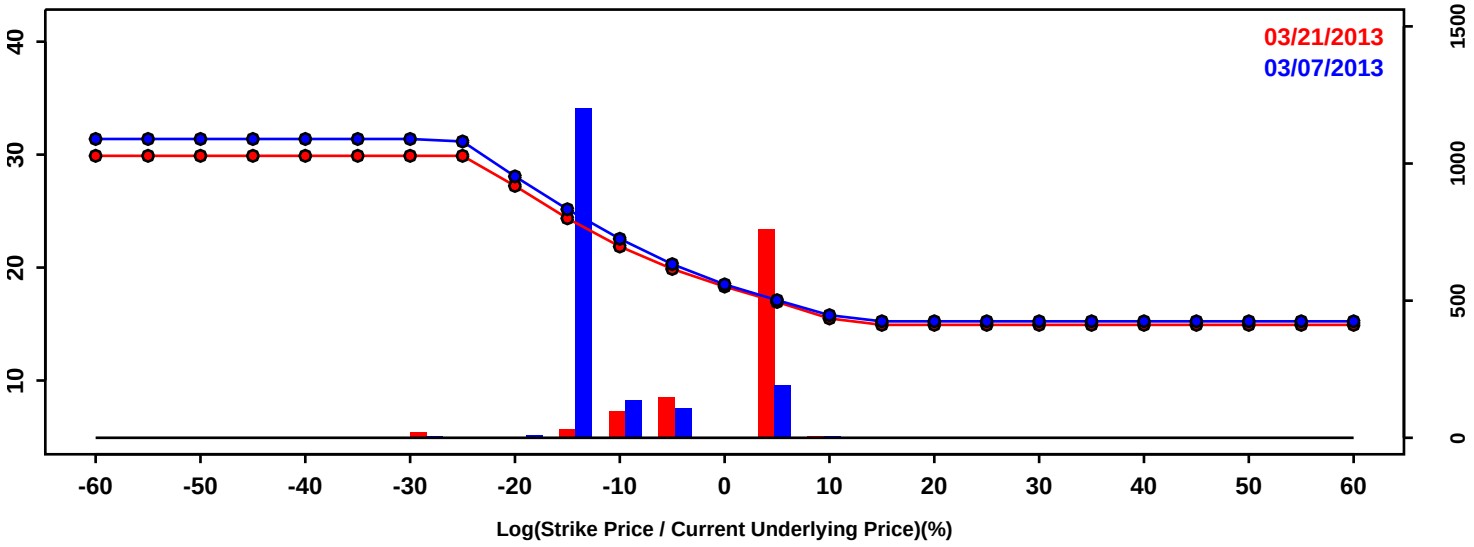
Statistics of the Log Return Distributions

	03/07/2013	03/21/2013	Change
10th Pct	-19.59%	-19.77%	-0.18%
50th Pct	0.55%	0.49%	-0.06%
90th Pct	17.46%	17.01%	-0.45%
Mean	-0.40%	-0.63%	-0.23%
Std Dev	15.32%	15.01%	-0.32%
Skew	-0.46	-0.50	-0.04
Kurtosis	1.09	0.88	-0.21

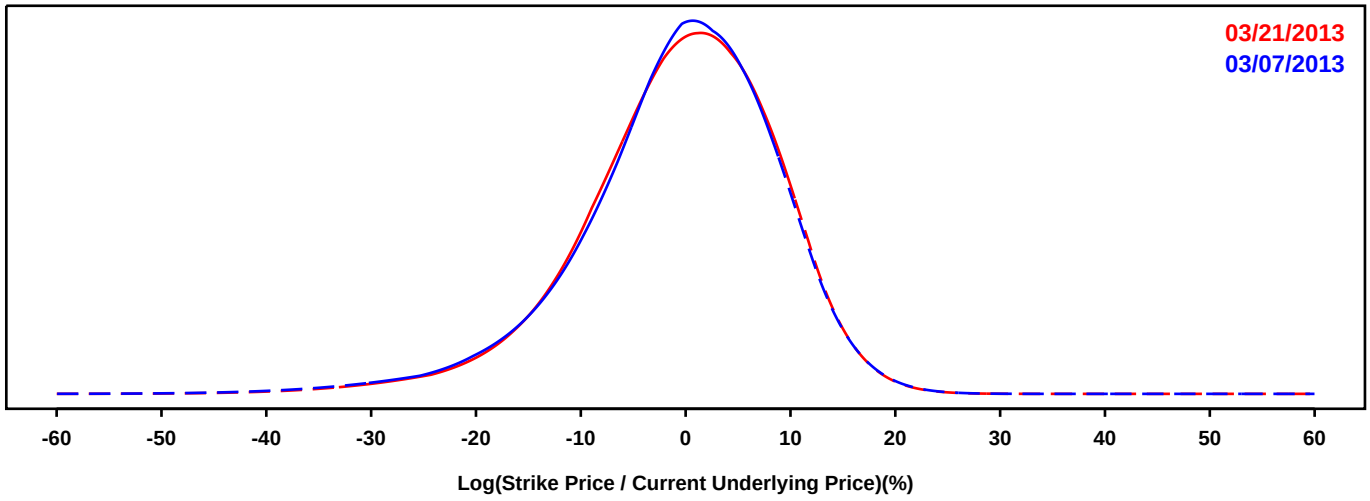
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- BB&T

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

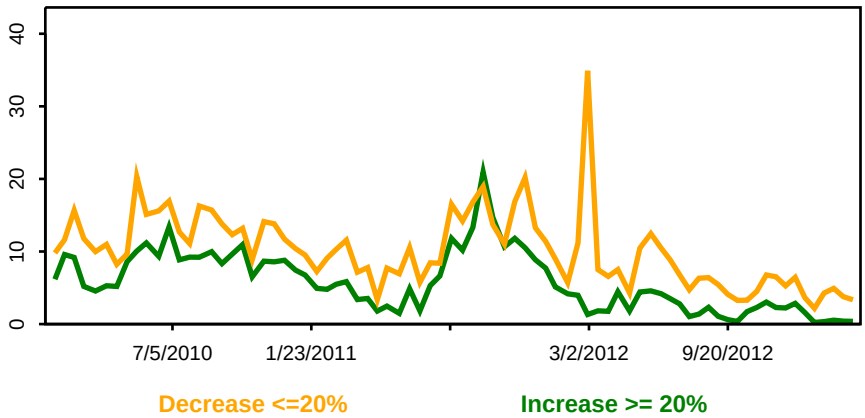
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



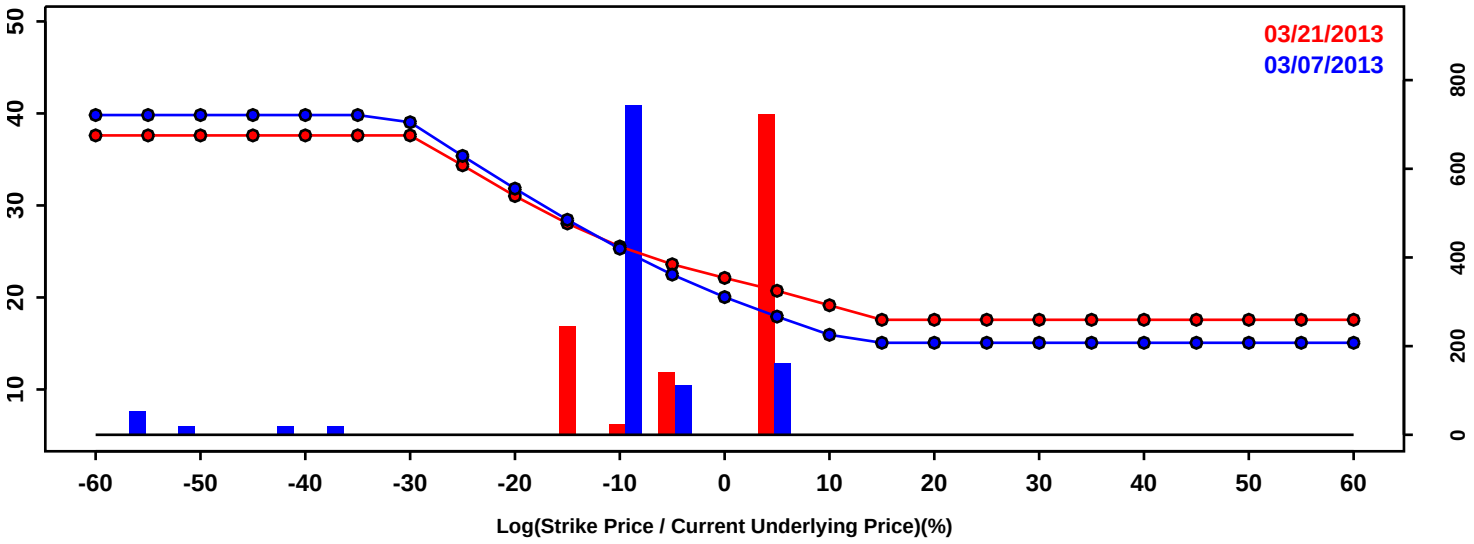
Statistics of the Log Return Distributions

	03/07/2013	03/21/2013	Change
10th Pct	-12.72%	-12.40%	0.32%
50th Pct	0.21%	0.22%	0.02%
90th Pct	10.23%	10.30%	0.08%
Mean	-0.72%	-0.60%	0.12%
Std Dev	9.55%	9.37%	-0.18%
Skew	-0.84	-0.75	0.09
Kurtosis	1.72	1.40	-0.32

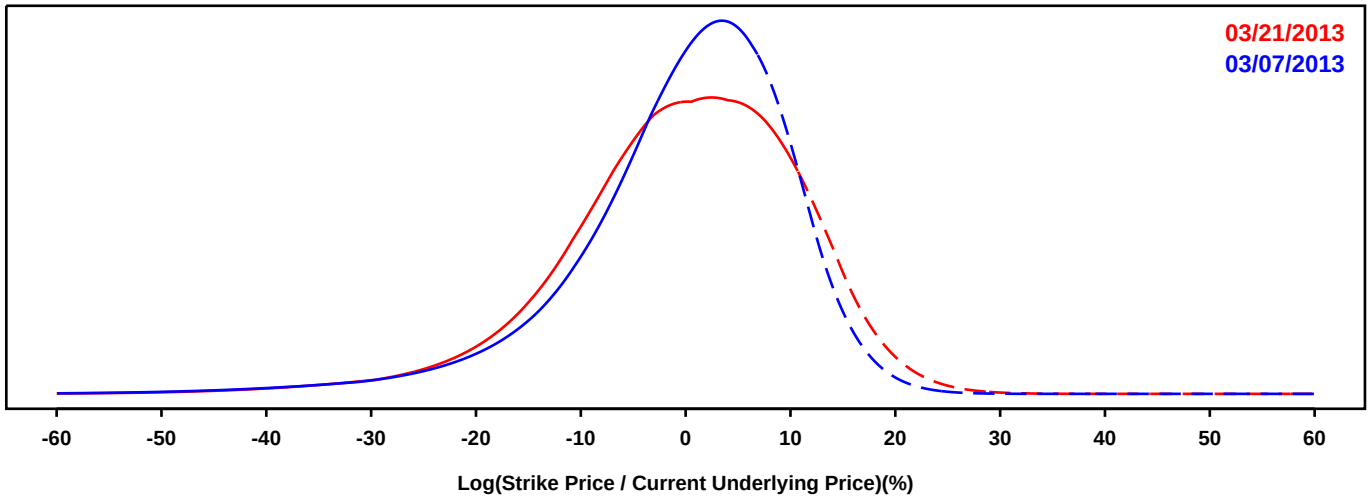
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- BANK OF NEW YORK MELLON

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

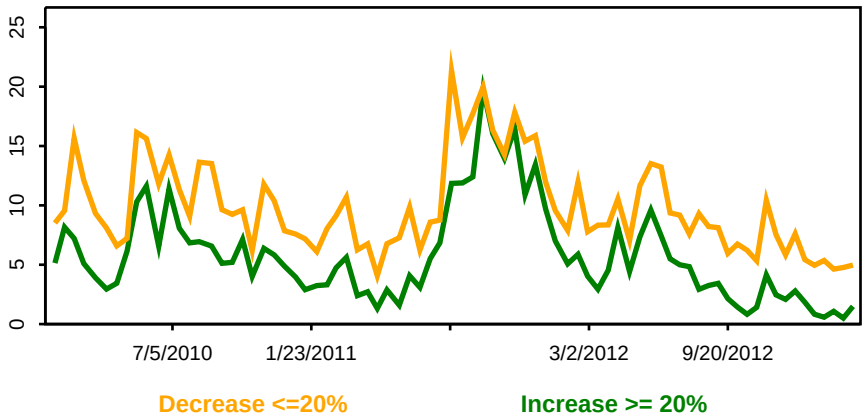
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



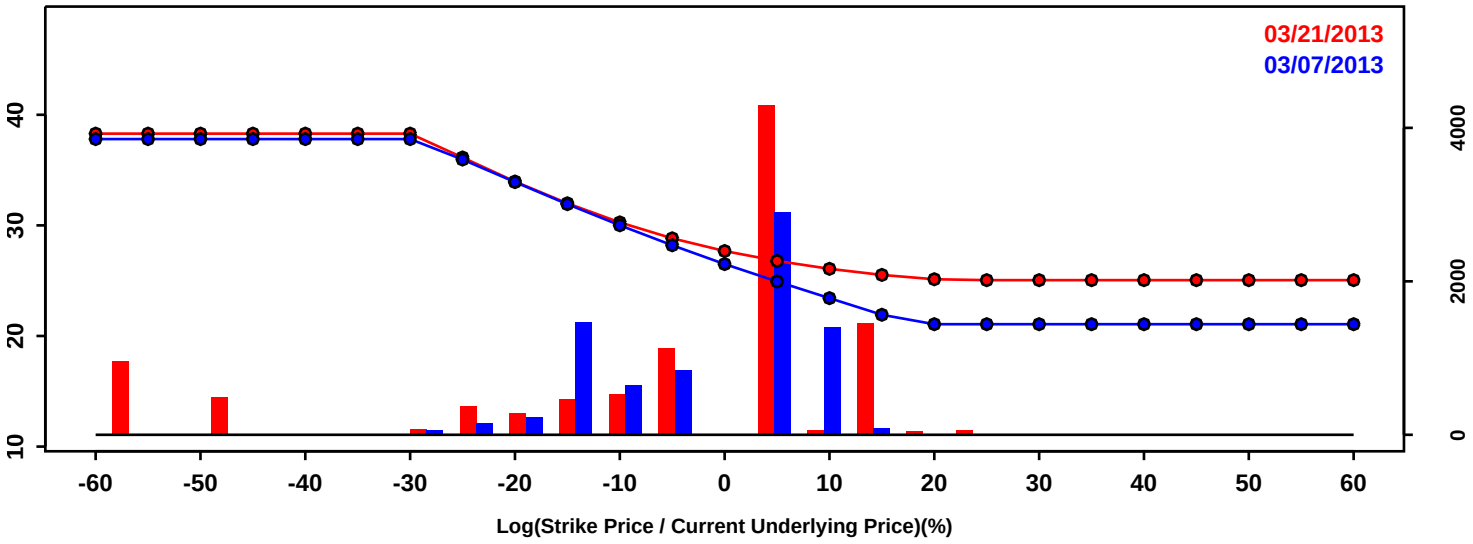
Statistics of the Log Return Distributions

	03/07/2013	03/21/2013	Change
10th Pct	-13.20%	-14.28%	-1.08%
50th Pct	1.28%	0.67%	-0.61%
90th Pct	11.07%	12.84%	1.76%
Mean	-0.23%	-0.27%	-0.04%
Std Dev	10.54%	11.27%	0.73%
Skew	-1.24	-0.78	0.46
Kurtosis	3.12	1.58	-1.54

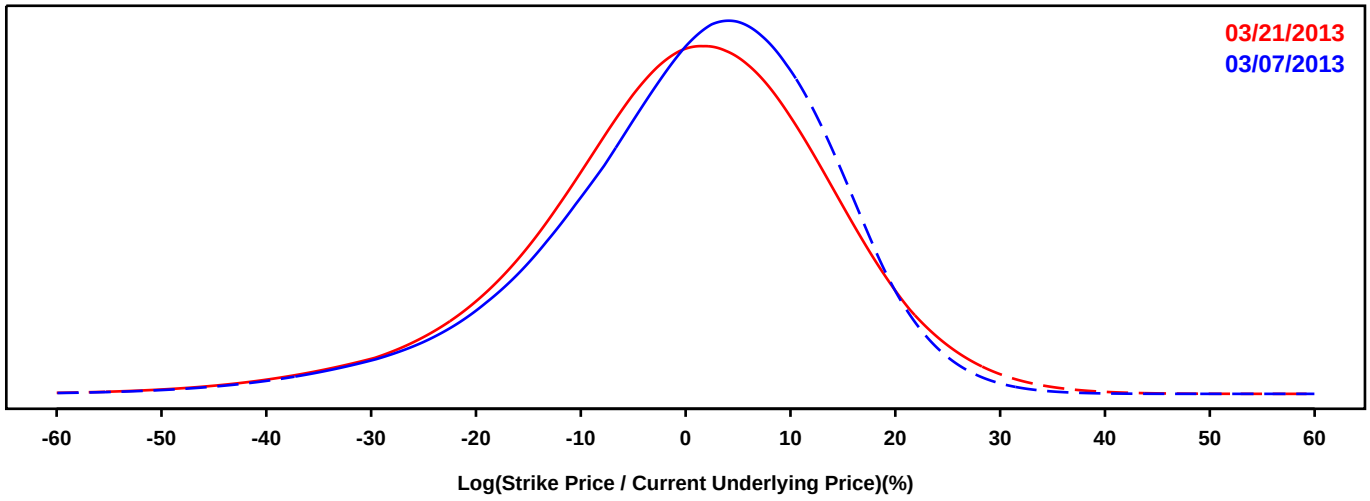
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CITIGROUP

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

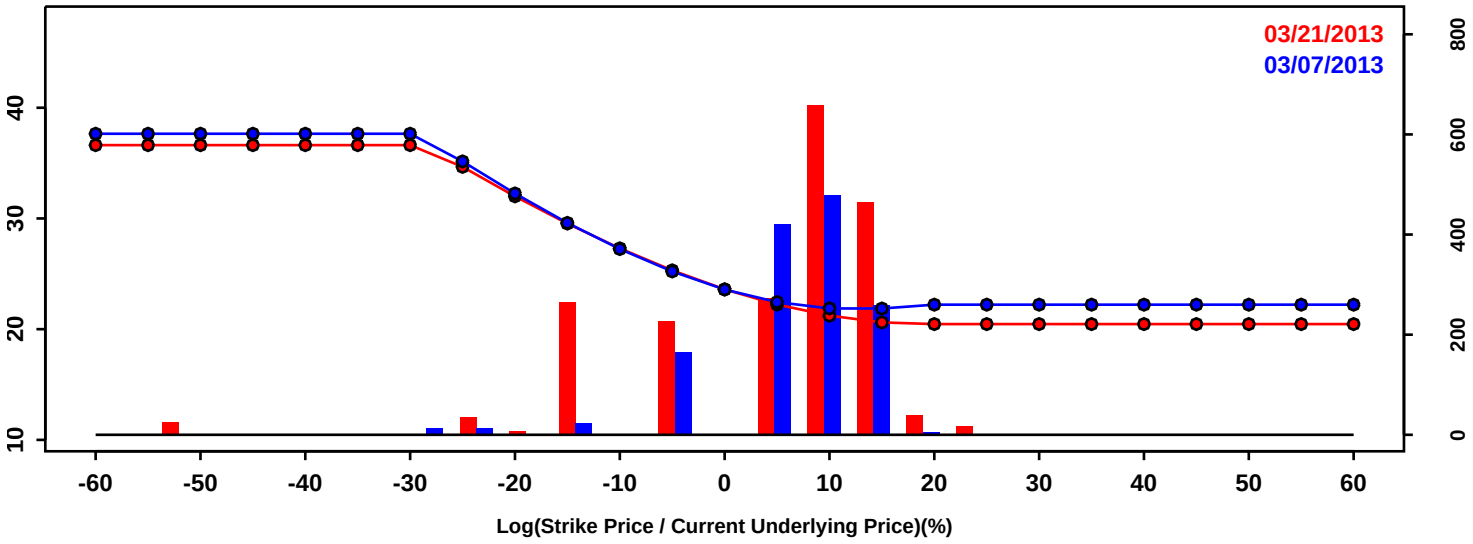
Statistics of the Log Return Distributions

	03/07/2013	03/21/2013	Change
10th Pct	-17.34%	-18.26%	-0.93%
50th Pct	1.85%	0.58%	-1.27%
90th Pct	15.68%	16.22%	0.54%
Mean	0.27%	-0.41%	-0.68%
Std Dev	13.42%	14.02%	0.60%
Skew	-0.74	-0.52	0.21
Kurtosis	1.02	0.85	-0.16

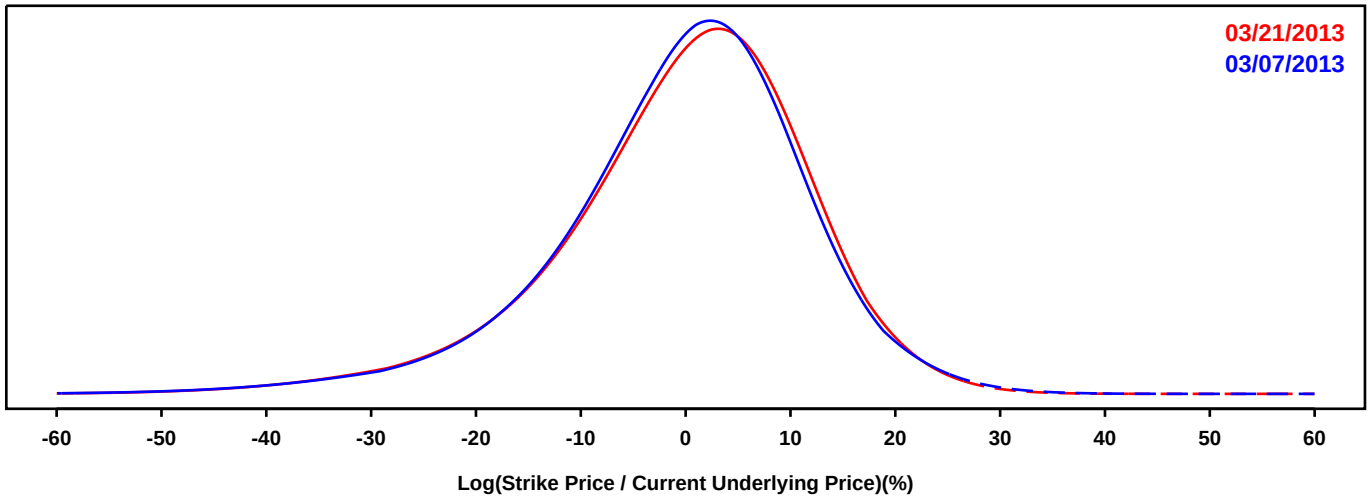
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CAPITAL ONE

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

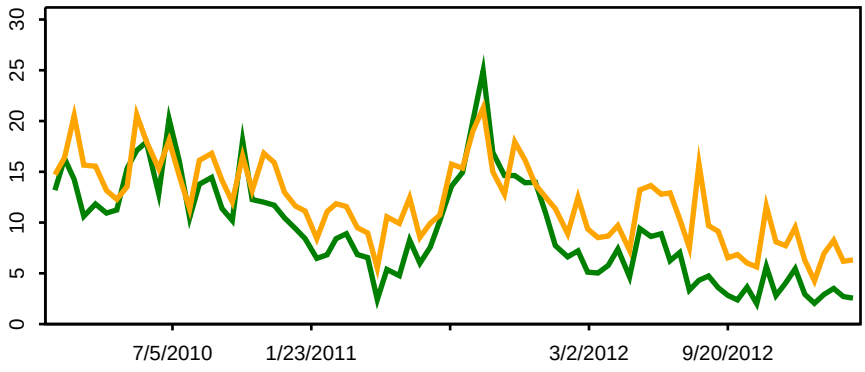
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



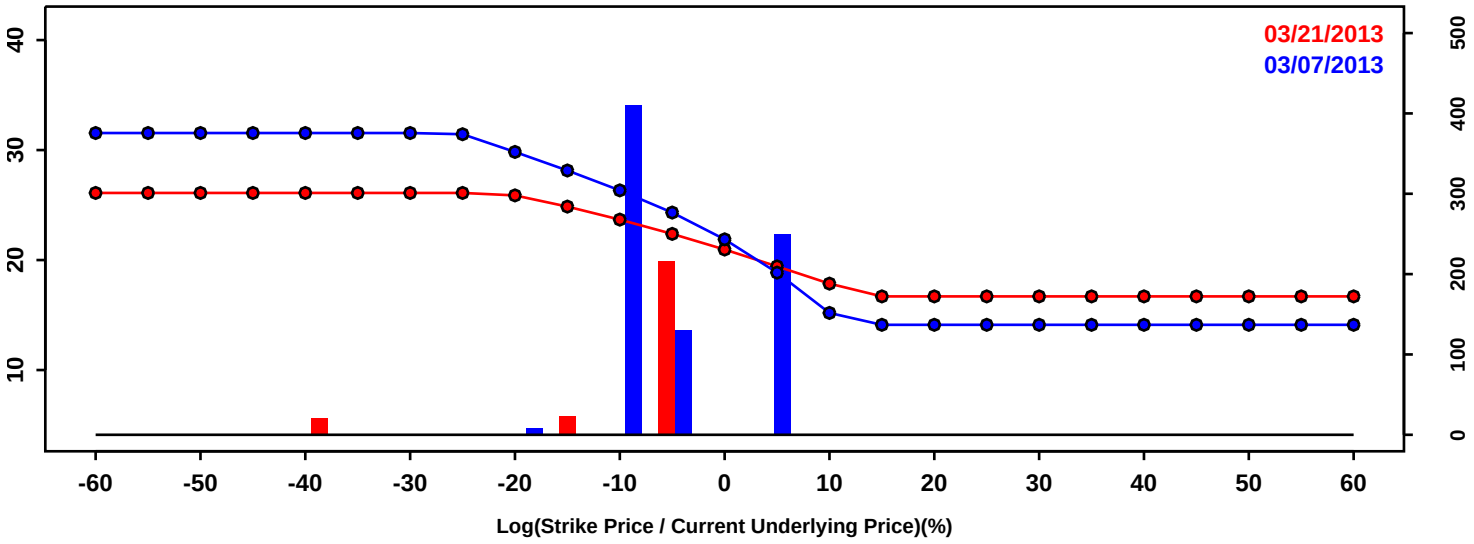
Statistics of the Log Return Distributions

	03/07/2013	03/21/2013	Change
10th Pct	-15.52%	-15.62%	-0.10%
50th Pct	0.74%	1.11%	0.36%
90th Pct	13.18%	13.50%	0.32%
Mean	-0.43%	-0.21%	0.22%
Std Dev	12.04%	12.08%	0.04%
Skew	-0.74	-0.77	-0.03
Kurtosis	1.62	1.43	-0.19

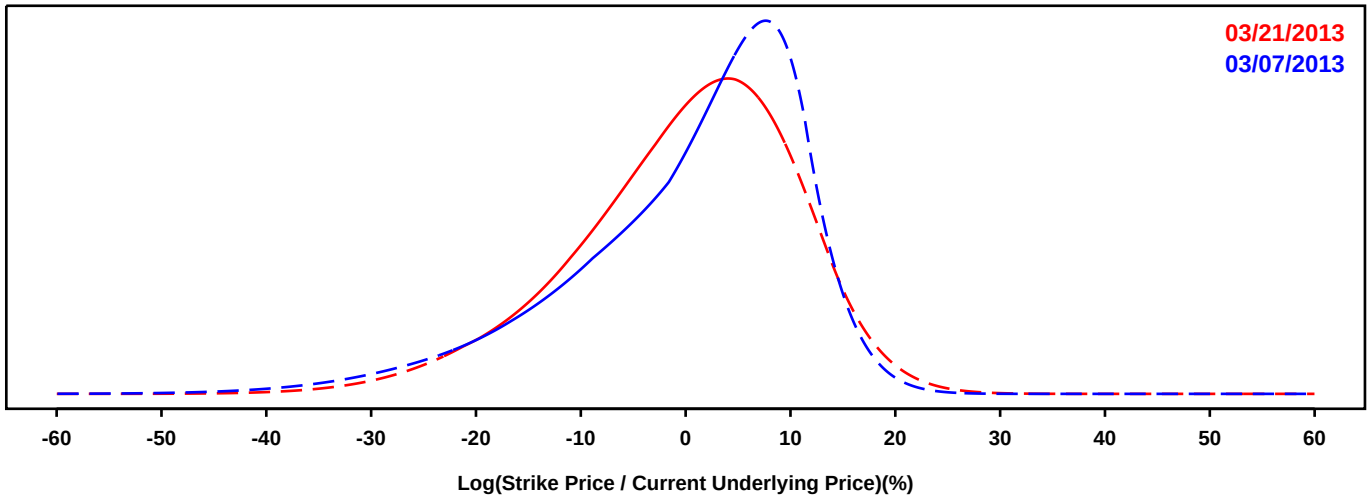
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- FIFTH THIRD

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

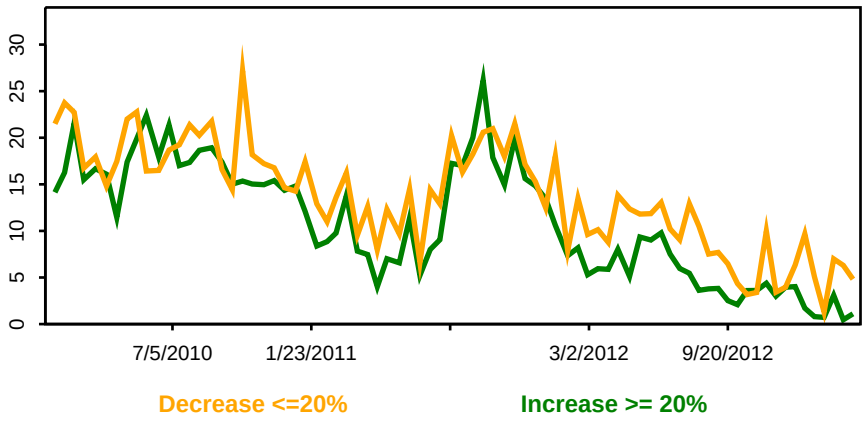
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



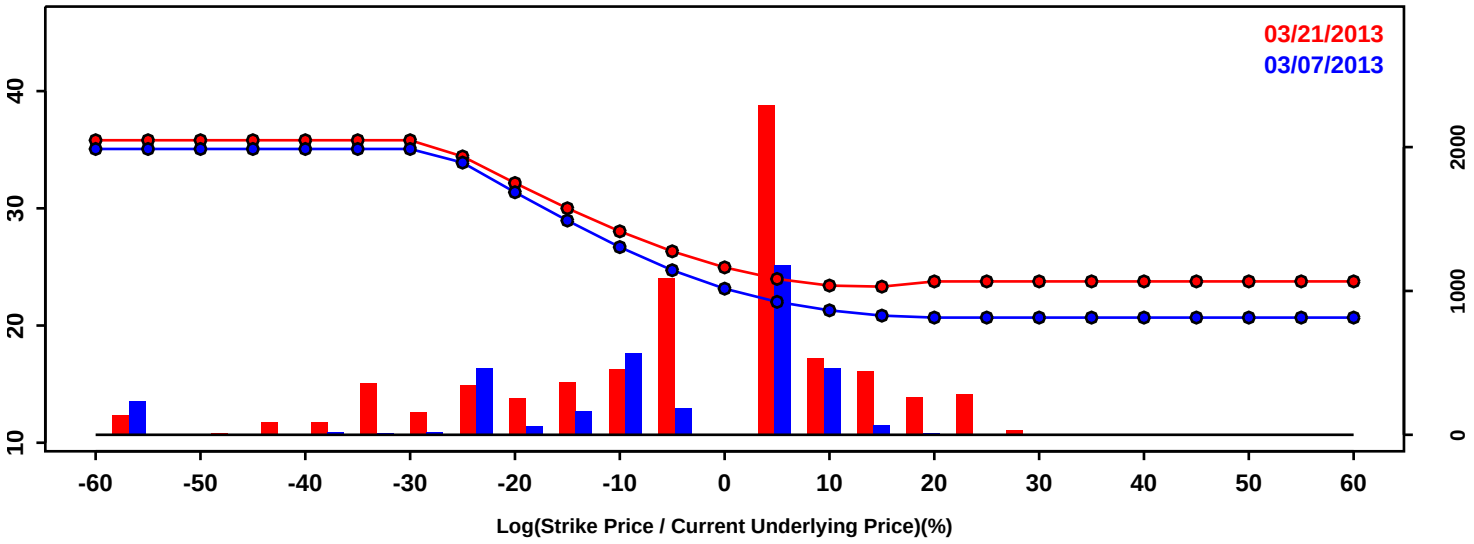
Statistics of the Log Return Distributions

	03/07/2013	03/21/2013	Change
10th Pct	-15.70%	-14.52%	1.18%
50th Pct	2.84%	1.18%	-1.66%
90th Pct	11.94%	12.26%	0.32%
Mean	0.22%	-0.09%	-0.31%
Std Dev	11.30%	10.62%	-0.68%
Skew	-1.05	-0.60	0.45
Kurtosis	1.19	0.43	-0.77

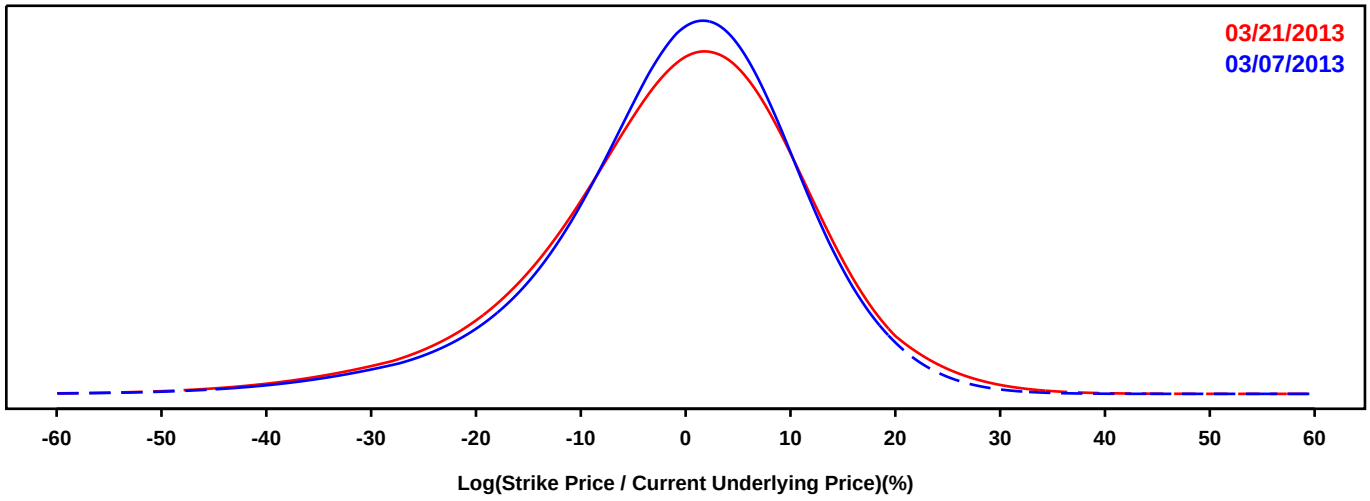
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- GOLDMAN SACHS

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

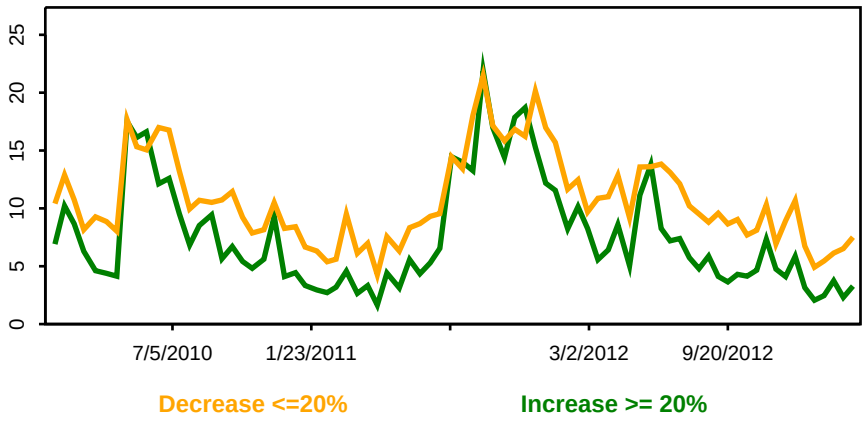
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



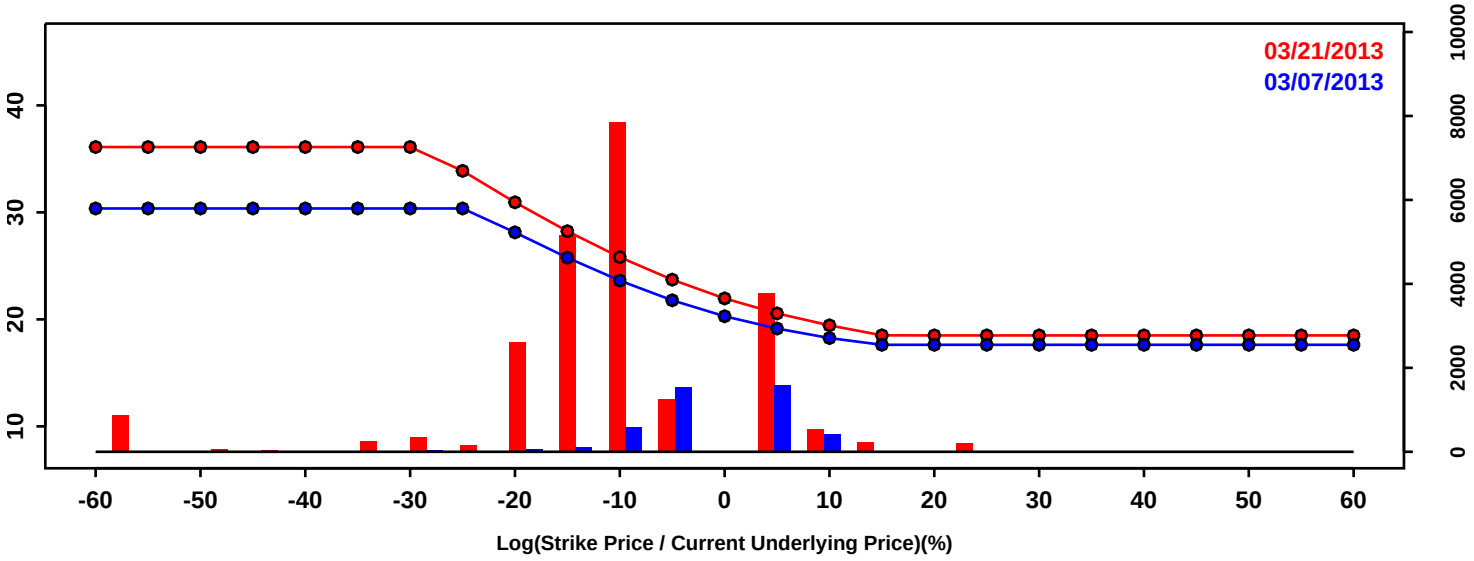
Statistics of the Log Return Distributions

	03/07/2013	03/21/2013	Change
10th Pct	-15.95%	-17.19%	-1.24%
50th Pct	0.29%	0.20%	-0.10%
90th Pct	12.85%	13.76%	0.90%
Mean	-0.84%	-0.94%	-0.10%
Std Dev	11.92%	12.75%	0.83%
Skew	-0.72	-0.61	0.11
Kurtosis	1.36	1.11	-0.25

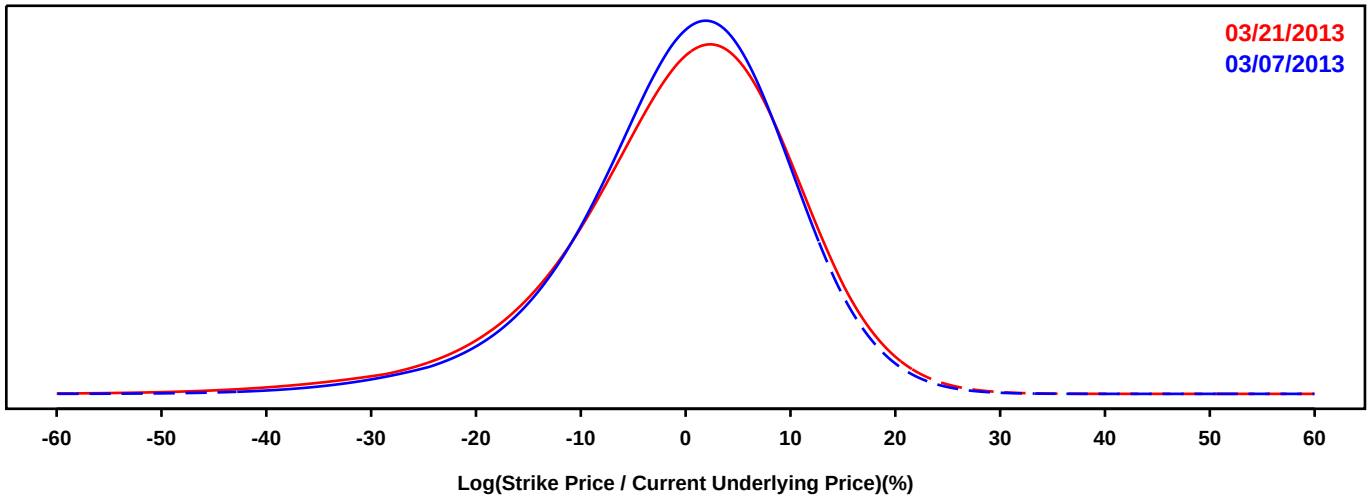
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- JP MORGAN

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

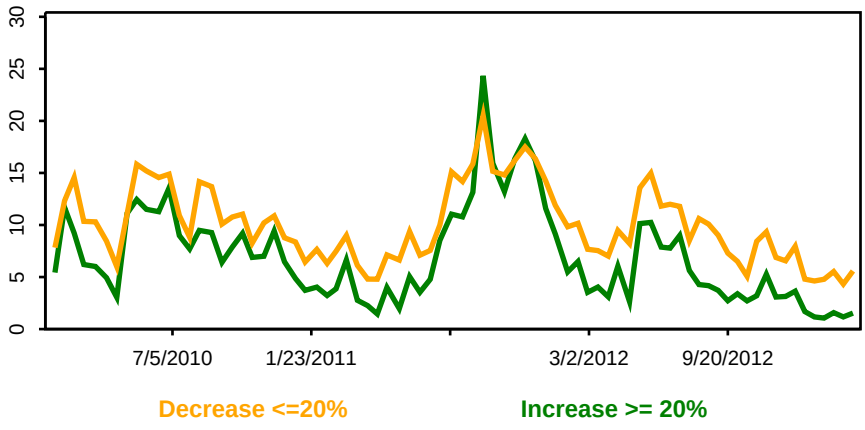
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



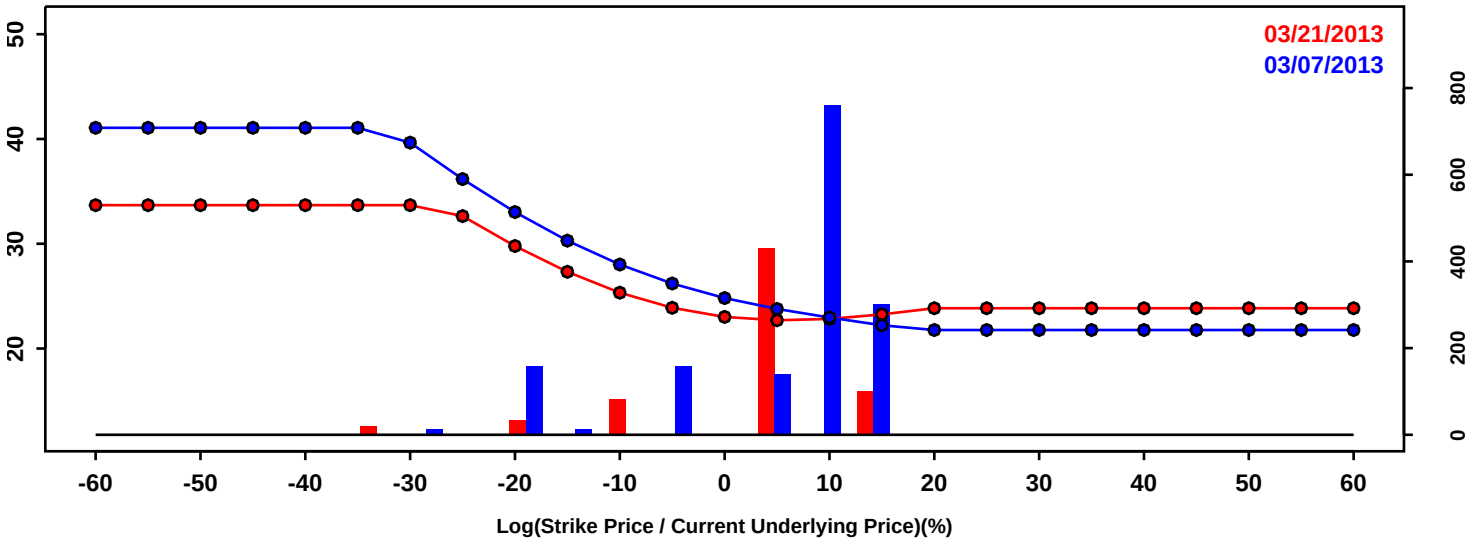
Statistics of the Log Return Distributions

	03/07/2013	03/21/2013	Change
10th Pct	-13.47%	-14.85%	-1.38%
50th Pct	0.60%	0.62%	0.02%
90th Pct	11.67%	12.29%	0.62%
Mean	-0.34%	-0.57%	-0.23%
Std Dev	10.32%	11.31%	0.99%
Skew	-0.67	-0.83	-0.16
Kurtosis	1.16	1.64	0.48

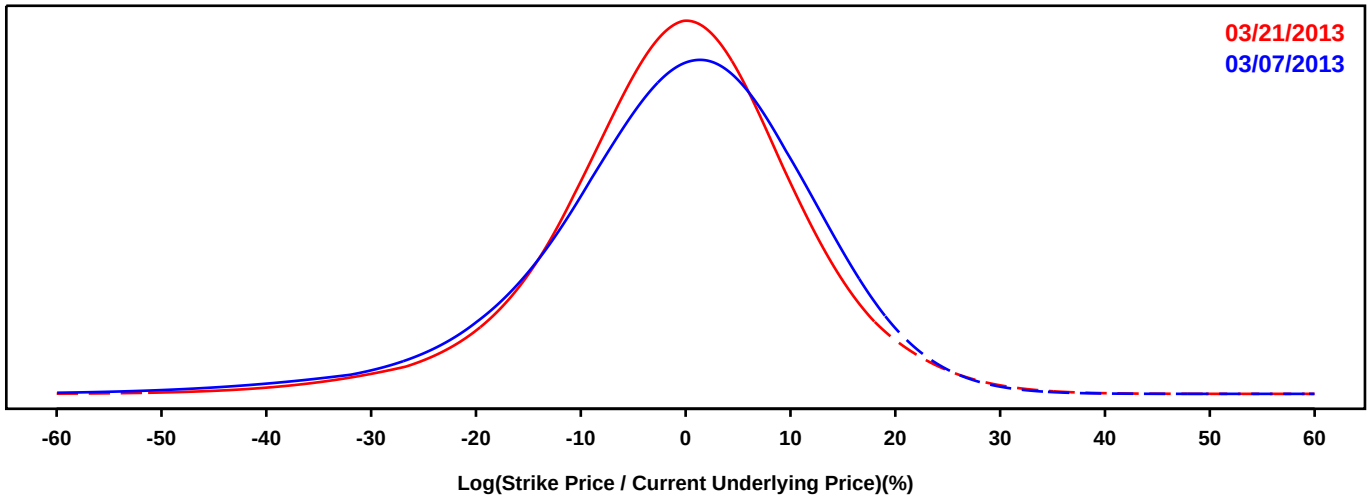
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- KEYCORP

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

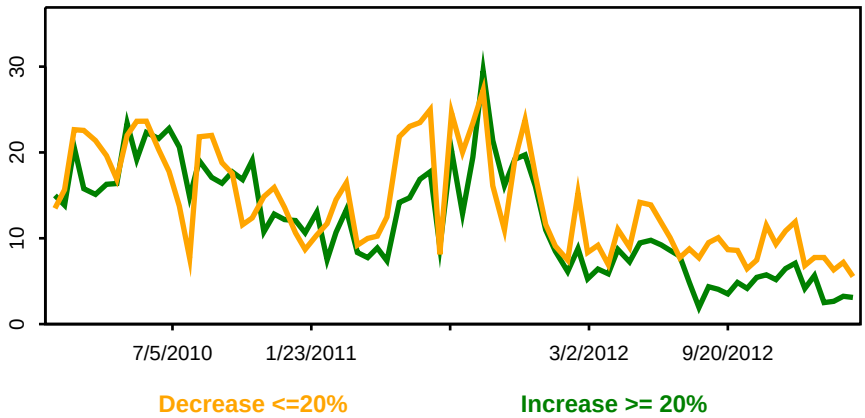
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



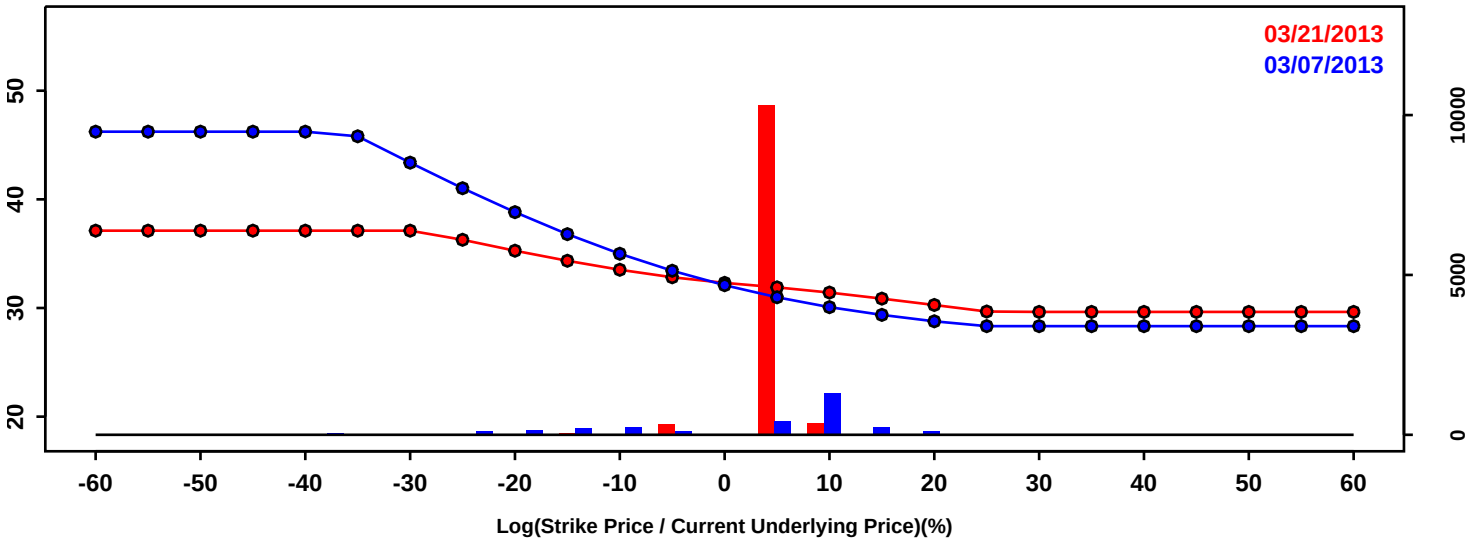
Statistics of the Log Return Distributions

	03/07/2013	03/21/2013	Change
10th Pct	-16.85%	-15.16%	1.69%
50th Pct	0.13%	-0.36%	-0.48%
90th Pct	14.11%	13.03%	-1.08%
Mean	-0.90%	-0.85%	0.05%
Std Dev	12.86%	11.67%	-1.19%
Skew	-0.73	-0.41	0.32
Kurtosis	1.55	1.14	-0.42

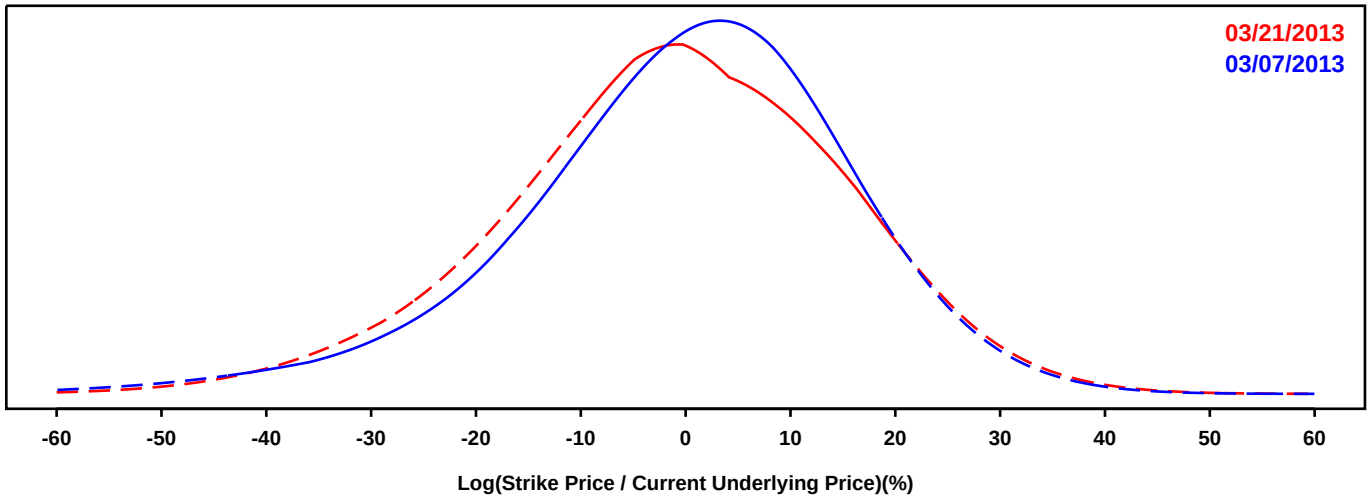
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- MORGAN STANLEY

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

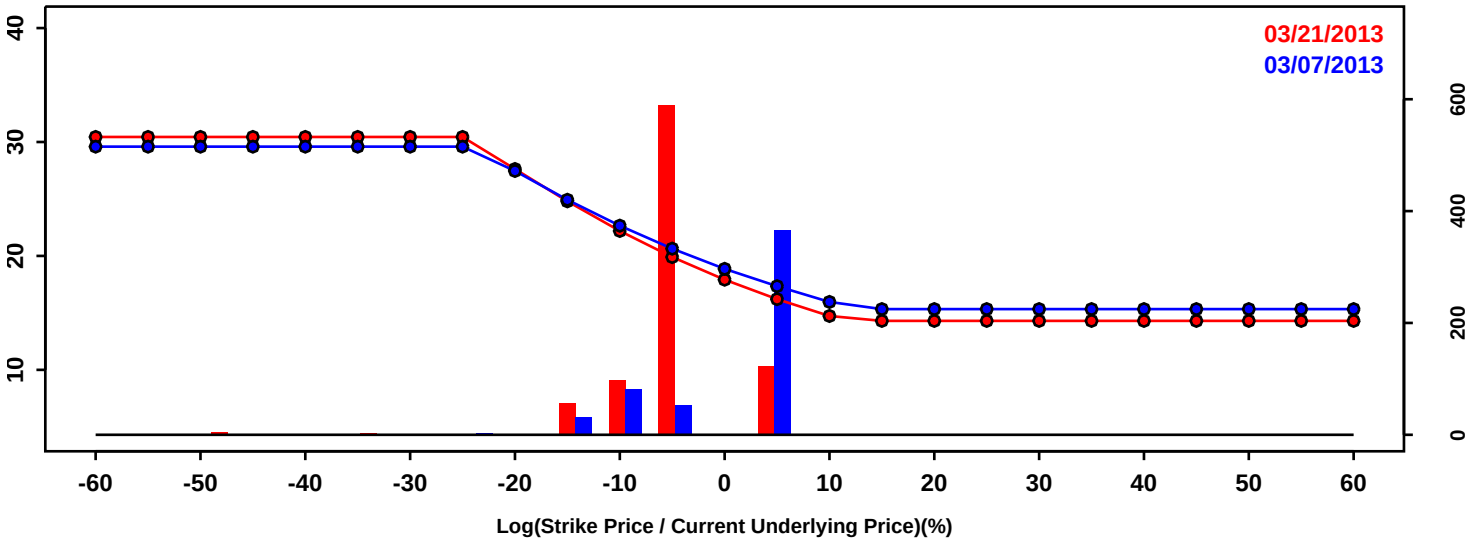
Statistics of the Log Return Distributions

	03/07/2013	03/21/2013	Change
10th Pct	-20.80%	-22.19%	-1.39%
50th Pct	1.10%	-0.62%	-1.73%
90th Pct	18.79%	19.24%	0.44%
Mean	-0.23%	-1.08%	-0.85%
Std Dev	16.19%	16.30%	0.11%
Skew	-0.60	-0.25	0.35
Kurtosis	1.03	0.20	-0.83

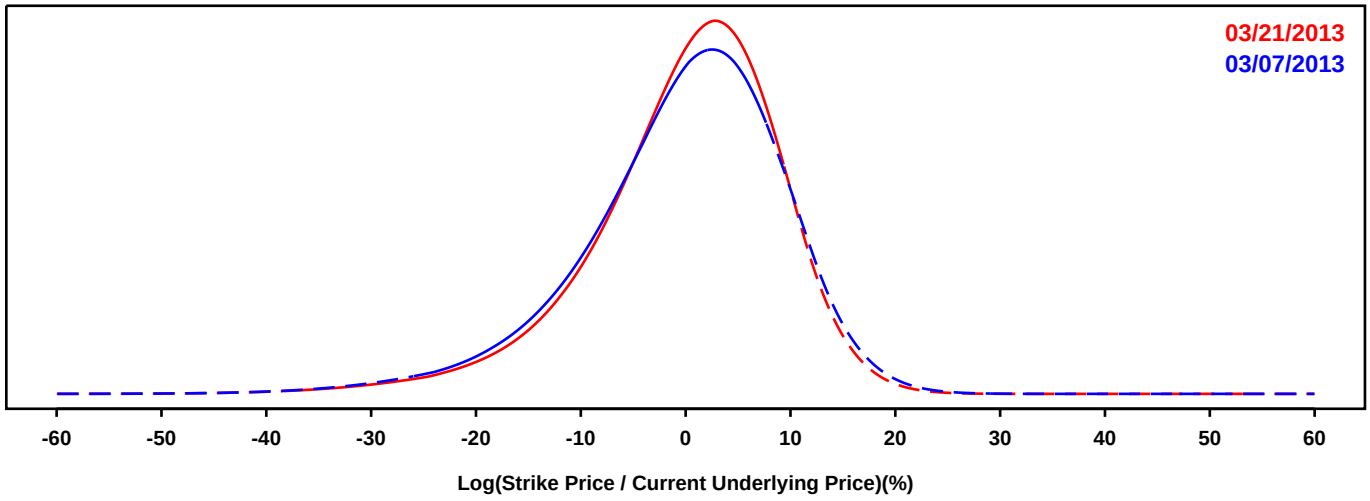
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- PNC FINANCIAL

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

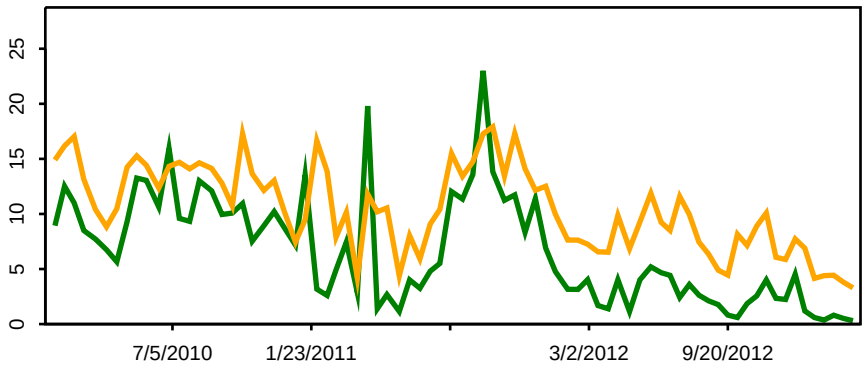
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



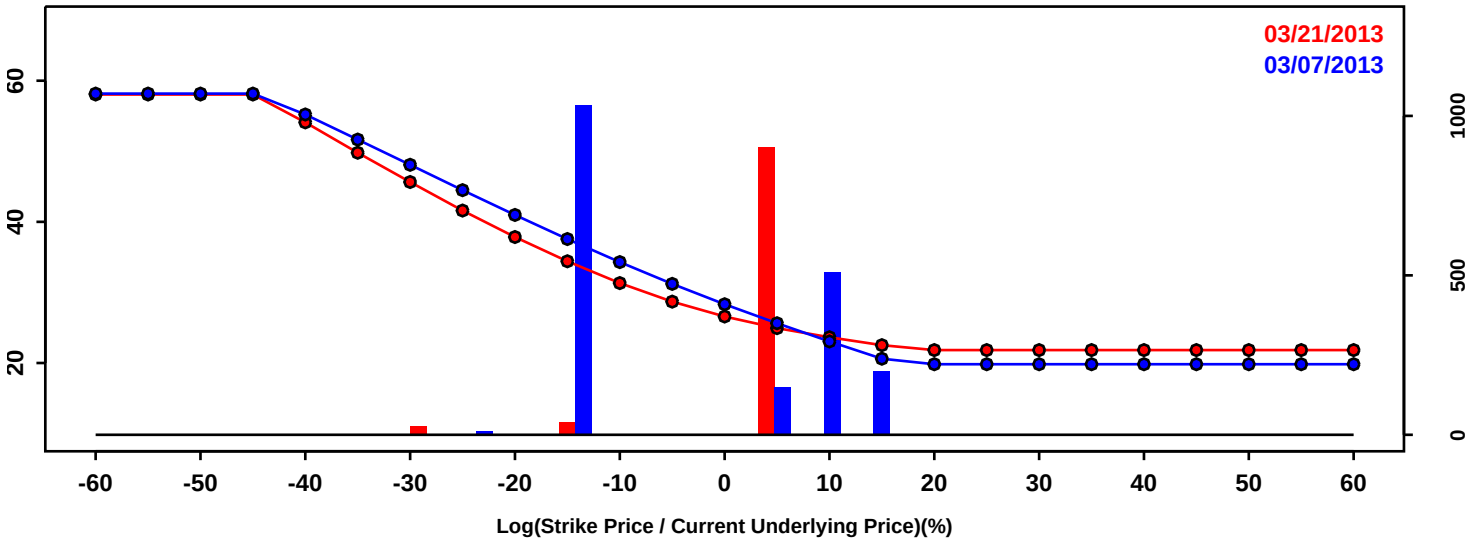
Statistics of the Log Return Distributions

	03/07/2013	03/21/2013	Change
10th Pct	-12.79%	-11.78%	1.01%
50th Pct	0.85%	1.12%	0.27%
90th Pct	10.75%	10.20%	-0.55%
Mean	-0.27%	-0.05%	0.23%
Std Dev	9.69%	9.19%	-0.50%
Skew	-0.80	-0.92	-0.12
Kurtosis	1.35	1.82	0.47

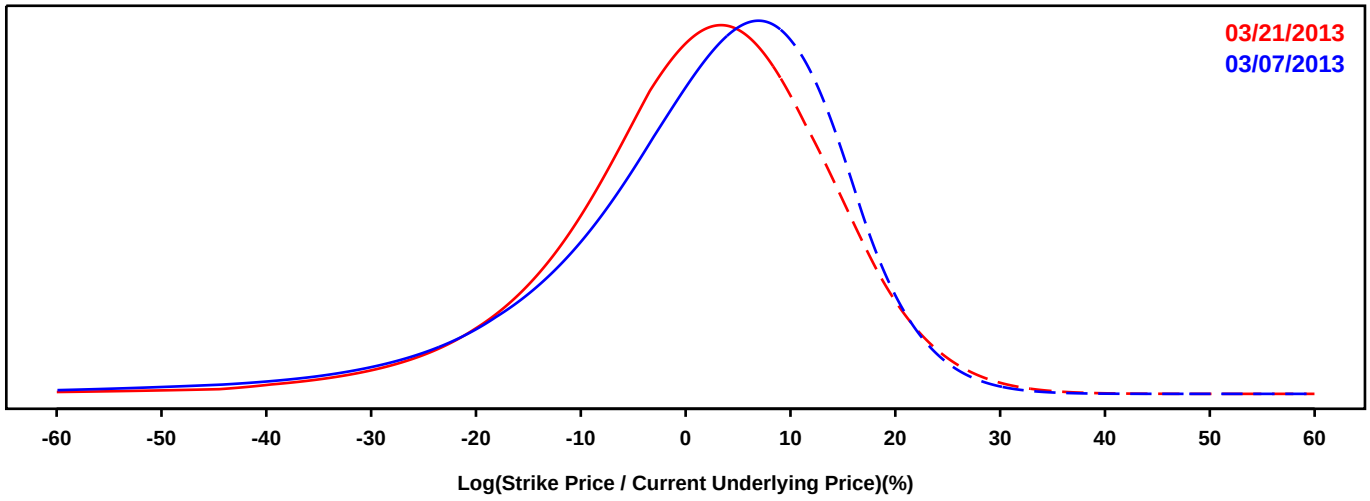
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- REGIONS FINANCIAL

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

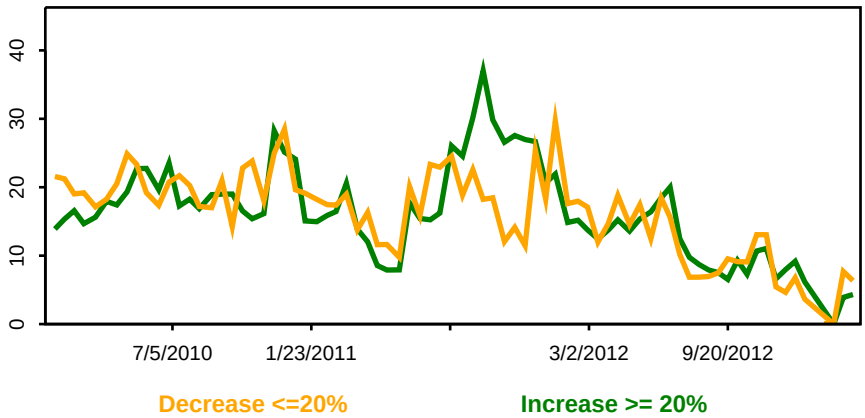
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



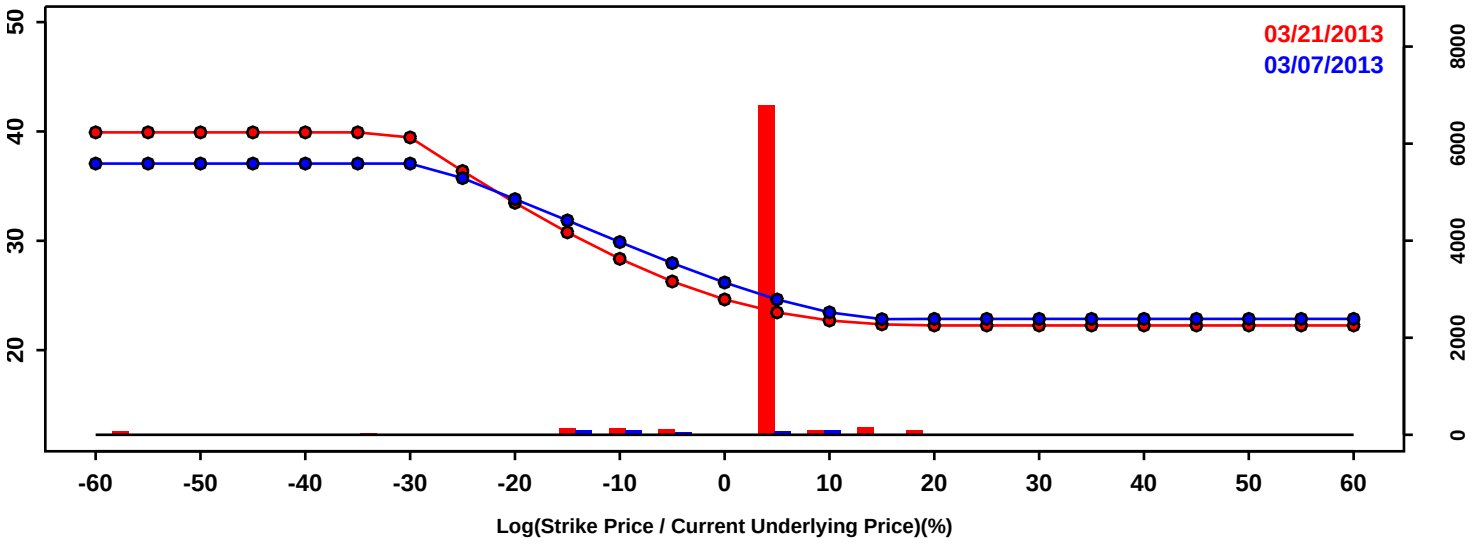
Statistics of the Log Return Distributions

	03/07/2013	03/21/2013	Change
10th Pct	-16.81%	-15.47%	1.33%
50th Pct	3.33%	1.95%	-1.37%
90th Pct	15.81%	15.63%	-0.18%
Mean	0.90%	0.70%	-0.20%
Std Dev	14.38%	13.17%	-1.20%
Skew	-1.42	-0.98	0.43
Kurtosis	3.86	2.90	-0.96

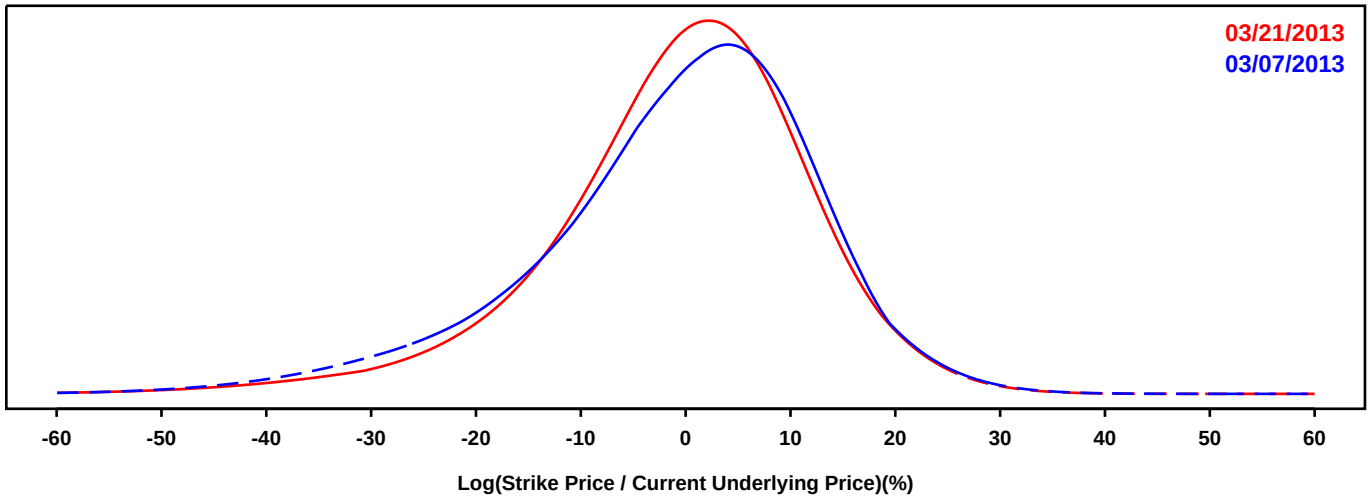
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- SUNTRUST

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

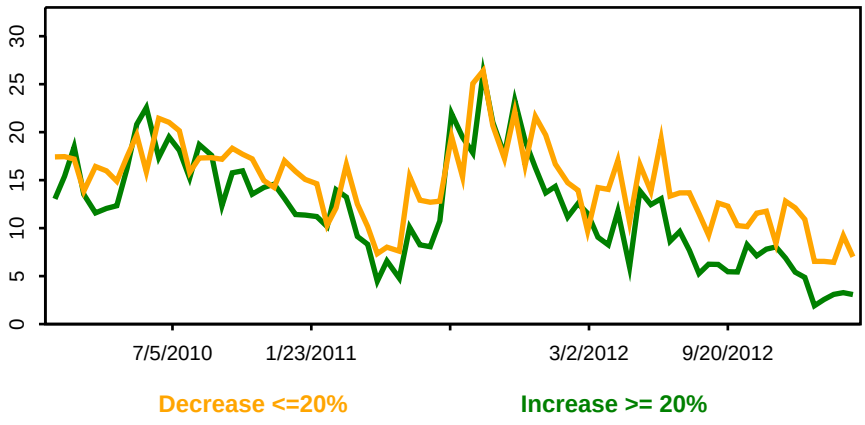
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



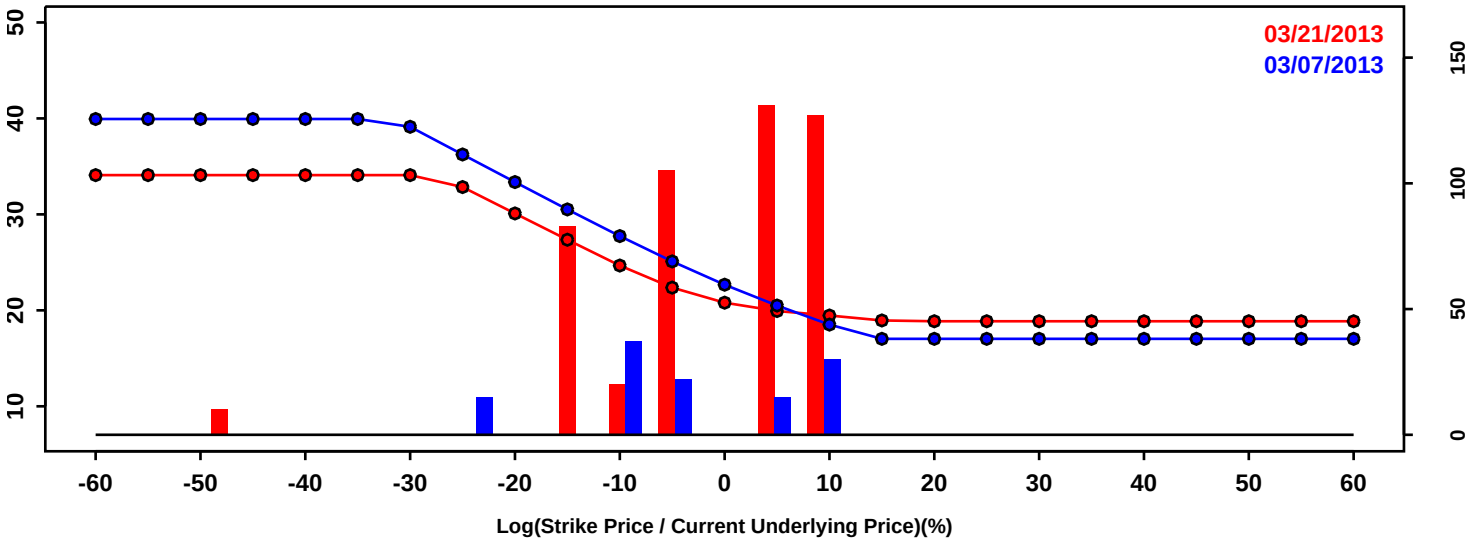
Statistics of the Log Return Distributions

	03/07/2013	03/21/2013	Change
10th Pct	-19.05%	-16.49%	2.56%
50th Pct	0.84%	0.58%	-0.26%
90th Pct	14.17%	13.69%	-0.48%
Mean	-0.99%	-0.67%	0.32%
Std Dev	13.58%	12.66%	-0.93%
Skew	-0.77	-0.78	-0.01
Kurtosis	1.08	1.69	0.60

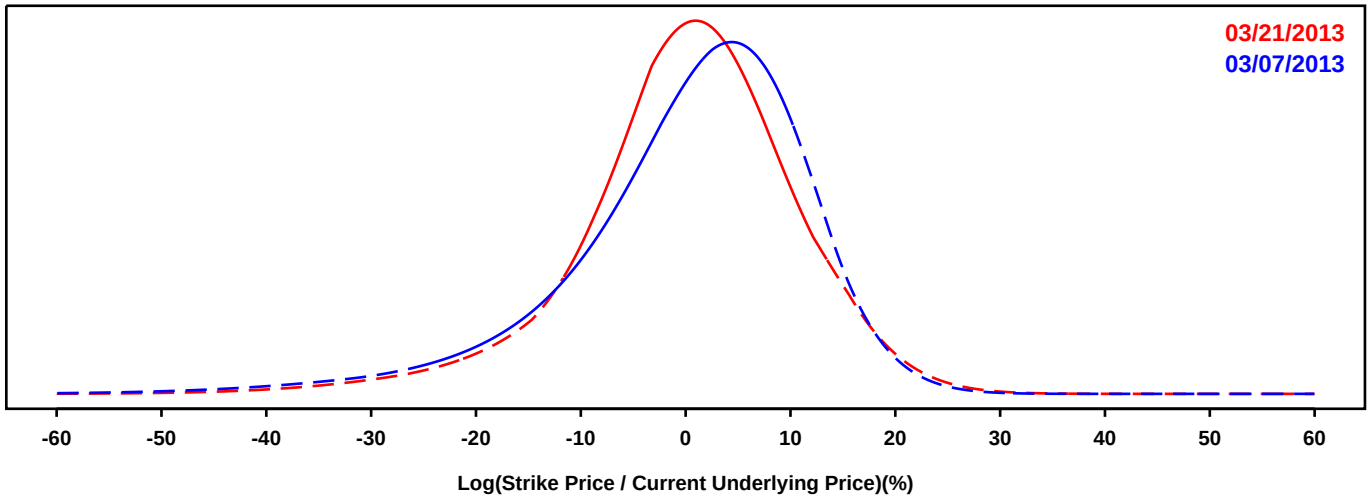
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- STATE STREET

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

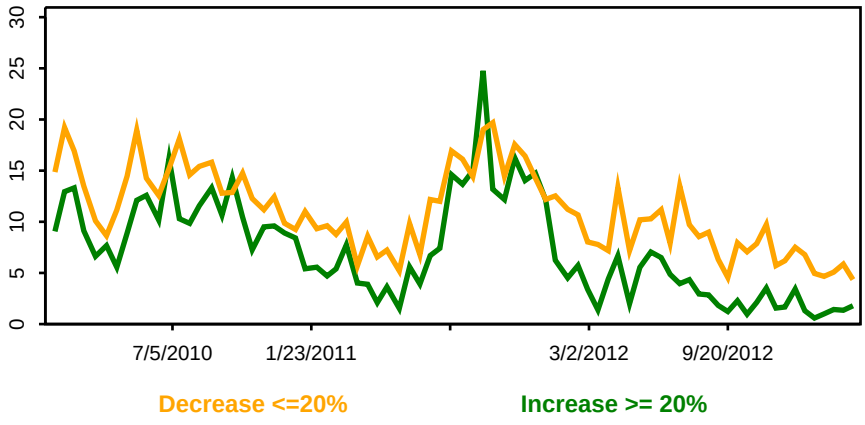
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



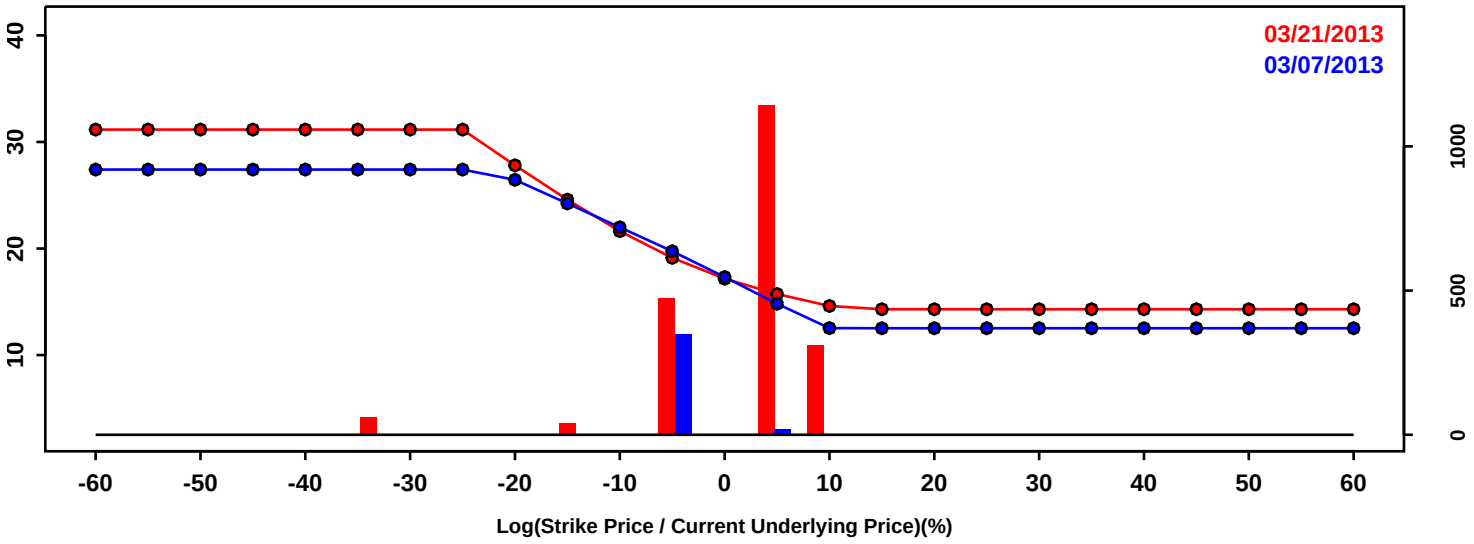
Statistics of the Log Return Distributions

	03/07/2013	03/21/2013	Change
10th Pct	-14.55%	-12.64%	1.91%
50th Pct	1.95%	0.73%	-1.22%
90th Pct	12.80%	12.46%	-0.33%
Mean	0.21%	0.07%	-0.14%
Std Dev	11.66%	10.58%	-1.08%
Skew	-1.13	-0.72	0.41
Kurtosis	2.40	1.76	-0.64

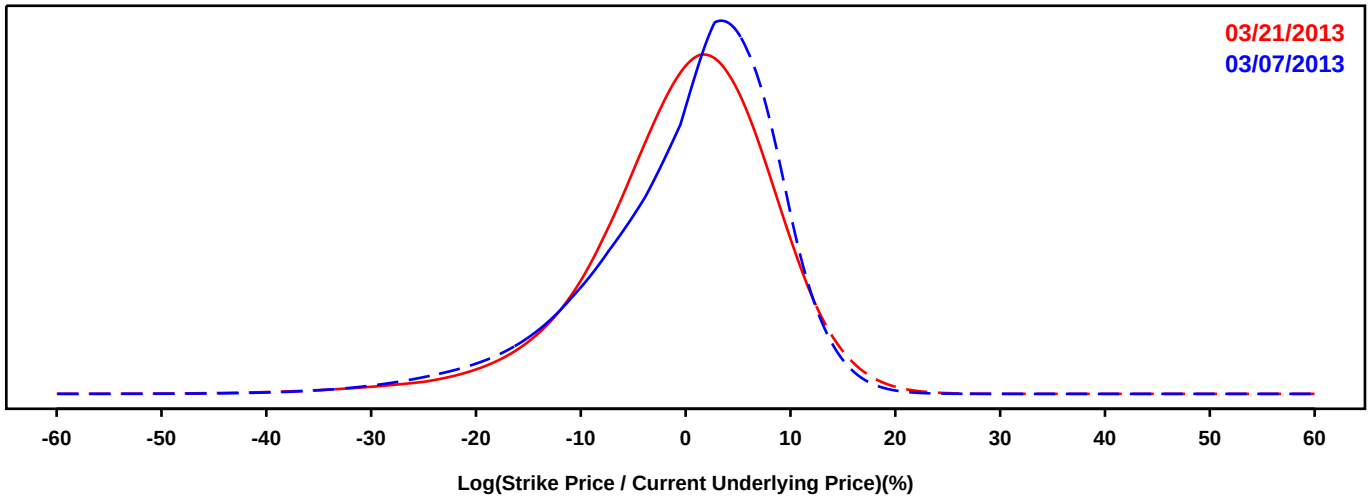
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- US BANCORP

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

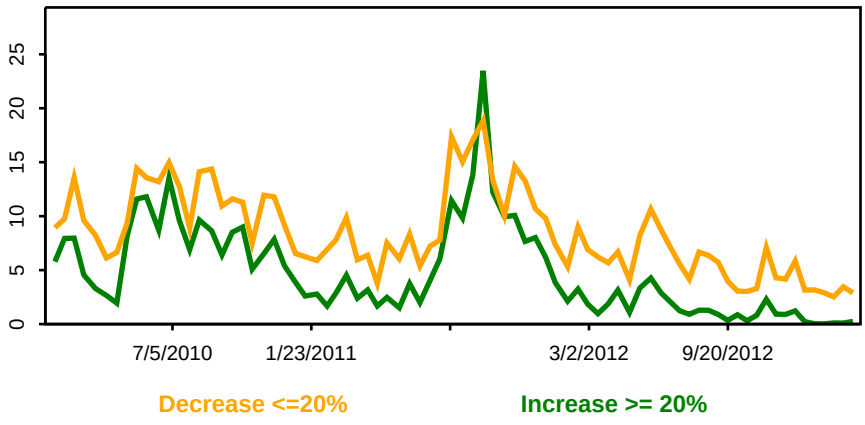
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



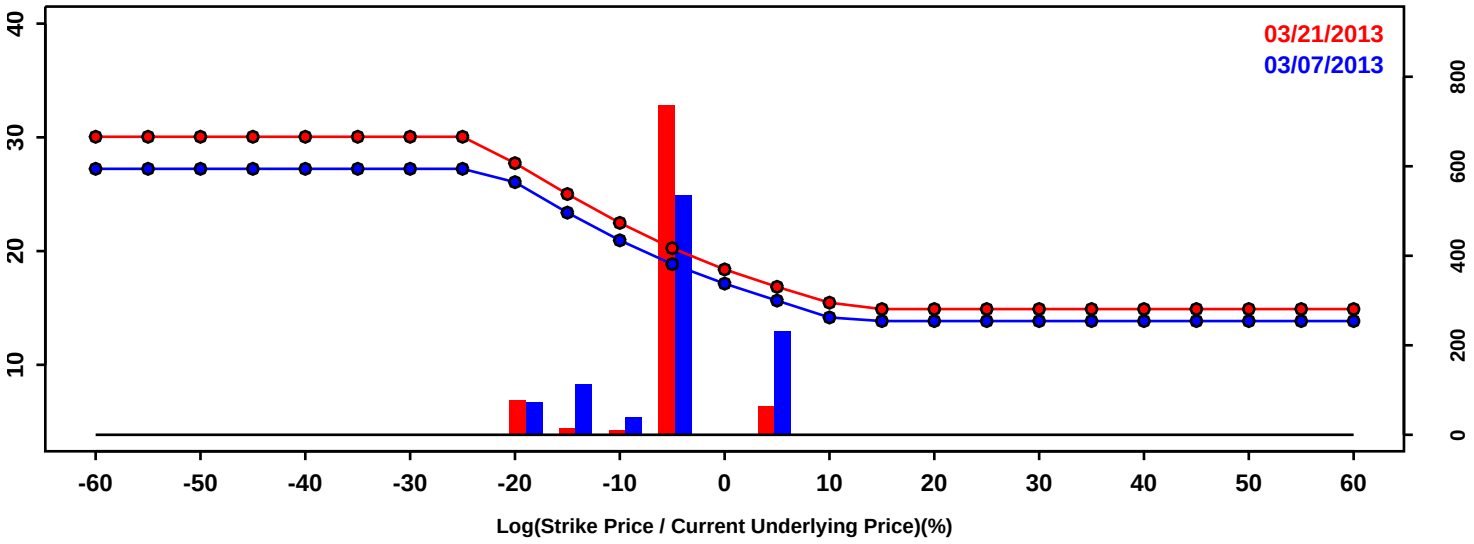
Statistics of the Log Return Distributions

	03/07/2013	03/21/2013	Change
10th Pct	-12.00%	-11.19%	0.80%
50th Pct	1.65%	0.62%	-1.03%
90th Pct	9.46%	9.62%	0.16%
Mean	-0.03%	-0.32%	-0.29%
Std Dev	8.93%	8.79%	-0.14%
Skew	-1.06	-0.92	0.14
Kurtosis	1.69	2.19	0.49

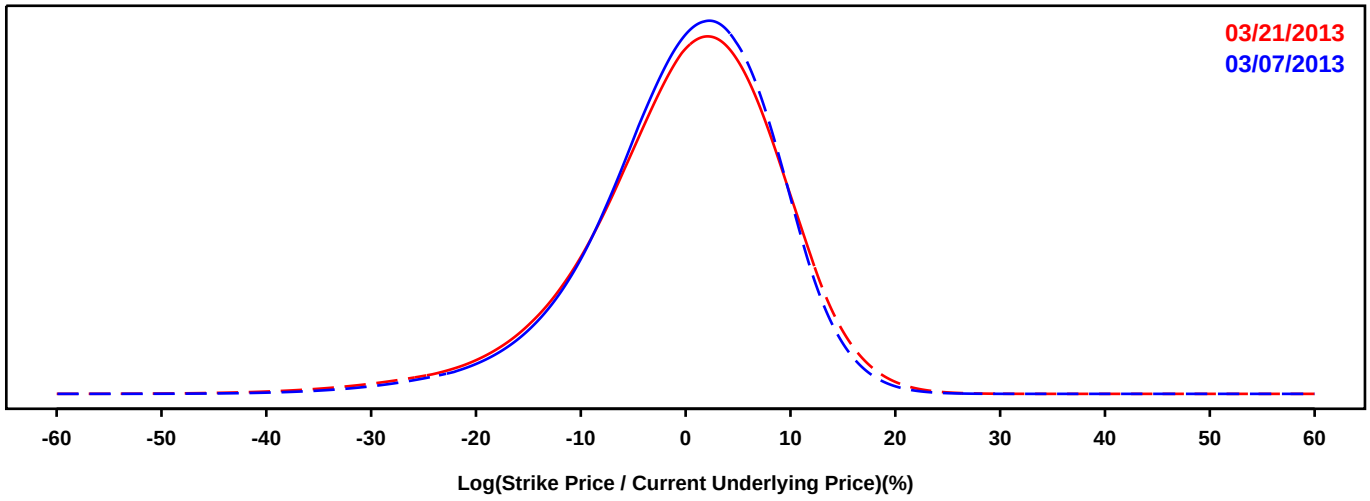
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- WELLS FARGO

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

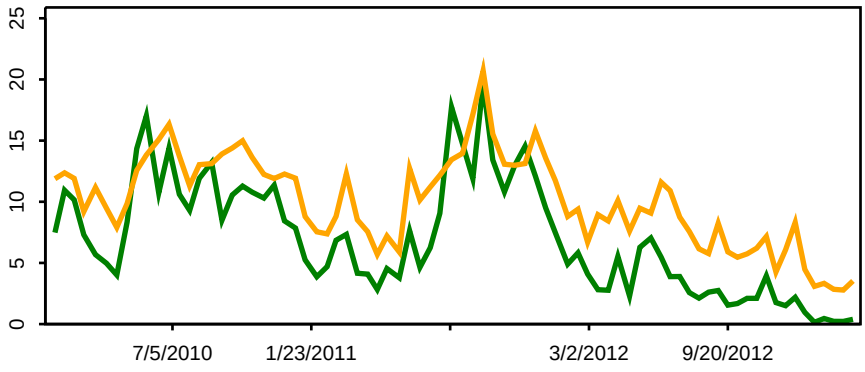
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



Statistics of the Log Return Distributions

	03/07/2013	03/21/2013	Change
10th Pct	-11.38%	-12.25%	-0.86%
50th Pct	0.70%	0.71%	0.01%
90th Pct	9.79%	10.38%	0.60%
Mean	-0.21%	-0.33%	-0.12%
Std Dev	8.74%	9.40%	0.66%
Skew	-0.79	-0.85	-0.06
Kurtosis	1.39	1.63	0.24