

FEDERAL RESERVE BANK OF MINNEAPOLIS
BANKING AND POLICY STUDIES

Minneapolis Options Report – June 29th

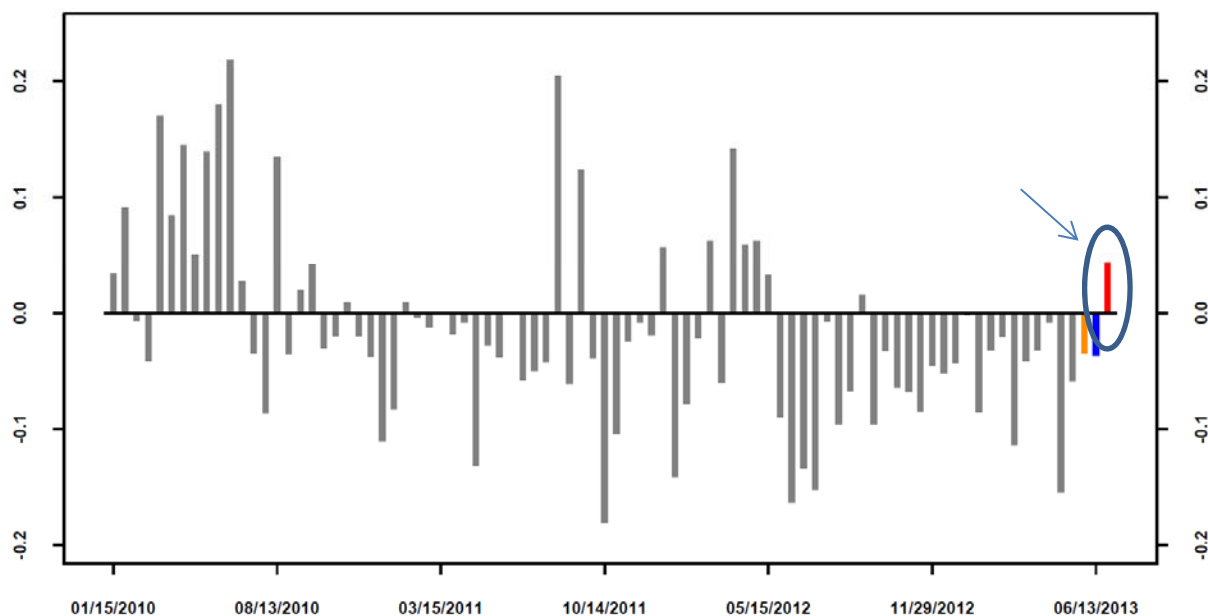
Banks

Trading in options on bank stocks jumped last week as markets turned volatile. Bank performance over the past two weeks has been generally weak. Average CCAR bank stocks were down -0.48%. Smaller firms (read less risky) outperformed. RF, KEY, and PNC rose 5.9%, 3.8%, and 2.6% respectively.

The bifurcation of spot performance manifested itself in RNPD standard deviations with the larger banks showing increased tail risks while the smaller banks were largely unchanged. RNPD shapes tended to skew more to the upside relative to two weeks ago. Deeply out of the money trades favored calls over puts indicating market participants' expectation of a reversal in share prices. RNPD standard remain above their recent lows, consistent with broader market indices.

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)

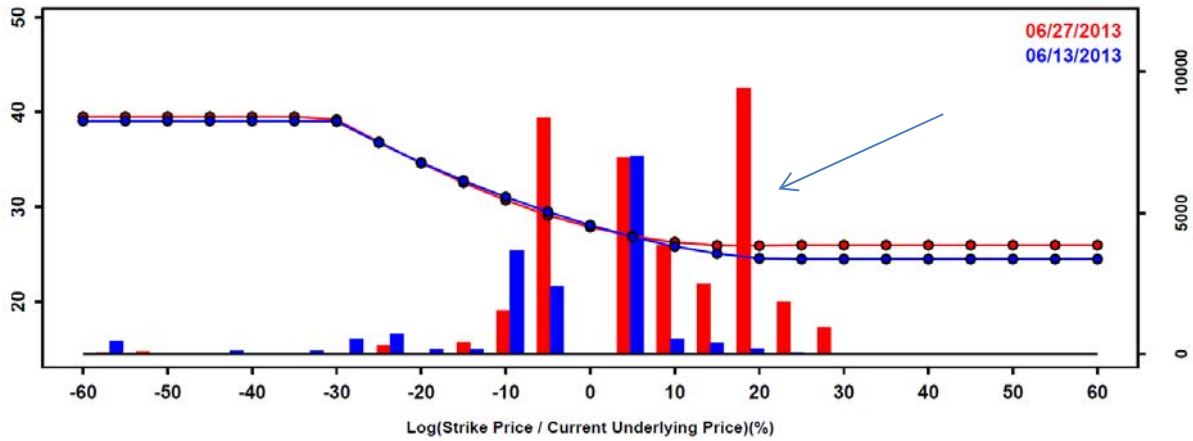


Additional notes:

- BAC and C generally dominate options trading volume across our universe and this week was no exception. Despite very weak performance, the RNPD standard deviation for BAC was largely unchanged. The RNPD standard deviation *fell* for C, an unusual occurrence. Note the large amount of trading for C at strikes above the spot. (*See BAC and C reports*)

OPTIONS STATISTICS - CITIGROUP

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



- Among the LBO firms, market participants were very active in options on shares of BBT, RF, and USB. These firms were among the better performers over the past two weeks (+2.1%, +5.9%, and +1.9% respectively). Tail risks, as measured by RNP standard deviation, declined for these firms. (*see individual reports*)

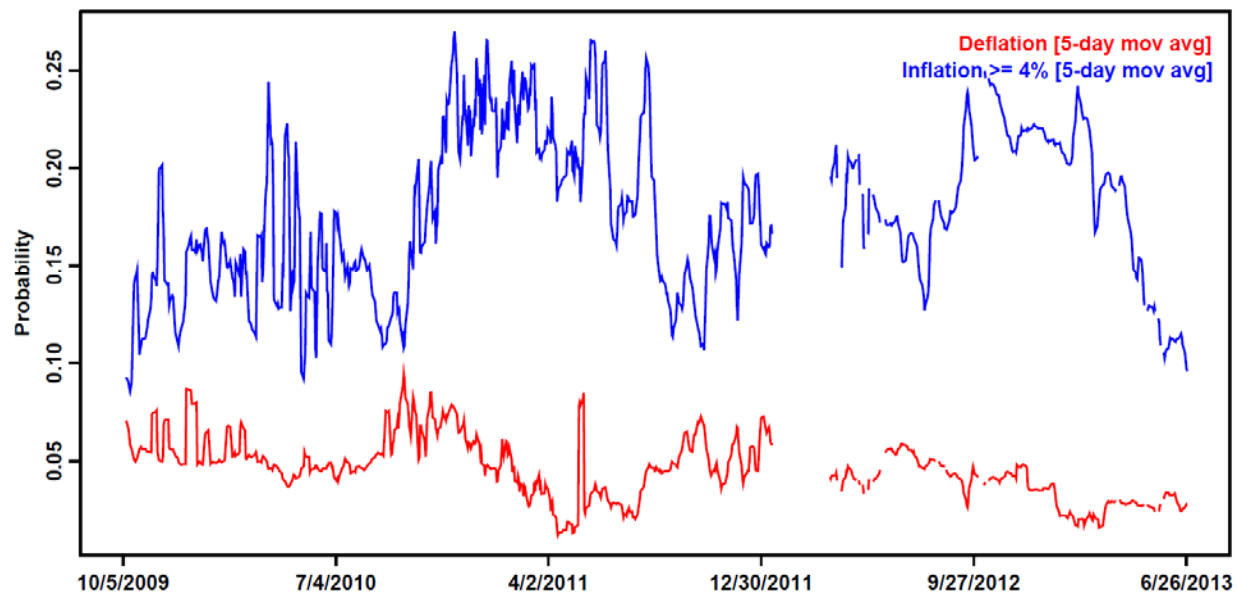
Other Commodity Markets

Trading was very active in options on the S&P 500 index as well as in options on precious metals and grains. Performance across the markets we follow was generally weak with spot prices lower across the spectrum of markets. Spot price performance on Gold and Silver futures was particularly weak declining more than -10% in both cases. This was consistent with falling inflation expectations as illustrated in the chart below.

Tail risks ticked higher as measured by RNPD standard deviations. The changes were largest in the Corn, Gold, and Silver markets.

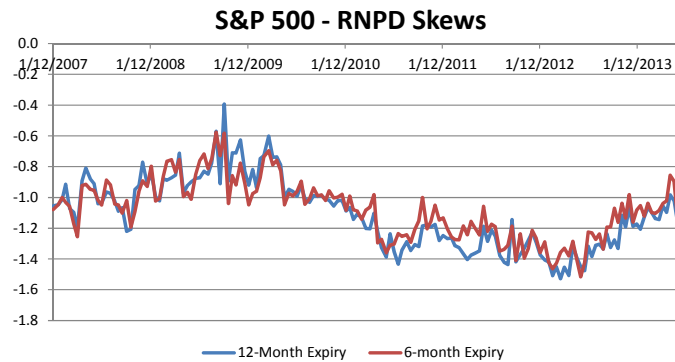
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS – INFLATION CAPS & FLOORS

Probability of Deflation and High Inflation over the next 5 Years

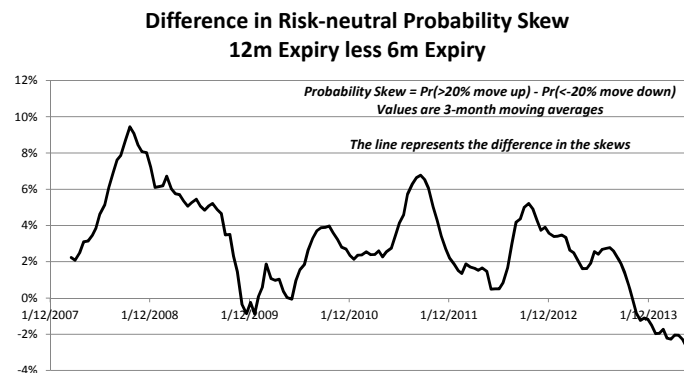


Additional notes:

- Trading in options on the S&P 500 index was very strong for the 6 month expiry. As RNPD standard deviations have begun to rise, skews have become more negative.

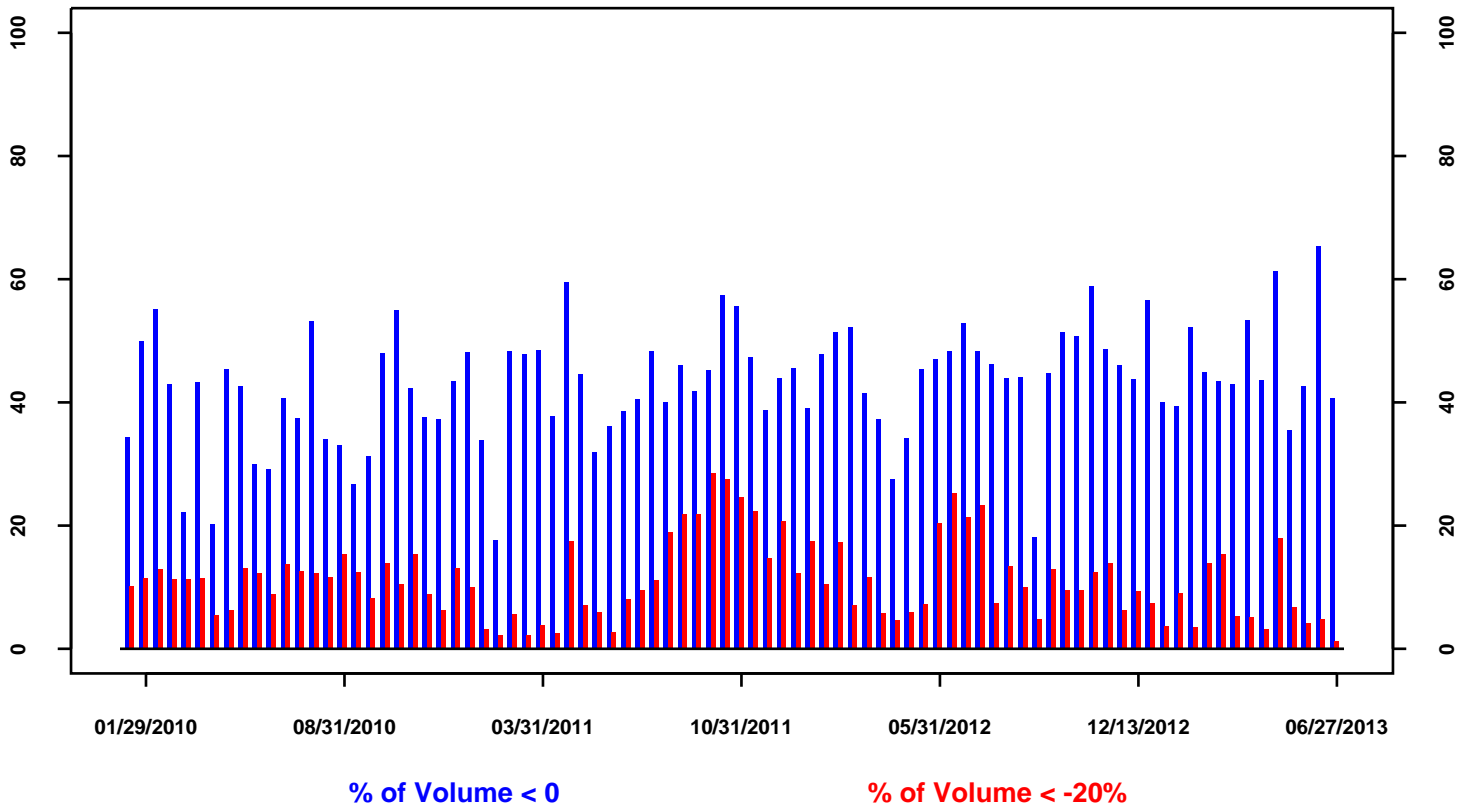


Market participants continue to see elevated downside tail risk 1 year ahead relative to 6 months ahead. (See S&P 500 reports)

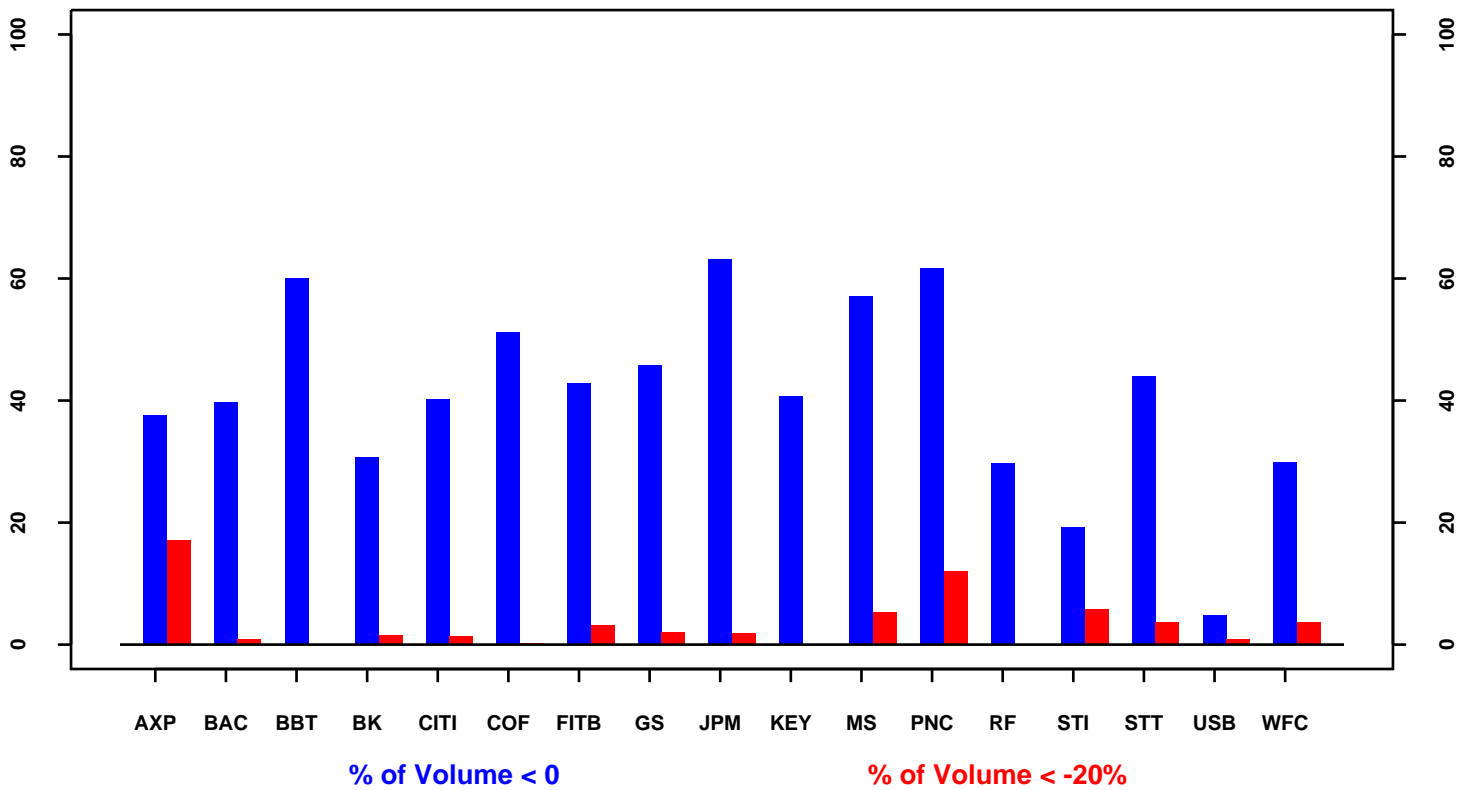


- Trading was relatively strong again for options on WTI and Brent crude futures. Spot prices were off slightly and RNP standard deviations rose by about 50 basis points. (See Oil Reports).
- Large downside return probabilities in the euro and pound markets continue to creep higher. Trading was light in the Yen-Dollar market. (See exchange rate reports)
- Options trading on corn, soybean, and wheat futures remains elevated. RNP standard deviation changes were mixed again (Corn +2.0%, Soybeans -0.8%, and Wheat +1.1%). (See grain market reports)
- Trading volumes for options on gold and silver futures was the highest of the year and one of the highest measured since the fall of 2010. Tail risks are rising rapidly in both markets. The RNP standard deviation derived from options on gold futures increased 3.4%. Similarly, the RNP standard deviation derived from options on silver futures rose 2.8%. (See gold and silver reports)
- The DJ Real Estate Index ETF fell -4.2% over the past two weeks. RNP statistics were largely unchanged. (See Real Estate report)

Aggregate Volumes for Options on CCAR Banks

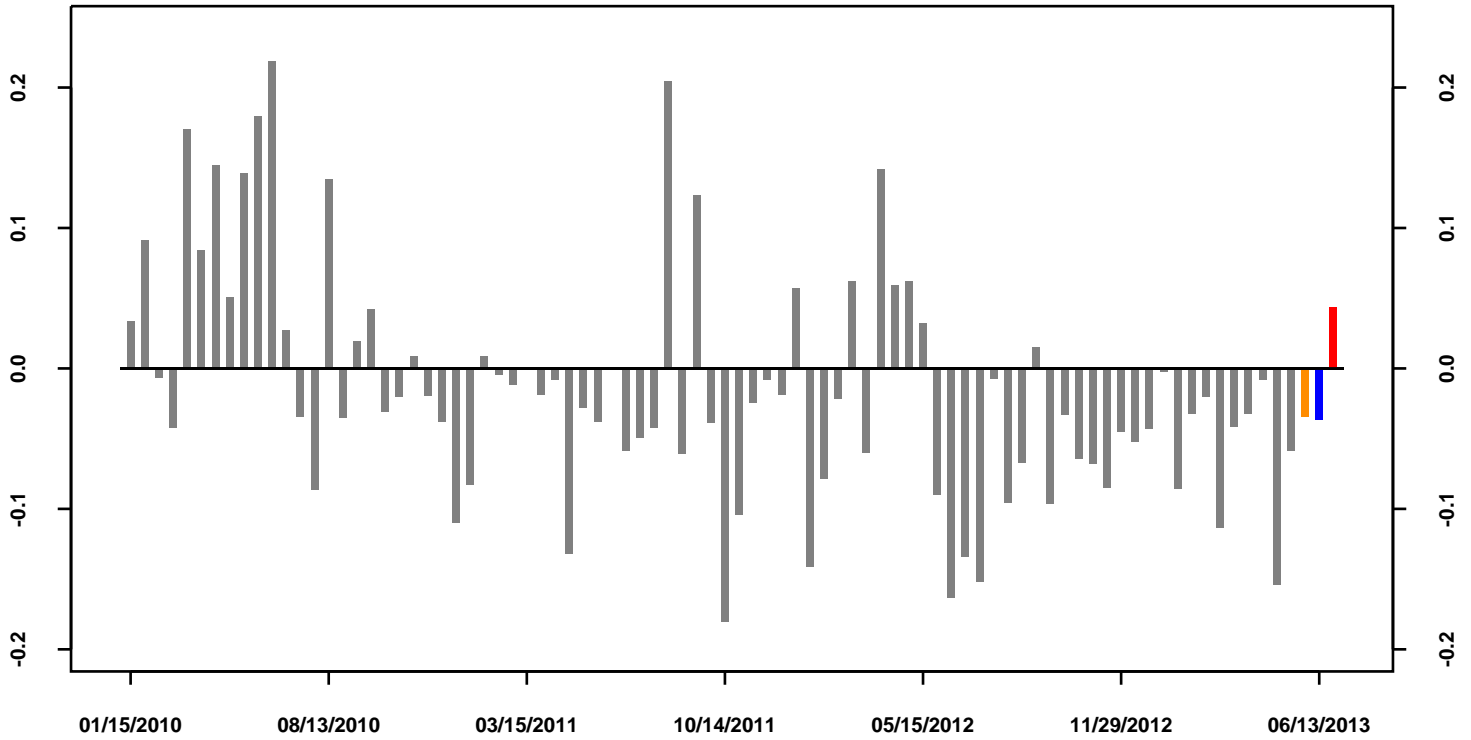


Volumes for Options on CCAR Banks

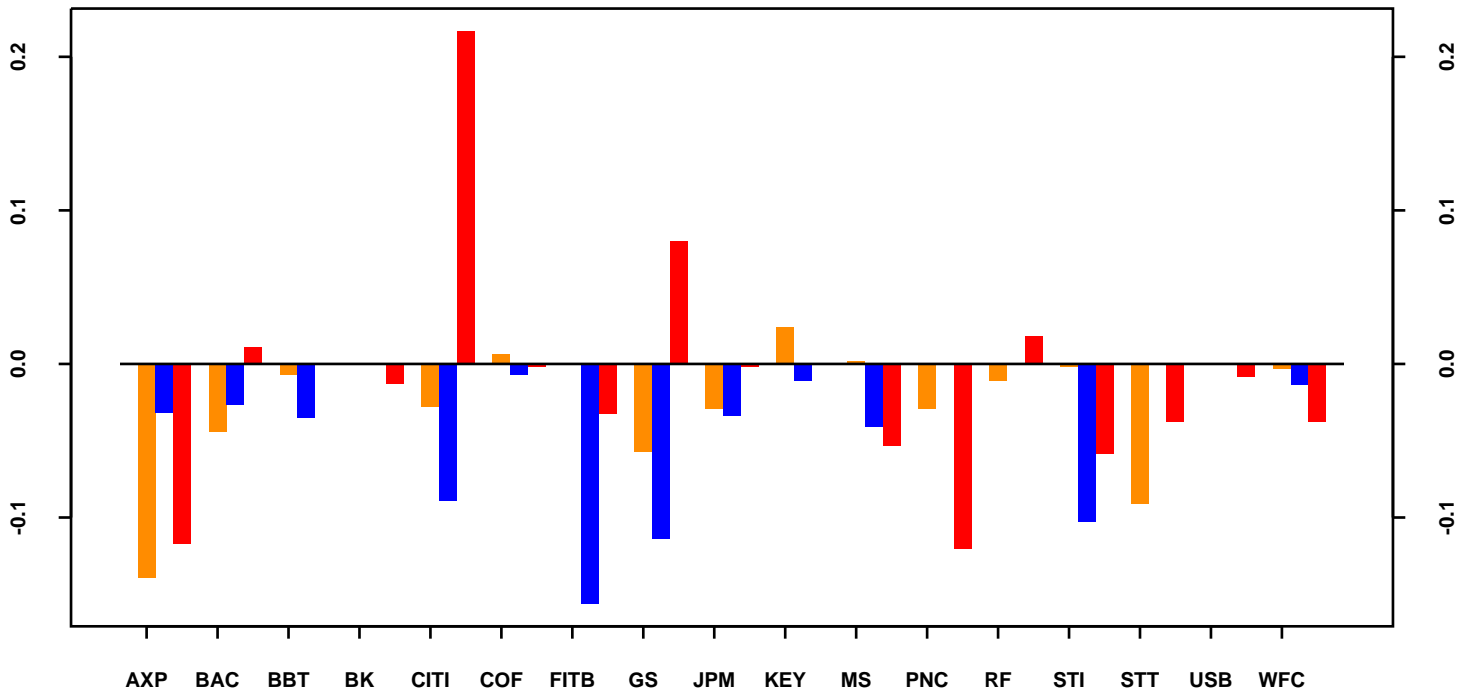


Aggregate Volume Skew--CCAR Banks

(% 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



05/30/2013

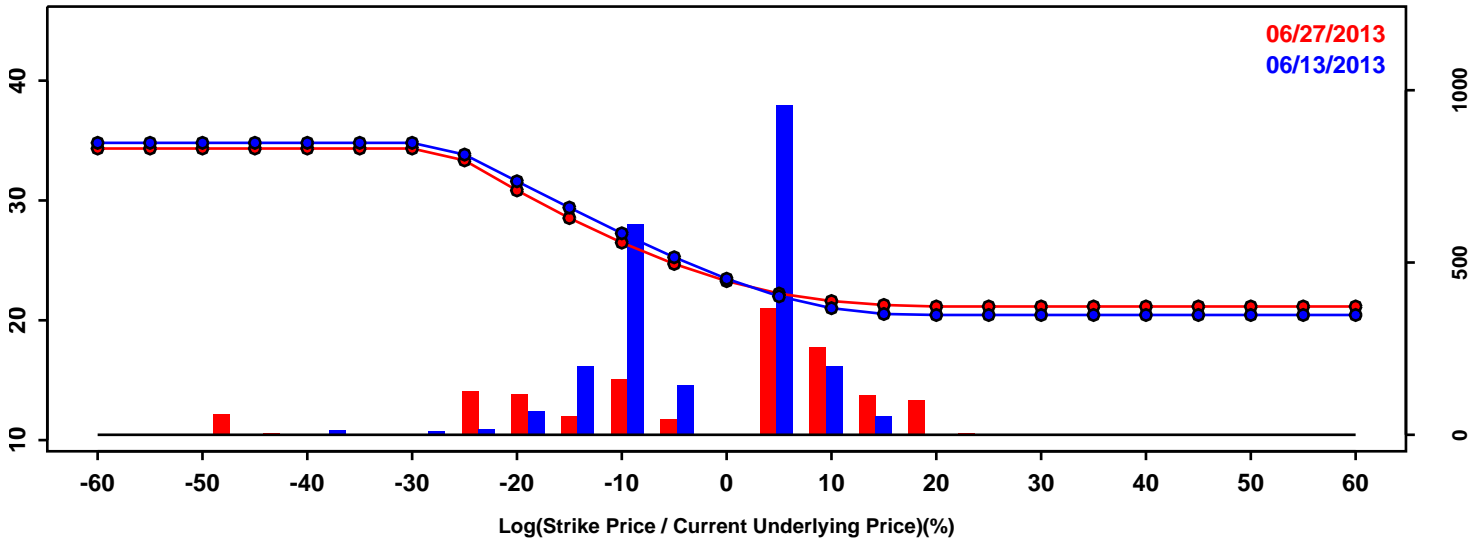
06/13/2013

06/27/2013

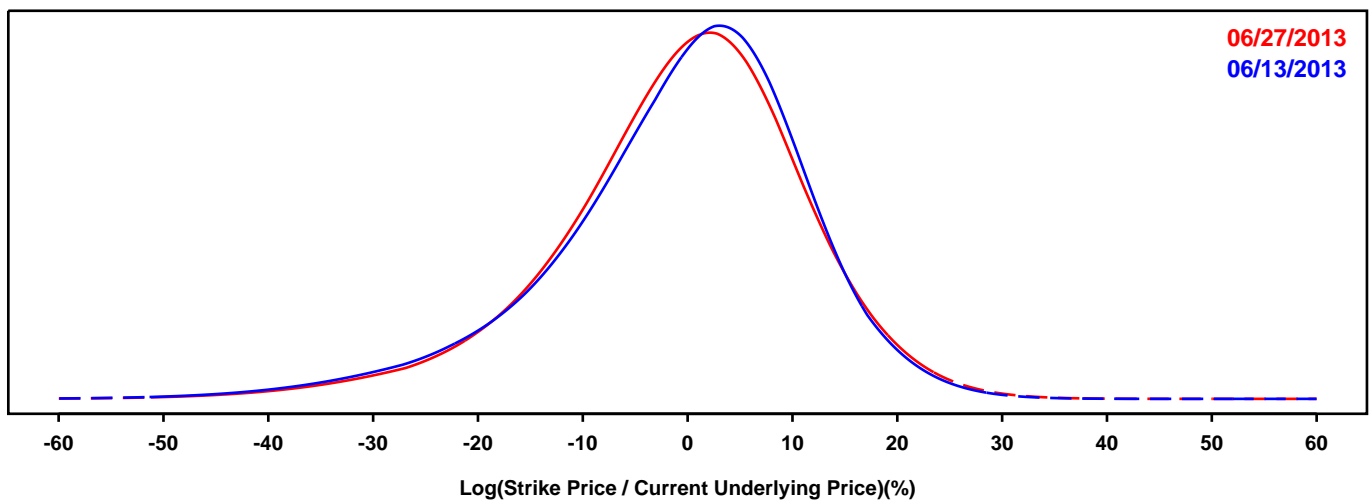
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- AMERICAN EXPRESS

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

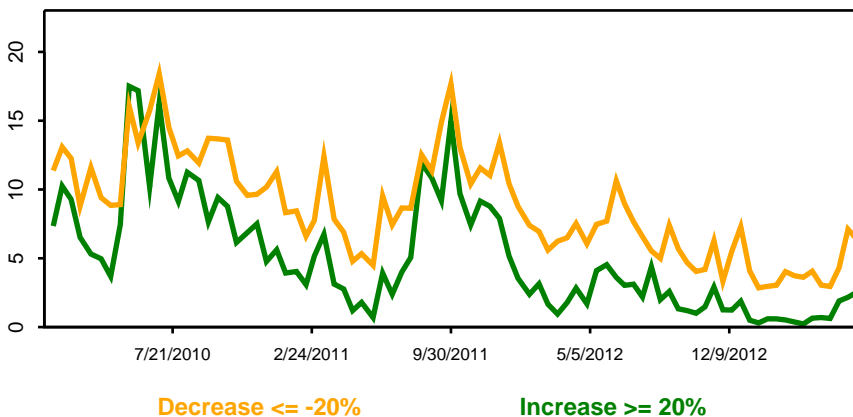
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

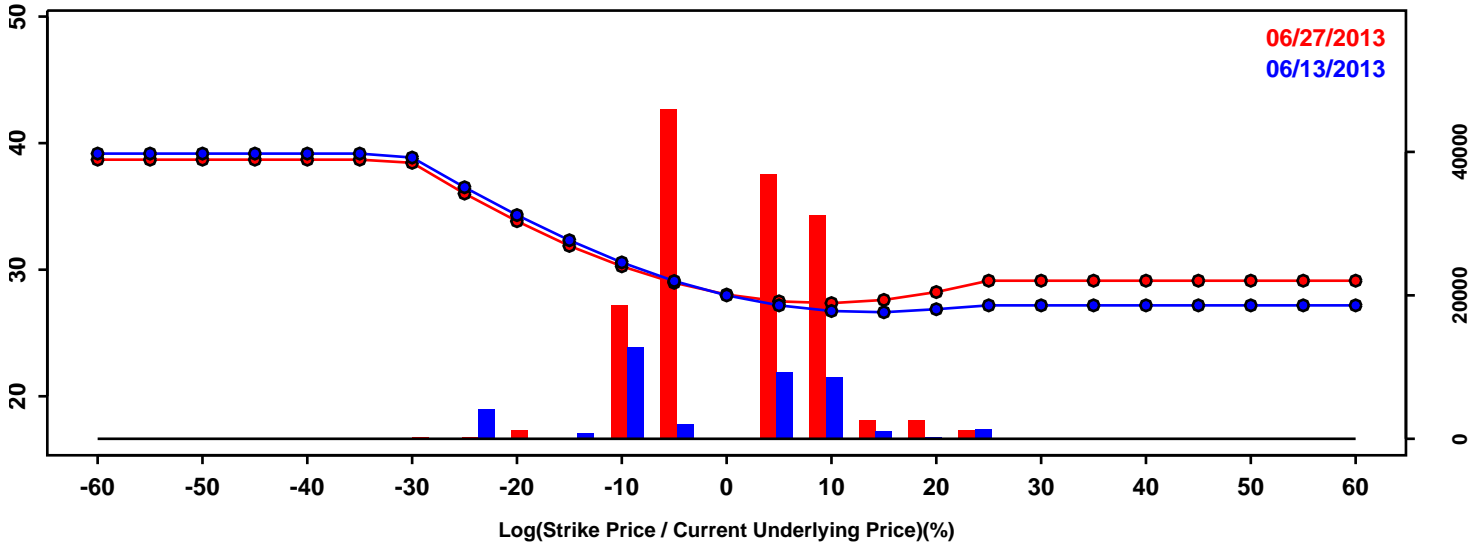


Statistics of the Log Return Distributions			
	06/13/2013	06/27/2013	Change
10th Pct	-16.62%	-15.93%	0.68%
50th Pct	0.75%	0.36%	-0.39%
90th Pct	12.82%	13.08%	0.26%
Mean	-0.79%	-0.72%	0.07%
Std Dev	12.13%	11.93%	-0.21%
Skew	-0.78	-0.64	0.14
Kurtosis	1.28	1.16	-0.12

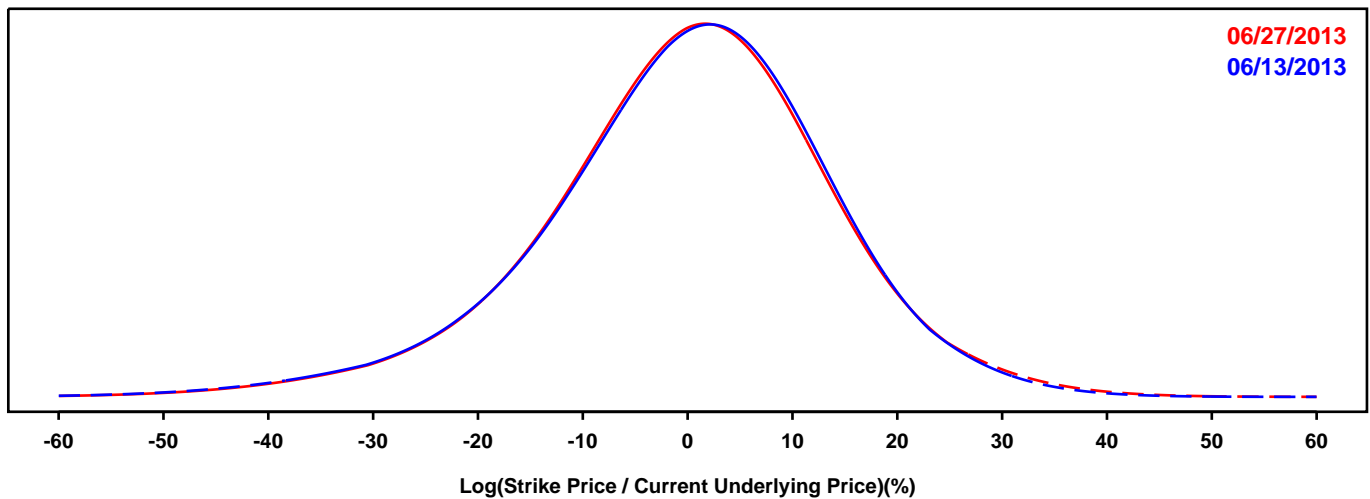
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- BANK OF AMERICA

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

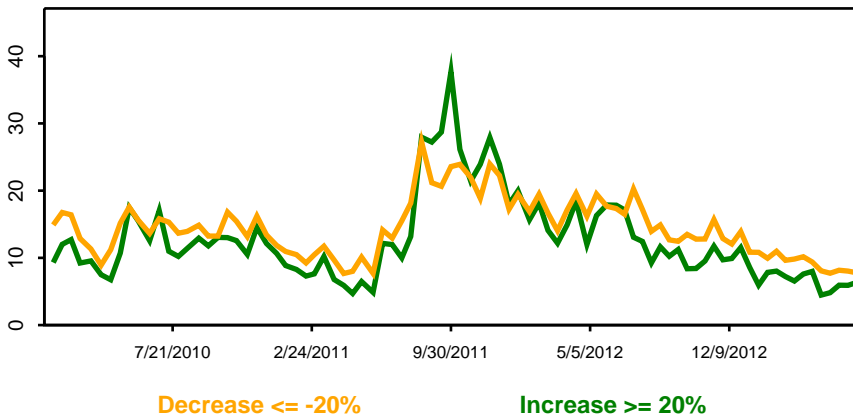
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

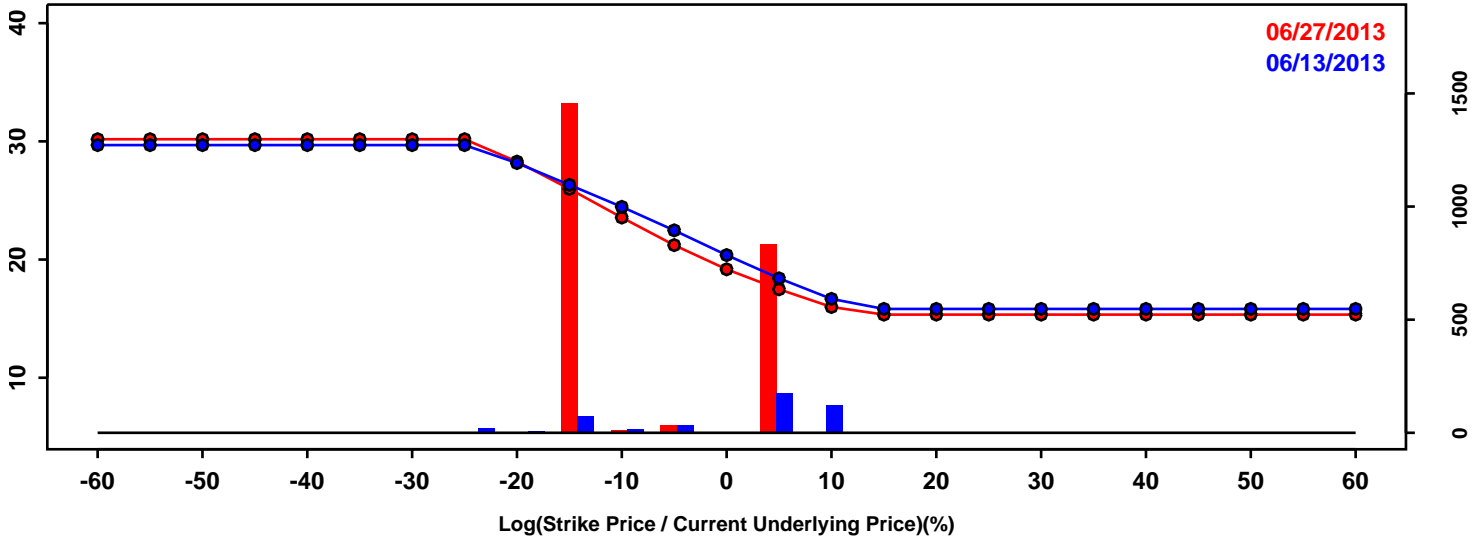


Statistics of the Log Return Distributions			
	06/13/2013	06/27/2013	Change
10th Pct	-17.83%	-17.54%	0.28%
50th Pct	0.85%	0.72%	-0.13%
90th Pct	16.42%	16.69%	0.26%
Mean	-0.09%	0.01%	0.10%
Std Dev	14.03%	14.06%	0.03%
Skew	-0.48	-0.38	0.10
Kurtosis	0.97	0.95	-0.03

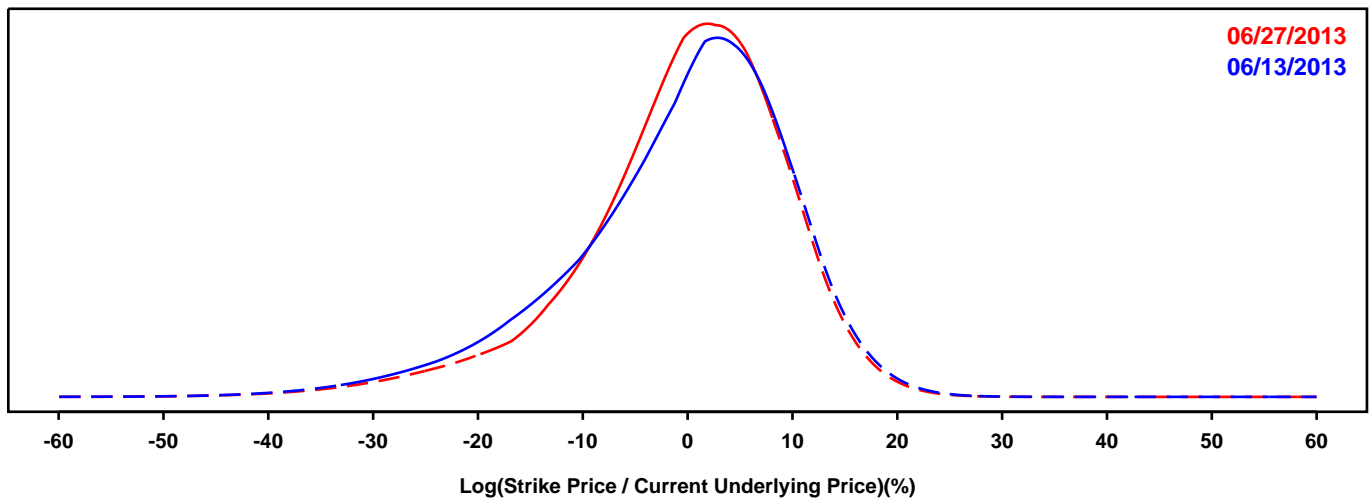
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- BB&T

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

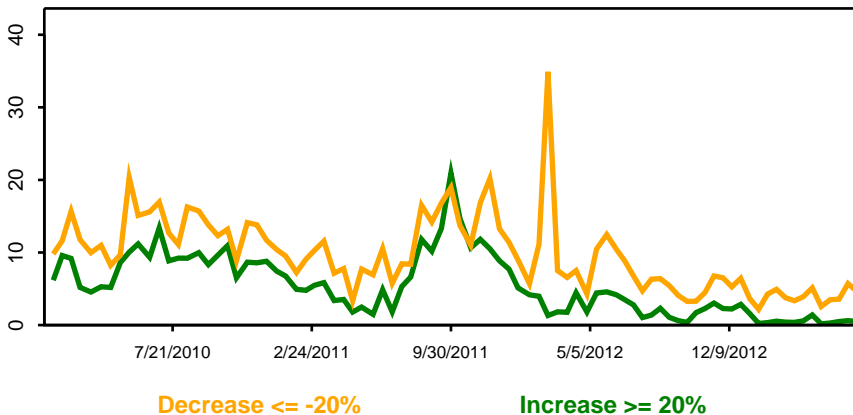
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

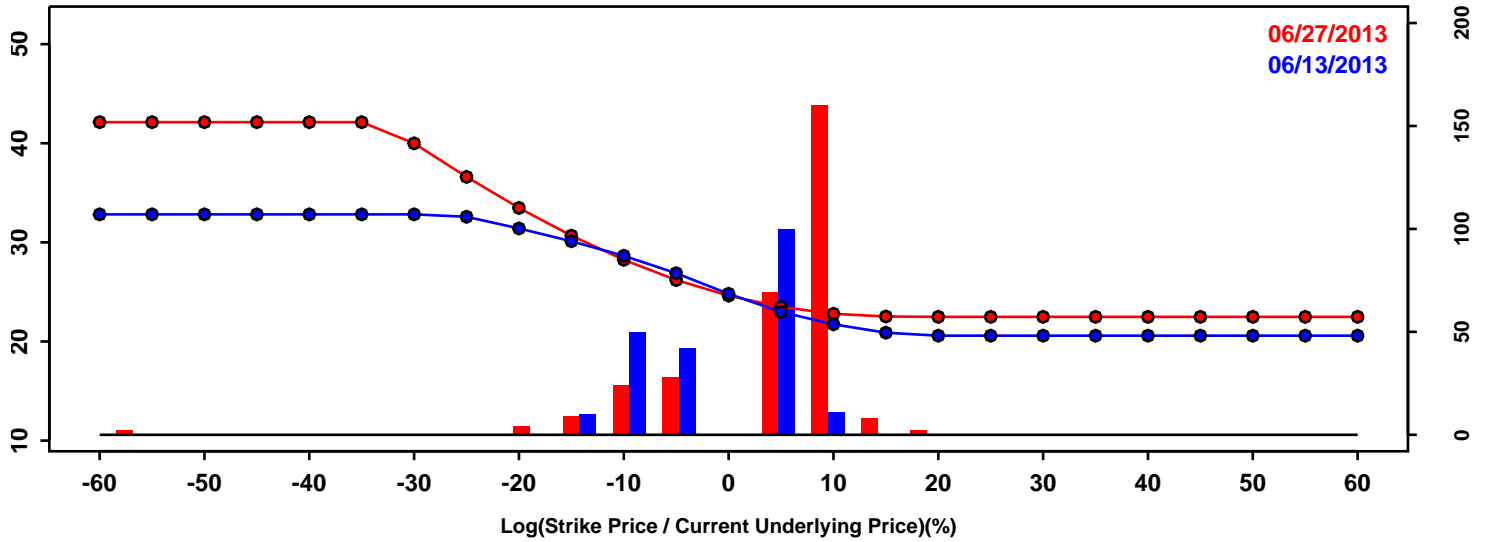


Statistics of the Log Return Distributions			
	06/13/2013	06/27/2013	Change
10th Pct	-15.26%	-13.17%	2.09%
50th Pct	0.94%	0.79%	-0.15%
90th Pct	11.08%	10.68%	-0.40%
Mean	-0.76%	-0.44%	0.32%
Std Dev	10.67%	9.96%	-0.71%
Skew	-0.86	-0.93	-0.07
Kurtosis	1.09	1.65	0.56

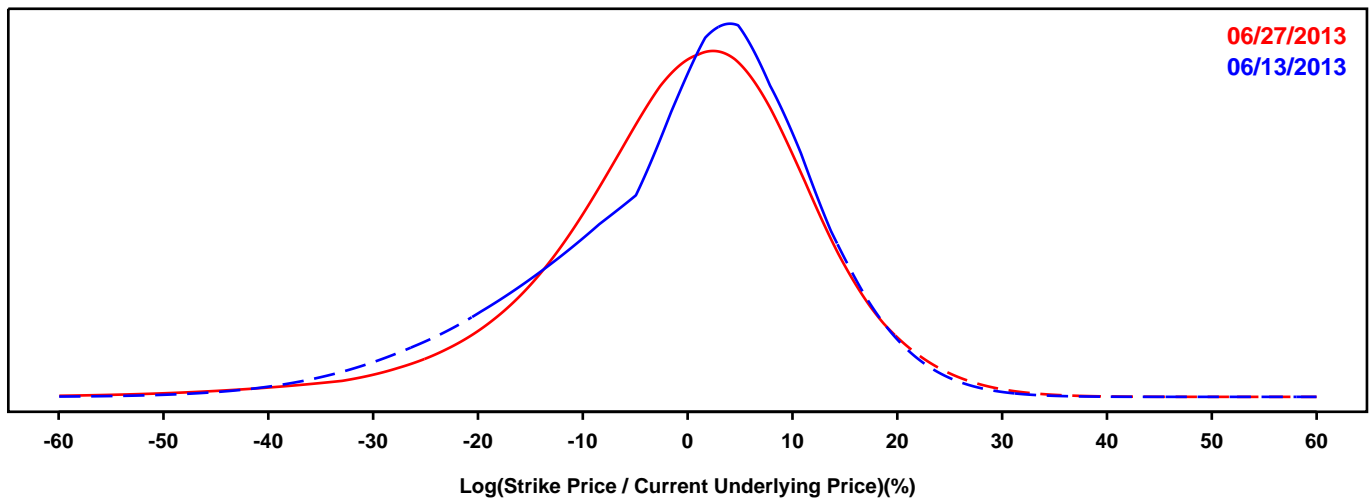
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- BANK OF NEW YORK MELLON

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

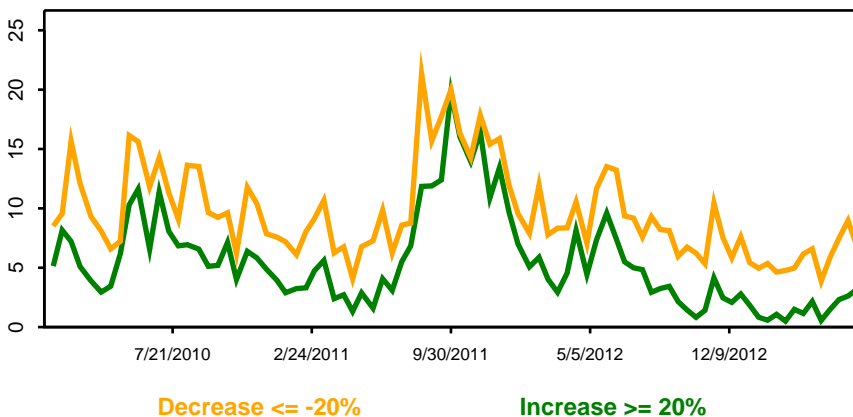
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

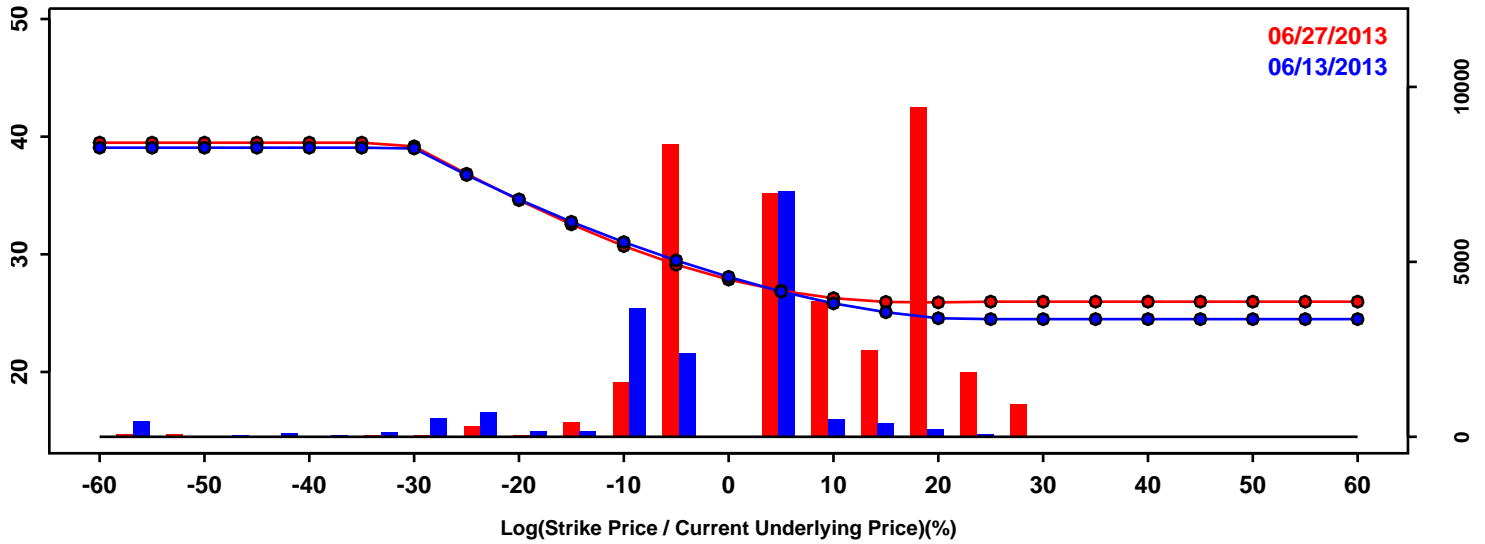


Statistics of the Log Return Distributions			
	06/13/2013	06/27/2013	Change
10th Pct	-18.89%	-16.32%	2.58%
50th Pct	1.28%	0.56%	-0.72%
90th Pct	13.57%	13.73%	0.16%
Mean	-0.86%	-0.62%	0.24%
Std Dev	12.92%	12.63%	-0.29%
Skew	-0.73	-0.78	-0.05
Kurtosis	0.71	1.82	1.11

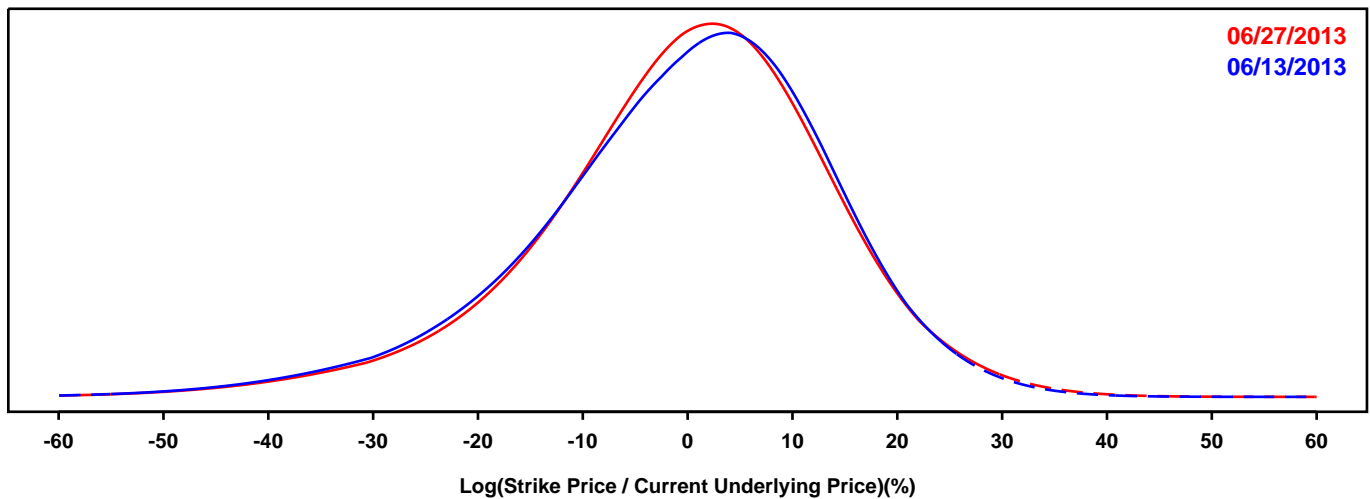
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CITIGROUP

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

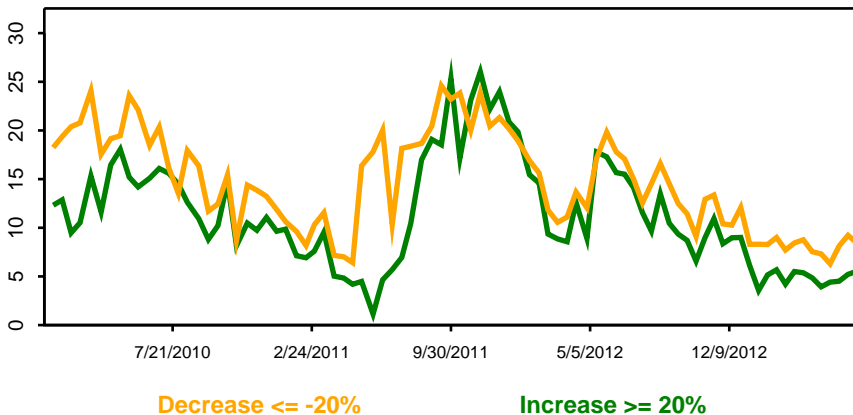
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

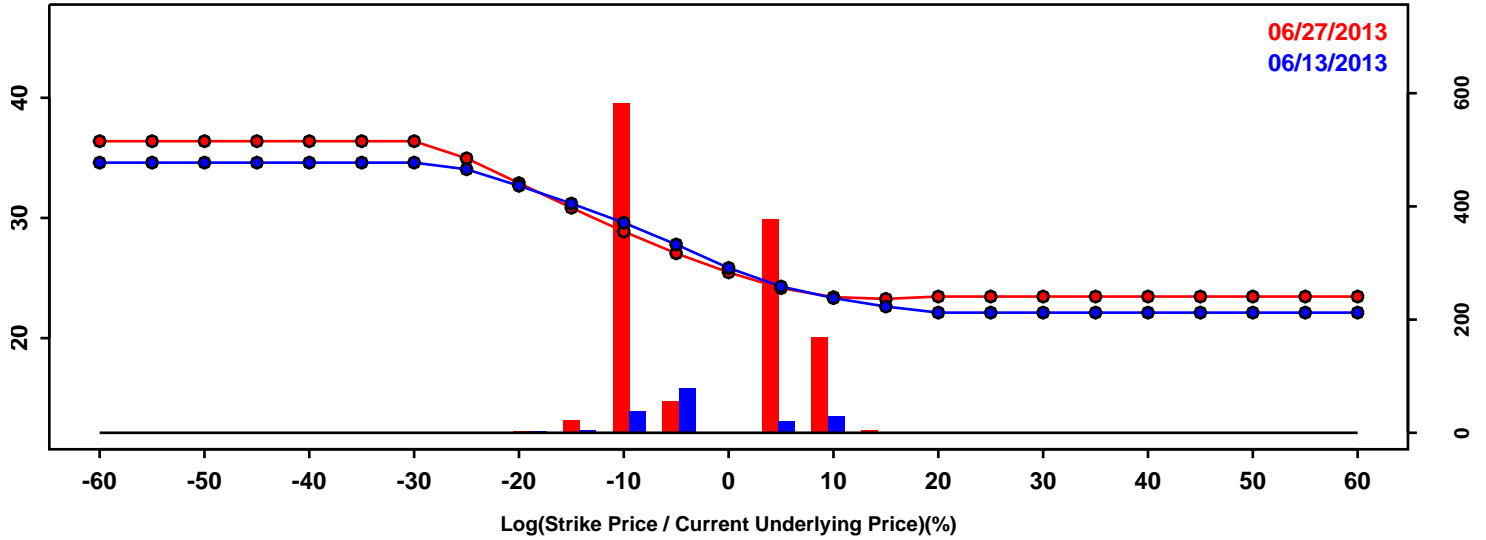


Statistics of the Log Return Distributions			
	06/13/2013	06/27/2013	Change
10th Pct	-19.16%	-18.23%	0.92%
50th Pct	0.90%	0.79%	-0.11%
90th Pct	16.07%	16.13%	0.07%
Mean	-0.54%	-0.34%	0.20%
Std Dev	14.30%	14.09%	-0.21%
Skew	-0.61	-0.56	0.05
Kurtosis	0.88	1.02	0.14

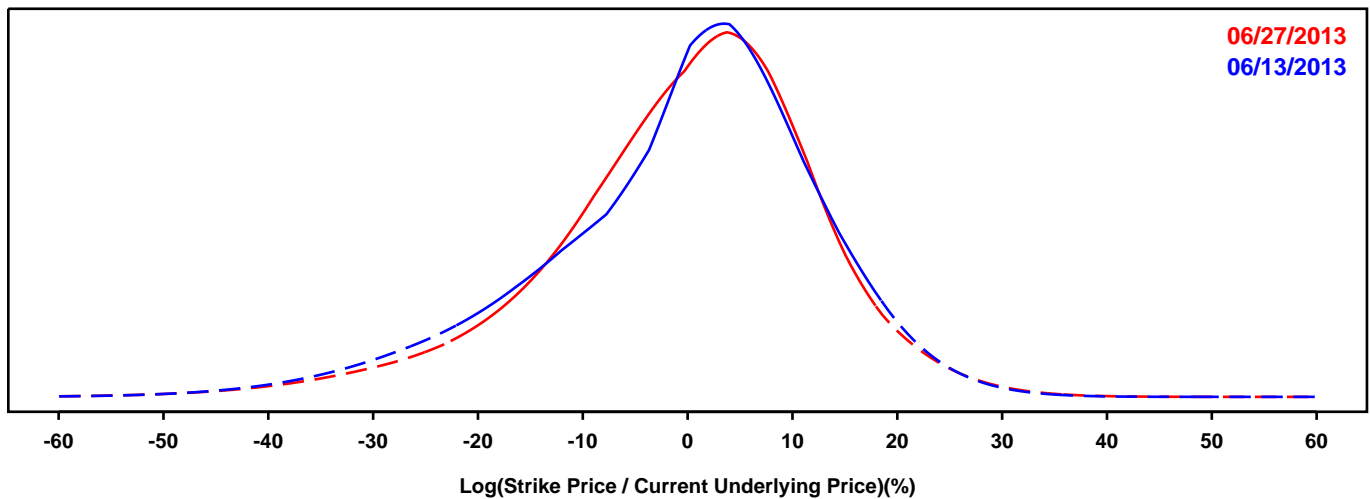
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CAPITAL ONE

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

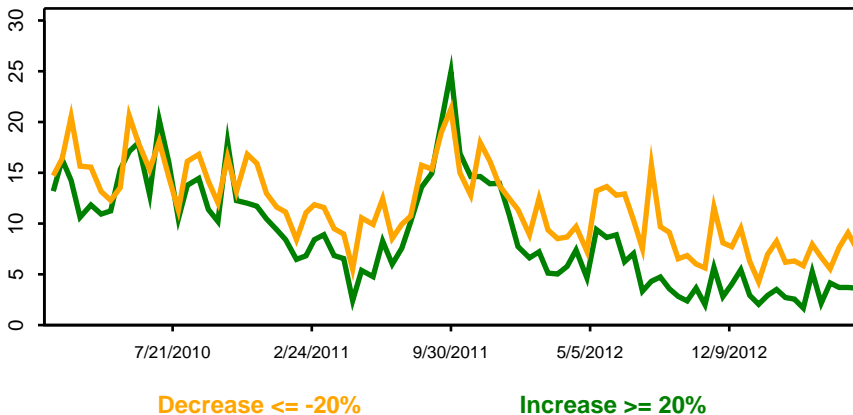
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

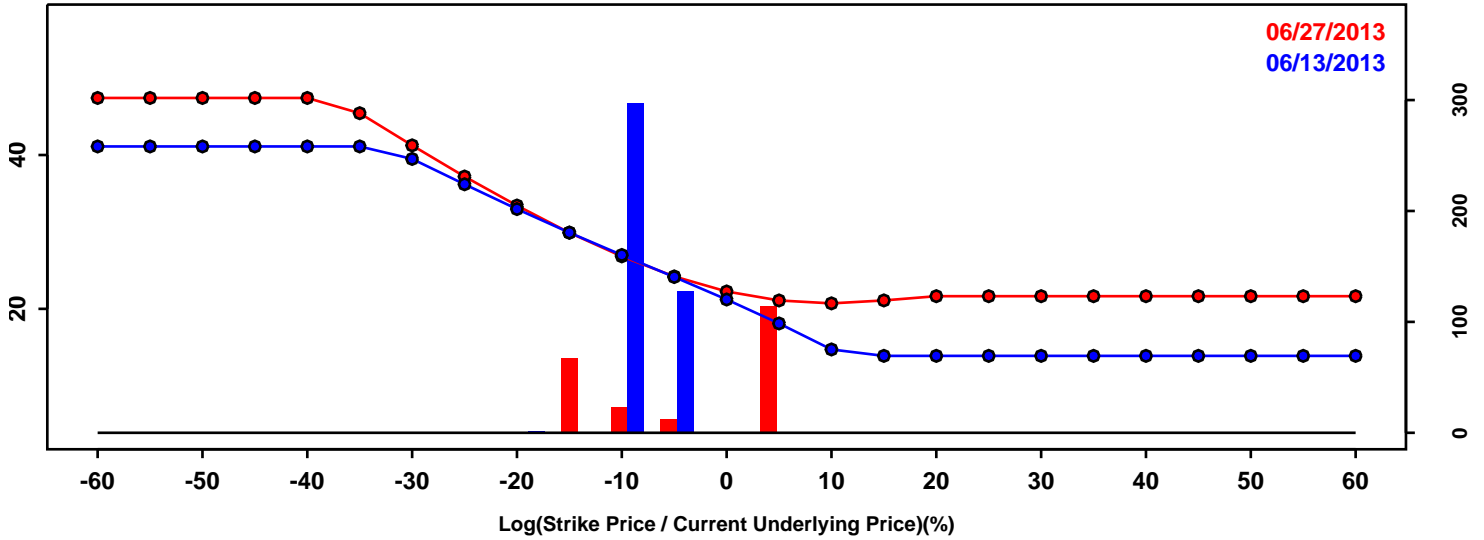


Statistics of the Log Return Distributions			
	06/13/2013	06/27/2013	Change
10th Pct	-18.95%	-17.02%	1.92%
50th Pct	1.28%	1.06%	-0.22%
90th Pct	14.64%	14.17%	-0.47%
Mean	-0.61%	-0.38%	0.23%
Std Dev	13.41%	12.90%	-0.51%
Skew	-0.69	-0.68	0.01
Kurtosis	0.80	1.17	0.37

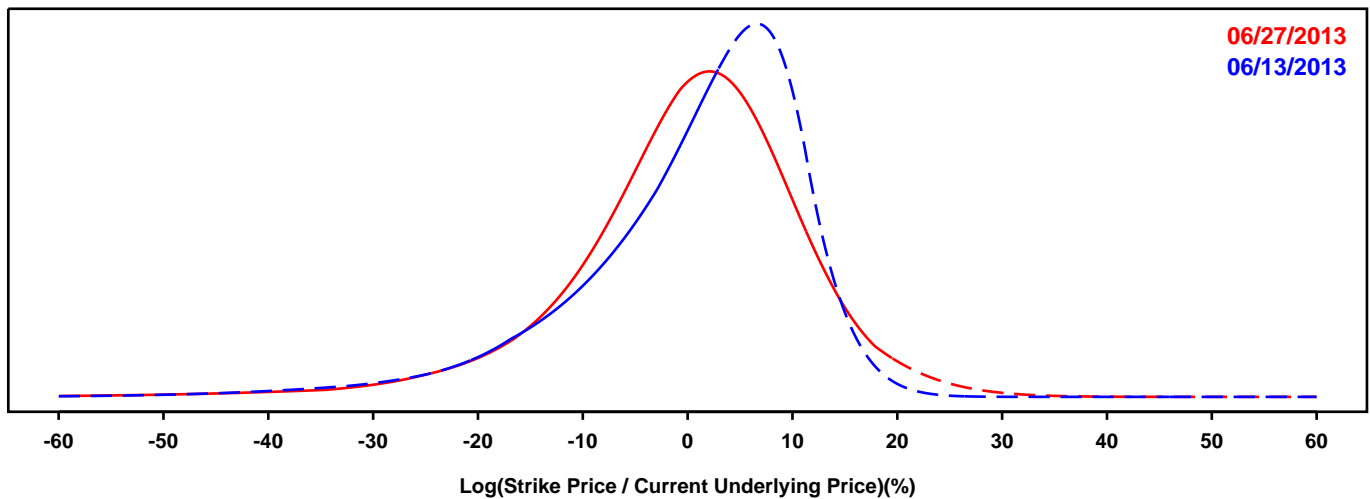
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- FIFTH THIRD

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

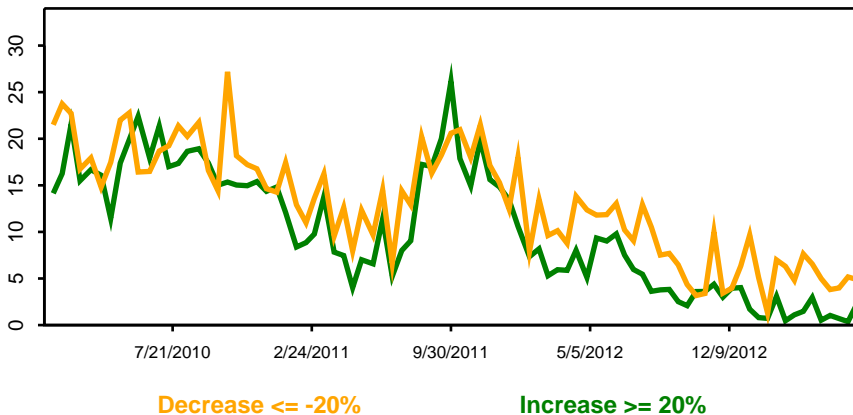
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

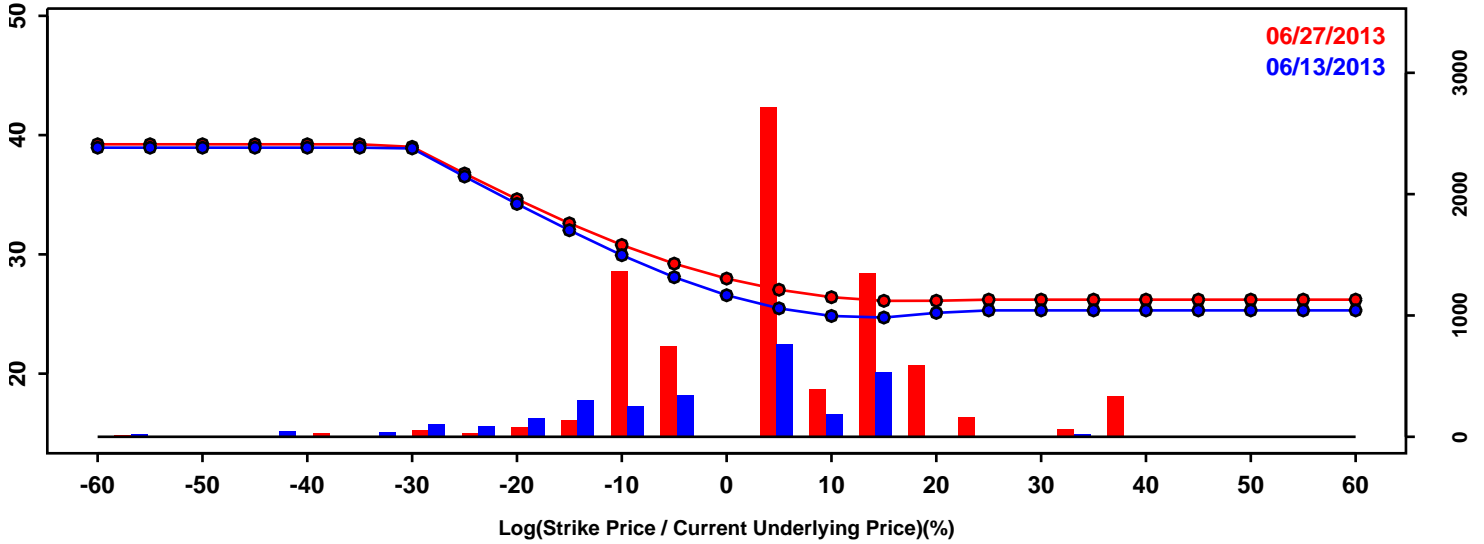


Statistics of the Log Return Distributions			
	06/13/2013	06/27/2013	Change
10th Pct	-13.83%	-13.57%	0.26%
50th Pct	2.78%	1.02%	-1.76%
90th Pct	11.52%	12.49%	0.97%
Mean	0.47%	-0.02%	-0.49%
Std Dev	10.96%	11.36%	0.41%
Skew	-1.39	-0.99	0.40
Kurtosis	3.16	3.25	0.08

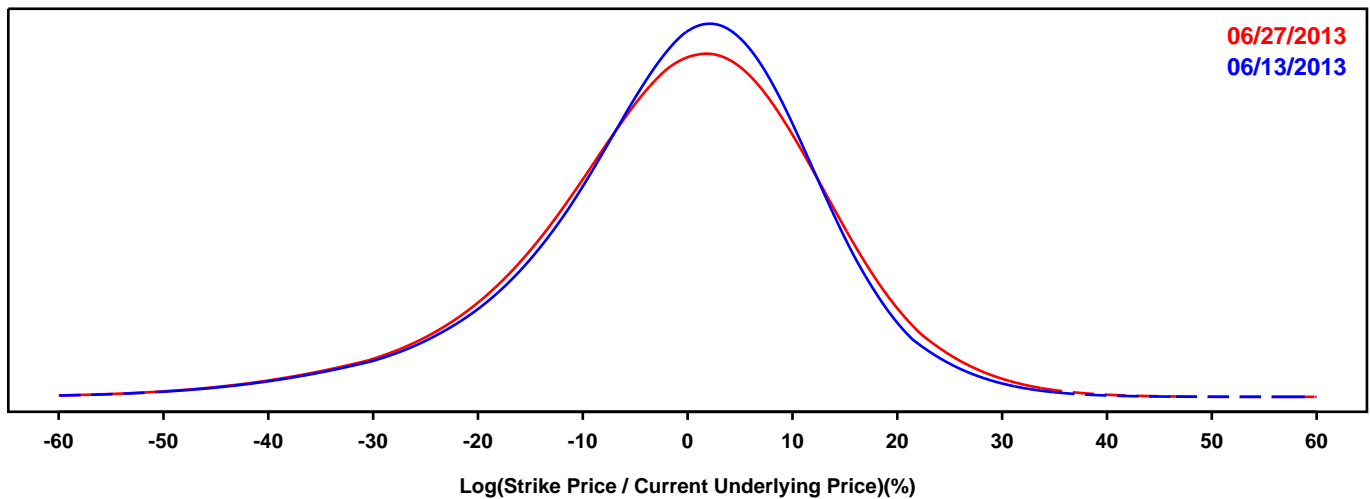
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- GOLDMAN SACHS

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

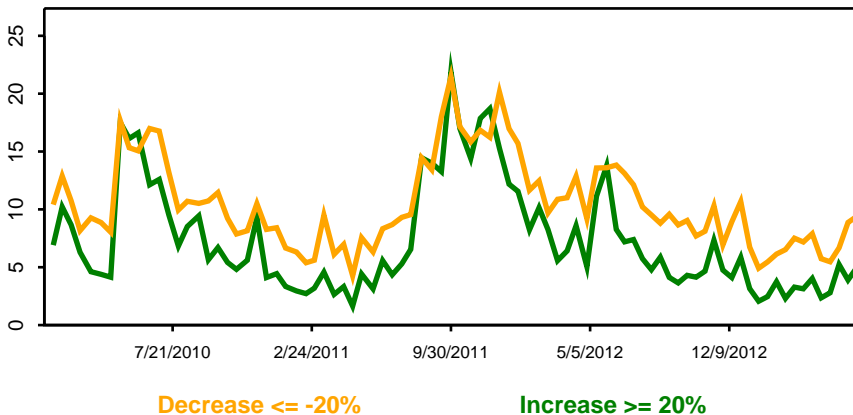
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

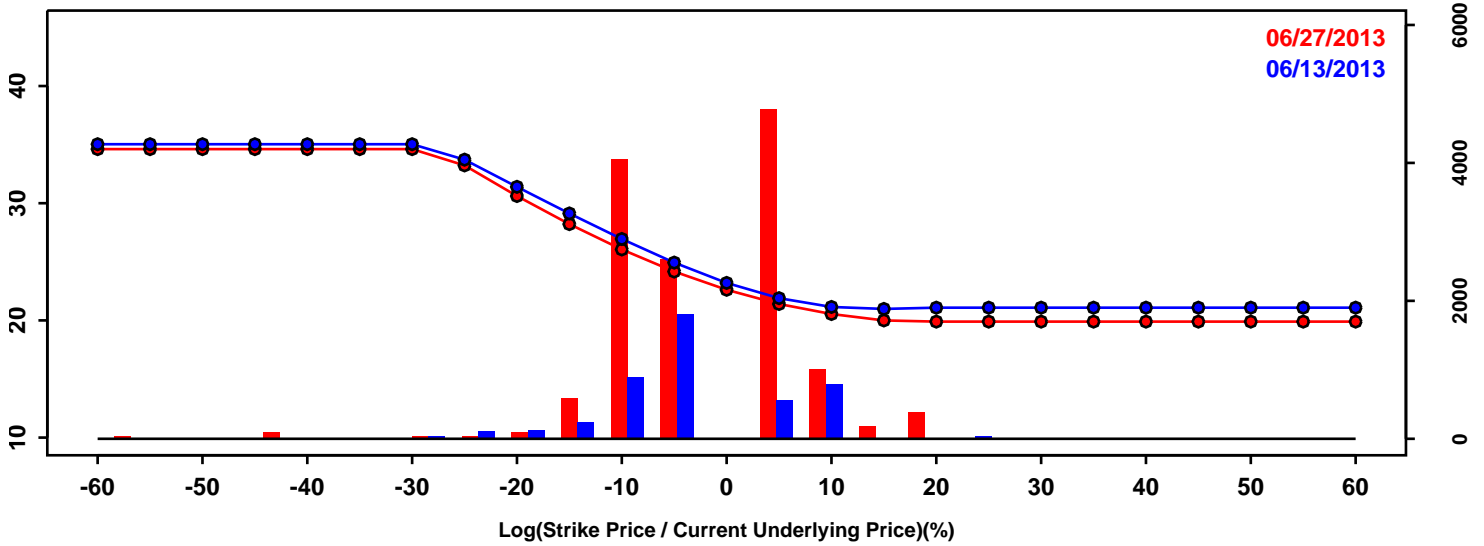


Statistics of the Log Return Distributions			
	06/13/2013	06/27/2013	Change
10th Pct	-18.67%	-19.35%	-0.68%
50th Pct	0.27%	0.08%	-0.18%
90th Pct	14.43%	15.54%	1.11%
Mean	-1.14%	-1.10%	0.04%
Std Dev	13.69%	14.28%	0.59%
Skew	-0.68	-0.57	0.11
Kurtosis	1.26	0.99	-0.27

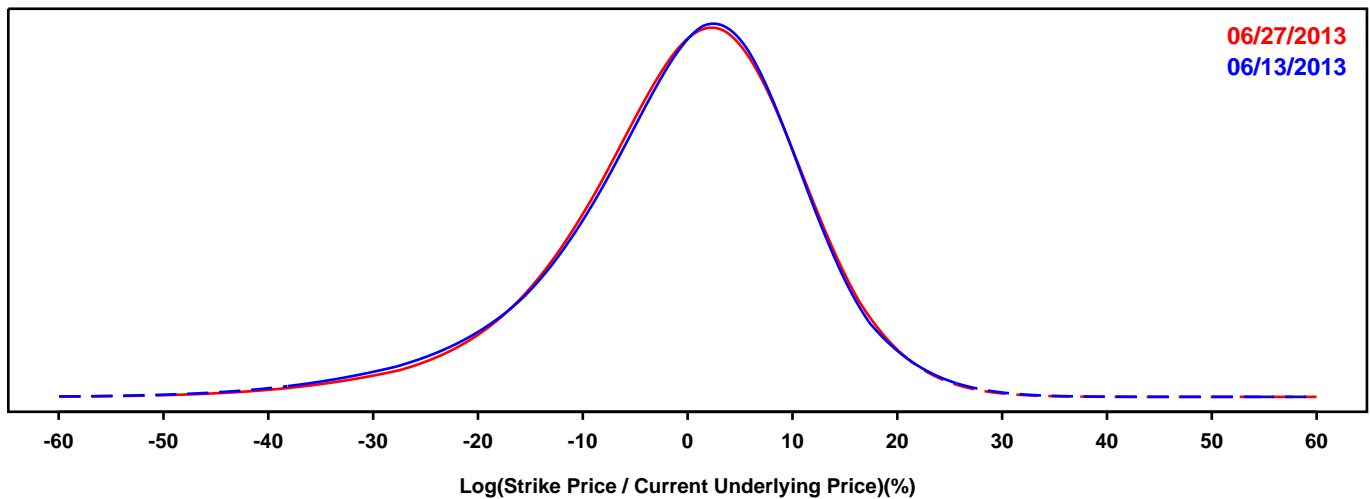
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- JP MORGAN

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

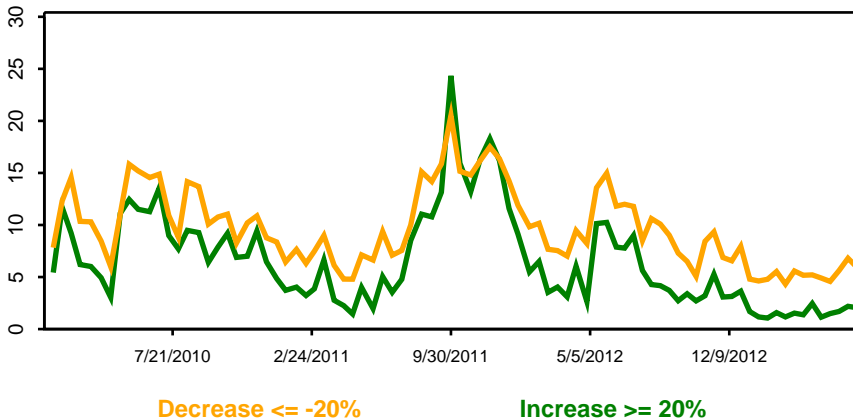
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

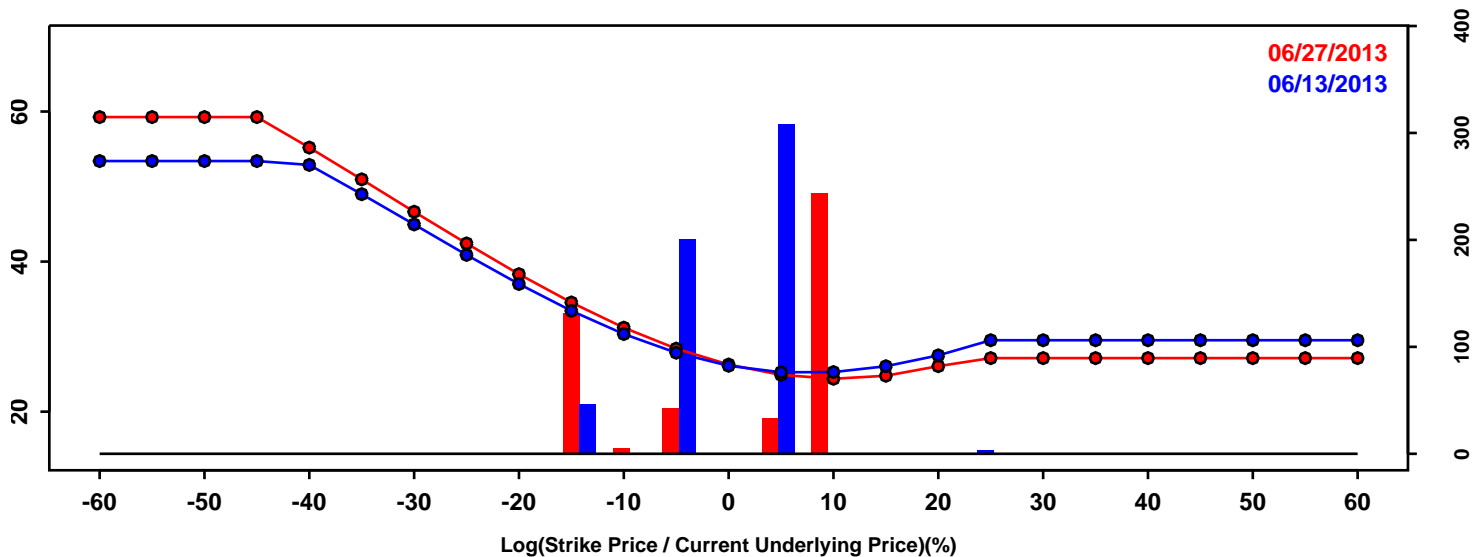


Statistics of the Log Return Distributions			
	06/13/2013	06/27/2013	Change
10th Pct	-16.22%	-15.35%	0.87%
50th Pct	0.56%	0.56%	-0.00%
90th Pct	12.60%	12.71%	0.11%
Mean	-0.81%	-0.59%	0.22%
Std Dev	11.95%	11.59%	-0.37%
Skew	-0.77	-0.71	0.05
Kurtosis	1.38	1.30	-0.09

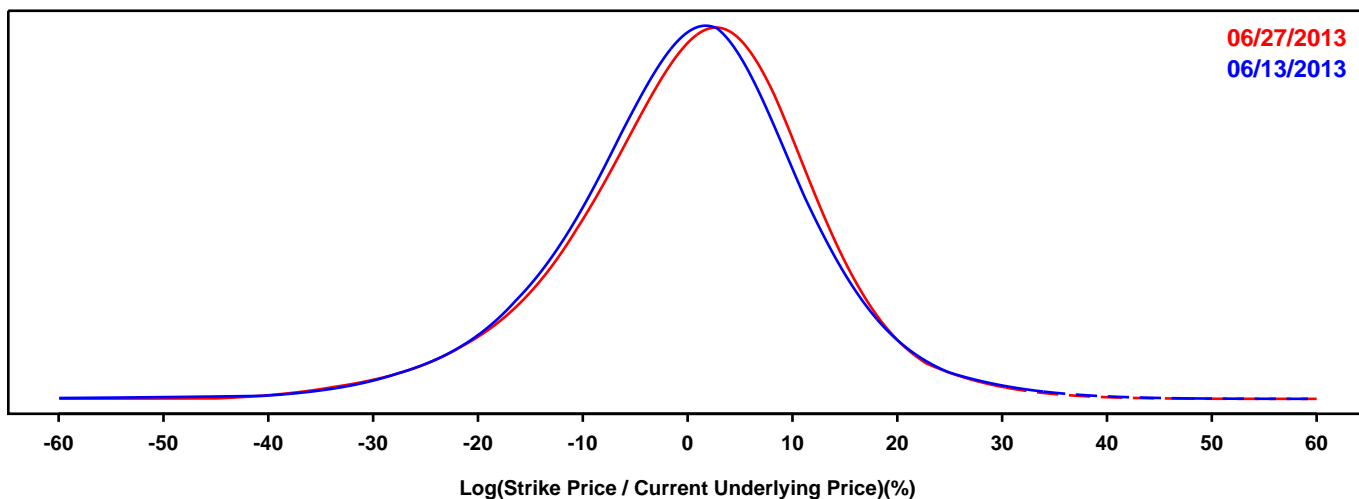
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- KEYCORP

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

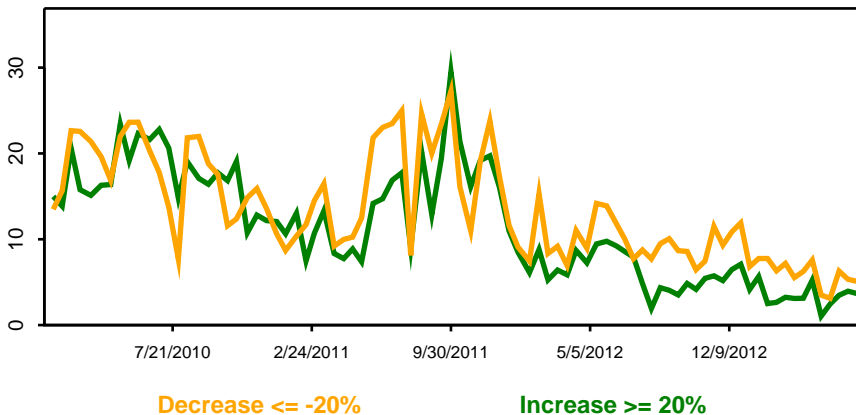
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



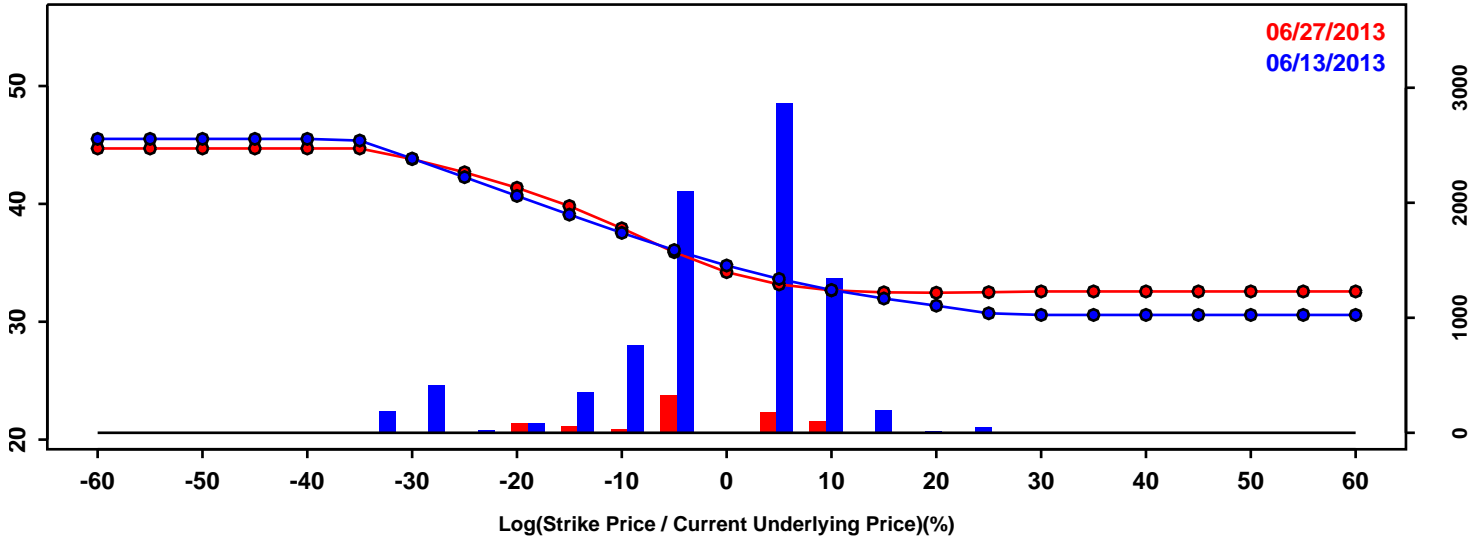
Statistics of the Log Return Distributions

	06/13/2013	06/27/2013	Change
10th Pct	-14.91%	-14.49%	0.42%
50th Pct	0.51%	1.24%	0.73%
90th Pct	13.98%	14.09%	0.11%
Mean	-0.05%	0.48%	0.54%
Std Dev	12.16%	11.73%	-0.42%
Skew	-0.47	-0.38	0.08
Kurtosis	2.20	1.17	-1.02

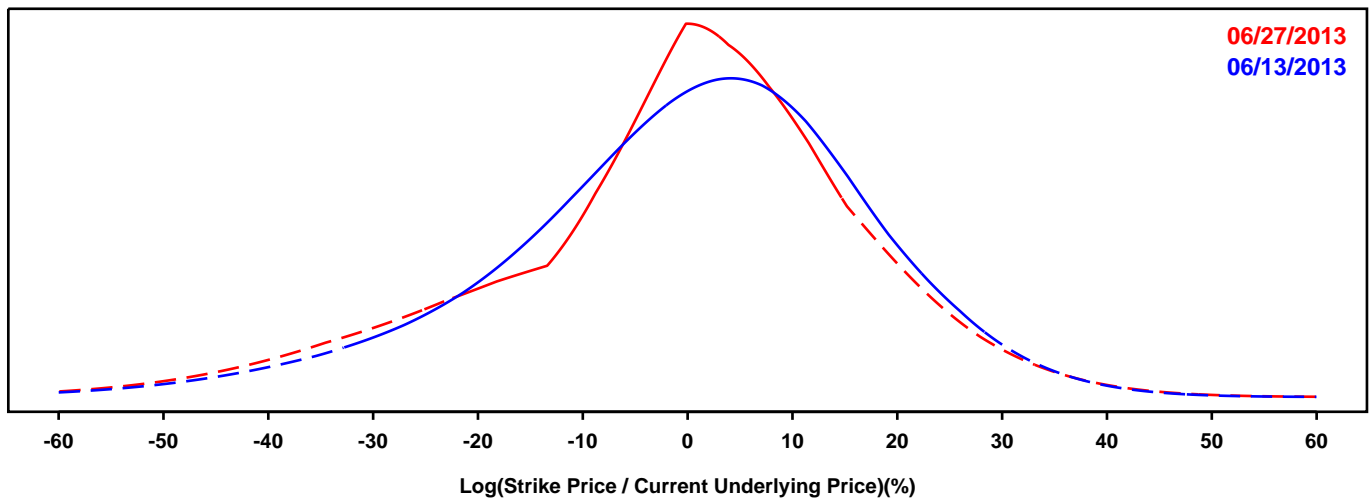
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- MORGAN STANLEY

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

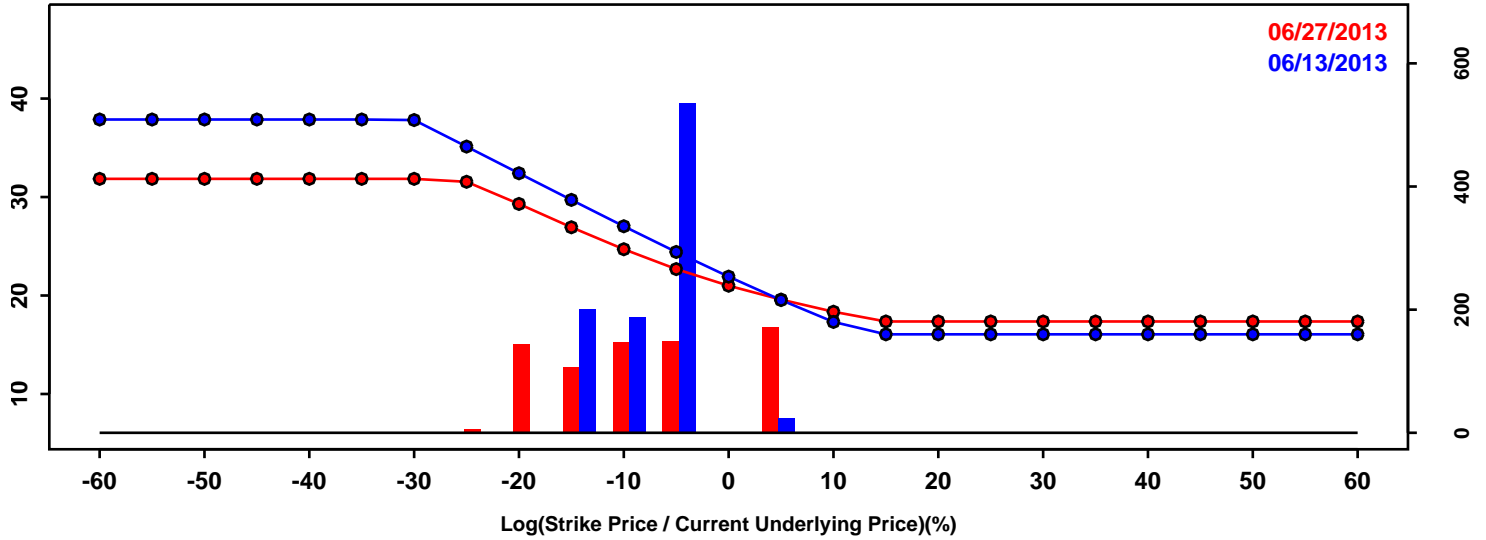


Statistics of the Log Return Distributions			
	06/13/2013	06/27/2013	Change
10th Pct	-23.38%	-25.79%	-2.41%
50th Pct	1.37%	0.88%	-0.50%
90th Pct	20.42%	19.56%	-0.86%
Mean	-0.27%	-1.05%	-0.78%
Std Dev	17.59%	17.92%	0.33%
Skew	-0.55	-0.59	-0.05
Kurtosis	0.70	0.80	0.10

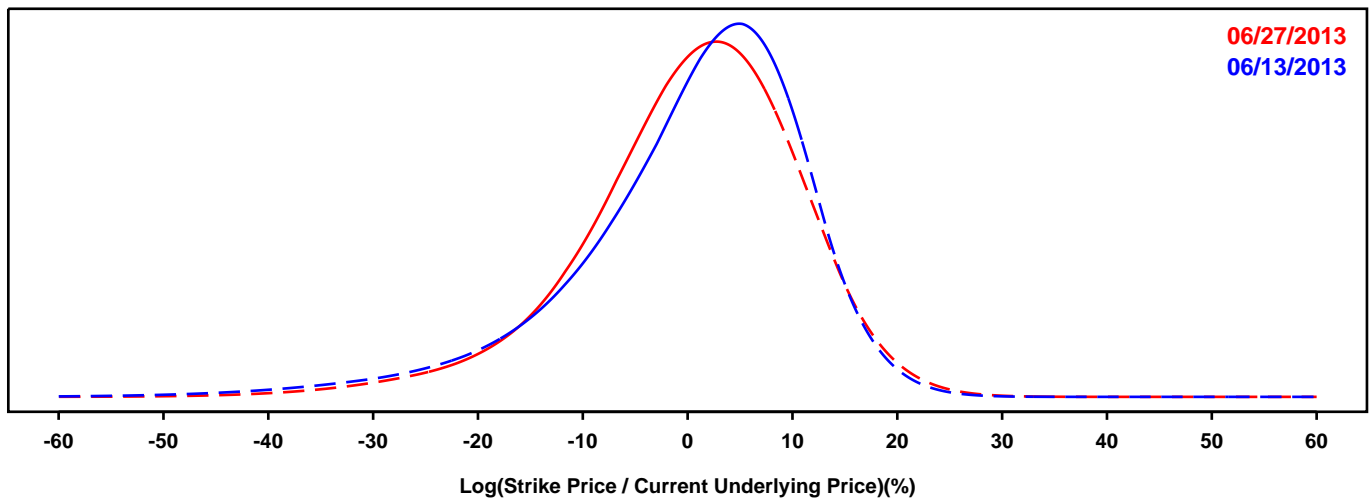
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- PNC FINANCIAL

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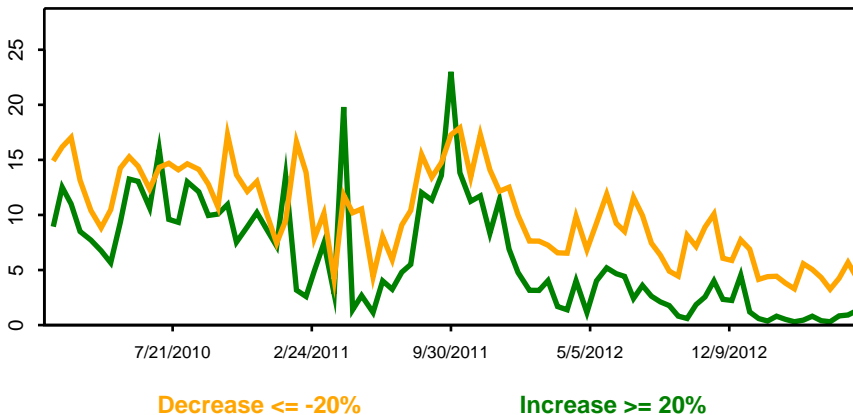
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

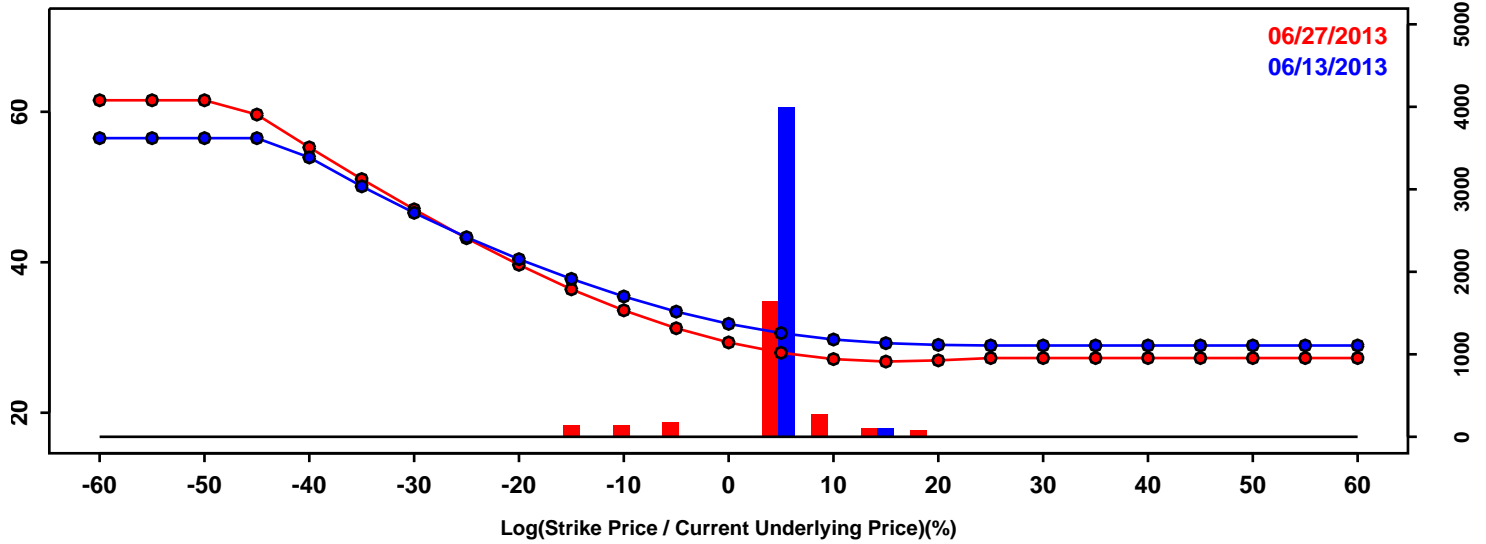


Statistics of the Log Return Distributions			
	06/13/2013	06/27/2013	Change
10th Pct	-14.36%	-13.10%	1.26%
50th Pct	2.05%	1.26%	-0.80%
90th Pct	12.19%	12.32%	0.13%
Mean	0.17%	0.22%	0.05%
Std Dev	11.29%	10.50%	-0.79%
Skew	-1.15	-0.74	0.41
Kurtosis	2.31	1.32	-0.99

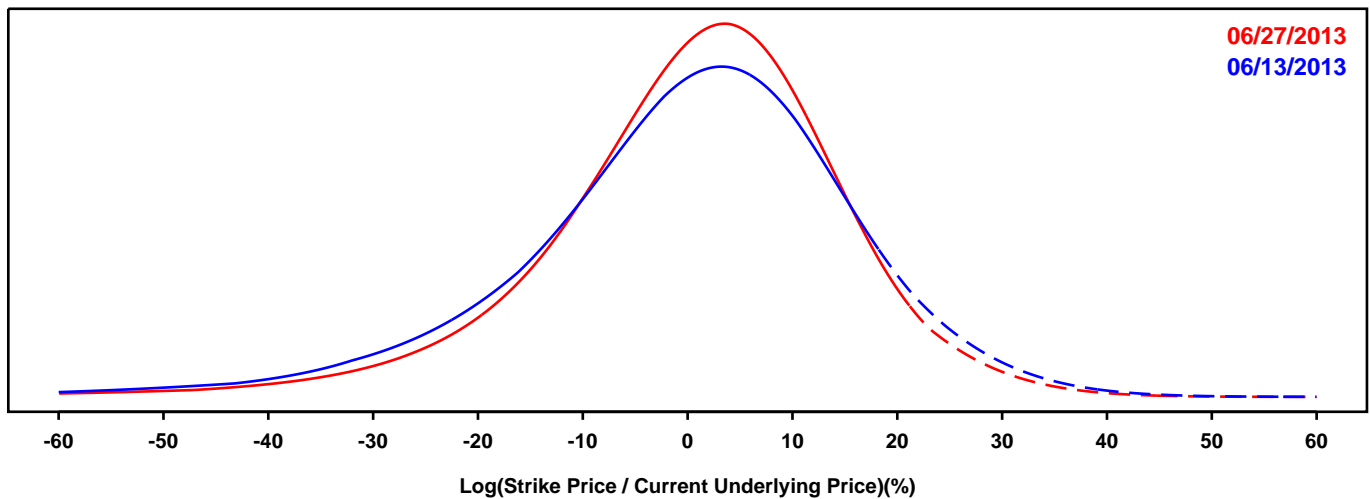
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- REGIONS FINANCIAL

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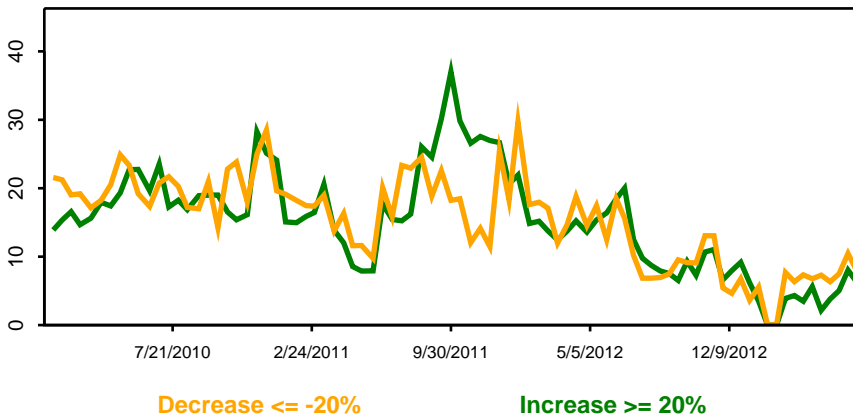
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

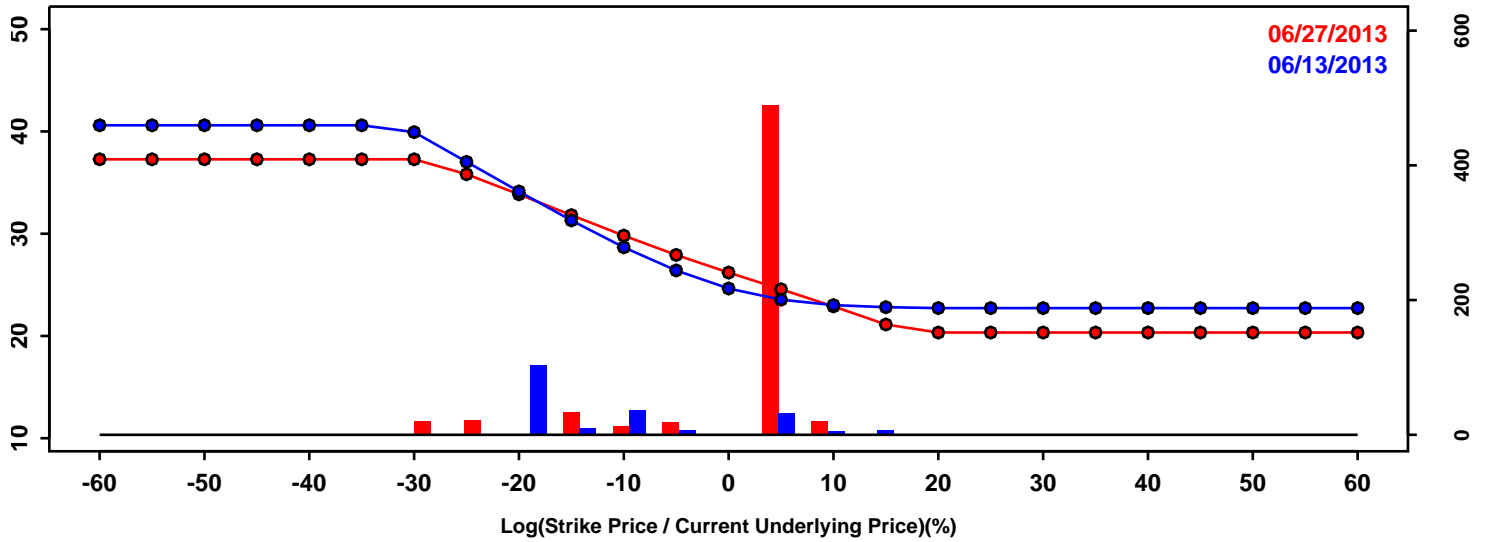


Statistics of the Log Return Distributions			
	06/13/2013	06/27/2013	Change
10th Pct	-20.57%	-17.34%	3.23%
50th Pct	1.32%	1.79%	0.47%
90th Pct	18.35%	16.85%	-1.50%
Mean	-0.21%	0.40%	0.61%
Std Dev	16.38%	14.79%	-1.59%
Skew	-0.82	-0.96	-0.15
Kurtosis	1.99	3.03	1.04

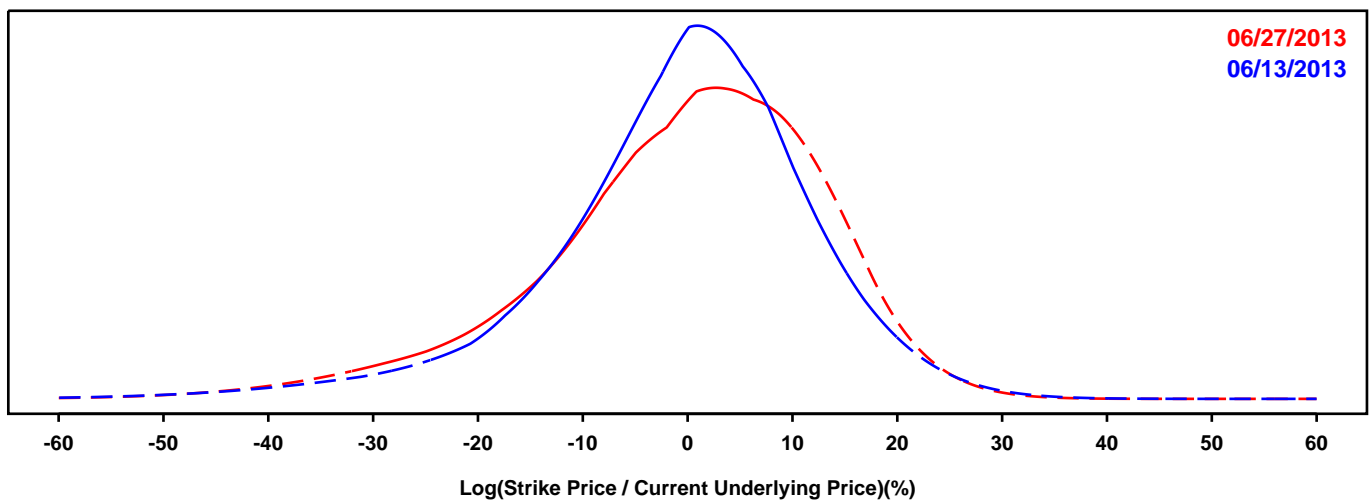
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- SUNTRUST

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

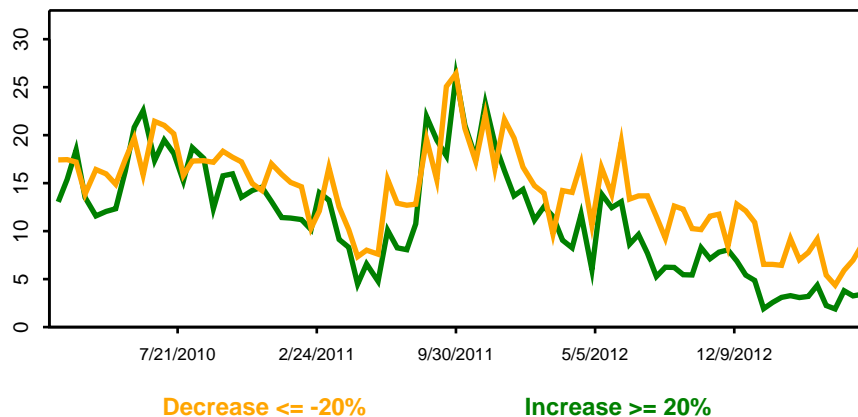
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

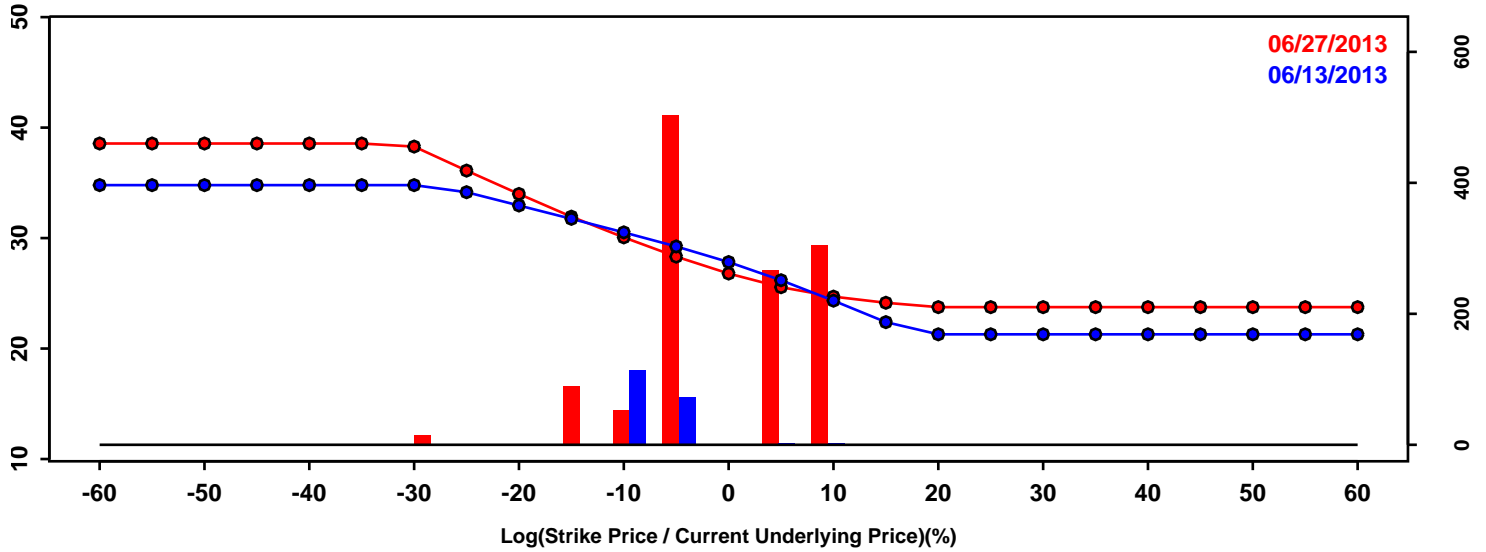


Statistics of the Log Return Distributions			
	06/13/2013	06/27/2013	Change
10th Pct	-16.25%	-18.26%	-2.01%
50th Pct	0.53%	1.20%	0.67%
90th Pct	13.72%	15.03%	1.31%
Mean	-0.69%	-0.44%	0.25%
Std Dev	12.73%	13.54%	0.81%
Skew	-0.82	-0.78	0.04
Kurtosis	1.95	1.03	-0.92

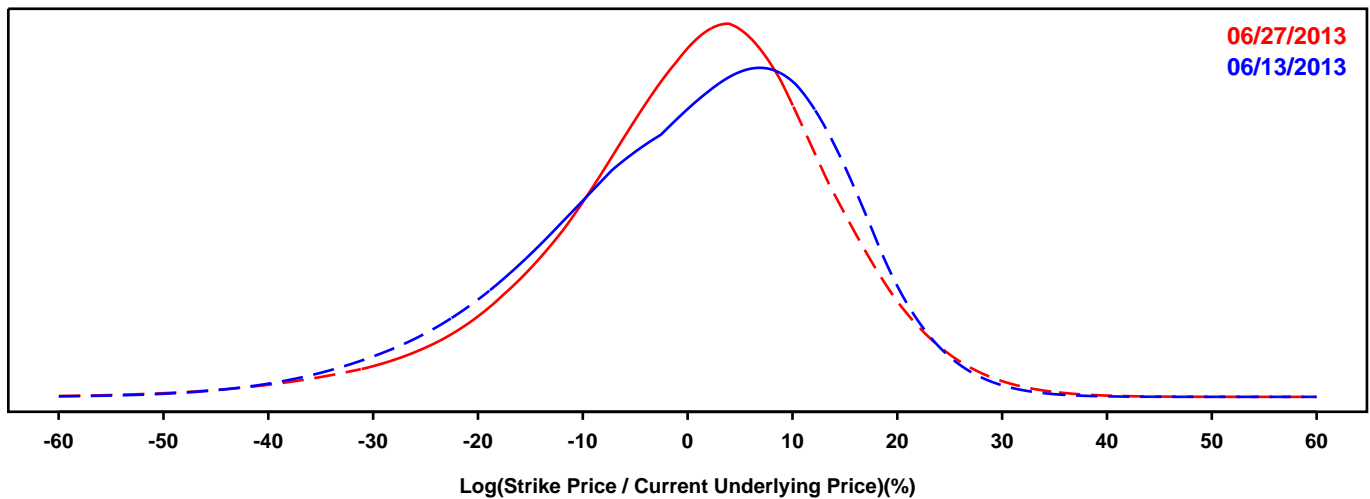
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- STATE STREET

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

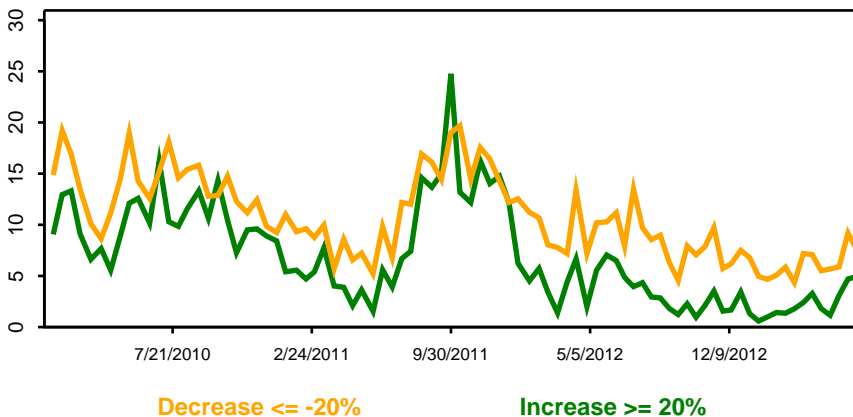
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

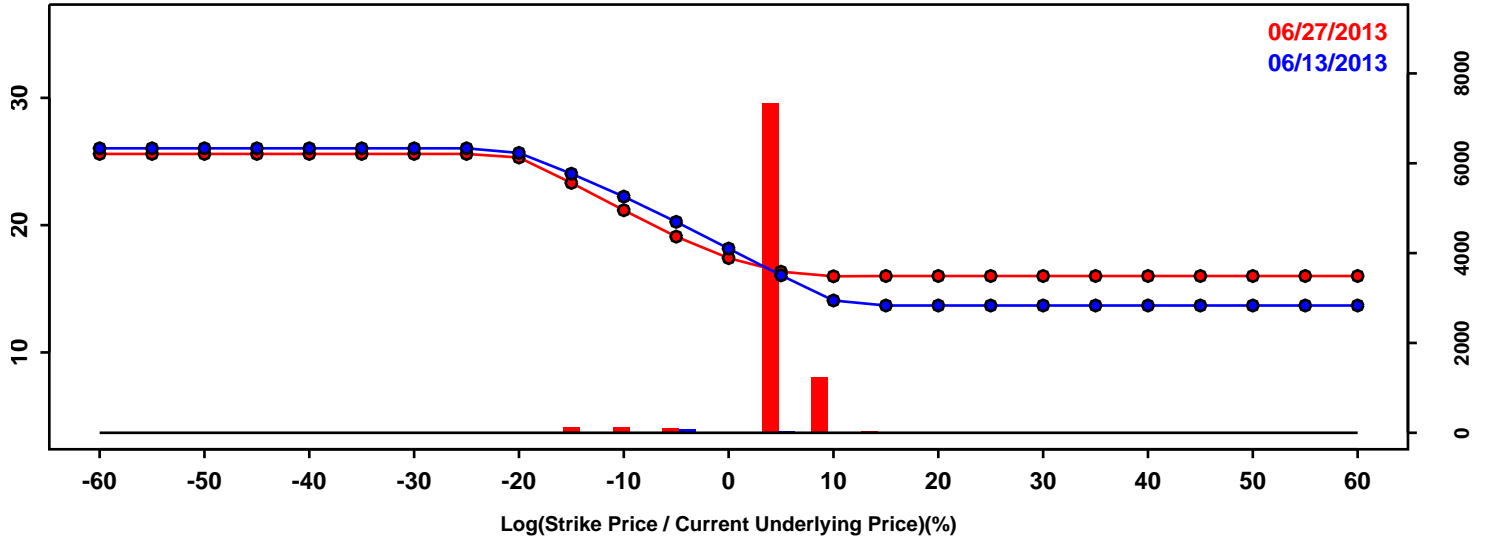


Statistics of the Log Return Distributions			
	06/13/2013	06/27/2013	Change
10th Pct	-19.13%	-17.13%	1.99%
50th Pct	1.79%	1.43%	-0.36%
90th Pct	16.28%	15.78%	-0.50%
Mean	-0.02%	0.16%	0.19%
Std Dev	14.07%	13.46%	-0.61%
Skew	-0.61	-0.63	-0.02
Kurtosis	0.38	1.08	0.70

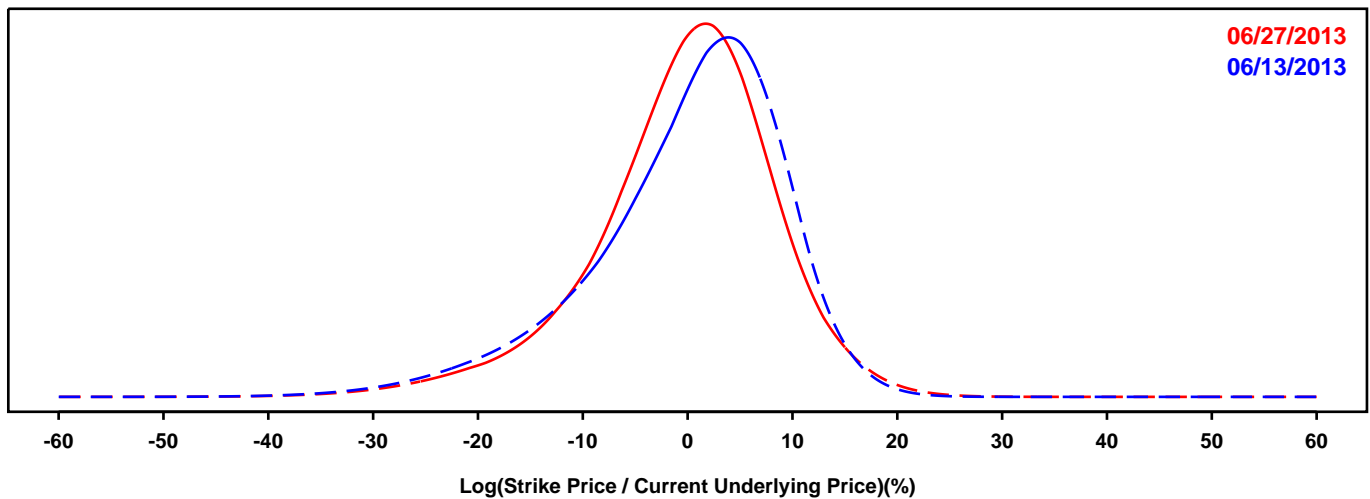
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- US BANCORP

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

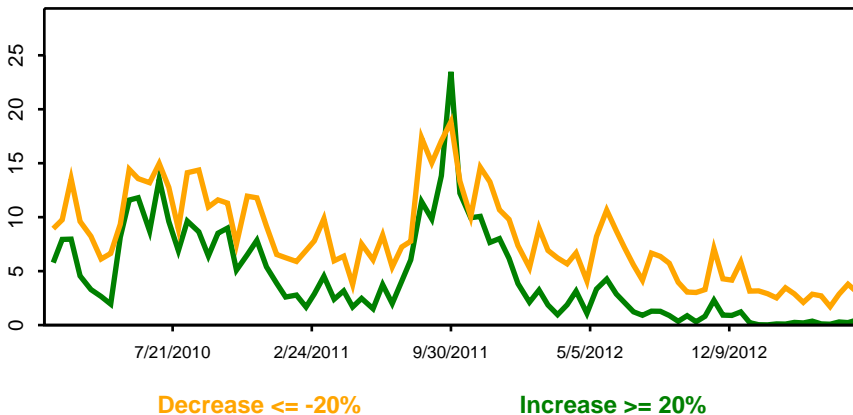
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

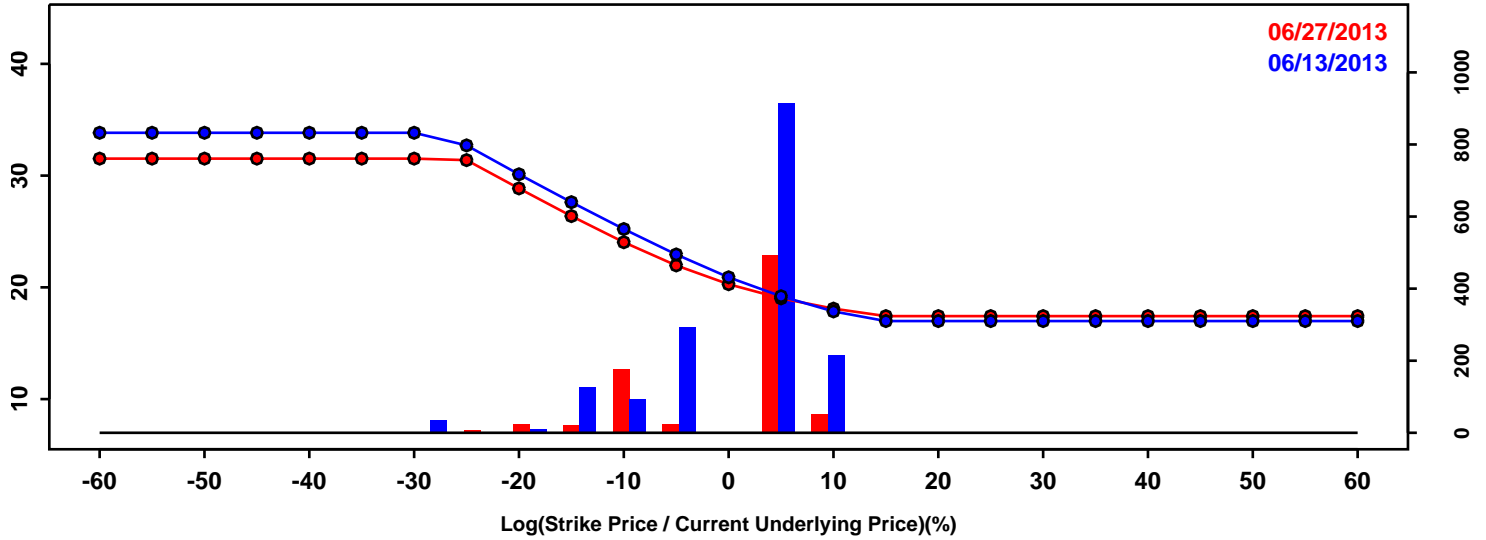


Statistics of the Log Return Distributions			
	06/13/2013	06/27/2013	Change
10th Pct	-12.76%	-11.65%	1.10%
50th Pct	1.48%	0.46%	-1.01%
90th Pct	10.21%	9.63%	-0.58%
Mean	-0.05%	-0.39%	-0.34%
Std Dev	9.33%	8.82%	-0.51%
Skew	-0.89	-0.70	0.19
Kurtosis	1.14	1.32	0.18

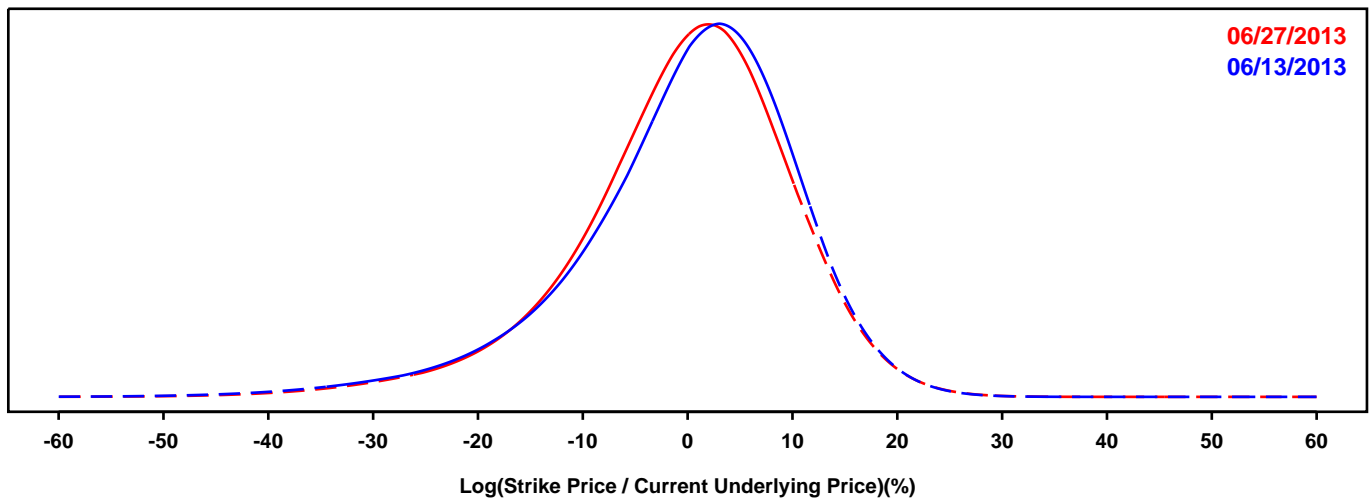
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- WELLS FARGO

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

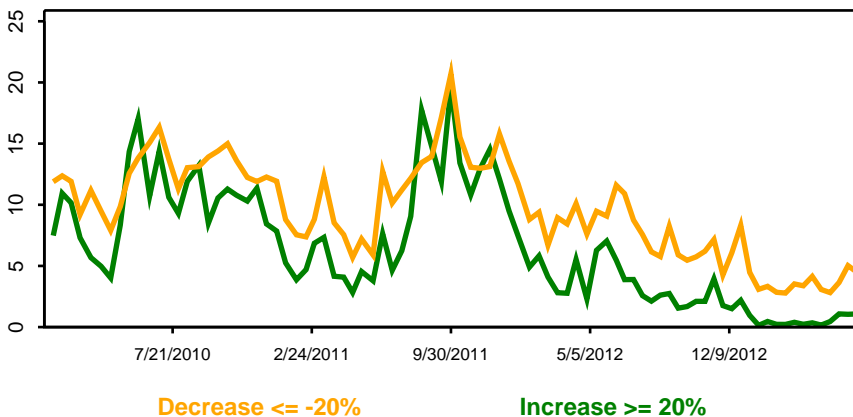
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

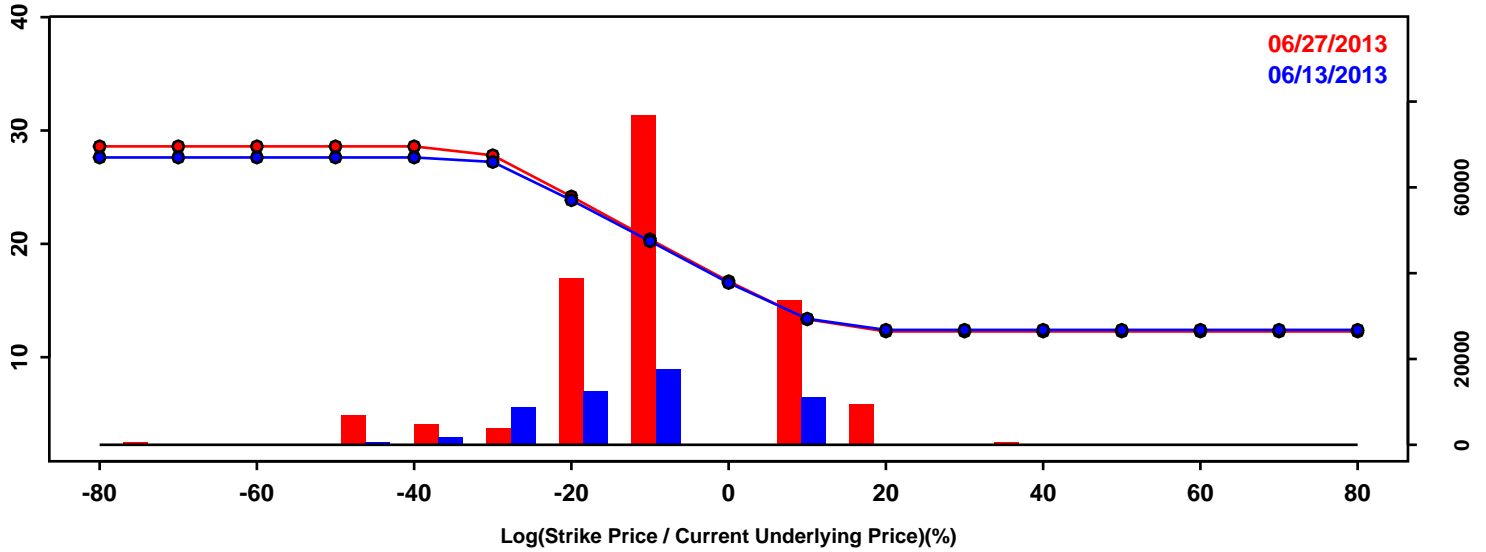


Statistics of the Log Return Distributions			
	06/13/2013	06/27/2013	Change
10th Pct	-13.94%	-13.53%	0.41%
50th Pct	1.27%	0.60%	-0.67%
90th Pct	11.81%	11.52%	-0.29%
Mean	-0.13%	-0.40%	-0.28%
Std Dev	10.72%	10.35%	-0.37%
Skew	-0.91	-0.75	0.16
Kurtosis	1.70	1.42	-0.28

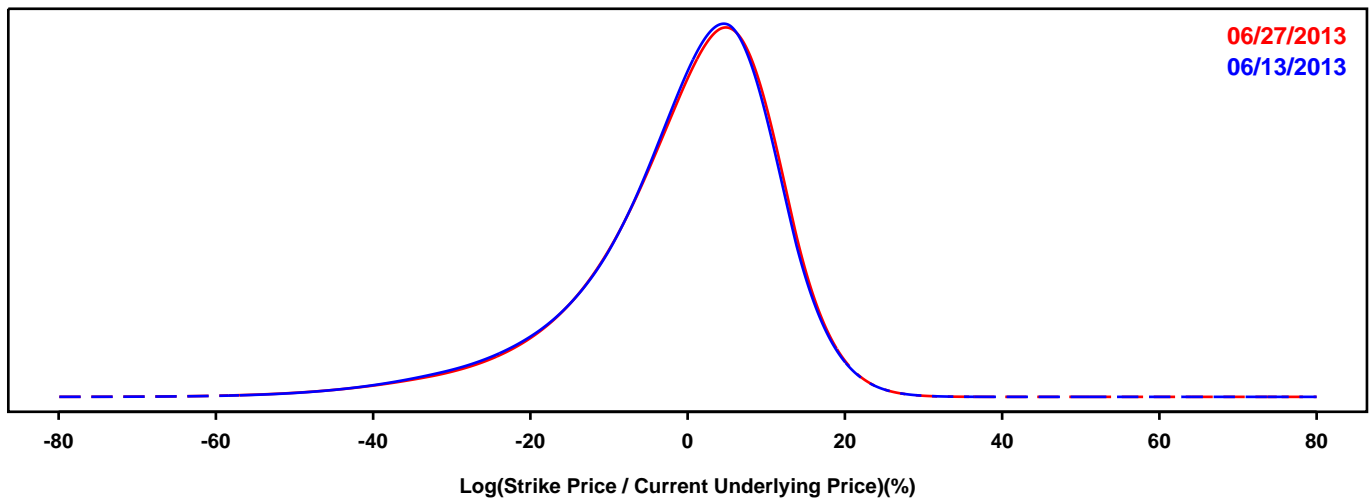
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- S&P 500

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

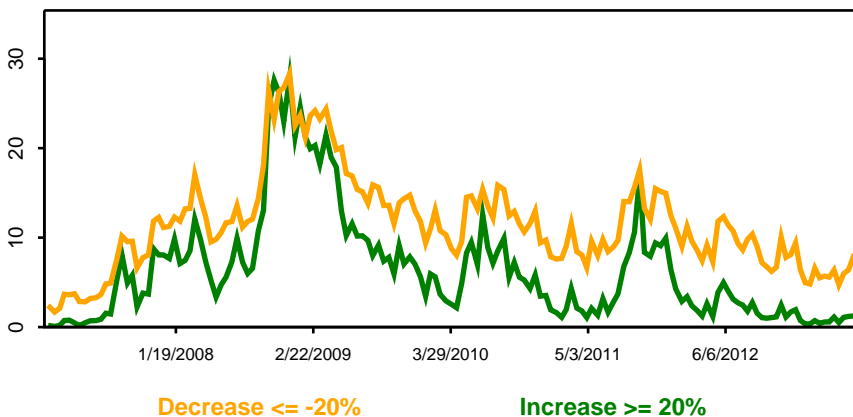
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

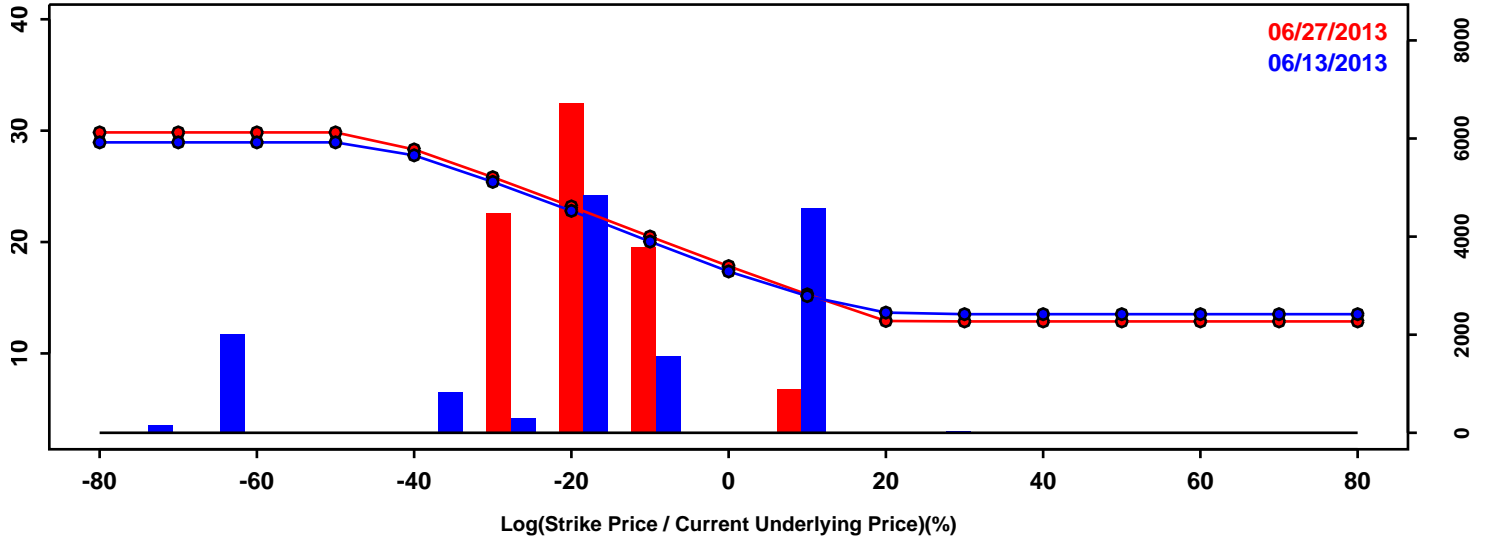


Statistics of the Log Return Distributions			
	06/13/2013	06/27/2013	Change
10th Pct	-17.18%	-16.78%	0.40%
50th Pct	1.39%	1.63%	0.23%
90th Pct	12.32%	12.53%	0.20%
Mean	-0.81%	-0.59%	0.22%
Std Dev	12.44%	12.44%	0.00%
Skew	-1.15	-1.18	-0.03
Kurtosis	2.09	2.26	0.18

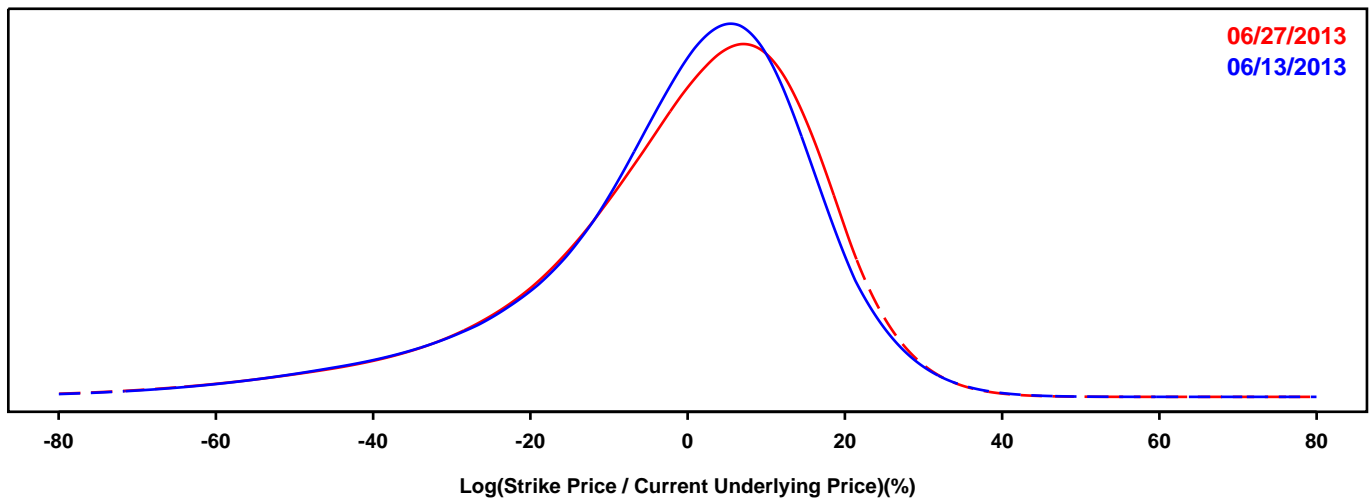
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- S&P 500

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

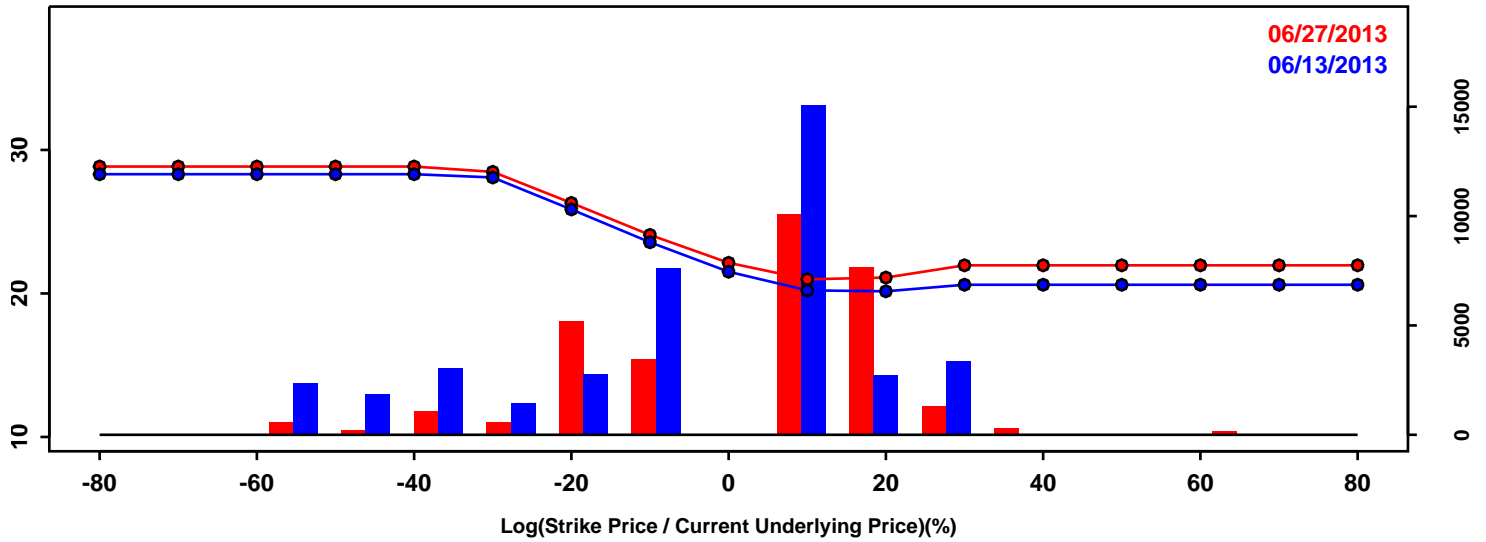


Statistics of the Log Return Distributions			
	06/13/2013	06/27/2013	Change
10th Pct	-26.94%	-27.06%	-0.11%
50th Pct	1.28%	1.83%	0.56%
90th Pct	17.48%	18.42%	0.95%
Mean	-2.12%	-1.74%	0.38%
Std Dev	18.78%	19.20%	0.42%
Skew	-1.17	-1.18	-0.01
Kurtosis	2.14	2.11	-0.03

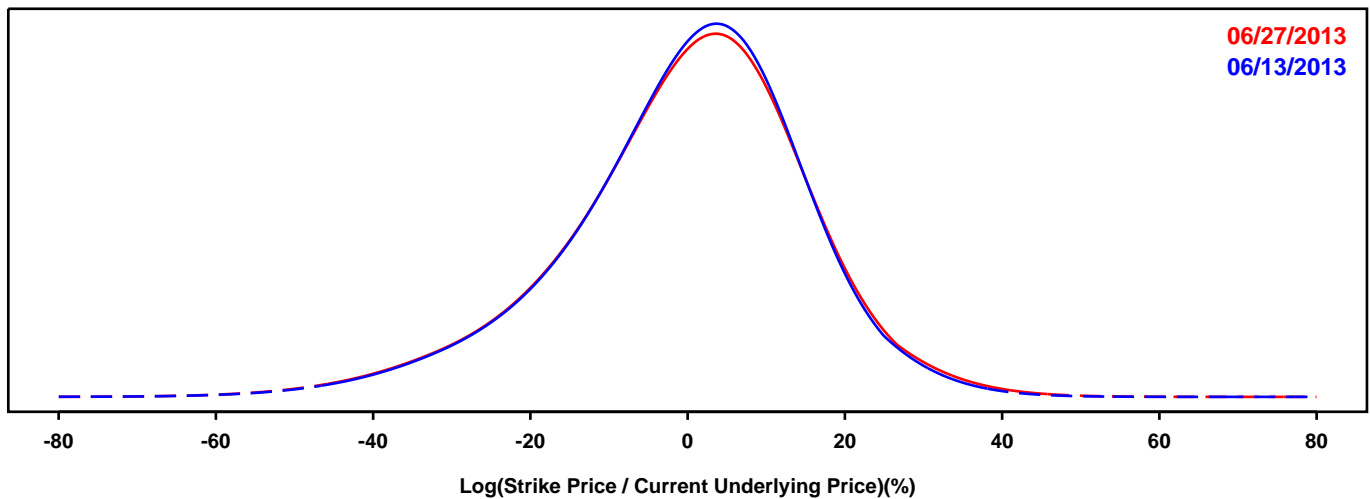
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CRUDE OIL FUTURES (WTI)

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

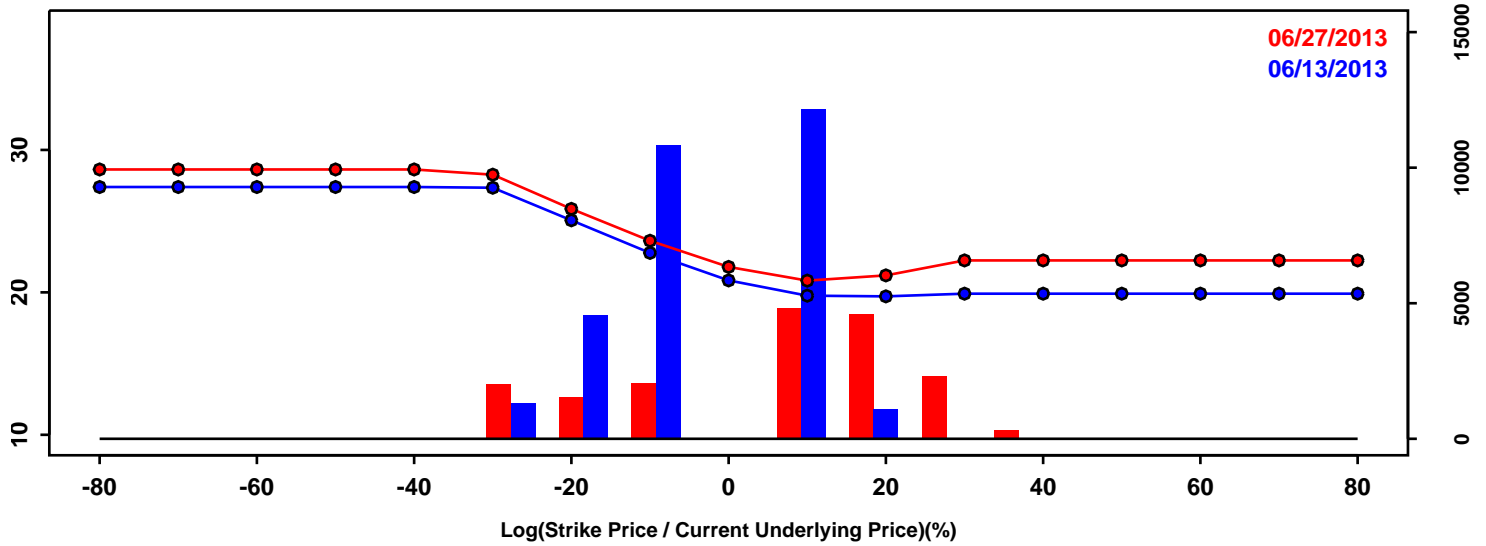


Statistics of the Log Return Distributions			
	06/13/2013	06/27/2013	Change
10th Pct	-20.63%	-20.91%	-0.28%
50th Pct	1.16%	1.17%	0.01%
90th Pct	17.34%	17.93%	0.60%
Mean	-0.37%	-0.27%	0.10%
Std Dev	15.39%	15.78%	0.39%
Skew	-0.55	-0.50	0.04
Kurtosis	0.82	0.81	-0.01

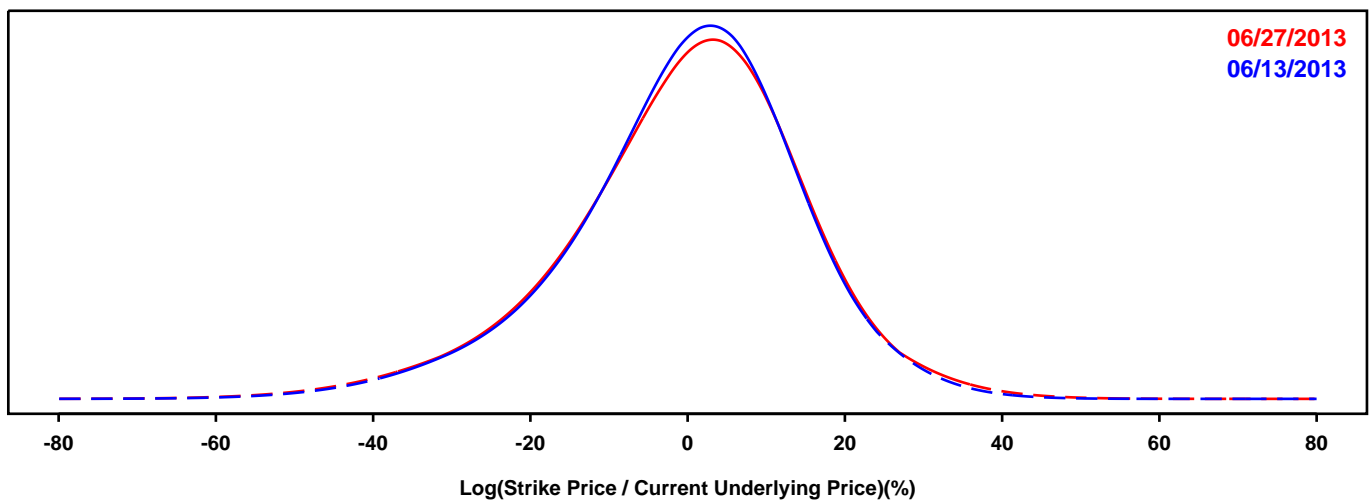
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CRUDE OIL FUTURES (Brent)

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

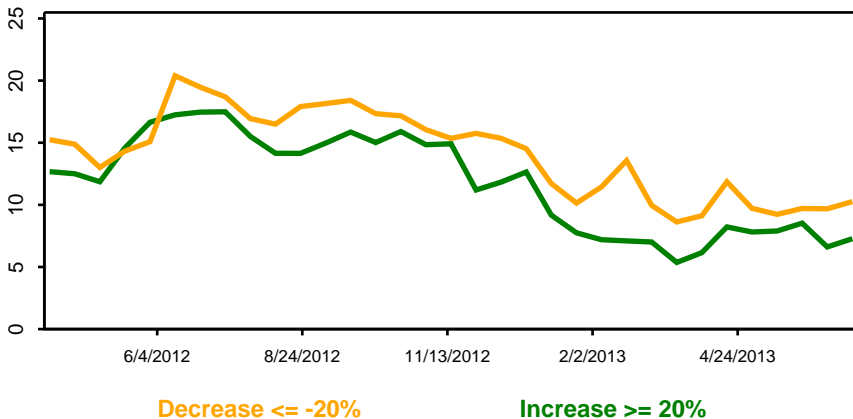
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

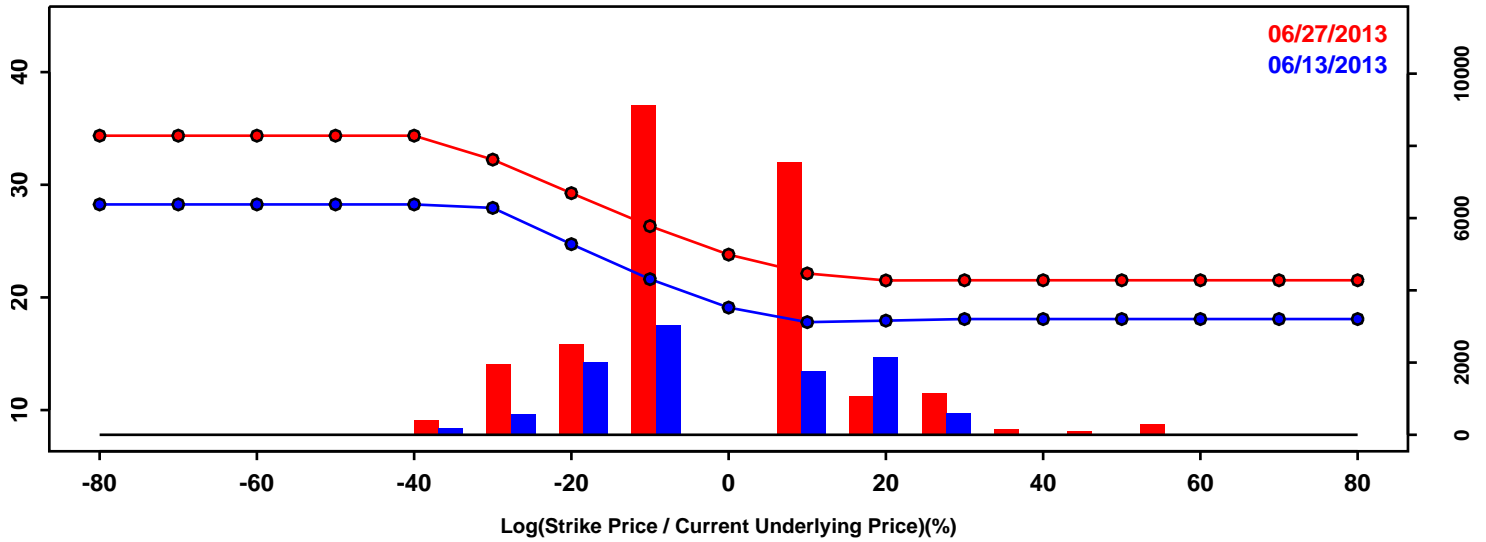


Statistics of the Log Return Distributions			
	06/13/2013	06/27/2013	Change
10th Pct	-19.66%	-20.29%	-0.63%
50th Pct	0.93%	0.98%	0.05%
90th Pct	17.02%	17.62%	0.60%
Mean	-0.31%	-0.28%	0.03%
Std Dev	14.87%	15.46%	0.59%
Skew	-0.50	-0.47	0.04
Kurtosis	0.80	0.85	0.05

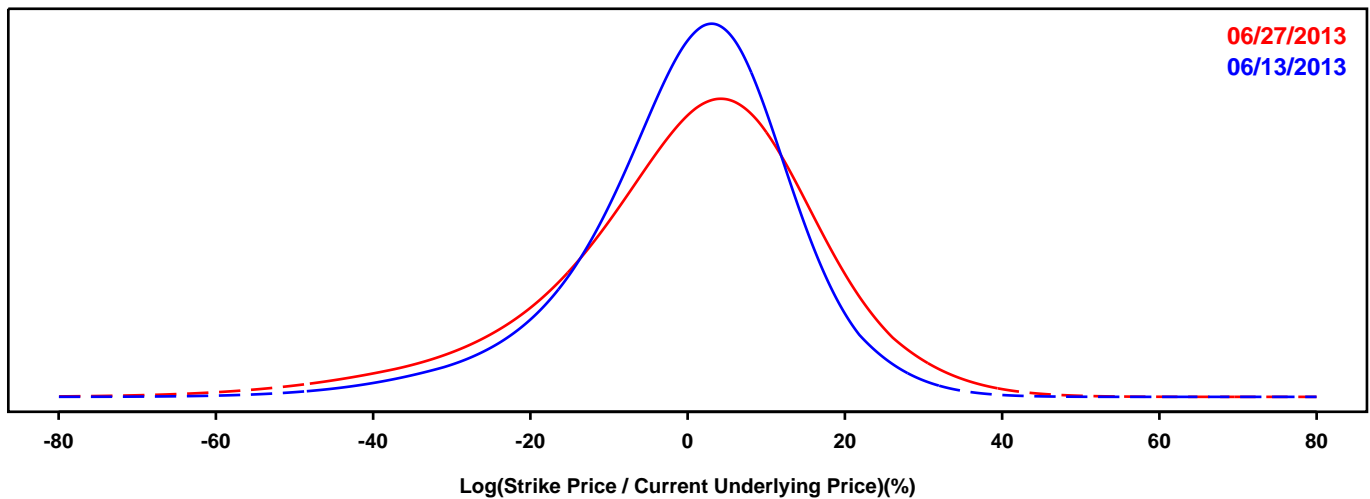
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- GOLD FUTURES

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

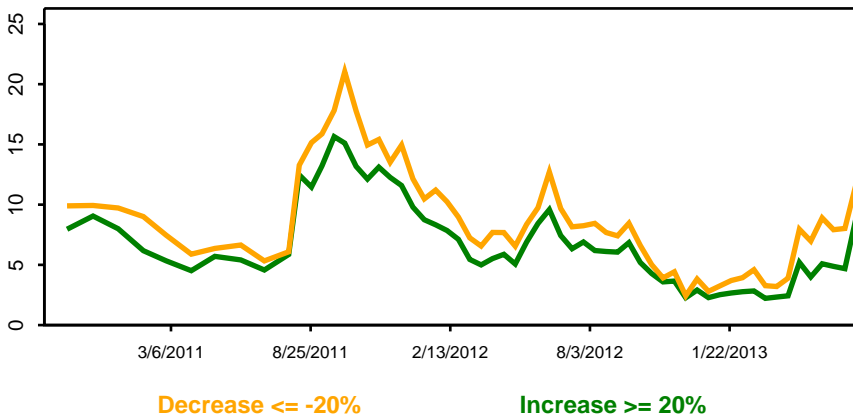
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

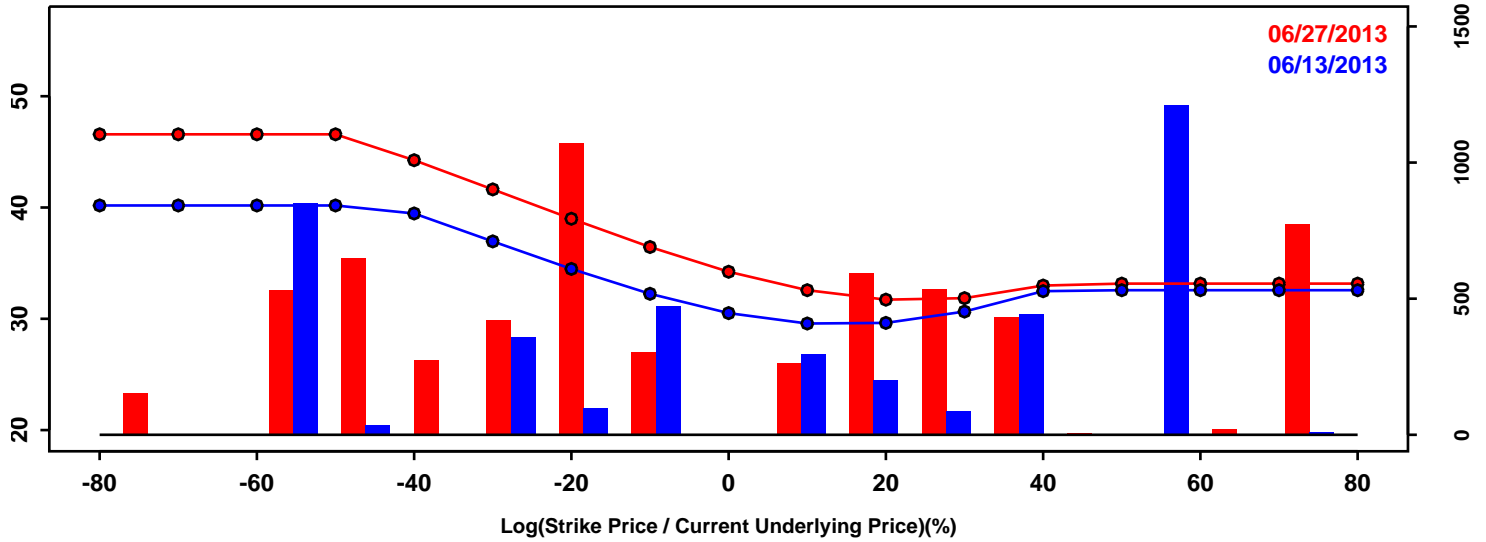


Statistics of the Log Return Distributions			
	06/13/2013	06/27/2013	Change
10th Pct	-17.56%	-22.29%	-4.73%
50th Pct	1.17%	1.67%	0.49%
90th Pct	15.29%	19.11%	3.82%
Mean	-0.17%	-0.22%	-0.04%
Std Dev	13.67%	17.09%	3.42%
Skew	-0.69	-0.71	-0.02
Kurtosis	1.38	1.25	-0.13

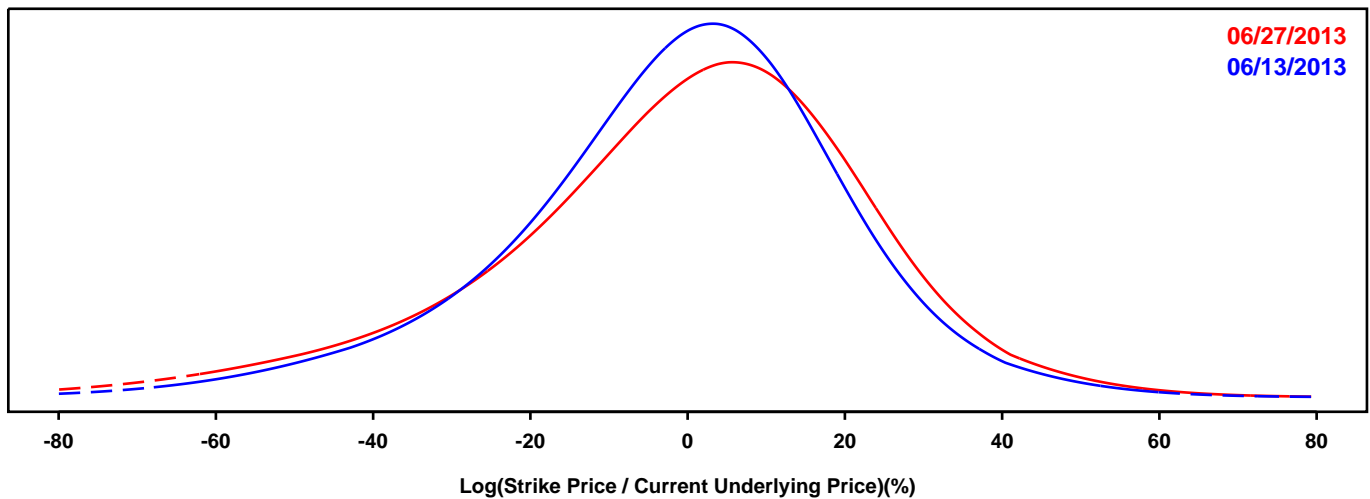
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- SILVER FUTURES

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

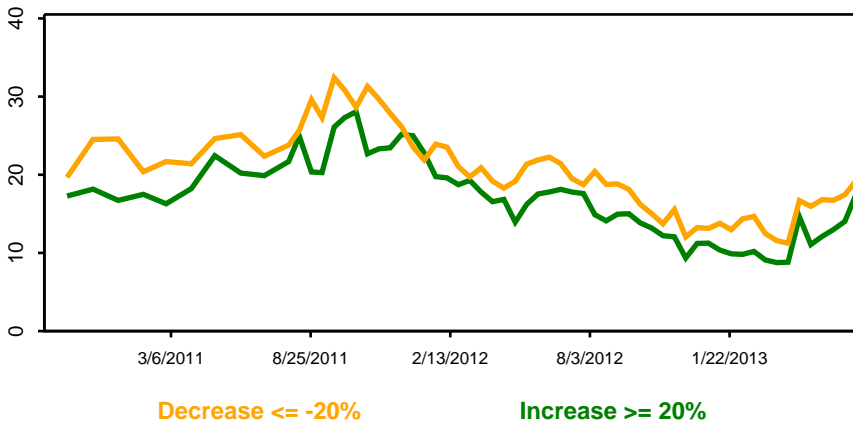
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

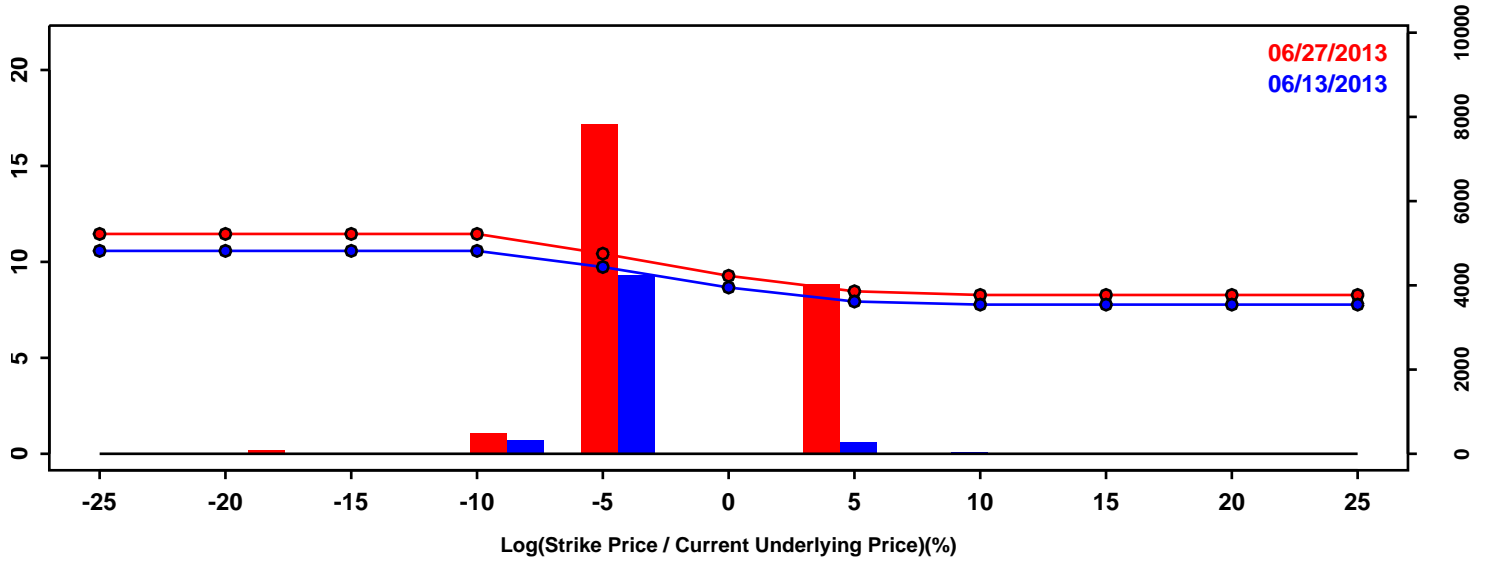


Statistics of the Log Return Distributions			
	06/13/2013	06/27/2013	Change
10th Pct	-29.46%	-33.39%	-3.94%
50th Pct	0.42%	1.57%	1.14%
90th Pct	23.83%	26.69%	2.86%
Mean	-1.35%	-1.13%	0.22%
Std Dev	21.82%	24.59%	2.77%
Skew	-0.47	-0.63	-0.17
Kurtosis	0.92	1.01	0.09

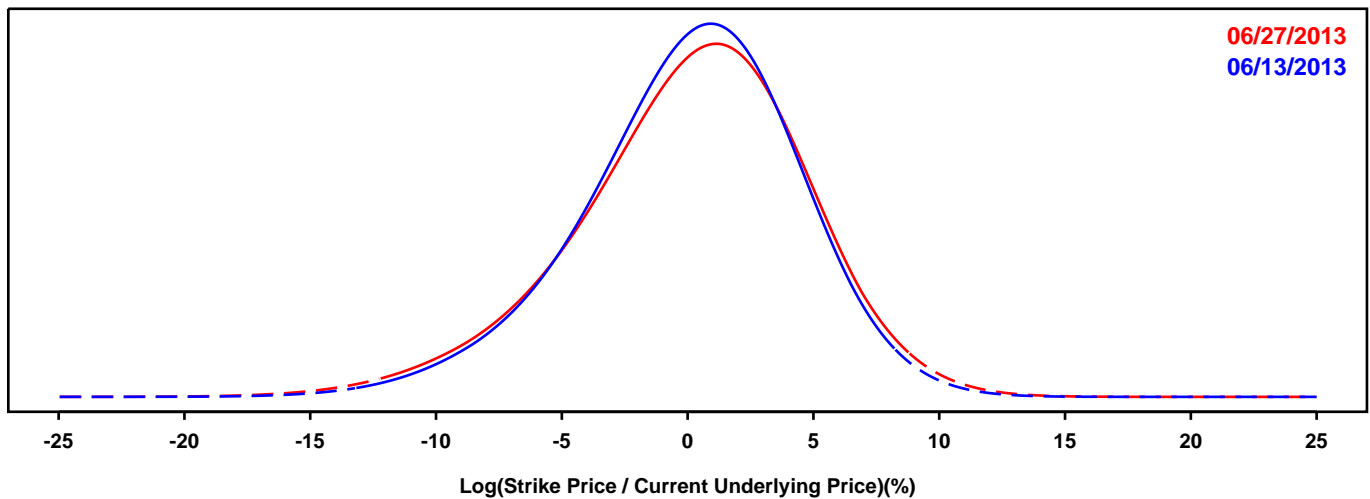
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- DOLLAR-EURO EXCHANGE RATE FUTURES

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

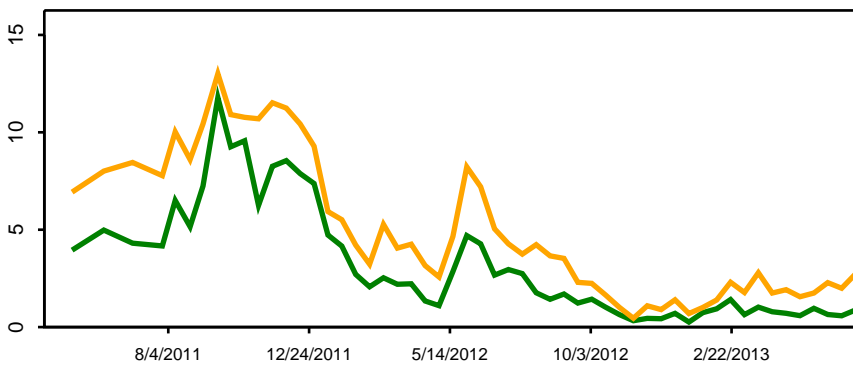
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



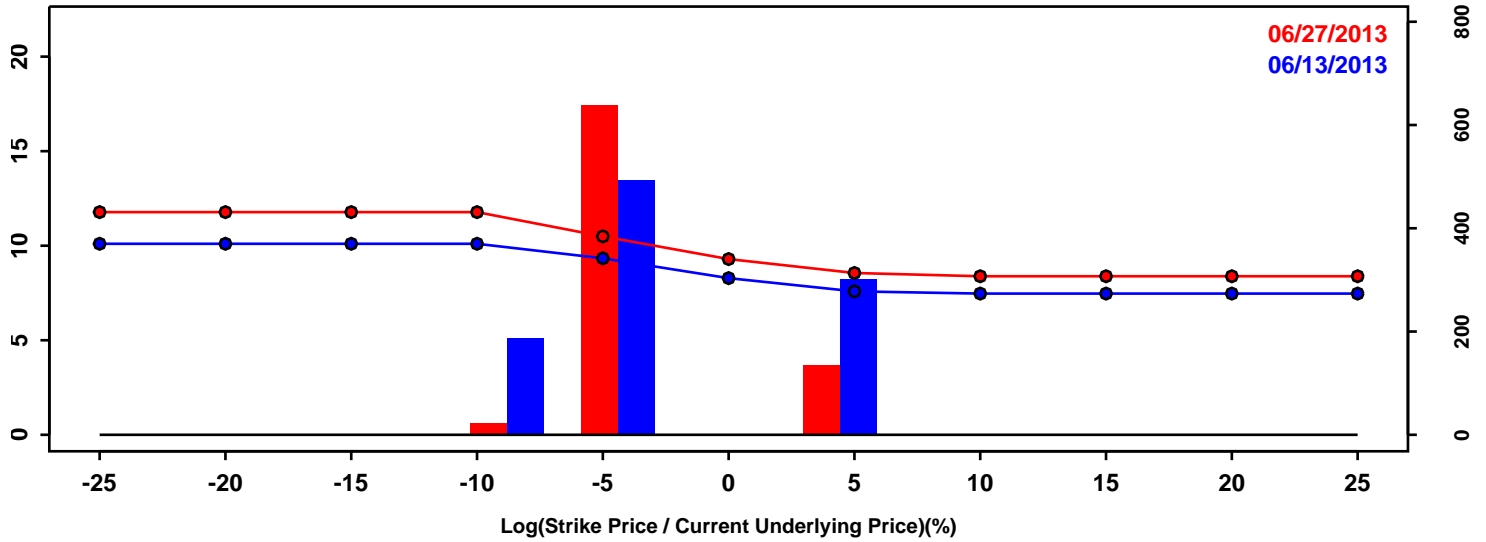
Decrease <= -10% [stronger \$] Increase >= 10% [weaker \$]

Statistics of the Log Return Distributions			
	06/13/2013	06/27/2013	Change
10th Pct	-5.65%	-6.03%	-0.38%
50th Pct	0.37%	0.46%	0.09%
90th Pct	5.31%	5.63%	0.32%
Mean	0.08%	0.11%	0.03%
Std Dev	4.35%	4.65%	0.30%
Skew	-0.40	-0.44	-0.04
Kurtosis	0.40	0.46	0.06

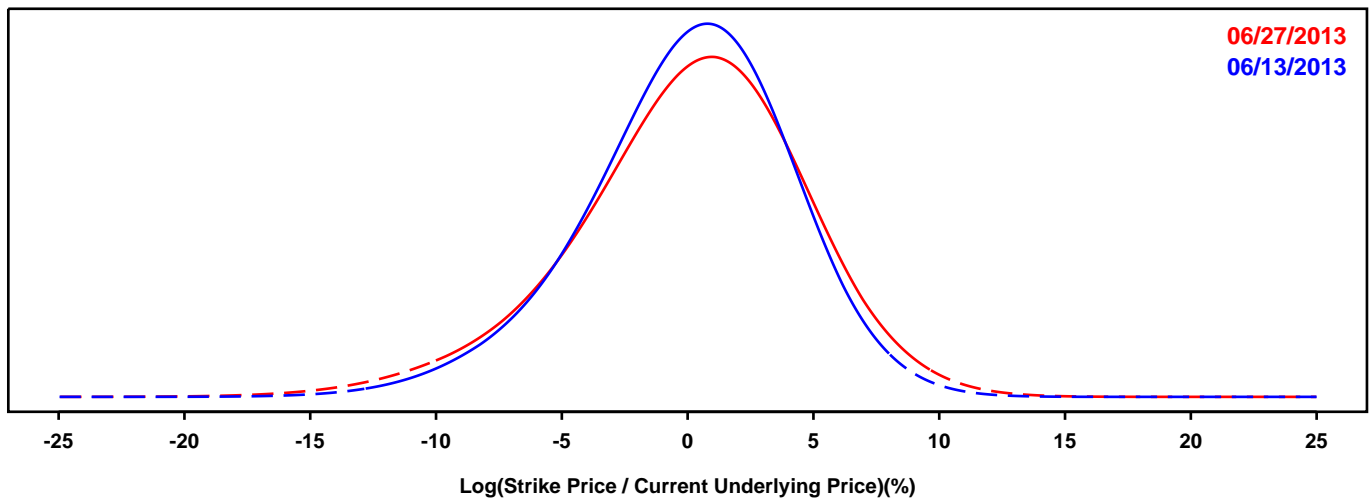
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- DOLLAR-POUND EXCHANGE RATE FUTURES

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

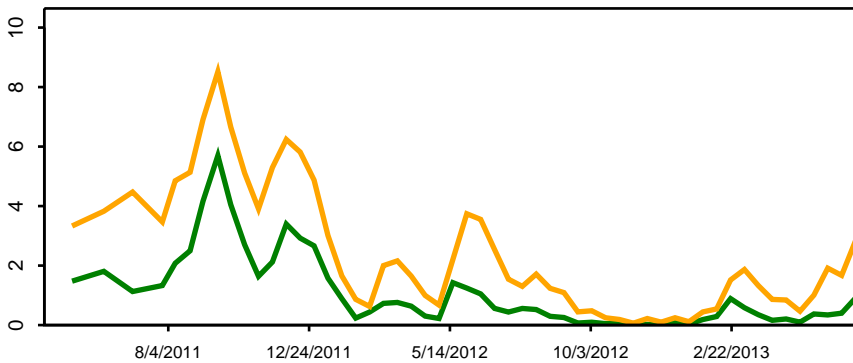
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



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

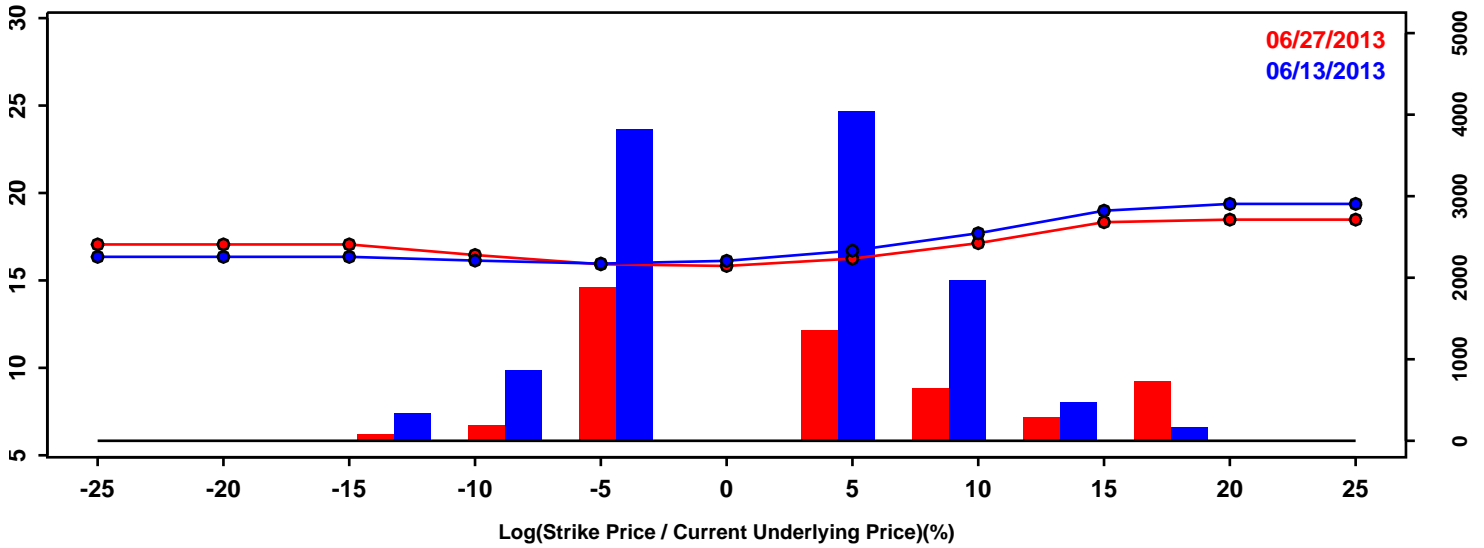
Statistics of the Log Return Distributions

	06/13/2013	06/27/2013	Change
10th Pct	-5.45%	-6.03%	-0.58%
50th Pct	0.28%	0.36%	0.08%
90th Pct	5.00%	5.63%	0.63%
Mean	0.01%	0.06%	0.05%
Std Dev	4.16%	4.67%	0.51%
Skew	-0.39	-0.44	-0.05
Kurtosis	0.39	0.54	0.15

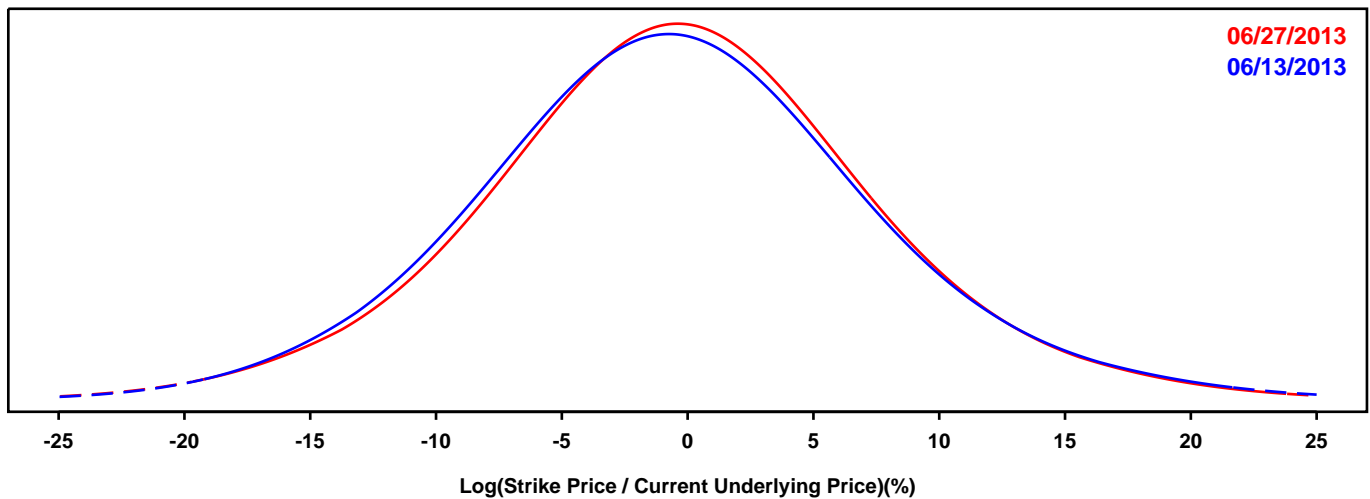
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- DOLLAR-YEN EXCHANGE RATE FUTURES

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

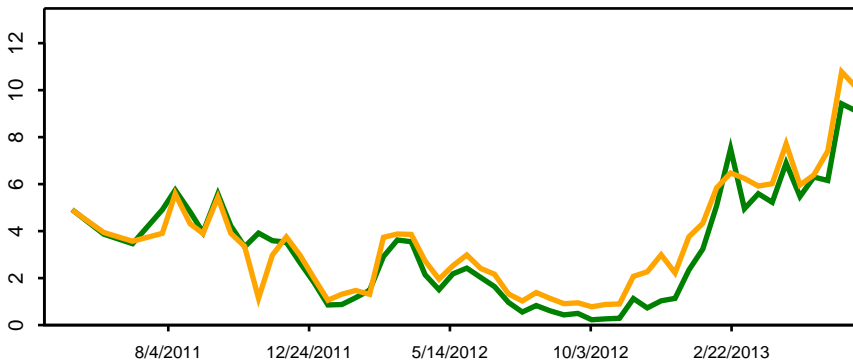
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



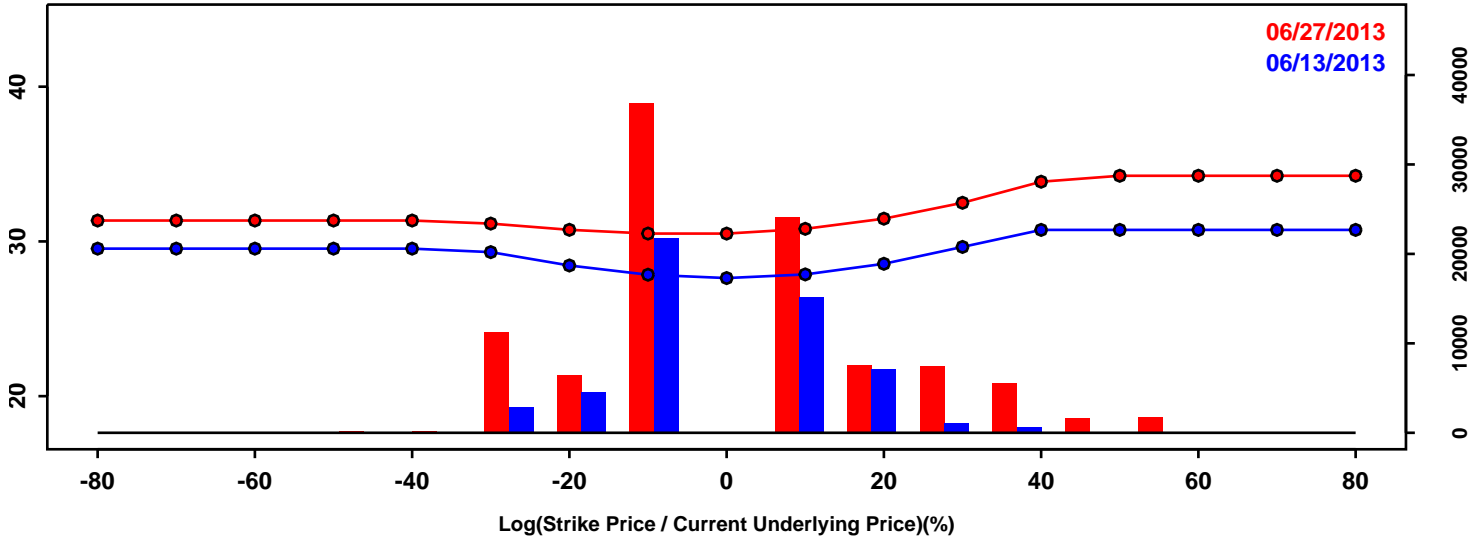
Decrease <= -10% [stronger \$] Increase >= 10% [weaker \$]

Statistics of the Log Return Distributions			
	06/13/2013	06/27/2013	Change
10th Pct	-10.38%	-10.03%	0.34%
50th Pct	-0.56%	-0.31%	0.25%
90th Pct	9.69%	9.55%	-0.14%
Mean	-0.39%	-0.23%	0.16%
Std Dev	8.02%	7.88%	-0.14%
Skew	0.17	0.07	-0.10
Kurtosis	0.45	0.48	0.03

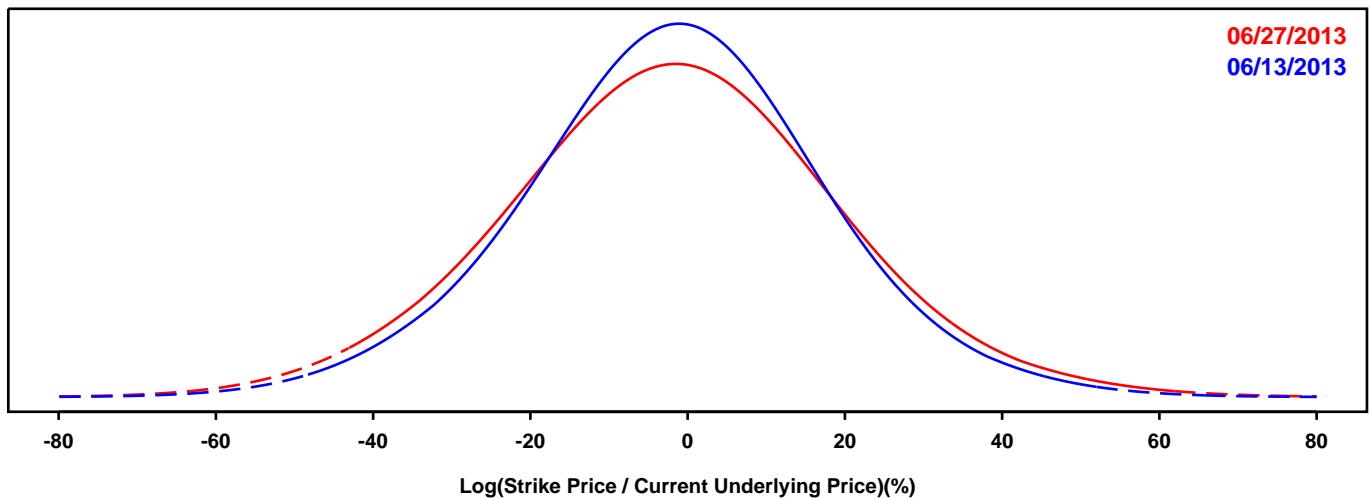
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CORN FUTURES

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

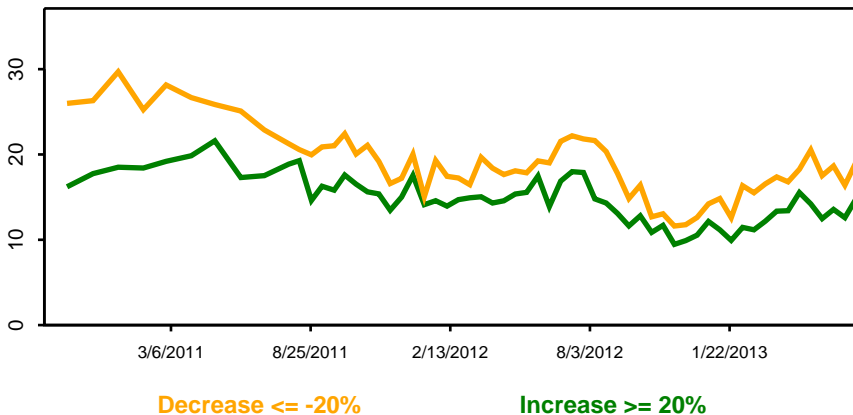
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

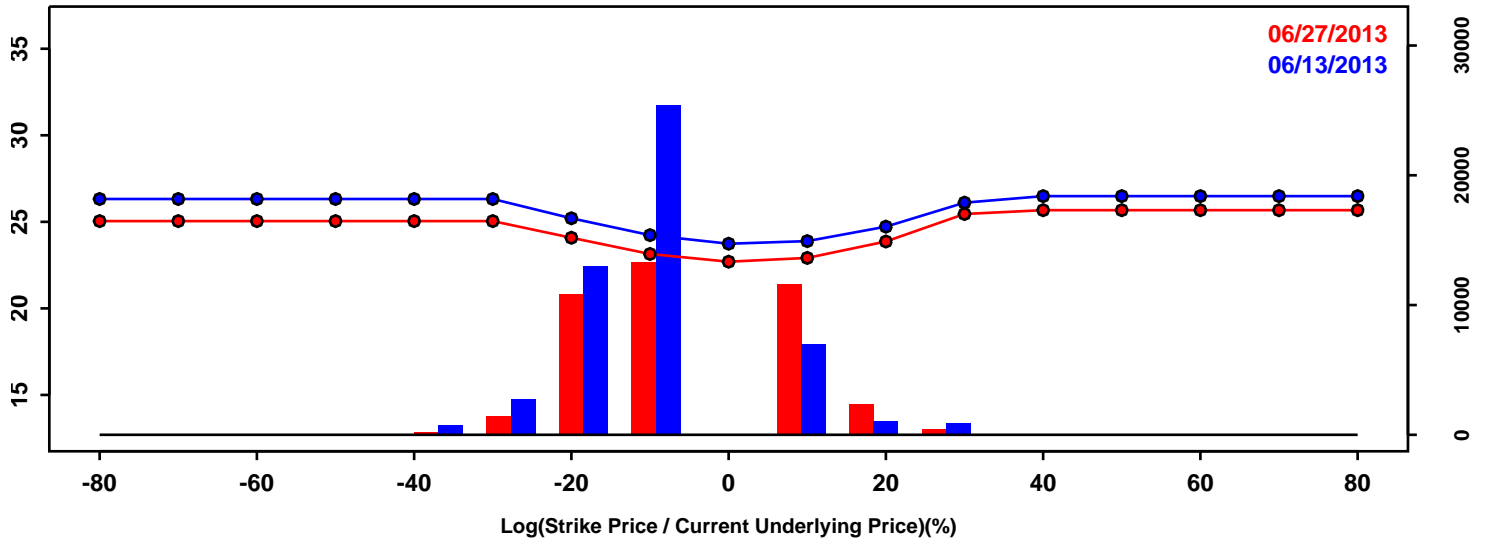


Statistics of the Log Return Distributions			
	06/13/2013	06/27/2013	Change
10th Pct	-26.21%	-28.98%	-2.78%
50th Pct	-1.44%	-1.76%	-0.32%
90th Pct	22.72%	25.23%	2.51%
Mean	-1.55%	-1.72%	-0.17%
Std Dev	19.48%	21.47%	1.99%
Skew	-0.01	0.04	0.05
Kurtosis	0.34	0.27	-0.07

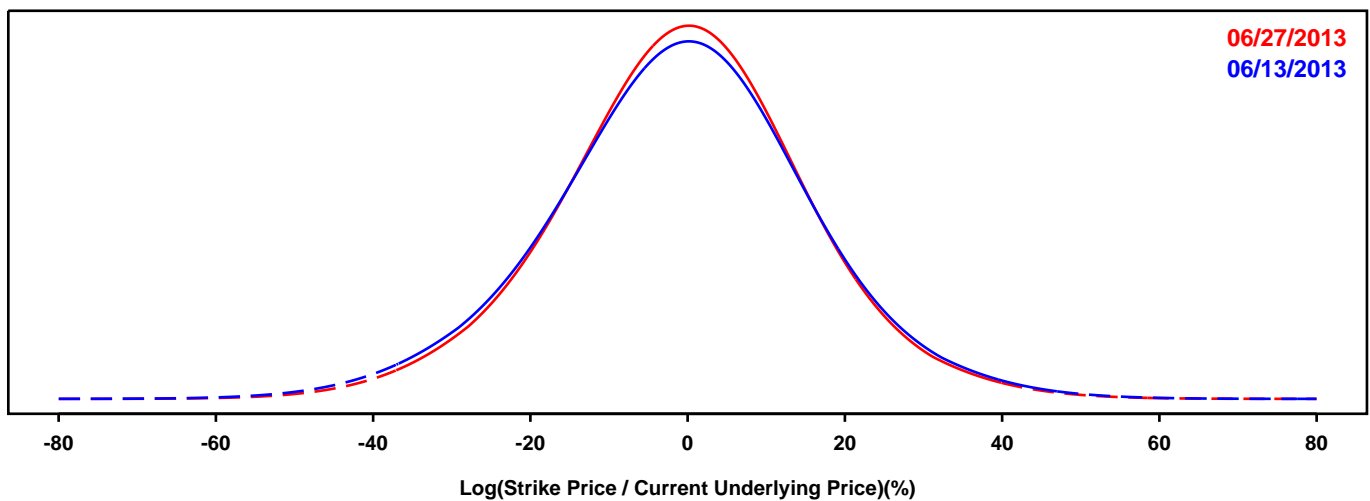
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- SOYBEAN FUTURES

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

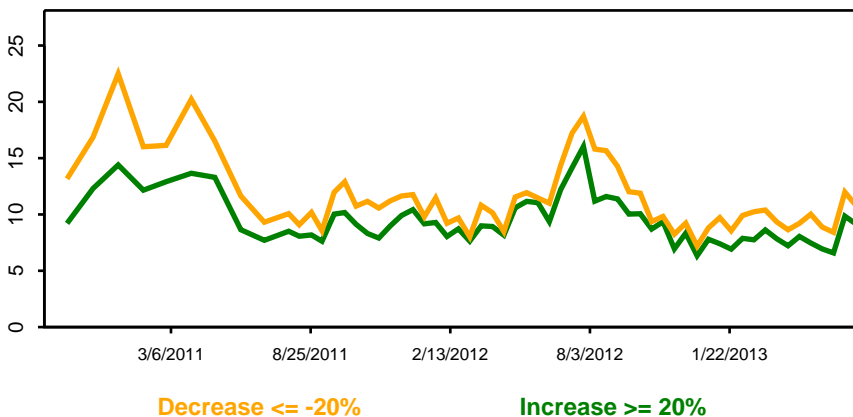
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

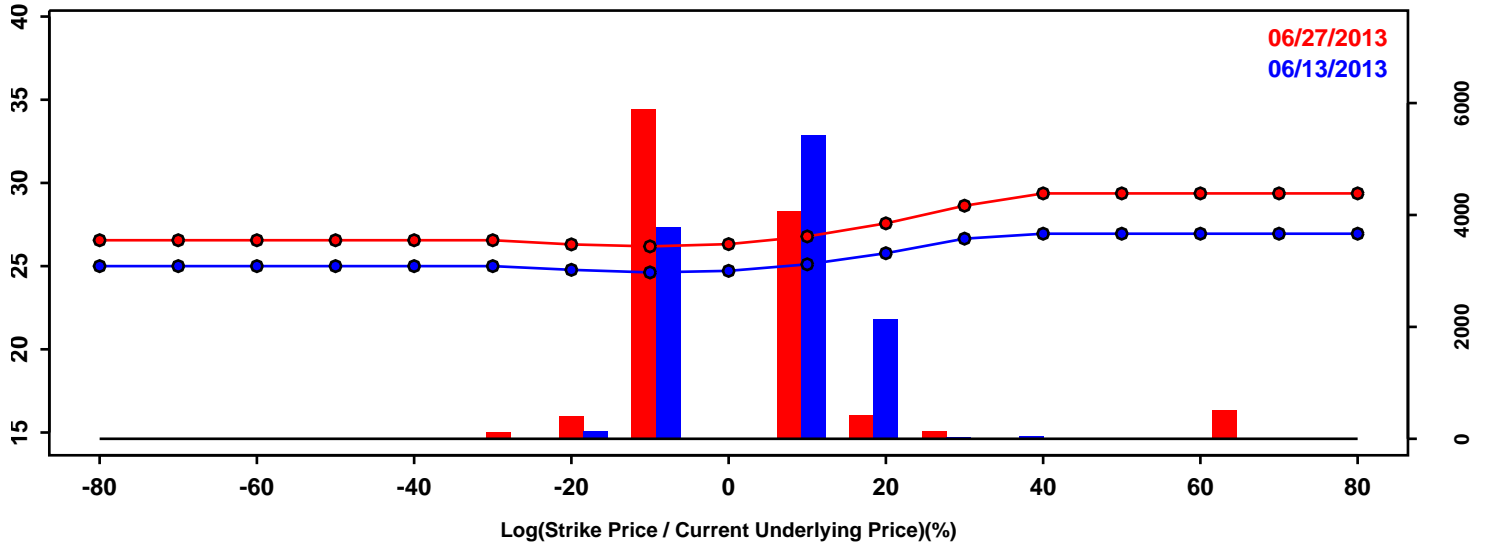


Statistics of the Log Return Distributions			
	06/13/2013	06/27/2013	Change
10th Pct	-21.95%	-20.70%	1.24%
50th Pct	-0.47%	-0.33%	0.14%
90th Pct	19.89%	19.16%	-0.73%
Mean	-0.73%	-0.52%	0.21%
Std Dev	16.75%	15.99%	-0.76%
Skew	-0.06	-0.04	0.02
Kurtosis	0.43	0.44	0.01

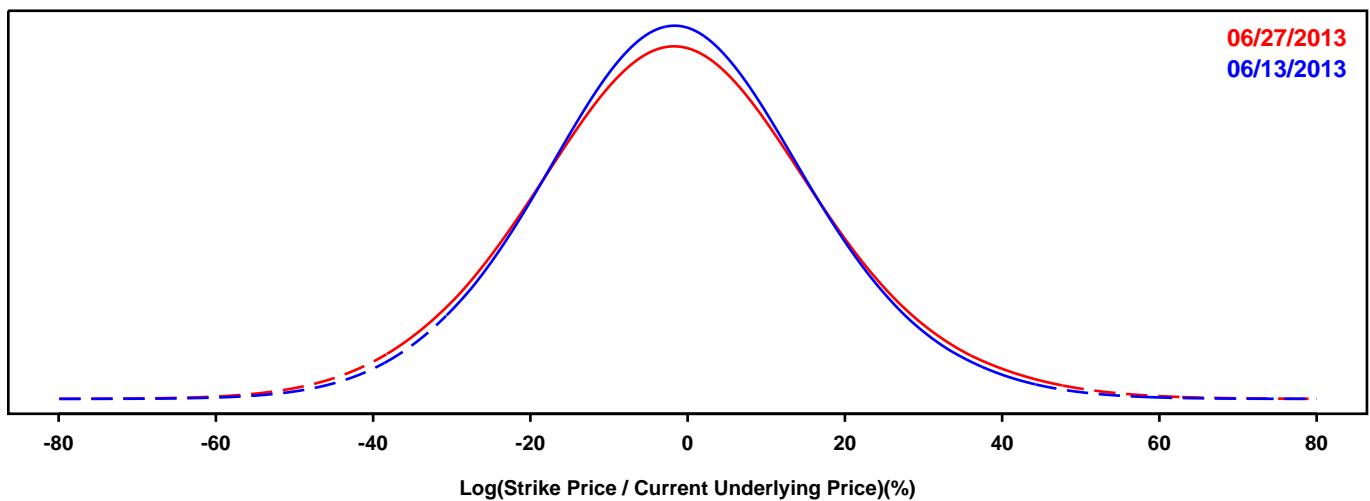
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- WHEAT FUTURES

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

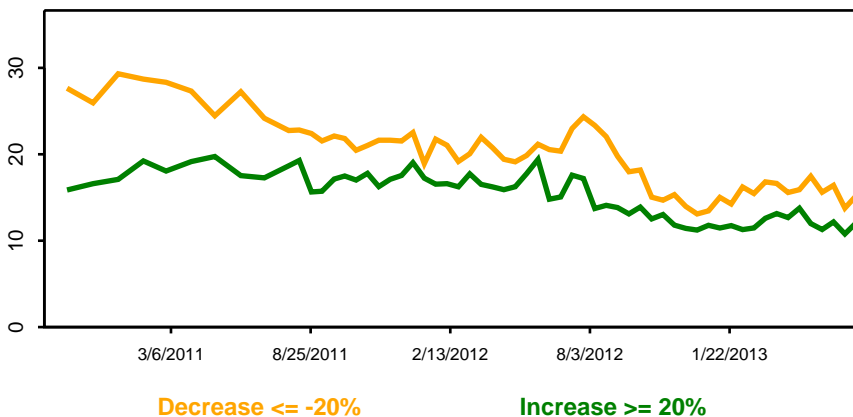
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

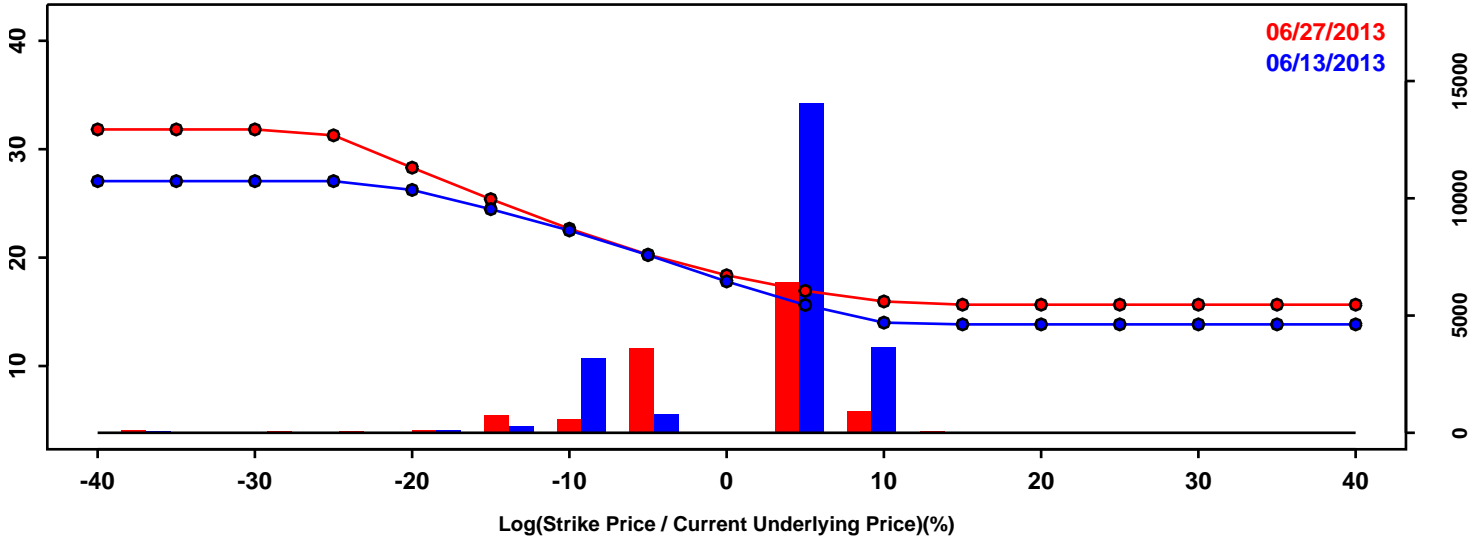


Statistics of the Log Return Distributions			
	06/13/2013	06/27/2013	Change
10th Pct	-23.32%	-24.73%	-1.41%
50th Pct	-1.48%	-1.55%	-0.07%
90th Pct	20.78%	22.17%	1.39%
Mean	-1.33%	-1.32%	0.01%
Std Dev	17.42%	18.54%	1.12%
Skew	0.07	0.09	0.02
Kurtosis	0.20	0.25	0.04

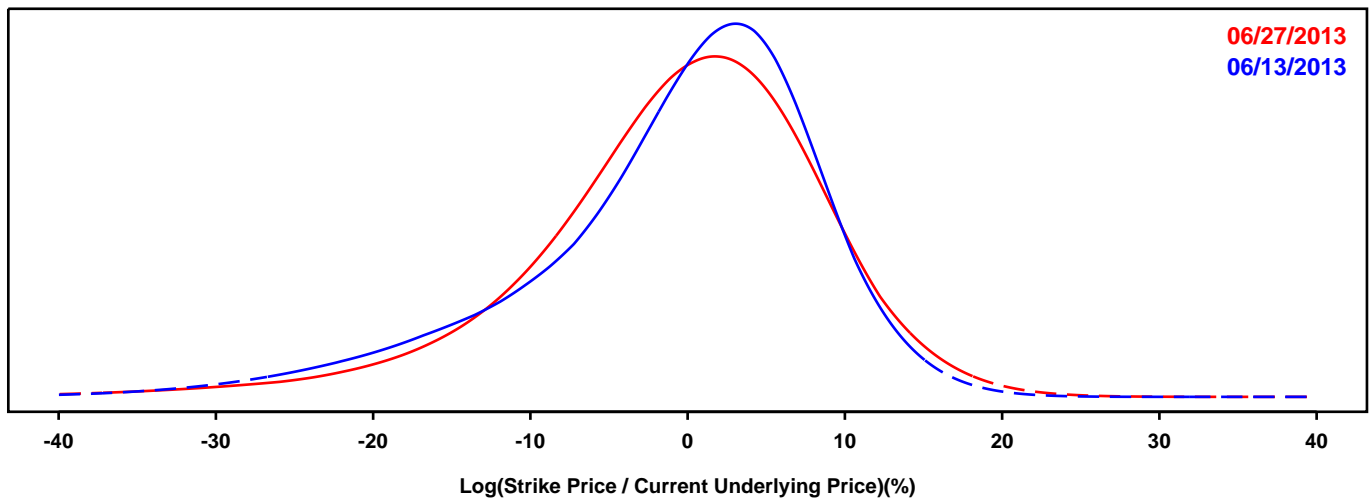
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- iSHARES DOW JONES US REAL ESTATE

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



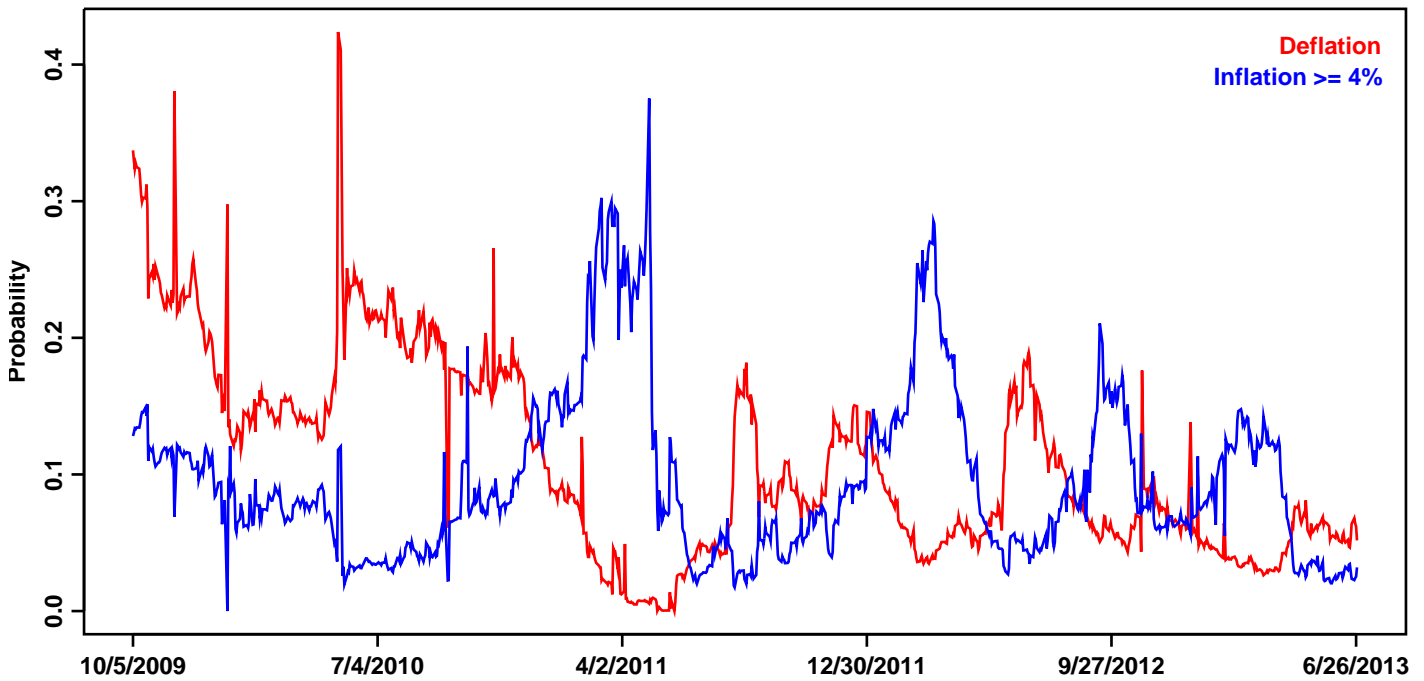
Probability of a Large Change



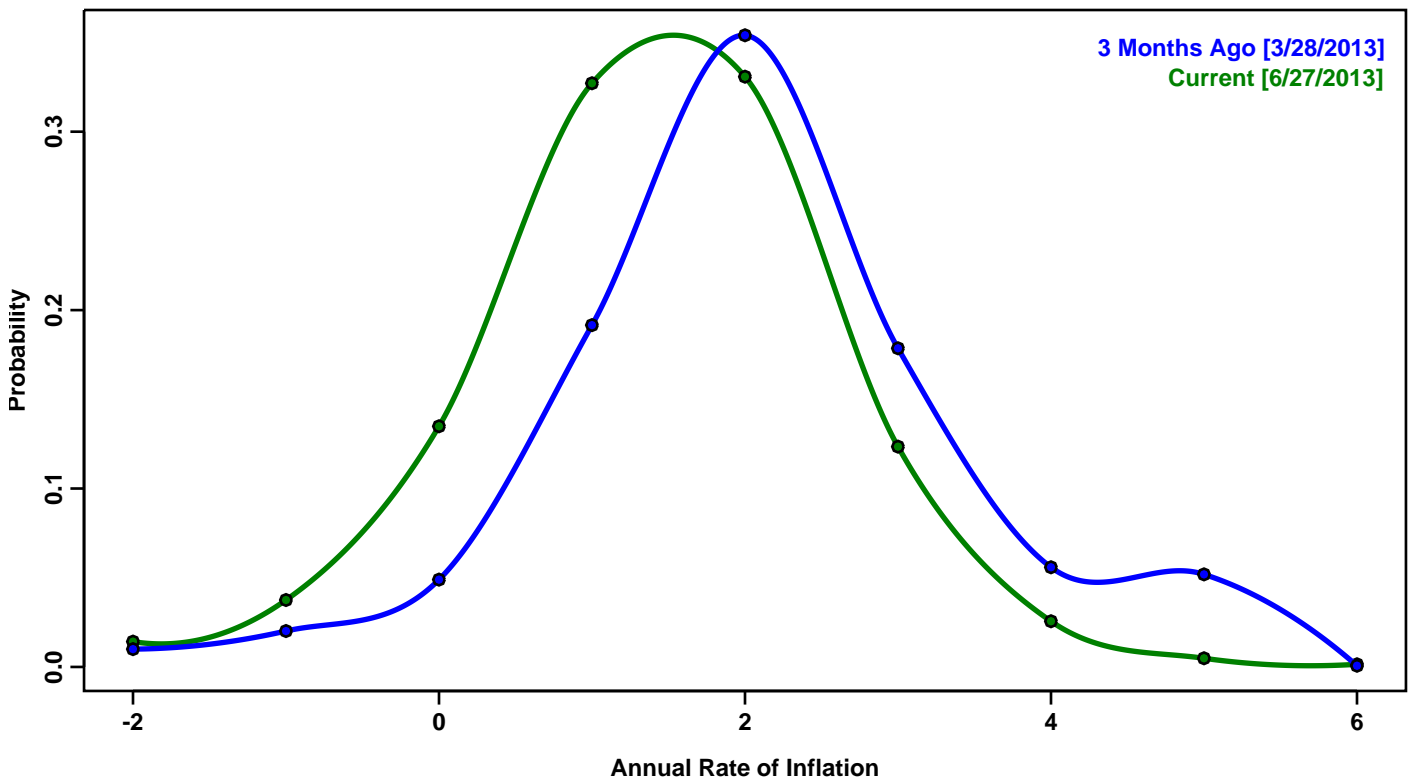
Statistics of the Log Return Distributions			
	06/13/2013	06/27/2013	Change
10th Pct	-14.16%	-12.48%	1.67%
50th Pct	0.73%	0.32%	-0.40%
90th Pct	9.19%	9.84%	0.65%
Mean	-0.98%	-0.72%	0.26%
Std Dev	9.52%	9.44%	-0.08%
Skew	-0.99	-0.90	0.09
Kurtosis	1.40	1.99	0.59

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

