

FEDERAL RESERVE BANK OF MINNEAPOLIS
BANKING AND POLICY STUDIES

Minneapolis Options Report – June 15th

Banks

Volumes were light for options on CCAR bank stocks last week. Only BAC, PNC, and RF options traded above their 20-period average levels. Option trades that did occur favored puts over calls by about 2 to 1. RNPD standard deviations were generally higher relative to two weeks ago. This is consistent with two week performance of, on average, -195 basis points for the CCAR firms. The median CCAR bank RNPD standard deviation was up 60 basis points.

Additional notes:

- Risk neutral probabilities of large downside spot price moves jumped more than risk neutral probabilities of large upside spot price moves for a number of firms (e.g., AXP, BK, COF, and GS).
- The standard deviation of the RNPD derived from options on PNC shares rose 124 basis points and 254 basis points for RF. Tail risks as measured by risk neutral probabilities of price changes greater than 20% have been rising for a number of weeks for these two firms.

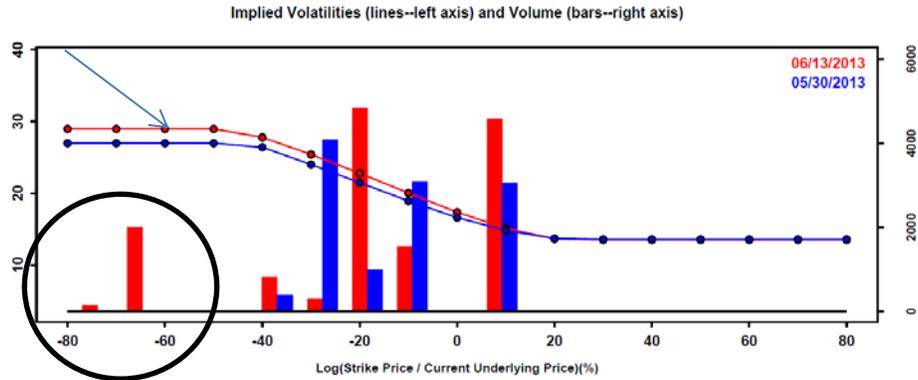
Other Commodity Markets

Spot prices were generally lower over the past two weeks across the universe of other markets we follow. The S&P 500 fell -1.10%. Gold and silver spot prices fell -2.43% and -4.84% respectively. Corn fell just under -5% and wheat over -2%. The DJ Real Estate Index ETF fell -2.30%. Bucking the falling price trend was oil, rising 2.65%. Trading was active for options in all of these markets.

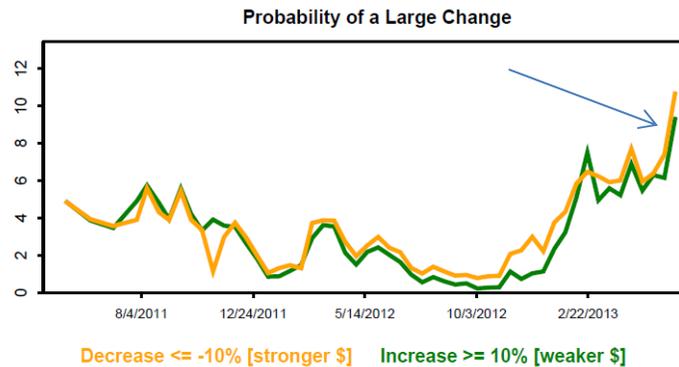
Standard deviations of RNPDs derived from the options on the underlying commodities and indices were mixed. Consistent with falling commodity prices, inflation expectations continued to fall for both shorter and longer term periods.

Additional notes:

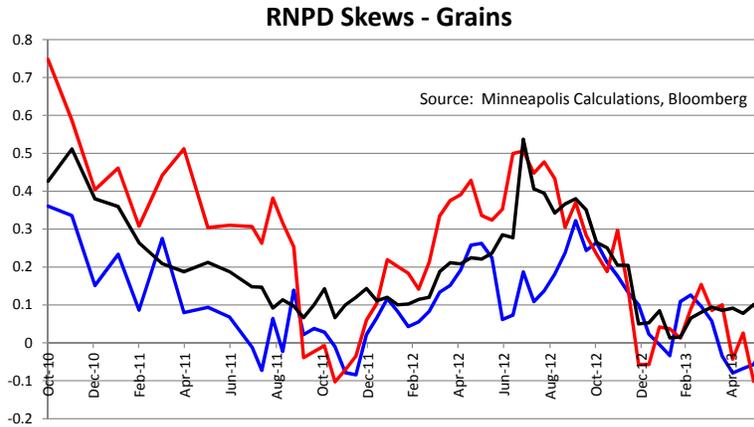
- The standard deviations derived from options on the S&P 500 index at 6 and 12-month expiries rose over 100 basis points. RNPD skews became more negative driven by some deeply out of the money put trades and twisting volatility smiles (*See S&P 500 reports*)



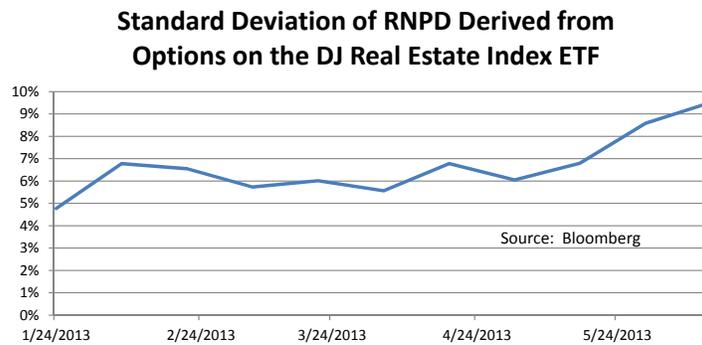
- Trading jumped for options on WTI and Brent crude futures. RNPD standard deviations were *lower* by over 120 basis points. Volatility smiles shifted lower. (*See Oil Reports*).
- We measured very little trading volume in options on dollar-pound and dollar-euro exchange rate futures. On the other hand, trading in options on yen-dollar futures was very active. Tail risk in the yen-dollar market jumped again consistent with other measures of volatility related to Japanese markets. (*See exchange rate reports*)



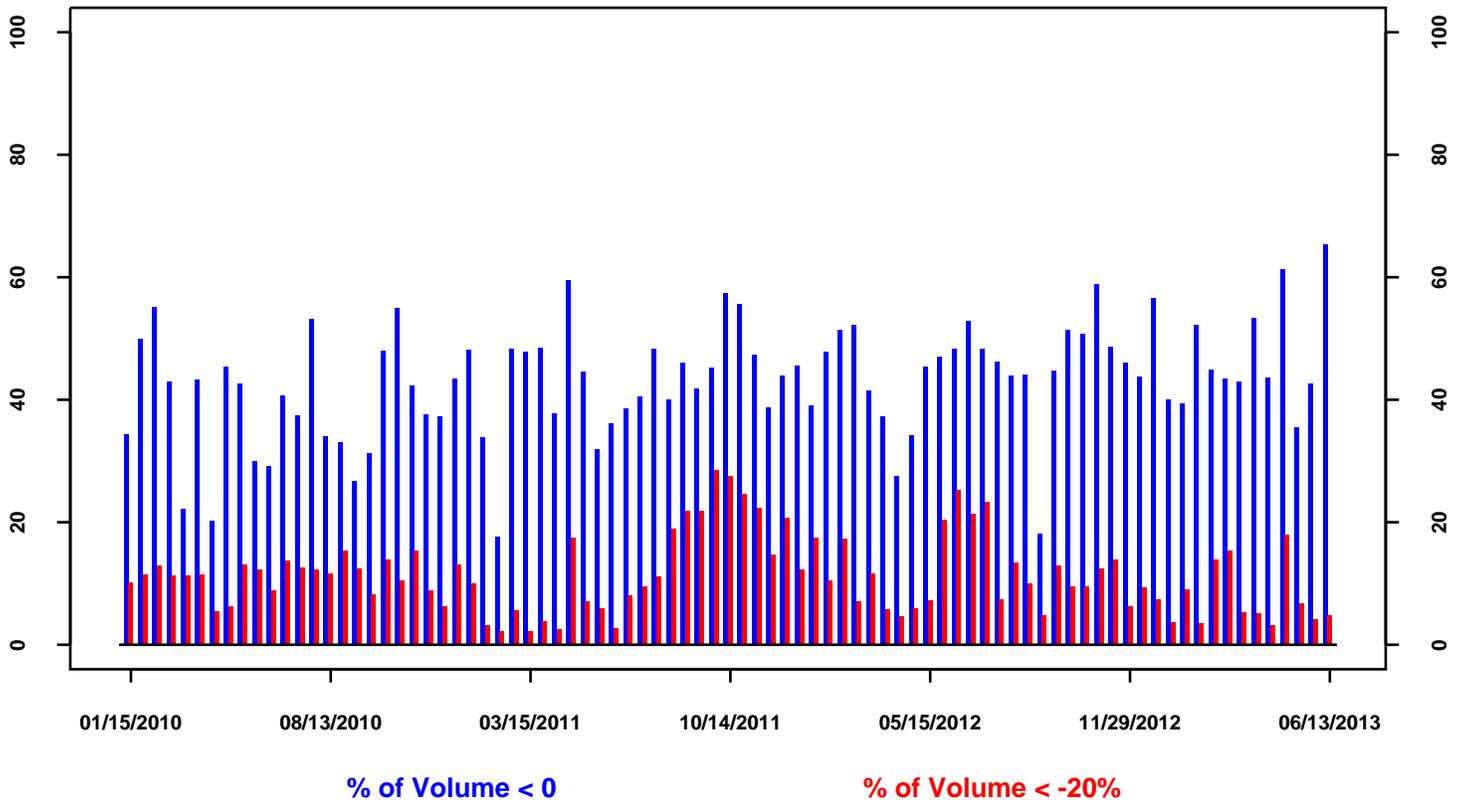
- There was strong activity in options on corn, soybean, and wheat futures again last week. RNPD standard deviations were mixed. RNPD skews remain close to zero, considerably lower than last summer. (*See grain market reports*)



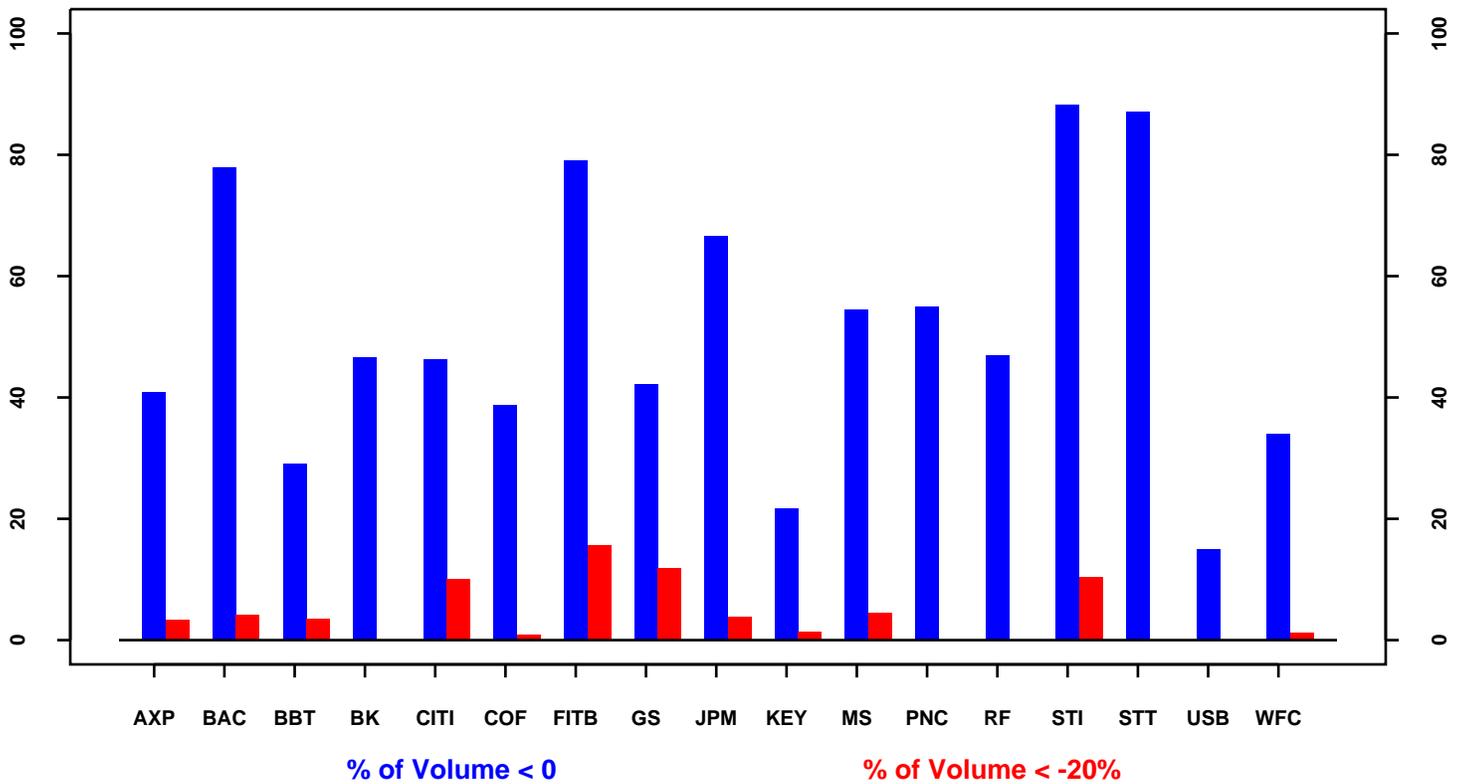
- The DJ Real Estate Index ETF continues to drop as fears of the end of central bank easing grow. The ETF was down another -2.3% over the past two weeks. Trading was strong again and the RNPD standard deviation increased 90 basis points. (*See Real Estate report*)



Aggregate Volumes for Options on CCAR Banks

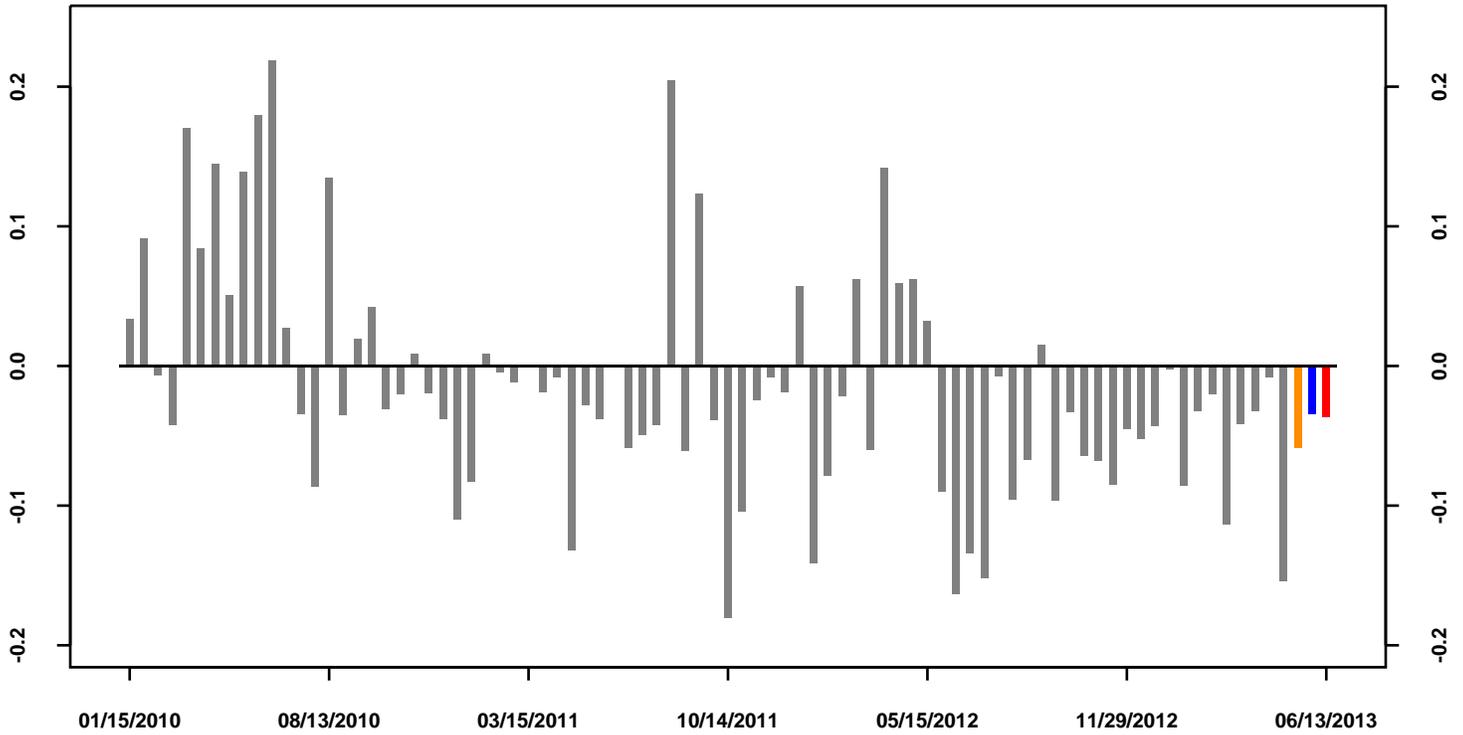


Volumes for Options on CCAR Banks

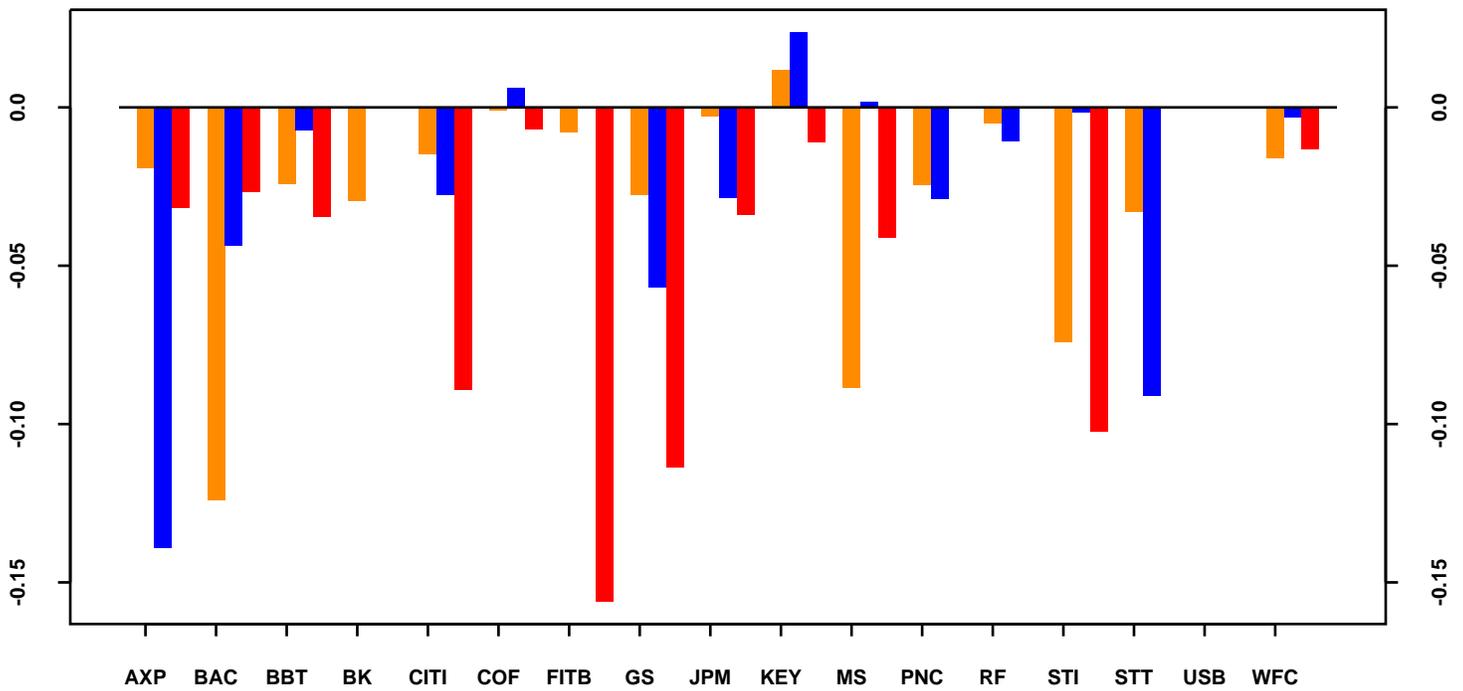


Aggregate Volume Skew--CCAR Banks

(% 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



05/16/2013

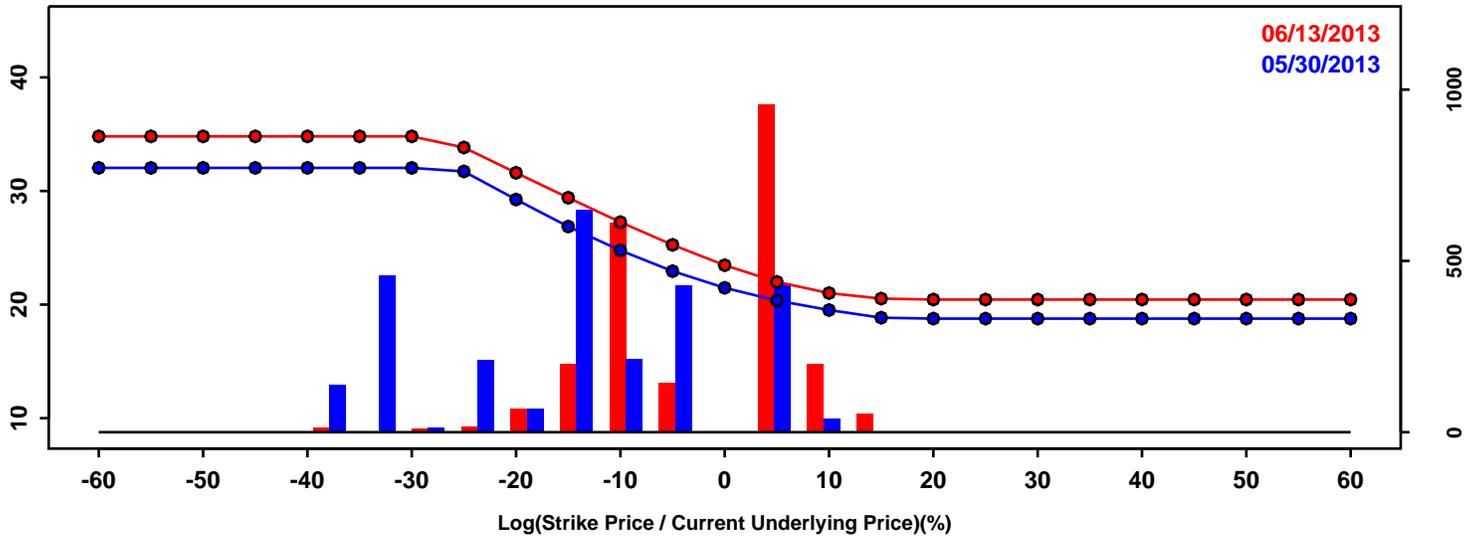
05/30/2013

06/13/2013

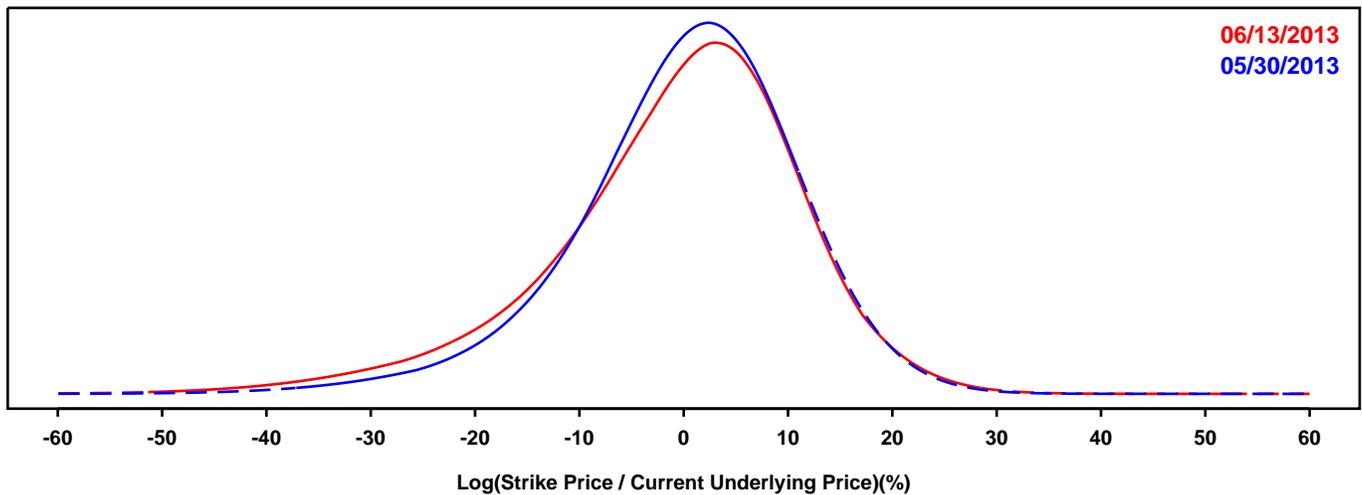
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- AMERICAN EXPRESS

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

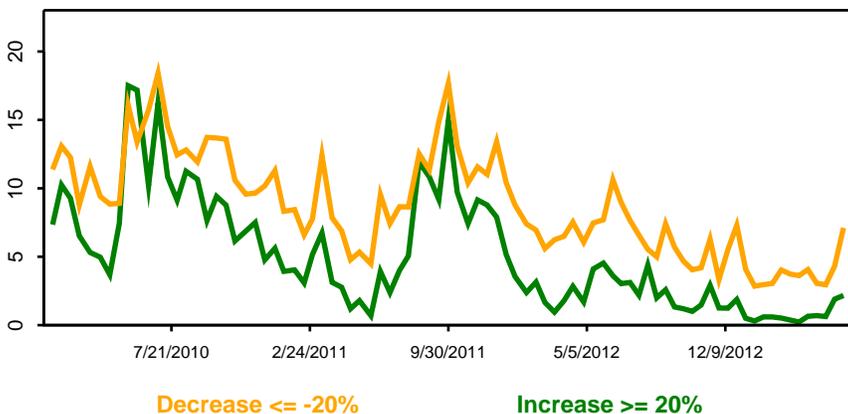
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

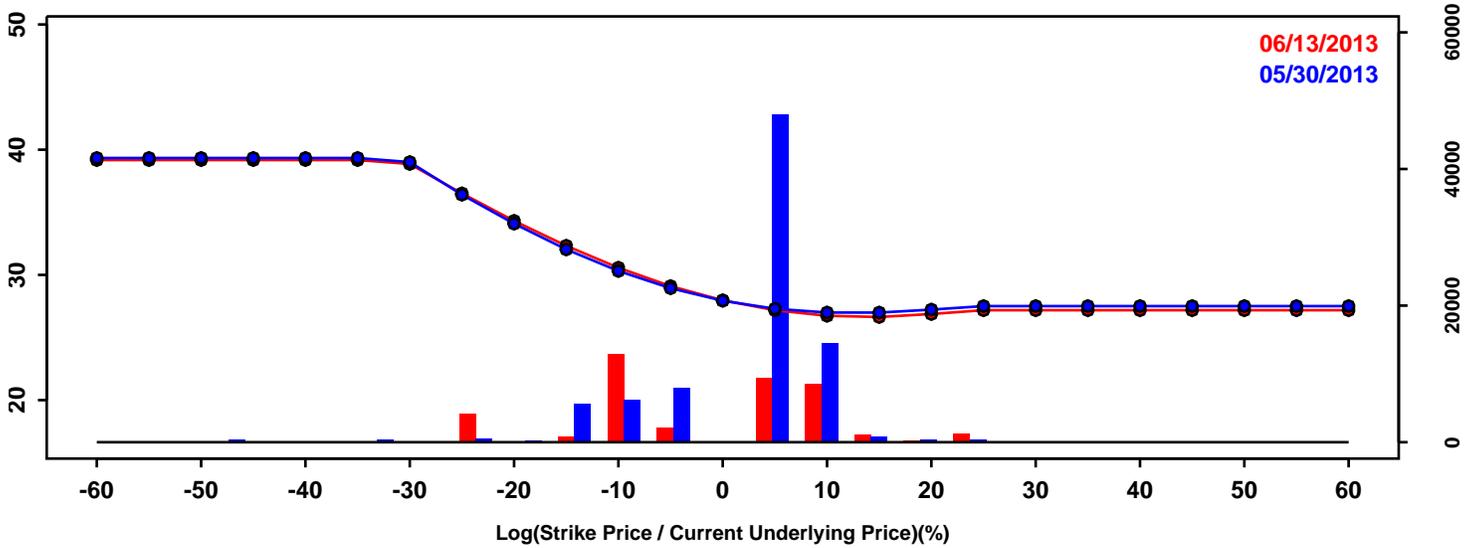


Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-13.37%	-16.62%	-3.25%
50th Pct	1.14%	0.75%	-0.38%
90th Pct	12.81%	12.82%	0.00%
Mean	0.25%	-0.79%	-1.04%
Std Dev	10.75%	12.13%	1.39%
Skew	-0.63	-0.78	-0.16
Kurtosis	1.15	1.28	0.14

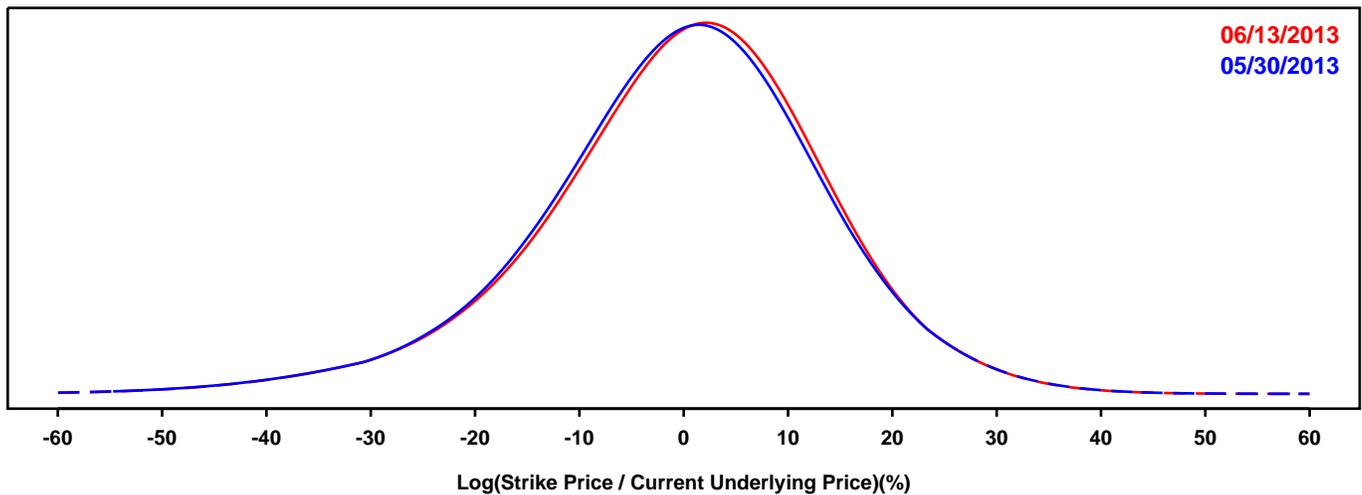
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- BANK OF AMERICA

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

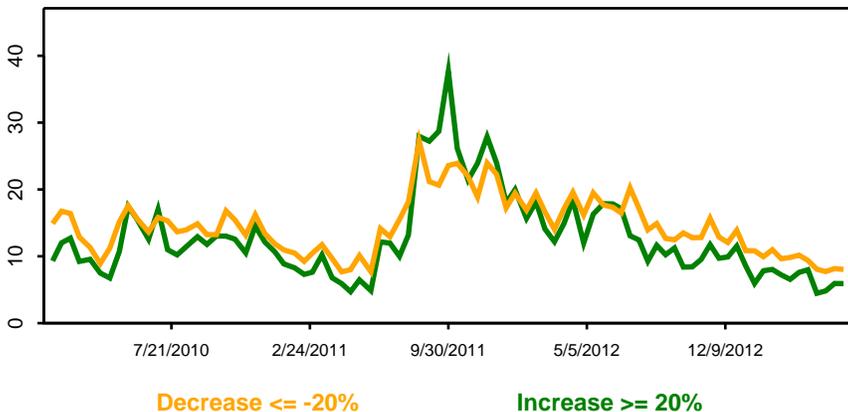
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

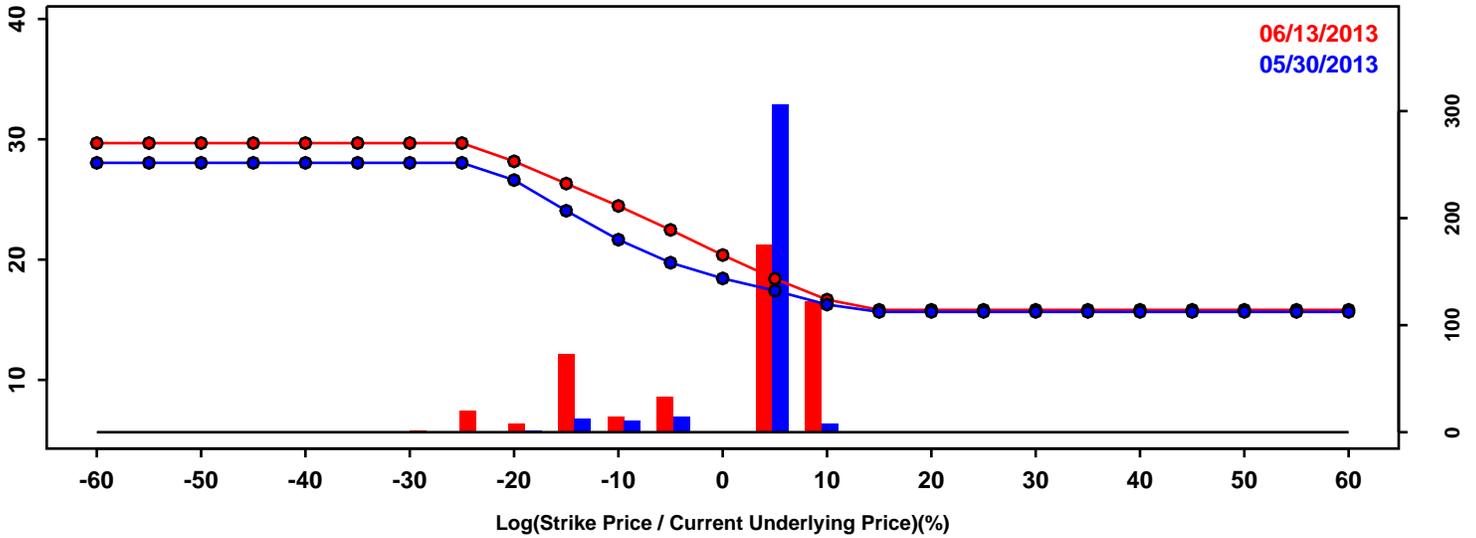


Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-18.01%	-17.83%	0.18%
50th Pct	0.39%	0.85%	0.46%
90th Pct	16.31%	16.42%	0.11%
Mean	-0.40%	-0.09%	0.32%
Std Dev	14.07%	14.03%	-0.04%
Skew	-0.44	-0.48	-0.04
Kurtosis	0.96	0.97	0.01

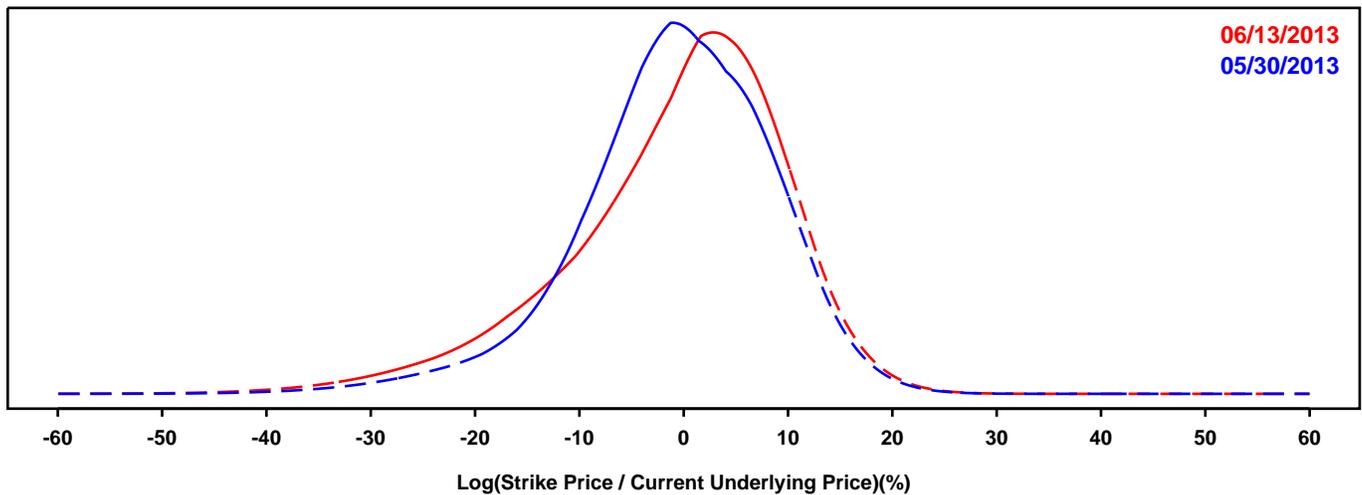
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- BB&T

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

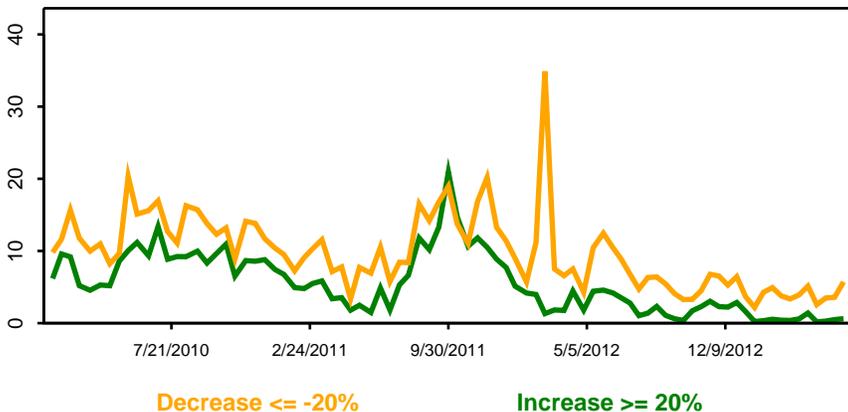
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

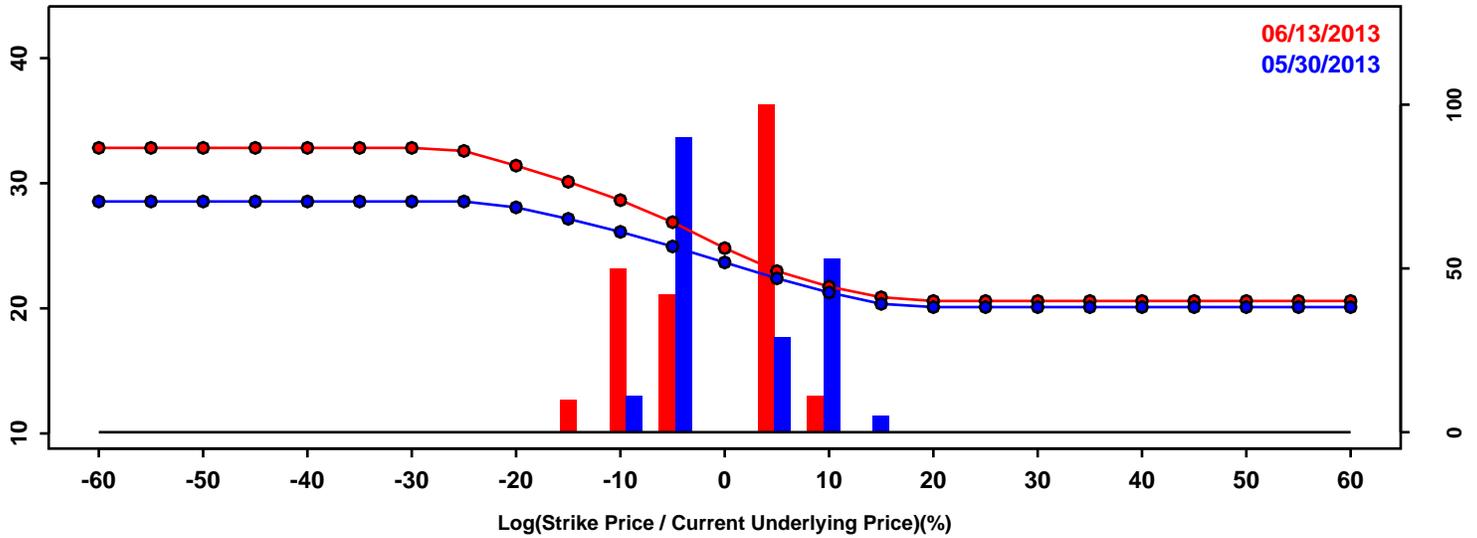


Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-12.42%	-15.26%	-2.84%
50th Pct	-0.20%	0.94%	1.14%
90th Pct	10.41%	11.08%	0.67%
Mean	-0.78%	-0.76%	0.02%
Std Dev	9.42%	10.67%	1.25%
Skew	-0.65	-0.86	-0.20
Kurtosis	1.22	1.09	-0.13

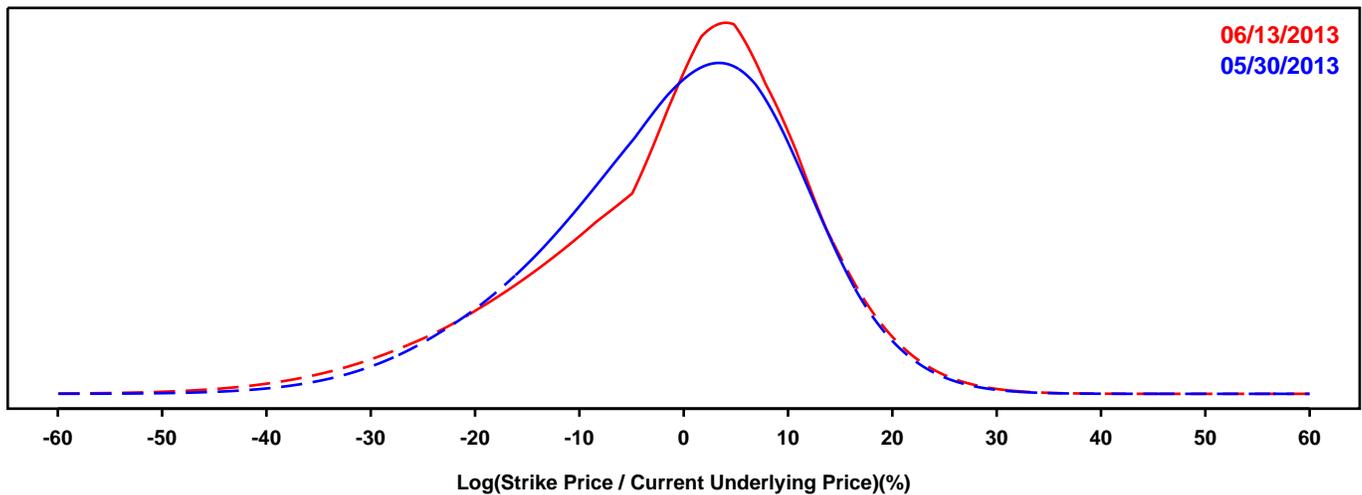
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- BANK OF NEW YORK MELLON

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

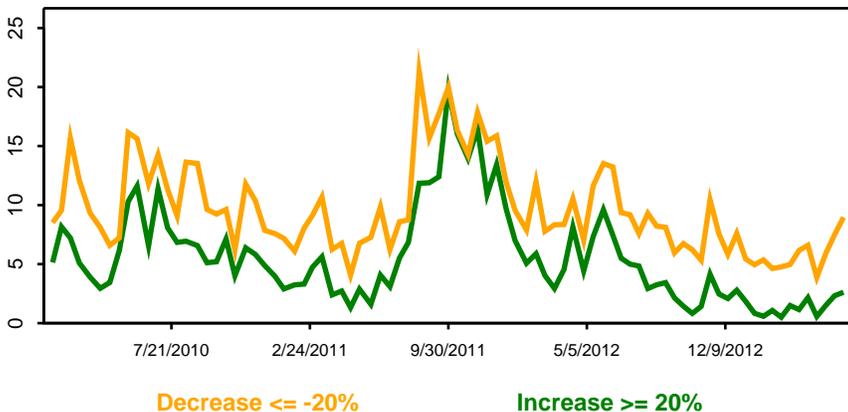
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

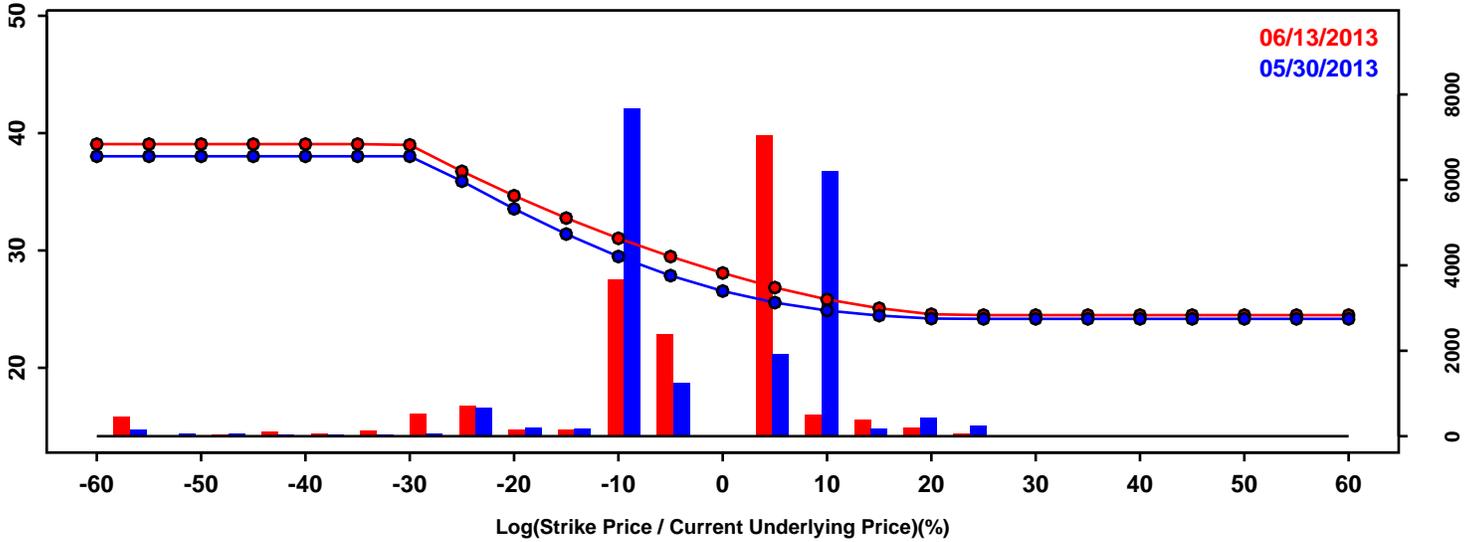


Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-17.56%	-18.89%	-1.34%
50th Pct	0.32%	1.28%	0.96%
90th Pct	13.27%	13.57%	0.30%
Mean	-1.01%	-0.86%	0.15%
Std Dev	12.13%	12.92%	0.79%
Skew	-0.50	-0.73	-0.23
Kurtosis	0.29	0.71	0.42

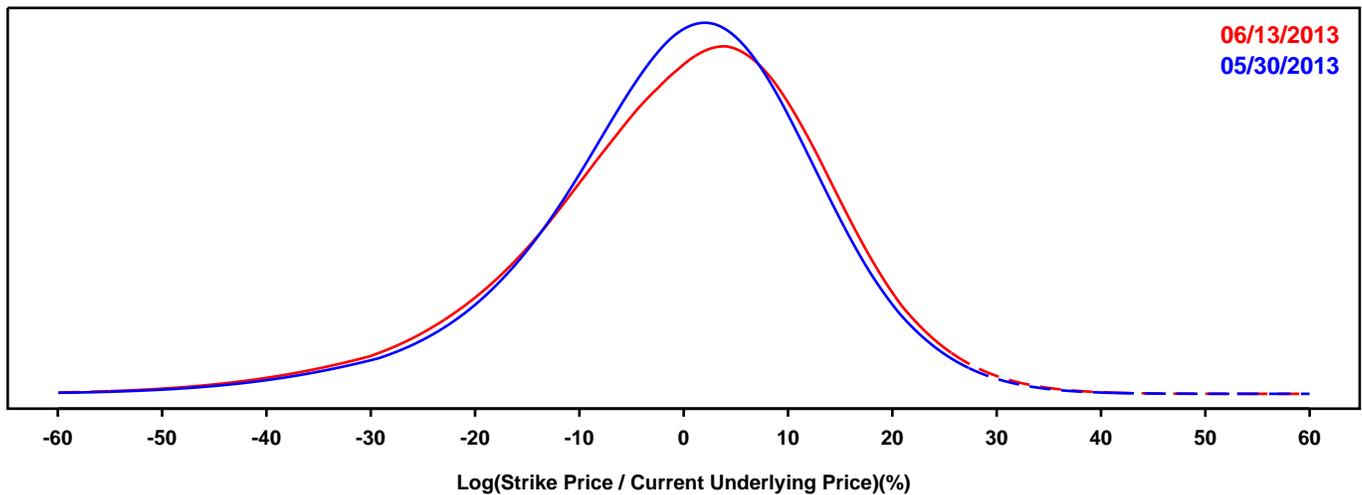
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CITIGROUP

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

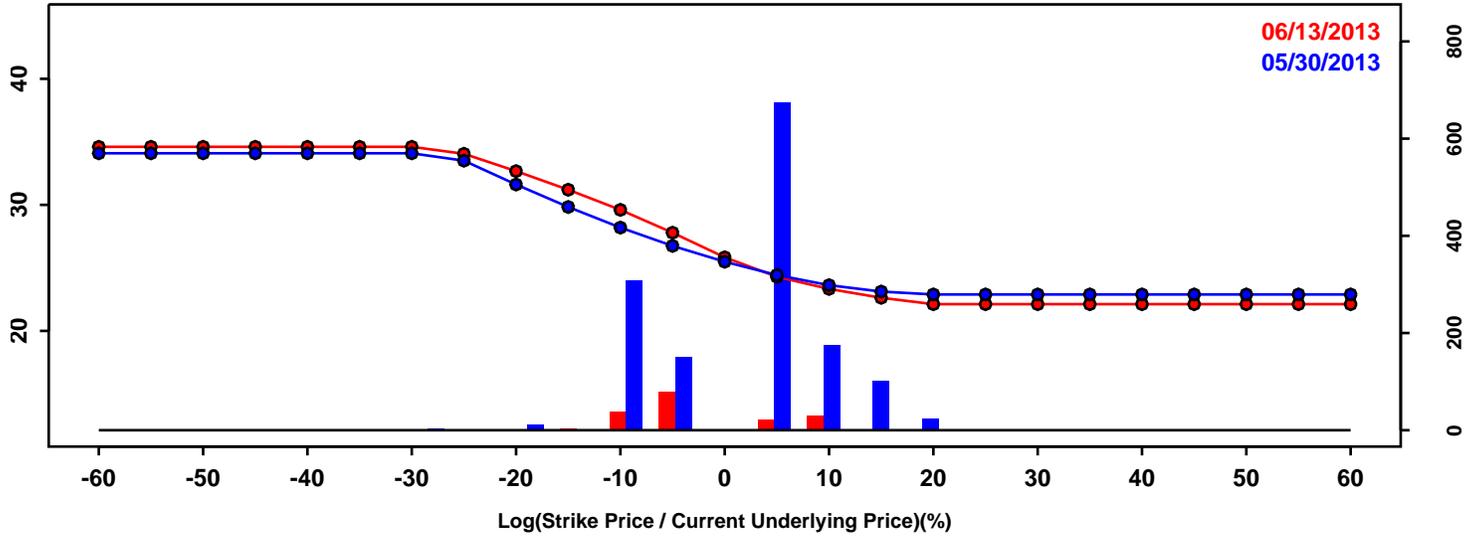


Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-17.90%	-19.16%	-1.25%
50th Pct	0.48%	0.90%	0.41%
90th Pct	15.20%	16.07%	0.87%
Mean	-0.64%	-0.54%	0.10%
Std Dev	13.55%	14.30%	0.75%
Skew	-0.59	-0.61	-0.02
Kurtosis	1.04	0.88	-0.16

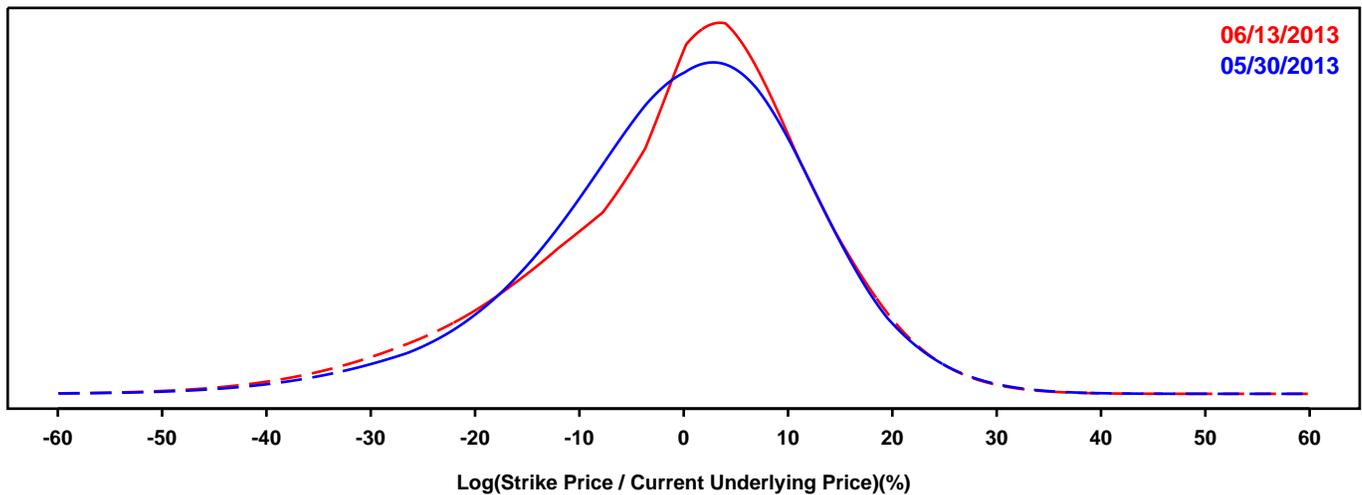
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CAPITAL ONE

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

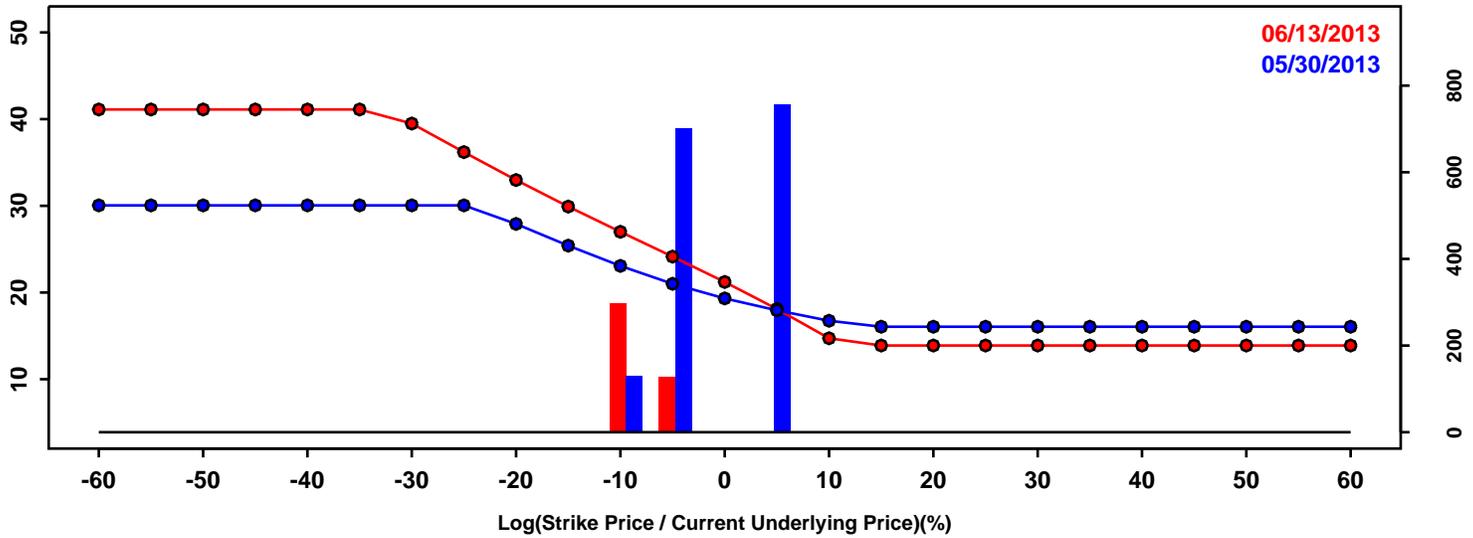


Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-17.41%	-18.95%	-1.54%
50th Pct	0.48%	1.28%	0.80%
90th Pct	14.52%	14.64%	0.13%
Mean	-0.64%	-0.61%	0.03%
Std Dev	12.93%	13.41%	0.49%
Skew	-0.54	-0.69	-0.15
Kurtosis	0.75	0.80	0.05

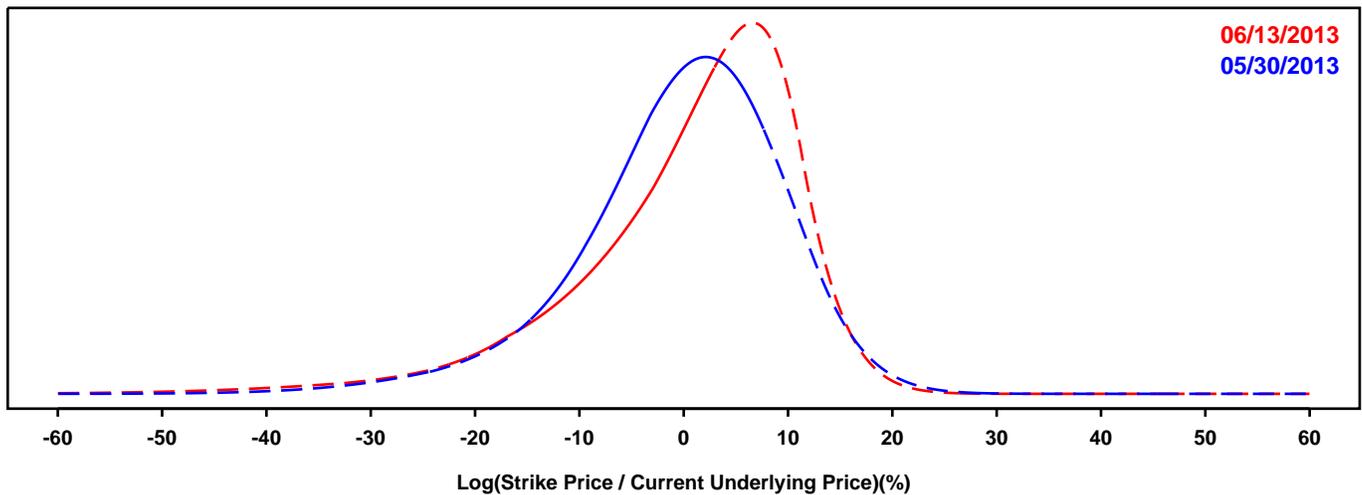
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- FIFTH THIRD

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

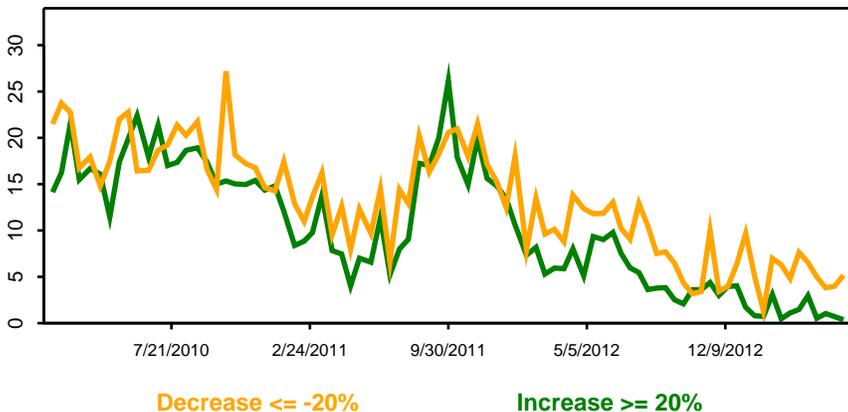
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

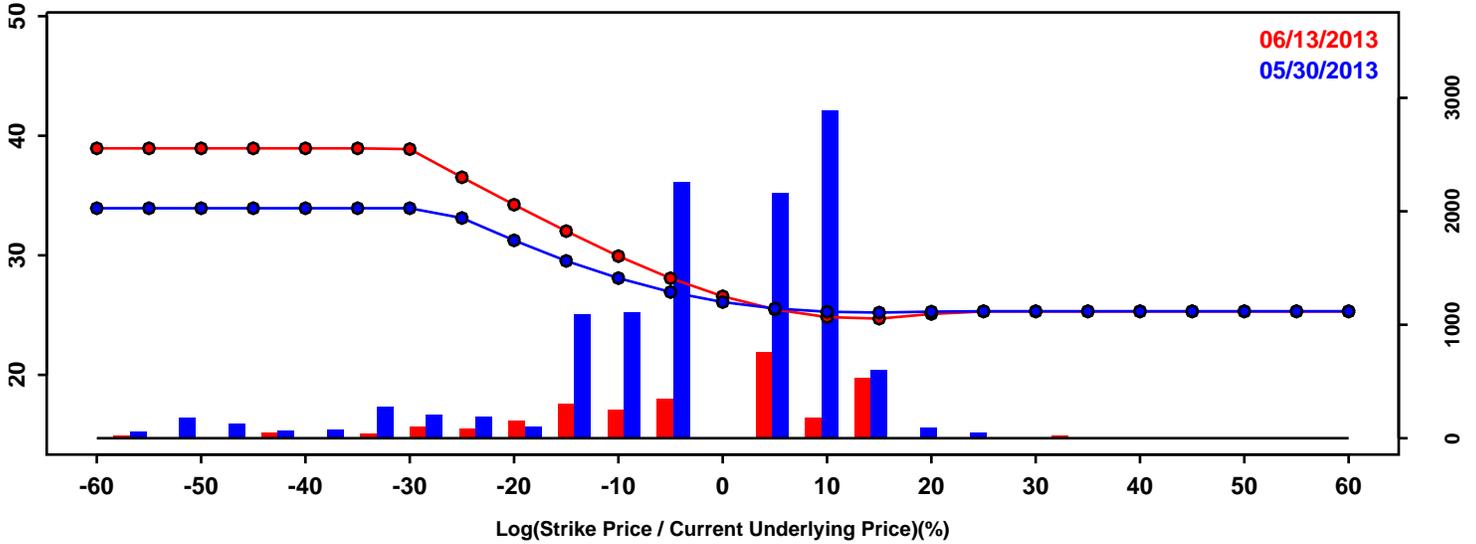


Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-12.82%	-13.83%	-1.00%
50th Pct	0.72%	2.78%	2.06%
90th Pct	11.11%	11.52%	0.40%
Mean	-0.25%	0.47%	0.72%
Std Dev	9.88%	10.96%	1.07%
Skew	-0.77	-1.39	-0.62
Kurtosis	1.38	3.16	1.78

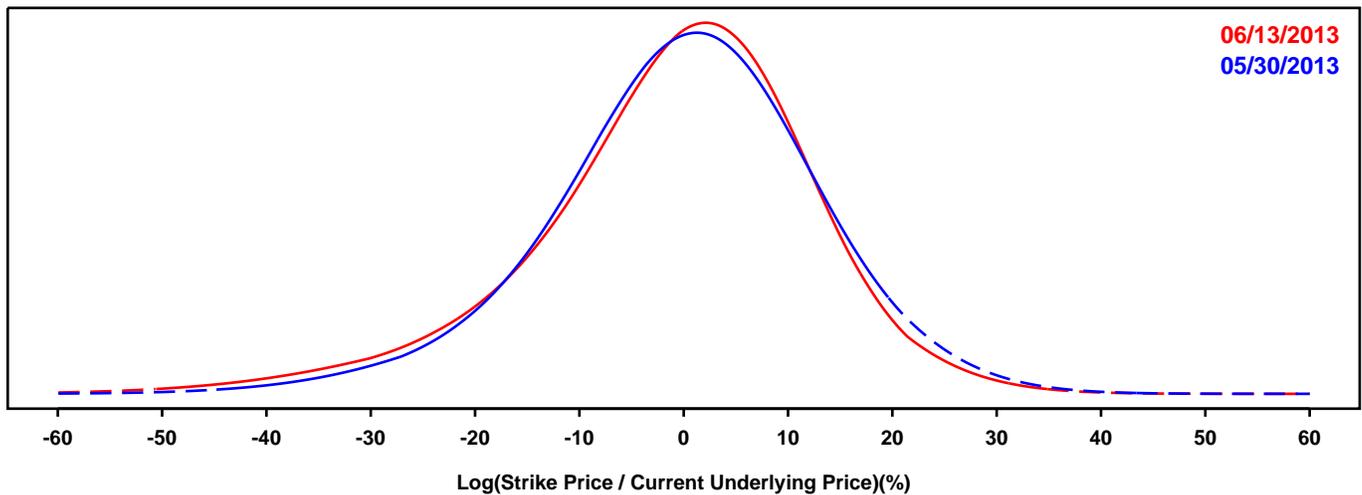
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- GOLDMAN SACHS

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

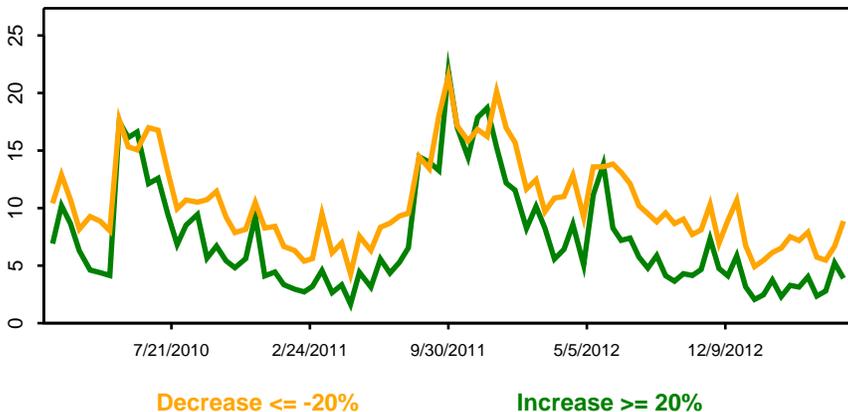
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

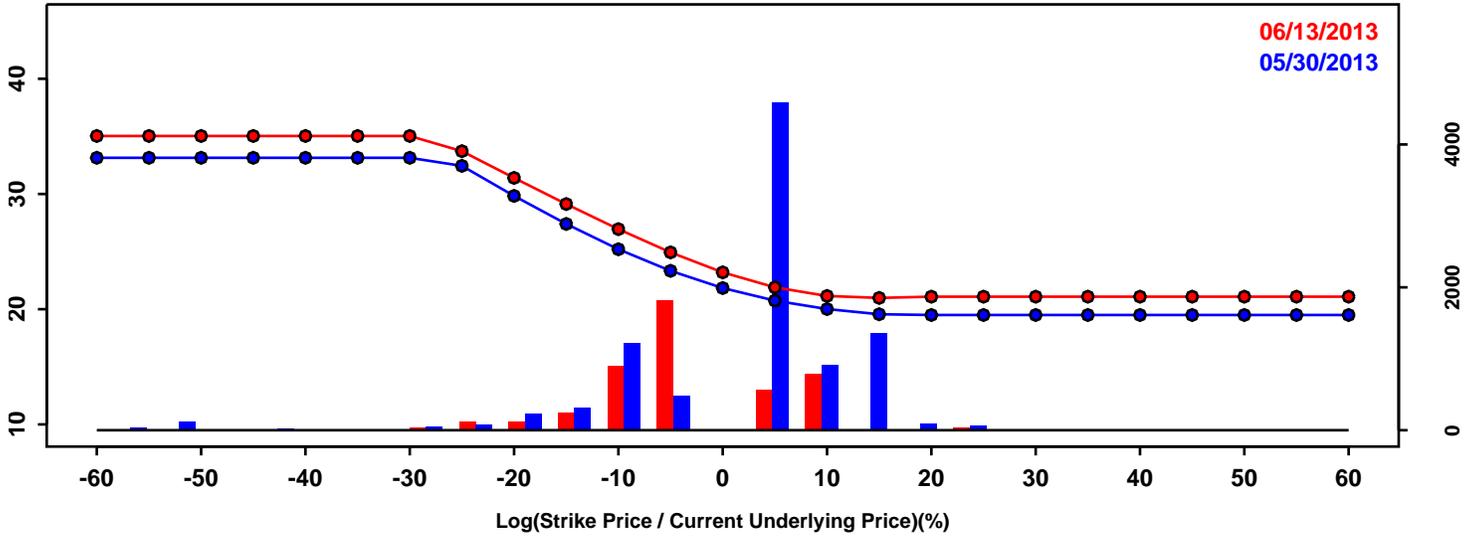


Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-16.45%	-18.67%	-2.21%
50th Pct	0.54%	0.27%	-0.28%
90th Pct	15.78%	14.43%	-1.36%
Mean	-0.02%	-1.14%	-1.12%
Std Dev	13.02%	13.69%	0.67%
Skew	-0.34	-0.68	-0.34
Kurtosis	0.66	1.26	0.60

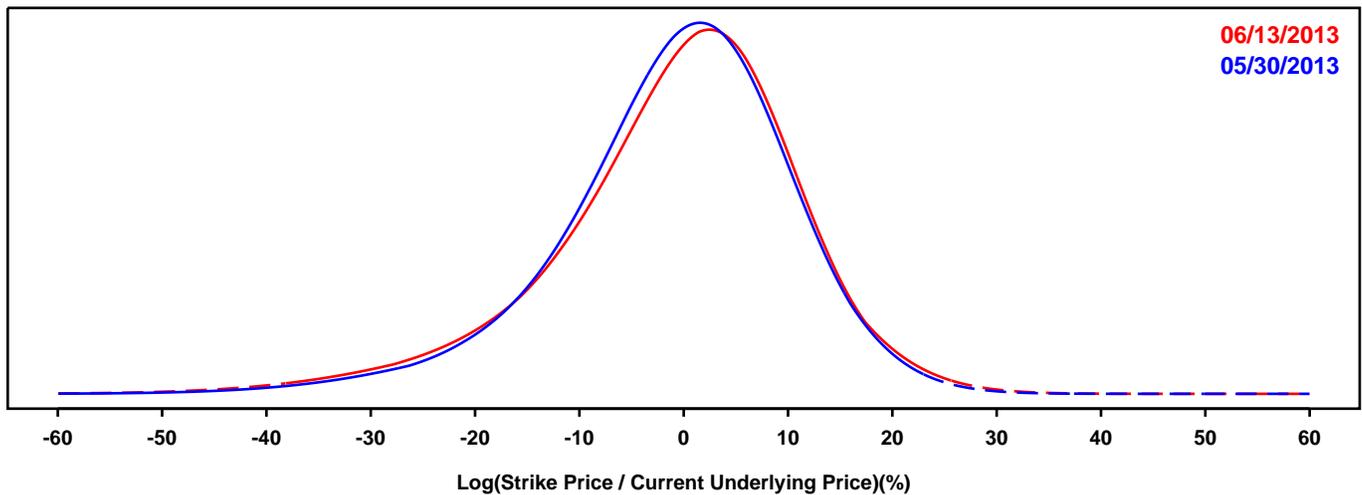
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- JP MORGAN

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

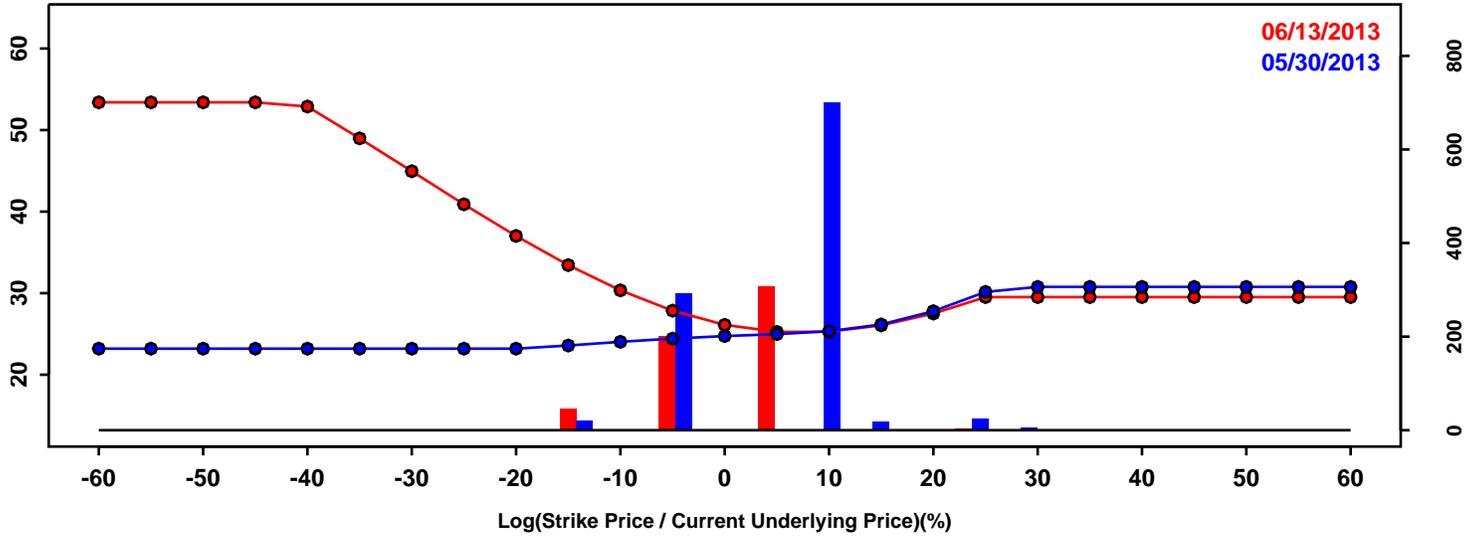


Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-15.05%	-16.22%	-1.17%
50th Pct	0.16%	0.56%	0.39%
90th Pct	12.12%	12.60%	0.48%
Mean	-0.85%	-0.81%	0.03%
Std Dev	11.20%	11.95%	0.75%
Skew	-0.68	-0.77	-0.08
Kurtosis	1.28	1.38	0.11

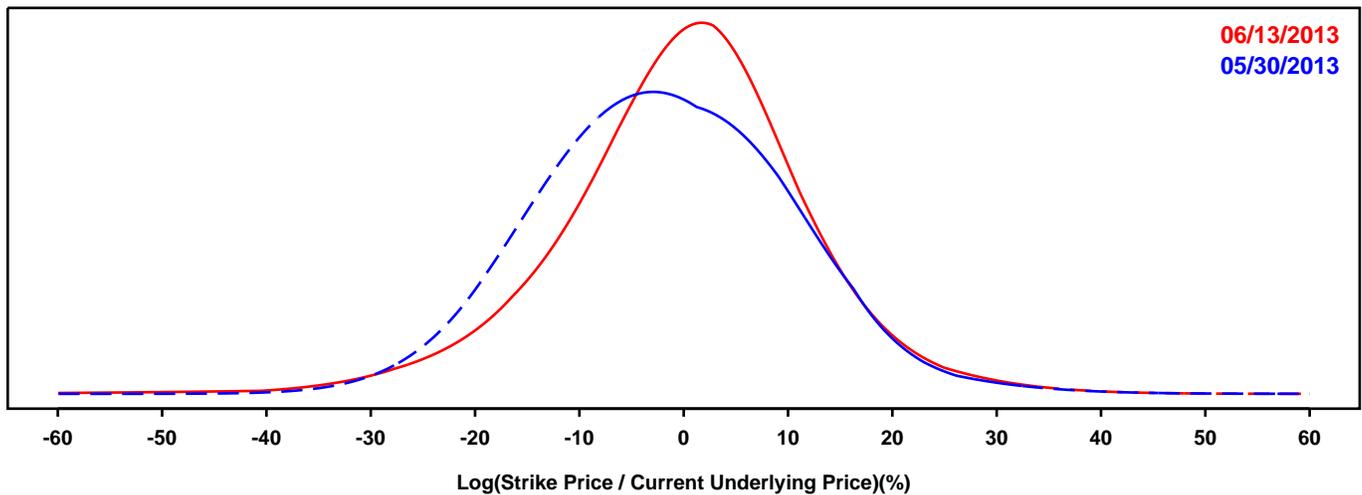
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- KEYCORP

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

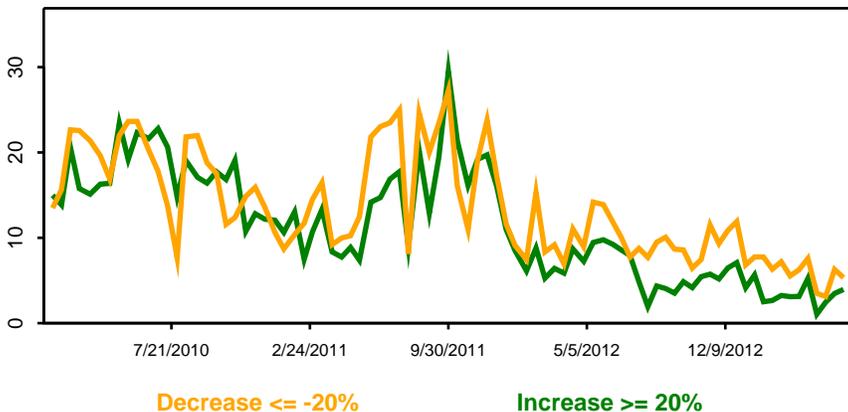
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

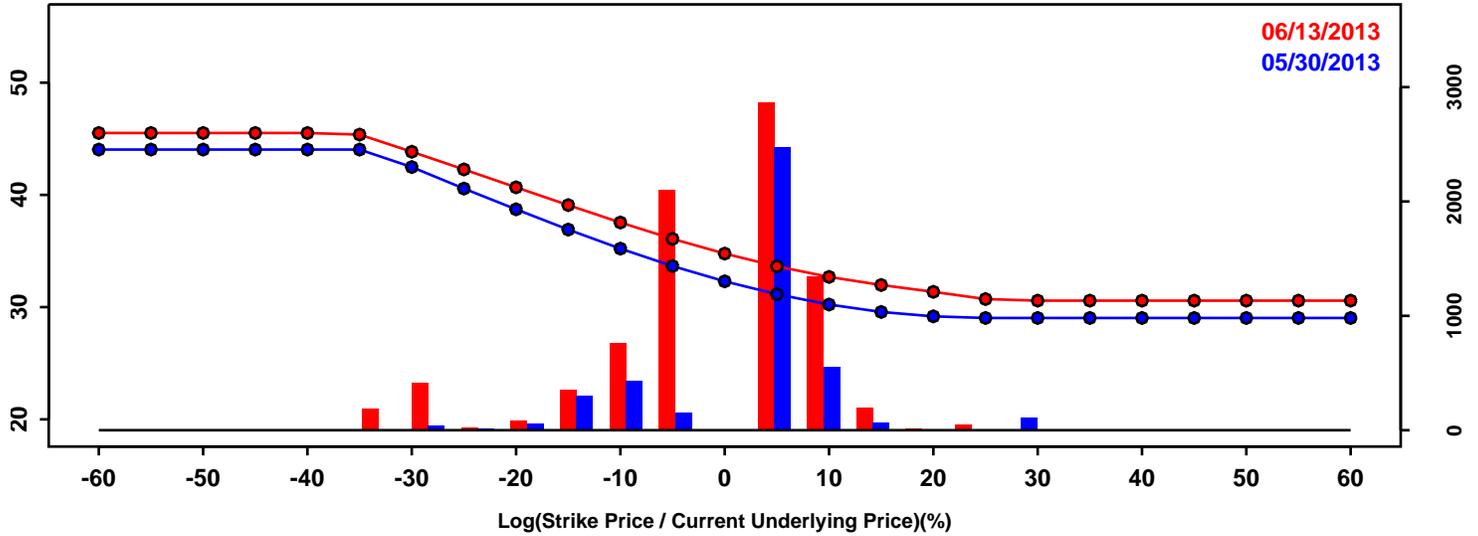


Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-17.17%	-14.91%	2.26%
50th Pct	-1.95%	0.51%	2.47%
90th Pct	13.62%	13.98%	0.36%
Mean	-1.75%	-0.05%	1.69%
Std Dev	12.15%	12.16%	0.01%
Skew	0.12	-0.47	-0.59
Kurtosis	0.14	2.20	2.06

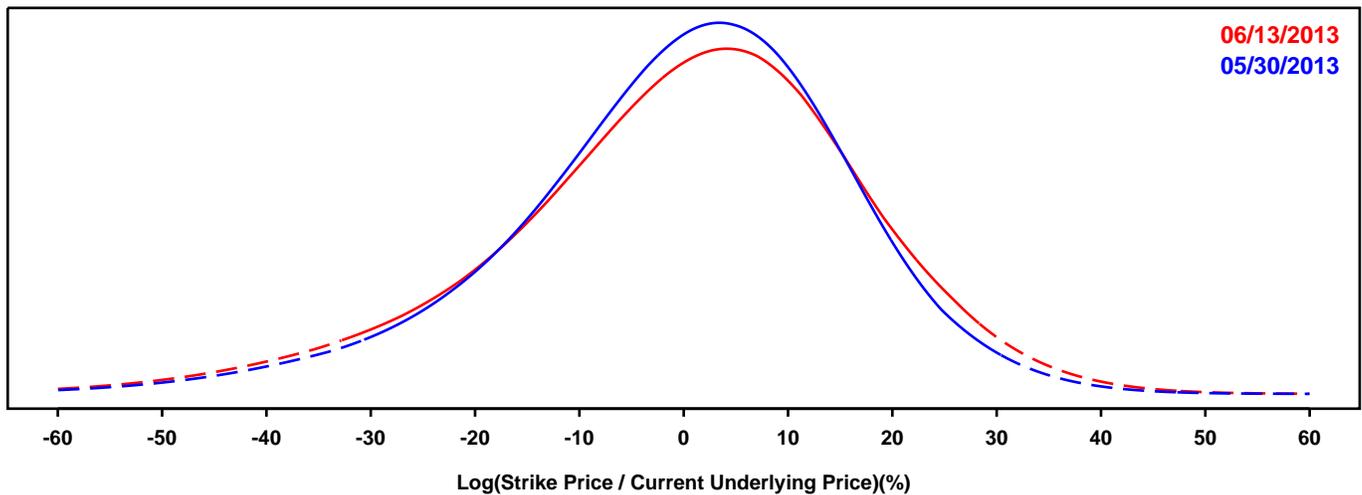
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- MORGAN STANLEY

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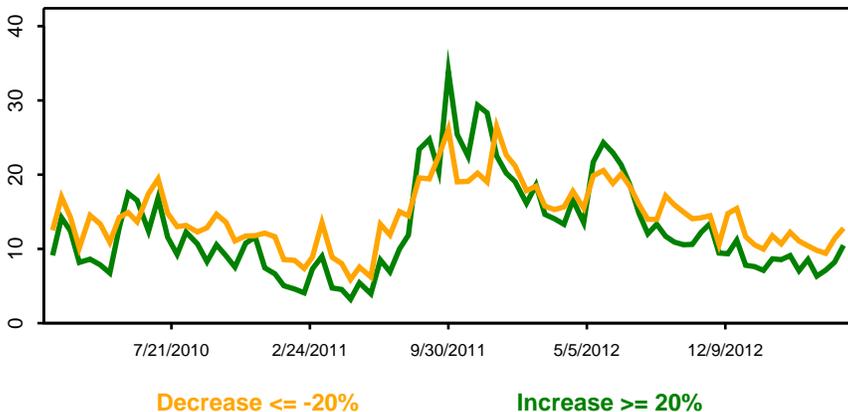
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

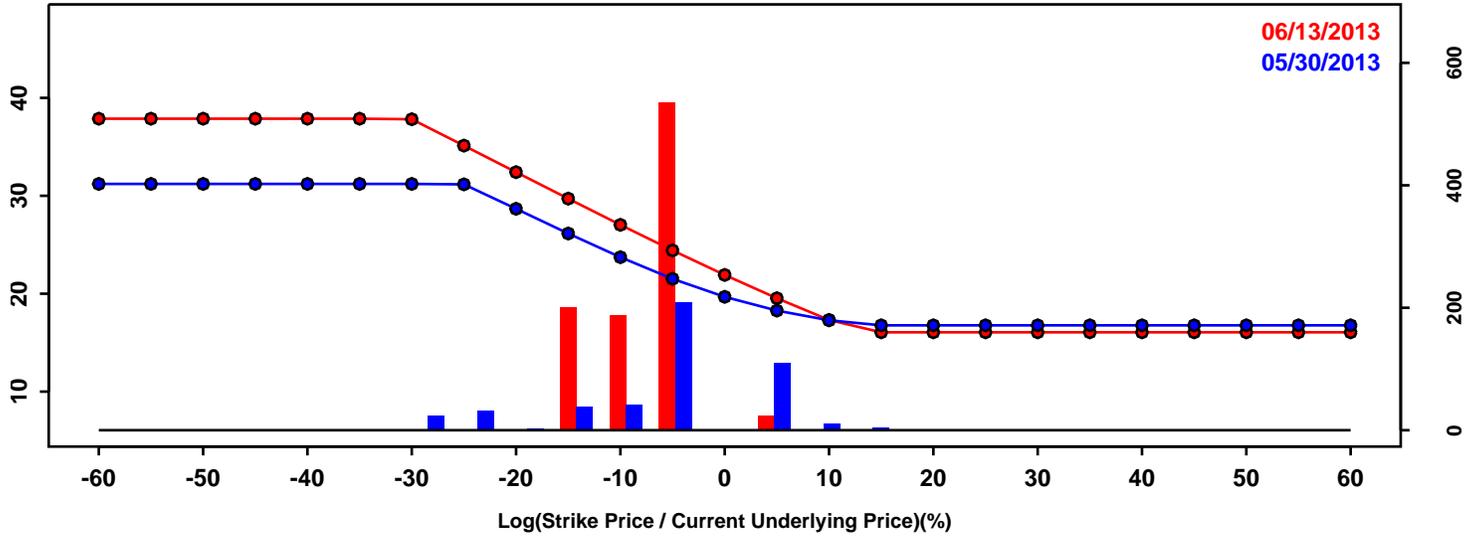


Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-21.67%	-23.38%	-1.71%
50th Pct	1.06%	1.37%	0.31%
90th Pct	18.54%	20.42%	1.88%
Mean	-0.47%	-0.27%	0.20%
Std Dev	16.34%	17.59%	1.25%
Skew	-0.59	-0.55	0.04
Kurtosis	0.88	0.70	-0.18

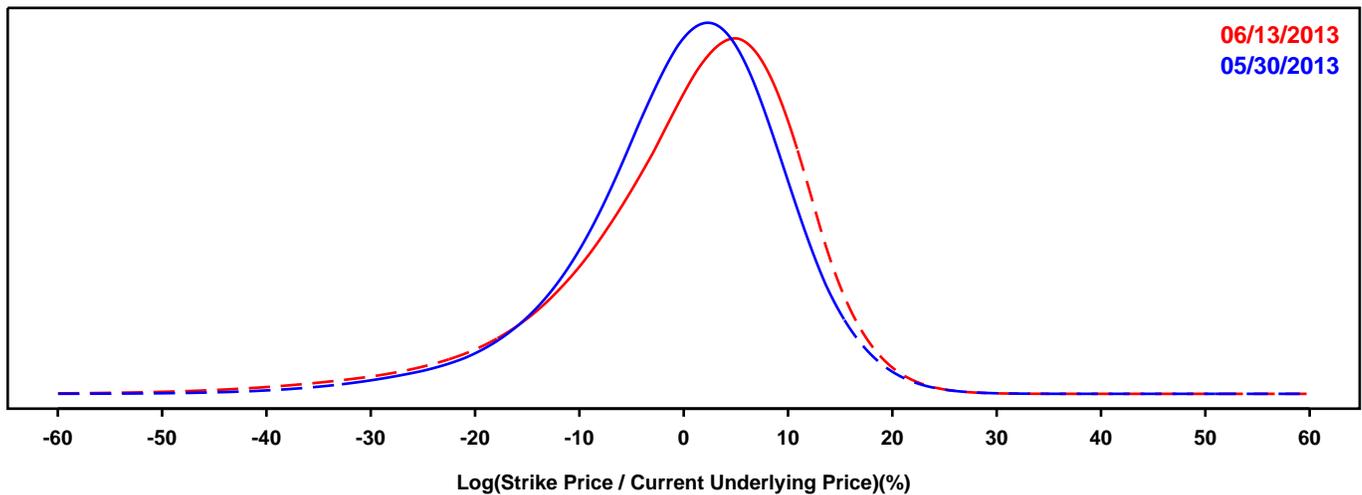
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- PNC FINANCIAL

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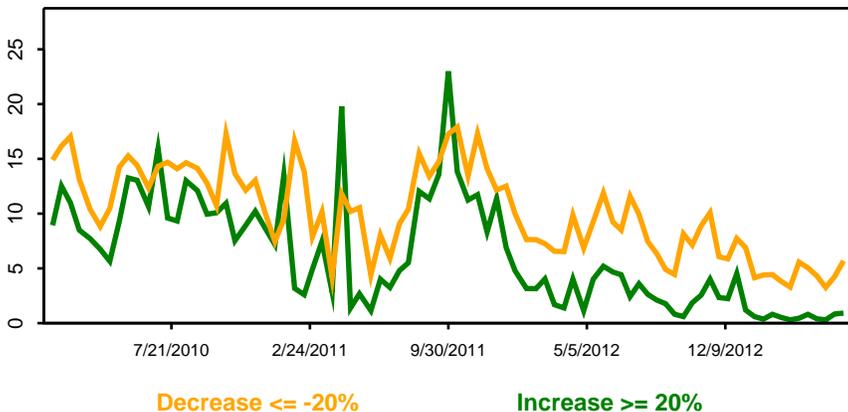
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

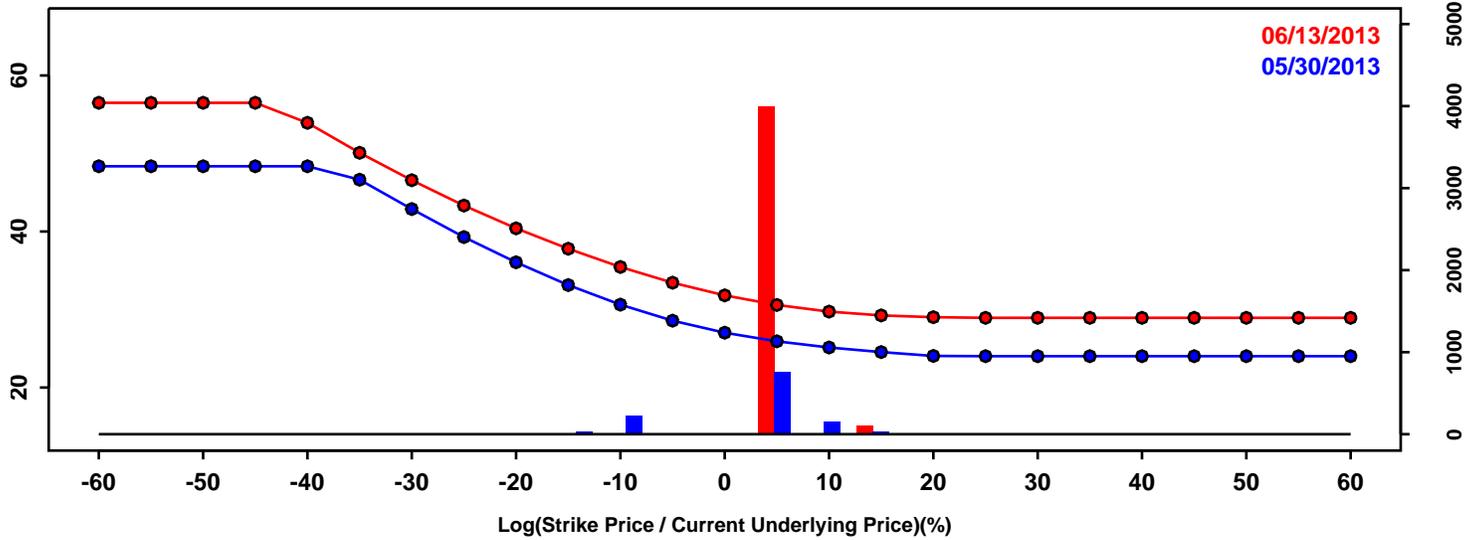


Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-13.04%	-14.36%	-1.32%
50th Pct	0.82%	2.05%	1.23%
90th Pct	11.07%	12.19%	1.12%
Mean	-0.29%	0.17%	0.46%
Std Dev	10.05%	11.29%	1.24%
Skew	-0.82	-1.15	-0.33
Kurtosis	1.60	2.31	0.71

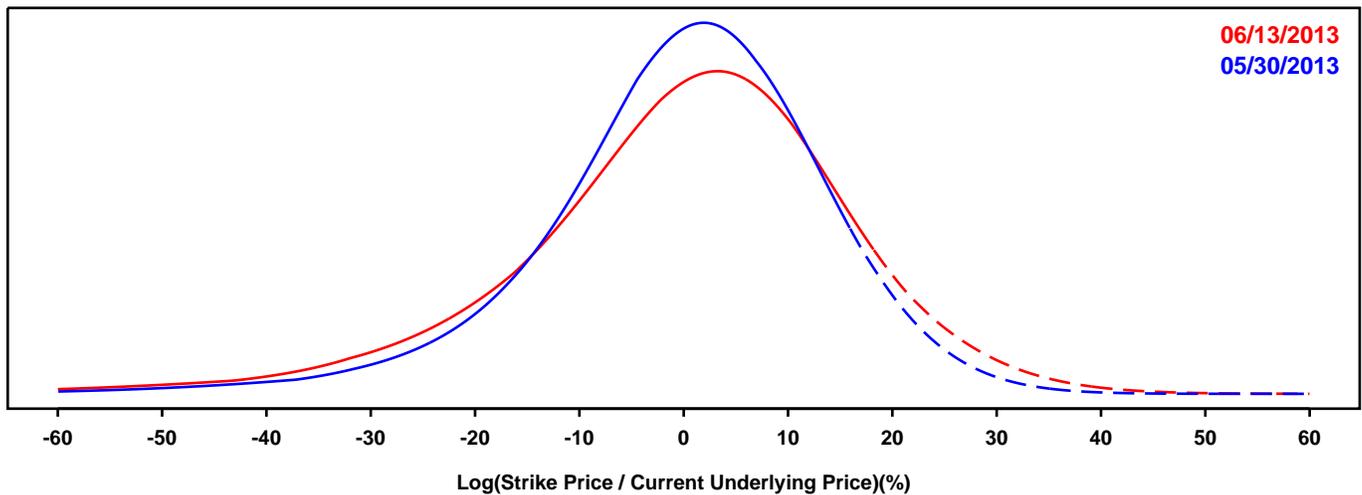
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- REGIONS FINANCIAL

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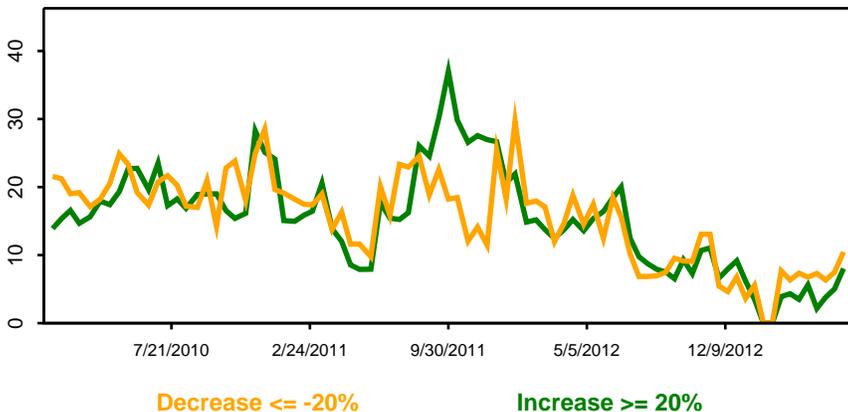
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

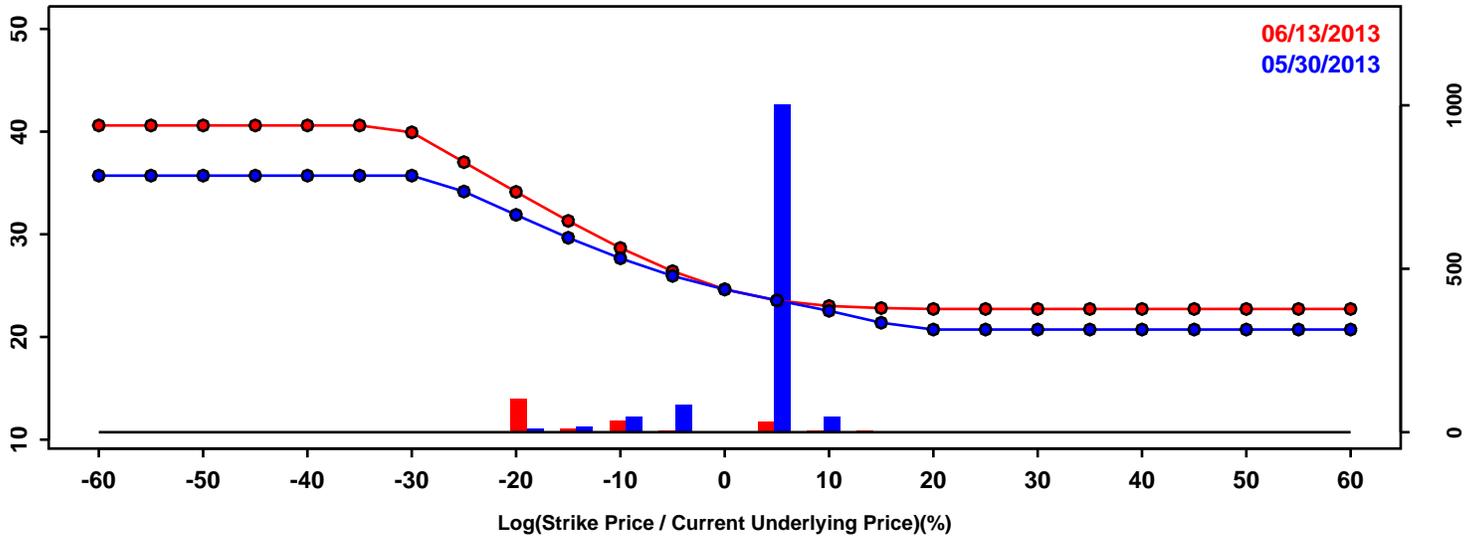


Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-17.04%	-20.57%	-3.53%
50th Pct	0.92%	1.32%	0.40%
90th Pct	15.81%	18.35%	2.54%
Mean	-0.15%	-0.21%	-0.06%
Std Dev	13.83%	16.38%	2.54%
Skew	-0.79	-0.82	-0.02
Kurtosis	2.00	1.99	-0.01

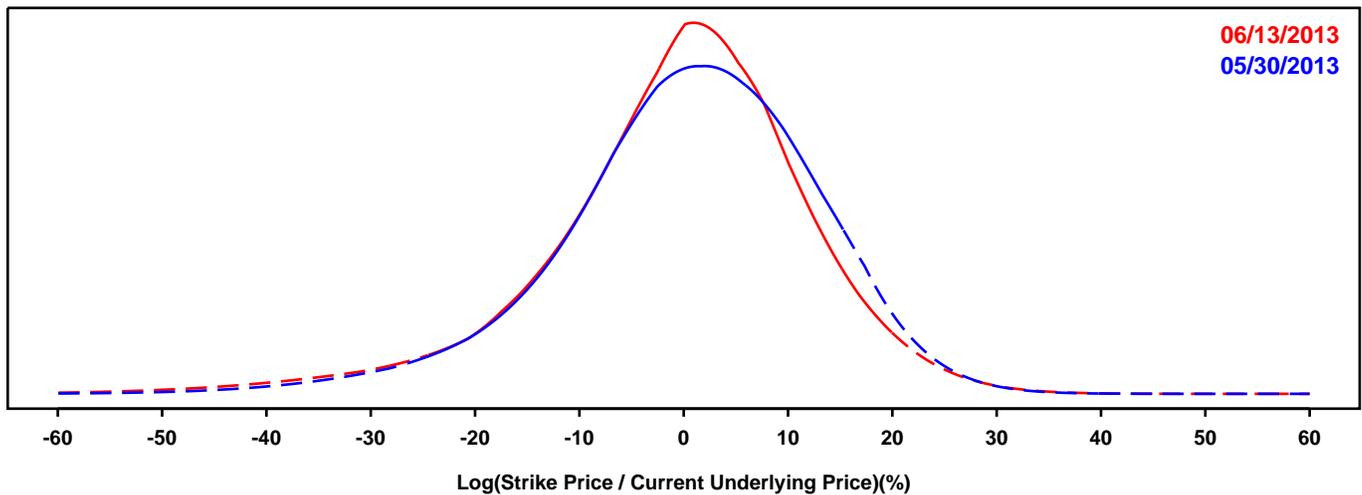
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- SUNTRUST

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

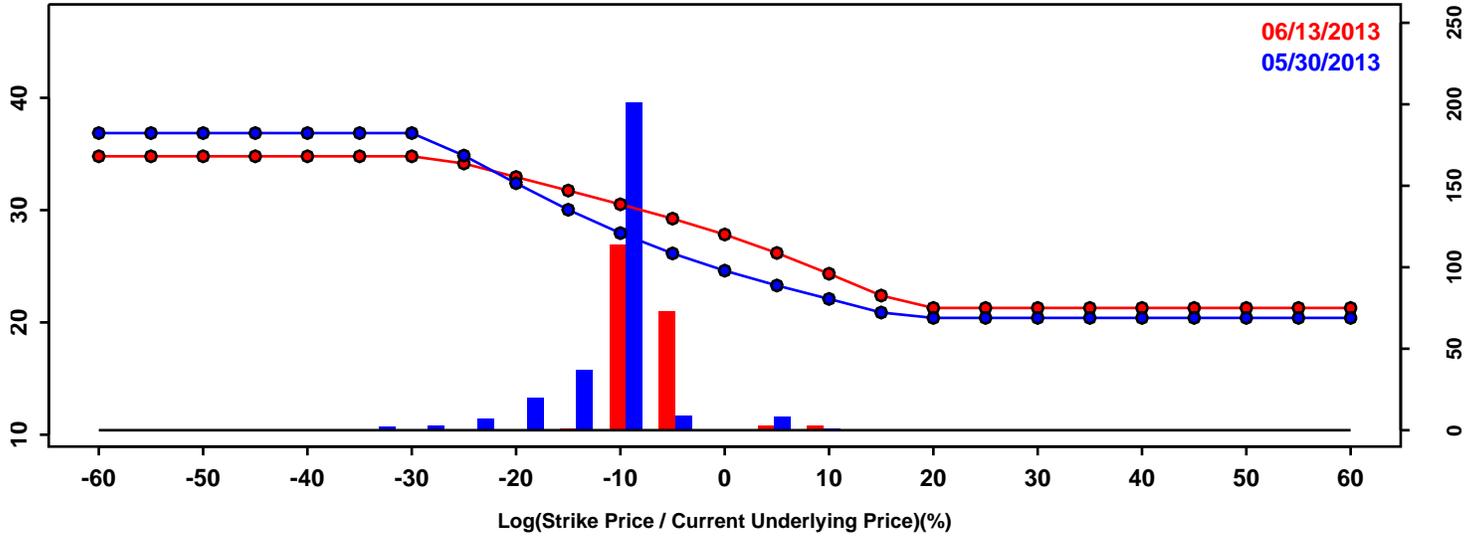


Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-15.17%	-16.25%	-1.08%
50th Pct	1.26%	0.53%	-0.73%
90th Pct	15.19%	13.72%	-1.47%
Mean	0.44%	-0.69%	-1.13%
Std Dev	12.37%	12.73%	0.36%
Skew	-0.61	-0.82	-0.22
Kurtosis	1.01	1.95	0.94

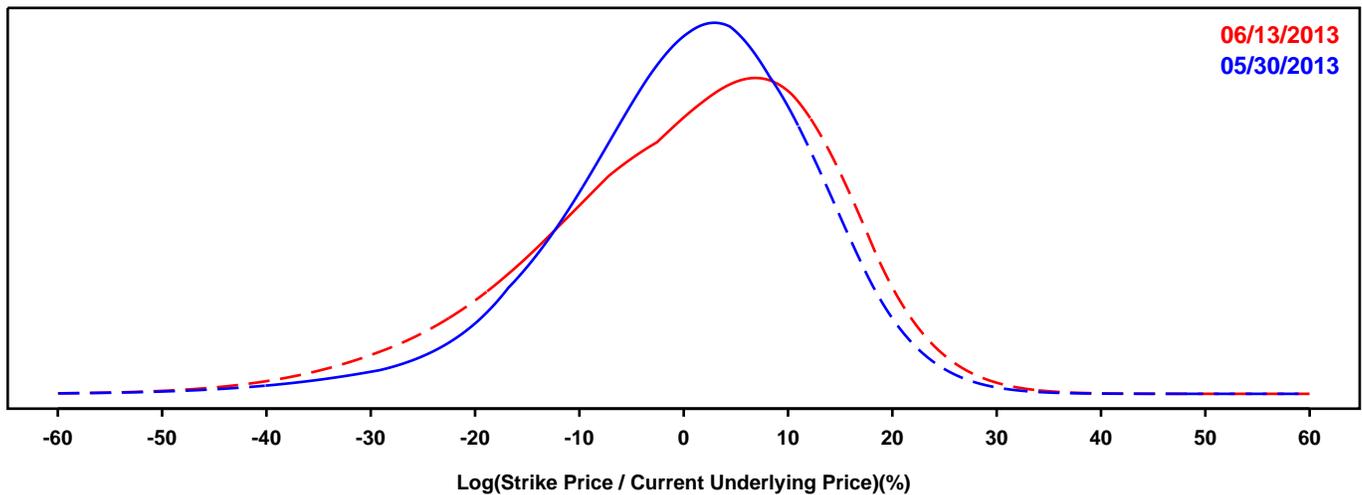
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- STATE STREET

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

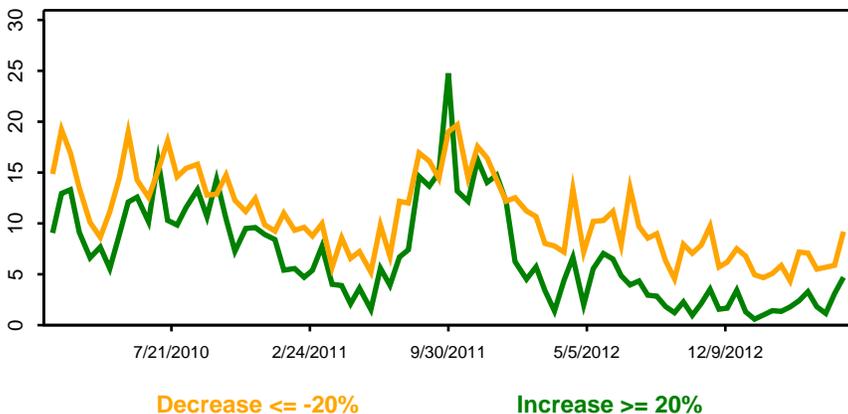
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

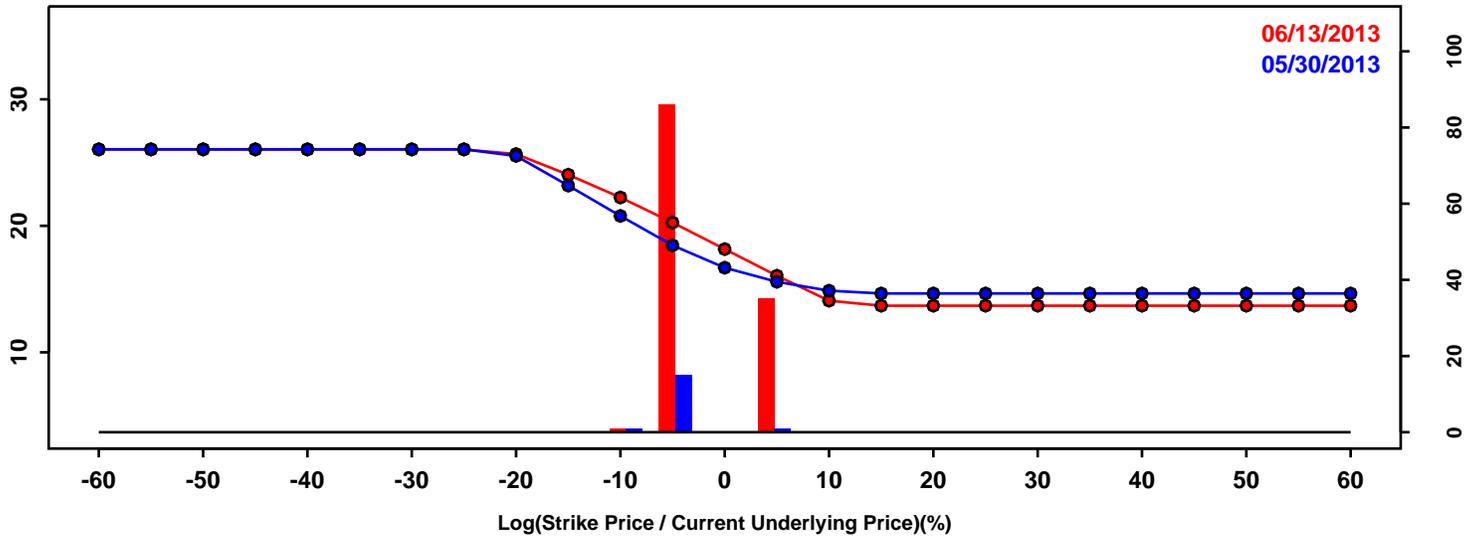


Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-15.52%	-19.13%	-3.60%
50th Pct	1.11%	1.79%	0.68%
90th Pct	14.42%	16.28%	1.86%
Mean	0.06%	-0.02%	-0.08%
Std Dev	12.24%	14.07%	1.83%
Skew	-0.66	-0.61	0.04
Kurtosis	1.14	0.38	-0.75

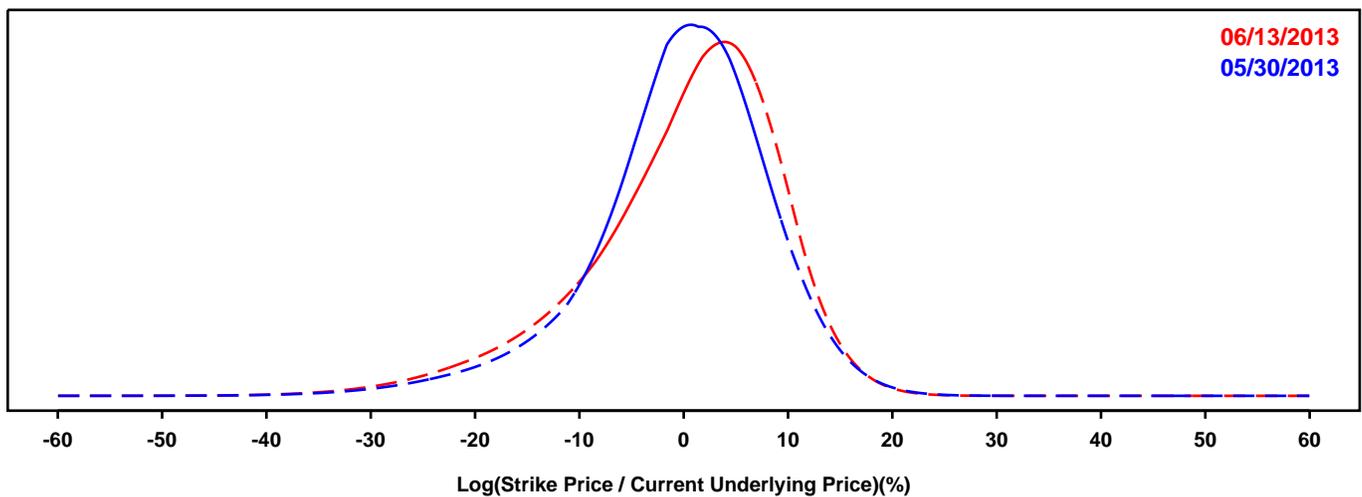
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- US BANCORP

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

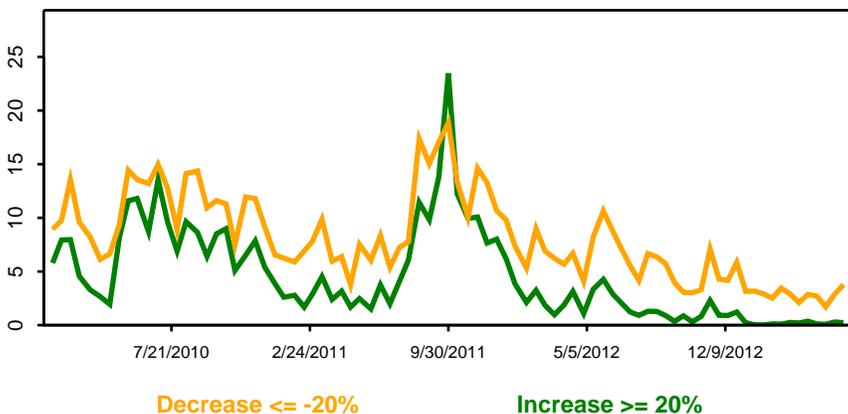
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

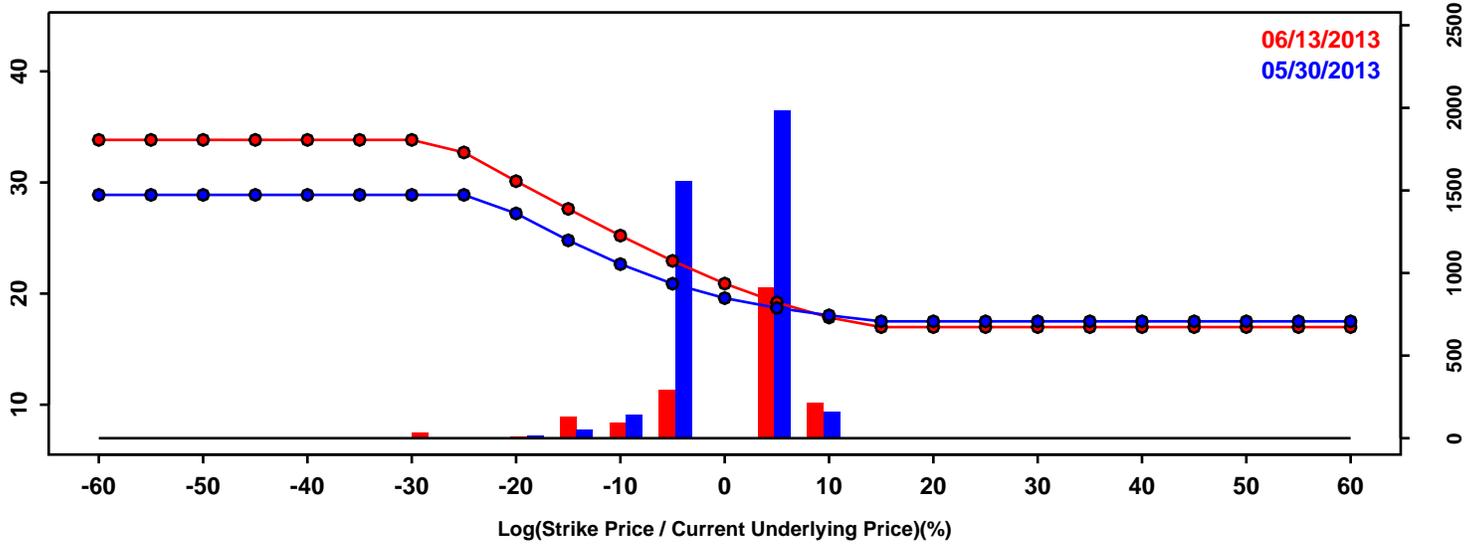


Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-11.04%	-12.76%	-1.72%
50th Pct	0.48%	1.48%	0.99%
90th Pct	9.49%	10.21%	0.72%
Mean	-0.30%	-0.05%	0.25%
Std Dev	8.57%	9.33%	0.76%
Skew	-0.78	-0.89	-0.11
Kurtosis	1.56	1.14	-0.42

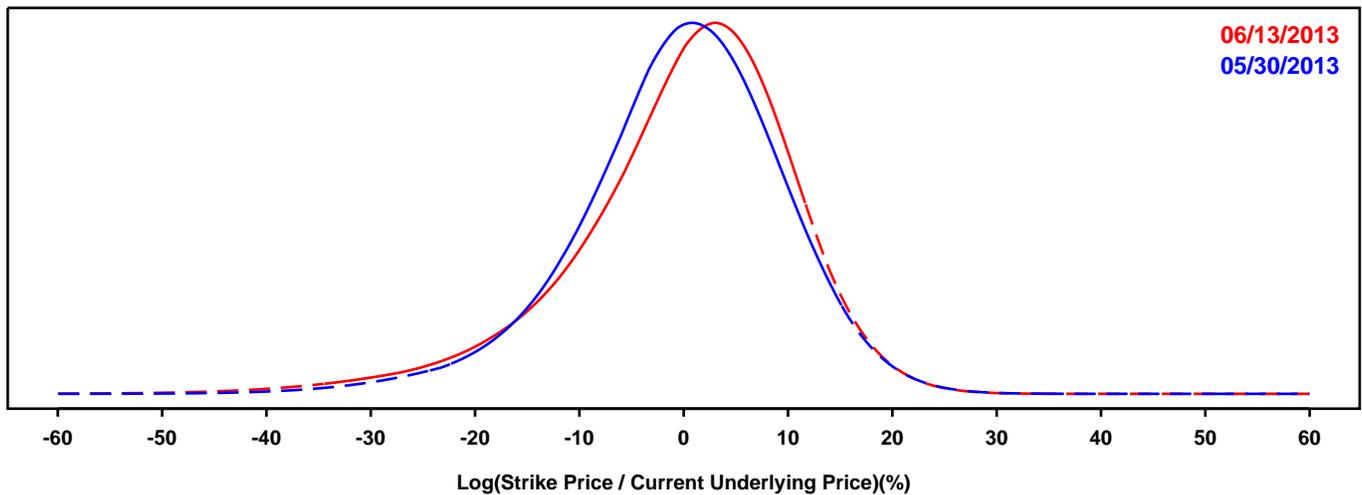
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- WELLS FARGO

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

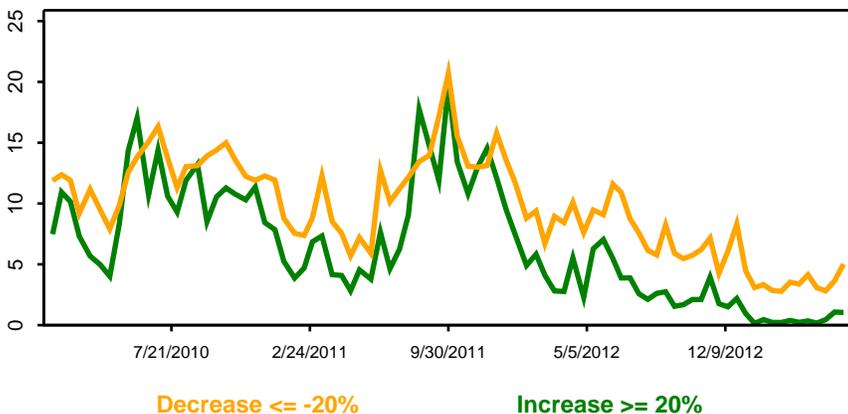
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

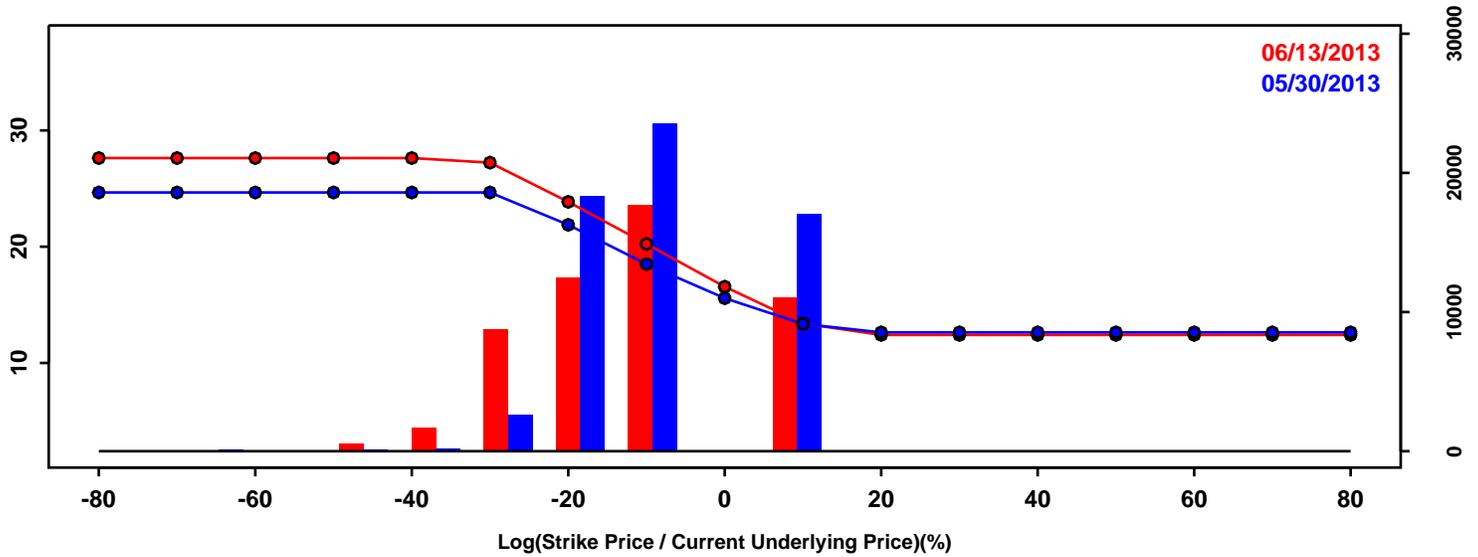


Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-12.82%	-13.94%	-1.12%
50th Pct	0.29%	1.27%	0.98%
90th Pct	11.38%	11.81%	0.43%
Mean	-0.37%	-0.13%	0.24%
Std Dev	9.89%	10.72%	0.82%
Skew	-0.56	-0.91	-0.35
Kurtosis	1.05	1.70	0.65

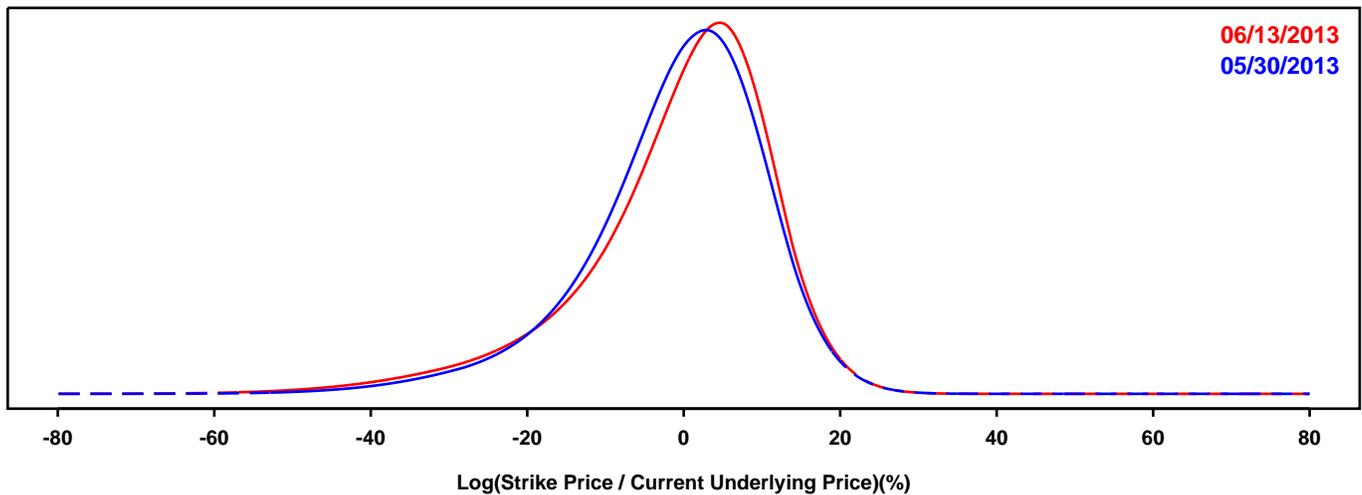
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- S&P 500

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

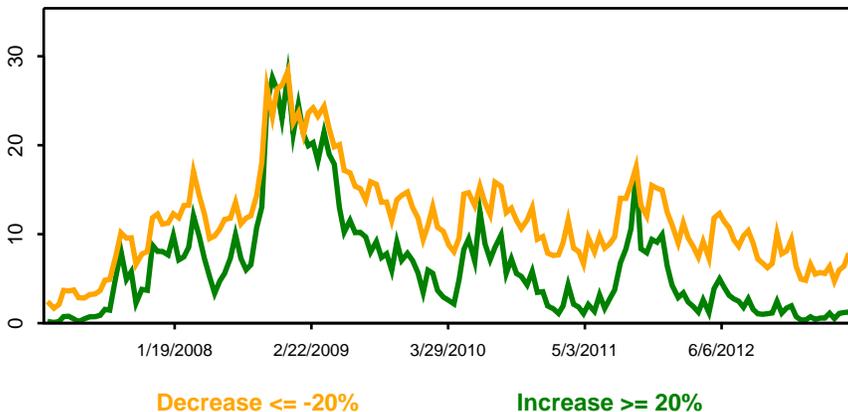
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

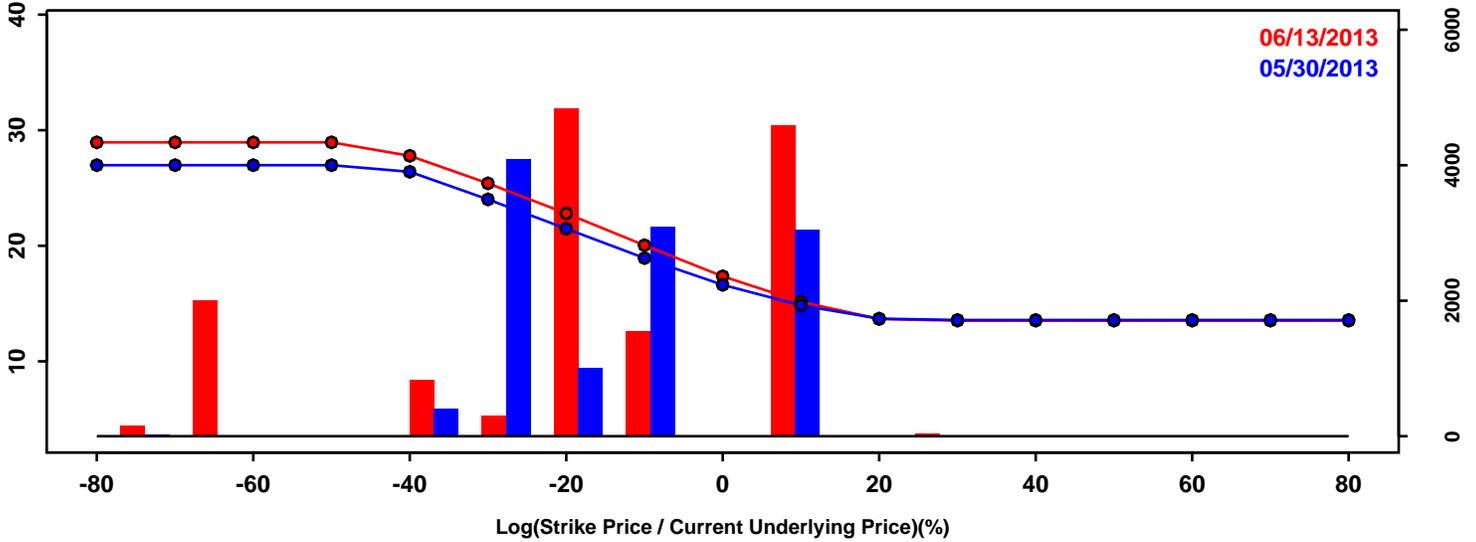


Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-15.71%	-17.18%	-1.47%
50th Pct	0.51%	1.39%	0.88%
90th Pct	11.84%	12.32%	0.48%
Mean	-0.95%	-0.81%	0.15%
Std Dev	11.47%	12.44%	0.97%
Skew	-0.89	-1.15	-0.25
Kurtosis	1.57	2.09	0.52

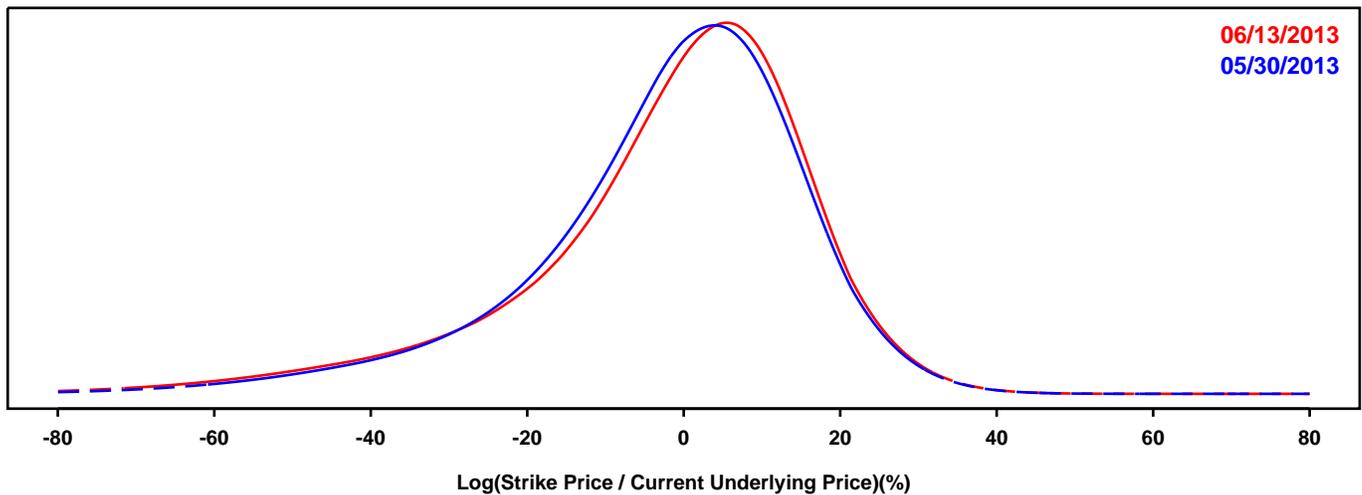
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- S&P 500

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

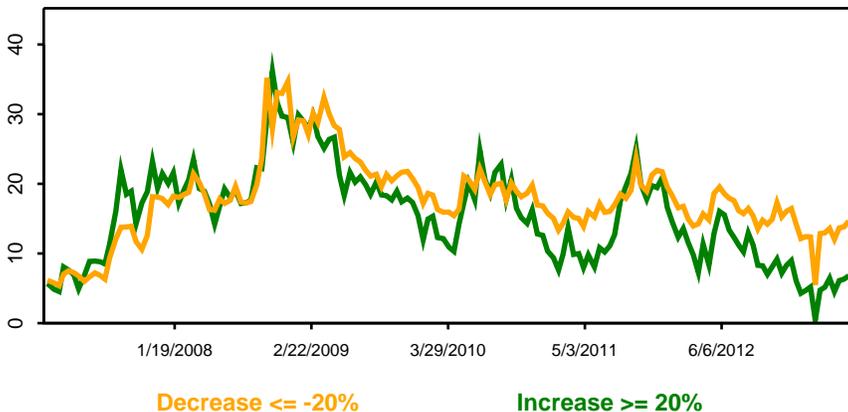
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

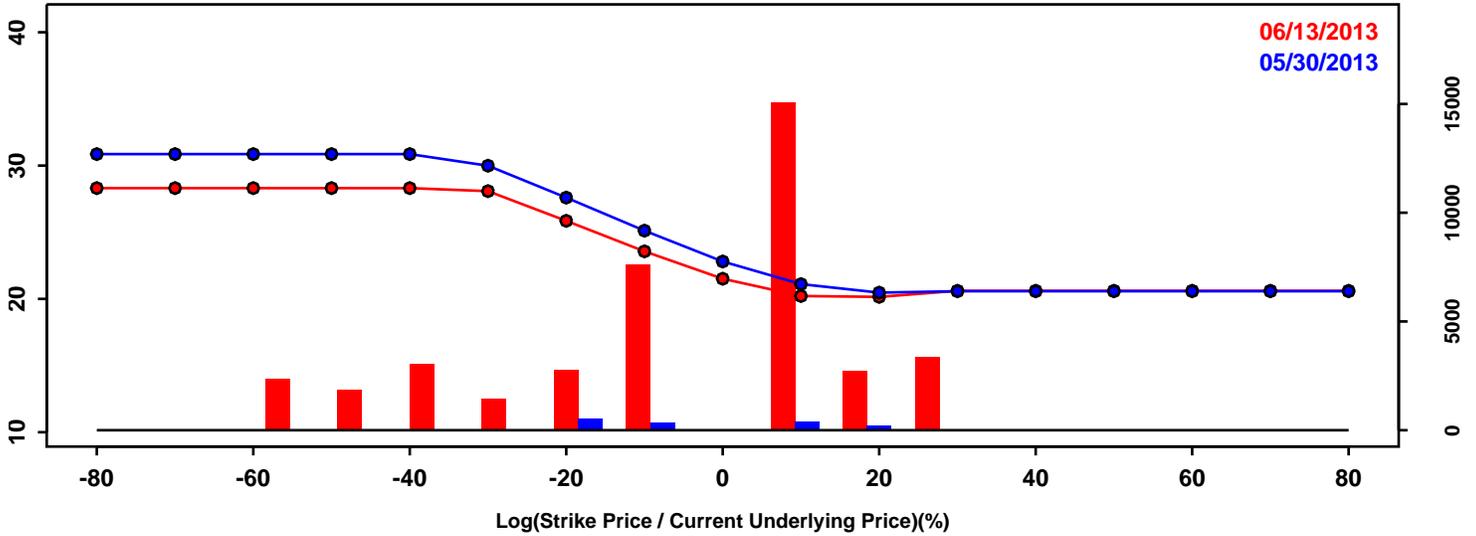


Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-25.17%	-26.94%	-1.77%
50th Pct	0.48%	1.28%	0.80%
90th Pct	16.99%	17.48%	0.48%
Mean	-2.19%	-2.12%	0.06%
Std Dev	17.71%	18.78%	1.06%
Skew	-1.02	-1.17	-0.15
Kurtosis	1.86	2.14	0.28

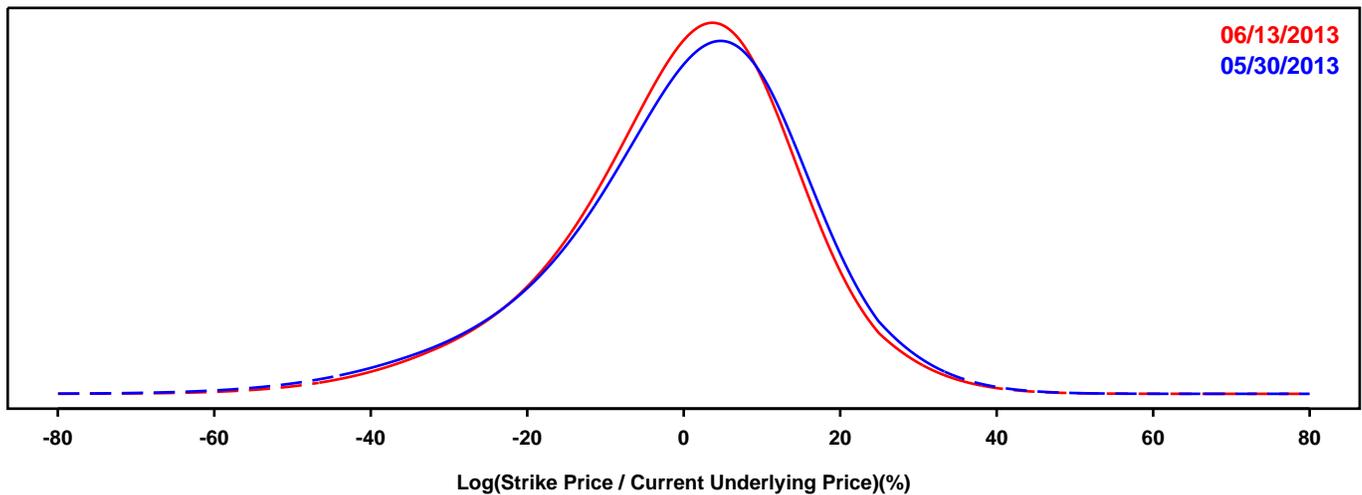
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CRUDE OIL FUTURES (WTI)

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

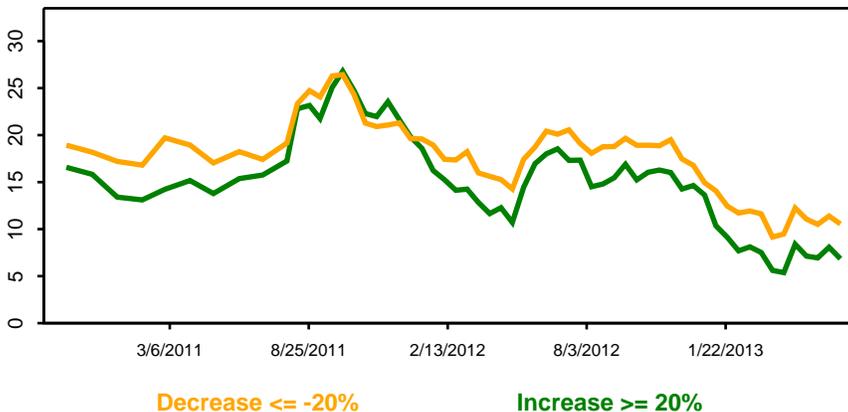
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

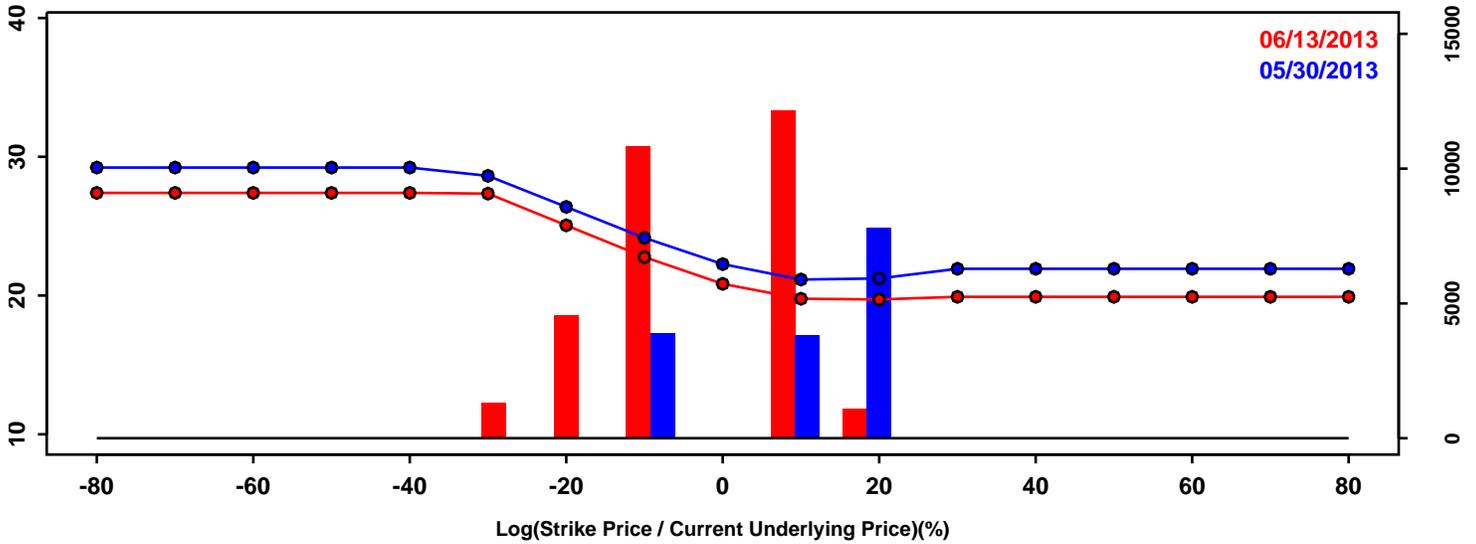


Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-21.73%	-20.63%	1.10%
50th Pct	1.68%	1.16%	-0.52%
90th Pct	18.44%	17.34%	-1.10%
Mean	-0.14%	-0.37%	-0.23%
Std Dev	16.33%	15.39%	-0.94%
Skew	-0.64	-0.55	0.09
Kurtosis	0.92	0.82	-0.10

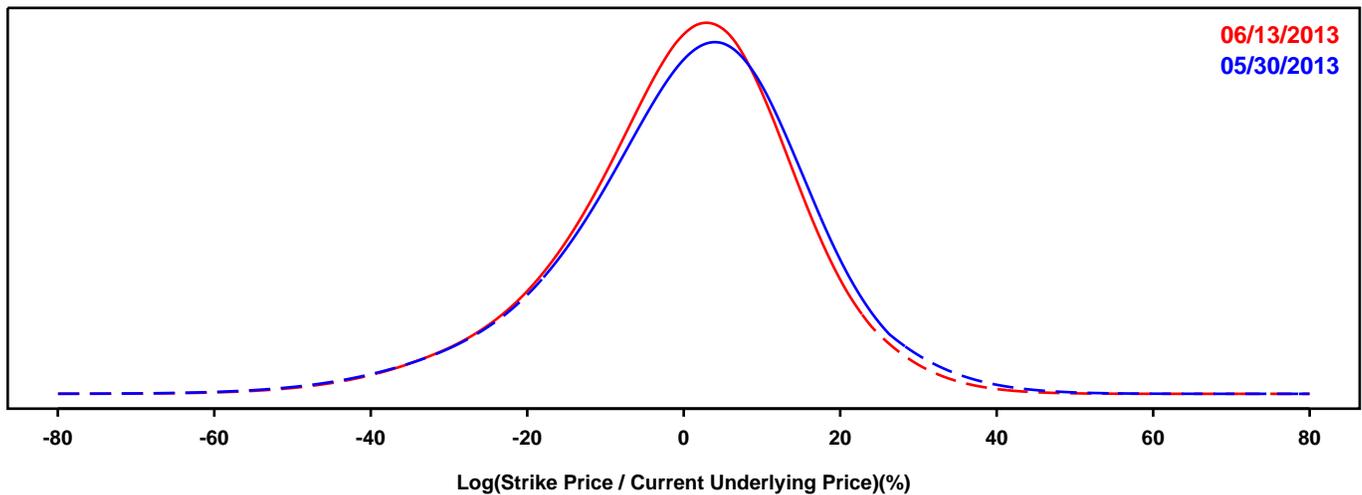
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CRUDE OIL FUTURES (Brent)

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

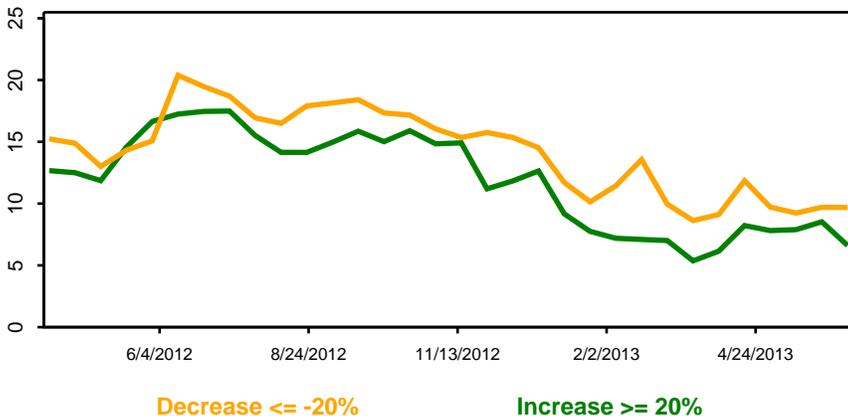
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

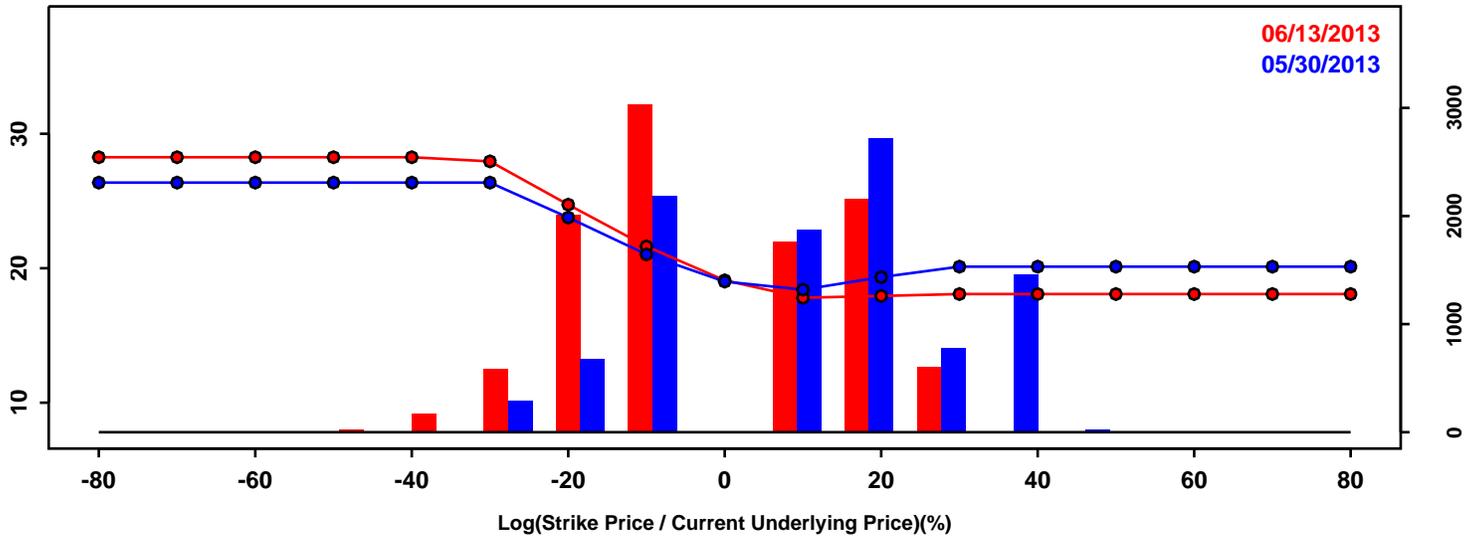


Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-19.71%	-19.66%	0.05%
50th Pct	1.83%	0.93%	-0.90%
90th Pct	18.73%	17.02%	-1.70%
Mean	0.58%	-0.31%	-0.89%
Std Dev	15.66%	14.87%	-0.79%
Skew	-0.48	-0.50	-0.03
Kurtosis	0.84	0.80	-0.04

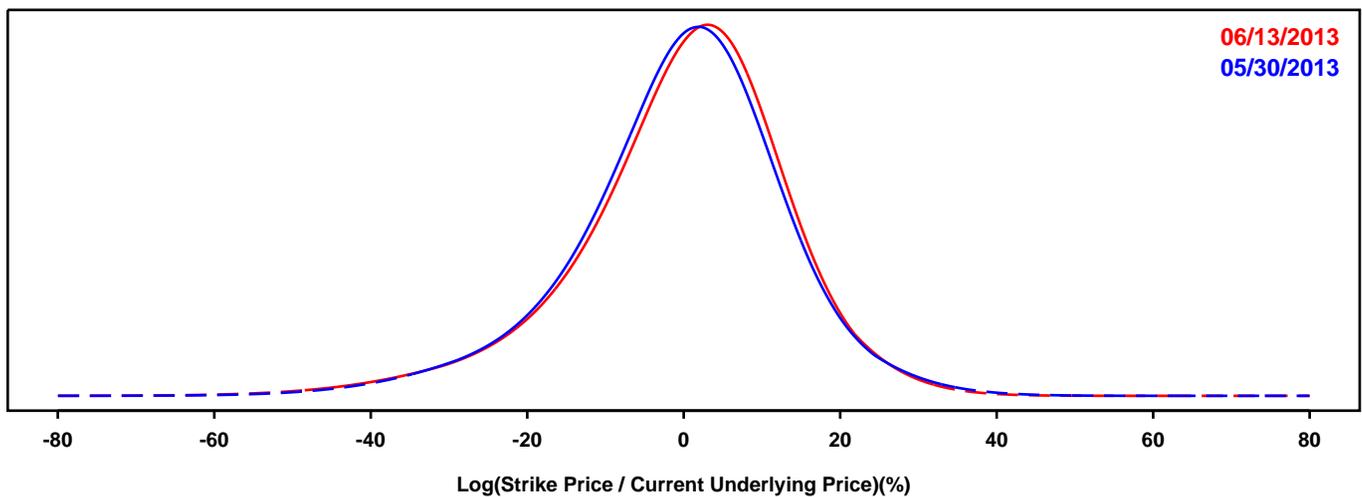
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- GOLD FUTURES

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

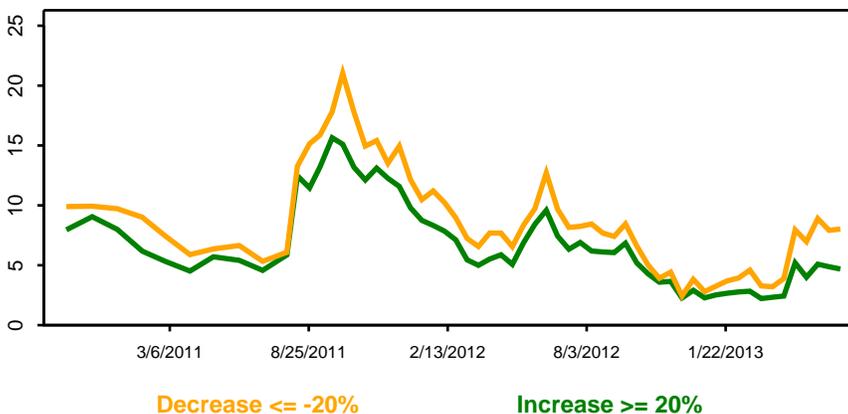
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

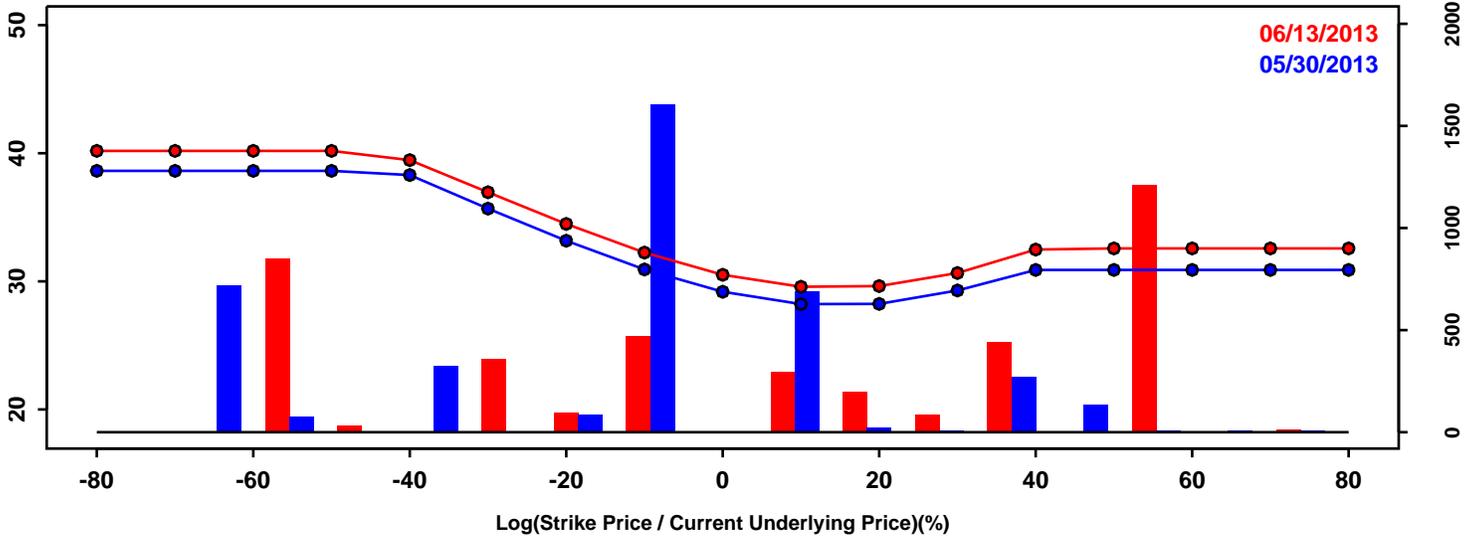


Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-17.59%	-17.56%	0.03%
50th Pct	0.54%	1.17%	0.63%
90th Pct	15.15%	15.29%	0.15%
Mean	-0.45%	-0.17%	0.28%
Std Dev	13.55%	13.67%	0.12%
Skew	-0.50	-0.69	-0.20
Kurtosis	1.14	1.38	0.24

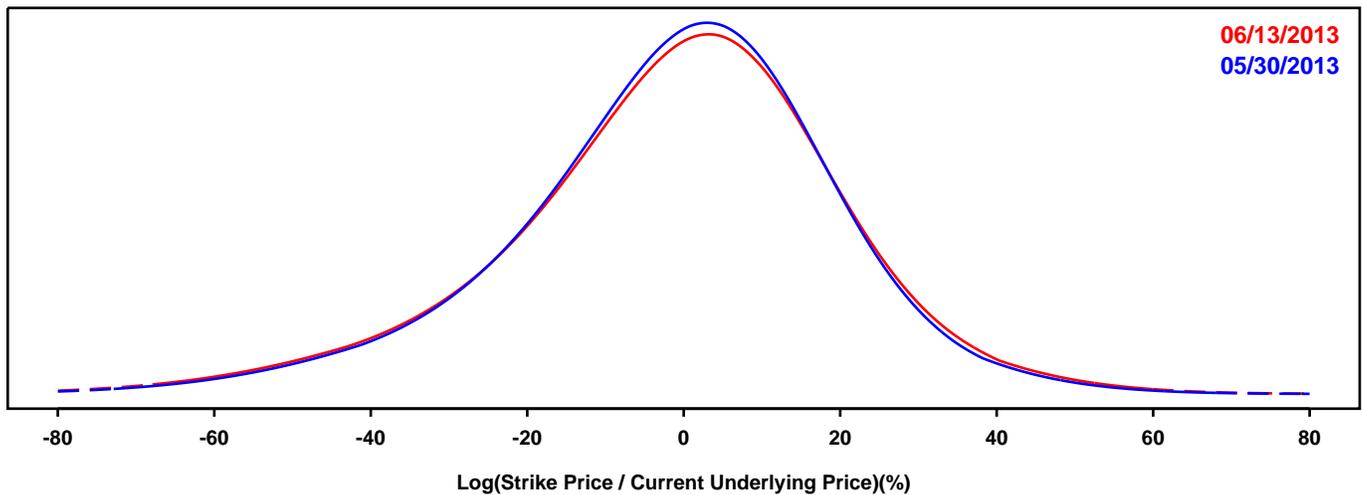
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- SILVER FUTURES

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

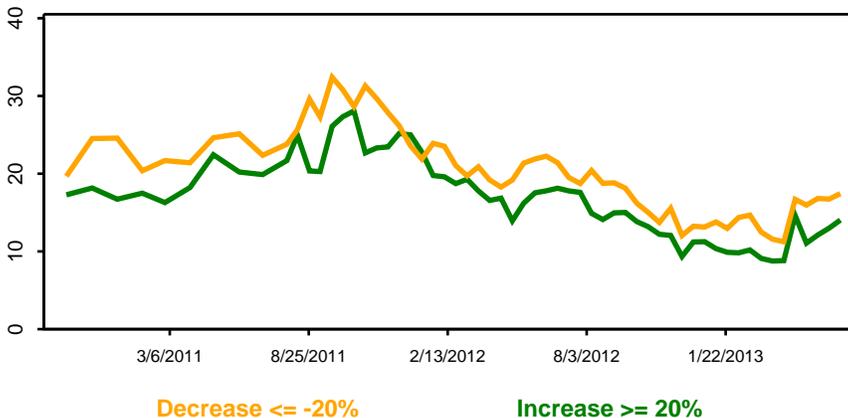
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

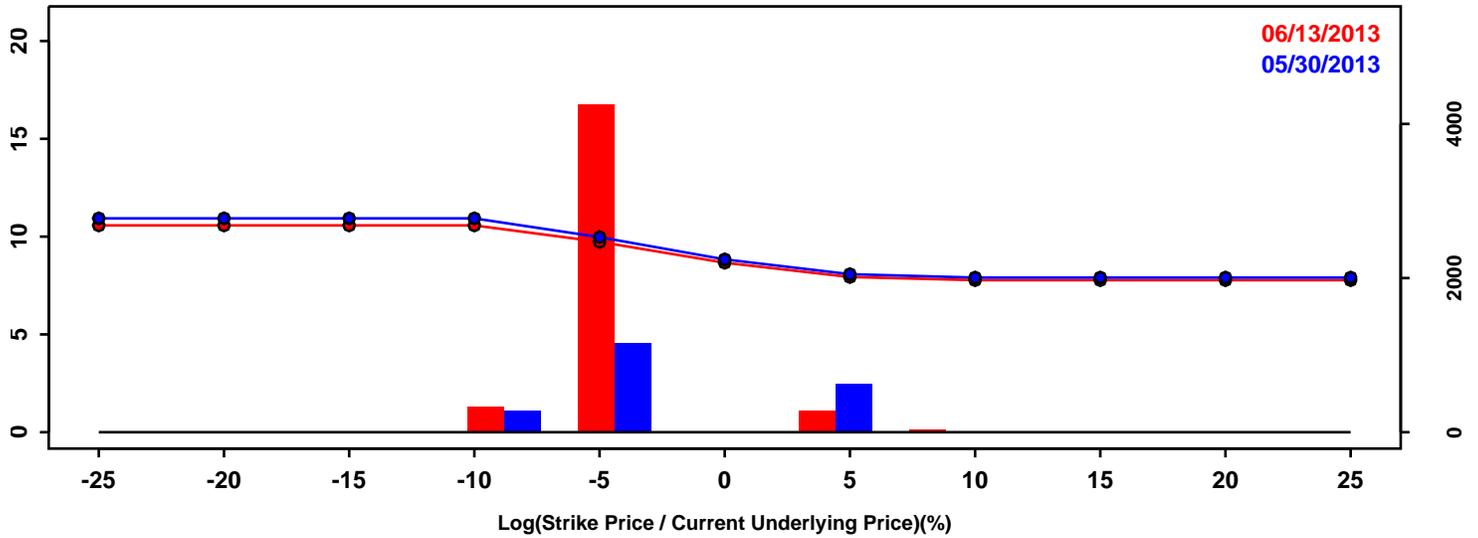


Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-28.34%	-29.46%	-1.12%
50th Pct	0.27%	0.42%	0.15%
90th Pct	22.78%	23.83%	1.05%
Mean	-1.41%	-1.35%	0.05%
Std Dev	20.91%	21.82%	0.91%
Skew	-0.47	-0.47	0.01
Kurtosis	0.91	0.92	0.01

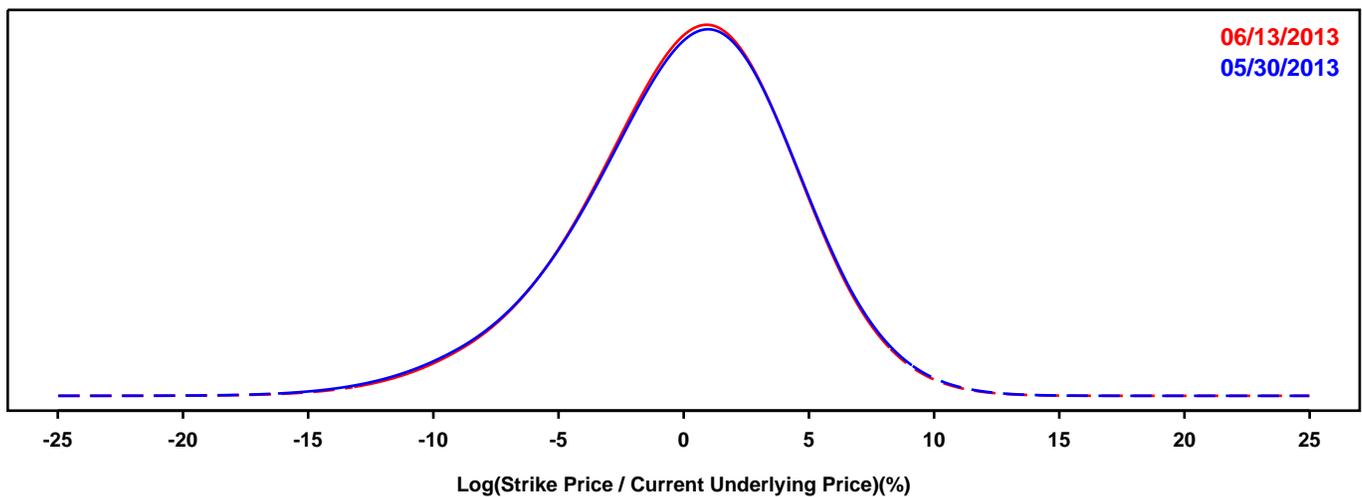
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- DOLLAR-EURO EXCHANGE RATE FUTURES

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

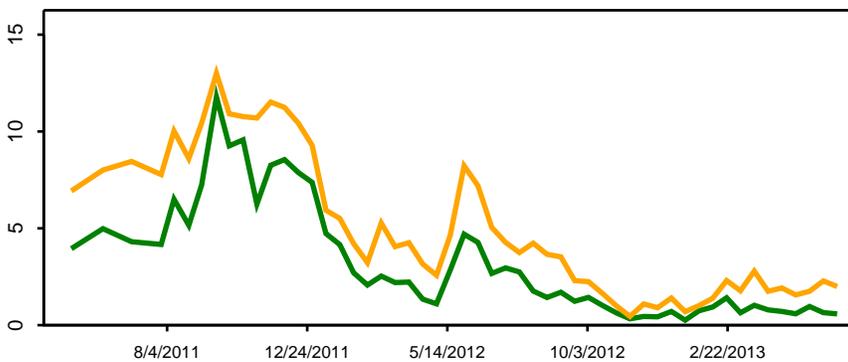
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



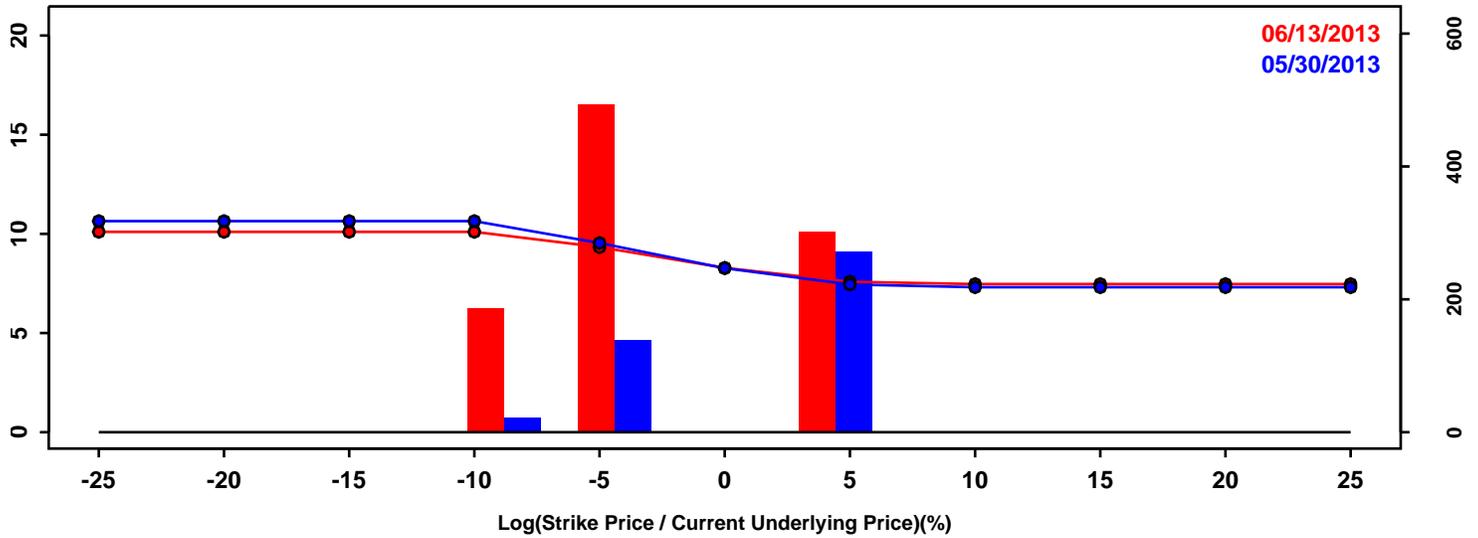
Decrease <= -10% [stronger \$] Increase >= 10% [weaker \$]

Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-5.75%	-5.65%	0.11%
50th Pct	0.39%	0.37%	-0.02%
90th Pct	5.39%	5.31%	-0.08%
Mean	0.07%	0.08%	0.01%
Std Dev	4.44%	4.35%	-0.09%
Skew	-0.43	-0.40	0.03
Kurtosis	0.45	0.40	-0.05

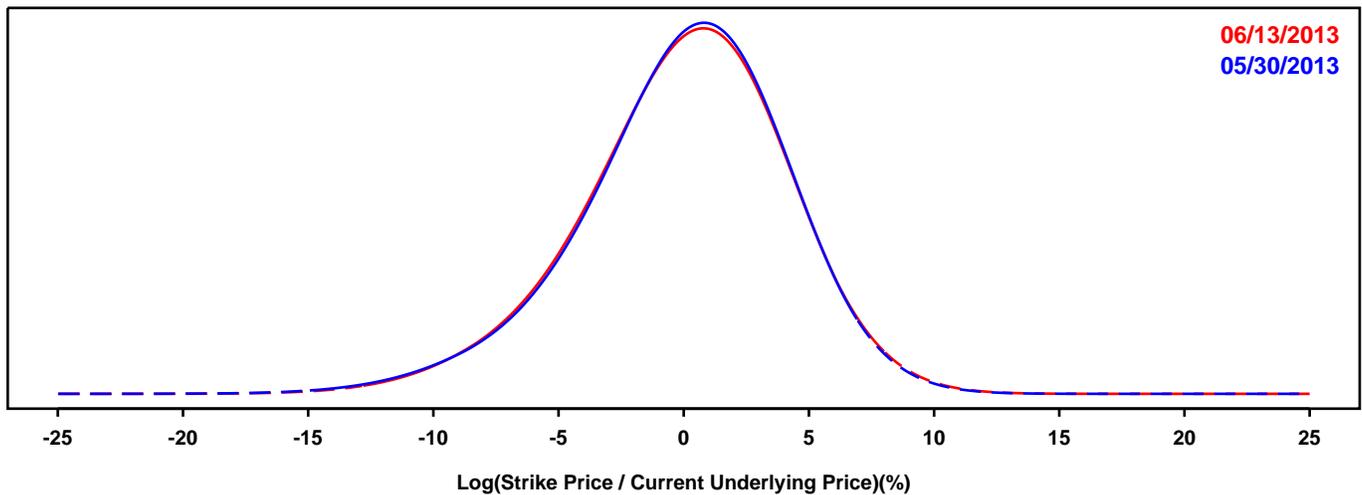
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- DOLLAR-POUND EXCHANGE RATE FUTURES

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

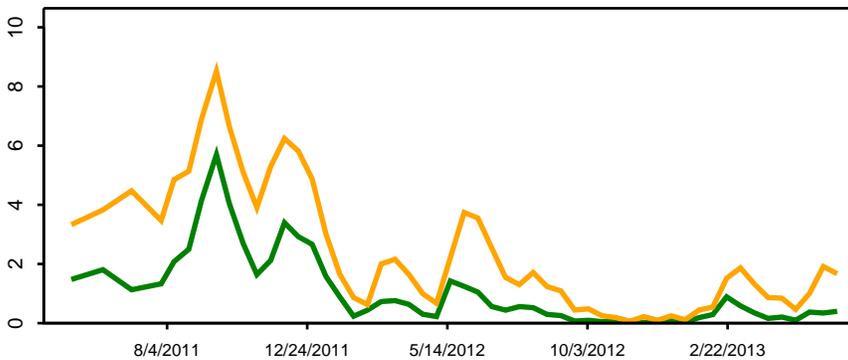
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



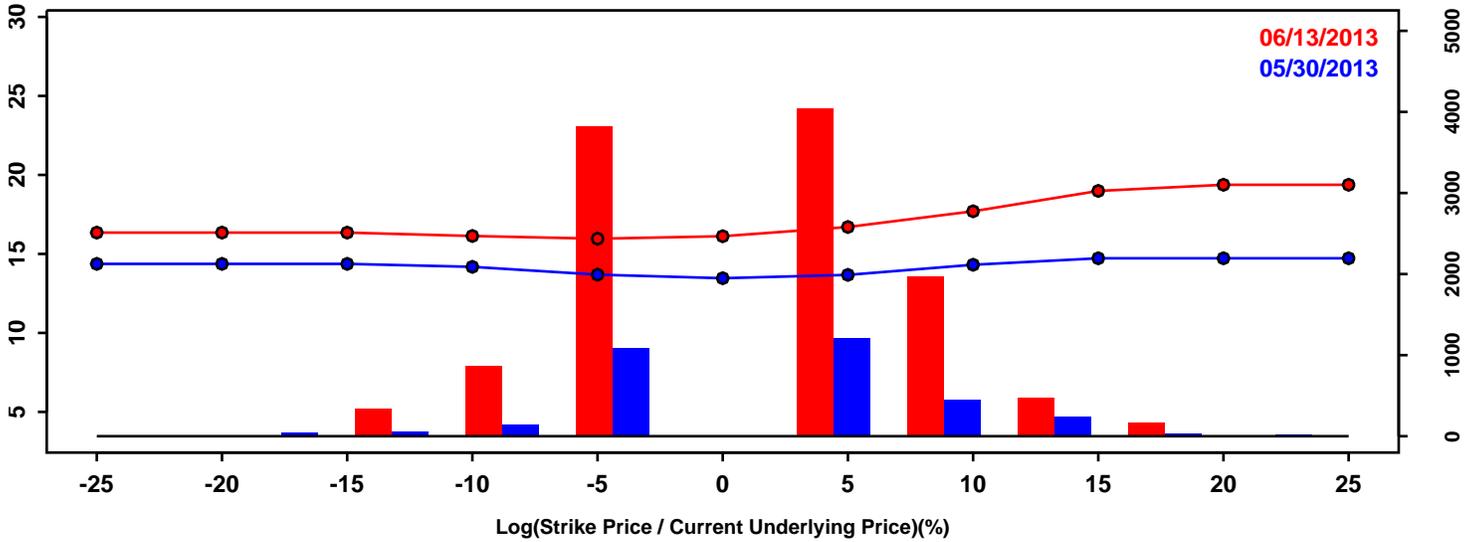
Decrease <= -10% [stronger \$] Increase >= 10% [weaker \$]

Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-5.43%	-5.45%	-0.02%
50th Pct	0.30%	0.28%	-0.02%
90th Pct	4.98%	5.00%	0.02%
Mean	-0.00%	0.01%	0.01%
Std Dev	4.17%	4.16%	-0.01%
Skew	-0.47	-0.39	0.08
Kurtosis	0.57	0.39	-0.17

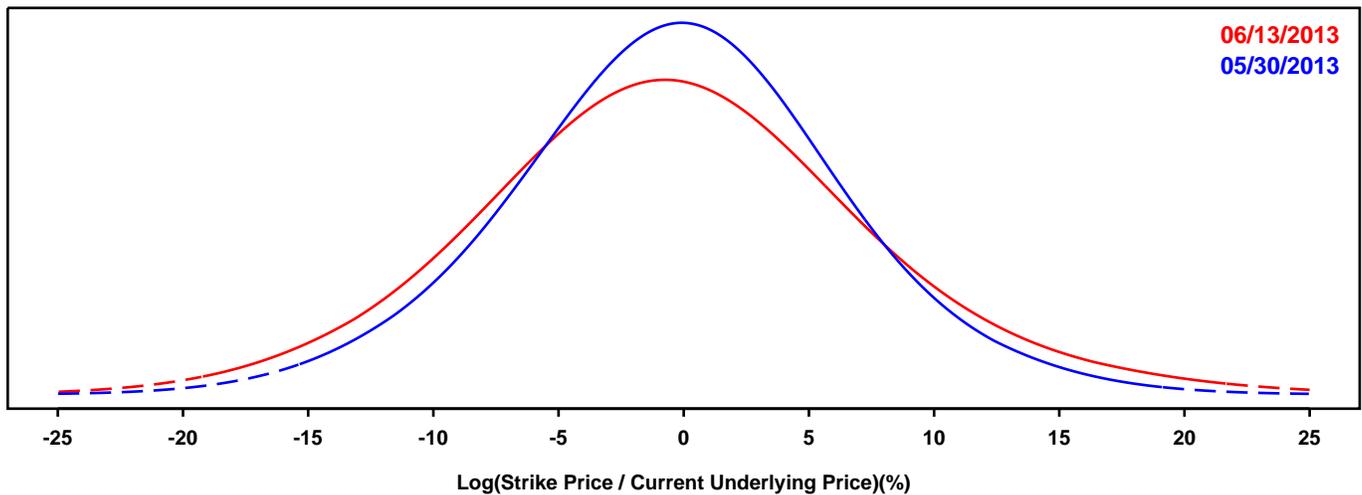
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- DOLLAR-YEN EXCHANGE RATE FUTURES

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

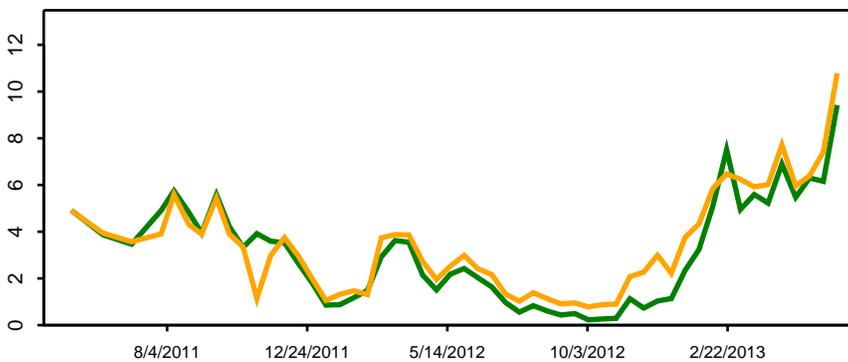
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



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

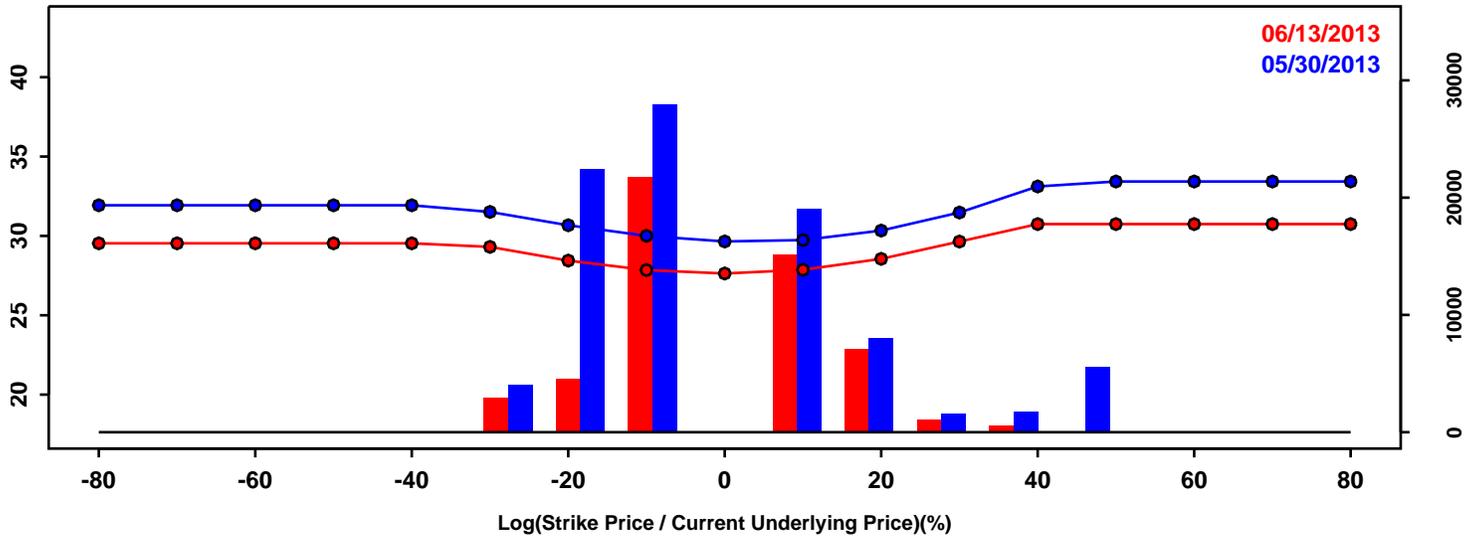
Statistics of the Log Return Distributions

	05/30/2013	06/13/2013	Change
10th Pct	-8.79%	-10.38%	-1.59%
50th Pct	-0.22%	-0.56%	-0.34%
90th Pct	8.10%	9.69%	1.59%
Mean	-0.25%	-0.39%	-0.14%
Std Dev	6.72%	8.02%	1.31%
Skew	-0.01	0.17	0.18
Kurtosis	0.32	0.45	0.13

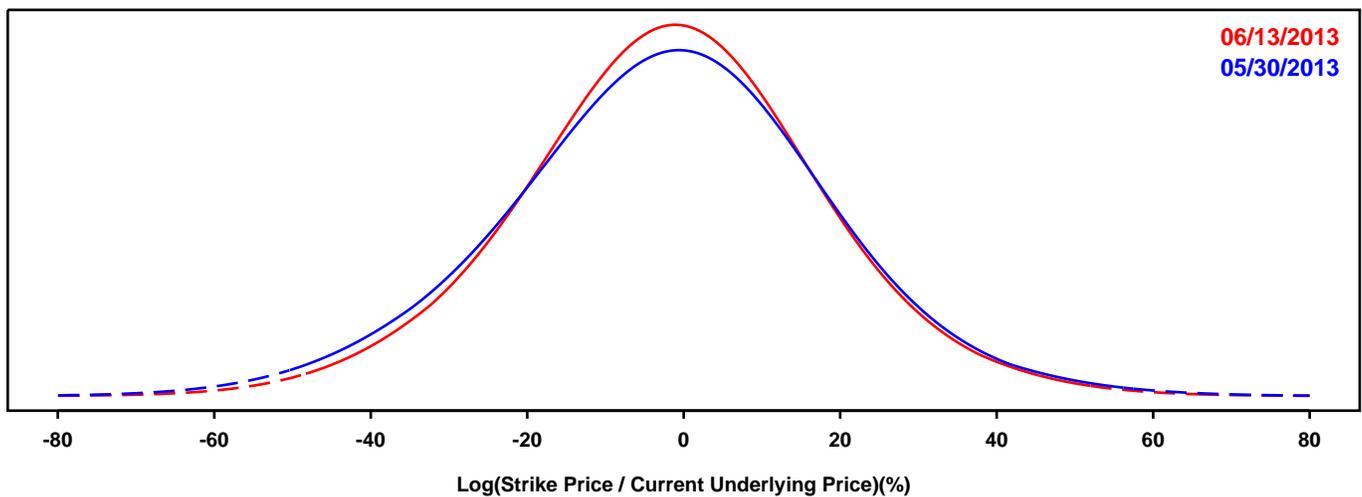
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CORN FUTURES

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

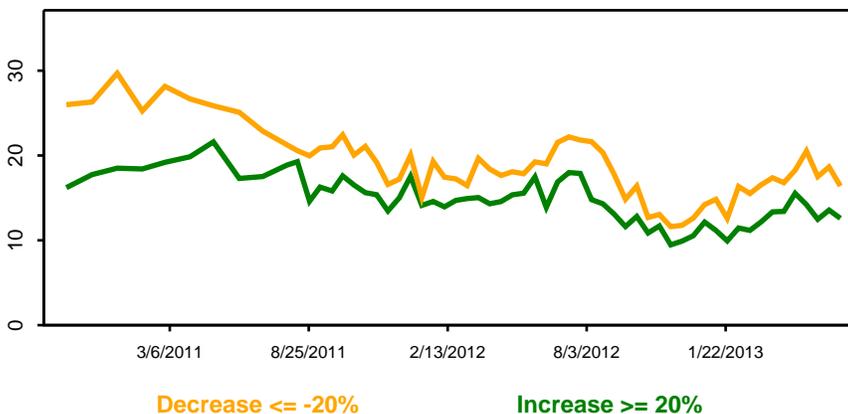
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

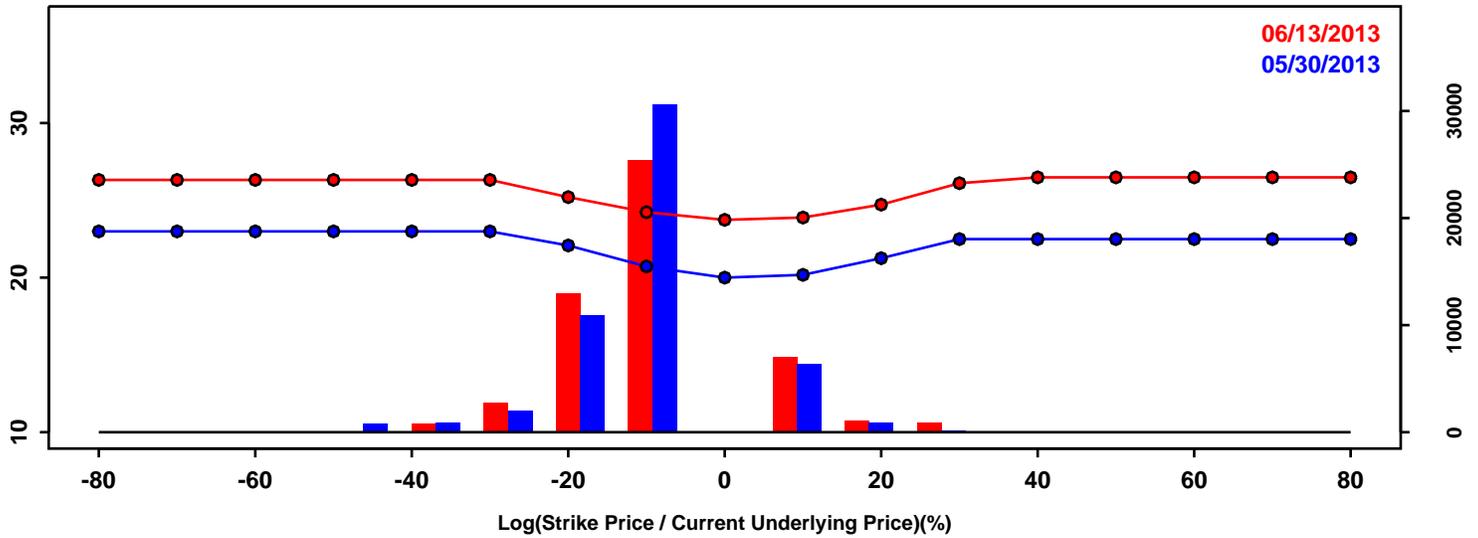


Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-28.77%	-26.21%	2.56%
50th Pct	-1.66%	-1.44%	0.22%
90th Pct	23.78%	22.72%	-1.07%
Mean	-2.02%	-1.55%	0.47%
Std Dev	20.92%	19.48%	-1.44%
Skew	-0.06	-0.01	0.05
Kurtosis	0.34	0.34	-0.00

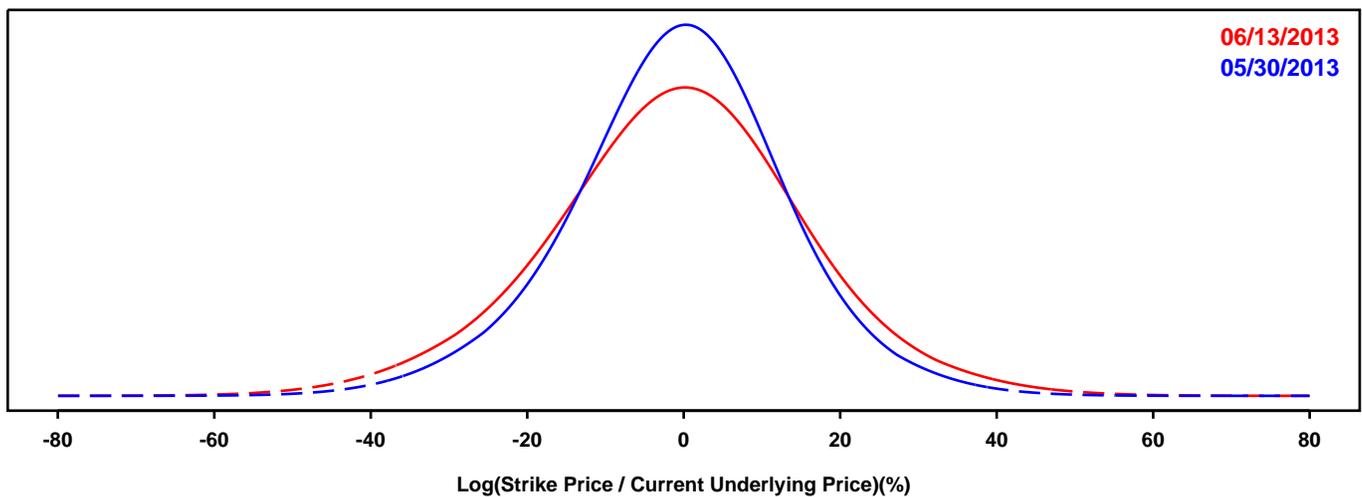
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- SOYBEAN FUTURES

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

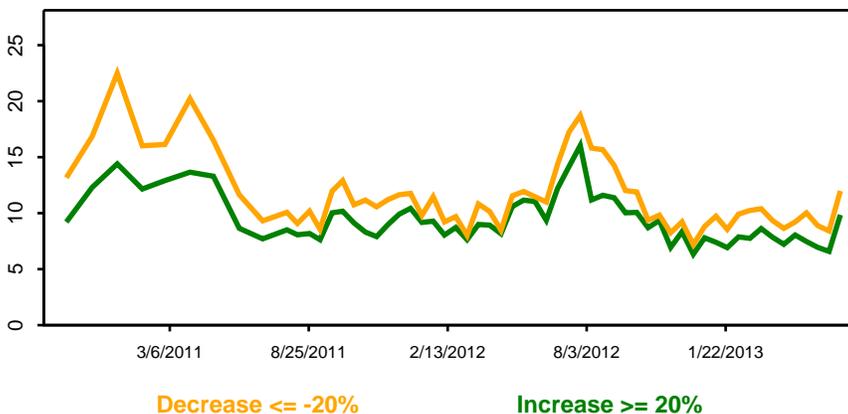
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

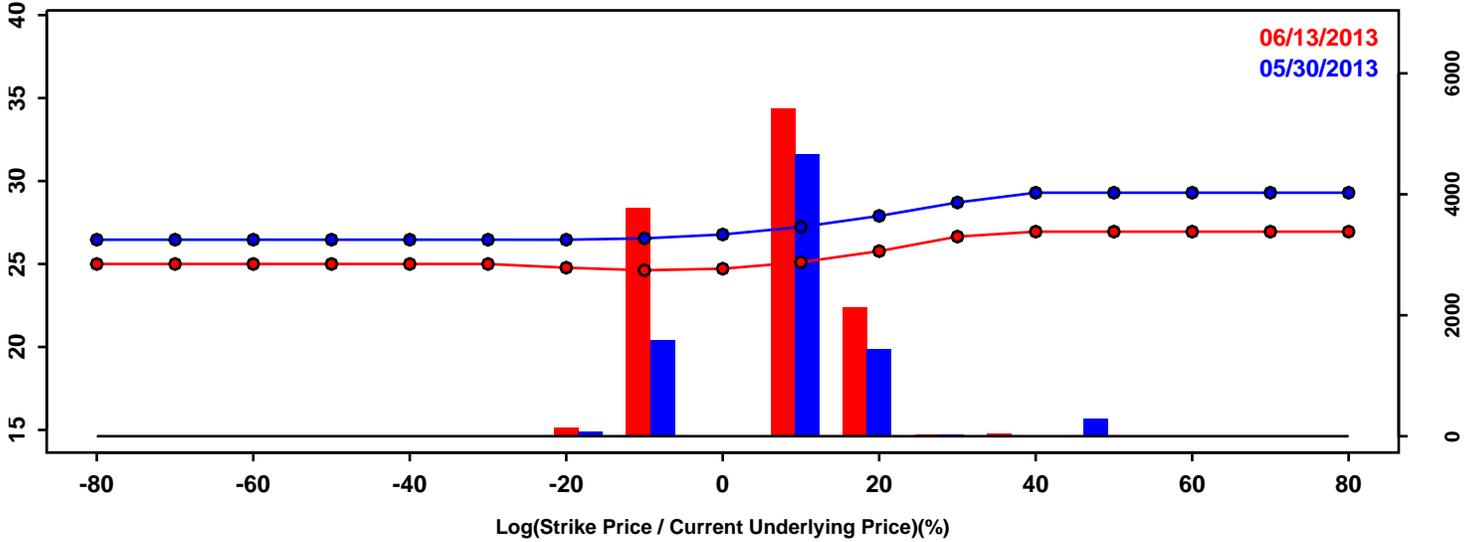


Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-18.38%	-21.95%	-3.56%
50th Pct	-0.30%	-0.47%	-0.17%
90th Pct	16.64%	19.89%	3.25%
Mean	-0.58%	-0.73%	-0.15%
Std Dev	14.11%	16.75%	2.63%
Skew	-0.10	-0.06	0.04
Kurtosis	0.53	0.43	-0.10

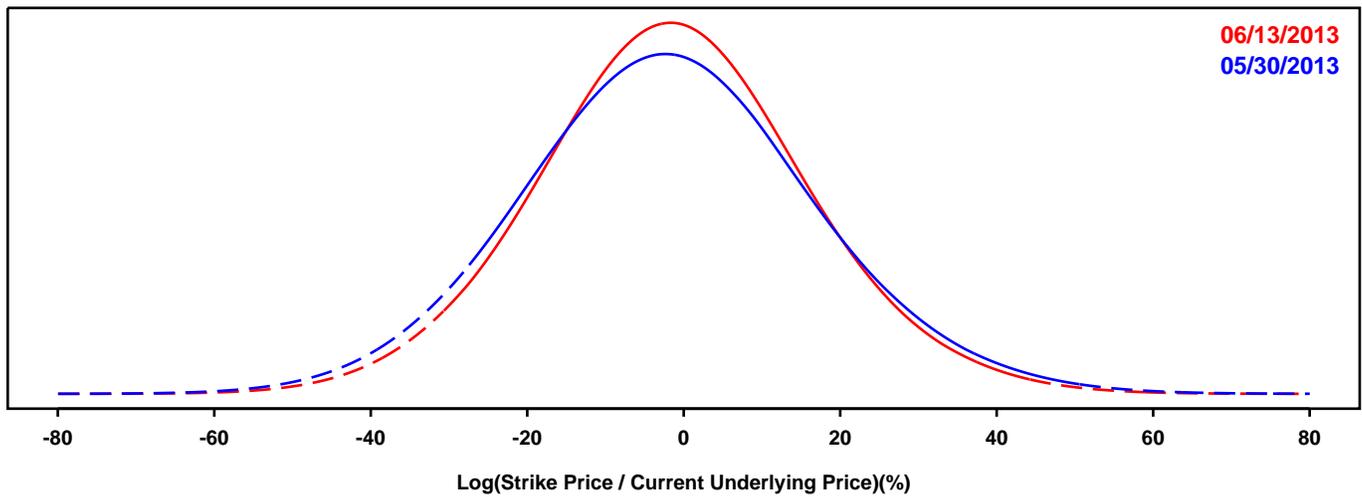
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- WHEAT FUTURES

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

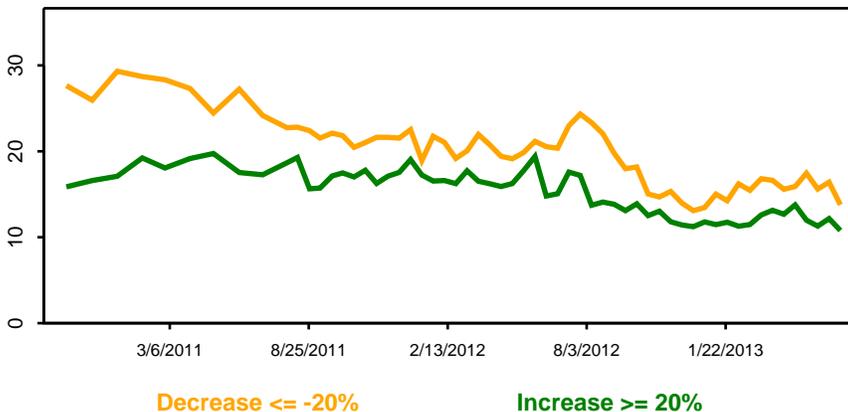
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

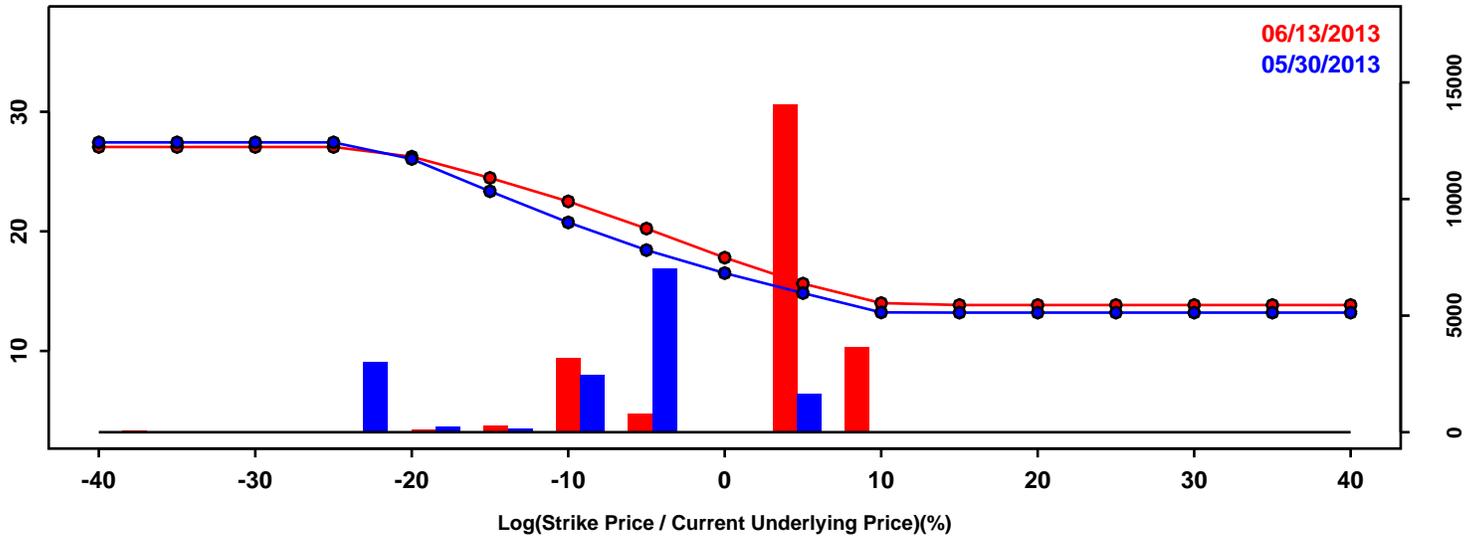


Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-25.61%	-23.32%	2.28%
50th Pct	-2.08%	-1.48%	0.59%
90th Pct	22.36%	20.78%	-1.58%
Mean	-1.79%	-1.33%	0.46%
Std Dev	18.88%	17.42%	-1.46%
Skew	0.10	0.07	-0.03
Kurtosis	0.17	0.20	0.04

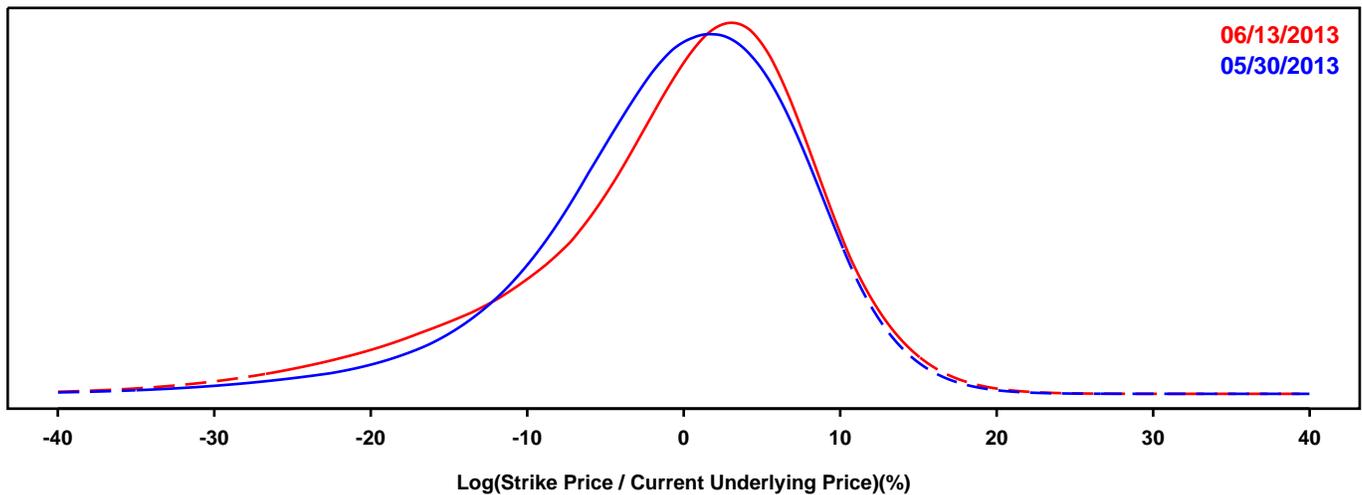
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- iSHARES DOW JONES US REAL ESTATE

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

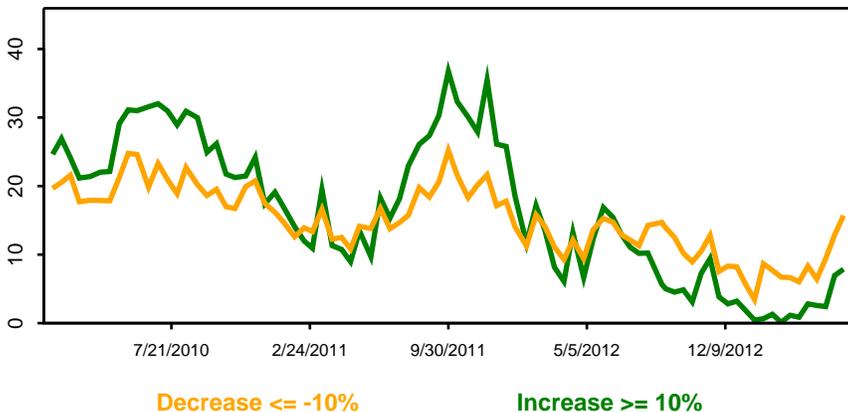
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



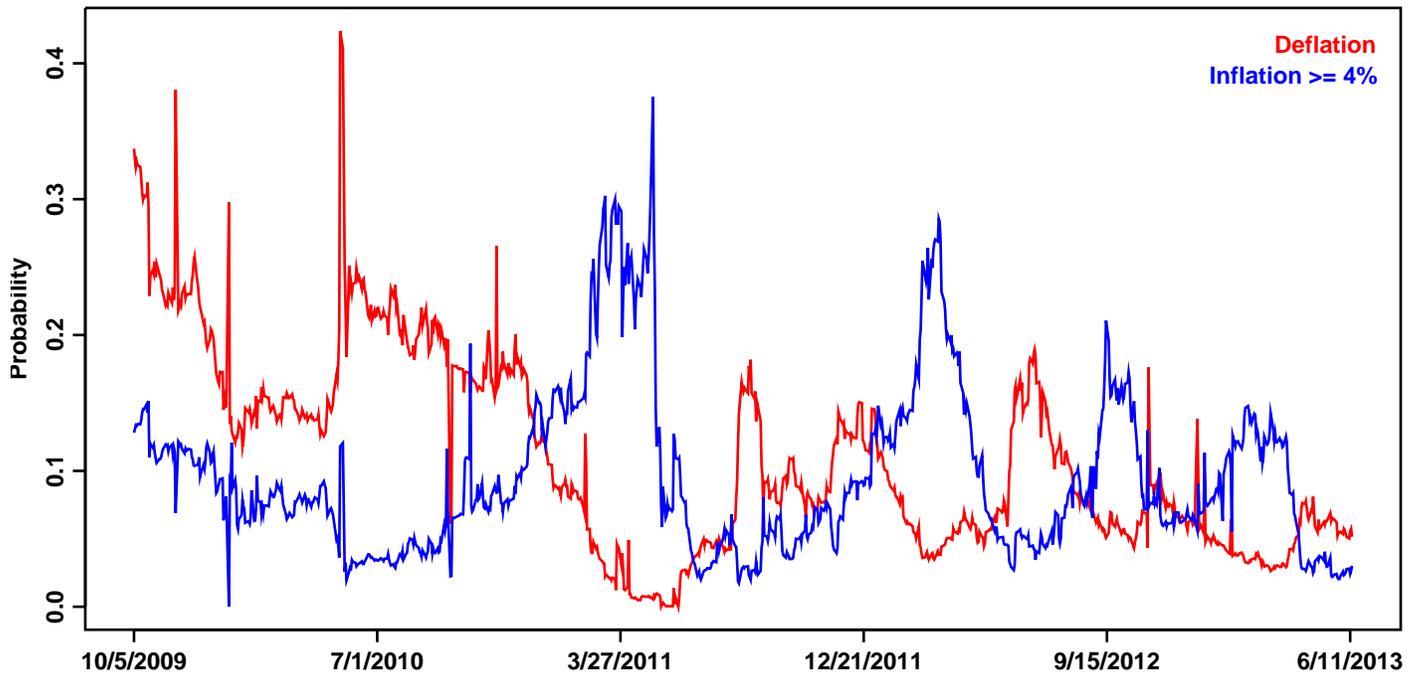
Probability of a Large Change



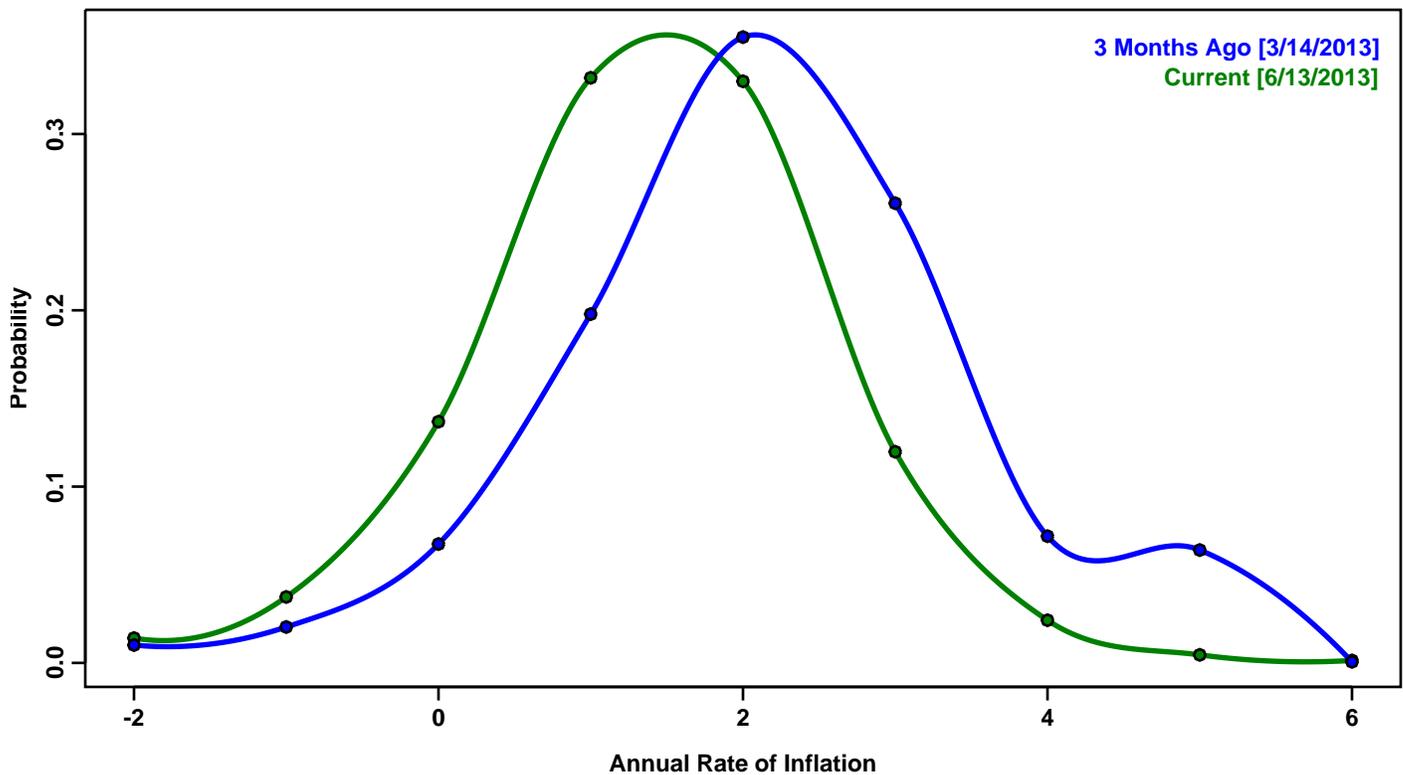
Statistics of the Log Return Distributions			
	05/30/2013	06/13/2013	Change
10th Pct	-11.73%	-14.16%	-2.43%
50th Pct	0.16%	0.73%	0.57%
90th Pct	8.82%	9.19%	0.37%
Mean	-0.84%	-0.98%	-0.14%
Std Dev	8.58%	9.52%	0.93%
Skew	-0.90	-0.99	-0.09
Kurtosis	1.72	1.40	-0.32

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

