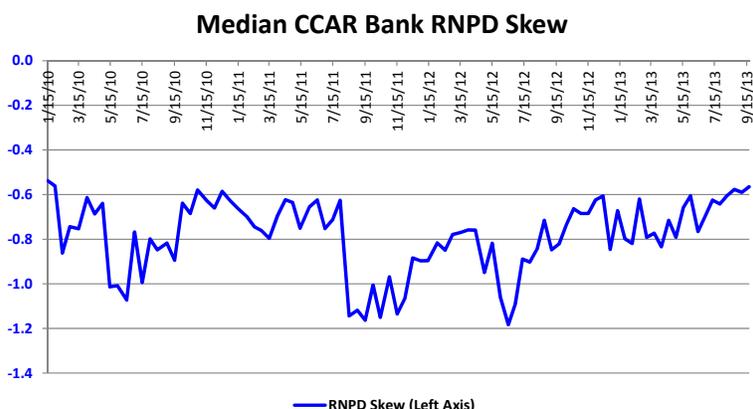


FEDERAL RESERVE BANK OF MINNEAPOLIS
BANKING AND POLICY STUDIES

Minneapolis Options Report – September 19th

Banks & Insurance Companies

The stock market rallied as did bank and insurance company stocks over the past two weeks. Trading in options on bank and insurance company stocks was about average and RNPD standard deviations fell. The median CCAR bank RNPD skew continues to fall in absolute value and is back to 2010 levels even as share prices have risen.



Additional notes:

- We recorded strong activity in options on RF shares. RF was the only CCAR firm to show an increase in RNPD standard deviation this week. RNPD skew for RF became more negative. (See *RF detail report*)
- Trading volumes were also strong in options on WFC shares. The standard deviation of the RNPD derived from options on WFC fell by approximately 100 basis points and its volatility smile flattened. (See *WFC detail report*)

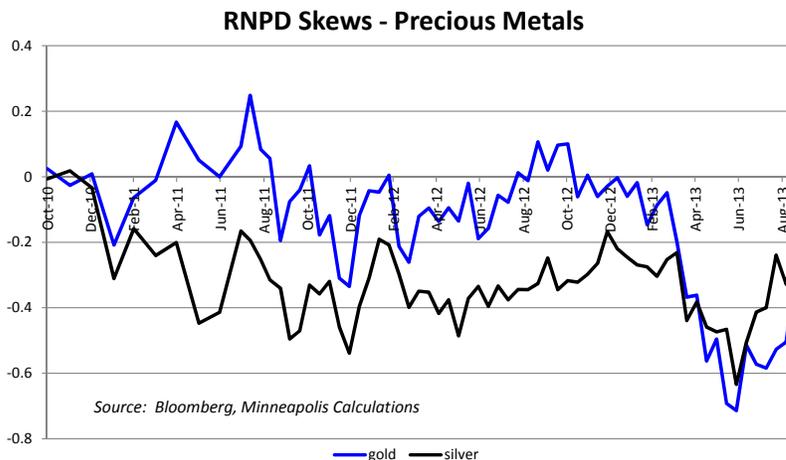
Other Commodity Markets

RNPD standard deviations dropped smartly across all of the markets we follow. The S&P 500 rose 400 basis points over the past two weeks while oil prices and precious metals prices fell. Grain prices were mixed and the dollar weakened. The direction of long-term, high inflation probabilities reversed direction as did the risk-neutral probabilities of large spot price changes in a number of markets.

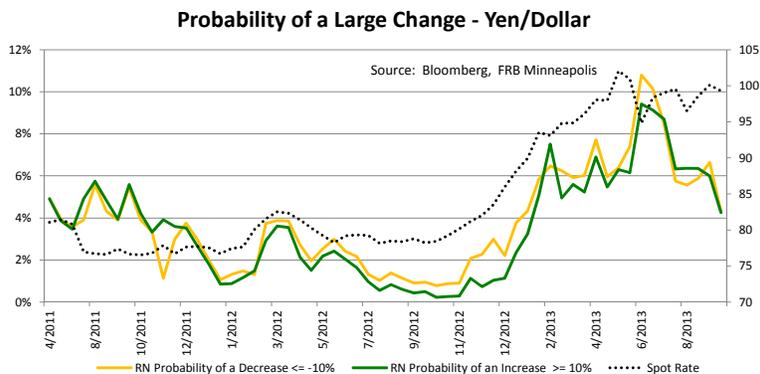
Additional notes:

- Trading in options on WTI crude futures remained strong. Spot prices for WTI fell -1.4% and Brent fell -2.7%. RNPD standard deviations sharply. (See *Oil Reports*).

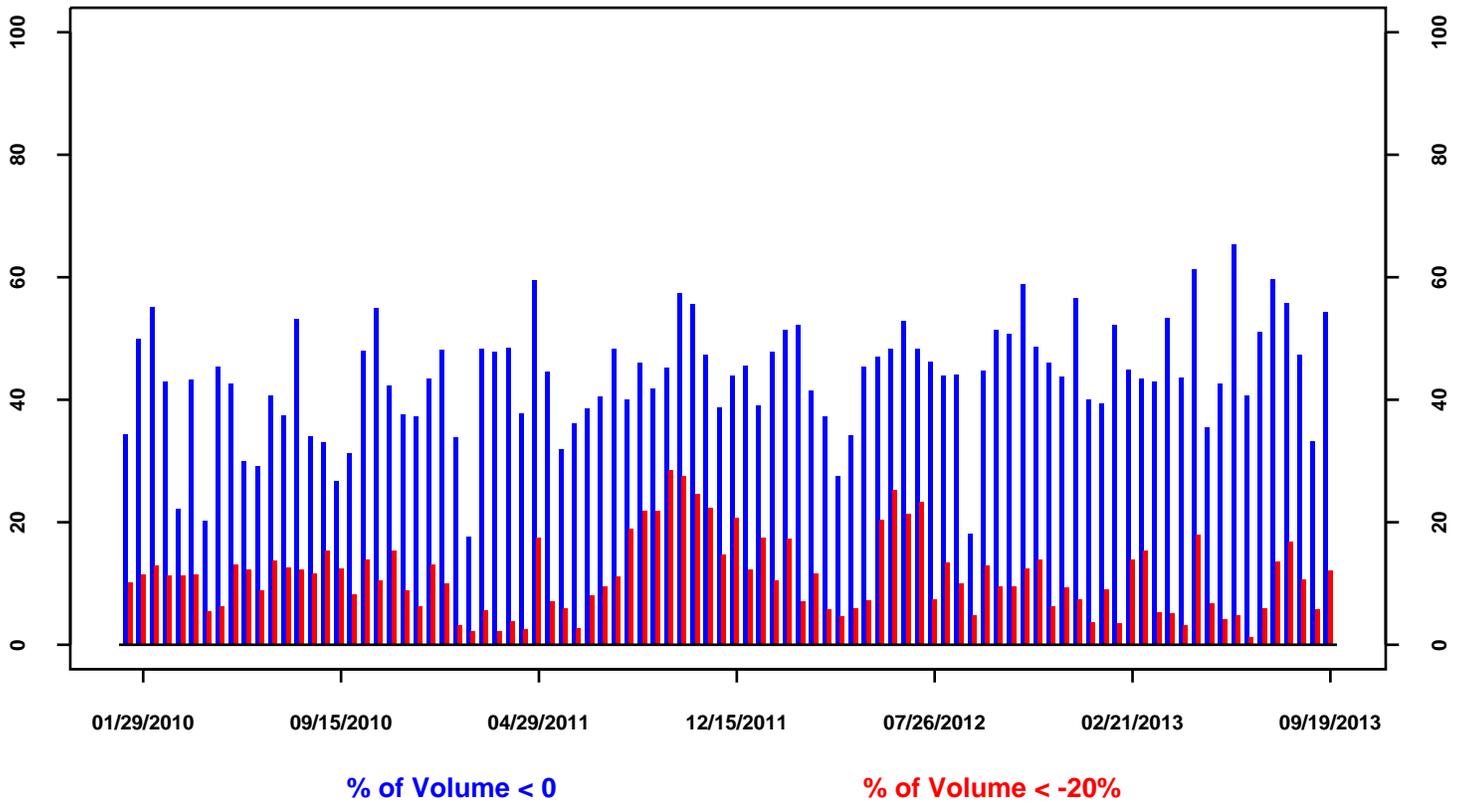
- Spot prices for gold and silver were largely unchanged over past two weeks. The RNPD standard deviations derived from options on gold and silver futures also fell (-1.1% for Gold and -1.3% for Silver). Skews continue to move toward zero. (See *Gold and Silver Reports*).



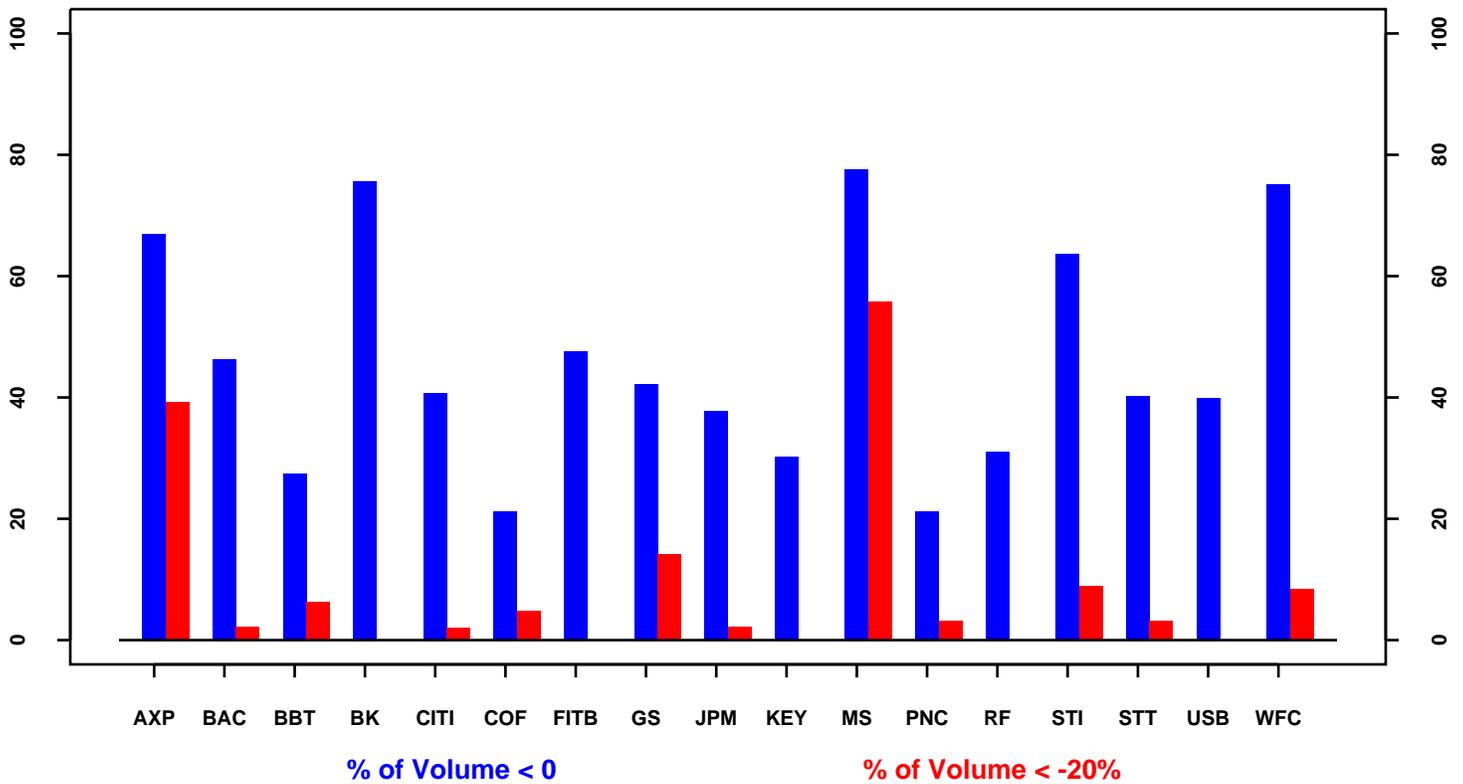
- Grain prices were mixed over the past two weeks. Corn futures fell -0.4%, soybeans fell -1.5%, and wheat rose another 2.2%. RNPD standard deviations fell for each of these markets for the second straight report. Risk neutral expectations as measured by skew remain directionless for corn and beans and biased to the upside for wheat. (See *grain market reports*)
- The DJ Real Estate Index ETF has rallied more than 8% over the past two weeks. Trading was very robust and the RNPD standard deviation fell -2.2%. Risk neutral probabilities of large price changes dropped sharply. (See *Real Estate Report*)
- Risk neutral probabilities of large changes in exchange rate futures have turned lower. In particular, Yen/Dollar tail risk has rolled over.



Aggregate Volumes for Options on CCAR Banks

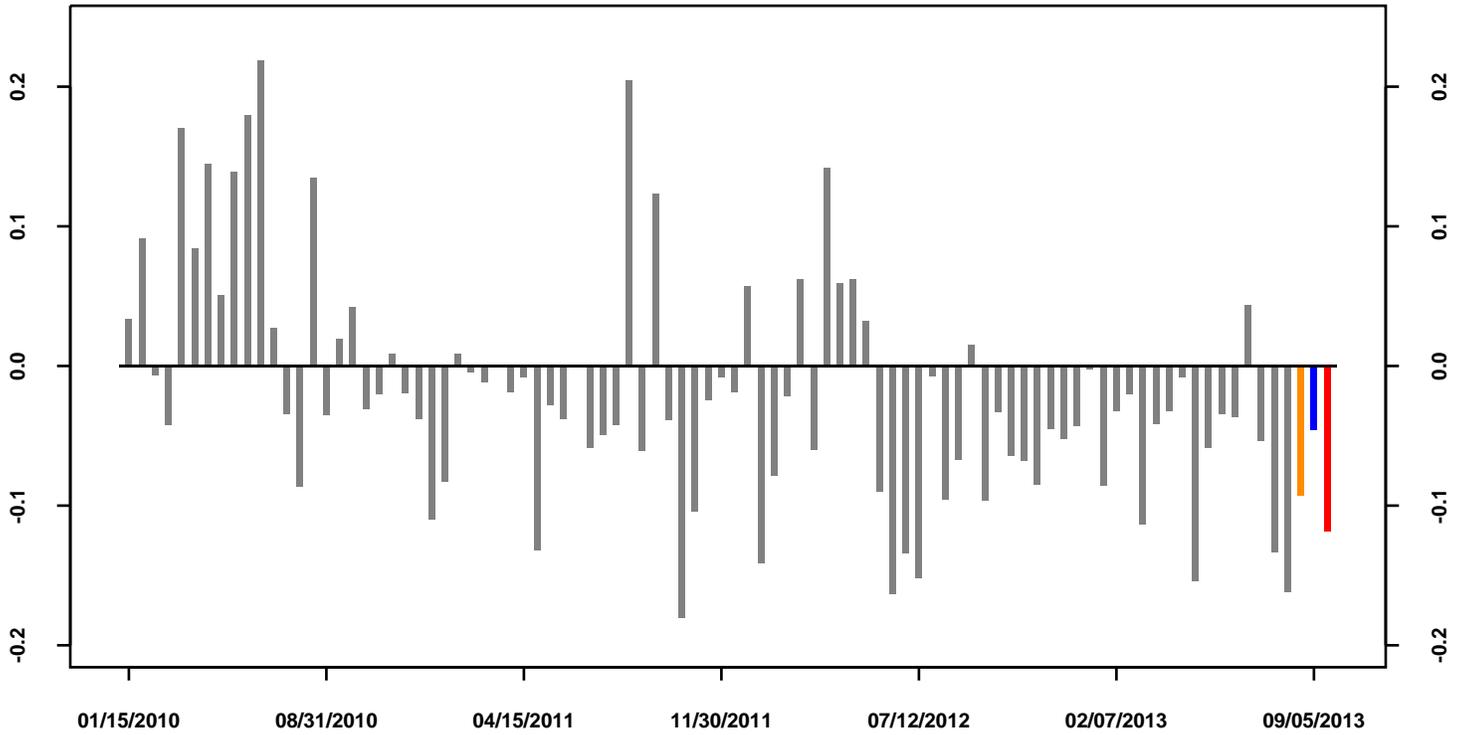


Volumes for Options on CCAR Banks

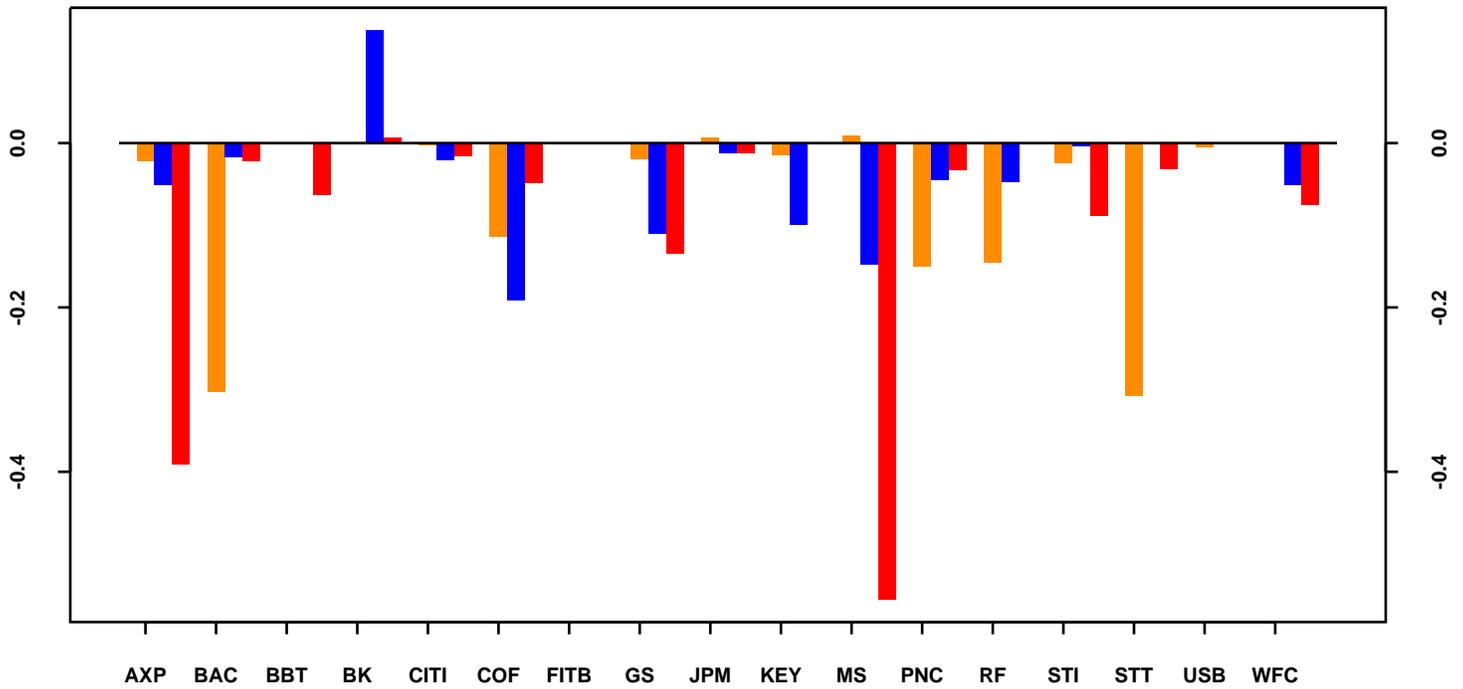


Aggregate Volume Skew--CCAR Banks

(% 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



08/22/2013

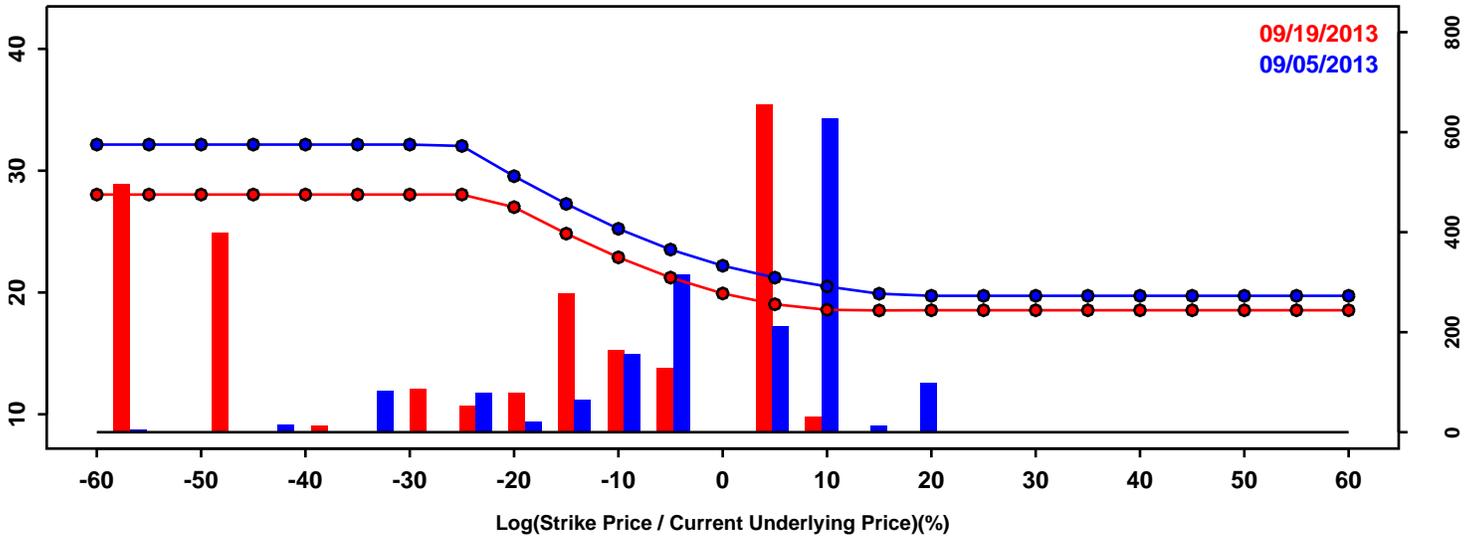
09/05/2013

09/19/2013

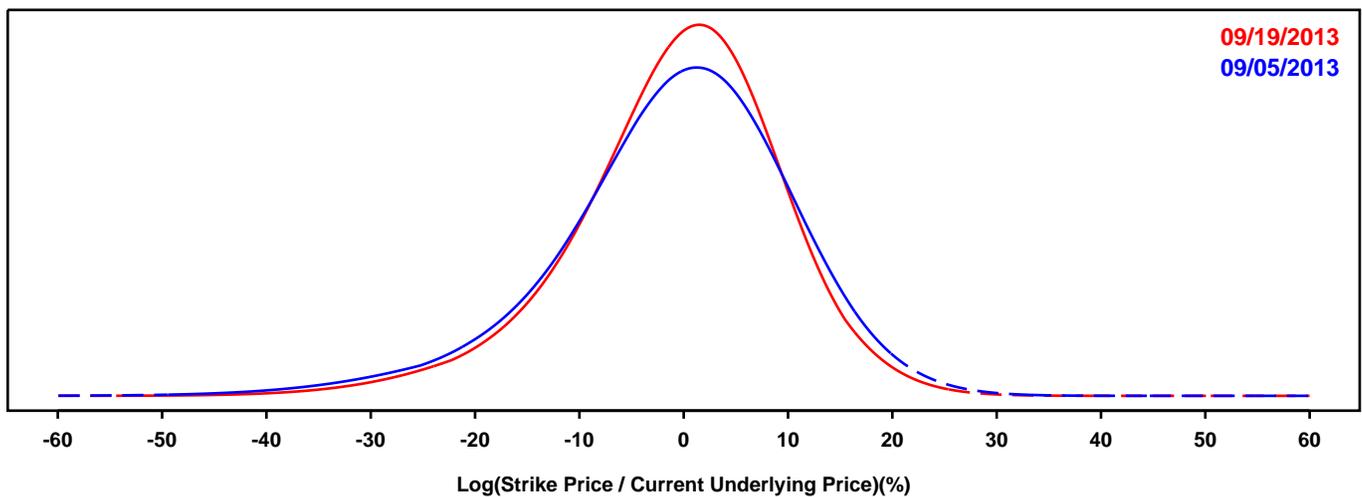
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- AMERICAN EXPRESS

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

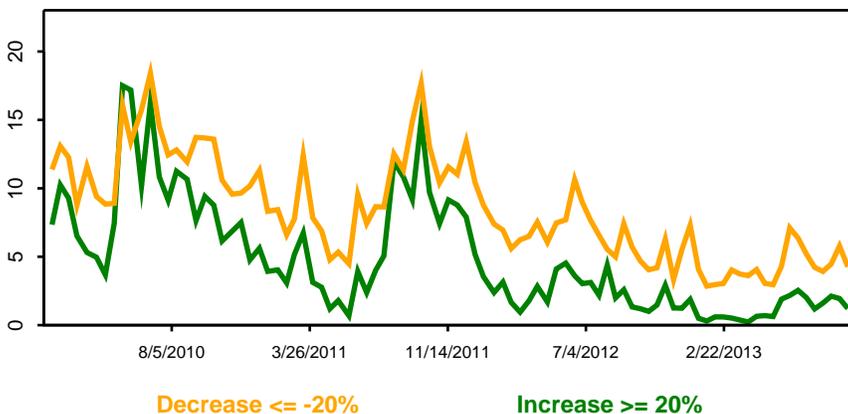
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

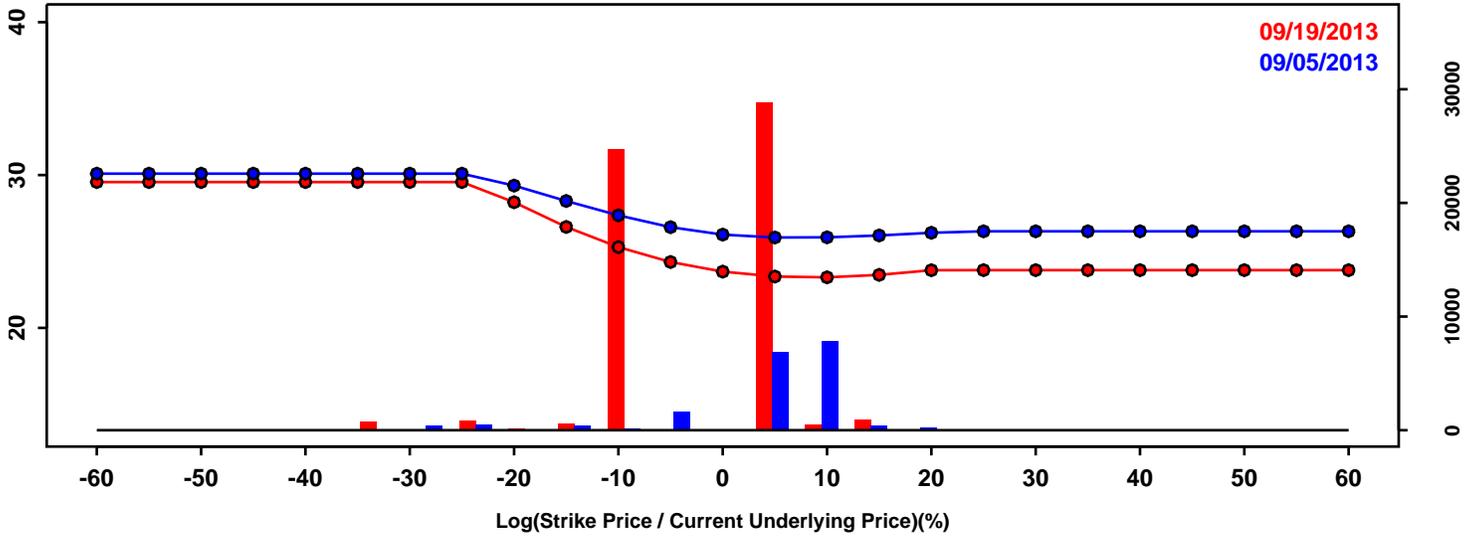


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-15.33%	-13.62%	1.71%
50th Pct	0.07%	0.20%	0.12%
90th Pct	12.54%	11.19%	-1.35%
Mean	-0.84%	-0.65%	0.19%
Std Dev	11.38%	10.15%	-1.24%
Skew	-0.61	-0.56	0.05
Kurtosis	1.04	0.96	-0.08

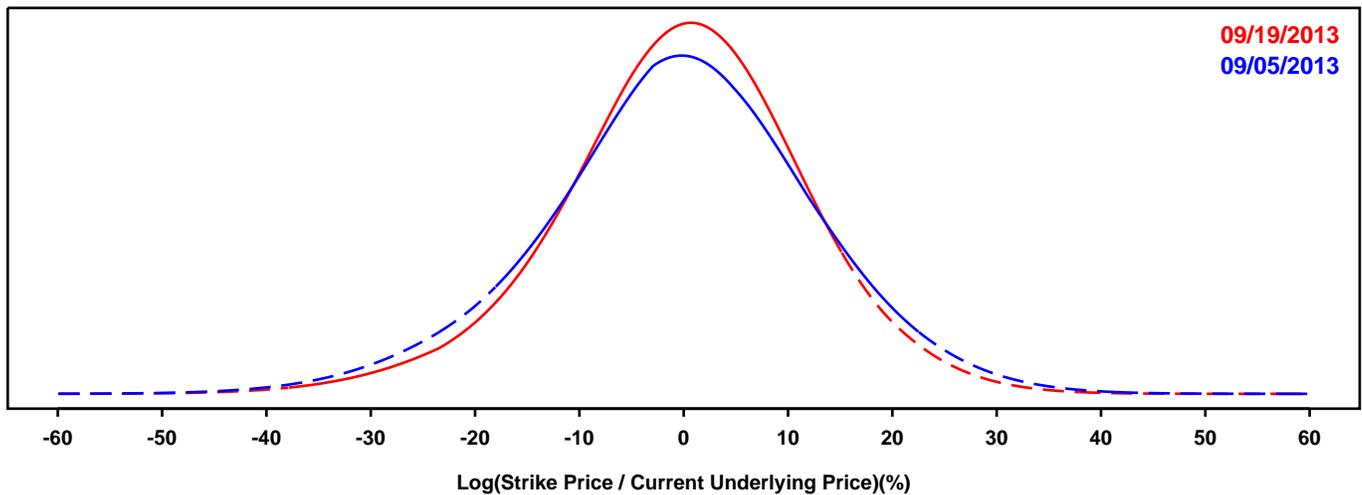
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- BANK OF AMERICA

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

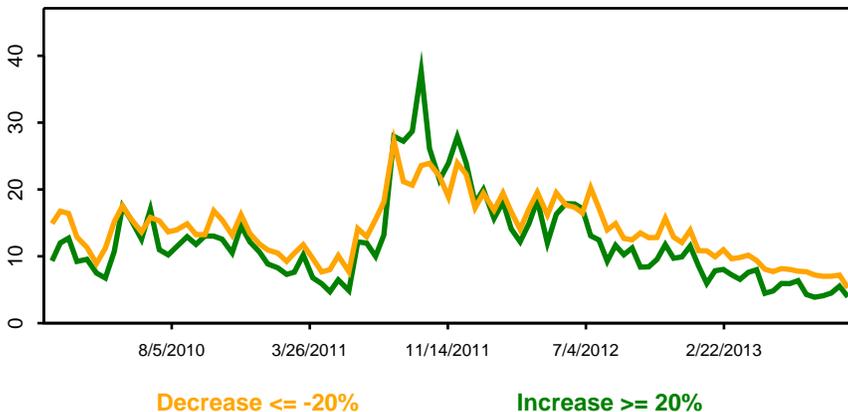
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

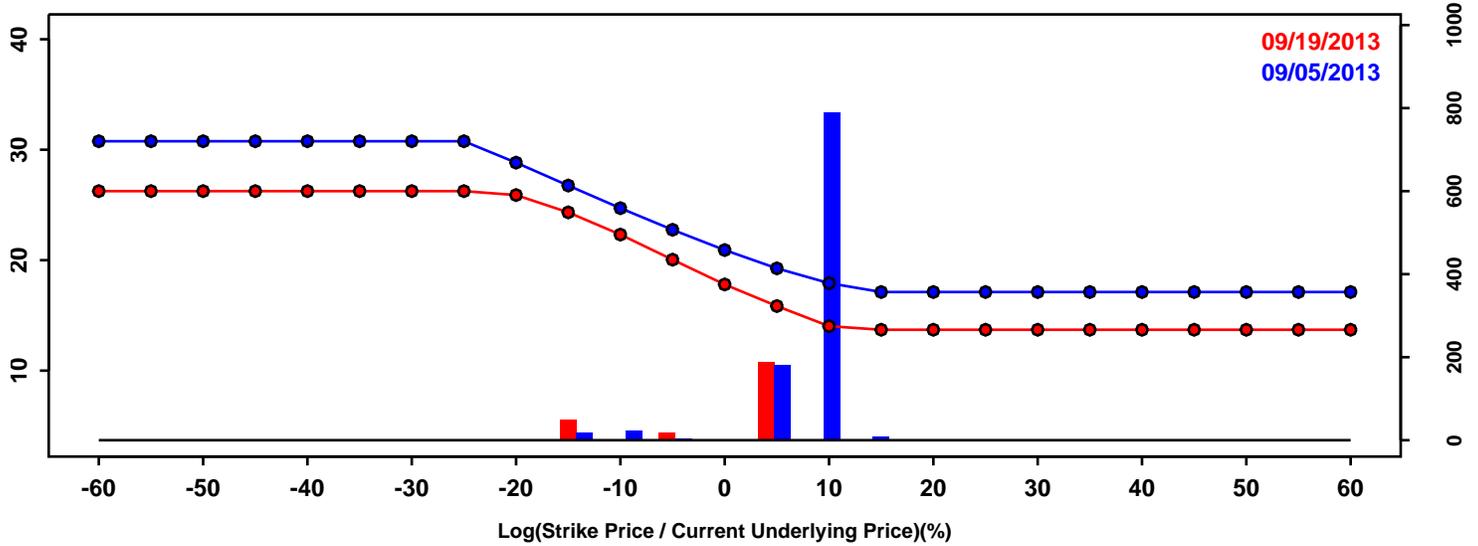


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-17.16%	-15.09%	2.07%
50th Pct	-0.10%	0.23%	0.33%
90th Pct	15.86%	14.38%	-1.47%
Mean	-0.40%	-0.12%	0.28%
Std Dev	13.11%	11.86%	-1.25%
Skew	-0.18	-0.25	-0.07
Kurtosis	0.37	0.54	0.17

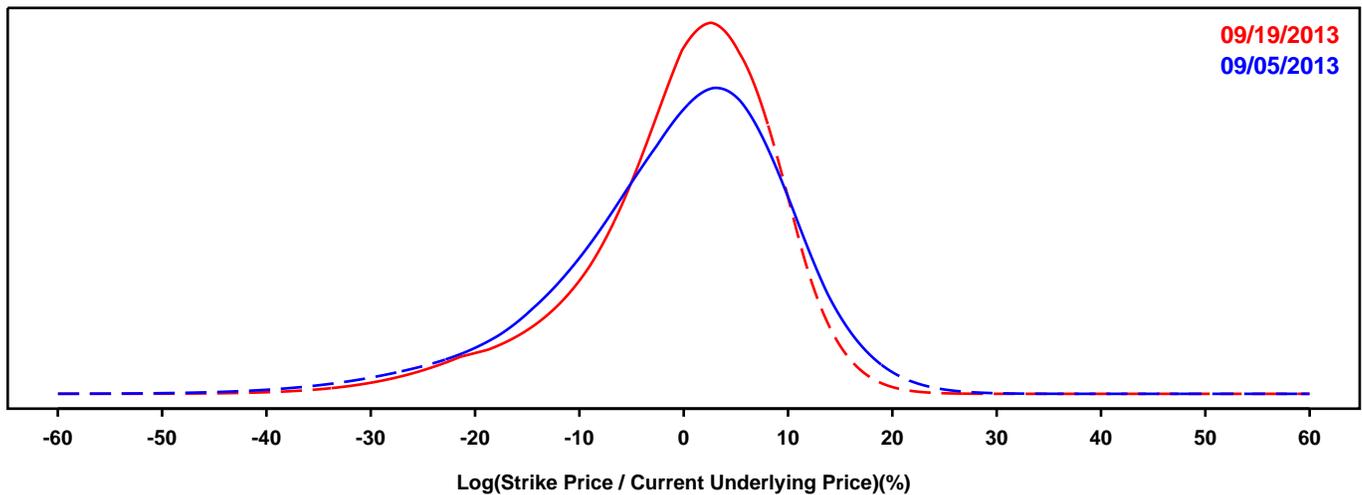
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- BB&T

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

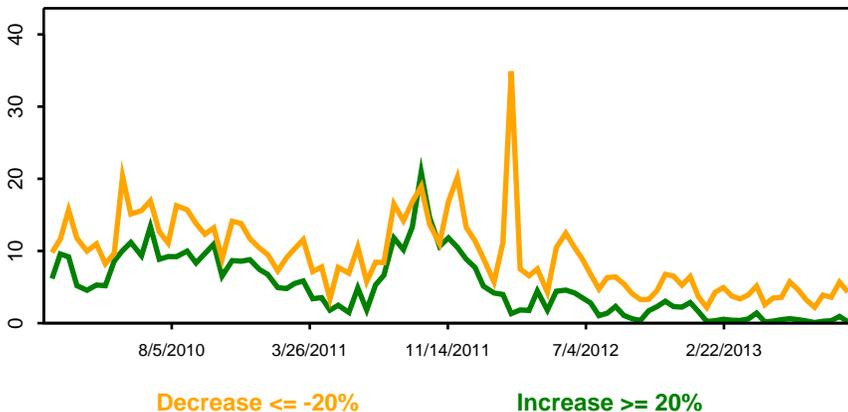
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

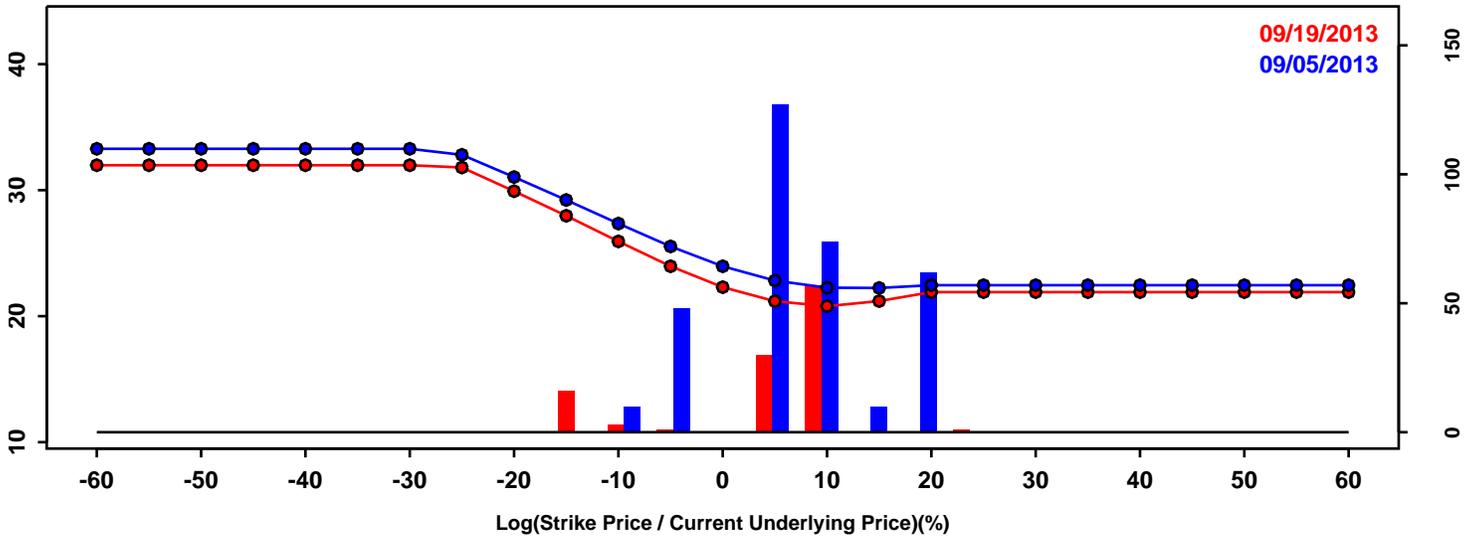


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-15.01%	-12.88%	2.13%
50th Pct	0.66%	1.01%	0.36%
90th Pct	11.39%	9.85%	-1.54%
Mean	-0.78%	-0.38%	0.40%
Std Dev	10.83%	9.33%	-1.50%
Skew	-0.80	-0.95	-0.15
Kurtosis	1.18	1.39	0.21

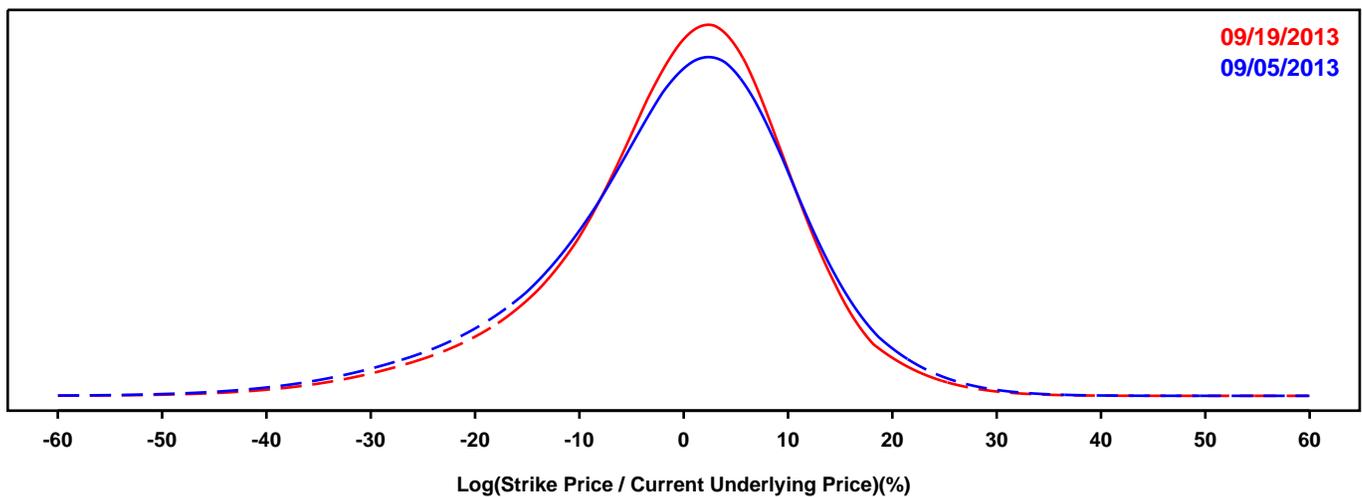
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- BANK OF NEW YORK MELLON

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

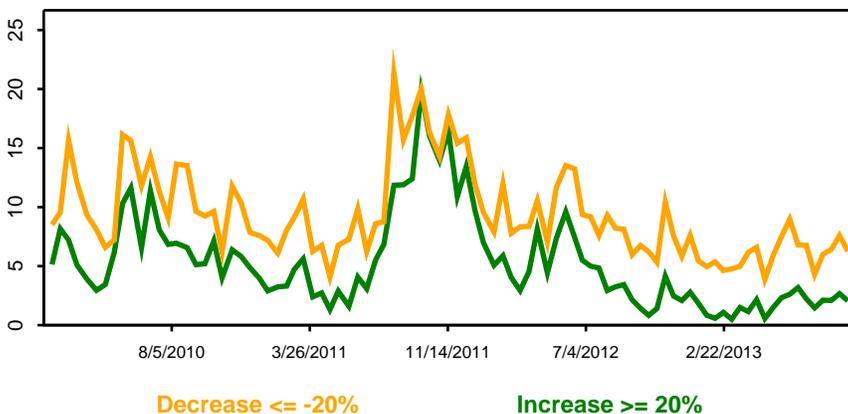
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

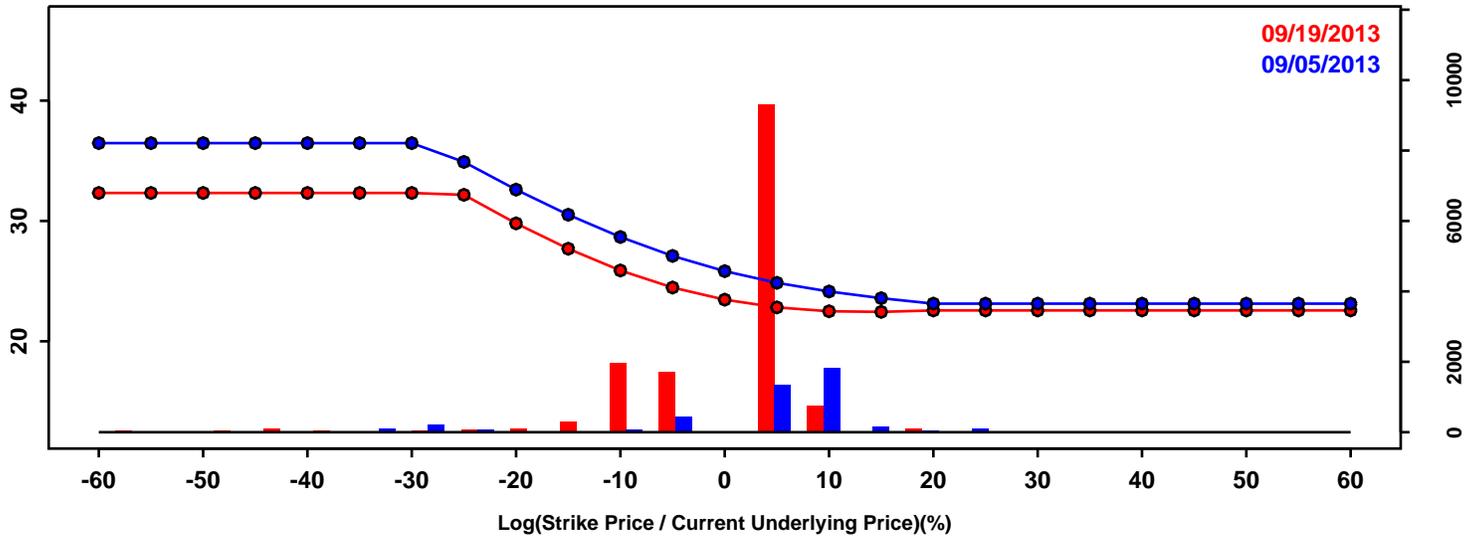


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-17.22%	-15.54%	1.68%
50th Pct	0.37%	0.57%	0.20%
90th Pct	12.98%	12.14%	-0.83%
Mean	-0.98%	-0.66%	0.32%
Std Dev	12.33%	11.44%	-0.89%
Skew	-0.65	-0.69	-0.04
Kurtosis	1.03	1.24	0.21

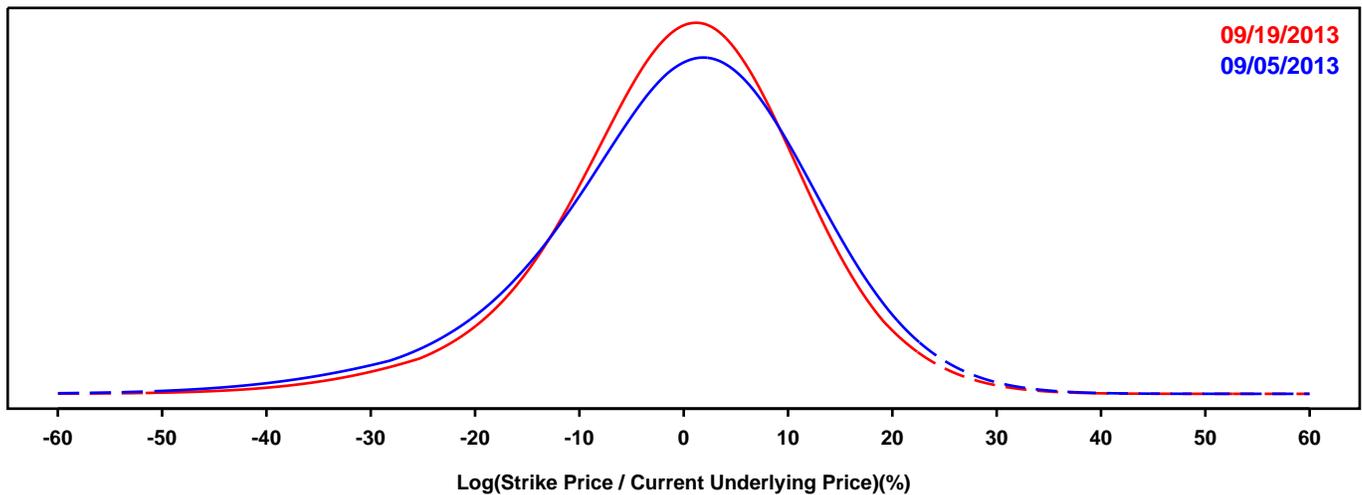
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CITIGROUP

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

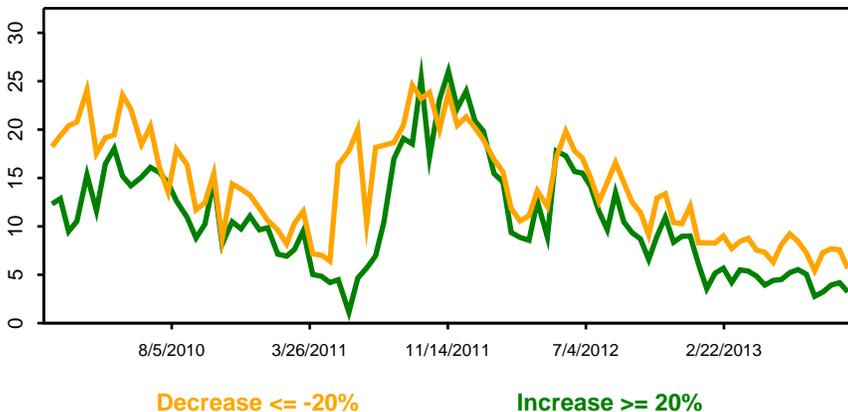
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

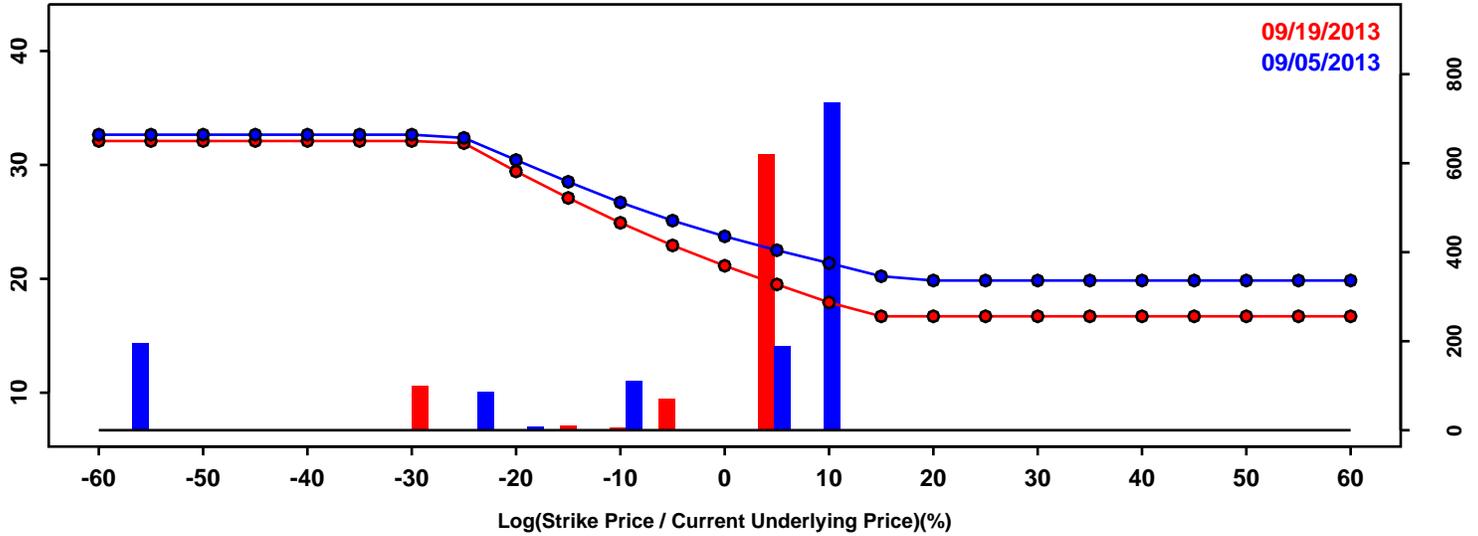


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-17.32%	-15.23%	2.09%
50th Pct	0.49%	0.31%	-0.18%
90th Pct	15.00%	13.74%	-1.26%
Mean	-0.52%	-0.36%	0.16%
Std Dev	13.15%	11.83%	-1.32%
Skew	-0.57	-0.44	0.12
Kurtosis	0.94	0.86	-0.07

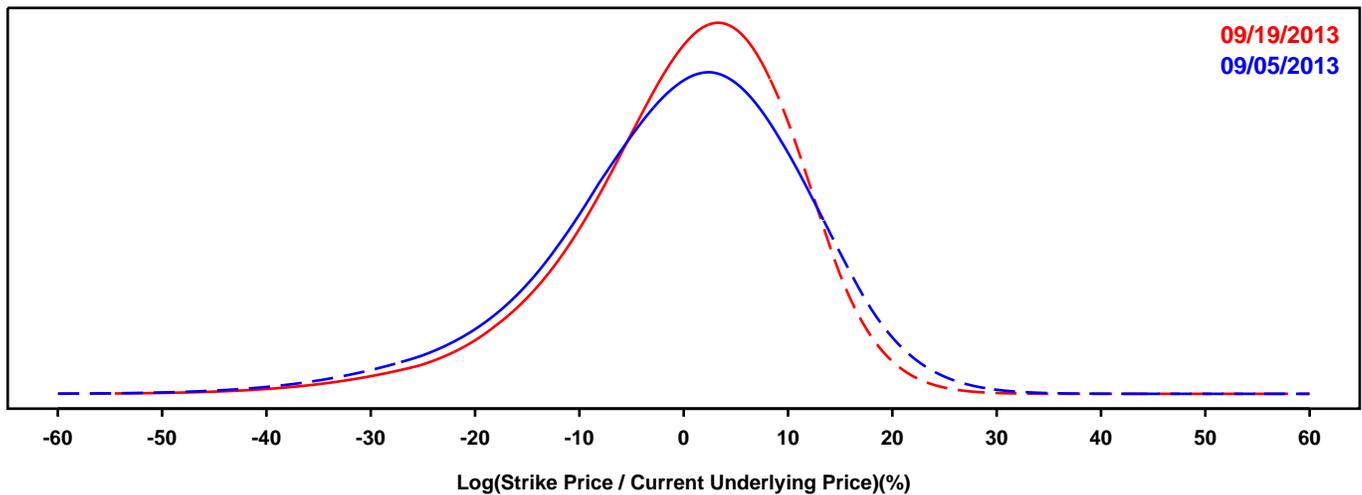
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CAPITAL ONE

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

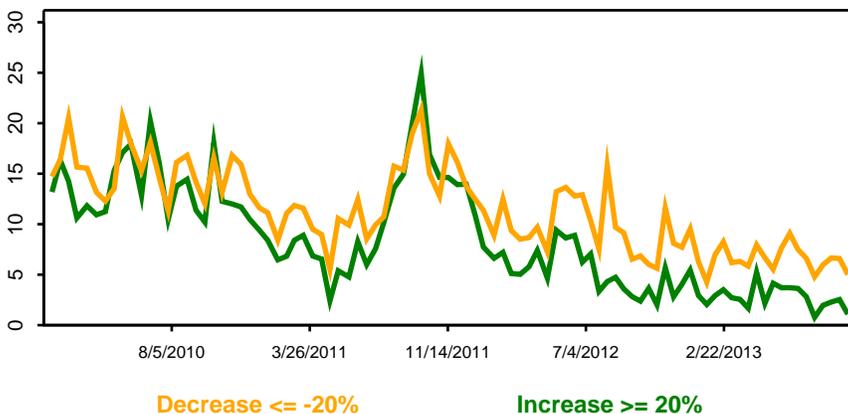
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

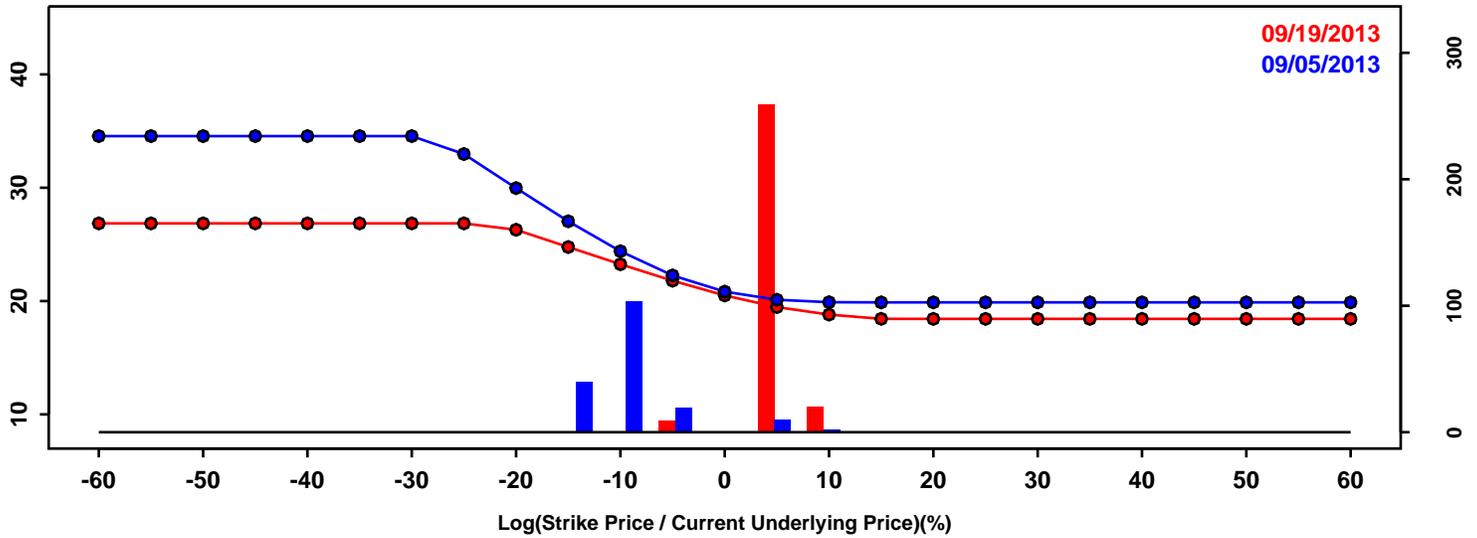


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-16.18%	-14.20%	1.98%
50th Pct	0.62%	1.15%	0.53%
90th Pct	13.76%	12.18%	-1.58%
Mean	-0.50%	-0.13%	0.37%
Std Dev	12.11%	10.82%	-1.28%
Skew	-0.61	-0.80	-0.19
Kurtosis	0.82	1.25	0.43

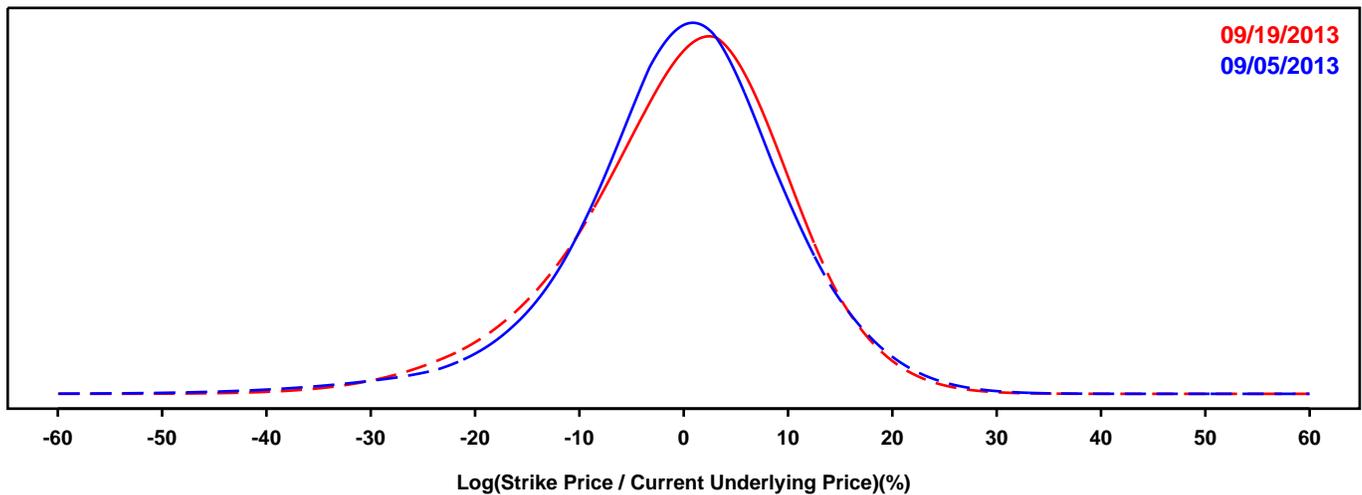
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- FIFTH THIRD

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

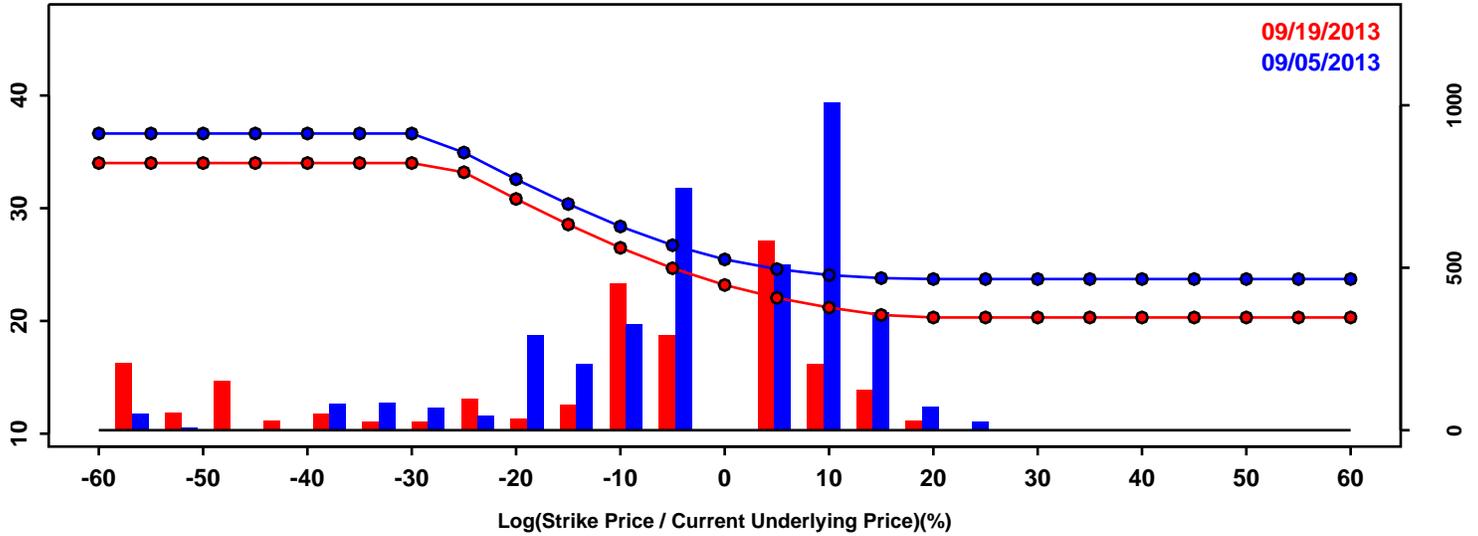


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-12.96%	-13.89%	-0.94%
50th Pct	0.30%	0.62%	0.32%
90th Pct	11.98%	11.85%	-0.13%
Mean	-0.30%	-0.28%	0.01%
Std Dev	10.49%	10.36%	-0.13%
Skew	-0.64	-0.52	0.12
Kurtosis	1.76	0.68	-1.08

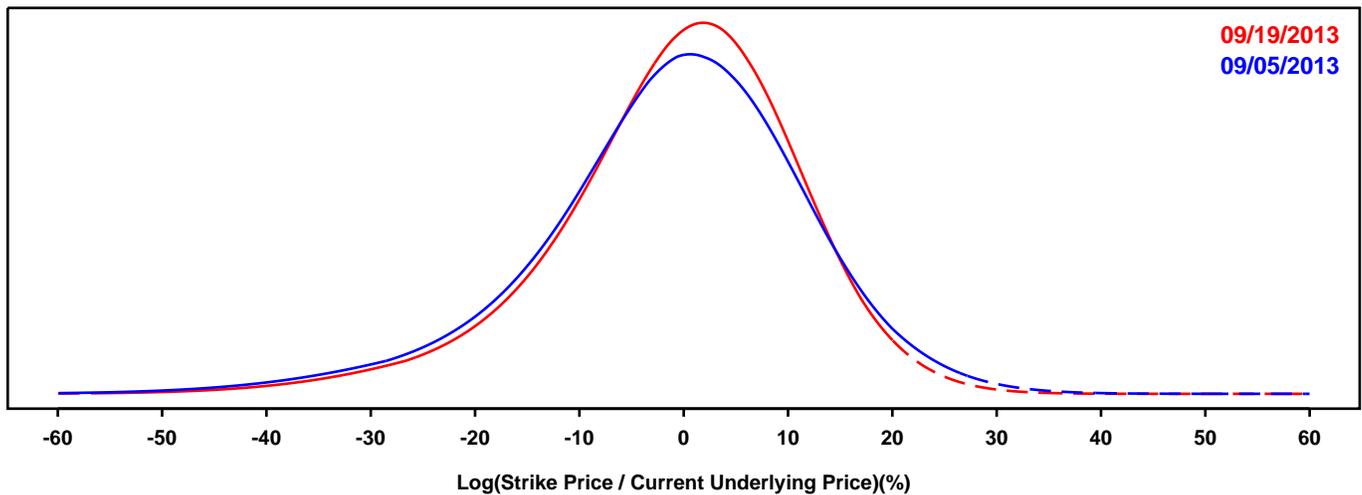
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- GOLDMAN SACHS

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

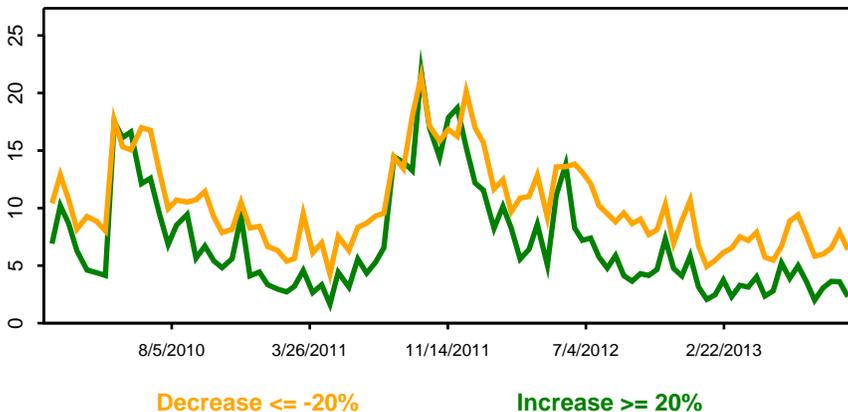
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

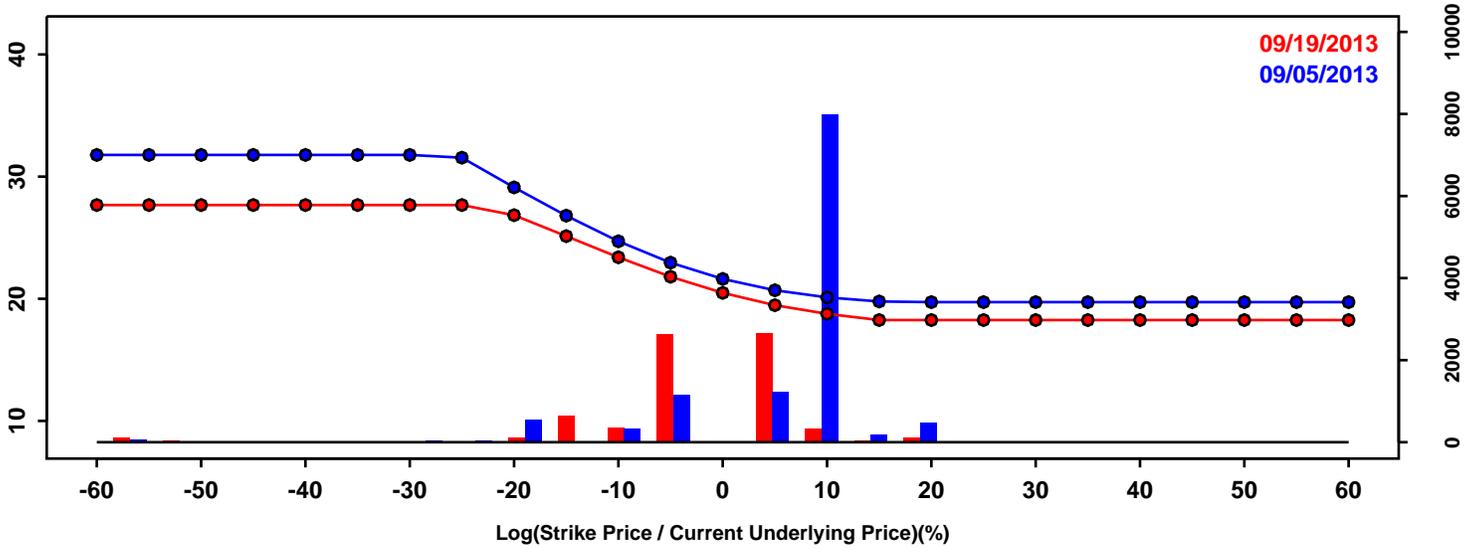


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-17.67%	-15.92%	1.74%
50th Pct	-0.18%	0.39%	0.57%
90th Pct	14.07%	13.05%	-1.02%
Mean	-1.18%	-0.72%	0.46%
Std Dev	13.05%	11.88%	-1.16%
Skew	-0.59	-0.67	-0.08
Kurtosis	1.10	1.14	0.04

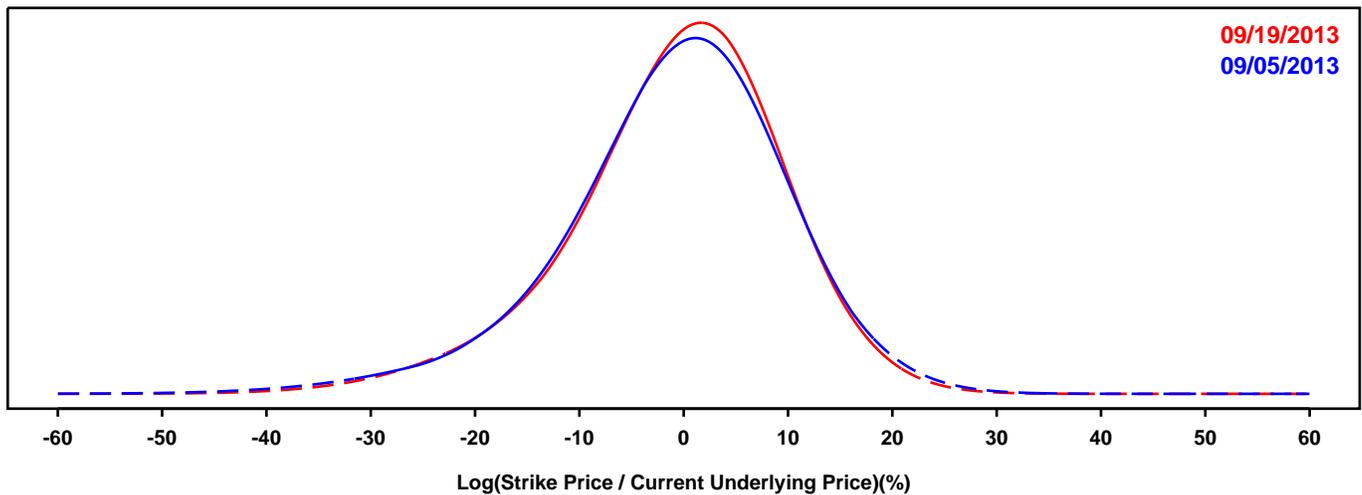
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- JP MORGAN

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

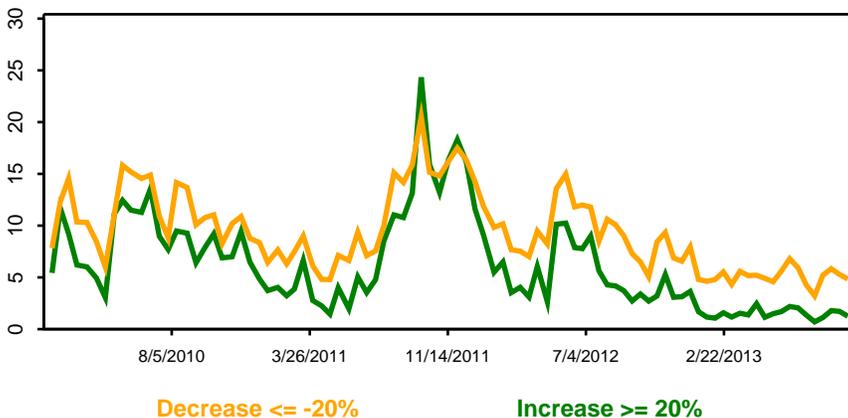
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

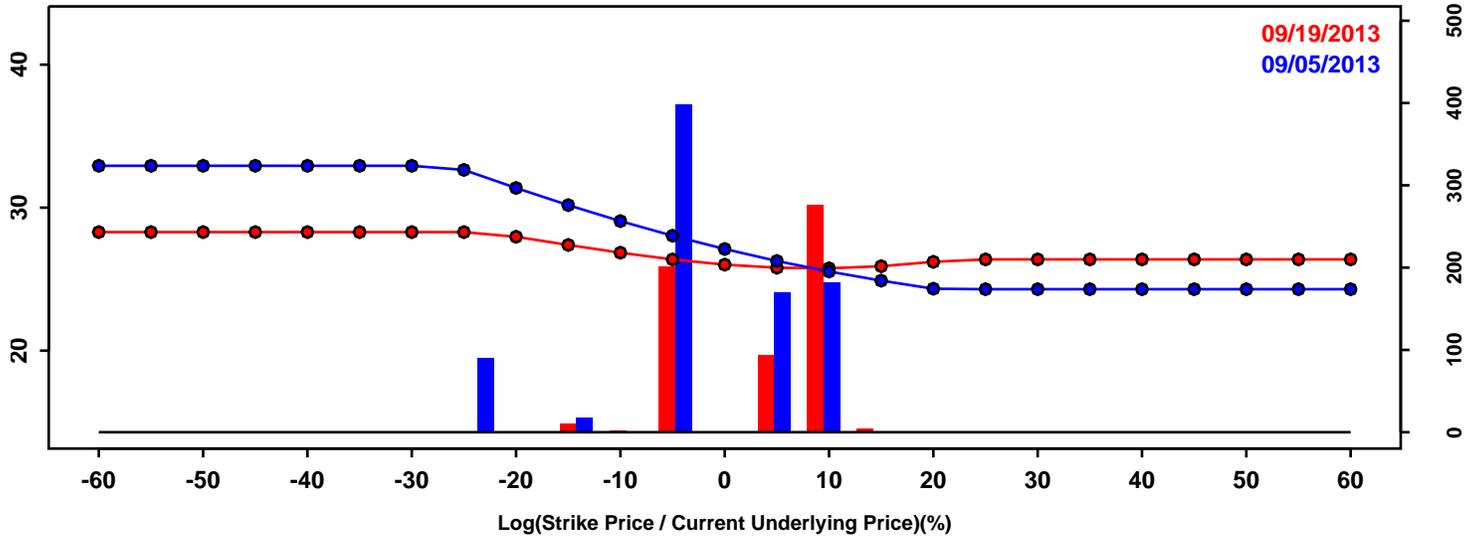


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-14.77%	-14.30%	0.46%
50th Pct	0.00%	0.18%	0.18%
90th Pct	12.00%	11.52%	-0.49%
Mean	-0.87%	-0.72%	0.15%
Std Dev	11.00%	10.44%	-0.56%
Skew	-0.60	-0.56	0.04
Kurtosis	1.13	0.80	-0.34

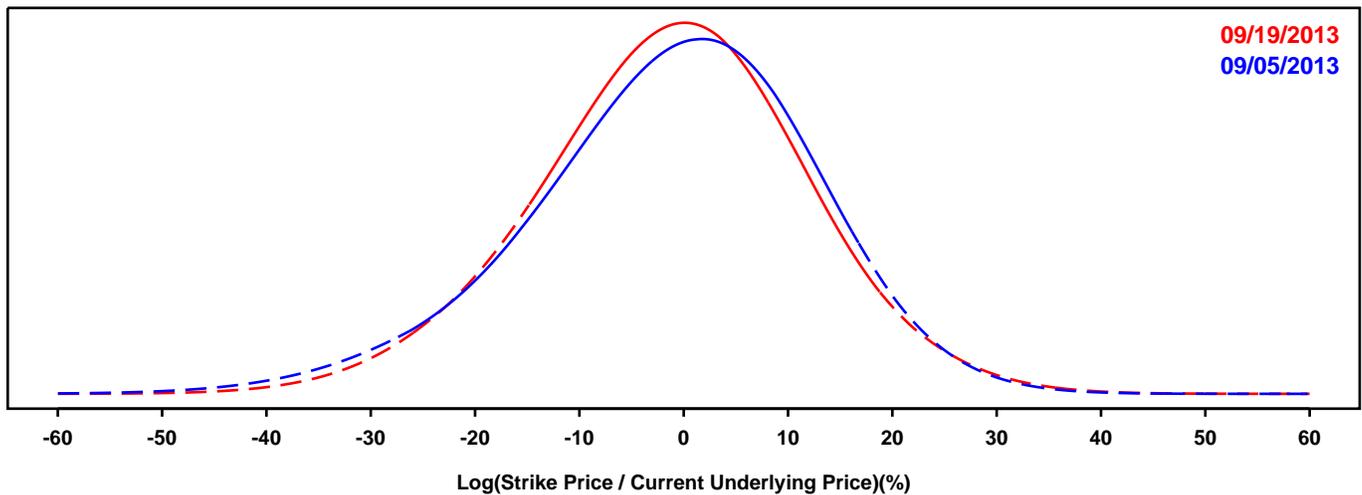
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- KEYCORP

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

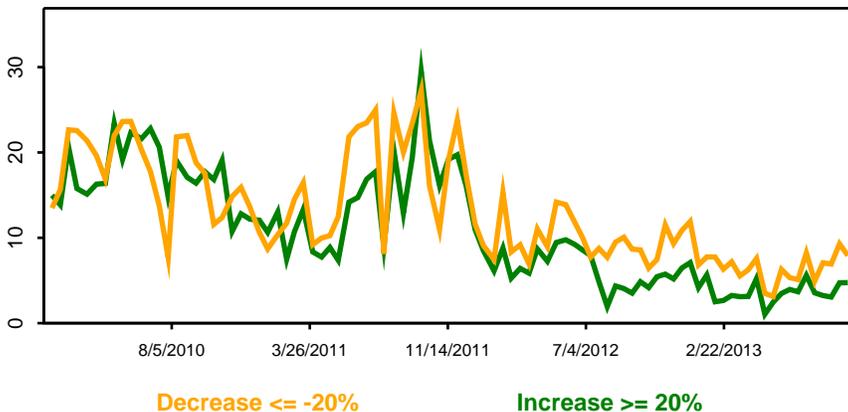
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

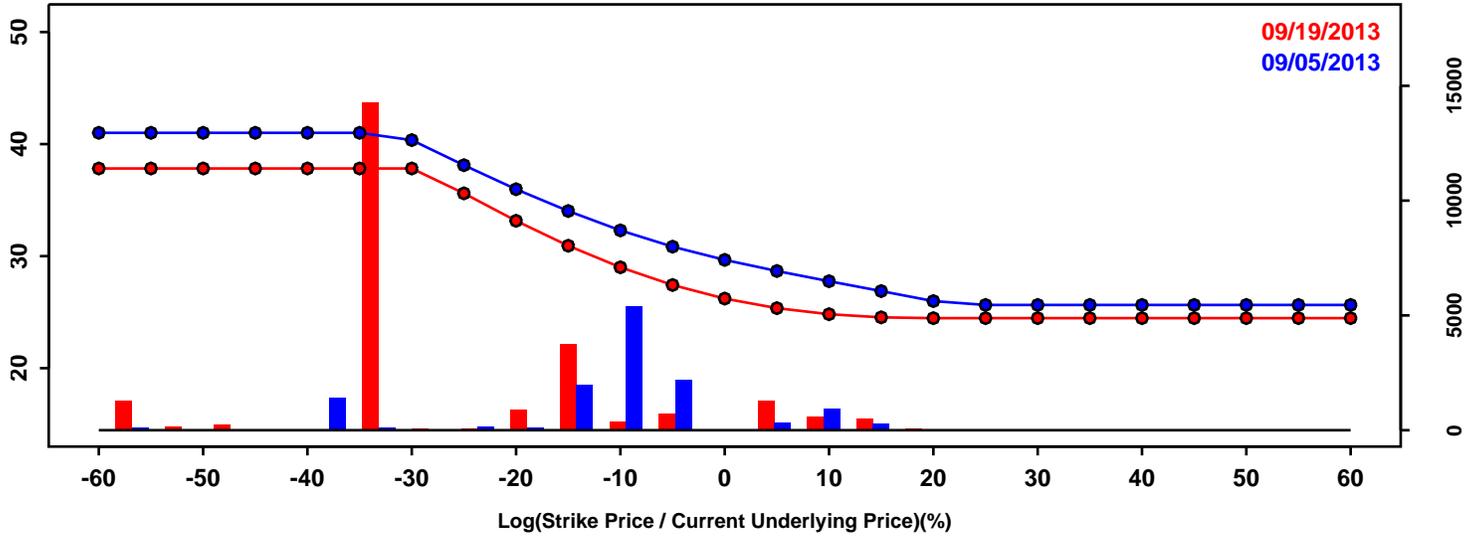


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-19.28%	-18.11%	1.17%
50th Pct	-0.25%	-0.84%	-0.60%
90th Pct	15.45%	14.96%	-0.49%
Mean	-1.19%	-1.21%	-0.02%
Std Dev	13.77%	13.05%	-0.72%
Skew	-0.39	-0.13	0.26
Kurtosis	0.35	0.20	-0.15

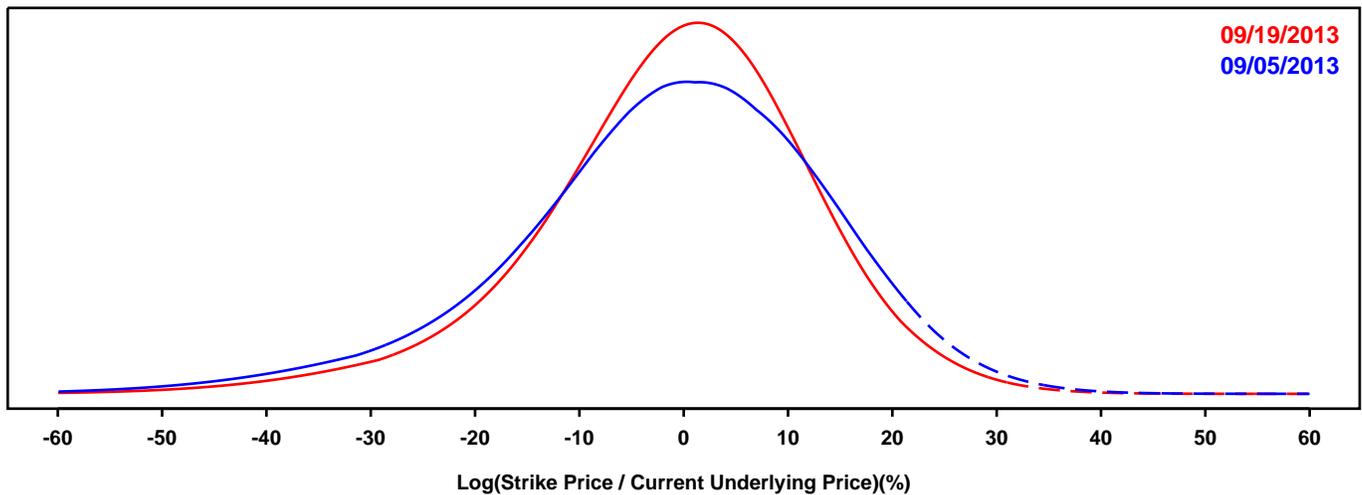
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- MORGAN STANLEY

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

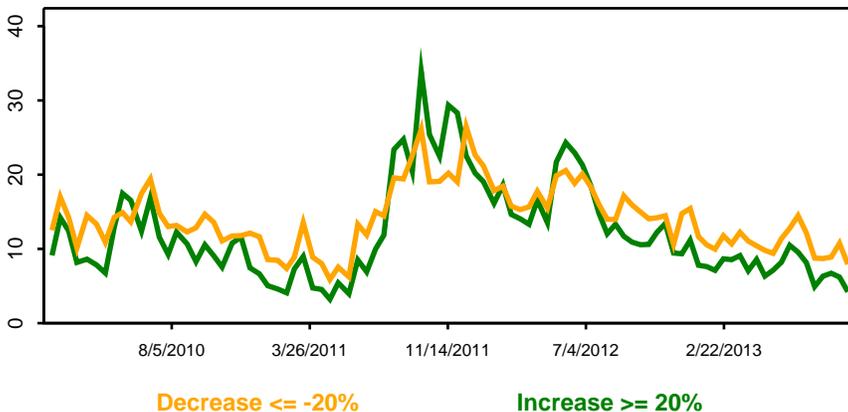
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

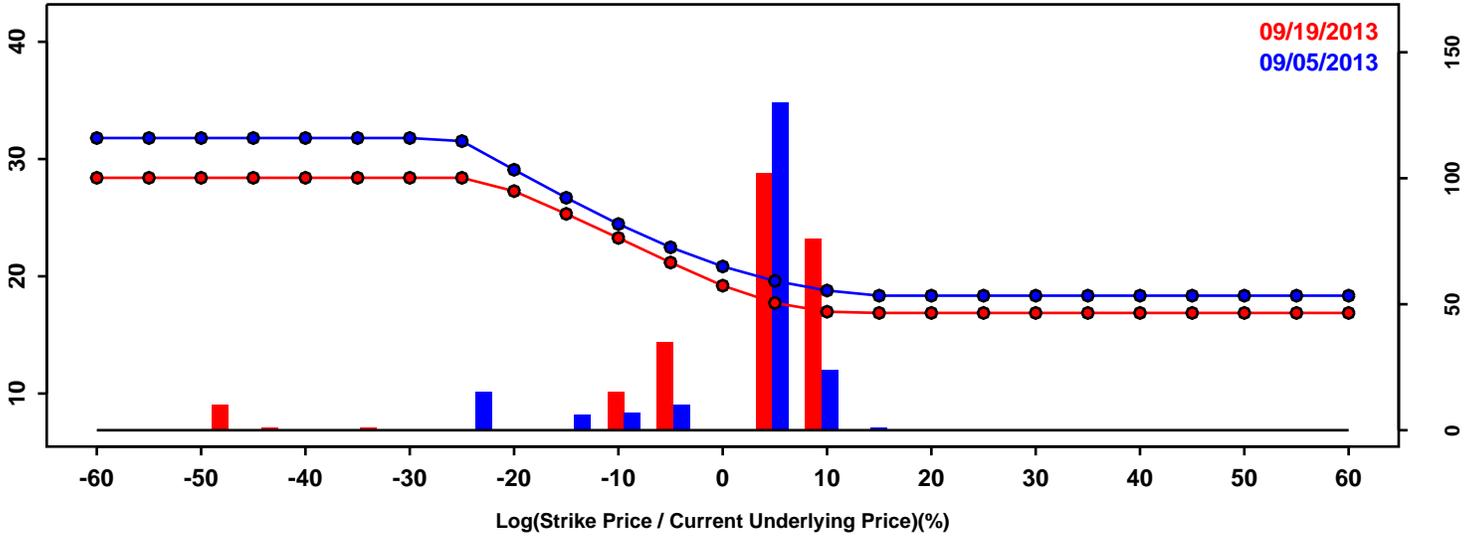


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-20.83%	-17.72%	3.11%
50th Pct	-0.15%	0.08%	0.23%
90th Pct	16.85%	14.78%	-2.07%
Mean	-1.30%	-0.90%	0.40%
Std Dev	15.25%	13.35%	-1.90%
Skew	-0.57	-0.56	0.01
Kurtosis	0.83	1.07	0.24

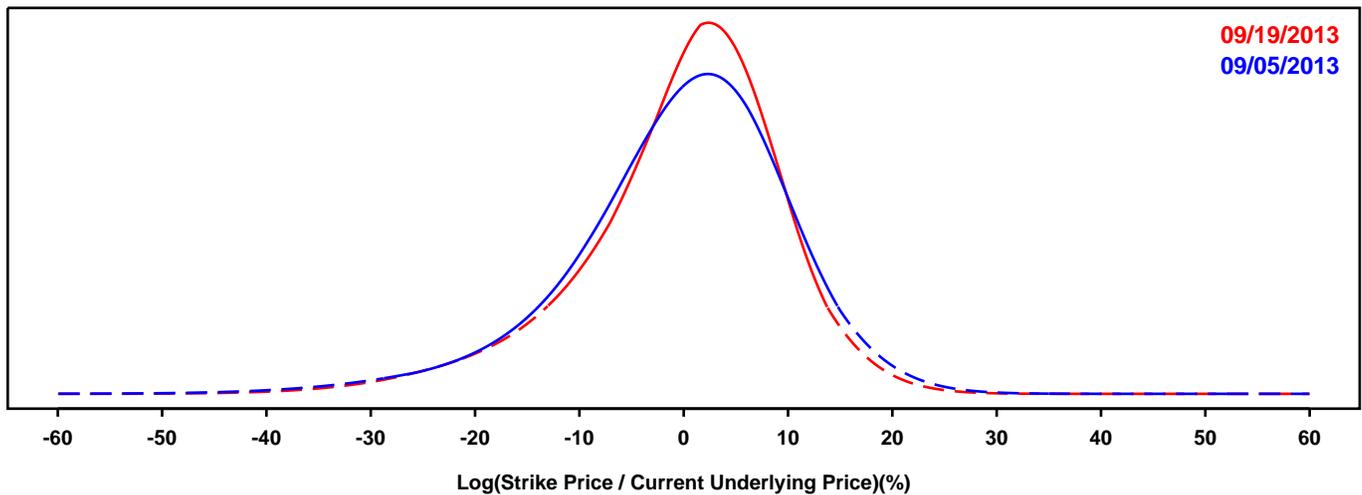
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- PNC FINANCIAL

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

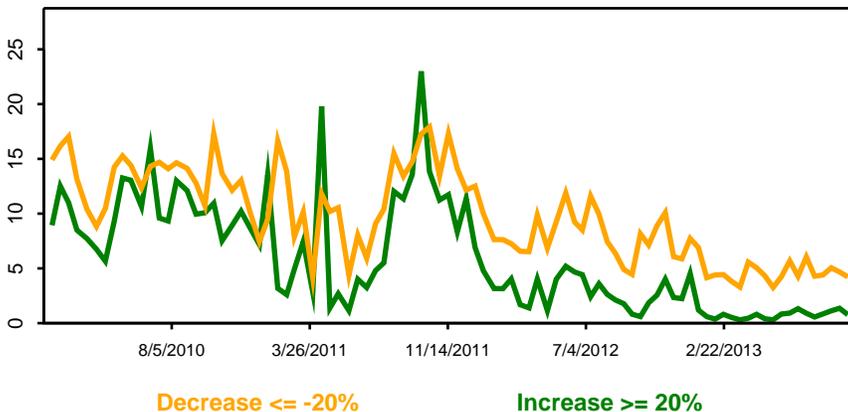
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

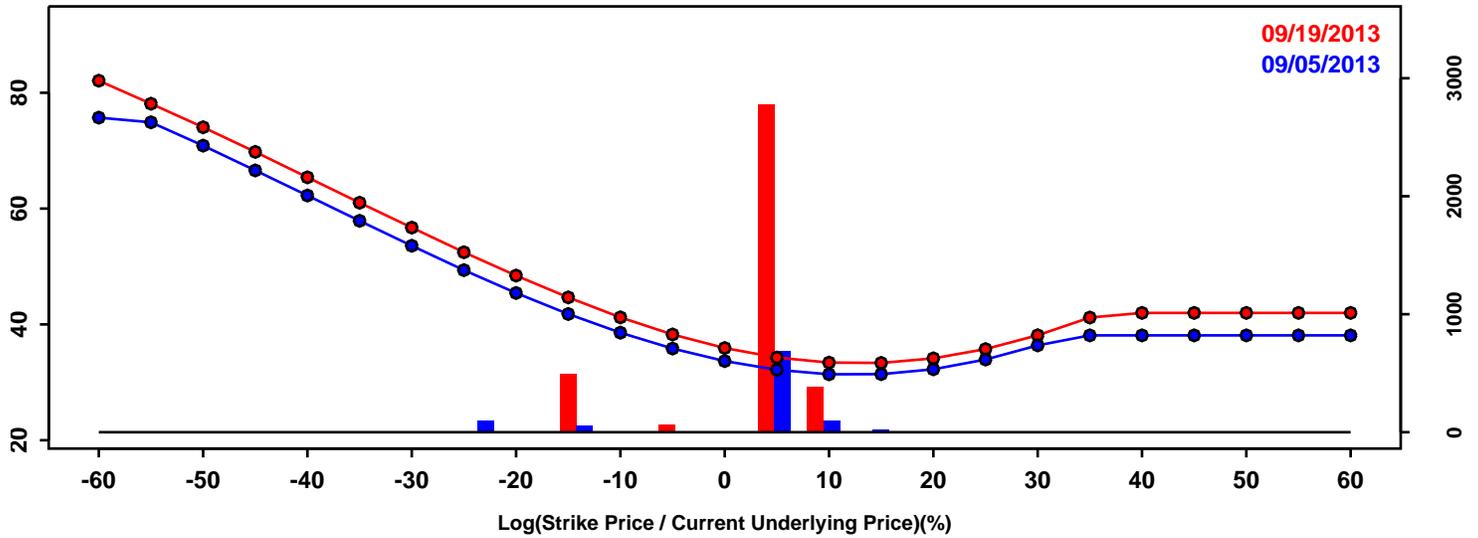


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-13.75%	-13.02%	0.73%
50th Pct	0.75%	1.12%	0.37%
90th Pct	11.76%	10.67%	-1.09%
Mean	-0.31%	-0.17%	0.15%
Std Dev	10.57%	9.80%	-0.77%
Skew	-0.72	-0.81	-0.08
Kurtosis	1.35	1.36	0.01

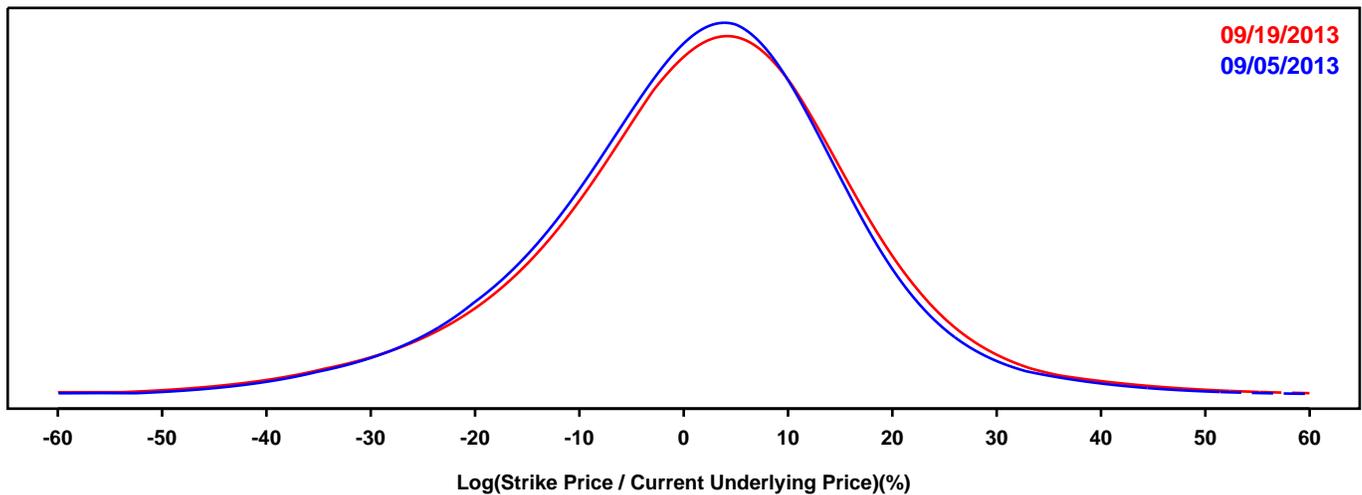
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- REGIONS FINANCIAL

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

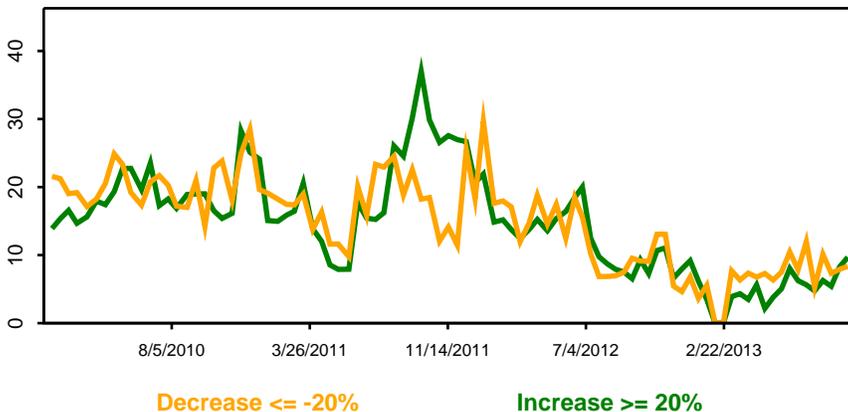
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

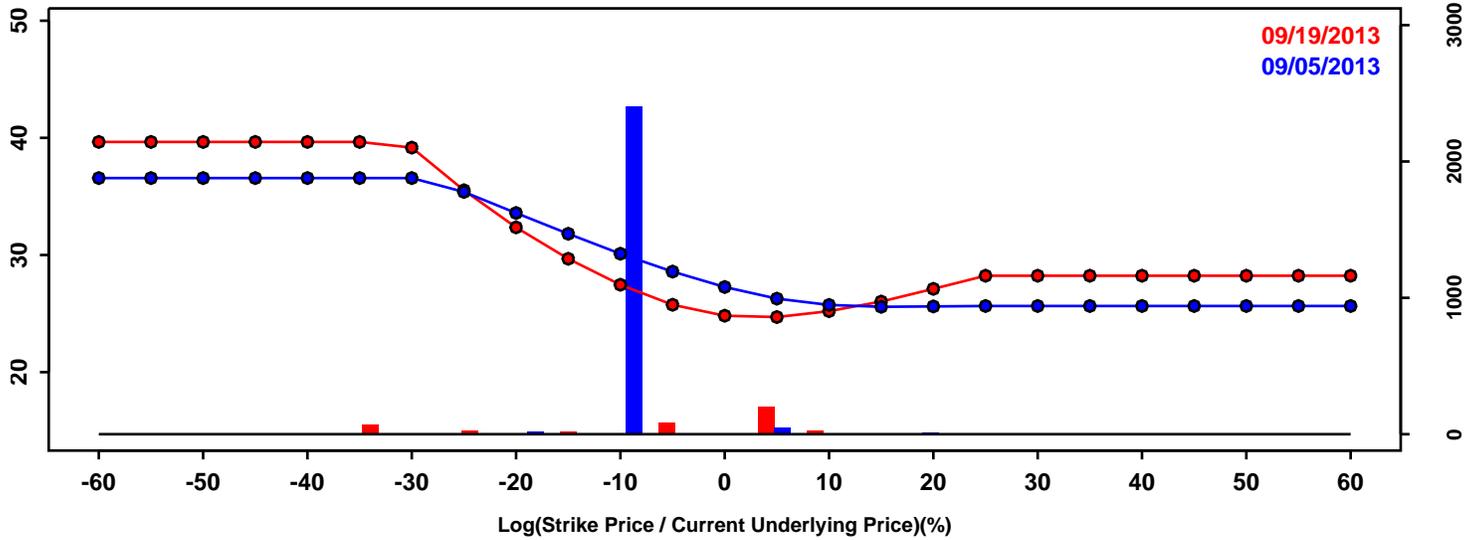


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-17.57%	-17.91%	-0.34%
50th Pct	2.15%	2.67%	0.52%
90th Pct	18.49%	19.73%	1.24%
Mean	1.24%	1.63%	0.39%
Std Dev	15.11%	16.35%	1.24%
Skew	-0.47	-0.73	-0.26
Kurtosis	2.23	3.69	1.46

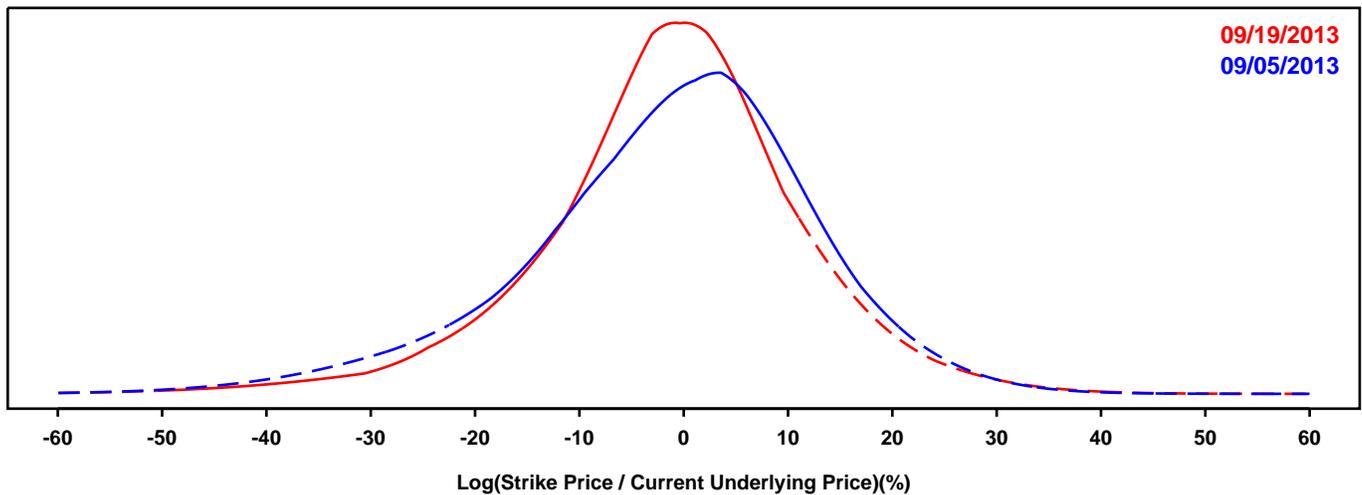
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- SUNTRUST

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

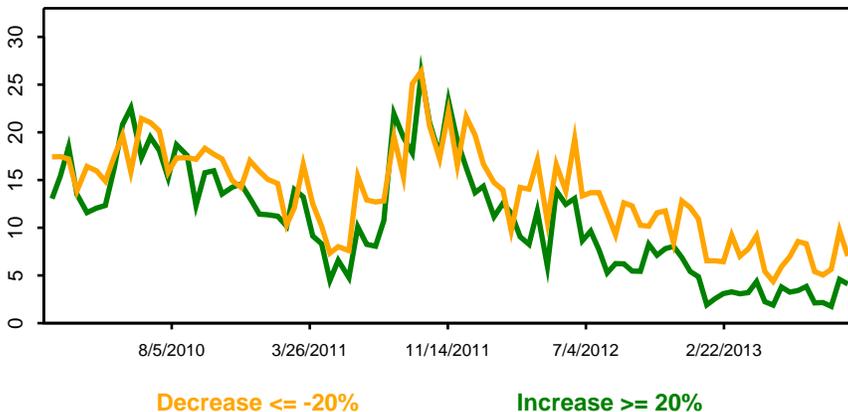
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

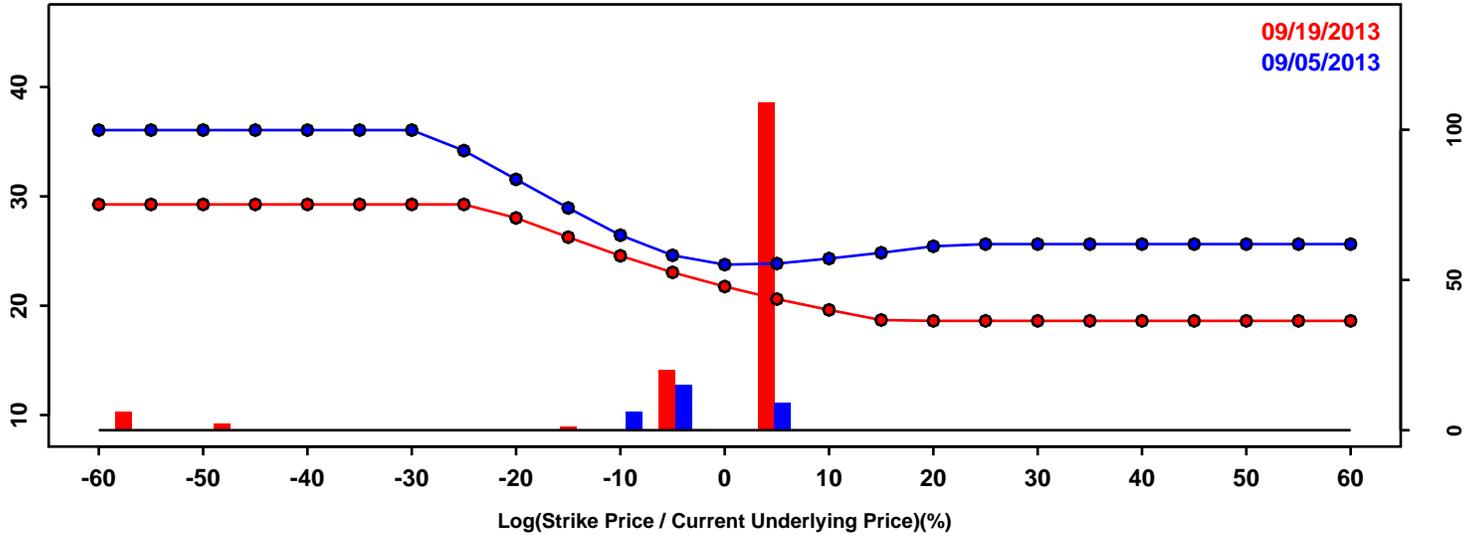


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-19.65%	-16.77%	2.88%
50th Pct	0.00%	-0.62%	-0.62%
90th Pct	14.94%	13.82%	-1.11%
Mean	-1.34%	-1.18%	0.16%
Std Dev	14.02%	12.79%	-1.24%
Skew	-0.55	-0.45	0.10
Kurtosis	0.84	1.59	0.75

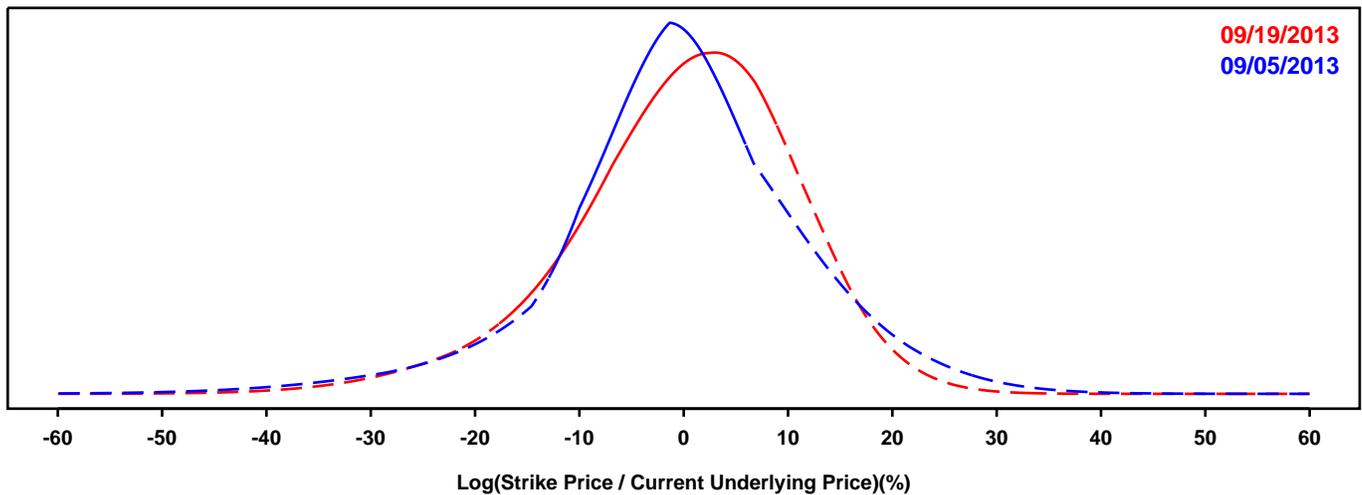
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- STATE STREET

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

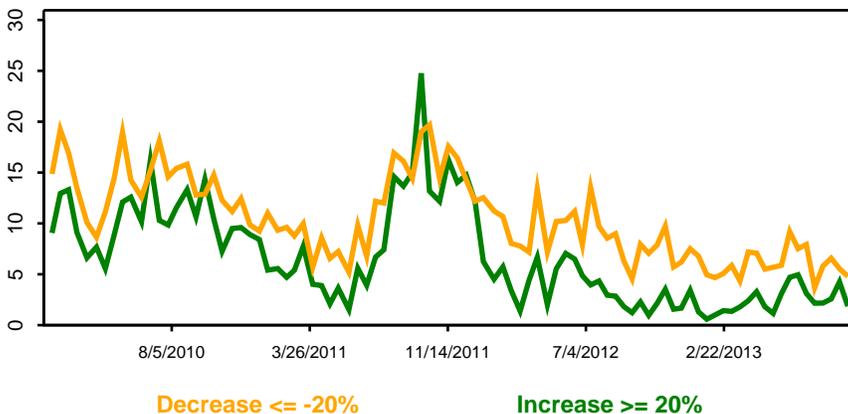
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

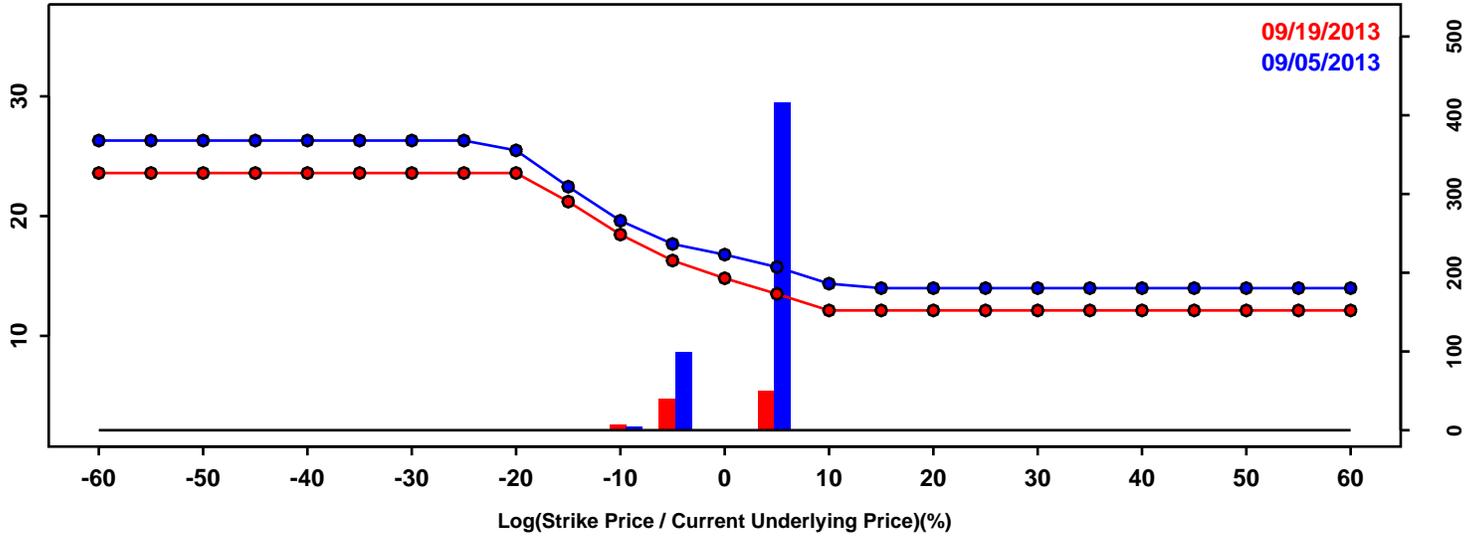


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-14.32%	-14.15%	0.18%
50th Pct	-0.25%	0.95%	1.20%
90th Pct	14.27%	12.97%	-1.30%
Mean	-0.34%	0.03%	0.37%
Std Dev	12.06%	10.94%	-1.13%
Skew	-0.39	-0.56	-0.17
Kurtosis	1.51	0.74	-0.77

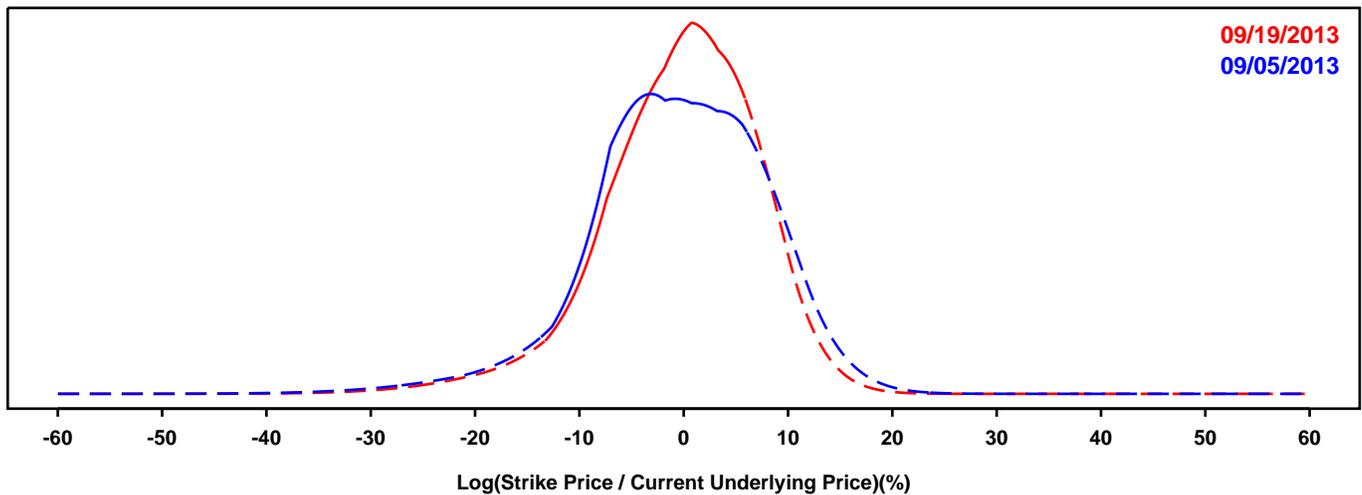
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- US BANCORP

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

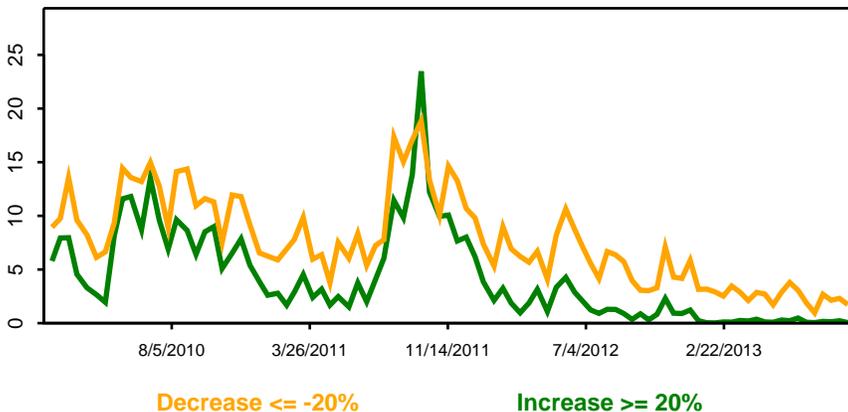
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

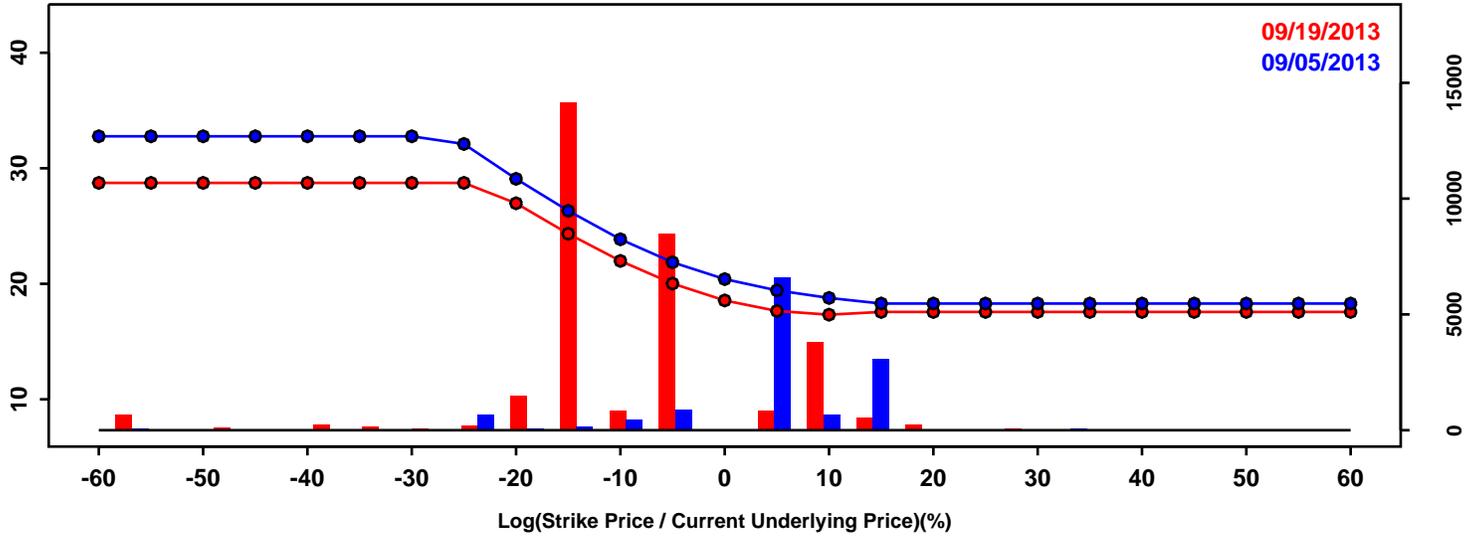


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-10.42%	-9.51%	0.91%
50th Pct	-0.16%	0.31%	0.47%
90th Pct	9.73%	8.52%	-1.22%
Mean	-0.47%	-0.30%	0.17%
Std Dev	8.43%	7.52%	-0.91%
Skew	-0.59	-0.72	-0.14
Kurtosis	1.19	1.37	0.18

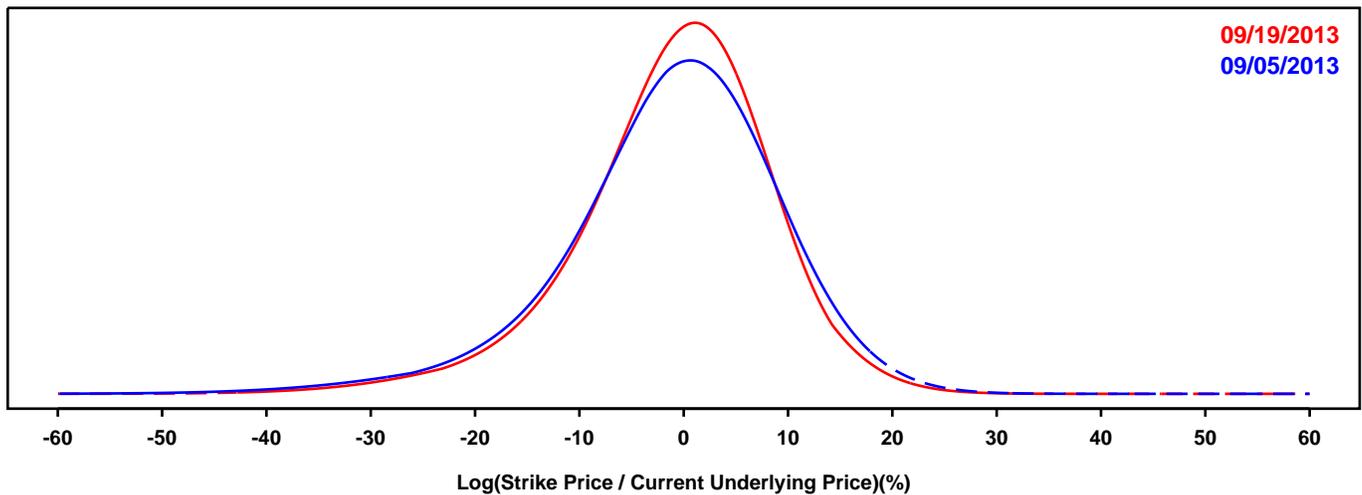
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- WELLS FARGO

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

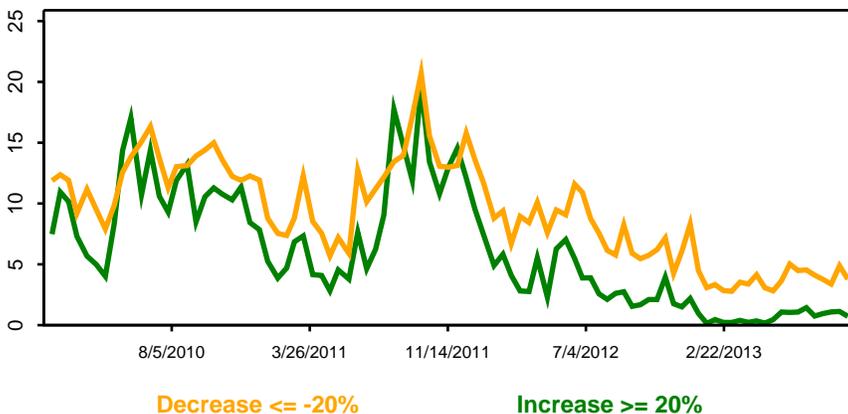
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

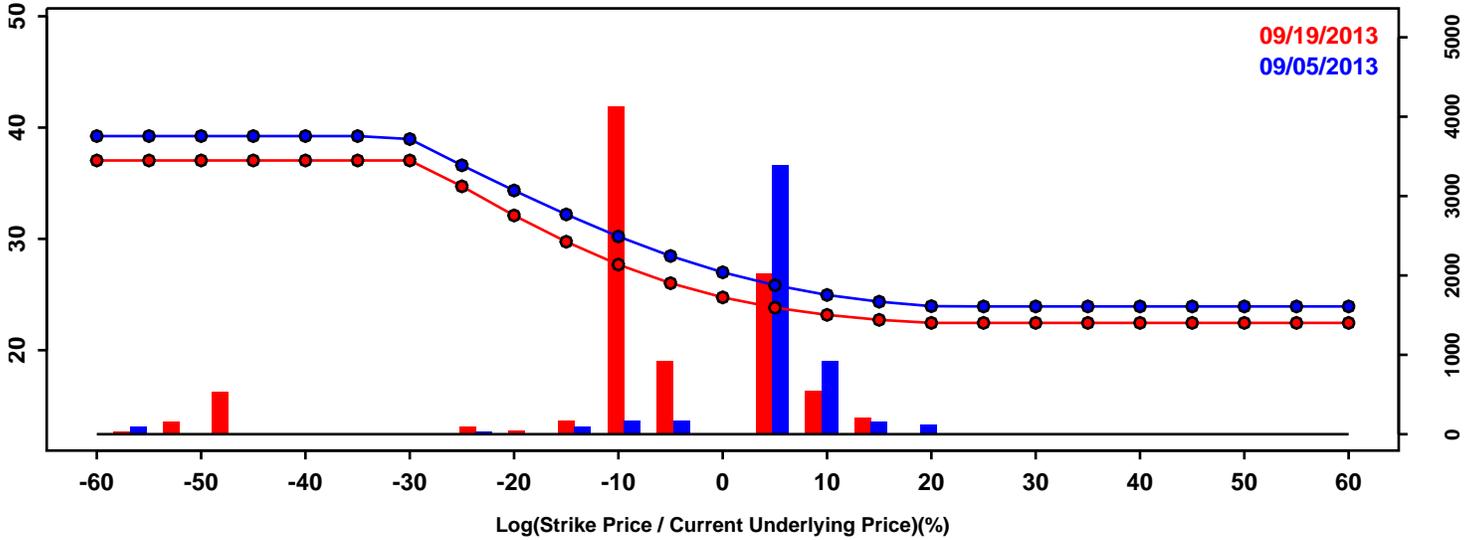


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-14.18%	-12.89%	1.29%
50th Pct	-0.22%	-0.08%	0.14%
90th Pct	11.14%	9.99%	-1.15%
Mean	-1.10%	-0.93%	0.17%
Std Dev	10.53%	9.52%	-1.01%
Skew	-0.71	-0.67	0.04
Kurtosis	1.51	1.38	-0.13

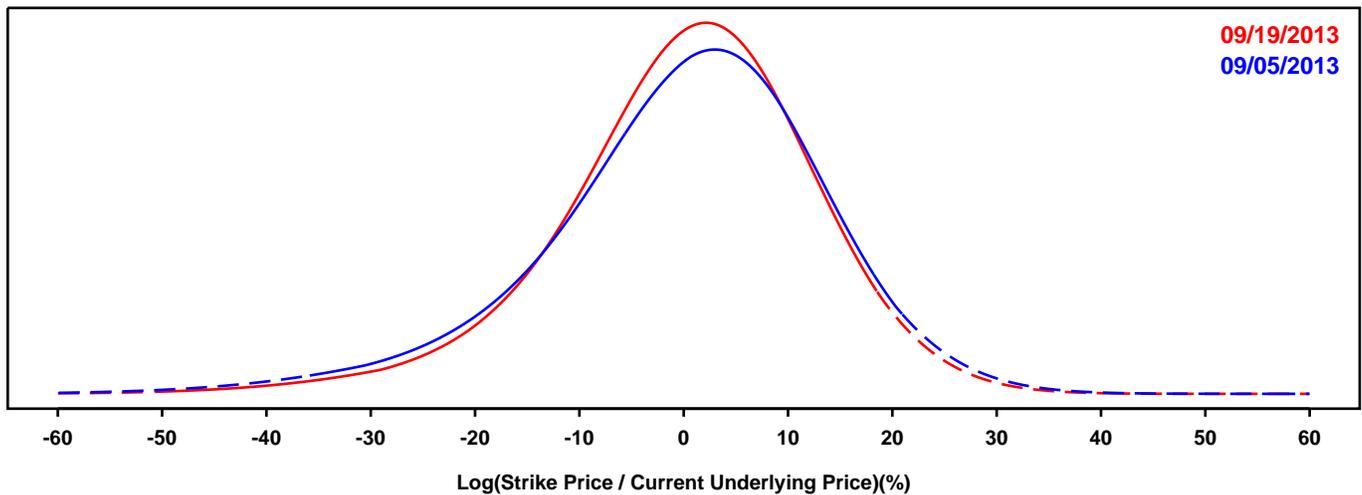
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- AIG

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

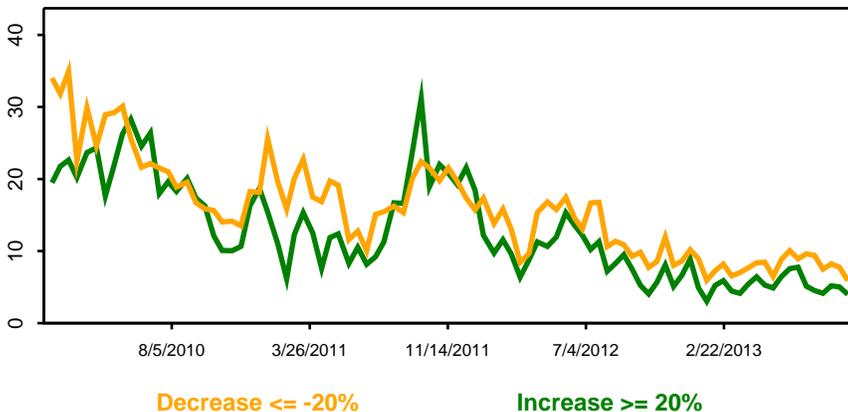
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

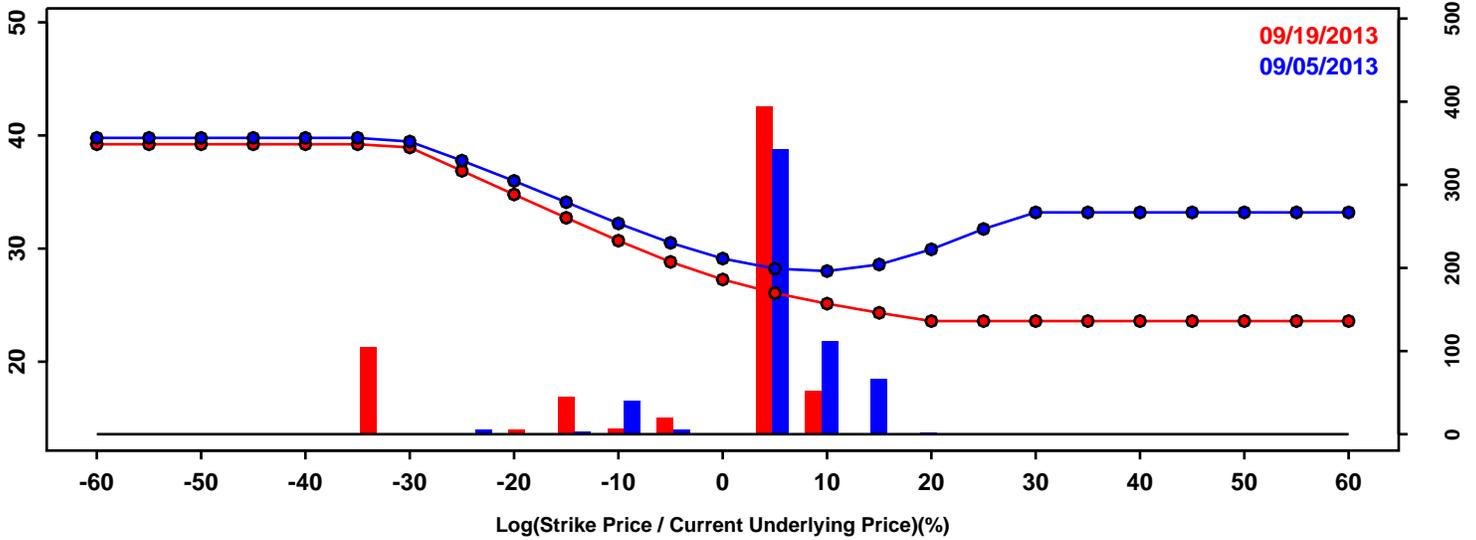


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-17.39%	-15.28%	2.11%
50th Pct	1.25%	1.07%	-0.19%
90th Pct	15.86%	14.93%	-0.92%
Mean	0.03%	0.25%	0.21%
Std Dev	13.64%	12.41%	-1.23%
Skew	-0.64	-0.56	0.08
Kurtosis	1.12	1.13	0.01

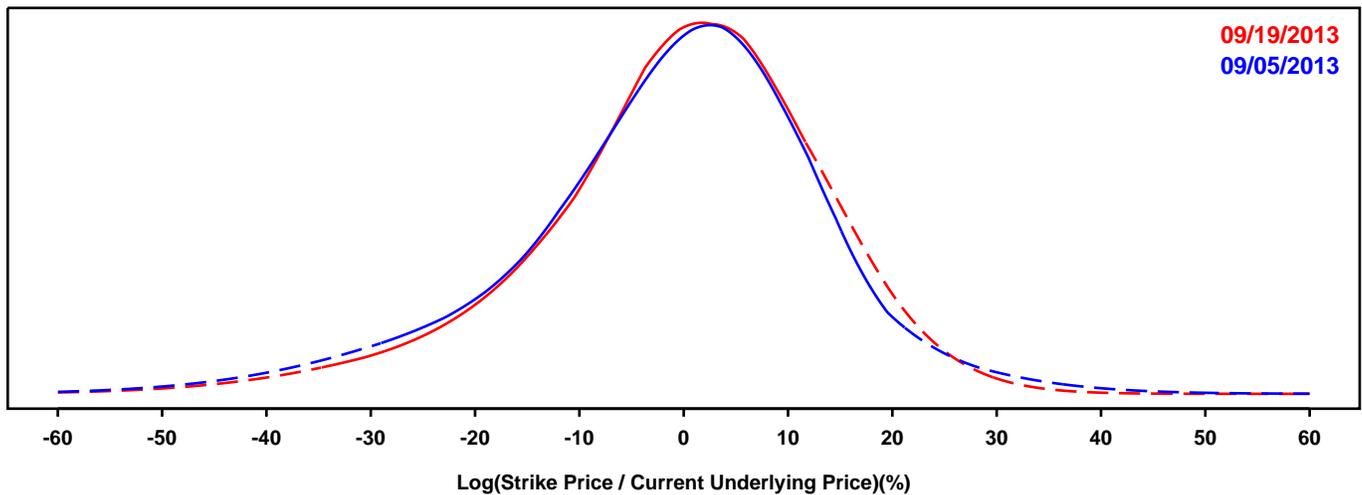
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- HARTFORD FINANCIAL

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

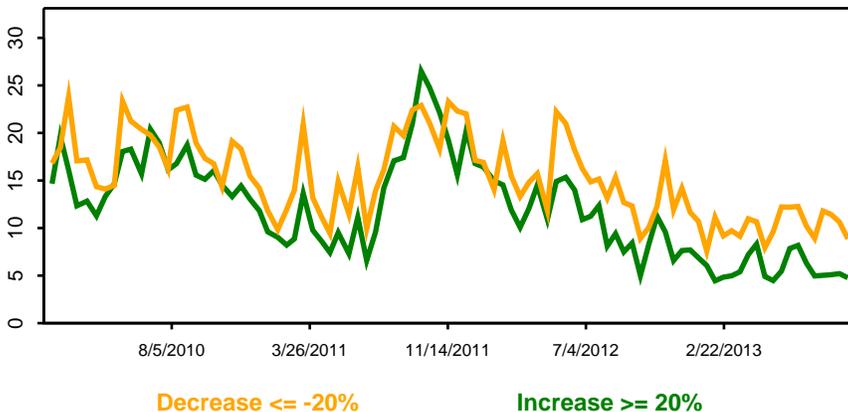
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

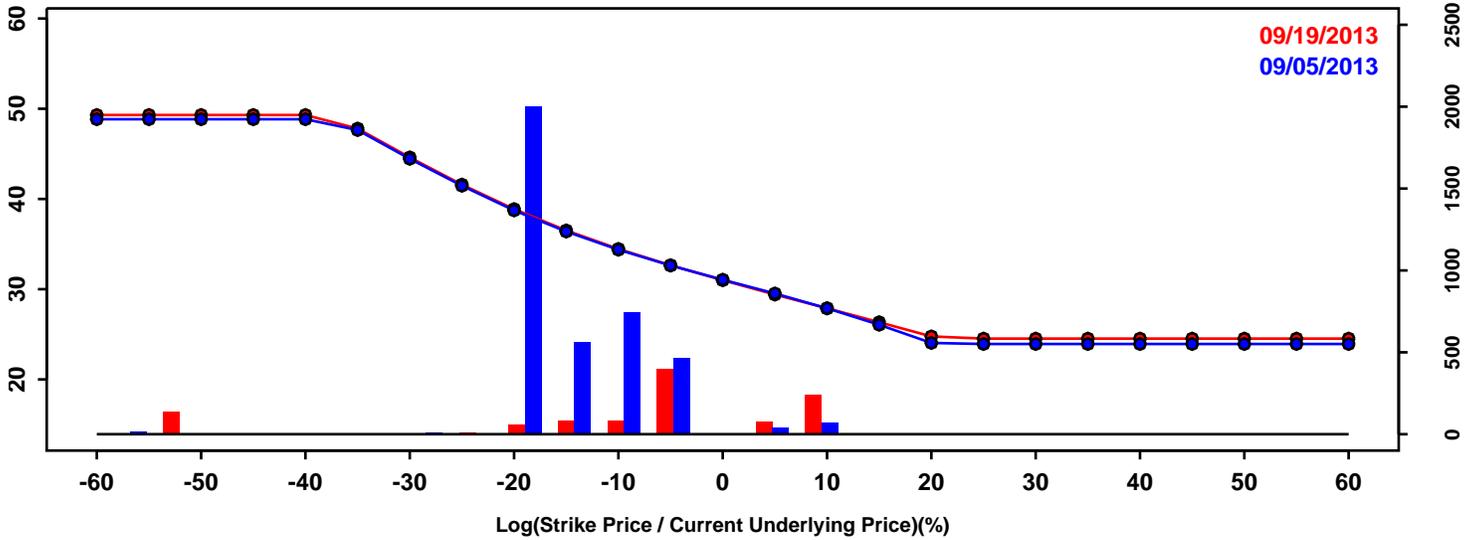


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-20.76%	-18.64%	2.12%
50th Pct	0.21%	0.75%	0.54%
90th Pct	15.24%	15.68%	0.44%
Mean	-1.31%	-0.57%	0.74%
Std Dev	14.96%	13.99%	-0.96%
Skew	-0.55	-0.68	-0.13
Kurtosis	1.17	1.11	-0.06

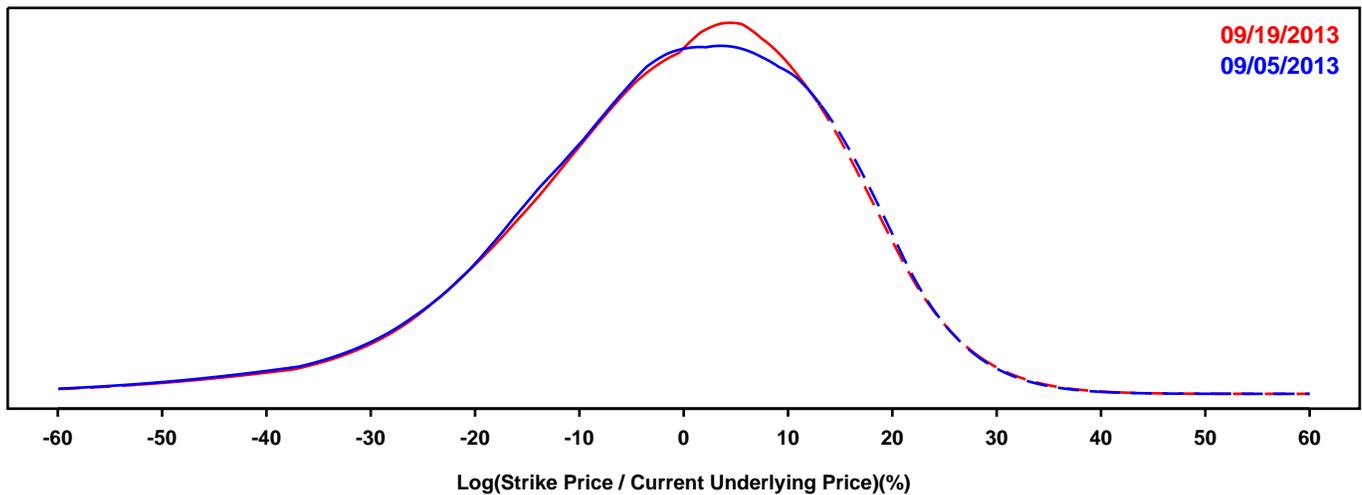
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- LINCOLN NATIONAL

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

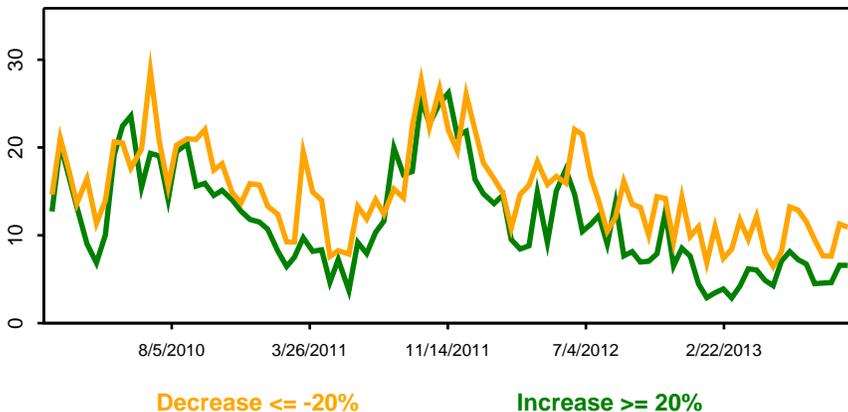
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

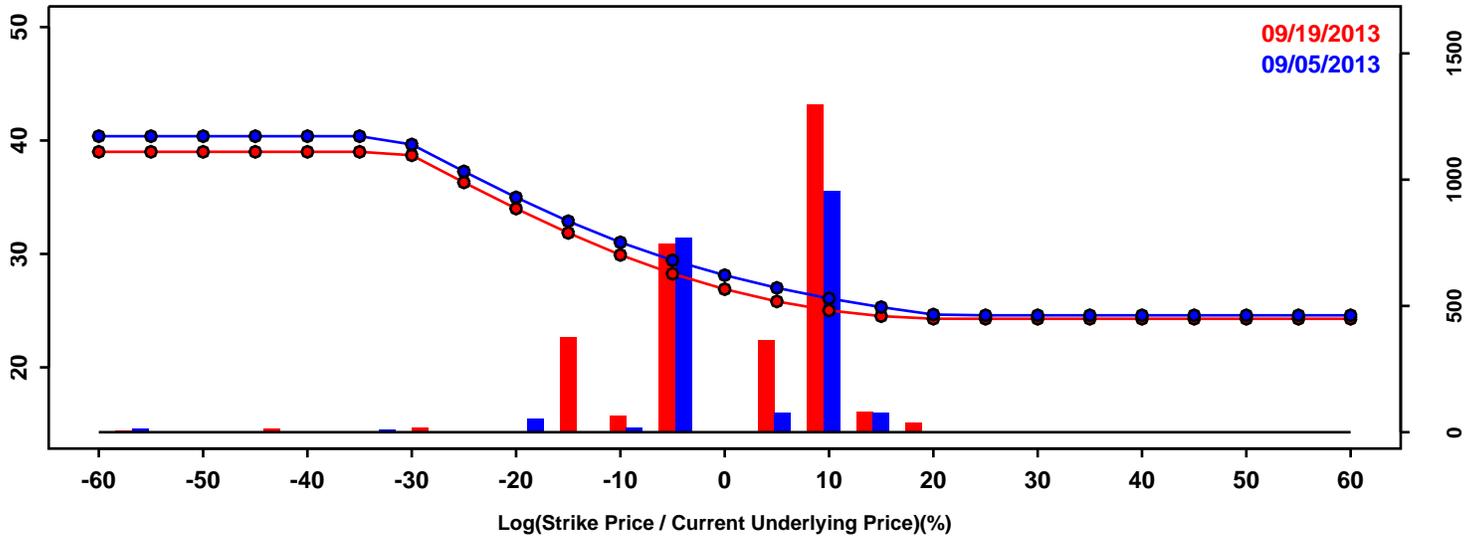


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-21.35%	-20.97%	0.38%
50th Pct	0.51%	0.89%	0.38%
90th Pct	17.56%	17.46%	-0.10%
Mean	-1.08%	-0.84%	0.24%
Std Dev	16.04%	15.84%	-0.20%
Skew	-0.78	-0.78	-0.00
Kurtosis	1.30	1.38	0.08

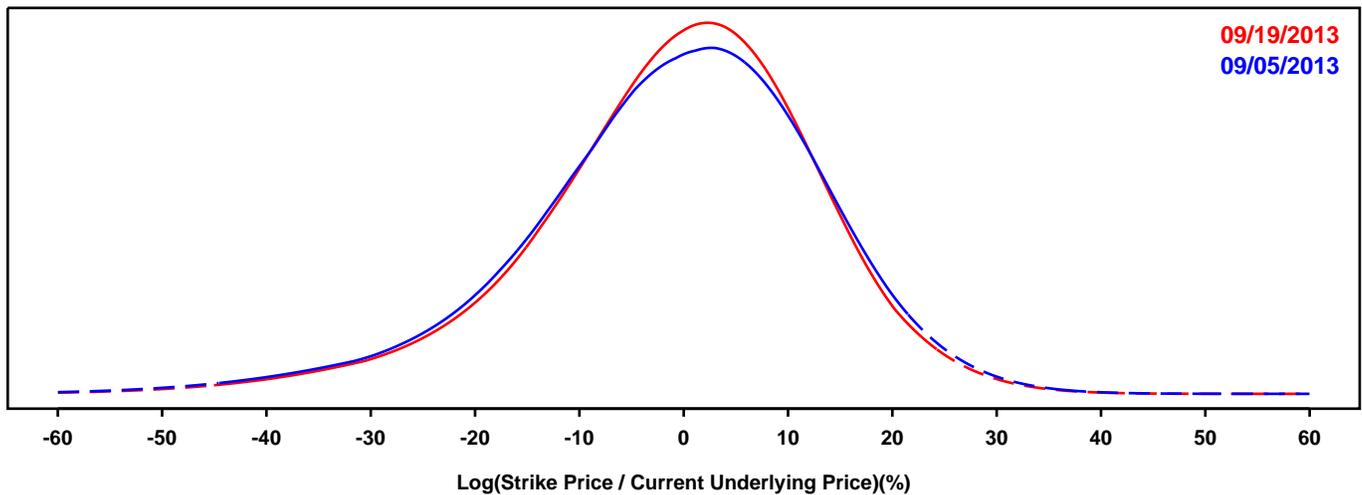
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- METLIFE

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

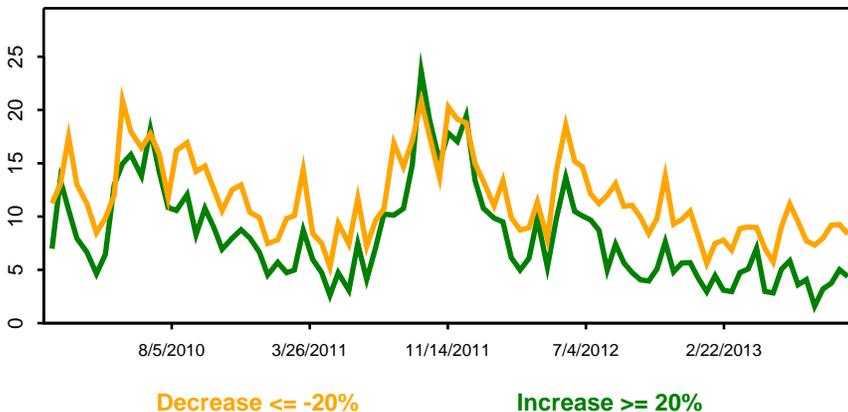
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

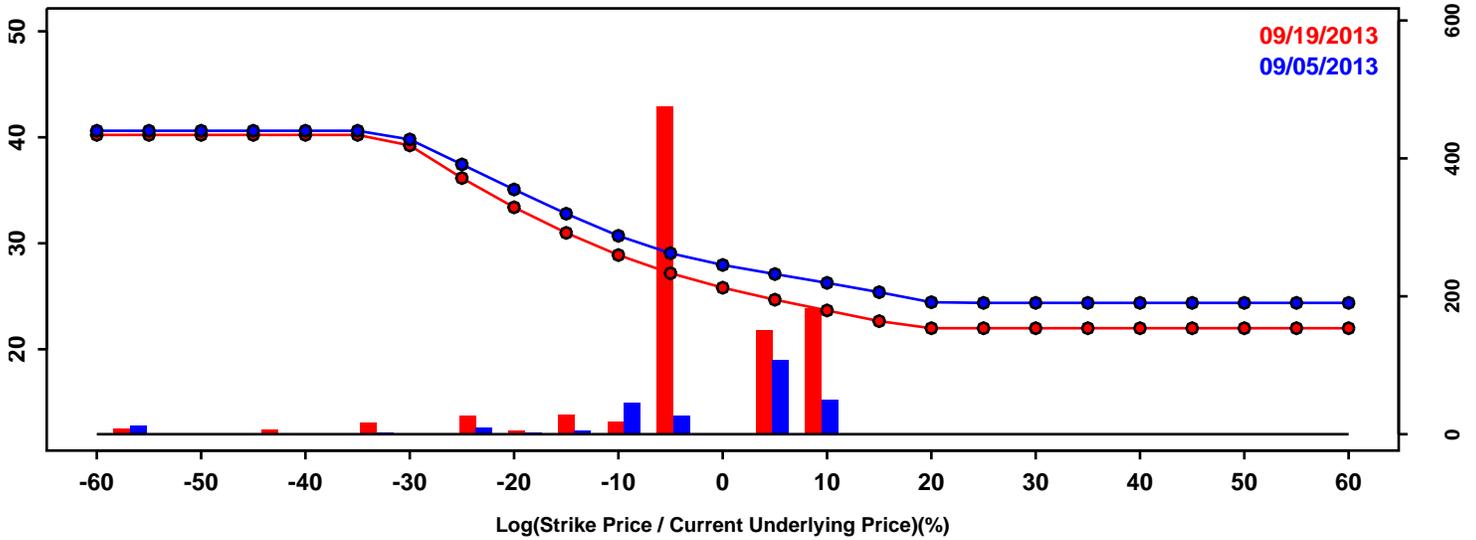


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-19.18%	-18.16%	1.01%
50th Pct	0.21%	0.40%	0.19%
90th Pct	15.76%	15.08%	-0.69%
Mean	-0.99%	-0.78%	0.21%
Std Dev	14.31%	13.66%	-0.65%
Skew	-0.62	-0.62	-0.01
Kurtosis	1.01	1.10	0.09

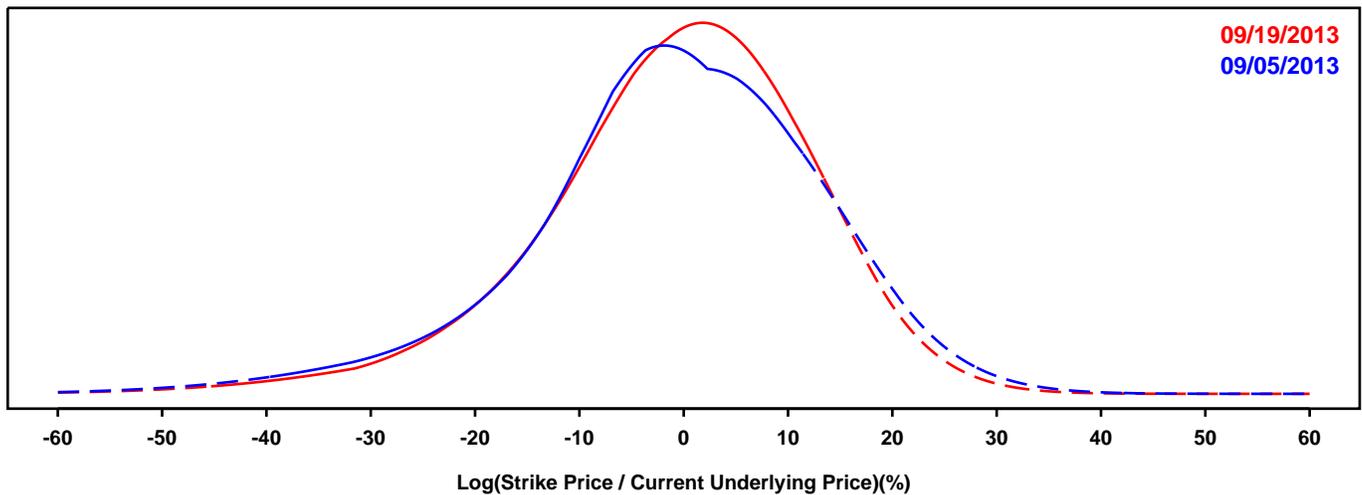
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- PRUDENTIAL

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

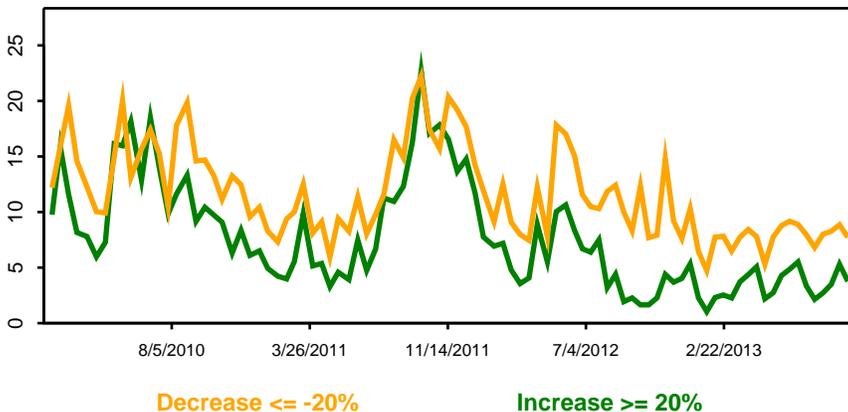
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

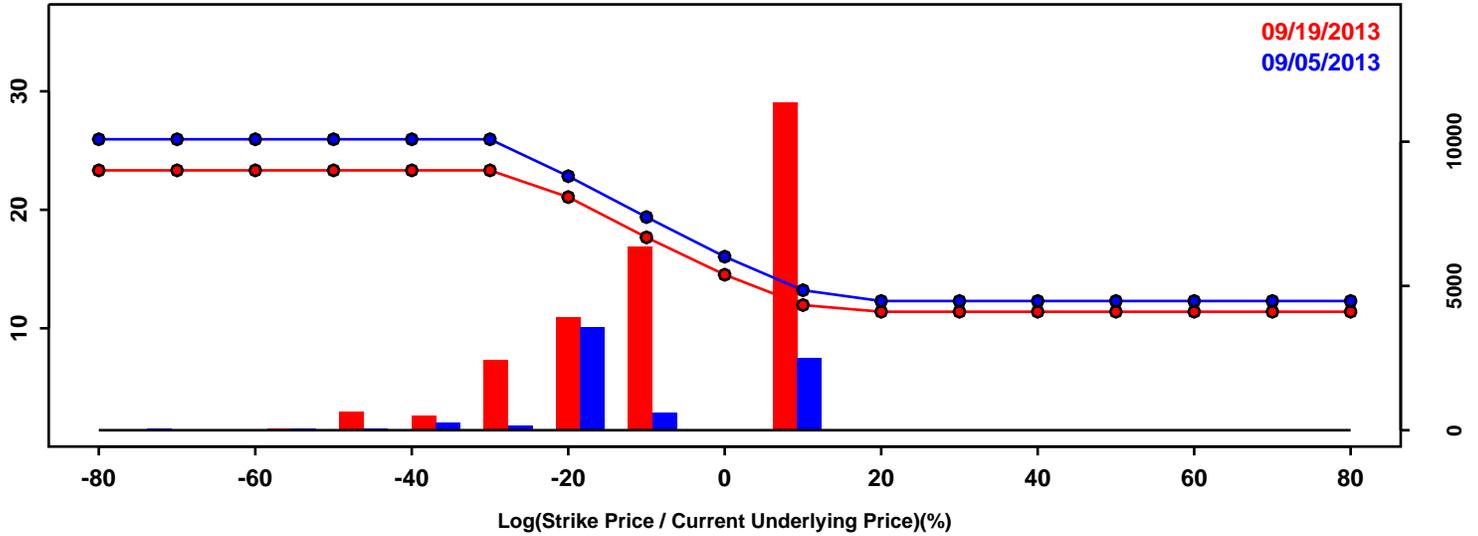


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-18.62%	-17.47%	1.15%
50th Pct	-0.16%	0.35%	0.52%
90th Pct	16.11%	14.85%	-1.26%
Mean	-0.91%	-0.73%	0.18%
Std Dev	14.25%	13.26%	-0.99%
Skew	-0.60	-0.68	-0.07
Kurtosis	1.11	1.23	0.13

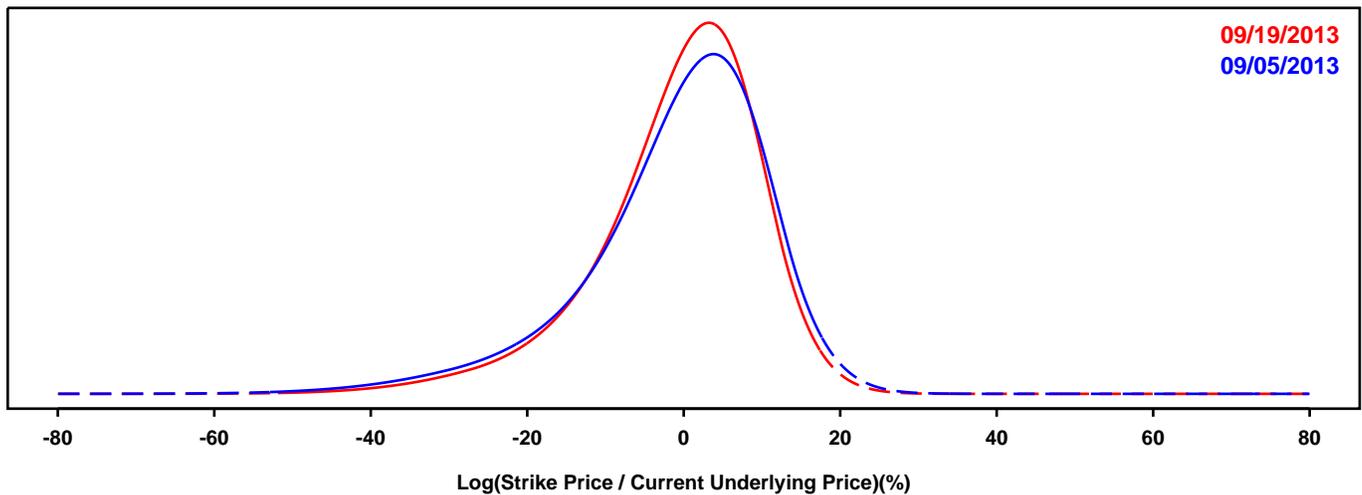
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- S&P 500

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

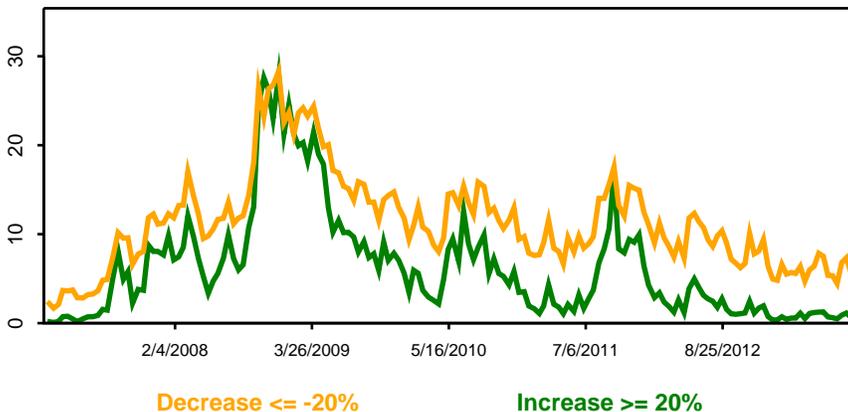
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

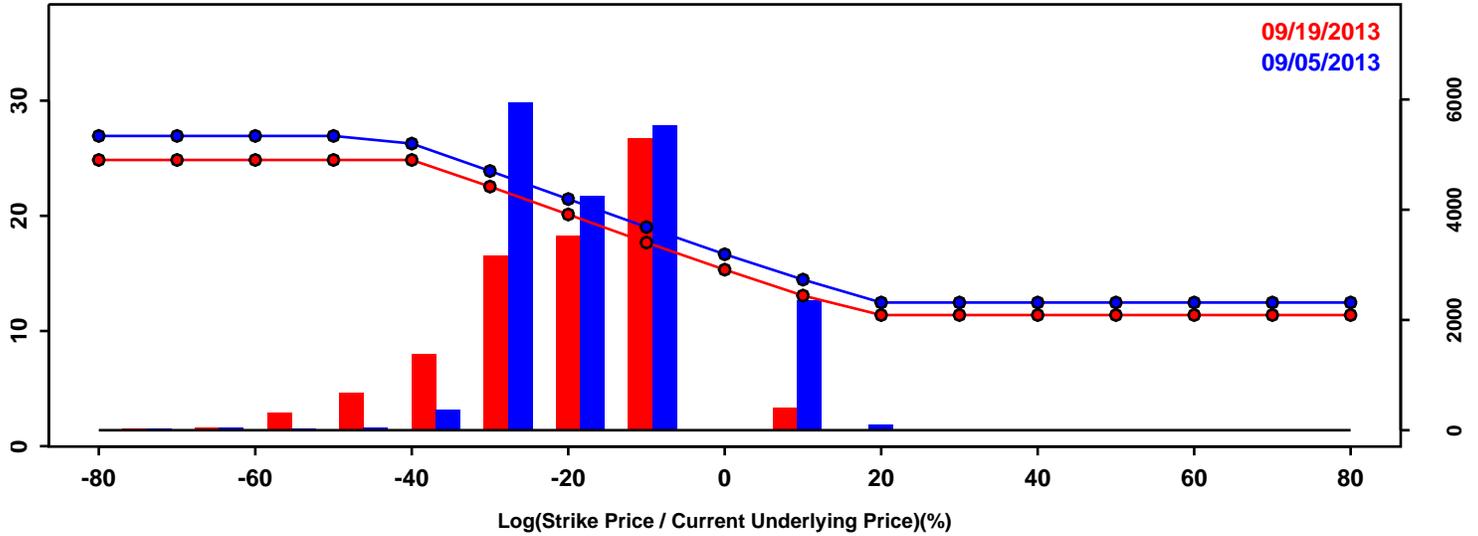


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-16.68%	-14.70%	1.98%
50th Pct	0.98%	0.80%	-0.18%
90th Pct	12.04%	10.99%	-1.05%
Mean	-0.93%	-0.76%	0.17%
Std Dev	12.00%	10.73%	-1.27%
Skew	-1.04	-0.97	0.07
Kurtosis	1.79	1.69	-0.10

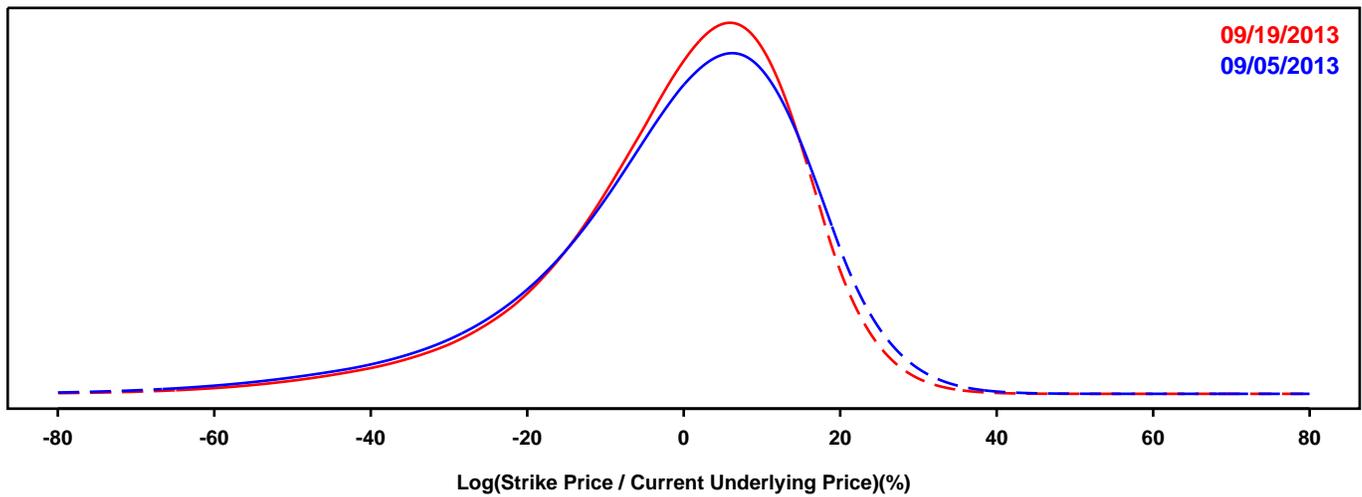
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- S&P 500

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

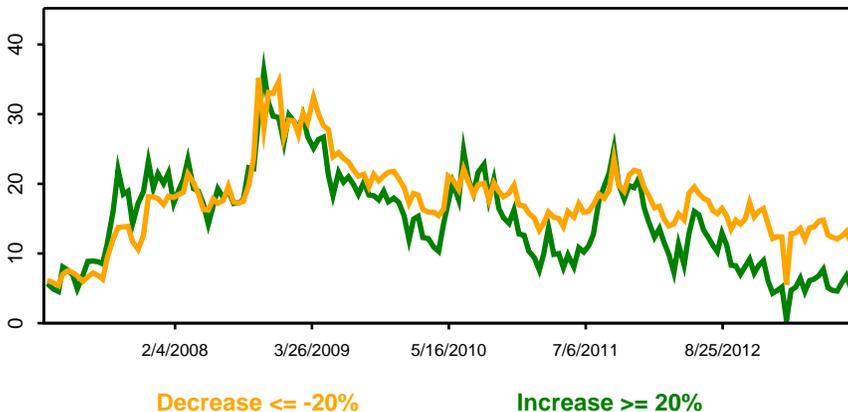
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

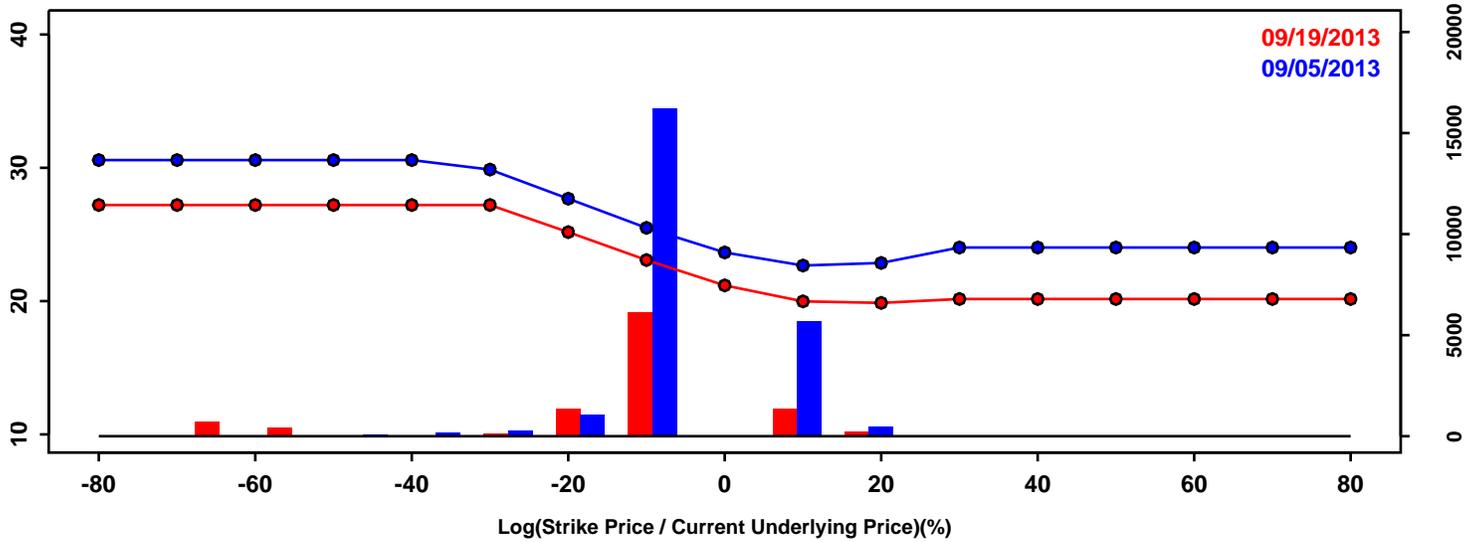


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-24.22%	-22.12%	2.10%
50th Pct	1.60%	1.59%	-0.01%
90th Pct	17.70%	16.34%	-1.37%
Mean	-1.26%	-1.04%	0.22%
Std Dev	17.51%	16.07%	-1.44%
Skew	-1.04	-1.05	-0.01
Kurtosis	1.78	1.79	0.01

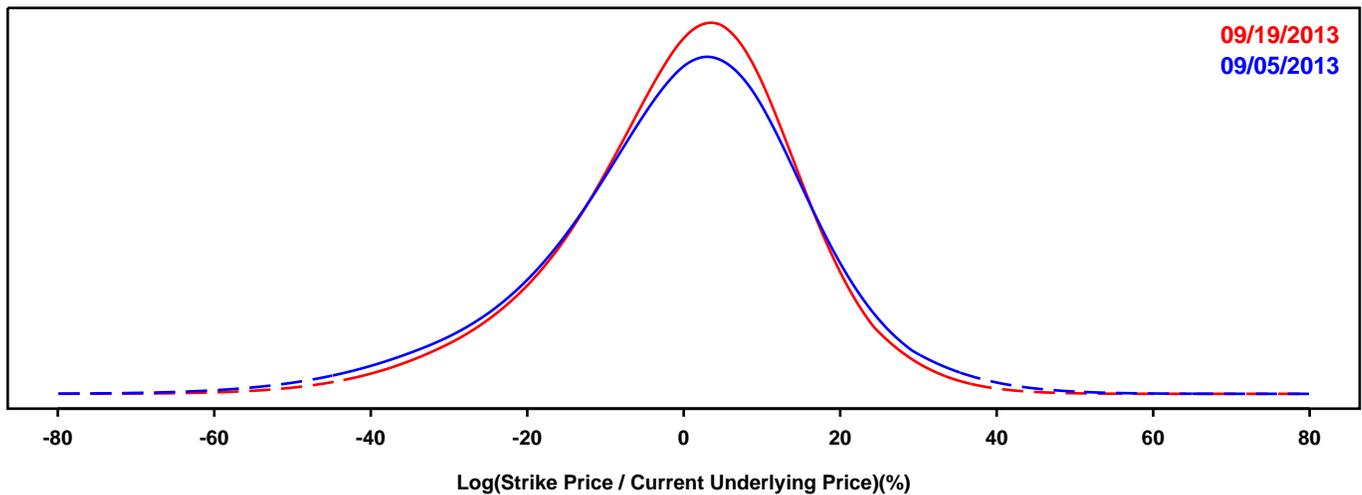
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CRUDE OIL FUTURES (WTI)

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

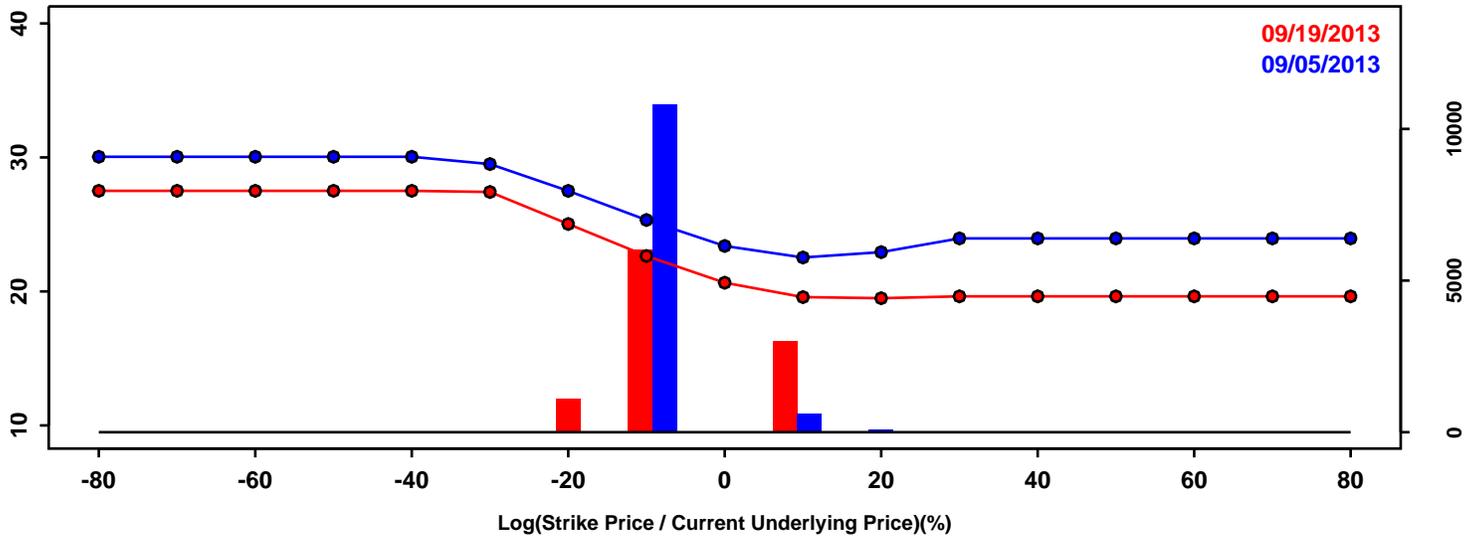


	09/05/2013	09/19/2013	Change
10th Pct	-22.73%	-20.22%	2.51%
50th Pct	0.76%	1.09%	0.33%
90th Pct	18.88%	17.28%	-1.60%
Mean	-0.68%	-0.31%	0.37%
Std Dev	16.90%	15.13%	-1.78%
Skew	-0.47	-0.50	-0.03
Kurtosis	0.80	0.70	-0.10

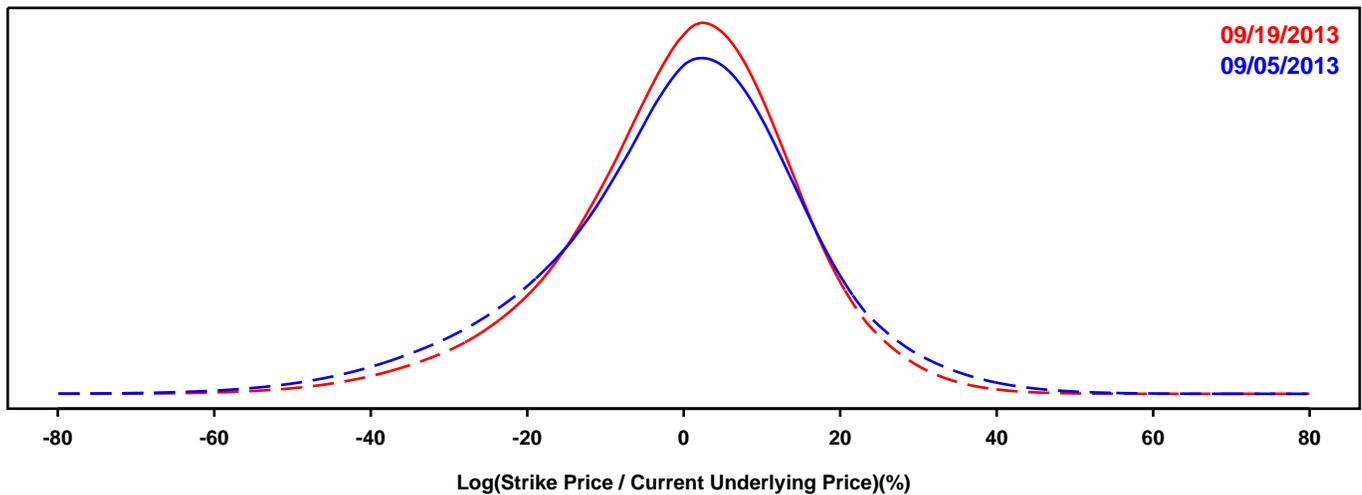
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CRUDE OIL FUTURES (Brent)

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

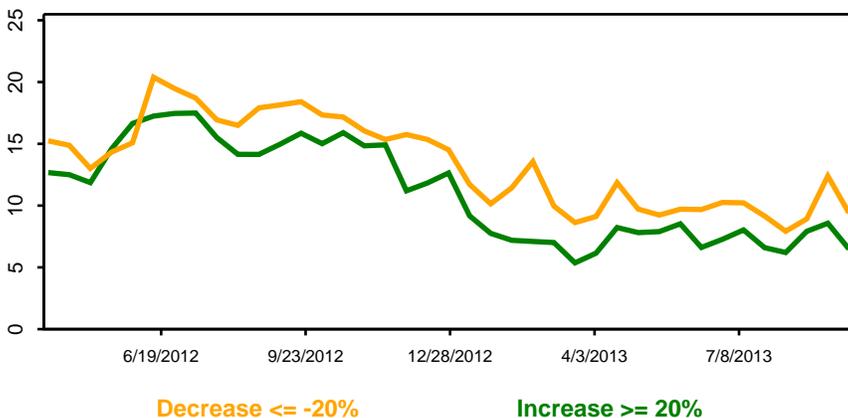
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

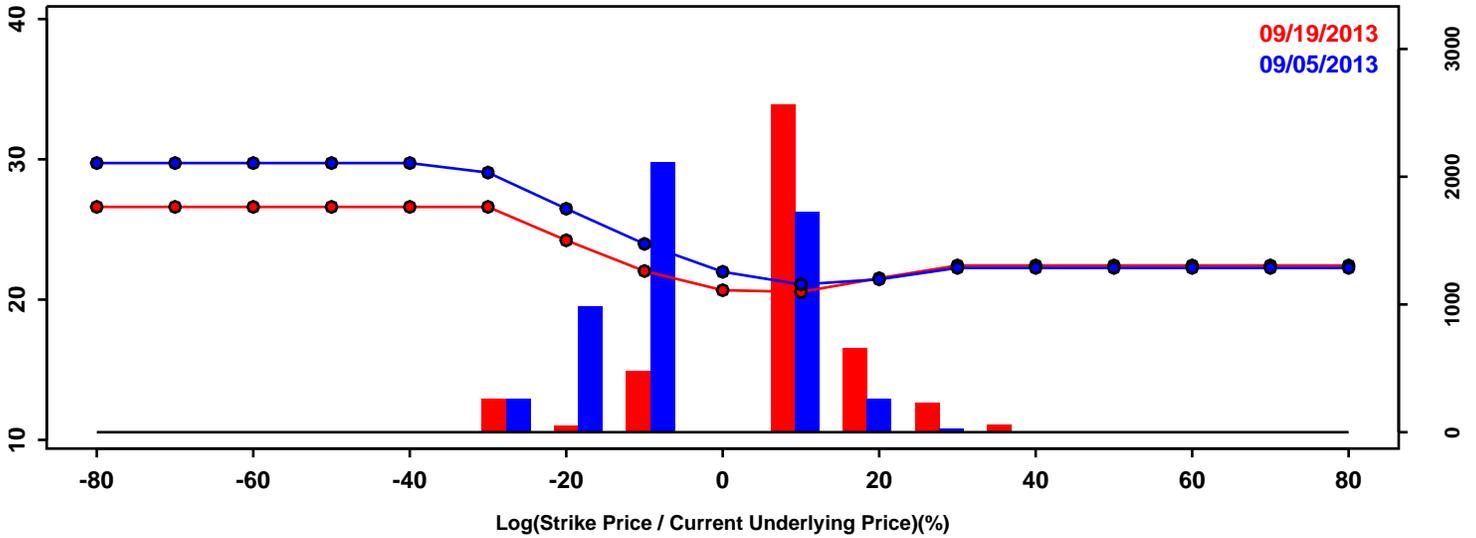


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-22.90%	-19.36%	3.54%
50th Pct	0.77%	1.01%	0.24%
90th Pct	18.68%	16.96%	-1.72%
Mean	-0.71%	-0.21%	0.50%
Std Dev	16.82%	14.73%	-2.09%
Skew	-0.46	-0.52	-0.06
Kurtosis	0.80	0.85	0.05

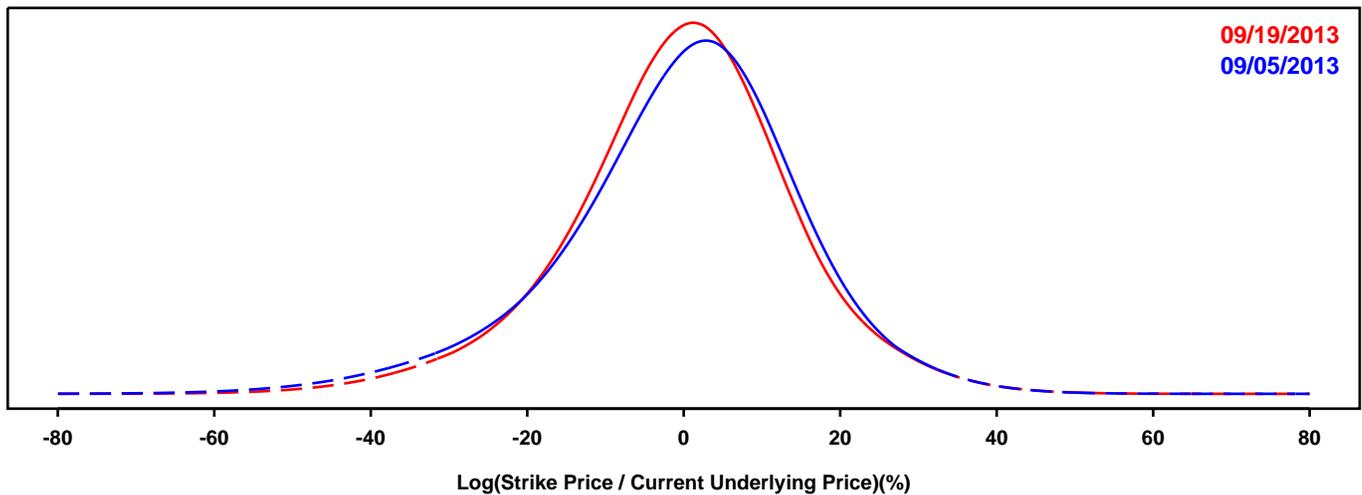
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- GOLD FUTURES

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

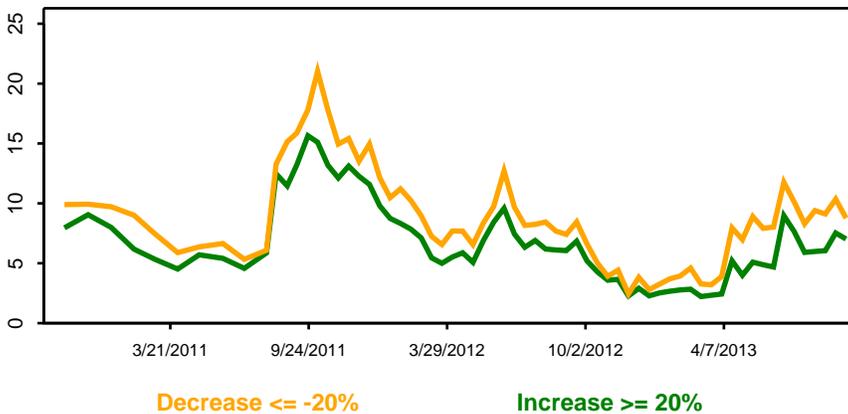
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

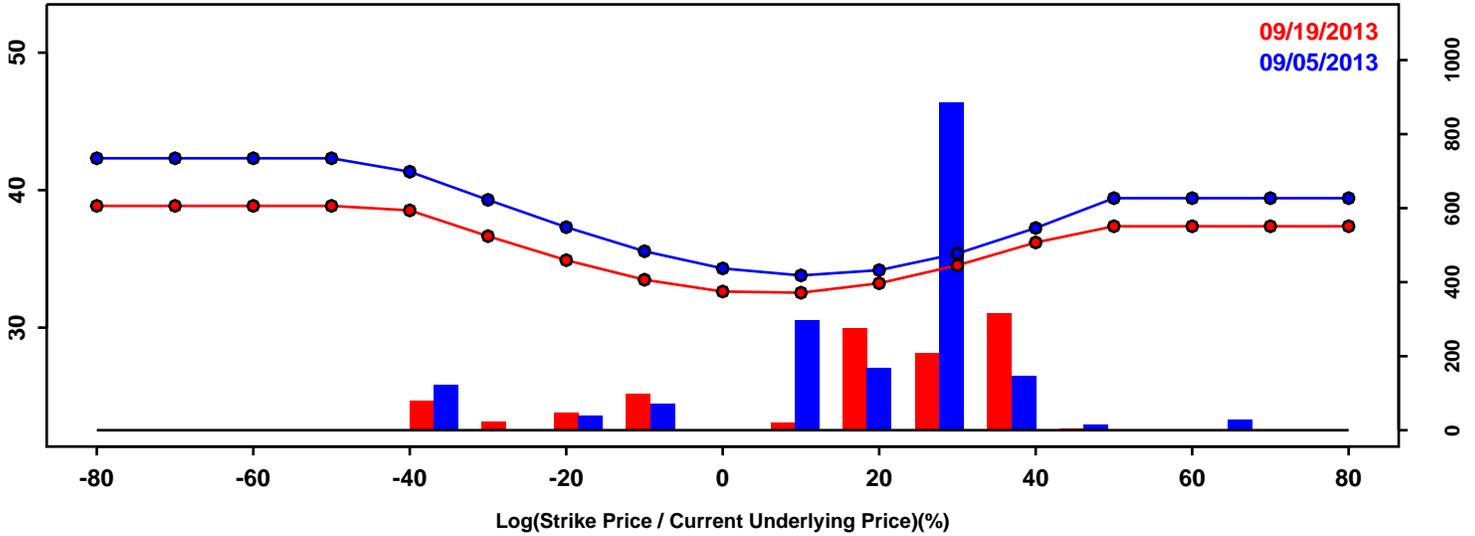


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-20.42%	-18.62%	1.80%
50th Pct	0.95%	0.27%	-0.69%
90th Pct	17.75%	17.05%	-0.70%
Mean	-0.34%	-0.32%	0.01%
Std Dev	15.67%	14.62%	-1.05%
Skew	-0.50	-0.27	0.23
Kurtosis	1.00	0.86	-0.14

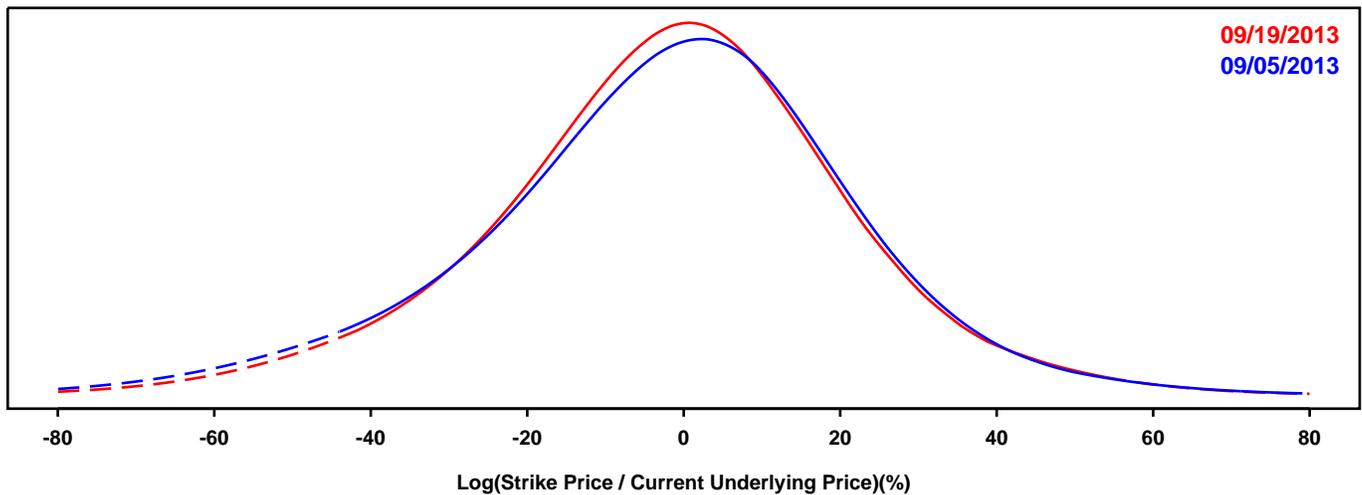
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- SILVER FUTURES

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

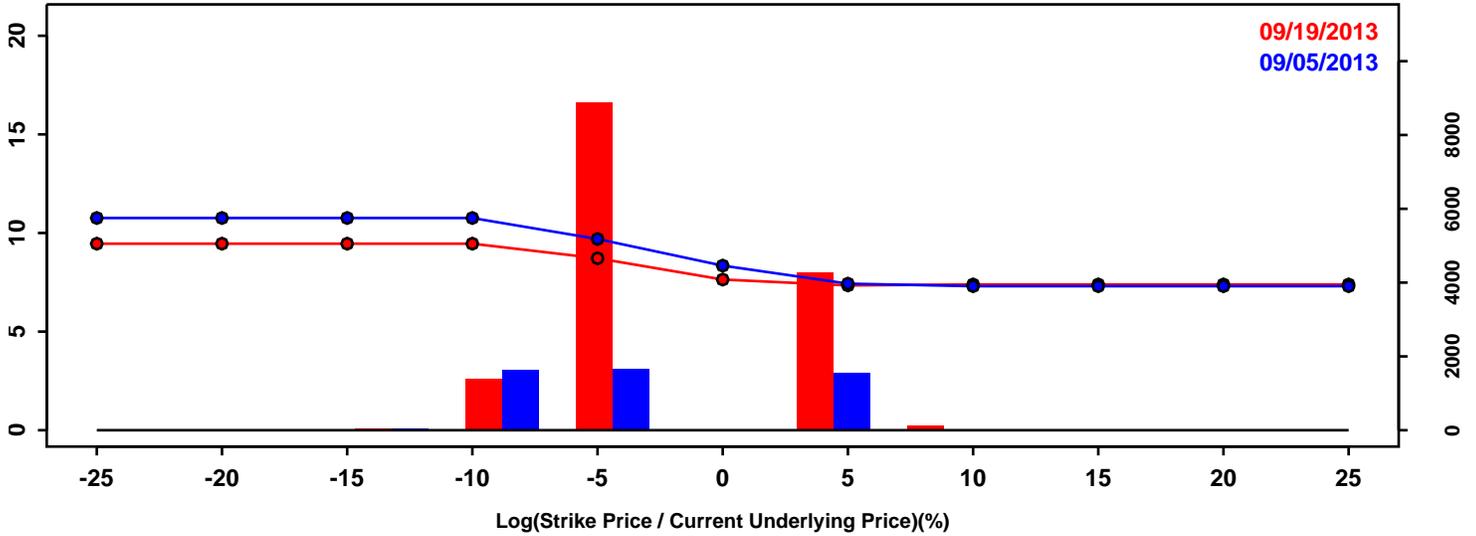


	09/05/2013	09/19/2013	Change
10th Pct	-33.81%	-31.23%	2.58%
50th Pct	-0.74%	-0.96%	-0.23%
90th Pct	26.23%	25.81%	-0.42%
Mean	-2.32%	-1.85%	0.48%
Std Dev	24.39%	23.13%	-1.25%
Skew	-0.33	-0.18	0.15
Kurtosis	0.74	0.68	-0.06

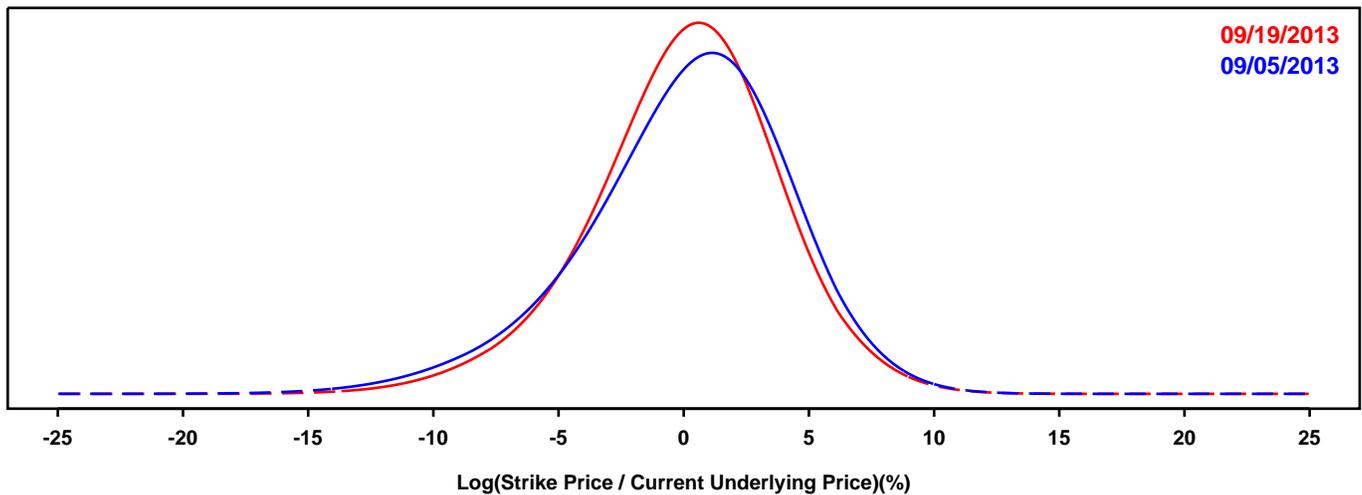
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- DOLLAR-EURO EXCHANGE RATE FUTURES

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

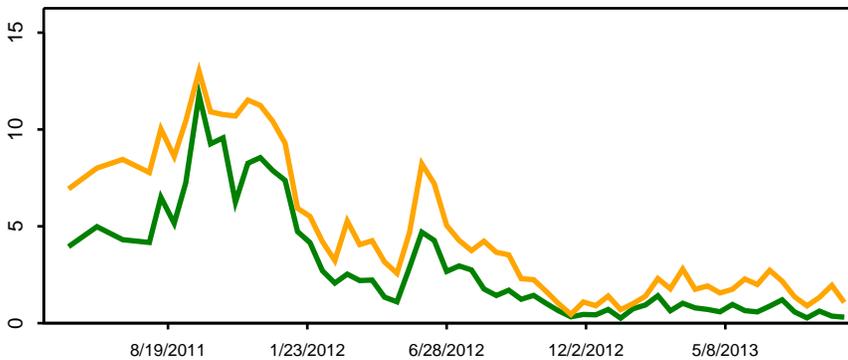
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



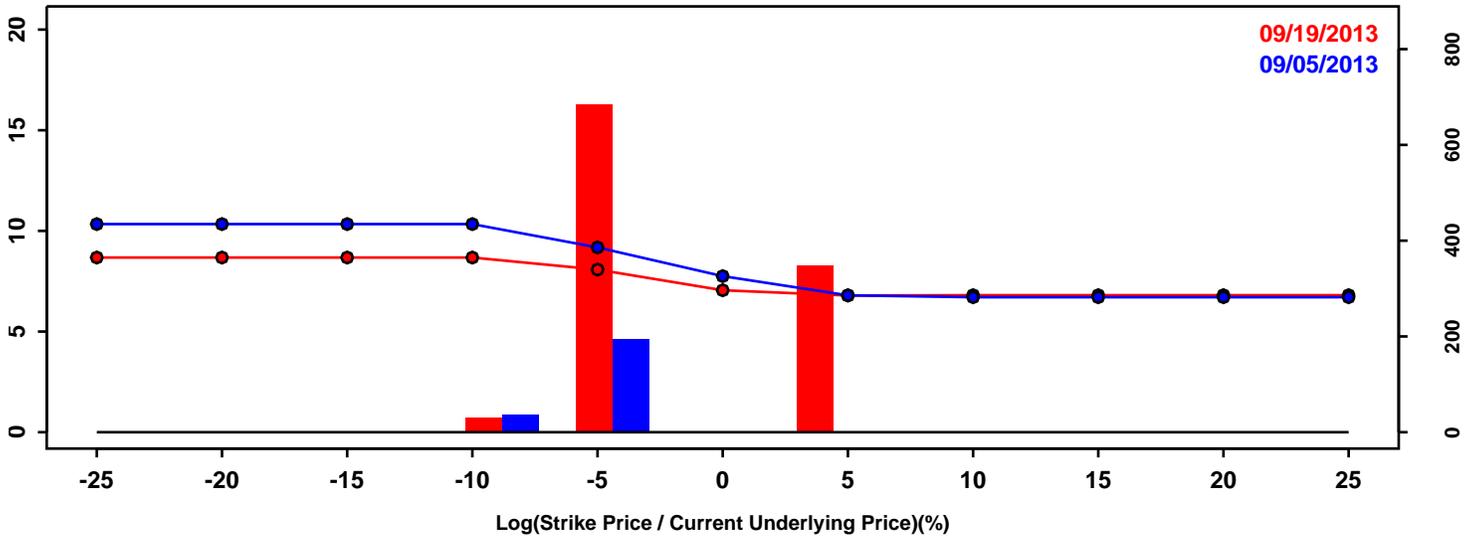
Decrease <= -10% [stronger \$] Increase >= 10% [weaker \$]

Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-5.44%	-4.90%	0.54%
50th Pct	0.45%	0.24%	-0.20%
90th Pct	5.03%	4.64%	-0.39%
Mean	0.09%	0.06%	-0.04%
Std Dev	4.20%	3.82%	-0.38%
Skew	-0.52	-0.33	0.19
Kurtosis	0.60	0.52	-0.08

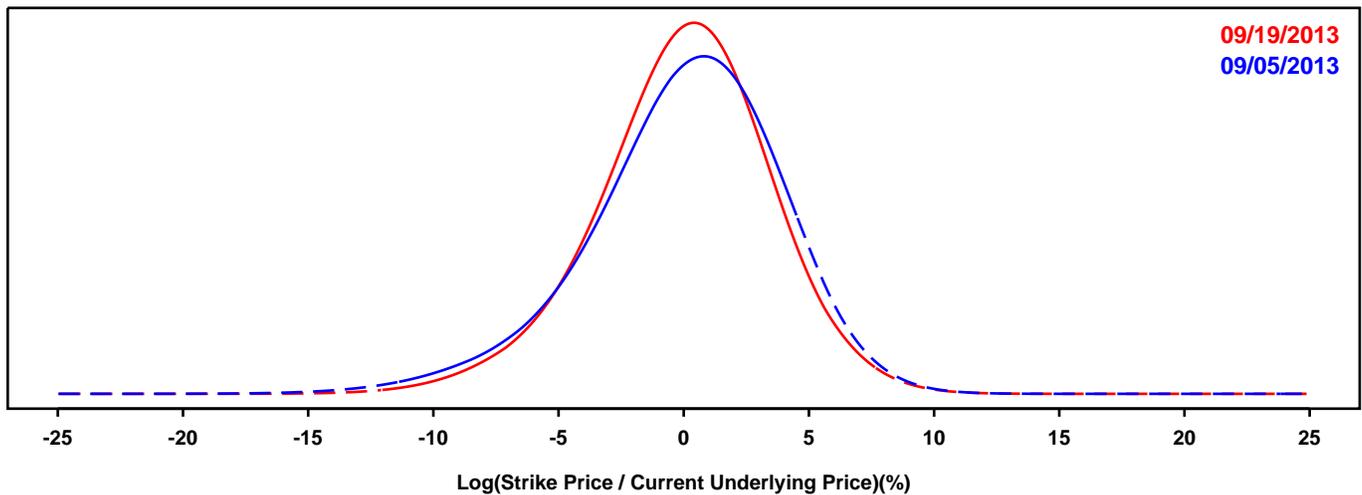
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- DOLLAR-POUND EXCHANGE RATE FUTURES

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

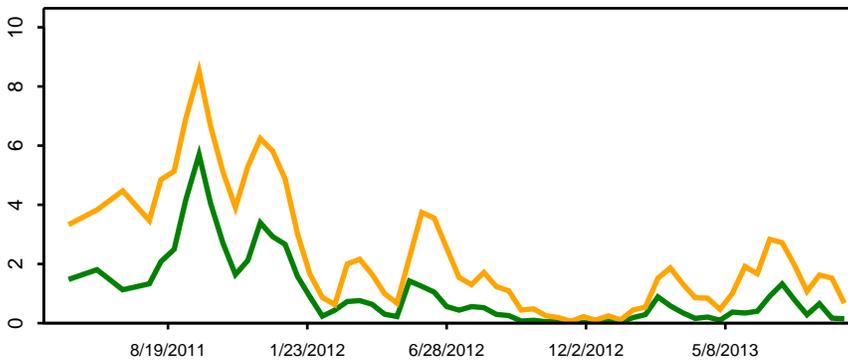
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



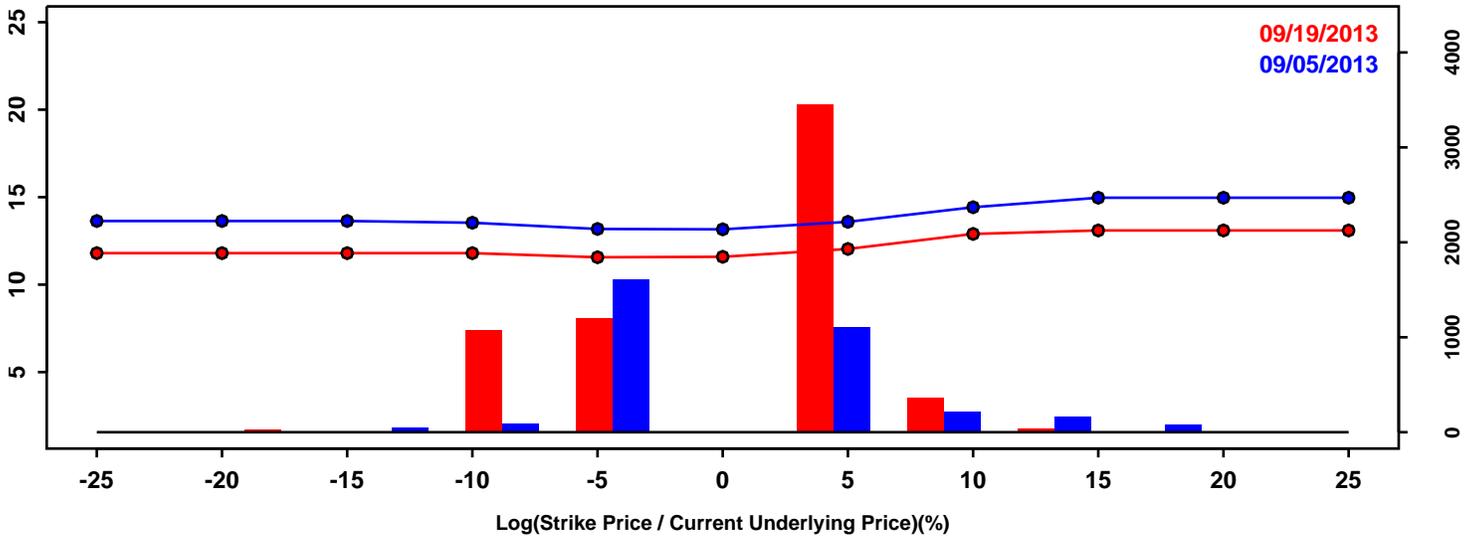
Decrease <= -10% [stronger \$] Increase >= 10% [weaker \$]

Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-5.06%	-4.54%	0.52%
50th Pct	0.31%	0.15%	-0.17%
90th Pct	4.65%	4.27%	-0.38%
Mean	0.04%	-0.01%	-0.04%
Std Dev	3.91%	3.53%	-0.38%
Skew	-0.53	-0.30	0.23
Kurtosis	0.69	0.48	-0.21

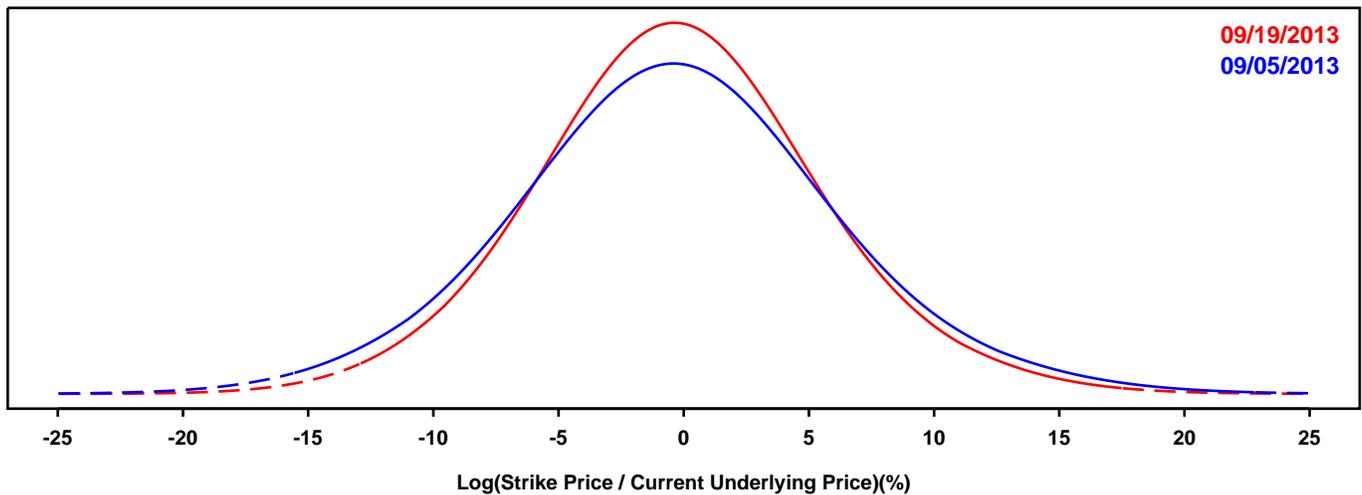
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- DOLLAR-YEN EXCHANGE RATE FUTURES

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

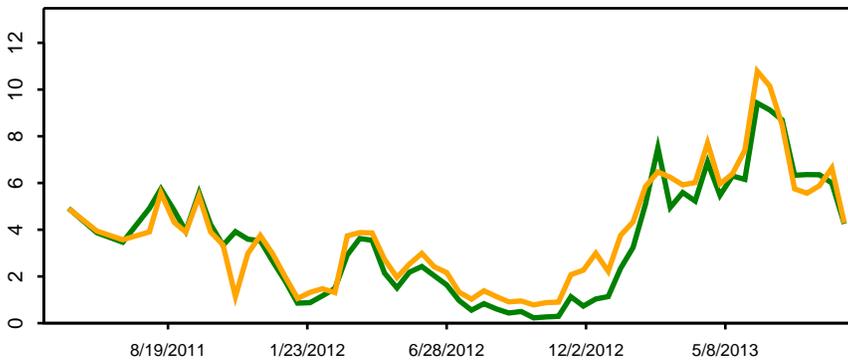
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change



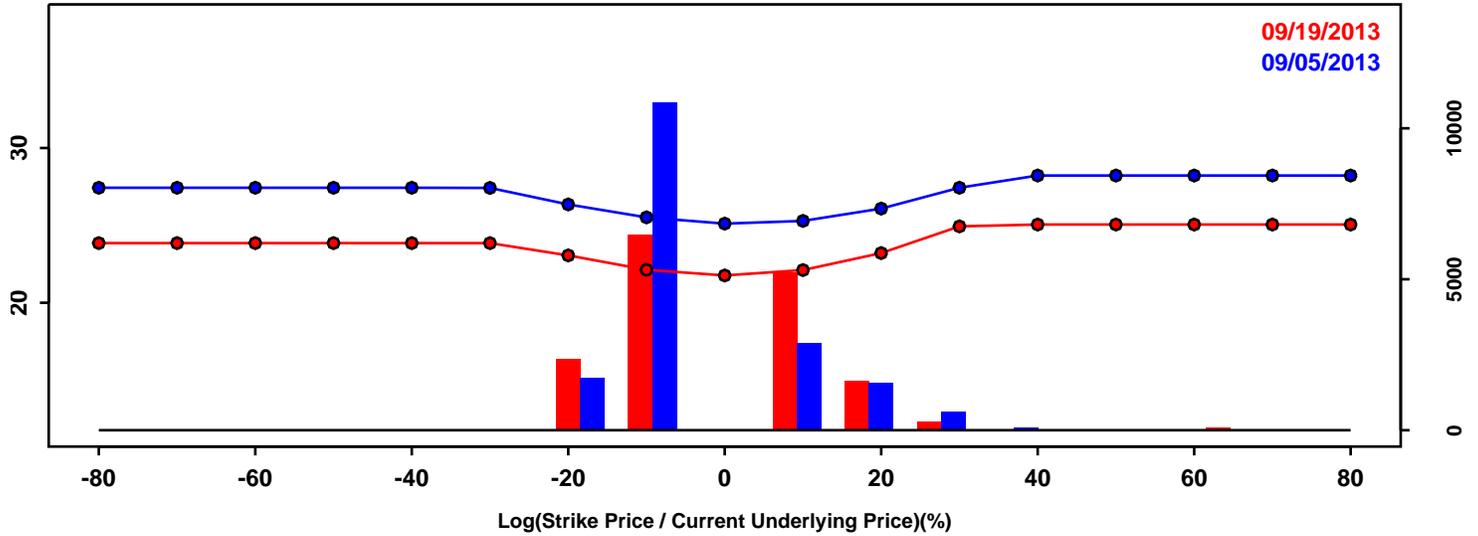
Decrease <= -10% [stronger \$] Increase >= 10% [weaker \$]

Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-8.49%	-7.46%	1.04%
50th Pct	-0.36%	-0.29%	0.07%
90th Pct	7.99%	7.11%	-0.88%
Mean	-0.26%	-0.17%	0.10%
Std Dev	6.56%	5.78%	-0.78%
Skew	0.09	0.10	0.02
Kurtosis	0.35	0.30	-0.05

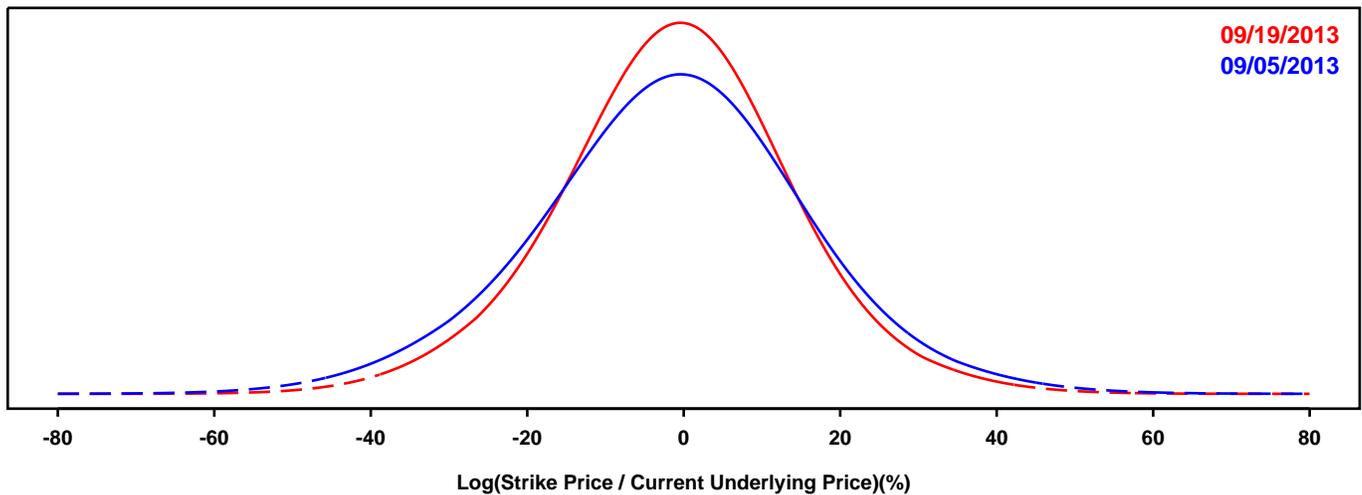
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CORN FUTURES

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

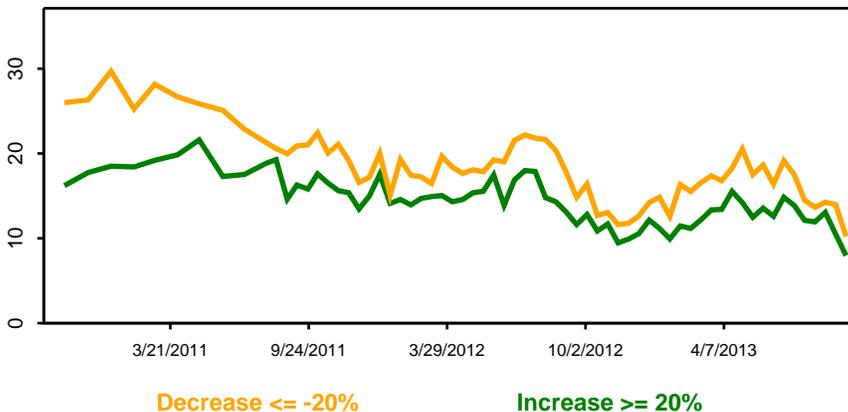
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

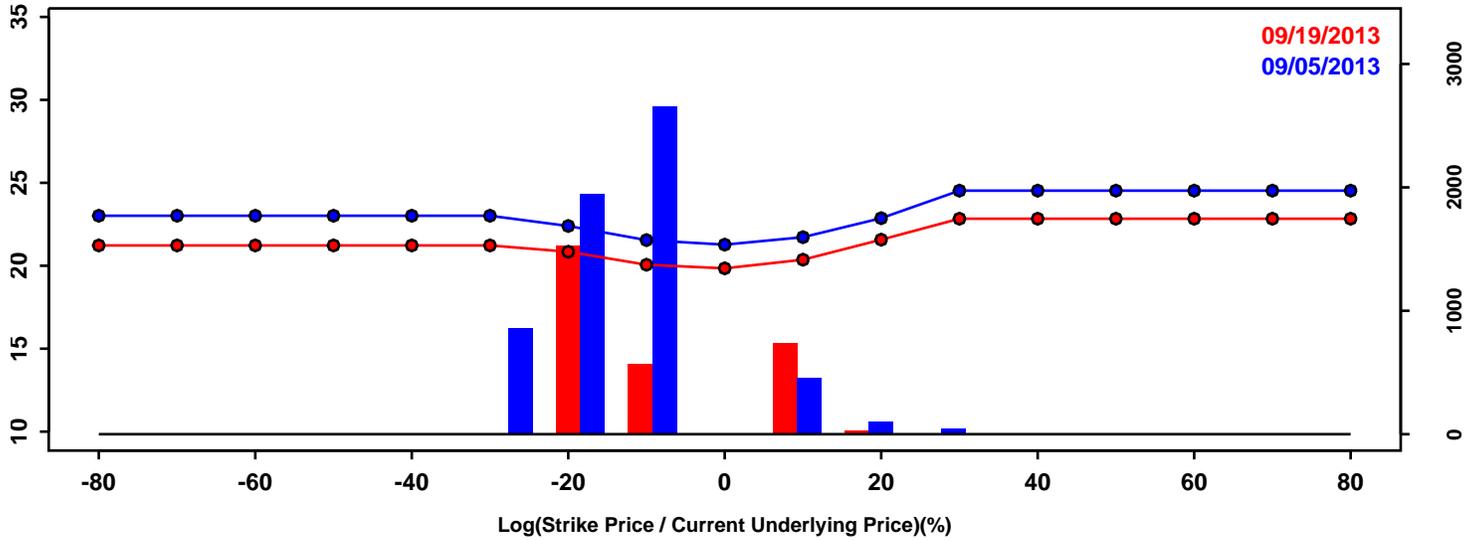


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-23.87%	-20.22%	3.66%
50th Pct	-1.08%	-0.78%	0.30%
90th Pct	20.49%	17.96%	-2.53%
Mean	-1.35%	-0.90%	0.45%
Std Dev	17.72%	15.31%	-2.41%
Skew	-0.05	-0.02	0.03
Kurtosis	0.40	0.46	0.06

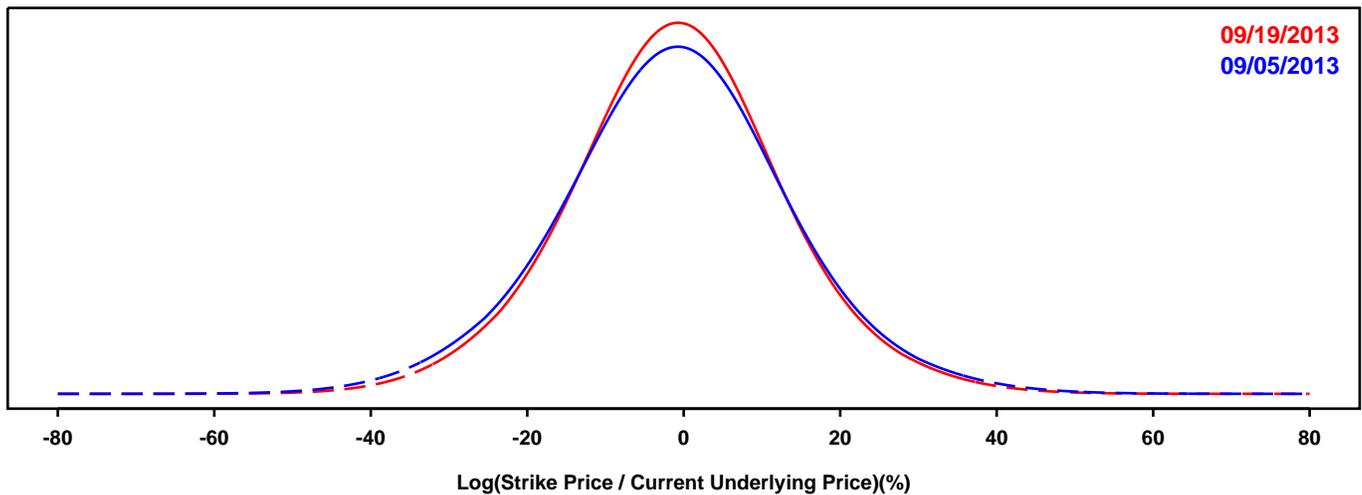
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- SOYBEAN FUTURES

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

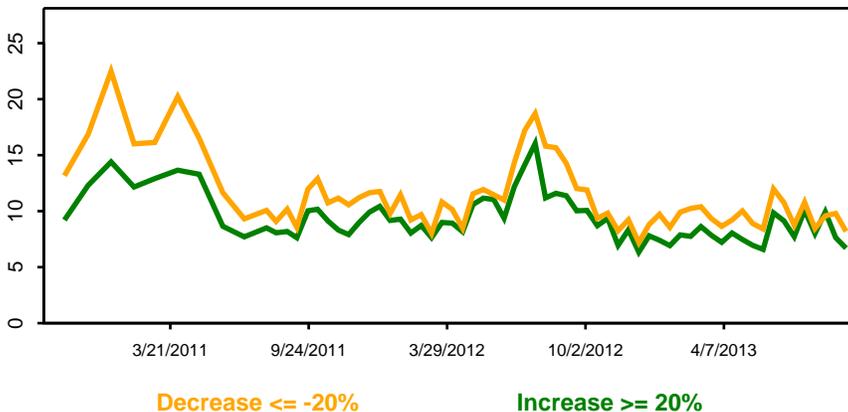
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

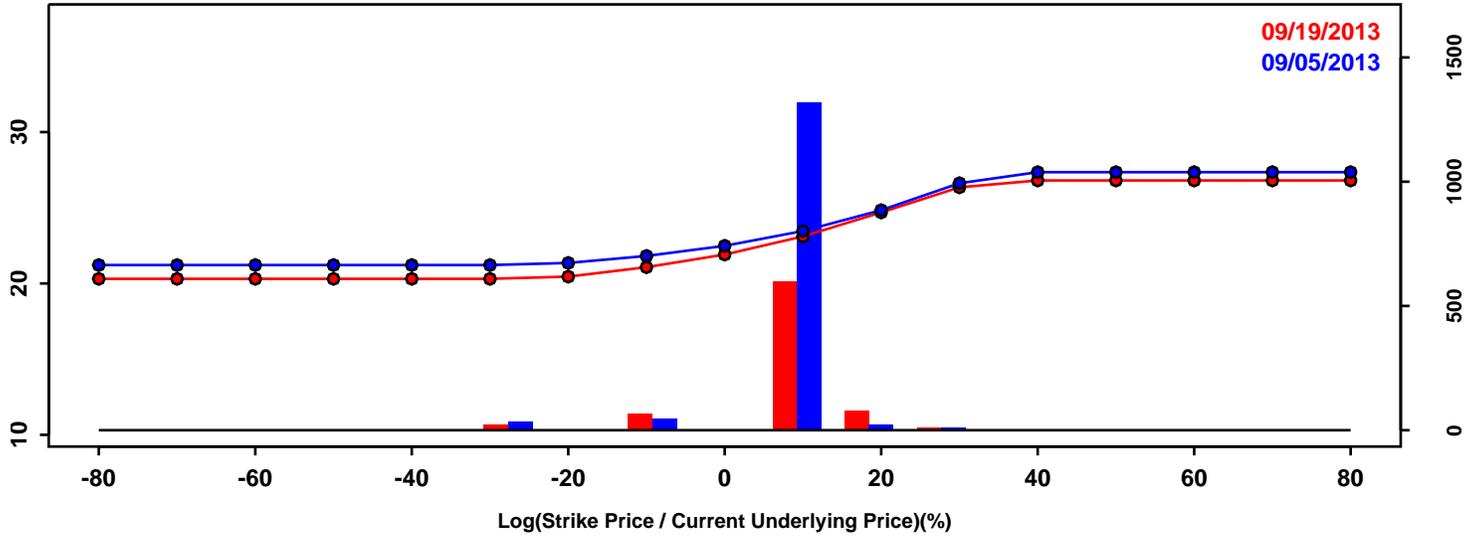


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-19.85%	-18.30%	1.55%
50th Pct	-0.98%	-0.83%	0.15%
90th Pct	17.58%	16.63%	-0.95%
Mean	-0.99%	-0.77%	0.23%
Std Dev	14.99%	13.99%	-1.00%
Skew	0.02	0.04	0.03
Kurtosis	0.45	0.43	-0.02

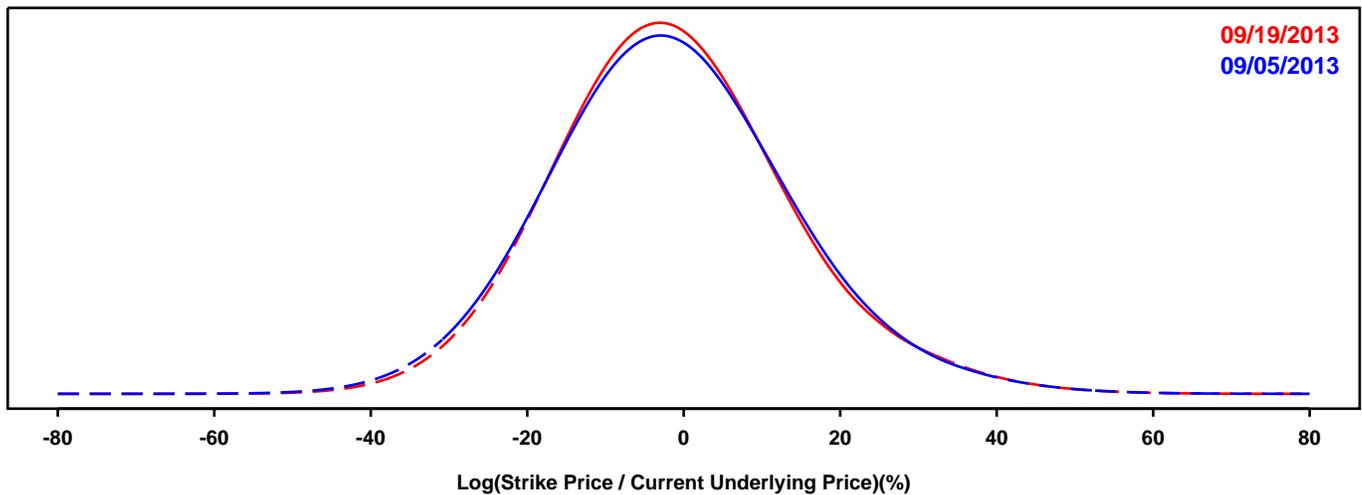
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- WHEAT FUTURES

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

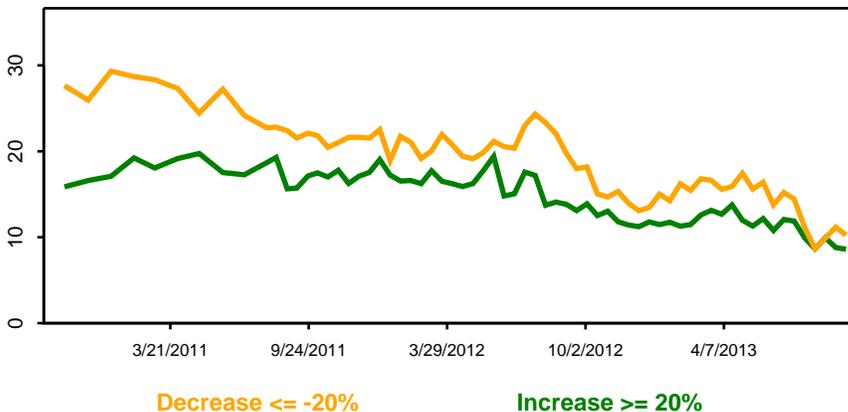
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



Probability of a Large Change

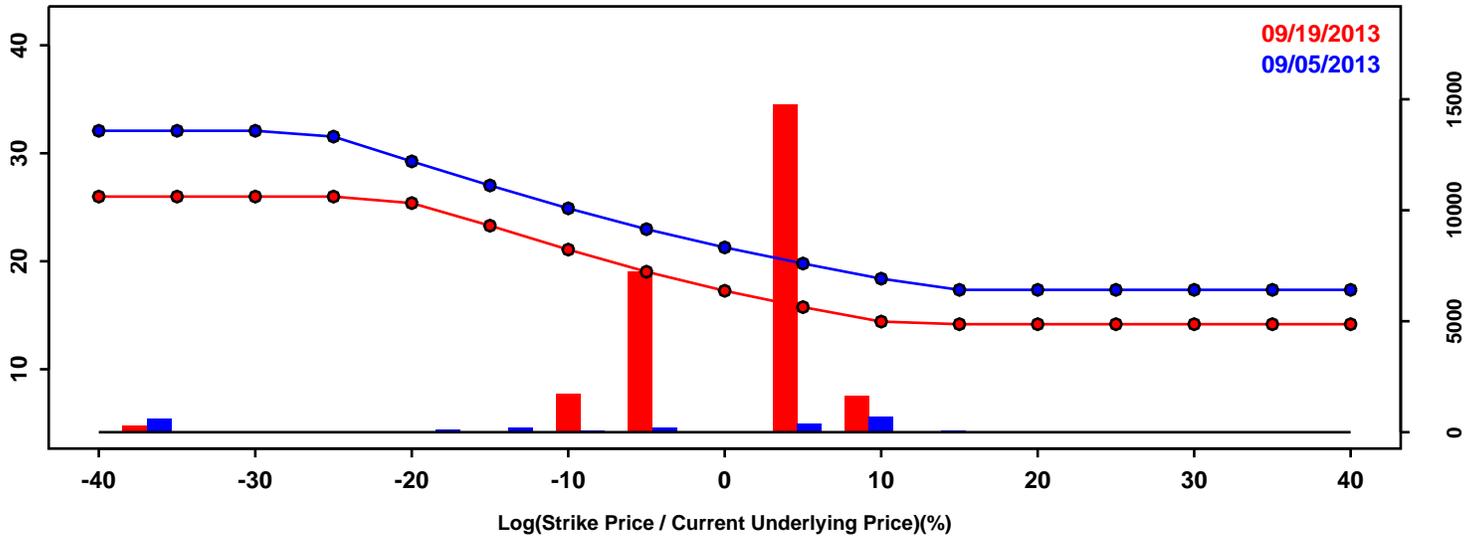


Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-20.99%	-20.16%	0.83%
50th Pct	-2.02%	-2.06%	-0.04%
90th Pct	18.71%	18.41%	-0.30%
Mean	-1.43%	-1.29%	0.14%
Std Dev	15.77%	15.41%	-0.36%
Skew	0.25	0.32	0.07
Kurtosis	0.35	0.43	0.07

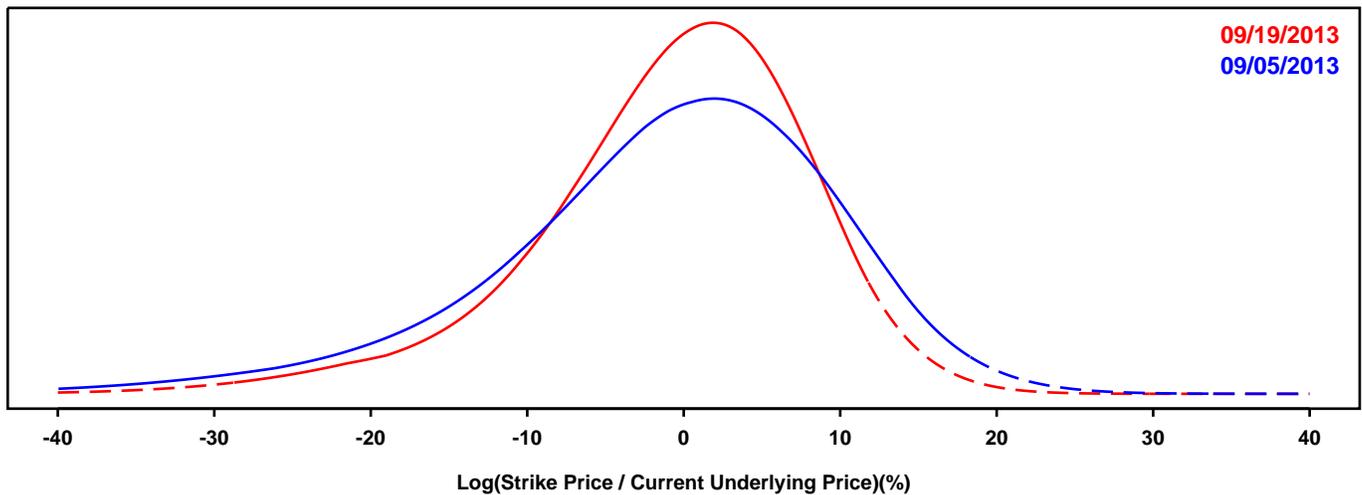
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- iSHARES DOW JONES US REAL ESTATE

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

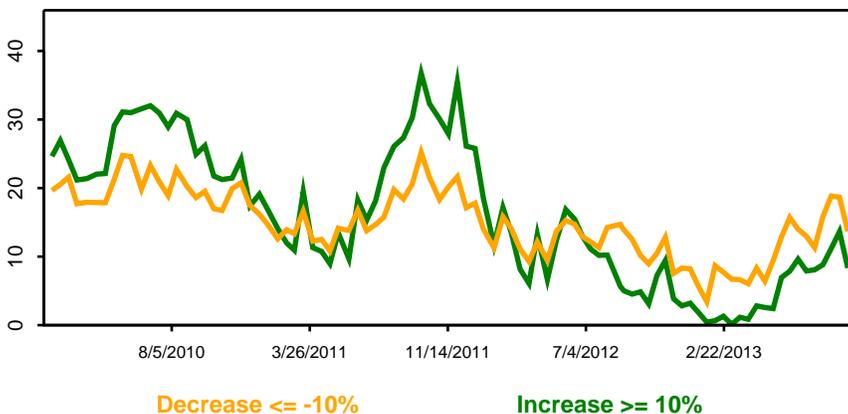
Implied Volatilities (lines--left axis) and Volume (bars--right axis)



Risk Neutral PDF of the Log Return Distribution



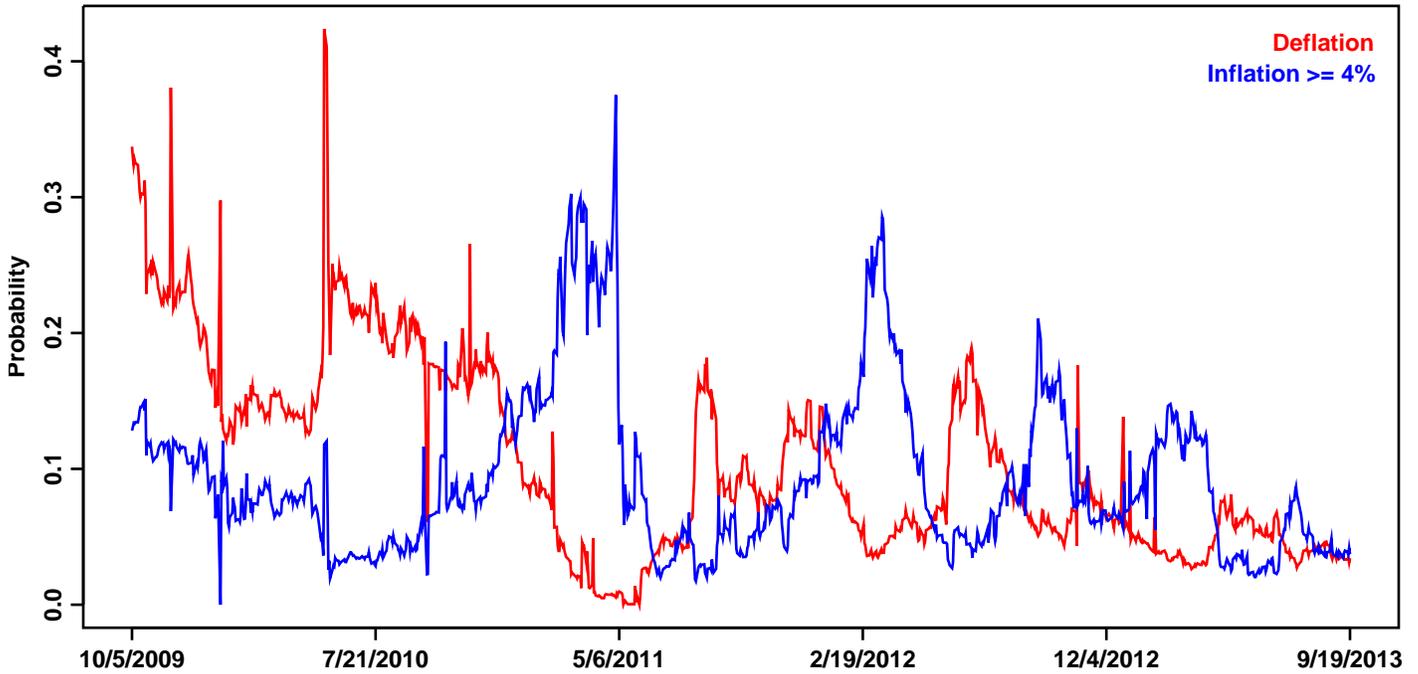
Probability of a Large Change



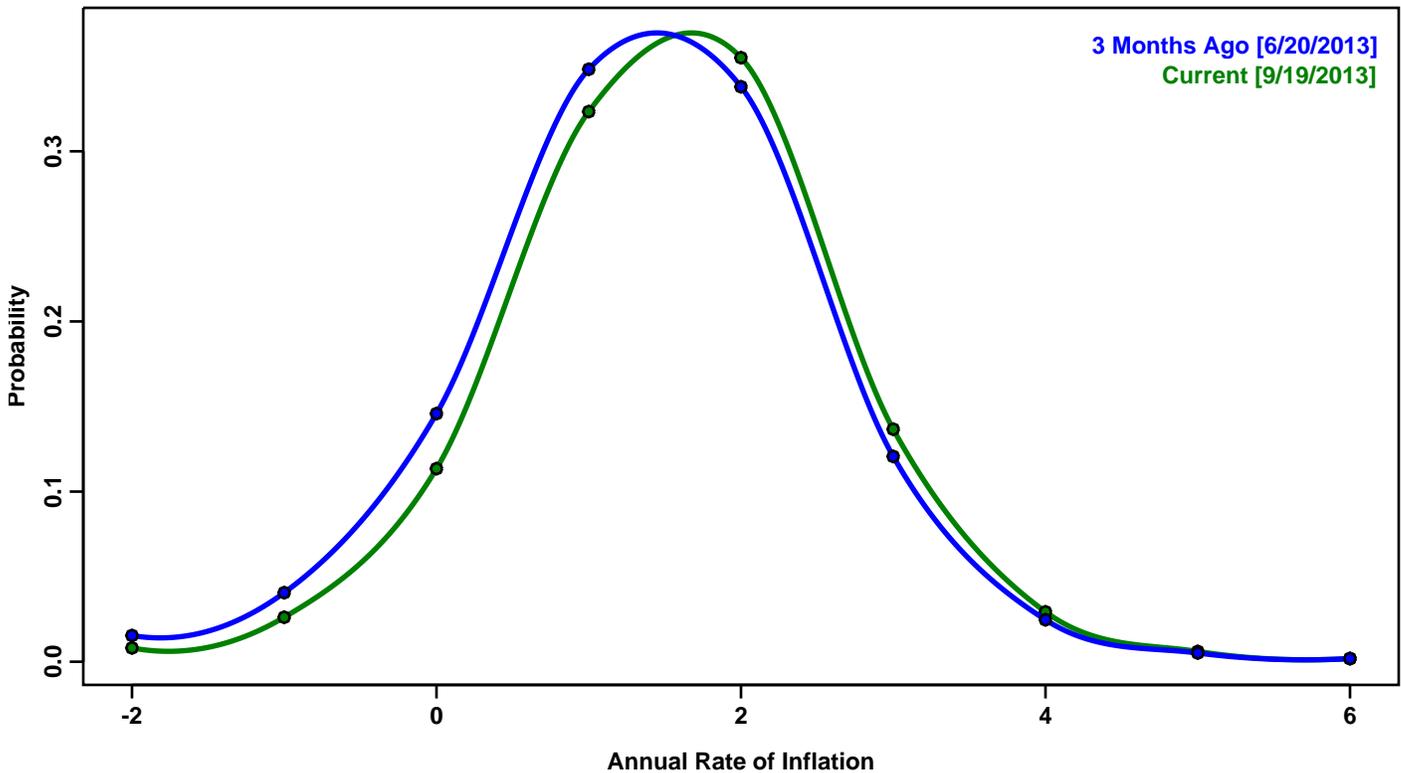
Statistics of the Log Return Distributions			
	09/05/2013	09/19/2013	Change
10th Pct	-15.59%	-12.23%	3.36%
50th Pct	0.04%	0.22%	0.18%
90th Pct	11.50%	9.37%	-2.13%
Mean	-1.20%	-0.79%	0.41%
Std Dev	11.09%	8.91%	-2.18%
Skew	-0.78	-0.80	-0.02
Kurtosis	1.19	1.30	0.10

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

