

Table I
Average quote midpoints and average bid ask spreads

The sample for this study is constructed from the market quotes of 6,430 one-month CBOE S&P 500 index options observed one-month prior to expiration. The sample period, January 1996 through April 2006, contains 124 dates on which the one-month option quotes are observed. The sample consists of both call and put option quotes and includes only quotes for options with positive trading volume, positive open interest and premiums greater than \$3/8. All quotes were obtained from OptionMetrics.

Calls							
S_0/K	< 0.94	0.94-0.97	0.97-1.00	1.00-1.03	1.03-1.06	> 1.06	Total
midpoint	2.08	4.90	13.91	31.95	55.78	141.29	
bid/ask spread	0.47	0.60	1.07	1.64	1.81	1.89	
number of options	350	512	661	561	360	504	2948
Puts							
S_0/K	< 0.94	0.94-0.97	0.97-1.00	1.00-1.03	1.03-1.06	> 1.06	Total
midpoint	128.11	54.04	28.89	14.40	7.50	2.78	
bid/ask spread	2.18	1.99	1.64	1.09	0.77	0.47	
number of options	134	255	603	608	504	1378	3482

Table II
Median implied parameter values
general jump-diffusion (GJD) option pricing model (22)

For each of the sample's 124 observations the structural parameters of the generalized jump diffusion model (22) are estimated by minimizing the sum of squared pricing errors between the mid point of the market quotes and model determined value for each option. Median values of the model's parameters are reported in this table. Statistical significance of the reported medians is tested with the Large sample Wilcoxon signed rank test. The z-statistic for this test is reported in parentheses below sample medians. Medians marked with ** are significantly different from zero at the one percent significance level.

Parameter	Median	Correlation	Median
λ	1.7885** (-9.624)		
σ	0.1238** (-9.663)		
γ	0.1066** (-9.663)		
γ_c	0.0682** (-9.663)		
α	-0.0096** (-6.516)		
α_c	-0.0058** (-5.366)		
σ_{sy}	-0.0103** (-8.797)	ρ_{sy}	-0.891** (-9.334)
σ_{syc}	0.0038** (-6.389)	ρ_{syc}	0.507** (-6.533)
σ_{cy}	0.0048** (-6.021)		
σ_{cyc}	0.0042** (-5.645)		
v_{sc}	0.0059** (-9.552)	$v_{sc}/\gamma\gamma_c$	0.9623** (-9.562)
b	6.5585** (-9.624)		
fval	50.204		

Table III
Black-Scholes implied volatility surface generated by the
general jump-diffusion (GJD) option pricing model (22)

This table contains the Black-Scholes implied volatility surface produced from the GJD option pricing model (22) evaluated for the implied parameter values of table II, $S_0 = 100$, and $r = 2$ percent. Option values from the general jump diffusion option pricing model generate a nonmonotonic term structure of implied volatilities of at-the-money options.

T	15 days	1 month	3 months	6 months	9 months	1 year
<i>K</i>						
109	19.23	15.38	15.66	16.43	16.63	16.53
106	16.19	15.10	16.08	16.46	16.53	15.92
103	14.99	15.50	16.58	16.48	16.27	16.72
100	15.88	16.68	17.14	16.43	15.67	17.23
97	19.33	18.87	17.75	16.29	15.80	17.26
94	24.97	21.88	18.38	16.14	16.54	17.21
91	30.14	24.85	19.02	16.20	16.65	17.98

General jump diffusion option values given by (22) are obtained by assuming that $S_0 = 100$, $r = 2$ percent, $\lambda = 1.7885$, $\sigma = 0.1238$, $\gamma = 0.1066$, $\gamma_c = 0.0682$, $\alpha = -0.0096$, $\alpha_c = -0.0058$, $\sigma_{sy} = -0.0103$, $\sigma_{syc} = 0.0038$, $\sigma_{sy_c} = 0.0038$, $\sigma_{cy} = 0.0048$, $\sigma_{cy_c} = 0.0042$, $v_{sc} = 0.0059$ and $b = 6.5585$.