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Introduction

Talk about what is done to price a vanilla option throughout the BSM method. How does the BSM model is fair under its assumption. What about if we are going beyond ? How performant is it ? What about other model such as ... ?

Using R. R Core Team [2017]

Chapter 1

Analysis

1.1 Jump-diffusion processes: delta hedging

1.1.1 Hedge with Black-Scholes delta

1.1.2 Hedge with appropriate delta

Table 1.1: Hedging with MJD: Relative P&L

Strikes	frequency	91 dbm ^a		182 dbm		399 dbm	
		Δ_{mrt}	Δ_{bsm}	Δ_{mrt}	Δ_{bsm}	Δ_{mrt}	Δ_{bsm}
140	intraday	0.004	0.006	0.011	0.012	0.01	0.021
	daily	0.002	0.006	0.008	0.012	0.016	0.021
	weekly	0.004	0.006	0.006	0.011	0.007	0.021
160	intraday	0.011	0.018	0.021	0.029	0.025	0.042
	daily	0.016	0.018	0.022	0.029	0.019	0.042
	weekly	0.013	0.016	0.018	0.026	0.018	0.04
186	intraday	0.036	0.021	0.078	0.055	0.079	0.074
	daily	0.039	0.022	0.072	0.055	0.068	0.074
	weekly	0.014	-0.008	0.055	0.037	0.057	0.061
200	intraday	0.072	-0.002	0.139	0.061	0.13	0.086
	daily	0.06	-0.013	0.131	0.057	0.115	0.085
	weekly	-0.02	-0.1	0.083	0.005	0.085	0.053
230	intraday	0.955	0.331	0.444	-0.061	0.301	0.063
	daily	1.098	0.466	0.409	-0.091	0.261	0.054
	weekly	-0.741	-1.335	0.085	-0.438	0.174	-0.088

^adbm: days before maturity

1.1.3 frequency

1.2 Stochastic volatility processes: delta hedging

1.2.1 Hedge with Black-Scholes delta

1.2.2 Hedge with appropriate delta

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