

	QR (LASSO)				GARCH(1, 1)				DNN (MLP)				LSTM			
Data Processing	rolling standardization				none				none				none			
Features	rv_sqrt_lag1, bv_sqrt_lag1, (rv5-bv)_sqrt_lag1, rv5_extreme_sqrt_lag1, rv5_ma5_sqrt_lag1, bv_ma5_sqrt_lag1				log_ret				log_ret, rv5_sqrt, bv_sqrt, (rv5-bv)_sqrt				log_ret%, rv5, bv, rv5_sqrt, bv_sqrt, (rv5-bv)_sqrt			
Window Size	expanding window				expanding window				21				21			
Model Specification					AR(2), Standard Normal Distribution				alpha=0.01: units1=128, units2=16, learning_rate=0.0005, batch_size=16 alpha=0.05: units1=256, units2=32, learning_rate=0.001, batch_size=16 alpha=0.1: units1=256, units2=64, learning_rate=0.0005, batch_size=16				hidden_size=50, num_layers=1, learning_rate = 0.001, epochs = 200, batch_size=8			
alpha	DQ Test	Kupiec test	failure rates	Average Tick Loss	DQ Test	Kupiec test	failure rates	Average Tick Loss	DQ Test	Kupiec test	failure rates	Average Tick Loss	DQ Test	Kupiec test	failure rates	Average Tick Loss
1%	fail	pass	1.08%	0.000288	pass	pass	0.54%	0.573581	fail	pass	1.65%	0.000289	fail	pass	1.21%	0.000290
5%	pass	pass	4.31%	0.000912	pass	fail	1.19%	0.389070	pass	pass	6.28%	0.000946	pass	pass	3.97%	0.000949
10%	pass	pass	9.48%	0.001464	pass	fail	2.69%	0.287142	pass	pass	11.91%	0.001529	fail	pass	8.16%	0.001615