

	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				<b>alpha=0.01:</b> units1=128, units2=16, learning_rate=0.0005, batch_size=16 <b>alpha=0.05:</b> units1=256, units2=32, learning_rate=0.001, batch_size=16 <b>alpha=0.1:</b> 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%	<span style="color:red">fail</span>	<span style="color:green">pass</span>	1.08%	0.000288	<span style="color:green">pass</span>	<span style="color:green">pass</span>	0.54%	0.573581	<span style="color:red">fail</span>	<span style="color:green">pass</span>	1.65%	0.000289	<span style="color:red">fail</span>	<span style="color:green">pass</span>	1.21%	0.000290
5%	<span style="color:green">pass</span>	<span style="color:green">pass</span>	4.31%	0.000912	<span style="color:green">pass</span>	<span style="color:red">fail</span>	1.19%	0.389070	<span style="color:green">pass</span>	<span style="color:green">pass</span>	6.28%	0.000946	<span style="color:green">pass</span>	<span style="color:green">pass</span>	3.97%	0.000949
10%	<span style="color:green">pass</span>	<span style="color:green">pass</span>	9.48%	0.001464	<span style="color:green">pass</span>	<span style="color:red">fail</span>	2.69%	0.287142	<span style="color:green">pass</span>	<span style="color:green">pass</span>	11.91%	0.001529	<span style="color:red">fail</span>	<span style="color:green">pass</span>	8.16%	0.001615