Table 1
Descriptive Statistics of Logarithmic Yield Series

Statistical parameters	CSI 300 index	Goad index
Mean	-0.000242	-0.078433
Minimum value	-0.091542	0.109453
Maximum value	0.089310	0.012474
Bias	0.018723	0.011761
Skewness	-0.464076	-0.070924
Kurtosis	6.346116	9.535776

5.1.2 Stability Test

In order to apply the GARCH model, the unit yield test is required for the logarithmic yield sequence. The ADF test is shown in Table 2, and the p value indicates that the original hypothesis is rejected, that is, the unit does not exist, and it can be considered as a stationary sequence.

Table 2
ADF Test Results for Logarithmic Yield Series

Items	CSI 300 index	Goad index
ADF statistics	-44.8867	-48.2450
t-statistics	1.6266	-1.6948
p-value	1.0000×10^{-3}	1.0000×10^{-3}
C-value	-1.9416	-1.9416

In the case of CSI 300 Index, the autocorrelation test of the logarithmic yield series of CSI 300 Index is shown in Figure 3. It exceeds the boundary value at the lagged fourth order, 13th order, and 14th order, indicating a slight degree of sequence correlation. The logarithmic yield sequence of the square autocorrelation test is shown in Figure 4, showing the degree of variance persistence variation, indicating a significant GARCH effect.
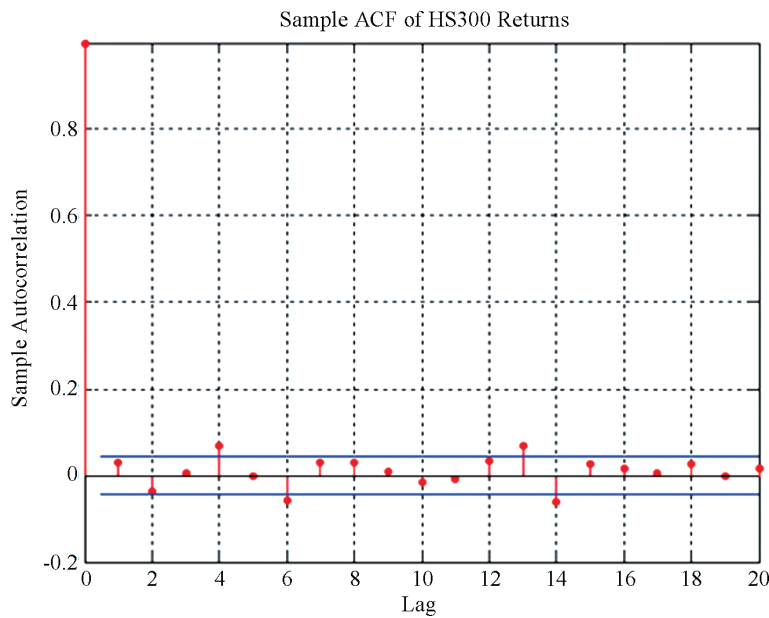

Figure 3
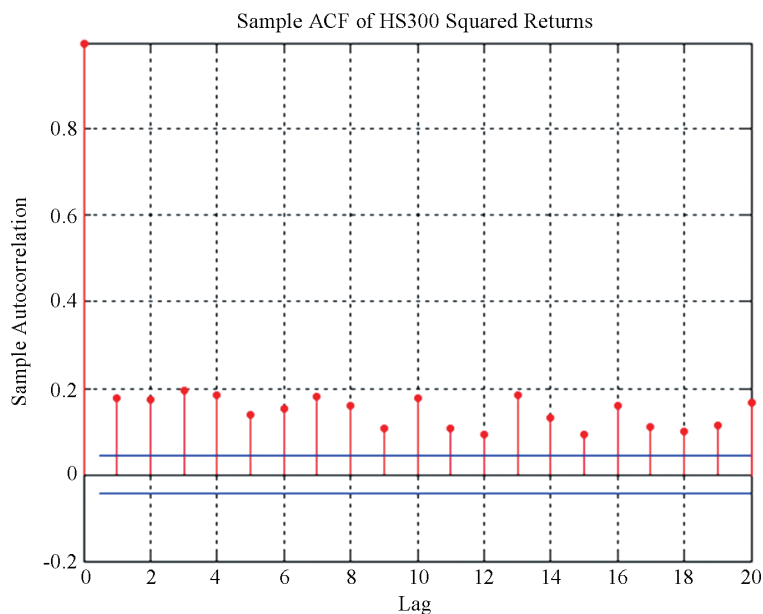**CSI 300 Index Daily Logistic Yield Sequence Autocorrelation Graph**

Figure 4
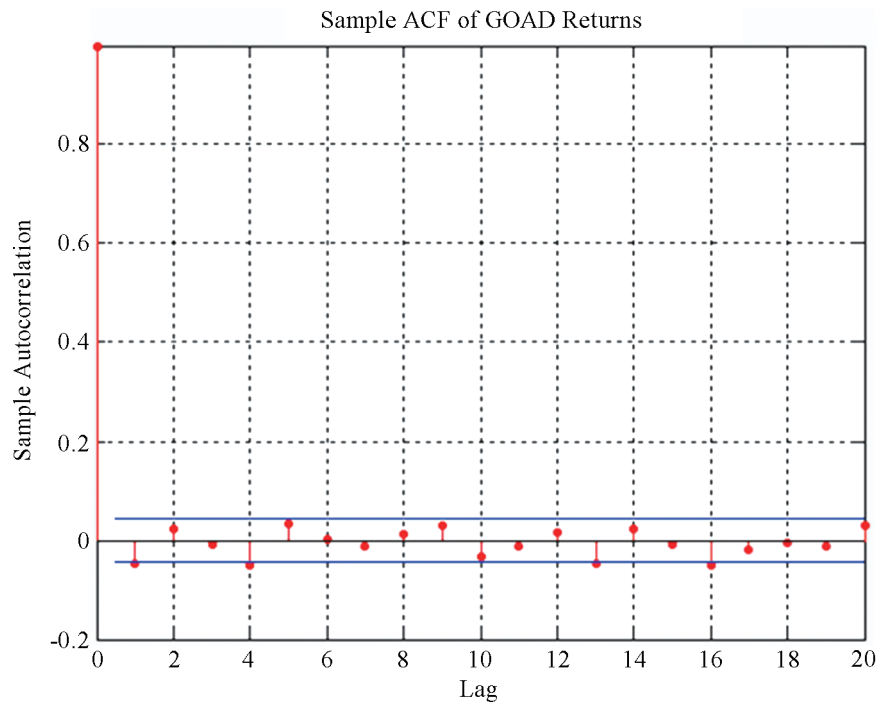**CSI 300 Index Daily Logarithmic Yield Sequence Square Autocorrelation**

Figure 5
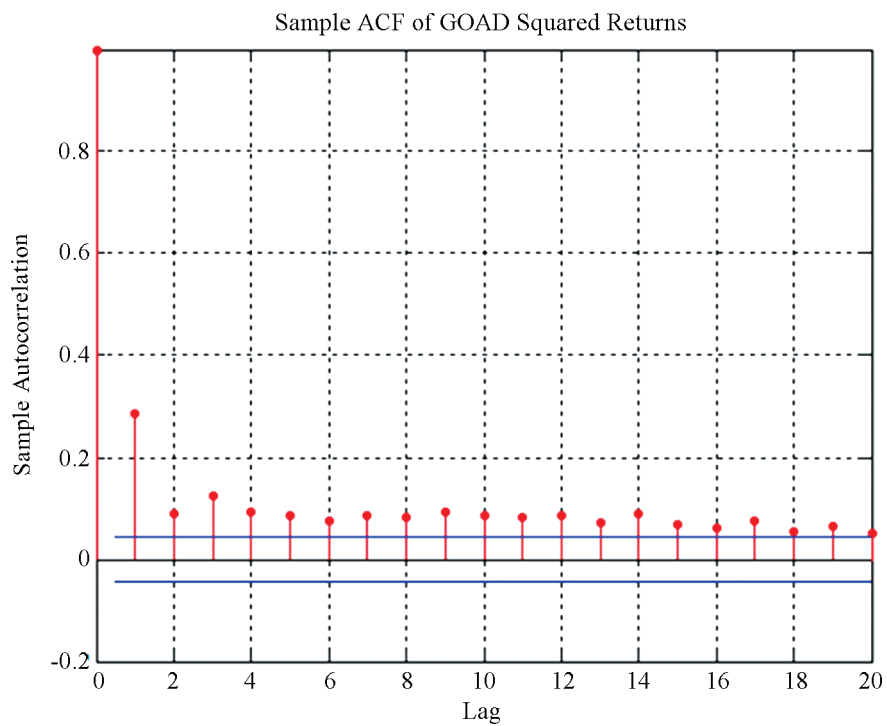**Goad Index Daily Logistic Yield Sequence Autocorrelation Graph**

Figure 6
Goad Index Daily Logarithmic Yield Sequence Square Autocorrelation

5.2 Data Filtering Is Performed Using the GARCH Model

The results of the above tests show that the two yield sequences are spikes of the thick and thick tails, which are stationary, have sequence correlation, and have obvious ARCH effect. Therefore, this paper uses GARCH (1,1) model, and filter the data by normalizing the residuals to generate new message sequences. From the autocorrelation graph of residual and residual squares, it can be seen that the GARCH model can eliminate the ARCH effect in the sample well. By comparing Figures 3, 4 and 7, 8, 9 which show that the filtered sequence of messages is suitable for subsequent tail estimates compared to the original sequence.
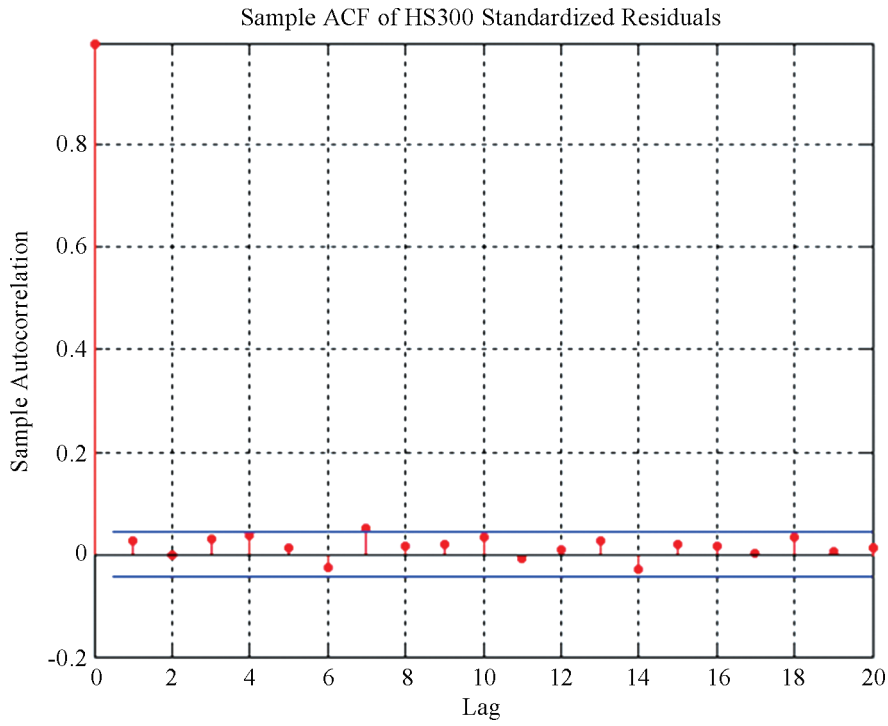
Figure 7
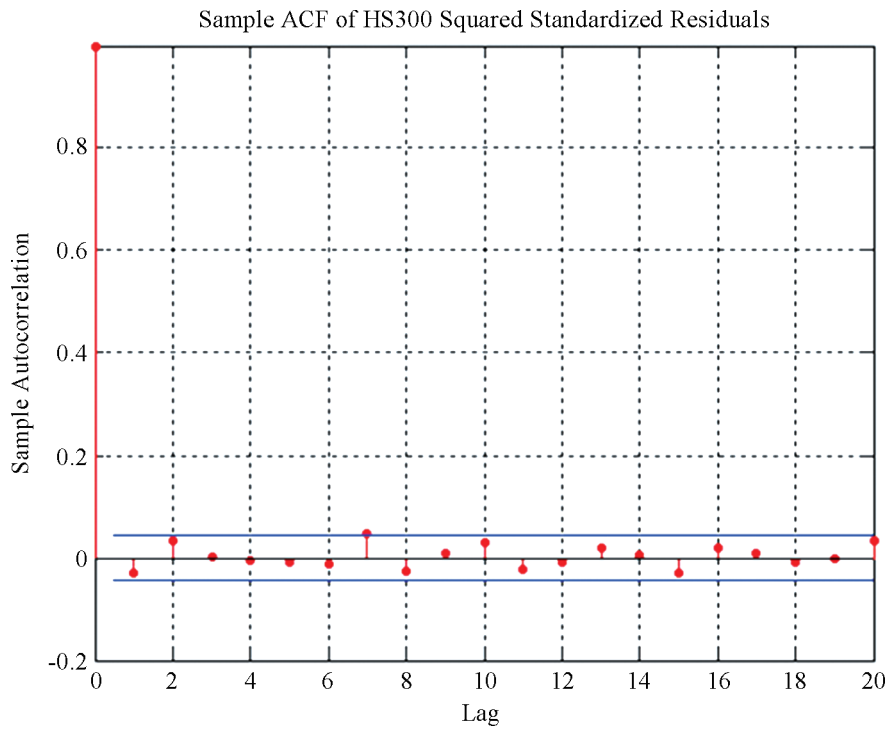**New Message Sequence Autocorrelation Graph (CSI 300 Index)**

Figure 8
Sending Sequence of Interest Information (CSI 300 Index)