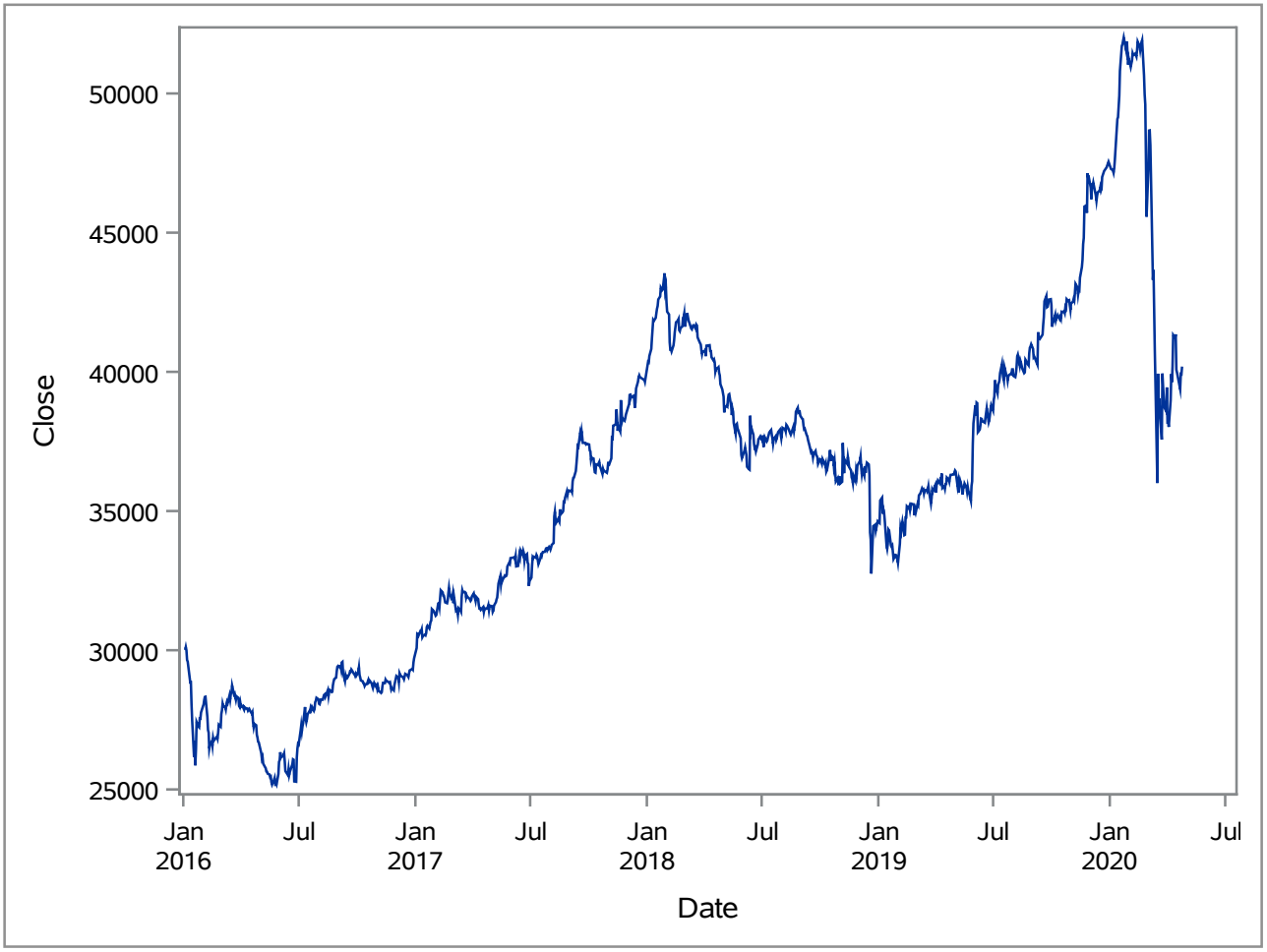
50000
45000
40000
35000
30000
25000
Close
Jan
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2019
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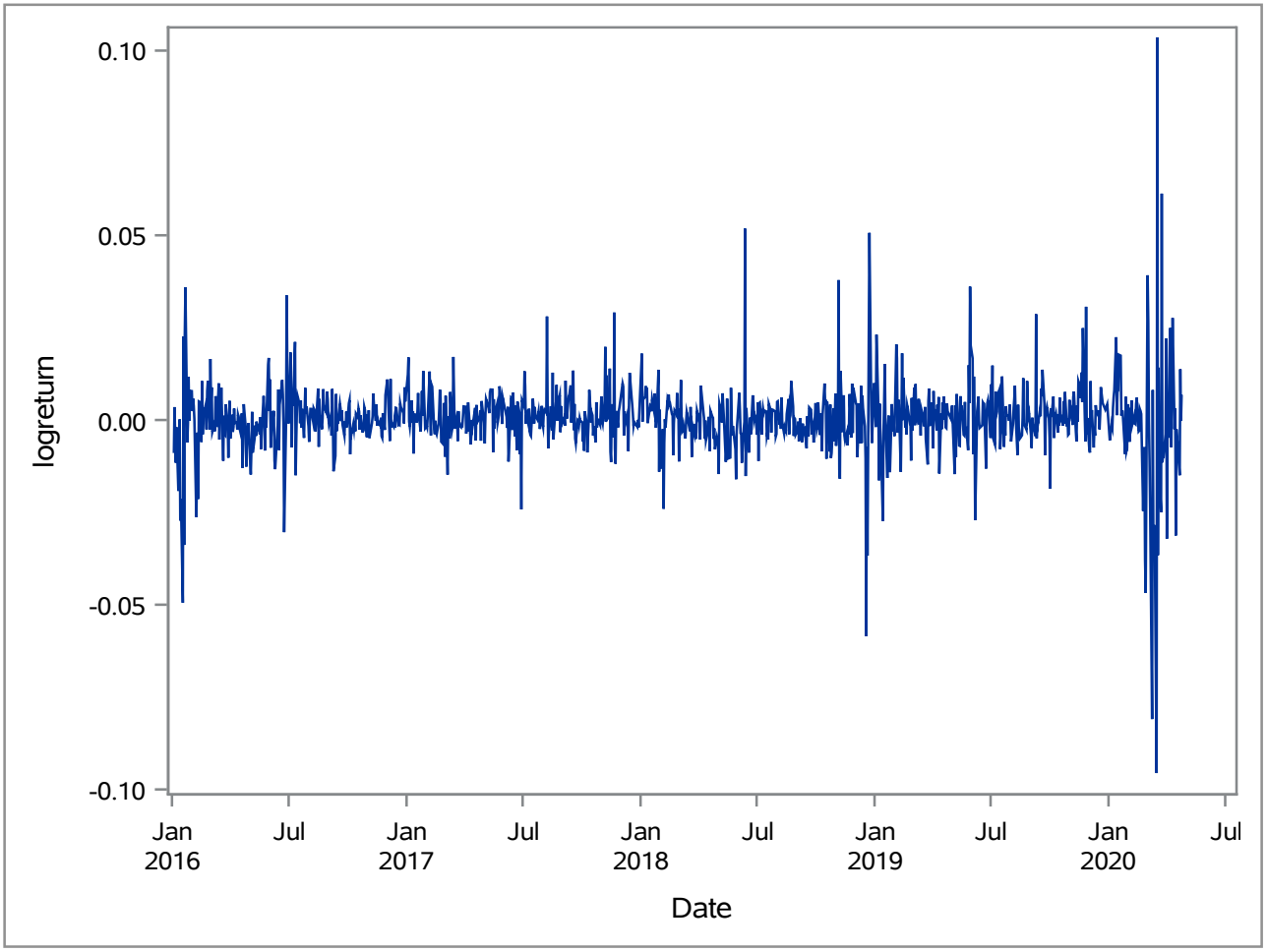
Jan
2020
Jul
Date


0.10
0.05
0.00
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-0.10
logreturn
Jan
2016
Jul
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2017
Jul
Jan
2018
Jul
Jan
2019
Jul
Jan
2020
Jul
Date

The AUTOREG Procedure

Dependent Variable	logreturn

The AUTOREG Procedure

Ordinary Least Squares Estimates			
SSE	0.11508009	**DFE**	1077
MSE	0.0001069	**Root MSE**	0.01034
SBC	-6792.0846	**AIC**	-6797.0674
MAE	0.00599515	**AICC**	-6797.0637
MAPE	110.117179	**HQC**	-6795.1805
Durbin-Watson	2.1258	**Total R-Square**	0.0000

Parameter Estimates					
Variable	**DF**	**Estimate**	**Standard Error**	**t Value**	**Approx Pr > |t|**
Intercept	1	0.000263	0.000315	0.83	0.4042

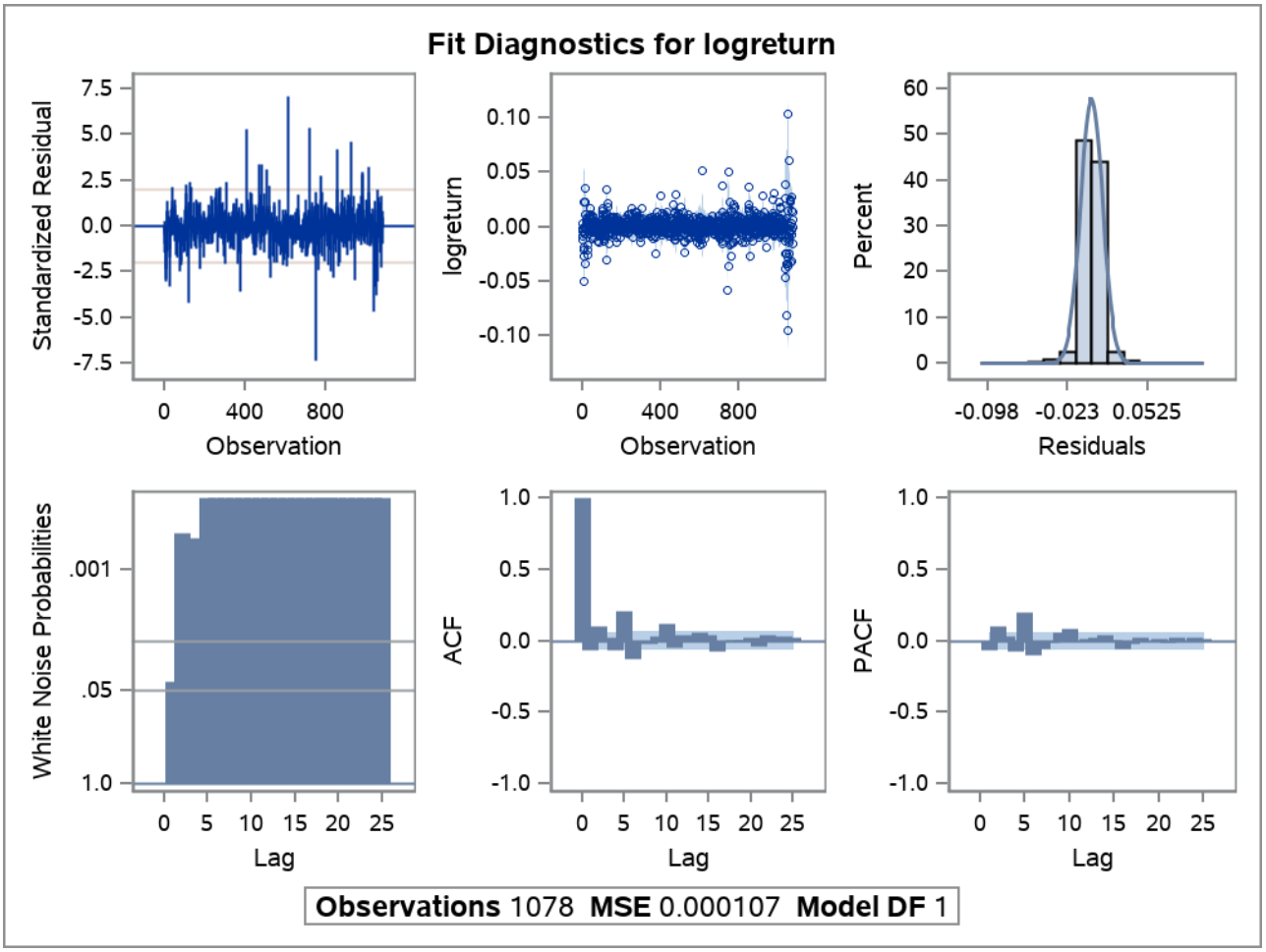
Algorithm converged.

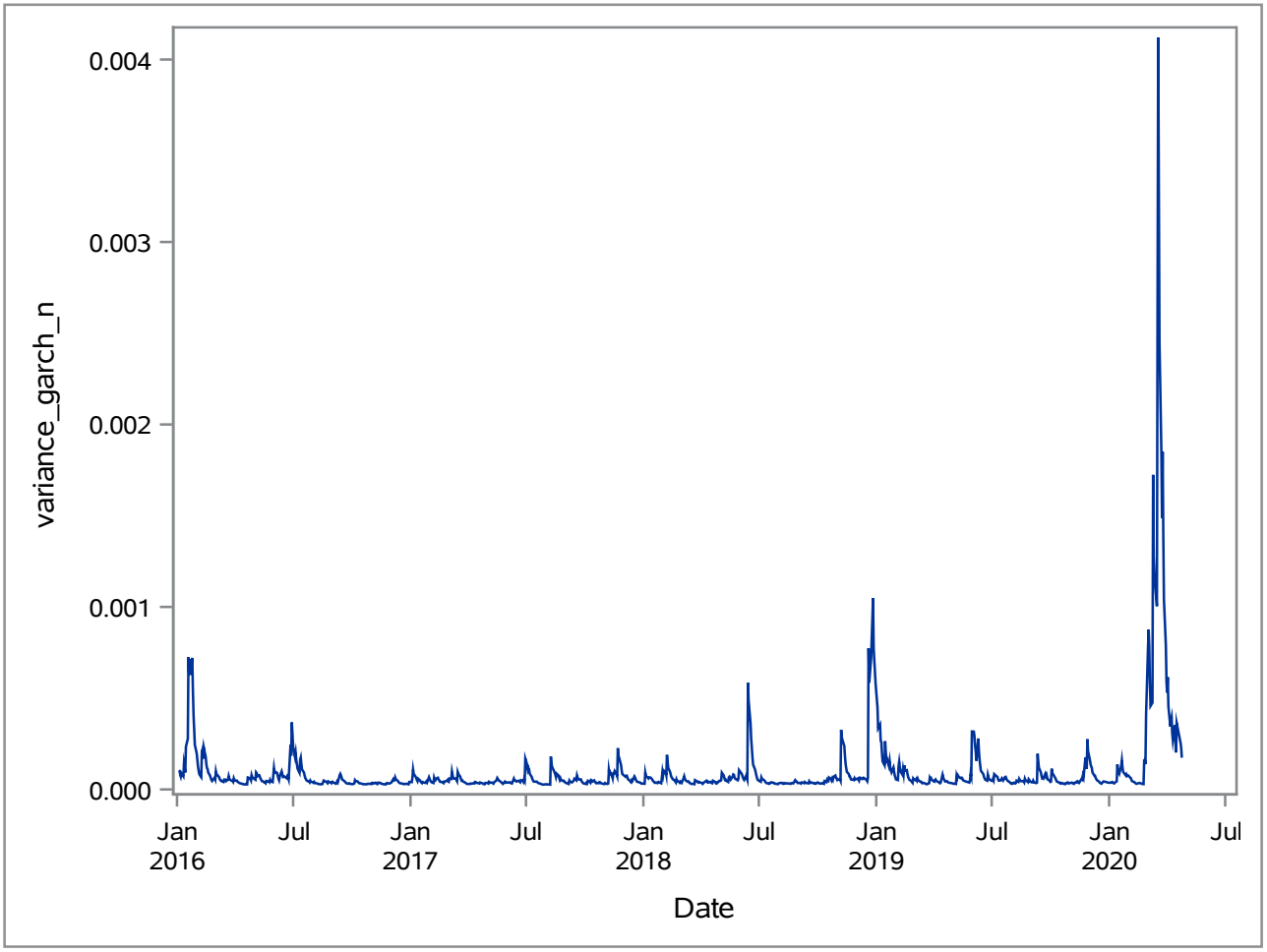
The AUTOREG Procedure

GARCH Estimates			
SSE	0.11521981	**Observations**	1078
MSE	0.0001069	**Uncond Var**	0.00009961
Log Likelihood	3701.679	**Total R-Square**	.
SBC	-7375.4265	**AIC**	-7395.358
MAE	0.00600246	**AICC**	-7395.3207
MAPE	130.909143	**HQC**	-7387.8103
		Normality Test	2849.2543
		Pr > ChiSq	<.0001

Parameter Estimates					
Variable	**DF**	**Estimate**	**Standard Error**	**t Value**	**Approx Pr > |t|**
Intercept	1	0.000623	0.000179	3.48	0.0005
ARCH0	1	6.3303E-6	6.7639E-7	9.36	<.0001
ARCH1	1	0.2059	0.0181	11.38	<.0001
GARCH1	1	0.7305	0.0200	36.61	<.0001

The AUTOREG Procedure




0.004
0.003
0.002
0.001
0.000
variance_garch_n
Jan
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Jul
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2017
Jul
Jan
2018
Jul
Jan
2019
Jul
Jan
2020
Jul
Date

The AUTOREG Procedure

Dependent Variable	logreturn

The AUTOREG Procedure

Ordinary Least Squares Estimates			
SSE	0.11508009	**DFE**	1077
MSE	0.0001069	**Root MSE**	0.01034
SBC	-6792.0846	**AIC**	-6797.0674
MAE	0.00599515	**AICC**	-6797.0637
MAPE	110.117179	**HQC**	-6795.1805
Durbin-Watson	2.1258	**Total R-Square**	0.0000

Parameter Estimates					
Variable	**DF**	**Estimate**	**Standard Error**	**t Value**	**Approx Pr > |t|**
Intercept	1	0.000263	0.000315	0.83	0.4042

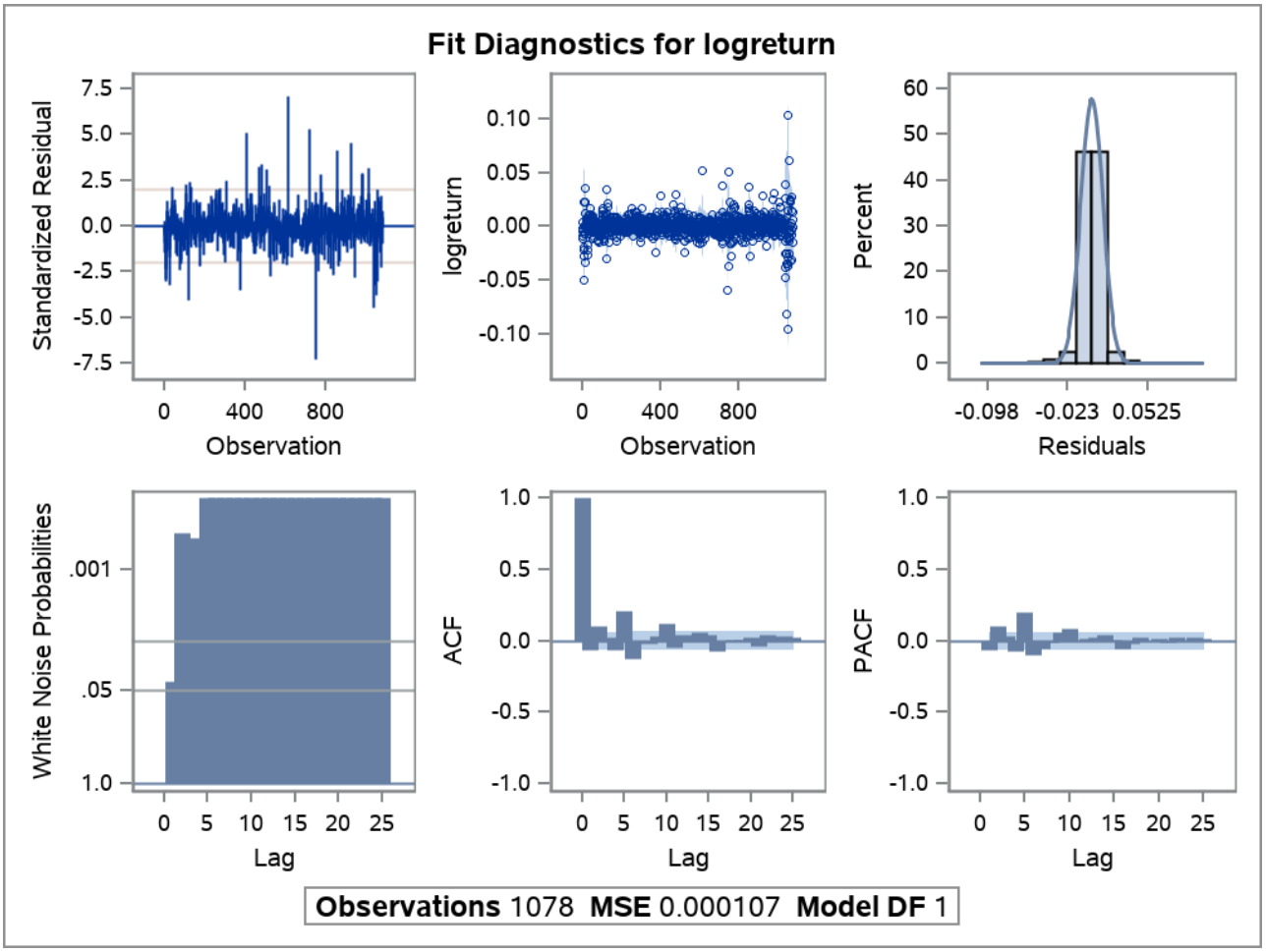
Algorithm converged.

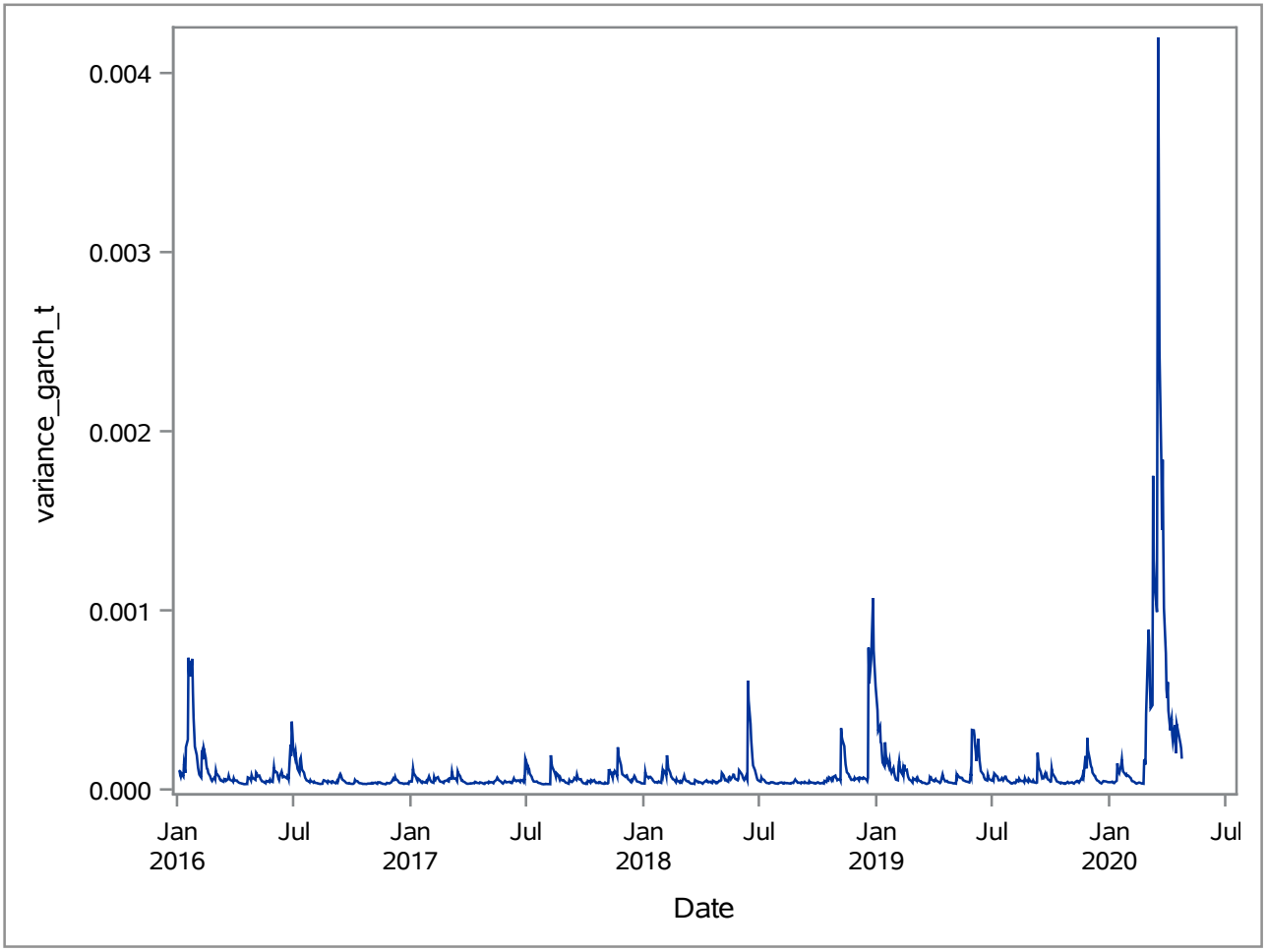
The AUTOREG Procedure

GARCH Estimates			
SSE	0.11509224	**Observations**	1078
MSE	0.0001068	**Uncond Var**	0.00010879
Log Likelihood	3822.79591	**Total R-Square**	.
SBC	-7610.6775	**AIC**	-7635.5918
MAE	0.00599492	**AICC**	-7635.5359
MAPE	115.680724	**HQC**	-7626.1572
		Normality Test	3000.0715
		Pr > ChiSq	<.0001

Parameter Estimates						
Variable	**DF**	**Estimate**	**Standard Error**	**t Value**	**Approx Pr > |t|**	**Variable Label**
Intercept	1	0.000369	0.000170	2.17	0.0300	
ARCH0	1	7.2418E-6	2.0425E-6	3.55	0.0004	
ARCH1	1	0.2124	0.0528	4.02	<.0001	
GARCH1	1	0.7210	0.0480	15.02	<.0001	
TDFI	1	0.2948	0.0331	8.90	<.0001	Inverse of t DF

The AUTOREG Procedure




variance_garch_t
0.004
0.003
0.002
0.001
0.000
Jan
2016
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2019
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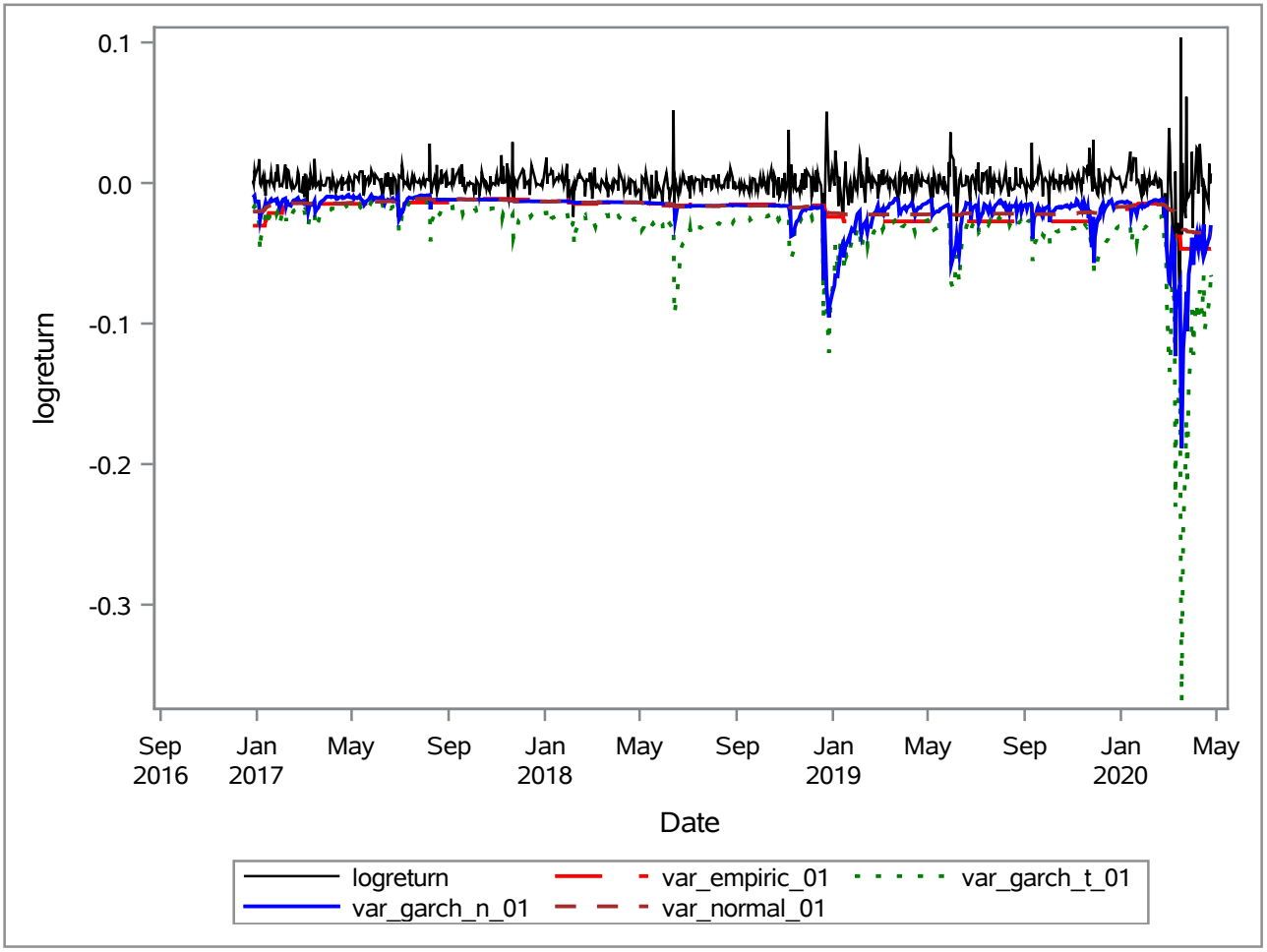
Jan
2020
Jul
Date


0.1
0.0
-0.1
-0.2
-0.3
logreturn
Sep 2016
Jan 2017
May
Sep
Jan 2018
May
Sep
Jan 2019
May
Sep
Jan 2020
May
Date
logreturn
var_empiric_01
var_garch_t_01
var_garch_n_01
var_normal_01

Obs	p	n	s	z	p_value
1	0.025362	828	21	4.44278	.000004440

Obs	p	n	s	z	p_value
1	0.020531	828	17	3.04568	.001160789

Obs	p	n	s	z	p_value
1	0.020531	828	17	3.04568	.001160789

Obs	p	n	s	z	p_value
1	.003623188	828	3	-1.84417	0.96742