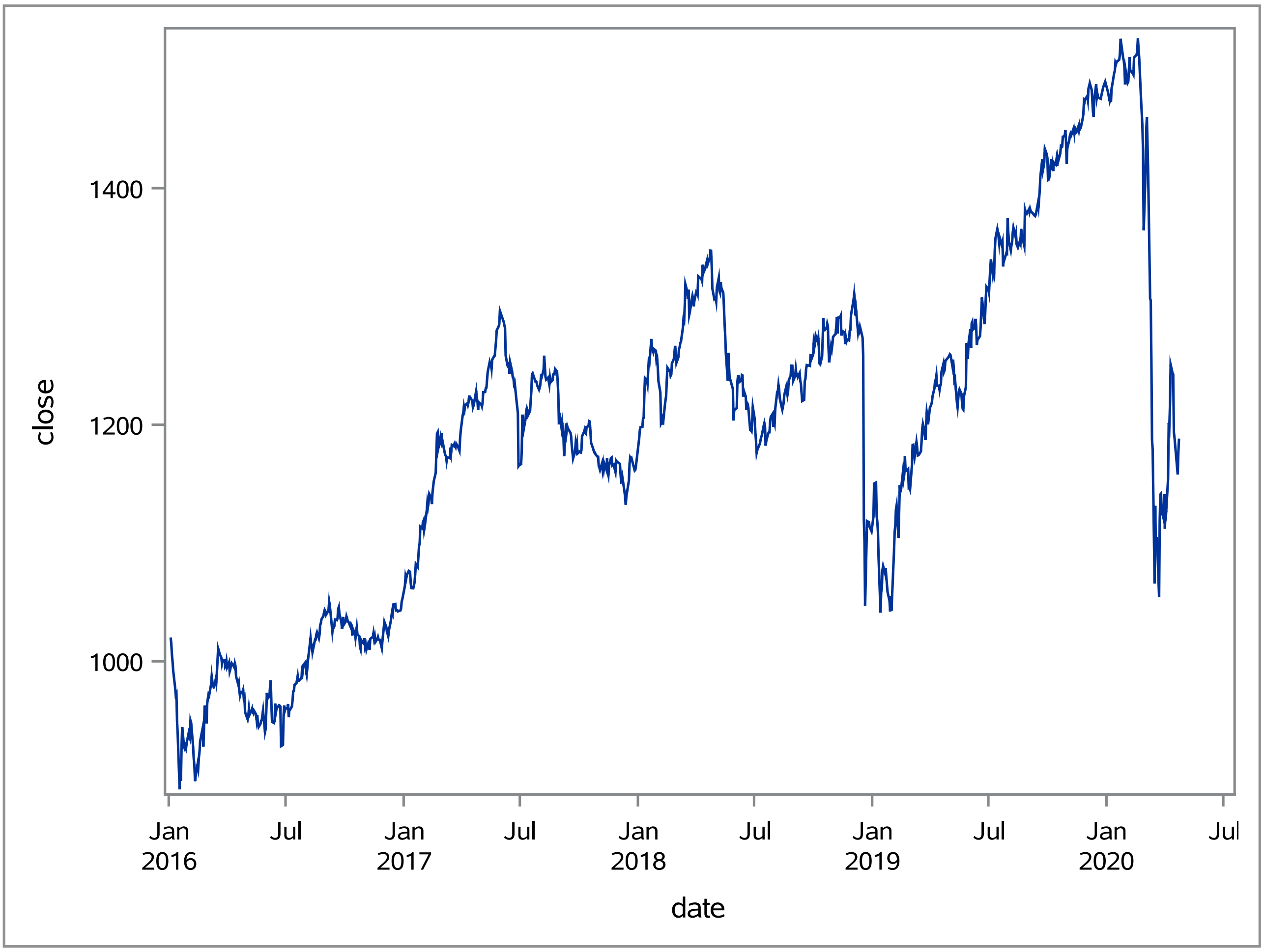
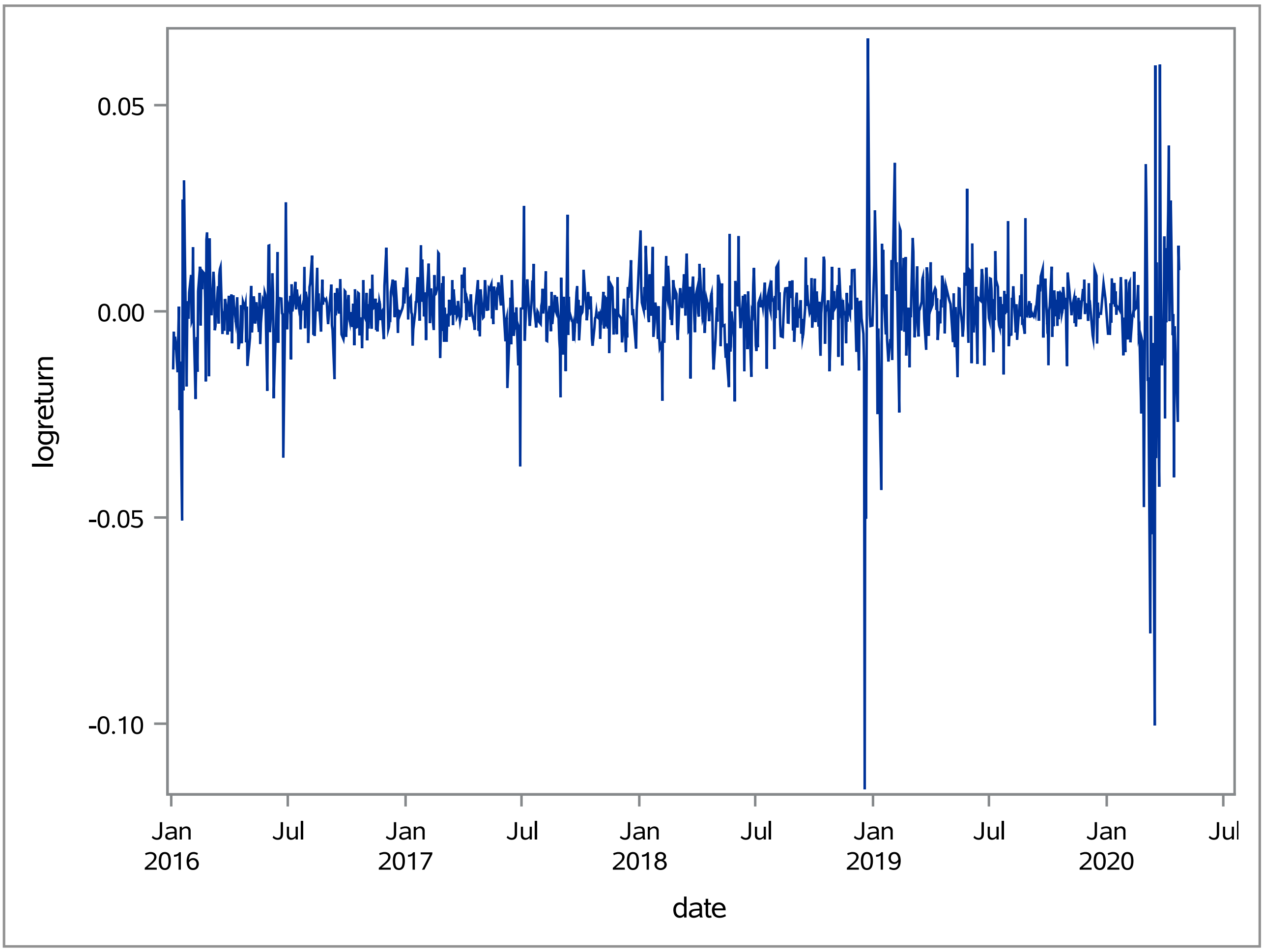


close
1400
1200
1000
Jan 2016
Jul
Jan 2017
Jul
Jan 2018
Jul
Jan 2019
Jul
Jan 2020
Jul
date


0.05
0.00
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logreturn
Jan 2016
Jul
Jan 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	0.124963	**DFE**	1076
MSE	0.0001161	**Root MSE**	0.01078
SBC	-6696.0455	**AIC**	-6701.0274
MAE	0.00631821	**AICC**	-6701.0237
MAPE	107.469628	**HQC**	-6699.1408
Durbin-Watson	1.9987	**Total R-Square**	0.0000

Parameter Estimates					
Variable	**DF**	**Estimate**	**Standard Error**	**t Value**	**Approx Pr > |t|**
Intercept	1	0.000129	0.000328	0.39	0.6954

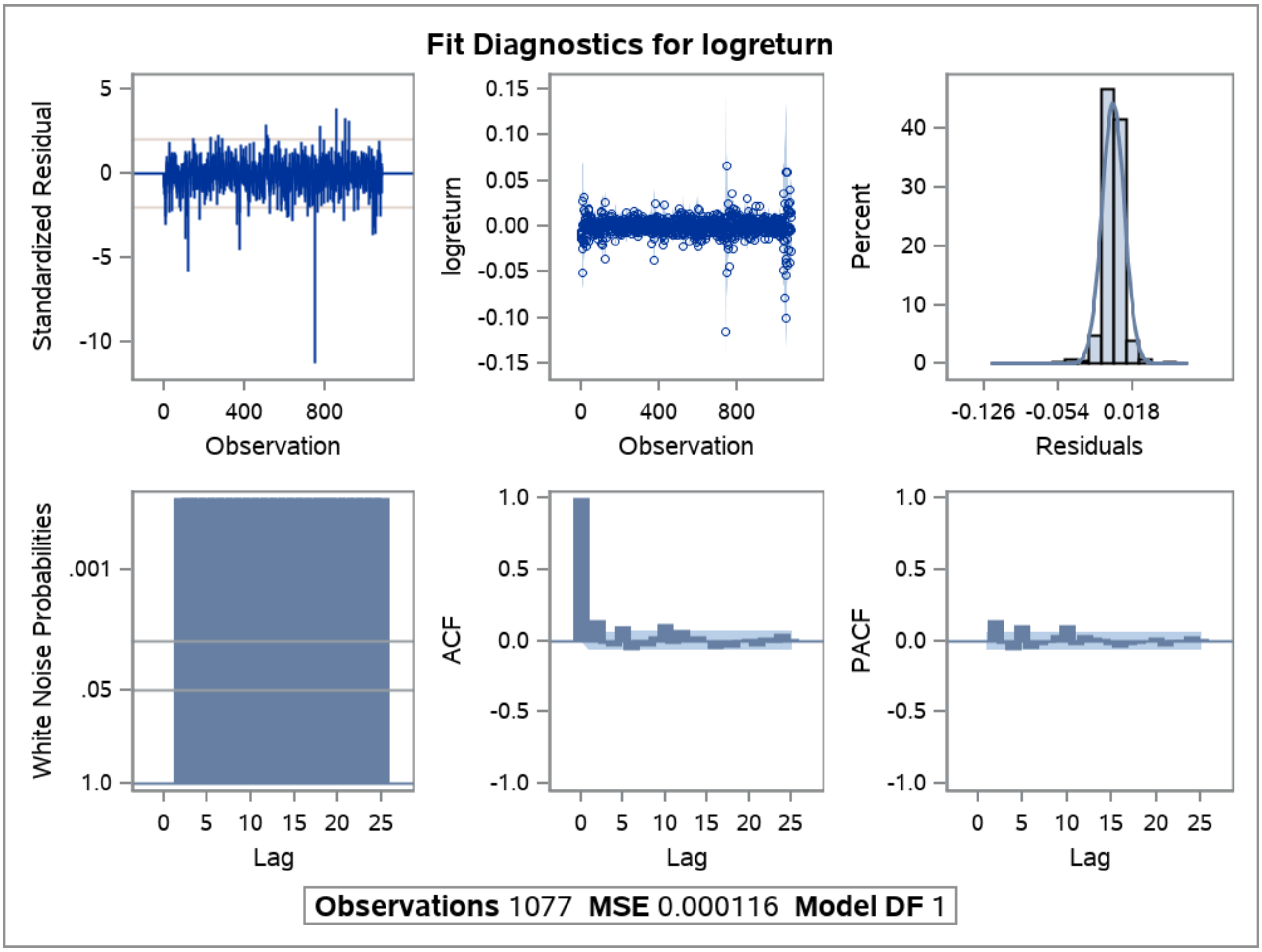
Algorithm converged.

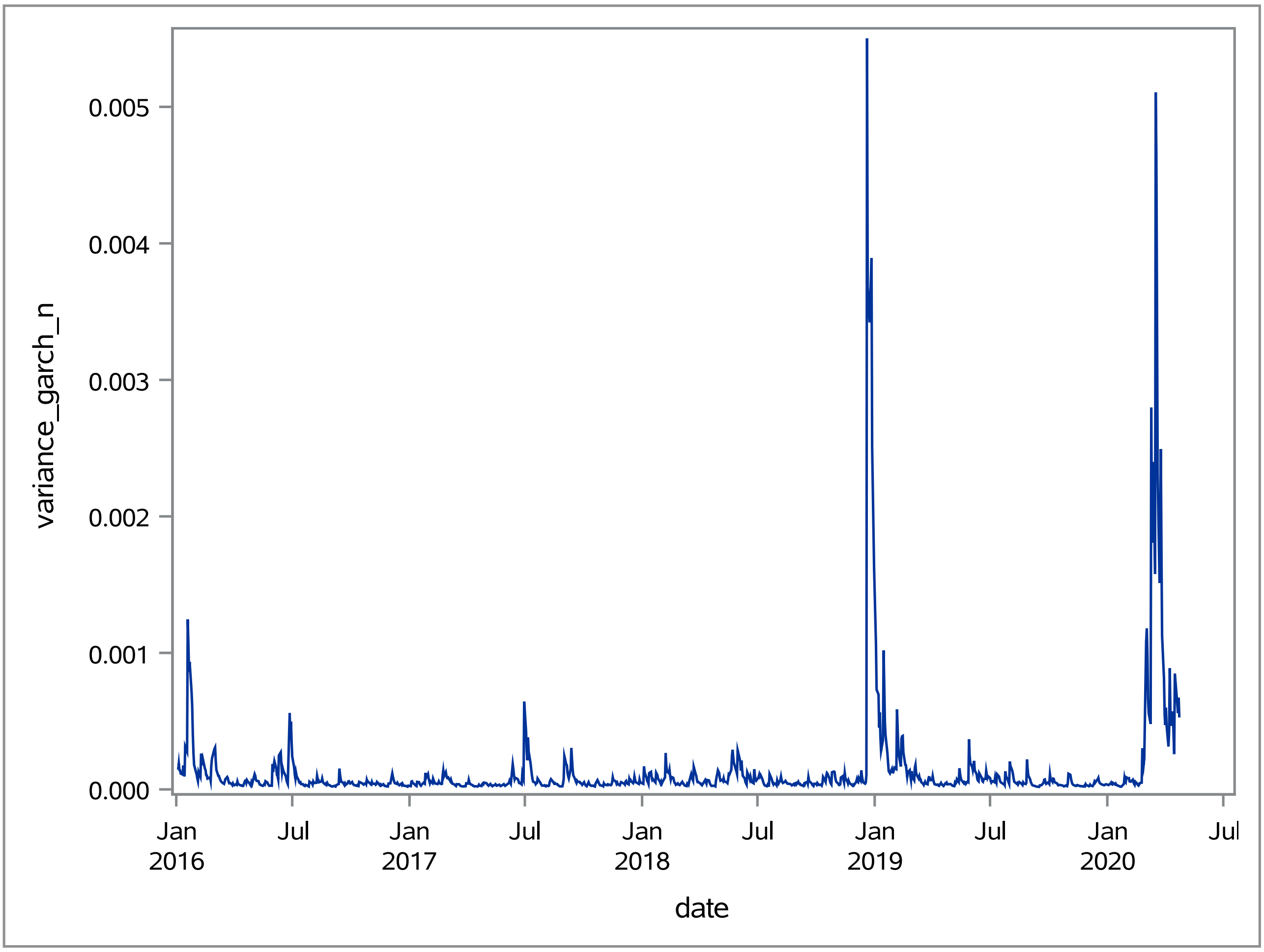
The AUTOREG Procedure

GARCH Estimates			
SSE	0.12583659	**Observations**	1077
MSE	0.0001168	**Uncond Var**	.
Log Likelihood	3651.24153	**Total R-Square**	.
SBC	-7274.5553	**AIC**	-7294.4831
MAE	0.00632141	**AICC**	-7294.4458
MAPE	184.486553	**HQC**	-7286.9365
		Normality Test	13523.4006
		Pr > ChiSq	<.0001

Parameter Estimates					
Variable	**DF**	**Estimate**	**Standard Error**	**t Value**	**Approx Pr > |t|**
Intercept	1	0.001029	0.000202	5.09	<.0001
ARCH0	1	5.6493E-6	1.045E-6	5.41	<.0001
ARCH1	1	0.3967	0.0198	19.99	<.0001
GARCH1	1	0.6435	0.0164	39.29	<.0001

The AUTOREG Procedure





variance_garch_n
0.005
0.004
0.003
0.002
0.001
0.000
Jan 2016
Jul
Jan 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	0.124963	**DFE**	1076
MSE	0.0001161	**Root MSE**	0.01078
SBC	-6696.0455	**AIC**	-6701.0274
MAE	0.00631821	**AICC**	-6701.0237
MAPE	107.469628	**HQC**	-6699.1408
Durbin-Watson	1.9987	**Total R-Square**	0.0000

Parameter Estimates

Variable	DF	Estimate	Standard Error	t Value	Approx Pr > |t|
Intercept	1	0.000129	0.000328	0.39	0.6954

Algorithm converged.

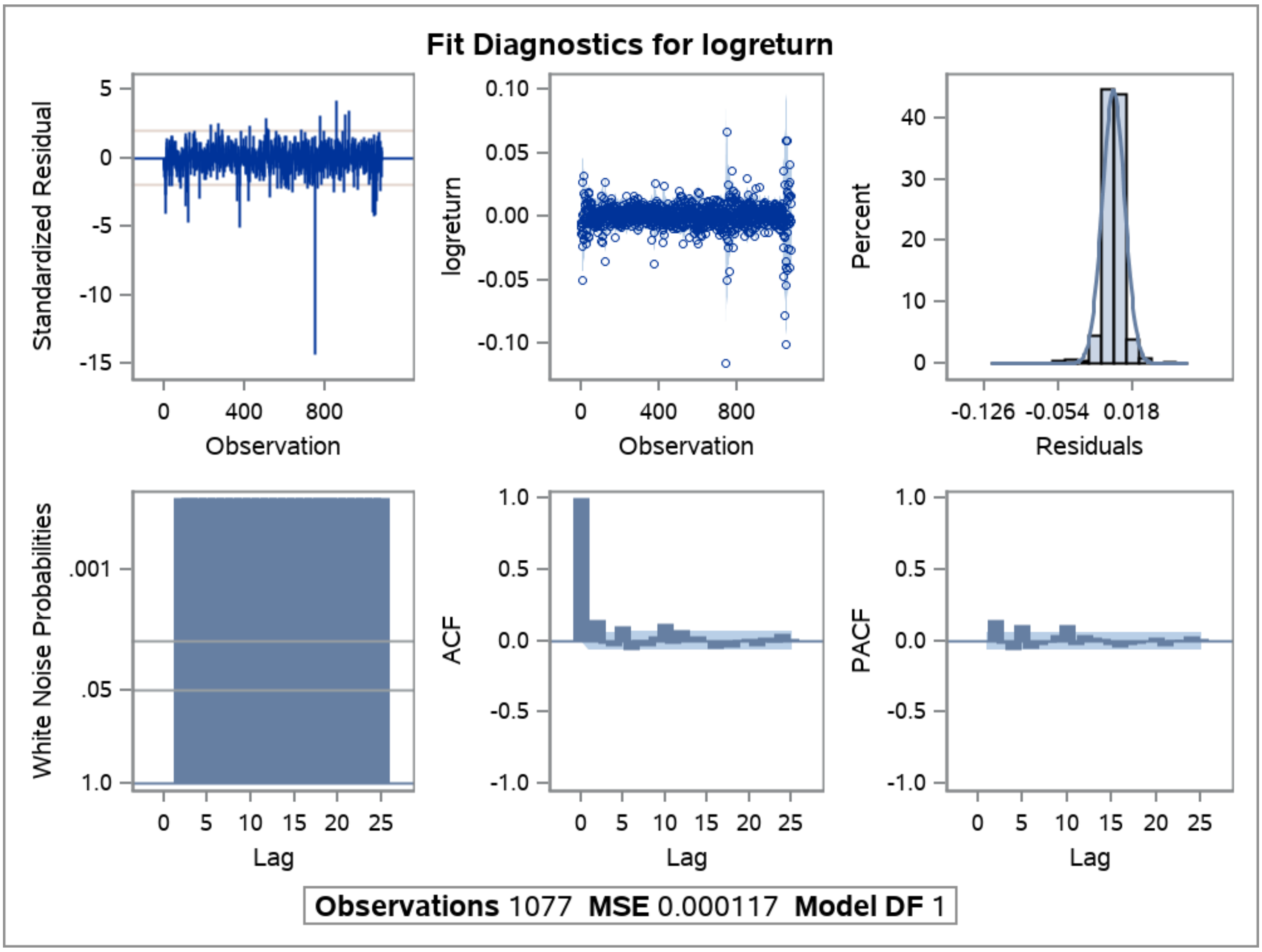
The AUTOREG Procedure

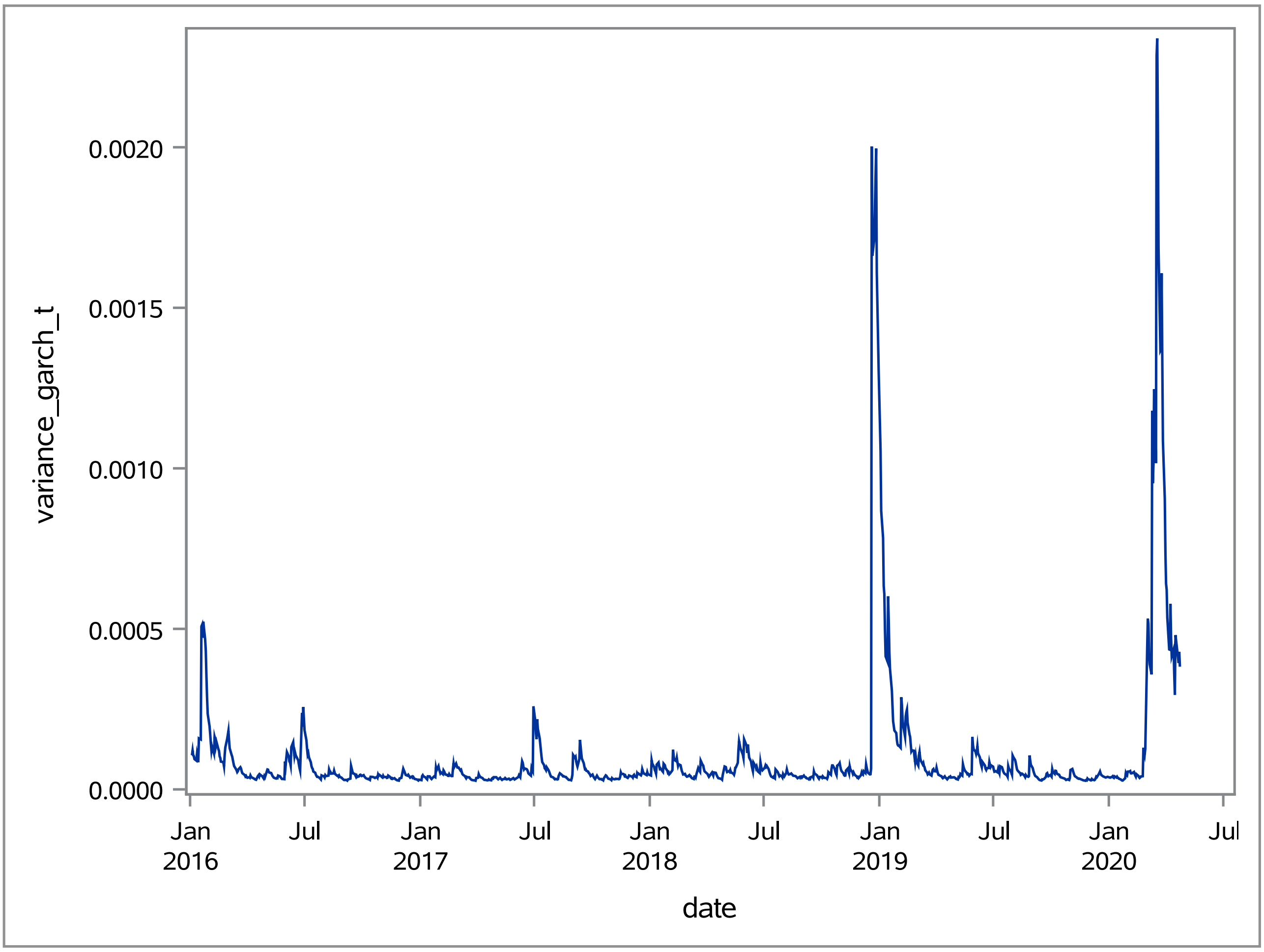
GARCH Estimates			
SSE	0.12528691	**Observations**	1077
MSE	0.0001163	**Uncond Var**	0.00008004
Log Likelihood	3766.29916	**Total R-Square**	.
SBC	-7497.6886	**AIC**	-7522.5983
MAE	0.00630697	**AICC**	-7522.5423
MAPE	151.833453	**HQC**	-7513.1651
		Normality Test	47685.4983
		Pr > ChiSq	<.0001

Parameter Estimates

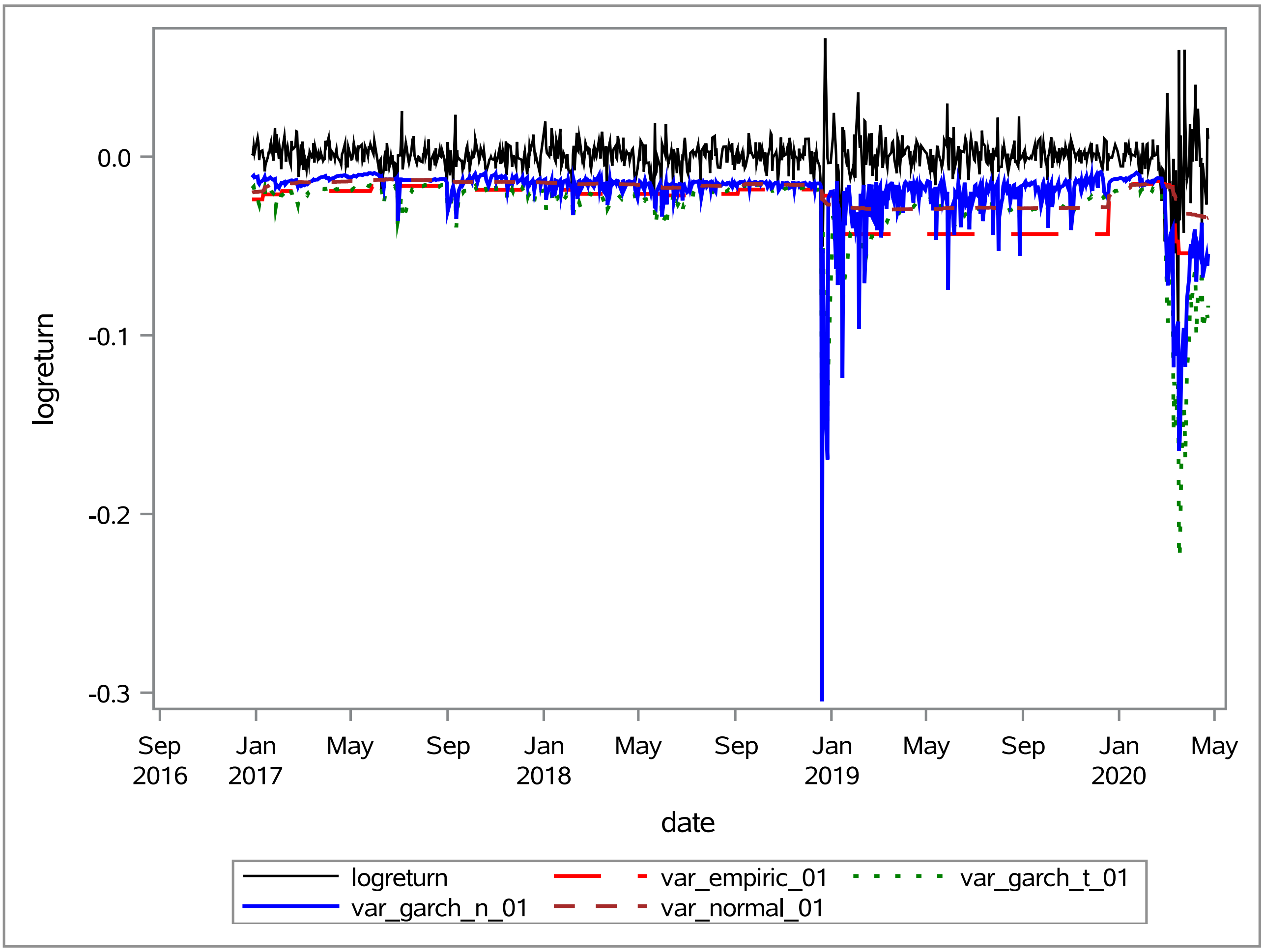
Variable	DF	Estimate	Standard Error	t Value	Approx Pr > |t|	Variable Label
Intercept	1	0.000677	0.000187	3.63	0.0003	
ARCH0	1	4.2184E-6	1.2563E-6	3.36	0.0008	
ARCH1	1	0.1431	0.0336	4.26	<.0001	
GARCH1	1	0.8042	0.0380	21.16	<.0001	
TDFI	1	0.2262	0.0251	9.00	<.0001	Inverse of t DF

The AUTOREG Procedure





variance_garch_t
0.0000
0.0005
0.0010
0.0015
0.0020
Jan 2016
Jul
Jan 2017
Jul
Jan 2018
Jul
Jan 2019
Jul
Jan 2020
Jul
date


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	0.026602	827	22	4.79844	.000000800

Obs	p	n	s	z	p_value
1	0.019347	827	16	2.70153	.003451105

Obs	p	n	s	z	p_value
1	0.022975	827	19	3.74998	.000088423

Obs	p	n	s	z	p_value
1	.009673519	827	8	-0.094361	0.53759