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Autocorrelation Test

Autocorrelation Test
Import data

Autocorrelation Test Context
Descriptive statistics for ordered G3 series

Descriptives

[AutocorrelationData] D:\DATA ANALYSIS\G Correlation Tests\Autocorrelation\SPSS_Output\sav\Autocorrelation-Test-data.sav

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Final grade / ordered dependent variable	649	0	19	11.91	3.231
Lag 1 value of G3 based on current row order	648	.00	19.00	11.9074	3.23296
First period grade	649	0	19	11.40	2.745
Second period grade	649	0	19	11.57	2.914
School absences	649	0	32	3.66	4.641
Weekly study time group	649	1	4	1.93	.830
Number of past class failures	649	0	3	.22	.593
Valid N (listwise)	648				

Autocorrelation Lag 1 Correlation

Autocorrelation Lag 1 Correlation
G3 is correlated with its previous ordered value

Correlations

Correlations

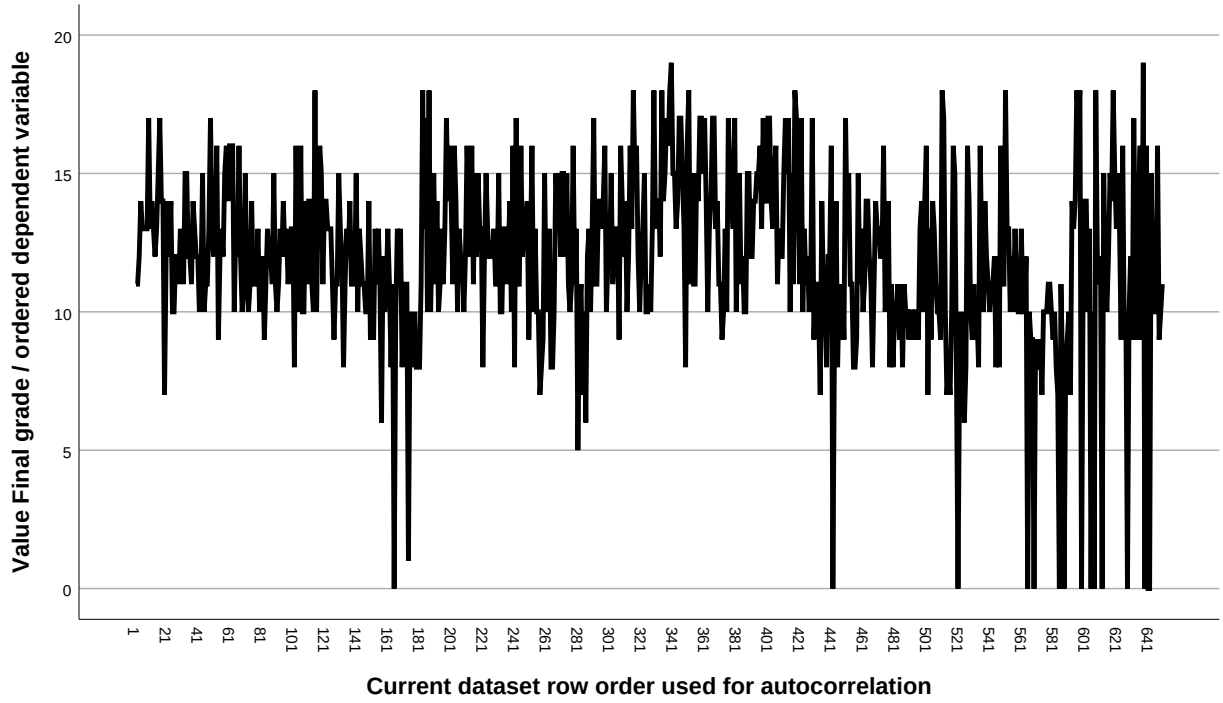
		Final grade / ordered dependent variable	Lag 1 value of G3 based on current row order
Final grade / ordered dependent variable	Pearson Correlation	1	.190**
	Sig. (2-tailed)		.000
	N	649	648
Lag 1 value of G3 based on current row order	Pearson Correlation	.190**	1
	Sig. (2-tailed)	.000	
	N	648	648

**. Correlation is significant at the 0.01 level (2-tailed).

Ordered Series Plot

Ordered Series Plot
Visual check of the G3 series in current row order

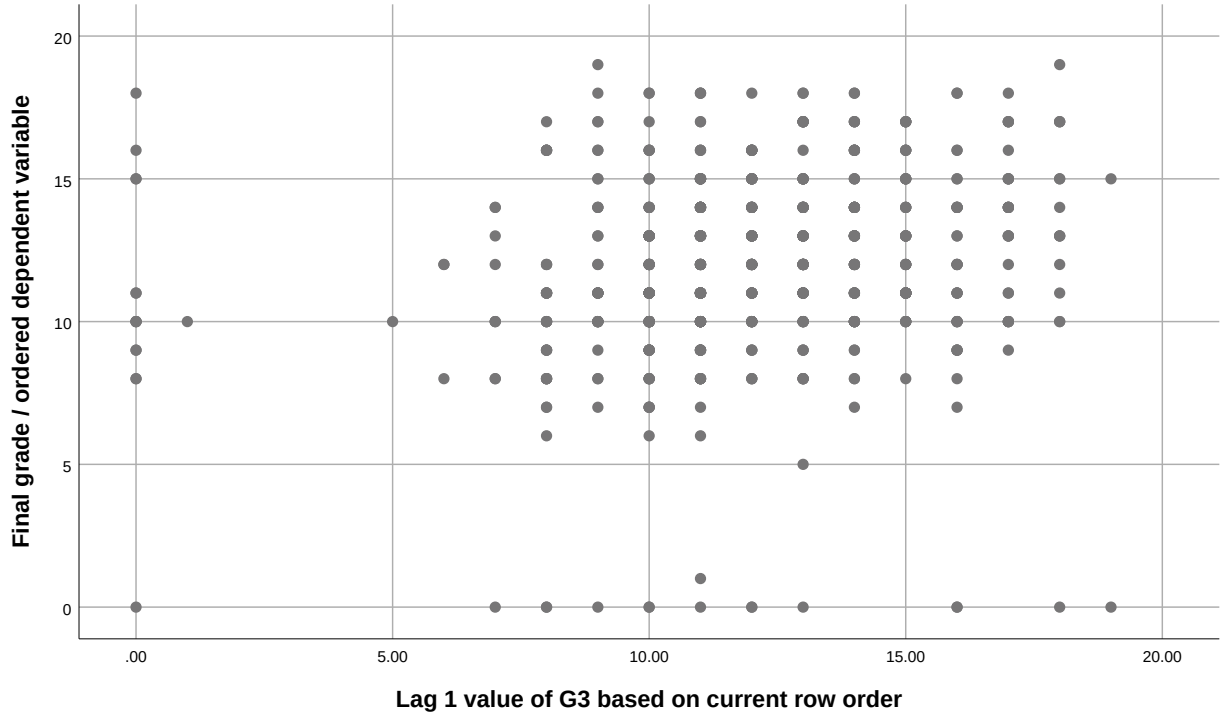
Graph



Lag 1 Scatterplot

Lag 1 Scatterplot
Current G3 against previous ordered G3 value

Graph



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>Warning # 2004.  Command name: SUBTITLE
>The subtitle given exceeds 60 characters in length.  The first 60 characters
>will be used.
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Regression Residual Autocorrelation Context
Durbin-Watson is requested through regression residual outpu

Regression

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Number of past class failures, School absences, Weekly study time group, Second period grade, First period grade[b]	.	Enter

a. Dependent Variable: Final grade / ordered dependent variable

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.922[a]	.851	.849	1.254	1.857

a. Predictors: (Constant), Number of past class failures, School absences, Weekly study time group, Second period grade, First period grade

b. Dependent Variable: Final grade / ordered dependent variable

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5752.587	5	1150.517	731.966	.000[b]
	Residual	1010.679	643	1.572		
	Total	6763.267	648			

a. Dependent Variable: Final grade / ordered dependent variable

b. Predictors: (Constant), Number of past class failures, School absences, Weekly study time group, Second period grade, First period grade

Regression Residual Autocorrelation Context
Durbin-Watson is requested through regression residual outpu

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-.155	.259		-.600	.549
	First period grade	.139	.036	.119	3.849	.000
	Second period grade	.886	.034	.799	26.107	.000
	School absences	.023	.011	.034	2.165	.031
	Weekly study time group	.097	.062	.025	1.564	.118
	Number of past class failures	-.218	.091	-.040	-2.402	.017

a. Dependent Variable: Final grade / ordered dependent variable

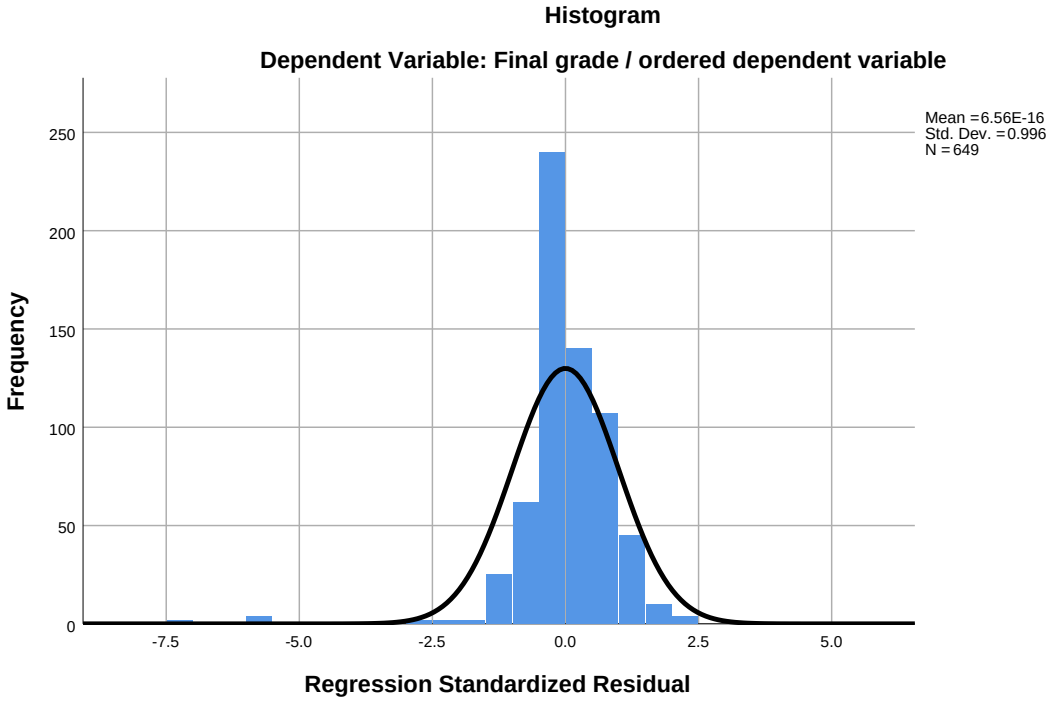
Residuals Statistics[a]

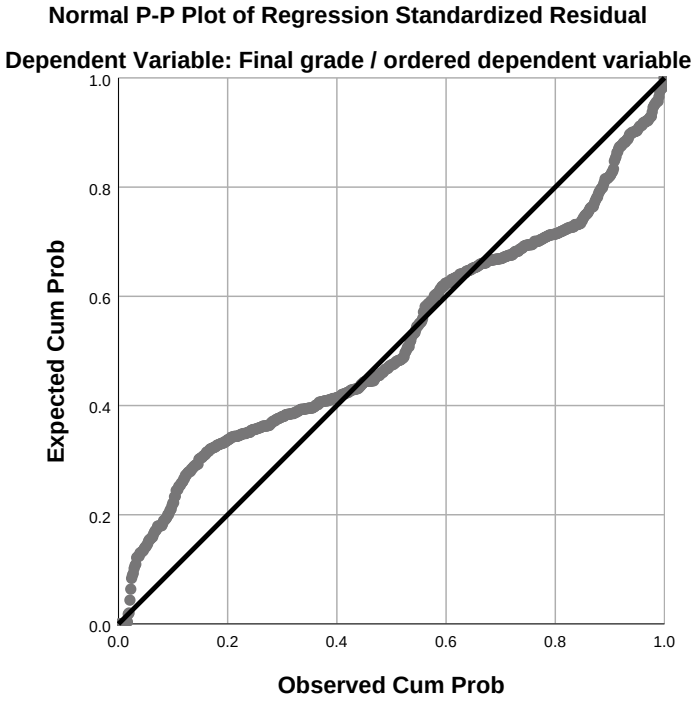
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.28	19.57	11.91	2.980	649
Residual	-9.072	5.807	.000	1.249	649
Std. Predicted Value	-3.902	2.572	.000	1.000	649
Std. Residual	-7.236	4.632	.000	.996	649

a. Dependent Variable: Final grade / ordered dependent variable

Charts

Regression Residual Autocorrelation Context
Durbin-Watson is requested through regression residual outpu





>Warning # 2003. Command name: TITLE

Regression Residual Autocorrelation Context
Durbin-Watson is requested through regression residual outpu

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>The title given exceeds 60 characters in length.  The first 60 characters wil
l
>be used.
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Autocorrelation Function and Partial Autocorrelation Functio
ACF/PACF for raw G3 and regression residuals

ACF

Model Description

Model Name		MOD_1
Series Name	1	Final grade / ordered dependent variable
	2	Regression residuals used for autocorrelation ACF/PACF context
Transformation		None
Non-Seasonal Differencing		0
Seasonal Differencing		0
Length of Seasonal Period		No periodicity
Maximum Number of Lags		16
Process Assumed for Calculating the Standard Errors of the Autocorrelations		Independence(white noise)[a]
Display and Plot		All lags

Applying the model specifications from MOD_1

a. Not applicable for calculating the standard errors of the partial autocorrelations.

Case Processing Summary

		Final grade / ordered dependent variable	Regression residuals used for autocorrelation ACF/PACF context
Series Length		649	649
Number of Missing Values	User-Missing	0	0
	System-Missing	0	0
Number of Valid Values		649	649
Number of Computable First Lags		648	648

Final grade / ordered dependent variable

Autocorrelation Function and Partial Autocorrelation Functio
ACF/PACF for raw G3 and regression residuals

Autocorrelations

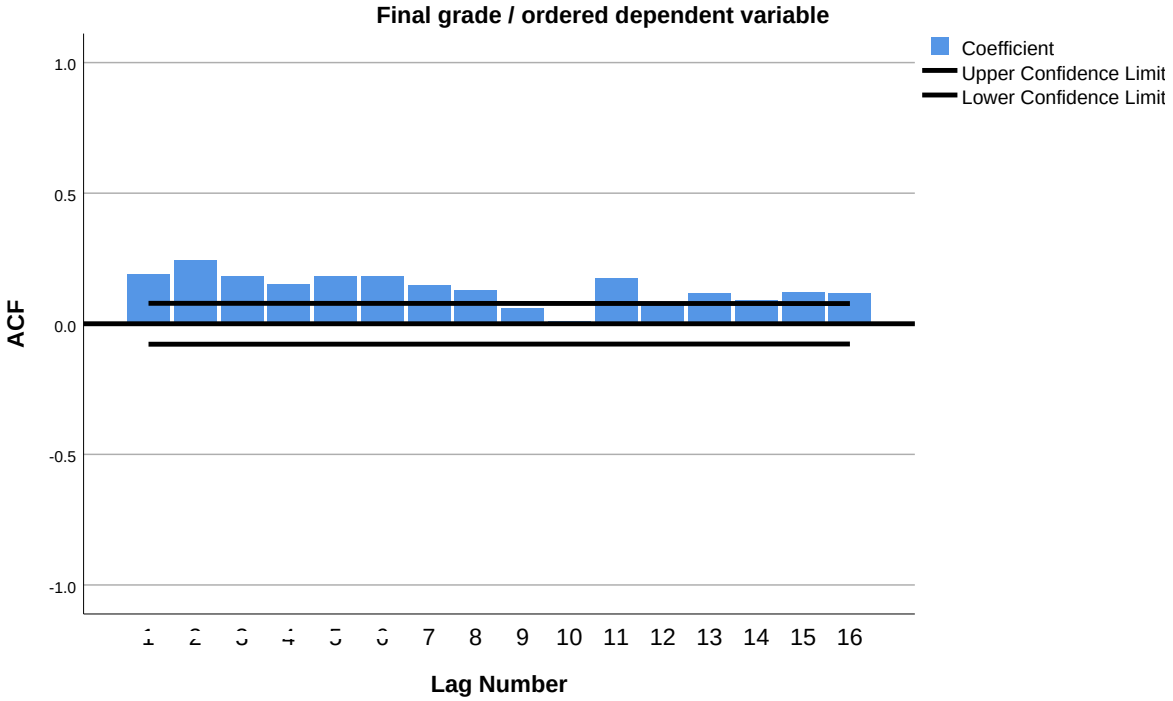
Series: Final grade / ordered dependent variable

Lag	Autocorrelation	Std. Error[a]	Box-Ljung Statistic		
			Value	df	Sig.[b]
1	.190	.039	23.516	1	.000
2	.241	.039	61.573	2	.000
3	.183	.039	83.558	3	.000
4	.152	.039	98.645	4	.000
5	.180	.039	119.940	5	.000
6	.180	.039	141.271	6	.000
7	.149	.039	155.848	7	.000
8	.128	.039	166.660	8	.000
9	.060	.039	169.060	9	.000
10	.009	.039	169.112	10	.000
11	.173	.039	189.042	11	.000
12	.080	.039	193.307	12	.000
13	.115	.039	202.135	13	.000
14	.089	.039	207.421	14	.000
15	.119	.039	216.936	15	.000
16	.118	.039	226.194	16	.000

a. The underlying process assumed is independence (white noise).

b. Based on the asymptotic chi-square approximation.

Autocorrelation Function and Partial Autocorrelation Functio
ACF/PACF for raw G3 and regression residuals



Partial Autocorrelations

Series: Final grade / ordered dependent variable

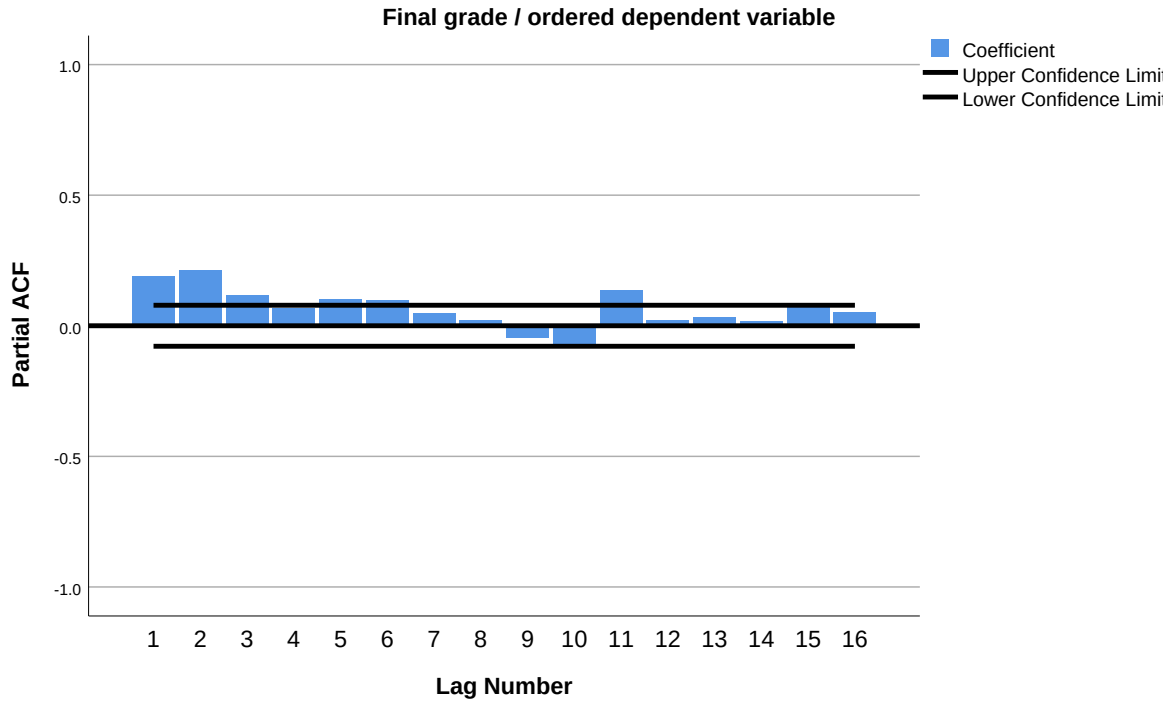
Lag	Partial Autocorrelation	Std. Error
1	.190	.039
2	.213	.039
3	.116	.039
4	.066	.039
5	.100	.039
6	.096	.039
7	.047	.039
8	.022	.039
9	-.044	.039
10	-.082	.039
11	.138	.039
12	.022	.039

Autocorrelation Function and Partial Autocorrelation Functio
ACF/PACF for raw G3 and regression residuals

Partial Autocorrelations

Series: Final grade / ordered dependent variable

Lag	Partial Autocorrelation	Std. Error
13	.034	.039
14	.017	.039
15	.069	.039
16	.053	.039



Regression residuals used for autocorrelation ACF/PACF context

Autocorrelation Function and Partial Autocorrelation Functio
ACF/PACF for raw G3 and regression residuals

Autocorrelations

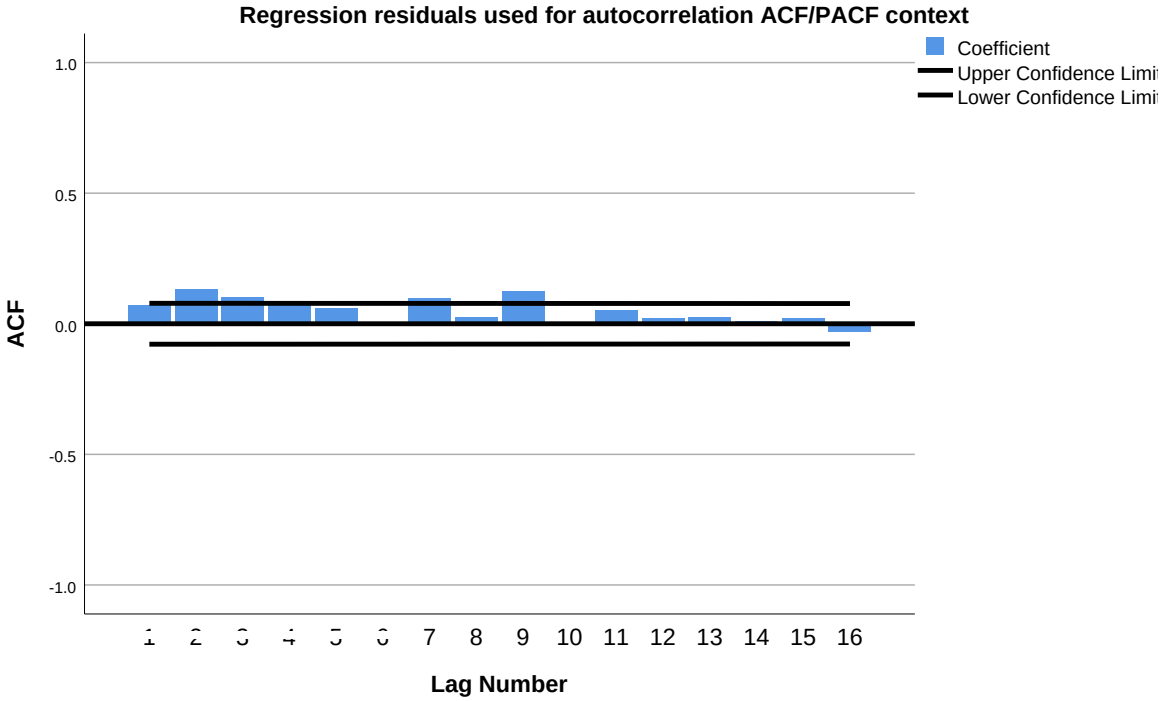
Series: Regression residuals used for autocorrelation ACF/PACF context

Lag	Autocorrelation	Std. Error[a]	Box-Ljung Statistic		
			Value	df	Sig.[b]
1	.071	.039	3.258	1	.071
2	.133	.039	14.734	2	.001
3	.101	.039	21.413	3	.000
4	.078	.039	25.441	4	.000
5	.061	.039	27.907	5	.000
6	-.002	.039	27.910	6	.000
7	.096	.039	34.033	7	.000
8	.027	.039	34.506	8	.000
9	.126	.039	45.024	9	.000
10	-.008	.039	45.070	10	.000
11	.054	.039	46.974	11	.000
12	.021	.039	47.266	12	.000
13	.026	.039	47.703	13	.000
14	.011	.039	47.779	14	.000
15	.021	.039	48.084	15	.000
16	-.029	.039	48.658	16	.000

a. The underlying process assumed is independence (white noise).

b. Based on the asymptotic chi-square approximation.

Autocorrelation Function and Partial Autocorrelation Functio
ACF/PACF for raw G3 and regression residuals



Partial Autocorrelations

Series: Regression residuals used for autocorrelation ACF/PACF context

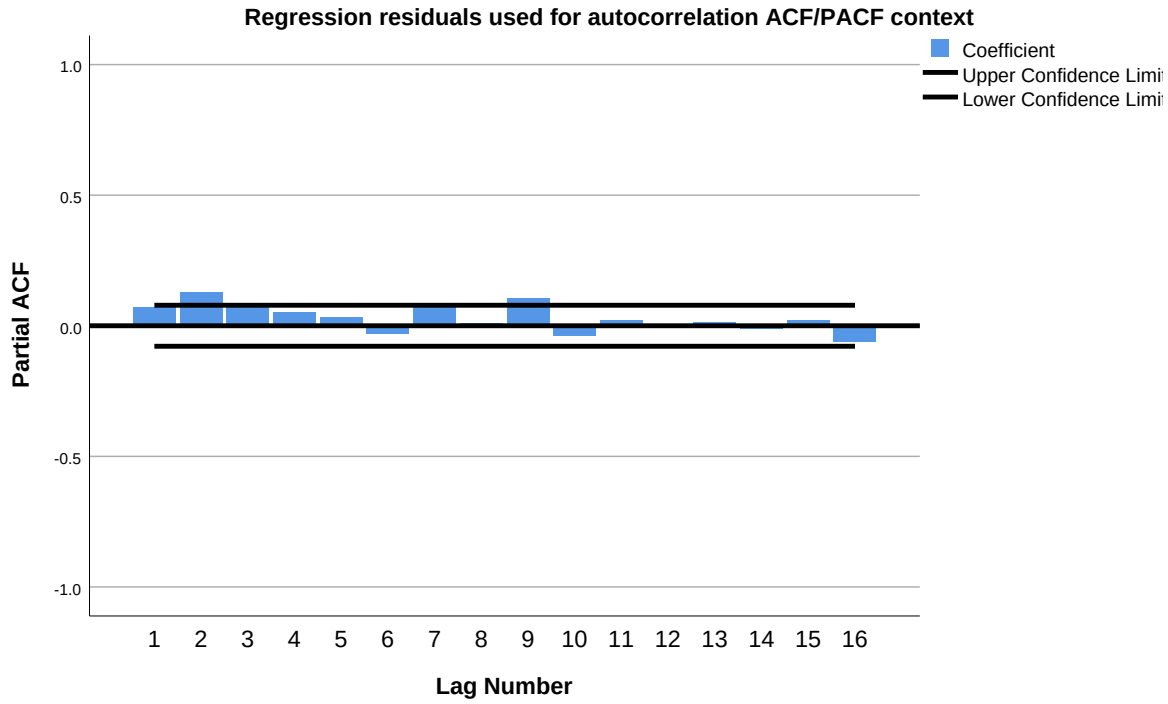
Lag	Partial Autocorrelation	Std. Error
1	.071	.039
2	.128	.039
3	.086	.039
4	.052	.039
5	.032	.039
6	-.032	.039
7	.078	.039
8	.011	.039
9	.106	.039
10	-.039	.039
11	.020	.039
12	-.007	.039

Autocorrelation Function and Partial Autocorrelation Functio
ACF/PACF for raw G3 and regression residuals

Partial Autocorrelations

Series: Regression residuals used for autocorrelation ACF/PACF context

Lag	Partial Autocorrelation	Std. Error
13	.012	.039
14	-.011	.039
15	.019	.039
16	-.060	.039



Residual Lag 1 Correlation

Residual Lag 1 Correlation
Regression residuals correlated with their one-case lag

Correlations

Correlations

		Regression residuals used for autocorrelation ACF/PACF context	Lag 1 regression residual
Regression residuals used for autocorrelation ACF/PACF context	Pearson Correlation	1	.071
	Sig. (2-tailed)		.072
	N	649	648
Lag 1 regression residual	Pearson Correlation	.071	1
	Sig. (2-tailed)	.072	
	N	648	648