

```
136 0 OUTPUT ACTIVATE PartialAutocorrelationFunctionOutput.  
136 0 M> OUTPUT ACTIVATE PartialAutocorrelationFunctionOutput.  
137 0 TITLE 'Partial Autocorrelation Function'.  
137 0 M> TITLE 'Partial Autocorrelation Function'.
```

Partial Autocorrelation Function

```
138 0 GET DATA /TYPE=TXT /FILE='D:\DATA ANALYSIS\N Time Series Tests and Fo
recasting\Partial Autocorrelation Function\dataset.csv
      ' /ENCODING='UTF8' /DELCASE=LINE /DELIMITERS=', ' /QUALIFIER='"' /A
RRANGEMENT=DELIMITED /FIRSTCASE=2
138 0 M> GET DATA /TYPE=TXT /FILE='D:\DATA ANALYSIS\N Time Series Tests and
Forecasting\Partial Autocorrelation Function\dataset.
      csv' /ENCODING='UTF8' /DELCASE=LINE /DELIMITERS=', ' /QUALIFIER=
'"' /ARRANGEMENT=DELIMITED /FIRSTCASE=2
139 0 /VARIABLES=school A8 sex A8 age F8.0 address A8 famsize A8 Pstatus A
8 Medu F8.0 Fedu F8.0 Mjob A16 Fjob A16 reason A16 gua
      rdian A16 traveltime F8.0 studytime F8.0 failures F8.0 schoolsup A
8 famsup A8 paid A8 activities A8 nursery A8 higher A8
      internet A8 romantic A8 famrel F8.0 freetime F8.0 goout F8.0 Dalc
F8.0 Walc F8.0 health F8.0 absences F8.0 G1 F8.0 G2 F
      8.0 G3 F8.0.
139 0 M> /VARIABLES=school A8 sex A8 age F8.0 address A8 famsize A8 Pstatu
s A8 Medu F8.0 Fedu F8.0 Mjob A16 Fjob A16 reason A16
      guardian A16 traveltime F8.0 studytime F8.0 failures F8.0 schoo
lsup A8 famsup A8 paid A8 activities A8 nursery A8 hig
      her A8 internet A8 romantic A8 famrel F8.0 freetime F8.0 goout
F8.0 Dalc F8.0 Walc F8.0 health F8.0 absences F8.0 G1
      F8.0 G2 F8.0 G3 F8.0.
140 0 DATASET NAME PartialAutocorrelationFunctionData.
140 0 M> DATASET NAME PartialAutocorrelationFunctionData.
141 0 COMPUTE time_index=$CASENUM.
141 0 M> COMPUTE time_index=$CASENUM.
142 0 EXECUTE.
142 0 M> EXECUTE.
143 0 * BEGIN METHOD-SPECIFIC SPSS WORKFLOW.
143 0 M> * BEGIN METHOD-SPECIFIC SPSS WORKFLOW.
144 0 PACF VARIABLES=G3 /NOLOG /MXAUTO 20.
144 0 M> PACF VARIABLES=G3 /NOLOG /MXAUTO 20.
```

PACF

Partial Autocorrelation Function

Notes

Output Created		18-JUL-2026 16:01:12
Comments		
Input	Data	D:\DATA ANALYSIS\N Time Series Tests and Forecasting\Partial Autocorrelation Function\dataset.csv
	Active Dataset	PartialAutocorrelationFunc tionData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
	Date	<none>
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	For a given time series variable, cases with missing values are not used in the analysis. Also, cases with negative or zero values are not used, if the log transform is requested.
Syntax		PACF VARIABLES=G3 /NOLOG /MXAUTO 20.
Resources	Processor Time	00:00:00.94
	Elapsed Time	00:00:00.87
Use	From	First observation
	To	Last observation
Time Series Settings (TSET)	Amount of Output	PRINT = DEFAULT
	Saving New Variables	NEWVAR = CURRENT
	Maximum Number of Lags in Autocorrelation or Partial Autocorrelation Plots	MXAUTO = 16
	Maximum Number of Lags Per Cross-Correlation Plots	MXCROSS = 7

Partial Autocorrelation Function

Notes

Maximum Number of New Variables Generated Per Procedure	MXNEWVAR = 60
Maximum Number of New Cases Per Procedure	MPREDICT = 1000
Treatment of User-Missing Values	MISSING = EXCLUDE
Confidence Interval Percentage Value	CIN = 95
Tolerance for Entering Variables in Regression Equations	TOLER = .0001
Maximum Iterative Parameter Change	CNVERGE = .001
Method of Calculating Std. Errors for Autocorrelations	ACFSE = IND
Length of Seasonal Period	Unspecified
Variable Whose Values Label Observations in Plots	Unspecified
Equations Include	CONSTANT

[PartialAutocorrelationFunctionData]

Model Description

Model Name	MOD_4
Series Name 1	G3
Transformation	None
Non-Seasonal Differencing	0
Seasonal Differencing	0
Length of Seasonal Period	No periodicity
Maximum Number of Lags	20
Display and Plot	All lags

Applying the model specifications from MOD_4

Partial Autocorrelation Function

Case Processing Summary

G3		
Series Length		649
Number of Missing Values	User-Missing	0
	System-Missing	0
Number of Valid Values		649
Number of Computable First Lags		648

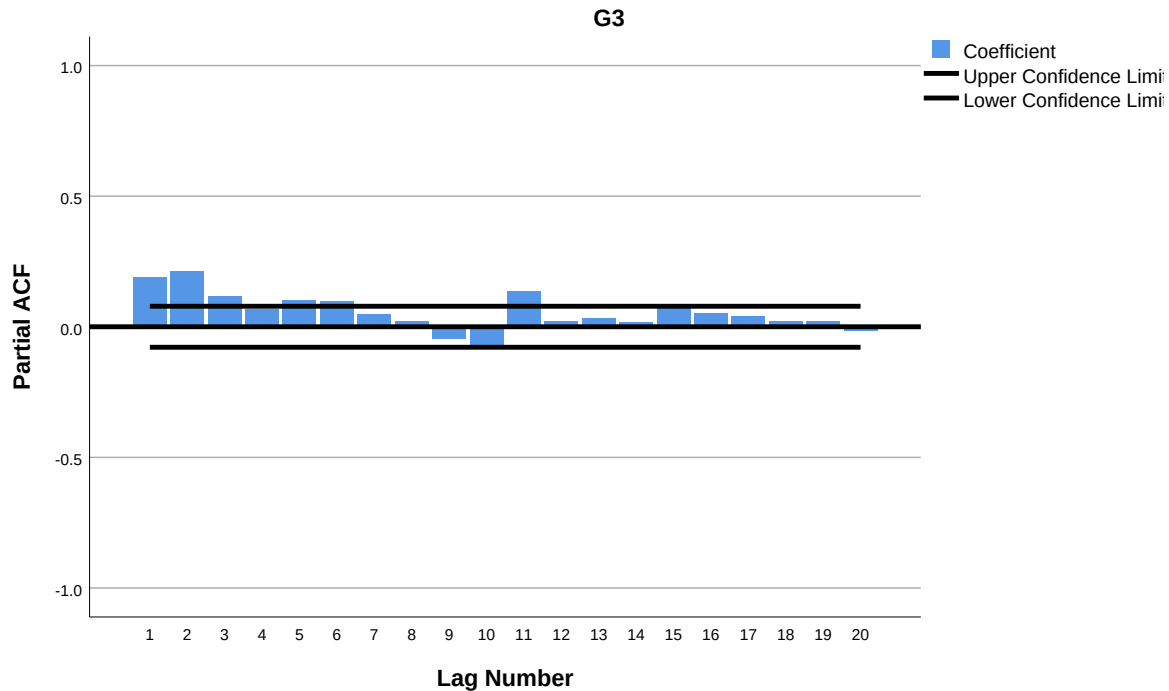
G3

Partial Autocorrelations

Series: G3

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
13	.034	.039
14	.017	.039
15	.069	.039
16	.053	.039
17	.040	.039
18	.020	.039
19	.021	.039
20	-.014	.039

Partial Autocorrelation Function



```

145 0 COMPUTE g3_l1=LAG(G3,1).
145 0 M> COMPUTE g3_l1=LAG(G3,1).
146 0 COMPUTE g3_l2=LAG(G3,2).
146 0 M> COMPUTE g3_l2=LAG(G3,2).
147 0 COMPUTE g3_l3=LAG(G3,3).
147 0 M> COMPUTE g3_l3=LAG(G3,3).
148 0 COMPUTE g3_l4=LAG(G3,4).
148 0 M> COMPUTE g3_l4=LAG(G3,4).
149 0 COMPUTE g3_l5=LAG(G3,5).
149 0 M> COMPUTE g3_l5=LAG(G3,5).
150 0 EXECUTE.
150 0 M> EXECUTE.
151 0 REGRESSION /STATISTICS=COEFF OUTS R ANOVA CI(95) /DEPENDENT G3 /METHO
D=ENTER g3_l1 g3_l2 g3_l3 g3_l4 g3_l5.
151 0 M> REGRESSION /STATISTICS=COEFF OUTS R ANOVA CI(95) /DEPENDENT G3 /ME
THOD=ENTER g3_l1 g3_l2 g3_l3 g3_l4 g3_l5.

```

Regression

Partial Autocorrelation Function

Notes

Output Created		18-JUL-2026 16:01:13
Comments		
Input	Data	D:\DATA ANALYSIS\N Time Series Tests and Forecasting\Partial Autocorrelation Function\dataset.csv
	Active Dataset	PartialAutocorrelationFunc tionData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any variable used.
Syntax		REGRESSION /STATISTICS=COEFF OUTS R ANOVA CI(95) /DEPENDENT G3 /METHOD=ENTER g3_l1 g3_l2 g3_l3 g3_l4 g3_l5.
Resources	Processor Time	00:00:00.06
	Elapsed Time	00:00:00.06
	Memory Required	6256 bytes
	Additional Memory Required for Residual Plots	0 bytes

Partial Autocorrelation Function

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	g3_I5, g3_I1, g3_I2, g3_I4, g3_I3 ^b	.	Enter

a. Dependent Variable: G3

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.325 ^a	.105	.098	3.078

a. Predictors: (Constant), g3_I5, g3_I1, g3_I2, g3_I4, g3_I3

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	712.644	5	142.529	15.047	.000 ^b
	Residual	6043.387	638	9.472		
	Total	6756.031	643			

a. Dependent Variable: G3

b. Predictors: (Constant), g3_I5, g3_I1, g3_I2, g3_I4, g3_I3

Partial Autocorrelation Function

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.628	.753		7.470	.000
	g3_l1	.110	.039	.110	2.791	.005
	g3_l2	.173	.040	.173	4.361	.000
	g3_l3	.090	.040	.090	2.260	.024
	g3_l4	.054	.040	.054	1.353	.177
	g3_l5	.100	.039	.100	2.539	.011

Coefficients^a

Model		95.0% Confidence Interval for B	
		Lower Bound	Upper Bound
1	(Constant)	4.148	7.107
	g3_l1	.033	.187
	g3_l2	.095	.250
	g3_l3	.012	.169
	g3_l4	-.024	.132
	g3_l5	.023	.178

a. Dependent Variable: G3

```

152 0 * END METHOD-SPECIFIC SPSS WORKFLOW.
152 0 M> * END METHOD-SPECIFIC SPSS WORKFLOW.
153 0 SAVE OUTFILE='D:\DATA ANALYSIS\N Time Series Tests and Forecasting\Partial Autocorrelation Function\SPSS_Output\sav\partial-autocorrelation-function_spss_ready_data.sav' /COMPRESSED.
153 0 M> SAVE OUTFILE='D:\DATA ANALYSIS\N Time Series Tests and Forecasting\Partial Autocorrelation Function\SPSS_Output\sav\partial-autocorrelation-function_spss_ready_data.sav' /COMPRESSED.
154 0 ECHO 'Partial Autocorrelation Function'.
154 0 M> ECHO 'Partial Autocorrelation Function'.
Partial Autocorrelation Function
155 0 ECHO 'Method type: serial_dependence_analysis'.
155 0 M> ECHO 'Method type: serial_dependence_analysis'.
Method type: serial_dependence_analysis

```

Partial Autocorrelation Function

```
156 0 ECHO 'Design: Yule-Walker partial autocorrelation of G3 through lag 20.'.
156 0 M> ECHO 'Design: Yule-Walker partial autocorrelation of G3 through lag 20.'.
Design: Yule-Walker partial autocorrelation of G3 through lag 20.
157 0 ECHO 'Formula: PACF(k)=Corr(y_t,y_(t-k) | y_(t-1),...,y_(t-k+1))'.
157 0 M> ECHO 'Formula: PACF(k)=Corr(y_t,y_(t-k) | y_(t-1),...,y_(t-k+1))'.
Formula: PACF(k)=Corr(y_t,y_(t-k) | y_(t-1),...,y_(t-k+1))
158 0 ECHO 'Series order: source-row order'.
158 0 M> ECHO 'Series order: source-row order'.
Series order: source-row order
159 0 ECHO 'n_series = 649'.
159 0 M> ECHO 'n_series = 649'.
n_series = 649
160 0 ECHO 'lag_1_pacf = 0.1899149913800519'.
160 0 M> ECHO 'lag_1_pacf = 0.1899149913800519'.
lag_1_pacf = 0.1899149913800519
161 0 ECHO 'lag_5_pacf = 0.09996673852542264'.
161 0 M> ECHO 'lag_5_pacf = 0.09996673852542264'.
lag_5_pacf = 0.09996673852542264
162 0 ECHO 'lag_10_pacf = -0.08195638687138776'.
162 0 M> ECHO 'lag_10_pacf = -0.08195638687138776'.
lag_10_pacf = -0.08195638687138776
163 0 ECHO 'maximum_absolute_pacf_lags_1_20 = 0.2130254375162711'.
163 0 M> ECHO 'maximum_absolute_pacf_lags_1_20 = 0.2130254375162711'.
maximum_absolute_pacf_lags_1_20 = 0.2130254375162711
164 0 ECHO 'significant_lags_approx = 7'.
164 0 M> ECHO 'significant_lags_approx = 7'.
significant_lags_approx = 7
165 0 ECHO 'Cross-check status: pass'.
165 0 M> ECHO 'Cross-check status: pass'.
Cross-check status: pass
166 0 OUTPUT SAVE OUTFILE='D:\DATA ANALYSIS\N Time Series Tests and Forecasting\Partial Autocorrelation Function\SPSS_Output\spv\partial-autocorrelation-function_spss_output.spv'.
166 0 M> OUTPUT SAVE OUTFILE='D:\DATA ANALYSIS\N Time Series Tests and Forecasting\Partial Autocorrelation Function\SPSS_Output\spv\partial-autocorrelation-function_spss_output.spv'.
```

Partial Autocorrelation Function

```
167 0 OUTPUT EXPORT /CONTENTS EXPORT=ALL LAYERS=PRINTSETTING MODELVIEWS=PRI
NTSETTING /PDF DOCUMENTFILE='D:\DATA ANALYSIS\N Time S
eries Tests and Forecasting\Partial Autocorrelation Function\SPSS_
Output\pdf\partial-autocorrelation-function_spss_outpu
t.pdf'.
```

```
167 0 M> OUTPUT EXPORT /CONTENTS EXPORT=ALL LAYERS=PRINTSETTING MODELVIEWS=
PRINTSETTING /PDF DOCUMENTFILE='D:\DATA ANALYSIS\N Tim
e Series Tests and Forecasting\Partial Autocorrelation Function
\SPSS_Output\pdf\partial-autocorrelation-function_spss
_output.pdf'.
```