Exercise 10.26/7th and 8th editions: Steps 1 and 2
Obtain initial estimates of the Betas, Conduct DW test

Obs	YEAR	RATE	time
1	1995	7.93	1
2	1996	7.81	2
3	1997	7.60	3
4	1998	6.94	4
5	1999	7.44	5
6	2000	8.05	6
7	2001	6.97	7
8	2002	6.54	8
9	2003	5.83	9
10	2004	5.84	10
11	2005	5.87	11
12	2006	6.41	12
13	2007	6.34	13
14	2008	6.03	14
15	2009	5.04	15
16	2010	4.69	16
17	2011	4.45	17
18	2012	3.66	18
19	2013	3.98	19
20	2014	4.17	20
21	2015	3.85	21
22	2016	3.65	22
23	2017	3.99	23

Exercise 10.26/7th and 8th editions: Steps 1 and 2
Obtain initial estimates of the Betas, Conduct DW test

The REG Procedure
Model: MODEL1
Dependent Variable: RATE

Number of Observations Read	23
Number of Observations Used	23

Analysis of Variance					
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	1	44.80157	44.80157	205.18	<.0001
Error	21	4.58538	0.21835		
Corrected Total	22	49.38695			

Root MSE	0.46728	**R-Square**	0.9072
Dependent Mean	5.78609	**Adj R-Sq**	0.9027
Coeff Var	8.07594		

Parameter Estimates					
Variable	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
Intercept	1	8.31095	0.20140	41.27	<.0001
time	1	-0.21041	0.01469	-14.32	<.0001

Exercise 10.26/7th and 8th editions: Steps 1 and 2
Obtain initial estimates of the Betas, Conduct DW test

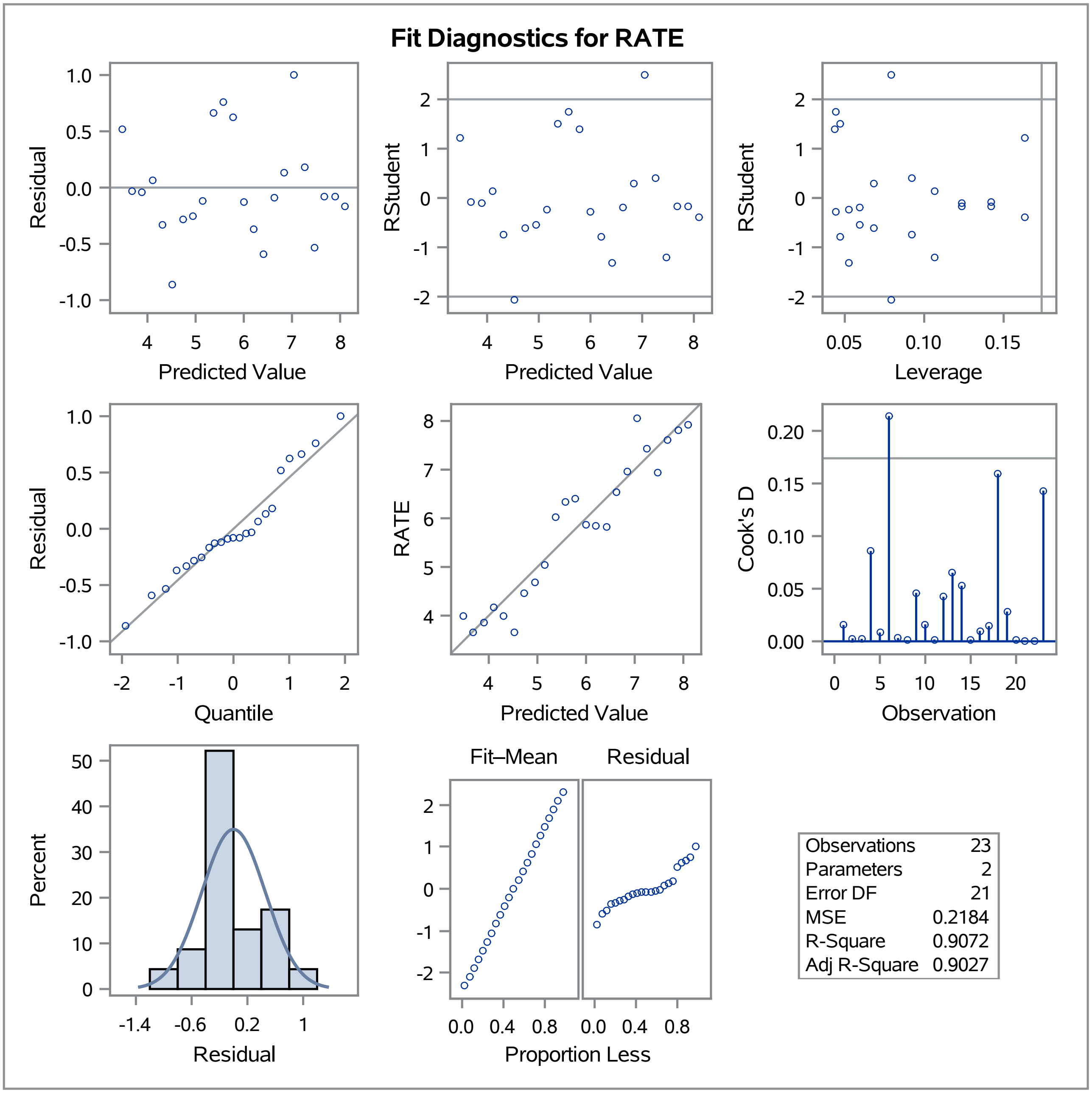
The REG Procedure
Model: MODEL1
Dependent Variable: RATE

Durbin-Watson D	1.060
Pr < DW	0.0035
Pr > DW	0.9965
Number of Observations	23
1st Order Autocorrelation	0.437

Note: Pr<DW is the p-value for testing positive autocorrelation, and Pr>DW is the p-value for testing negative autocorrelation.

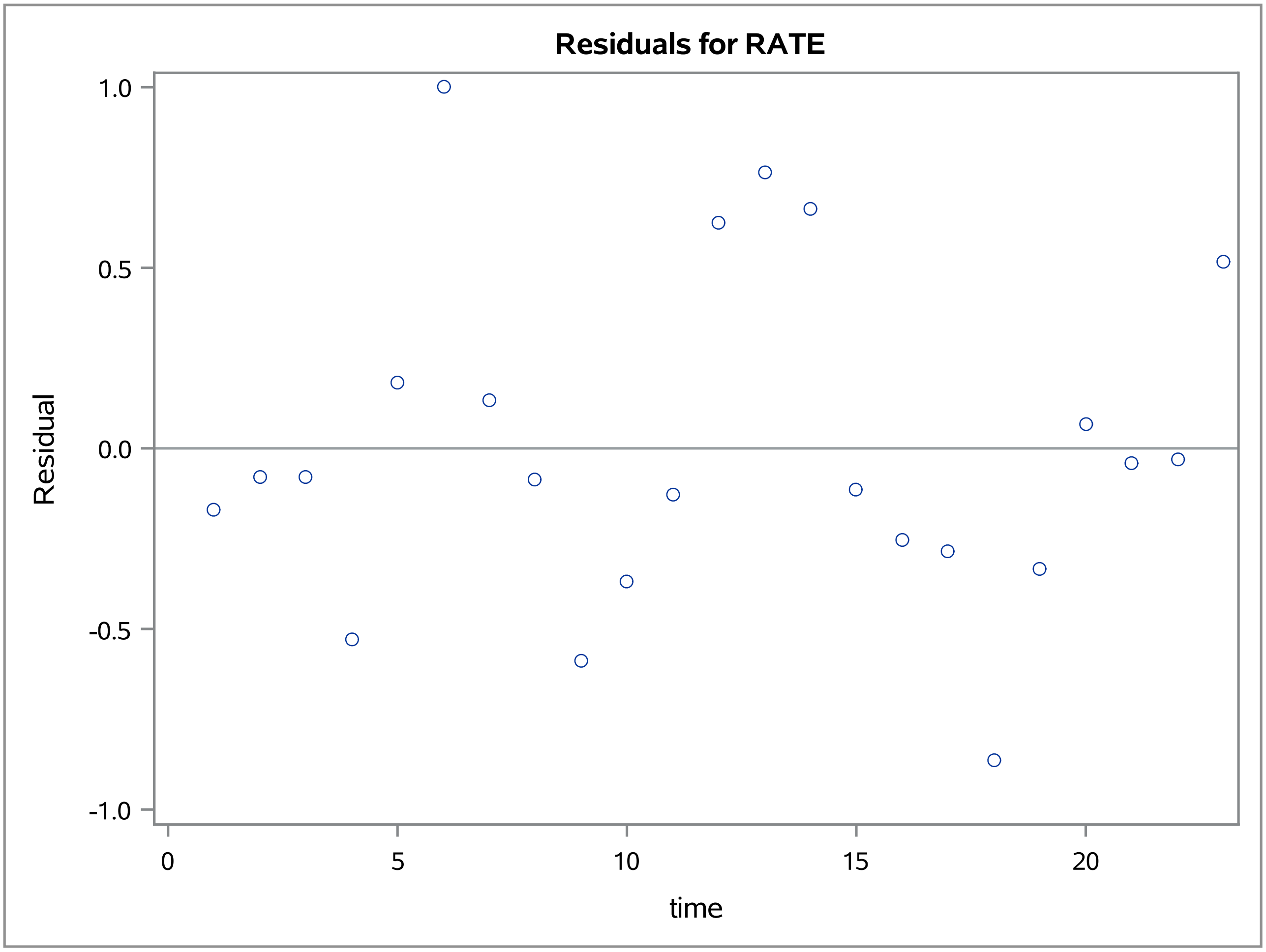
Exercise 10.26/7th and 8th editions: Steps 1 and 2
Obtain initial estimates of the Betas, Conduct DW test

The REG Procedure
Model: MODEL1
Dependent Variable: RATE



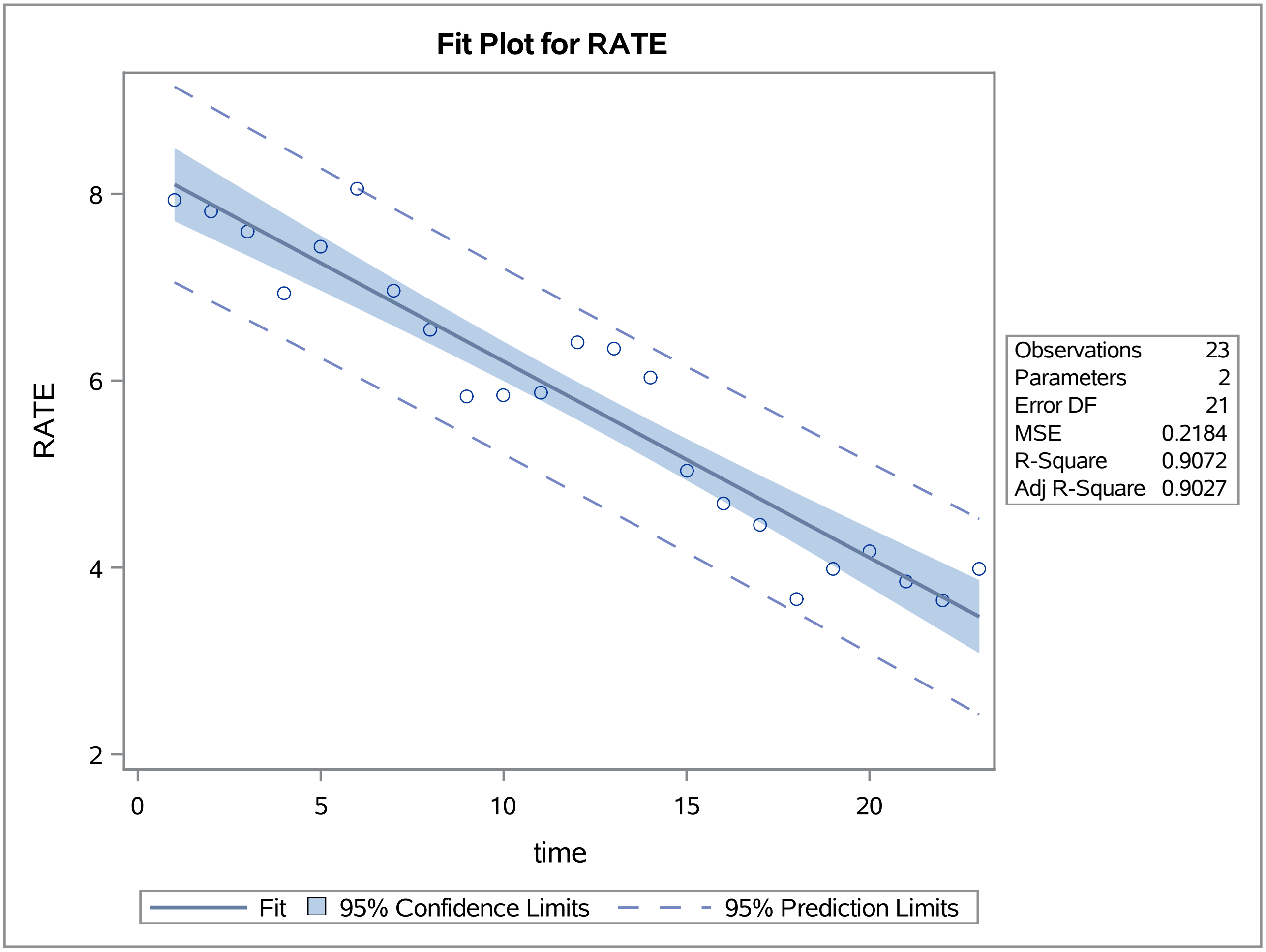
Exercise 10.26/7th and 8th editions: Steps 1 and 2
Obtain initial estimates of the Betas, Conduct DW test

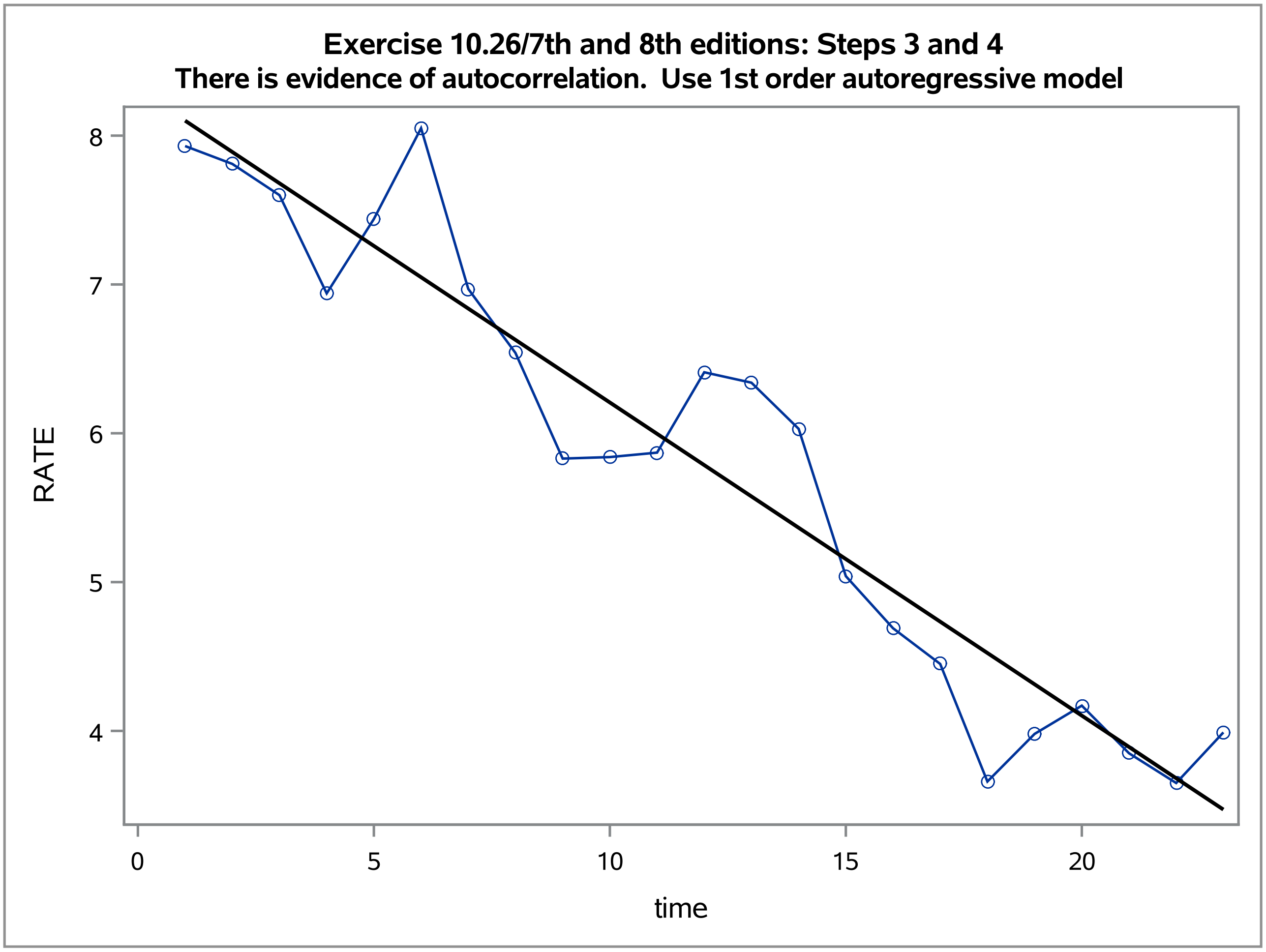
The REG Procedure
Model: MODEL1
Dependent Variable: RATE



Exercise 10.26/7th and 8th editions: Steps 1 and 2
Obtain initial estimates of the Betas, Conduct DW test

The REG Procedure
Model: MODEL1
Dependent Variable: RATE




Exercise 10.26/7th and 8th editions: Steps 3 and 4
There is evidence of autocorrelation. Use 1st order autoregressive model
RATE
8
7
6
5
4
0
5
10
15
20
time

Exercise 10.26/7th and 8th editions: Steps 3 and 4
There is evidence of autocorrelation. Use 1st order autoregressive model

The AUTOREG Procedure

Dependent Variable	RATE

Exercise 10.26/7th and 8th editions: Steps 3 and 4
There is evidence of autocorrelation. Use 1st order autoregressive model

The AUTOREG Procedure

Ordinary Least Squares Estimates			
SSE	4.58538172	**DFE**	21
MSE	0.21835	**Root MSE**	0.46728
SBC	34.4518812	**AIC**	32.1808928
MAE	0.3437326	**AICC**	32.7808928
MAPE	6.25762815	**HQC**	32.75204
Durbin-Watson	1.0603	**Total R-Square**	0.9072

Parameter Estimates

Variable	DF	Estimate	Standard Error	t Value	Approx Pr > |t|
Intercept	1	8.3109	0.2014	41.27	<.0001
time	1	-0.2104	0.0147	-14.32	<.0001

Estimates of Autocorrelations

Lag	Covariance	Correlation	-1.0 -0.5 0.0 0.5 1.0
0	0.1994	1.0000	
1	0.0872	0.4374	

Preliminary MSE	0.1612

Estimates of Autoregressive Parameters

Lag	Coefficient	Standard Error	t Value
1	-0.437370	0.201085	-2.18

Exercise 10.26/7th and 8th editions: Steps 3 and 4
There is evidence of autocorrelation. Use 1st order autoregressive model

The AUTOREG Procedure

Yule-Walker Estimates			
SSE	3.63827923	**DFE**	20
MSE	0.18191	**Root MSE**	0.42651
SBC	32.4783553	**AIC**	29.0718727
MAE	0.30607633	**AICC**	30.3350306
MAPE	5.54023092	**HQC**	29.9285935
Durbin-Watson	1.5436	**Transformed Regression R-Square**	0.8179
		Total R-Square	0.9263

Parameter Estimates					
Variable	**DF**	**Estimate**	**Standard Error**	**t Value**	**Approx Pr > |t|**
Intercept	1	8.2552	0.3011	27.42	<.0001
time	1	-0.2048	0.0216	-9.48	<.0001

Exercise 10.26/7th and 8th editions: Steps 3 and 4
There is evidence of autocorrelation. Use 1st order autoregressive model

The AUTOREG Procedure