Exercise 10.35/8th edition - first 3 observations

Obs	month_t	atl_rooms	phx_rooms	m1	m2	m3	m4	m5	m6	m7	m8	m9	m10	m11
1	1	59	67	1	0	0	0	0	0	0	0	0	0	0
2	2	63	85	0	1	0	0	0	0	0	0	0	0	0
3	3	68	83	0	0	1	0	0	0	0	0	0	0	0

Exercise 10.35/8th edition Phoenix Rooms
Obtain initial estimates of the Betas, Conduct DW test

The REG Procedure
Model: MODEL1
Dependent Variable: phx_rooms

Number of Observations Read	25
Number of Observations Used	24
Number of Observations with Missing Values	1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	12	4171.50000	347.62500	38.58	<.0001
Error	11	99.12500	9.01136		
Corrected Total	23	4270.62500			

Root MSE	3.00189	**R-Square**	0.9768
Dependent Mean	64.87500	**Adj R-Sq**	0.9515
Coeff Var	4.62720		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	43.12500	2.80801	15.36	<.0001
month_t	1	0.35417	0.10213	3.47	0.0053
m1	1	23.89583	3.20521	7.46	<.0001
m2	1	42.04167	3.17086	13.26	<.0001
m3	1	38.68750	3.13946	12.32	<.0001
m4	1	25.33333	3.11109	8.14	<.0001
m5	1	19.47917	3.08584	6.31	<.0001
m6	1	9.12500	3.06379	2.98	0.0126
m7	1	-0.22917	3.04501	-0.08	0.9414
m8	1	-1.58333	3.02956	-0.52	0.6116
m9	1	11.06250	3.01749	3.67	0.0037
m10	1	22.20833	3.00883	7.38	<.0001
m11	1	17.85417	3.00363	5.94	<.0001

Exercise 10.35/8th edition Phoenix Rooms
Obtain initial estimates of the Betas, Conduct DW test

The REG Procedure
Model: MODEL1
Dependent Variable: phx_rooms

Durbin-Watson D	1.796
Pr < DW	.
Pr > DW	.
Number of Observations	24
1st Order Autocorrelation	0.099

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

Exercise 10.35/8th edition Phoenix Rooms
Obtain initial estimates of the Betas, Conduct DW test

The REG Procedure
Model: MODEL2
Dependent Variable: phx_rooms

Number of Observations Read	25
Number of Observations Used	24
Number of Observations with Missing Values	1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	96.13587	96.13587	0.51	0.4841
Error	22	4174.48913	189.74951		
Corrected Total	23	4270.62500			

Root MSE	13.77496	**R-Square**	0.0225
Dependent Mean	64.87500	**Adj R-Sq**	-0.0219
Coeff Var	21.23308		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	68.48913	5.80409	11.80	<.0001
month_t	1	-0.28913	0.40620	-0.71	0.4841

Exercise 10.35/8th edition Phoenix Rooms
Obtain initial estimates of the Betas, Conduct DW test

The AUTOREG Procedure

Dependent Variable	phx_rooms

Exercise 10.35/8th edition Phoenix Rooms
Obtain initial estimates of the Betas, Conduct DW test

The AUTOREG Procedure

Ordinary Least Squares Estimates			
SSE	99.125	**DFE**	11
MSE	9.01136	**Root MSE**	3.00189
SBC	143.463618	**AIC**	128.148918
MAE	1.52083333	**AICC**	164.548918
MAPE	2.78214814	**HQC**	132.211912
Durbin-Watson	1.7963	**Total R-Square**	0.9768

Parameter Estimates					
Variable	**DF**	**Estimate**	**Standard Error**	**t Value**	**Approx Pr > |t|**
Intercept	1	43.1250	2.8080	15.36	<.0001
month_t	1	0.3542	0.1021	3.47	0.0053
m1	1	23.8958	3.2052	7.46	<.0001
m2	1	42.0417	3.1709	13.26	<.0001
m3	1	38.6875	3.1395	12.32	<.0001
m4	1	25.3333	3.1111	8.14	<.0001
m5	1	19.4792	3.0858	6.31	<.0001
m6	1	9.1250	3.0638	2.98	0.0126
m7	1	-0.2292	3.0450	-0.08	0.9414
m8	1	-1.5833	3.0296	-0.52	0.6116
m9	1	11.0625	3.0175	3.67	0.0037
m10	1	22.2083	3.0088	7.38	<.0001
m11	1	17.8542	3.0036	5.94	<.0001

Estimates of Autocorrelations			
Lag	**Covariance**	**Correlation**	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1
0	4.1302	1.000000	||********************|
1	0.4095	0.099149	| |** |

Preliminary MSE	4.0896

Estimates of Autoregressive Parameters			
Lag	**Coefficient**	**Standard Error**	**t Value**
1	-0.099149	0.314670	-0.32

Exercise 10.35/8th edition Phoenix Rooms
Obtain initial estimates of the Betas, Conduct DW test

The AUTOREG Procedure

Yule-Walker Estimates			
SSE	98.1427958	**DFE**	10
MSE	9.81428	**Root MSE**	3.13278
SBC	146.412555	**AIC**	129.919801
MAE	1.56102482	**AICC**	176.586468
MAPE	2.84415224	**HQC**	134.295333
Durbin-Watson	1.9274	**Transformed Regression R-Square**	0.9744
		Total R-Square	0.9770

Parameter Estimates					
Variable	**DF**	**Estimate**	**Standard Error**	**t Value**	**Approx Pr > |t|**
Intercept	1	43.1183	3.0330	14.22	<.0001
month_t	1	0.3536	0.1166	3.03	0.0126
m1	1	23.8767	3.2953	7.25	<.0001
m2	1	42.0501	3.3345	12.61	<.0001
m3	1	38.6992	3.3046	11.71	<.0001
m4	1	25.3459	3.2715	7.75	<.0001
m5	1	19.4923	3.2416	6.01	0.0001
m6	1	9.1388	3.2155	2.84	0.0175
m7	1	-0.2148	3.1935	-0.07	0.9477
m8	1	-1.5684	3.1754	-0.49	0.6320
m9	1	11.0780	3.1604	3.51	0.0057
m10	1	22.2243	3.1371	7.08	<.0001
m11	1	17.8691	2.9877	5.98	0.0001

Exercise 10.35/8th edition Phoenix Rooms
Obtain forecast for January of Year 3

Obs	yhat	lcl	ucl	ytrend	month_t	atl_rooms	phx_rooms	m1	m2	m3	m4	m5	m6	m7	m8	m9	m10	m11
25	75.7746	66.1349	85.4143	75.8345	25	.	.	1	0	0	0	0	0	0	0	0	0	0

Exercise 10.35/8th edition Atlanta Rooms
Obtain initial estimates of the Betas, Conduct DW test

The REG Procedure
Model: MODEL1
Dependent Variable: atl_rooms

Number of Observations Read	25
Number of Observations Used	24
Number of Observations with Missing Values	1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	12	976.83333	81.40278	9.03	0.0005
Error	11	99.12500	9.01136		
Corrected Total	23	1075.95833			

Root MSE	3.00189	R-Square	0.9079
Dependent Mean	64.79167	Adj R-Sq	0.8074
Coeff Var	4.63315		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	42.12500	2.80801	15.00	<.0001
month_t	1	0.27083	0.10213	2.65	0.0225
m1	1	17.47917	3.20521	5.45	0.0002
m2	1	21.70833	3.17086	6.85	<.0001
m3	1	25.93750	3.13946	8.26	<.0001
m4	1	23.66667	3.11109	7.61	<.0001
m5	1	20.39583	3.08584	6.61	<.0001
m6	1	19.62500	3.06379	6.41	<.0001
m7	1	21.85417	3.04501	7.18	<.0001
m8	1	21.58333	3.02956	7.12	<.0001
m9	1	17.31250	3.01749	5.74	0.0001
m10	1	26.04167	3.00883	8.66	<.0001
m11	1	15.77083	3.00363	5.25	0.0003

Exercise 10.35/8th edition Atlanta Rooms
Obtain initial estimates of the Betas, Conduct DW test

The REG Procedure
Model: MODEL1
Dependent Variable: atl_rooms

Durbin-Watson D	2.270
Pr < DW	0.6367
Pr > DW	0.3633
Number of Observations	24
1st Order Autocorrelation	-0.152

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

Exercise 10.35/8th edition Atlanta Rooms
Obtain initial estimates of the Betas, Conduct DW test

The REG Procedure
Model: MODEL2
Dependent Variable: atl_rooms

Number of Observations Read	25
Number of Observations Used	24
Number of Observations with Missing Values	1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	1.42630	1.42630	0.03	0.8659
Error	22	1074.53203	48.84236		
Corrected Total	23	1075.95833			

Root MSE	6.98873	**R-Square**	0.0013
Dependent Mean	64.79167	**Adj R-Sq**	-0.0441
Coeff Var	10.78647		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	64.35145	2.94471	21.85	<.0001
month_t	1	0.03522	0.20609	0.17	0.8659

The AUTOREG Procedure

Dependent Variable	atl_rooms

Exercise 10.35/8th edition Atlanta Rooms
Obtain initial estimates of the Betas, Conduct DW test

The AUTOREG Procedure

Ordinary Least Squares Estimates			
SSE	99.125	**DFE**	11
MSE	9.01136	**Root MSE**	3.00189
SBC	143.463618	**AIC**	128.148918
MAE	1.70833333	**AICC**	164.548918
MAPE	2.64711824	**HQC**	132.211912
Durbin-Watson	2.2705	**Total R-Square**	0.9079

Parameter Estimates					
Variable	**DF**	**Estimate**	**Standard Error**	**t Value**	**Approx Pr > |t|**
Intercept	1	42.1250	2.8080	15.00	<.0001
month_t	1	0.2708	0.1021	2.65	0.0225
m1	1	17.4792	3.2052	5.45	0.0002
m2	1	21.7083	3.1709	6.85	<.0001
m3	1	25.9375	3.1395	8.26	<.0001
m4	1	23.6667	3.1111	7.61	<.0001
m5	1	20.3958	3.0858	6.61	<.0001
m6	1	19.6250	3.0638	6.41	<.0001
m7	1	21.8542	3.0450	7.18	<.0001
m8	1	21.5833	3.0296	7.12	<.0001
m9	1	17.3125	3.0175	5.74	0.0001
m10	1	26.0417	3.0088	8.66	<.0001
m11	1	15.7708	3.0036	5.25	0.0003

Estimates of Autocorrelations			
Lag	**Covariance**	**Correlation**	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1
0	4.1302	1.000000	| |********************|
1	-0.6296	-0.152427	| ***| |

Preliminary MSE	4.0342

Estimates of Autoregressive Parameters			
Lag	**Coefficient**	**Standard Error**	**t Value**
1	0.152427	0.312533	0.49

Exercise 10.35/8th edition Atlanta Rooms
Obtain initial estimates of the Betas, Conduct DW test

The AUTOREG Procedure

Yule-Walker Estimates			
SSE	96.6905473	**DFE**	10
MSE	9.66905	**Root MSE**	3.10951
SBC	146.068395	**AIC**	129.575641
MAE	1.66780681	**AICC**	176.242308
MAPE	2.59979077	**HQC**	133.951174
Durbin-Watson	2.0317	**Transformed Regression R-Square**	0.9150
		Total R-Square	0.9101

Parameter Estimates					
Variable	**DF**	**Estimate**	**Standard Error**	**t Value**	**Approx Pr > |t|**
Intercept	1	42.1651	2.8057	15.03	<.0001
month_t	1	0.2728	0.0932	2.93	0.0151
m1	1	17.5558	3.4381	5.11	0.0005
m2	1	21.6325	3.2691	6.62	<.0001
m3	1	25.8826	3.2652	7.93	<.0001
m4	1	23.6063	3.2379	7.29	<.0001
m5	1	20.3340	3.2171	6.32	<.0001
m6	1	19.5611	3.1983	6.12	0.0001
m7	1	21.7883	3.1823	6.85	<.0001
m8	1	21.5156	3.1678	6.79	<.0001
m9	1	17.2424	3.1634	5.45	0.0003
m10	1	25.9717	3.1132	8.34	<.0001
m11	1	15.6855	3.3747	4.65	0.0009

Exercise 10.35/8th edition Atlanta Rooms
Obtain forecast for January of Year 3

Obs	yhat	lcl	ucl	ytrend	month_t	atl_rooms	phx_rooms	m1	m2	m3	m4	m5	m6	m7	m8	m9	m10	m11
25	66.8022	57.3969	76.2075	66.5412	25	.	.	1	0	0	0	0	0	0	0	0	0	0