India's per capita income rises 10%[online] 31 May 2019. https://www.livemint.com/politics/policy/india-s-per-capita-income-rises-10-to-rs-10-534-a-month-in-fy19-1559318636062.html Accessed 8 June 2018

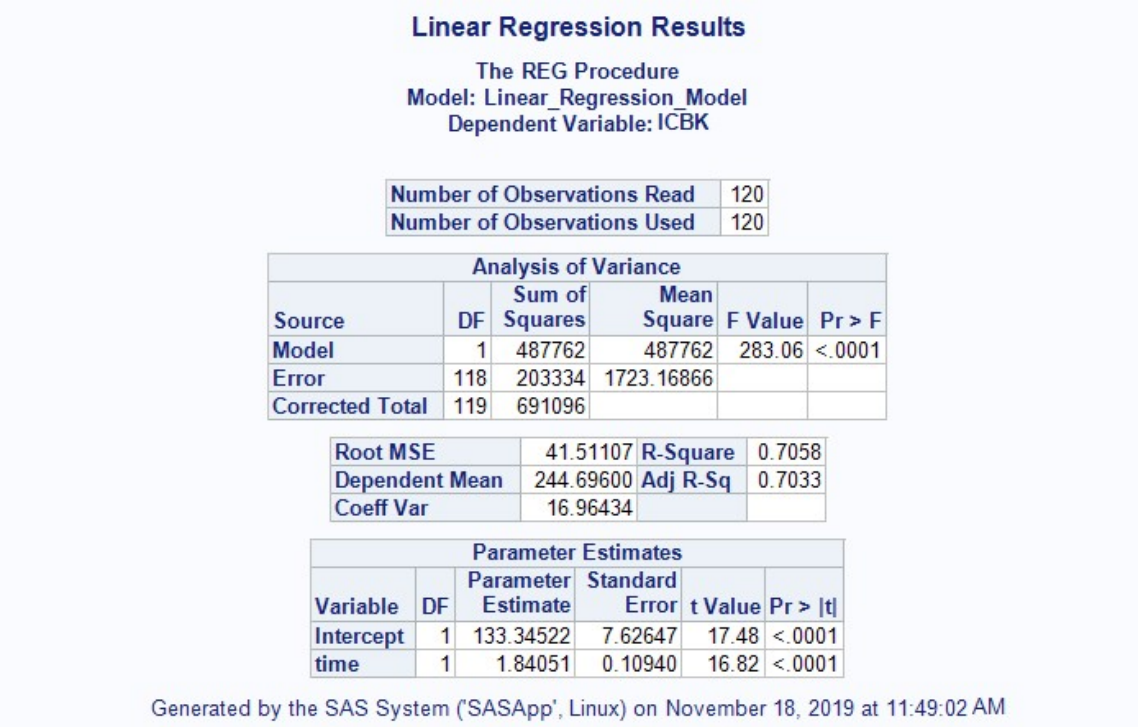
8. Appendix

8.1 Banking

Selected stocks ICBK, HDFC and YES

Xt = time Yt = ICBK

Figure 13: Original Result ICBK.



Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: ICBK

Number of Observations Read	120
Number of Observations Used	120

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	487762	487762	283.06	<.0001
Error	118	203334	1723.16866		
Corrected Total	119	691096			

Root MSE	41.51107	R-Square	0.7058
Dependent Mean	244.69600	Adj R-Sq	0.7033
Coeff Var	16.96434		

Parameter Estimates

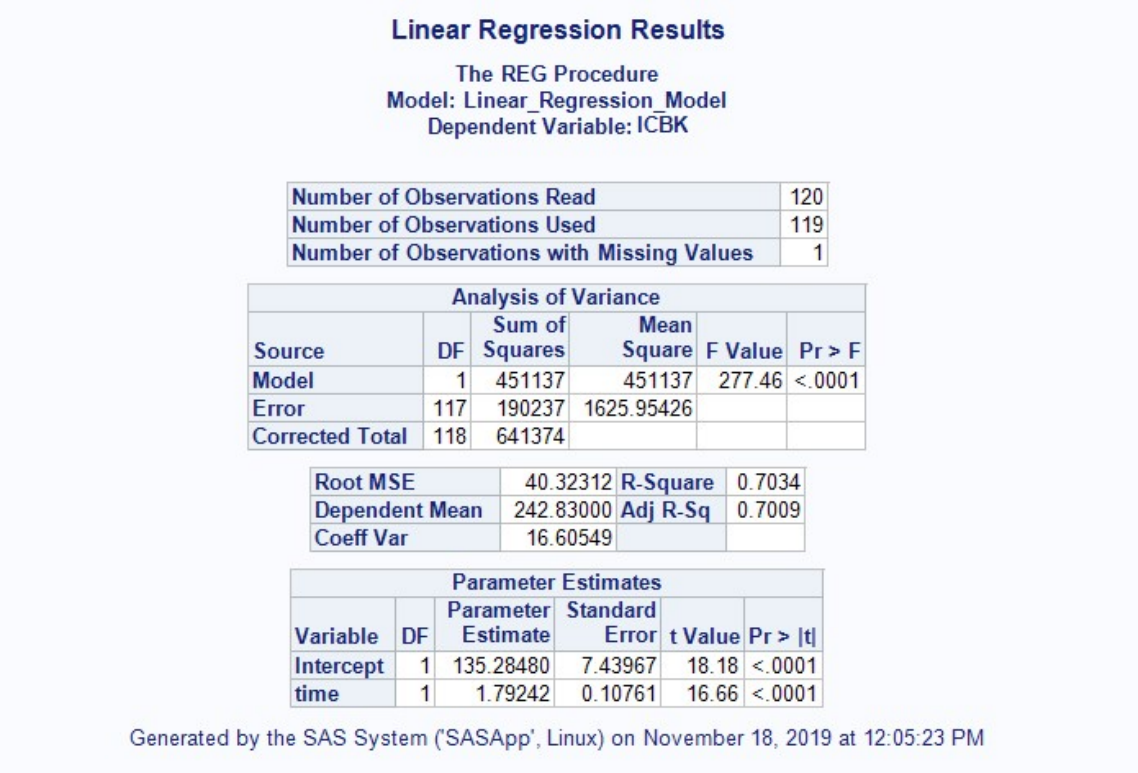
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	133.34522	7.62647	17.48	<.0001
time	1	1.84051	0.10940	16.82	<.0001

Generated by the SAS System ('SASApp', Linux) on November 18, 2019 at 11:49:02 AM

(SAS, own creation,2019)

Yt =133.34522 + 1.84051xt

Figure 14: Missing Frequency Result ICBK.



Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: ICBK

Number of Observations Read	120
Number of Observations Used	119
Number of Observations with Missing Values	1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	451137	451137	277.46	<.0001
Error	117	190237	1625.95426		
Corrected Total	118	641374			

Root MSE	40.32312	R-Square	0.7034
Dependent Mean	242.83000	Adj R-Sq	0.7009
Coeff Var	16.60549		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	135.28480	7.43967	18.18	<.0001
time	1	1.79242	0.10761	16.66	<.0001

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(SAS, own creation,2019)

y't= 135.28480 + 1.79242xt

Forecasting: y't(120) = 135.28480 + 1.79242(120) ⇒350.3752

Y(121) = 133.34522 + 1.84051(121) ⇒356.04572

Y(122) = 133.34522 + 1.84051(122) ⇒357.88622

Y(123) = 133.34522 + 1.84051(123) ⇒359.72672

Y(124) = 133.34522 + 1.84051(124) ⇒361.56722

Y(125) = 133.34522 + 1.84051(125) ⇒363.40772

Y(126) = 133.34522 + 1.84051(126) ⇒365.24822

Y(127) = 133.34522 + 1.84051(127) ⇒367.08872

Y(128) = 133.34522 + 1.84051(128) ⇒368.92922

Y(129) = 133.34522 + 1.84051(129) ⇒370.76972

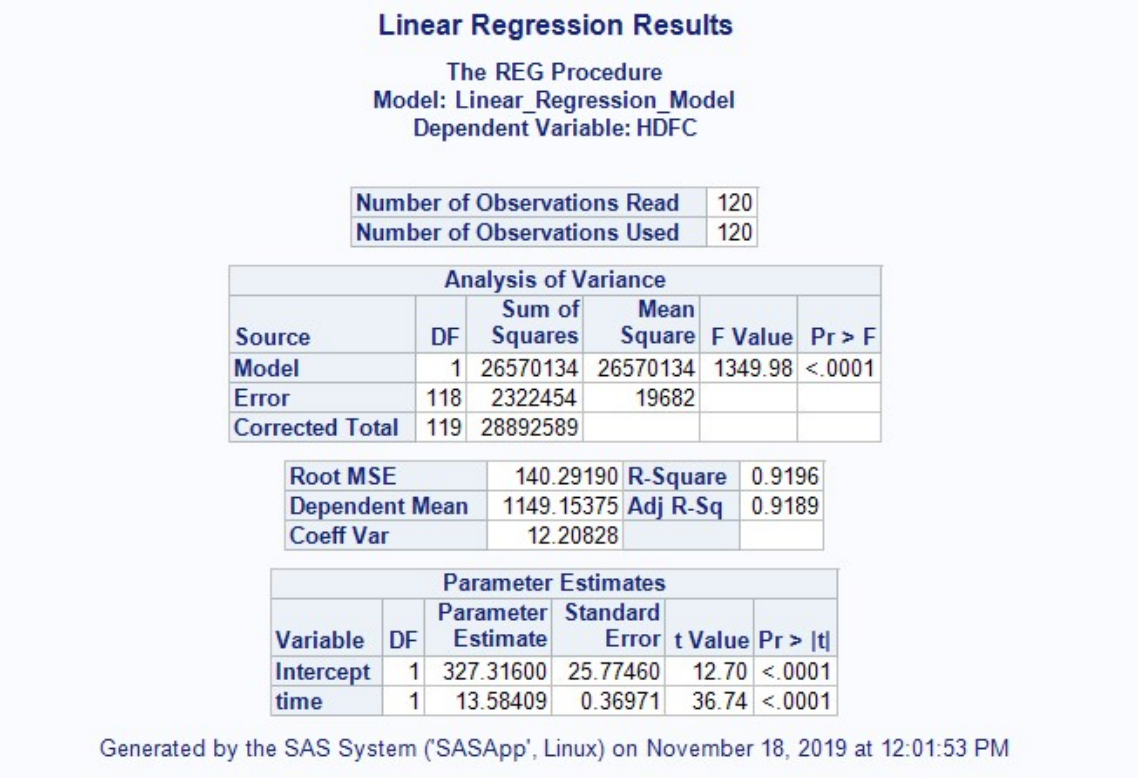
Y(130) = 133.34522 + 1.84051(130) ⇒372.61022

Y(131) = 133.34522 + 1.84051(131) ⇒374.45072

Y(132) = 133.34522 + 1.84051(132) ⇒376.29122

Xt = time Yt = HDFC

Figure 15: Original Result HDFC.



Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: HDFC

Number of Observations Read	120
Number of Observations Used	120

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	26570134	26570134	1349.98	<.0001
Error	118	2322454	19682		
Corrected Total	119	28892589			

Root MSE	140.29190	R-Square	0.9196
Dependent Mean	1149.15375	Adj R-Sq	0.9189
Coeff Var	12.20828		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	327.31600	25.77460	12.70	<.0001
time	1	13.58409	0.36971	36.74	<.0001

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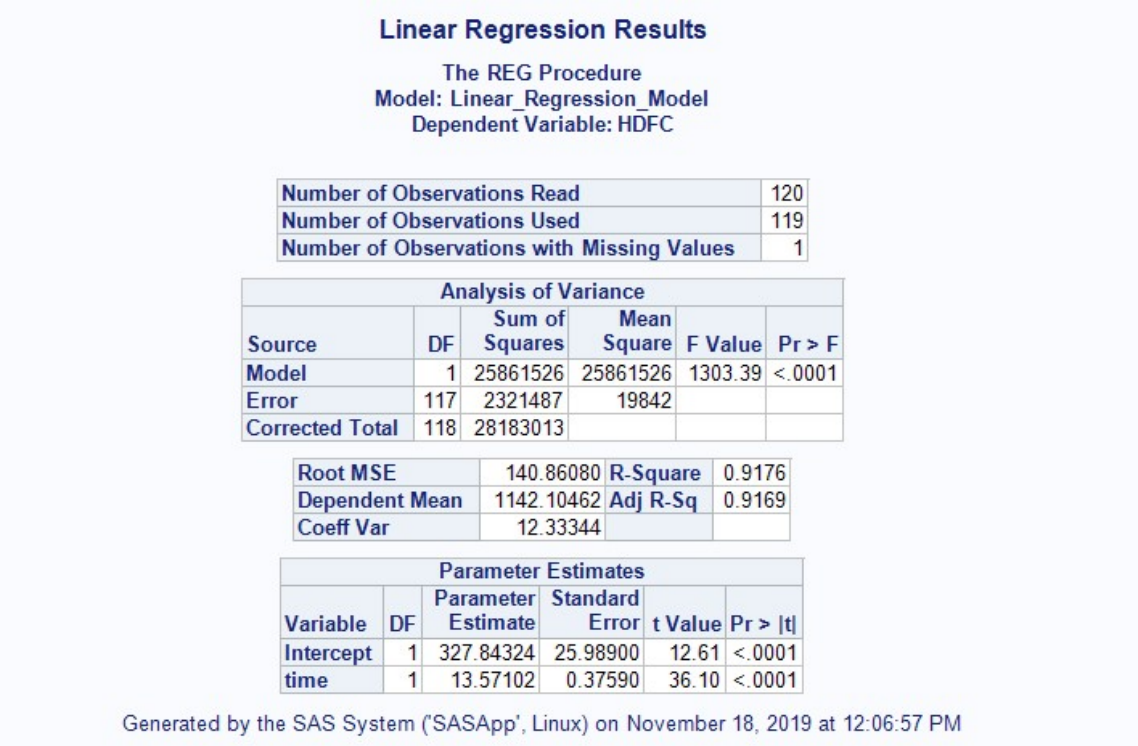
(SAS, own creation,2019)

Yt = 327.31600 + 13.58409xt

Figure 16: Missing Frequency Result HDFC.



Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: HDFC

Number of Observations Read	120
Number of Observations Used	119
Number of Observations with Missing Values	1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	25861526	25861526	1303.39	<.0001
Error	117	2321487	19842		
Corrected Total	118	28183013			

Root MSE	140.86080	R-Square	0.9176
Dependent Mean	1142.10462	Adj R-Sq	0.9169
Coeff Var	12.33344		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	327.84324	25.98900	12.61	<.0001
time	1	13.57102	0.37590	36.10	<.0001

Generated by the SAS System ('SASApp', Linux) on November 18, 2019 at 12:06:57 PM

(SAS, own creation,2019)

y't = 327.84324 + 13.57102x't

Forecasting : y'(120) = 327.84324 + 13.57102(120) ⇒1949.16564

Y (121) = 327.31600 + 13.58409(121) ⇒1970.99089

Y (122) = 327.31600 + 13.58409(122) ⇒1984.57498

Y (123) = 327.31600 + 13.58409(123) ⇒1998.15907

Y (124) = 327.31600 + 13.58409(124) ⇒2011.74316

Y (125) = 327.31600 + 13.58409(125) ⇒2025.32725

Y (126) = 327.31600 + 13.58409(126) ⇒2038.91134

Y (127) = 327.31600 + 13.58409(127) ⇒2052.49543

Y (128) = 327.31600 + 13.58409(128) ⇒2066.07952

Y (129) = 327.31600 + 13.58409(129) ⇒2079.66361

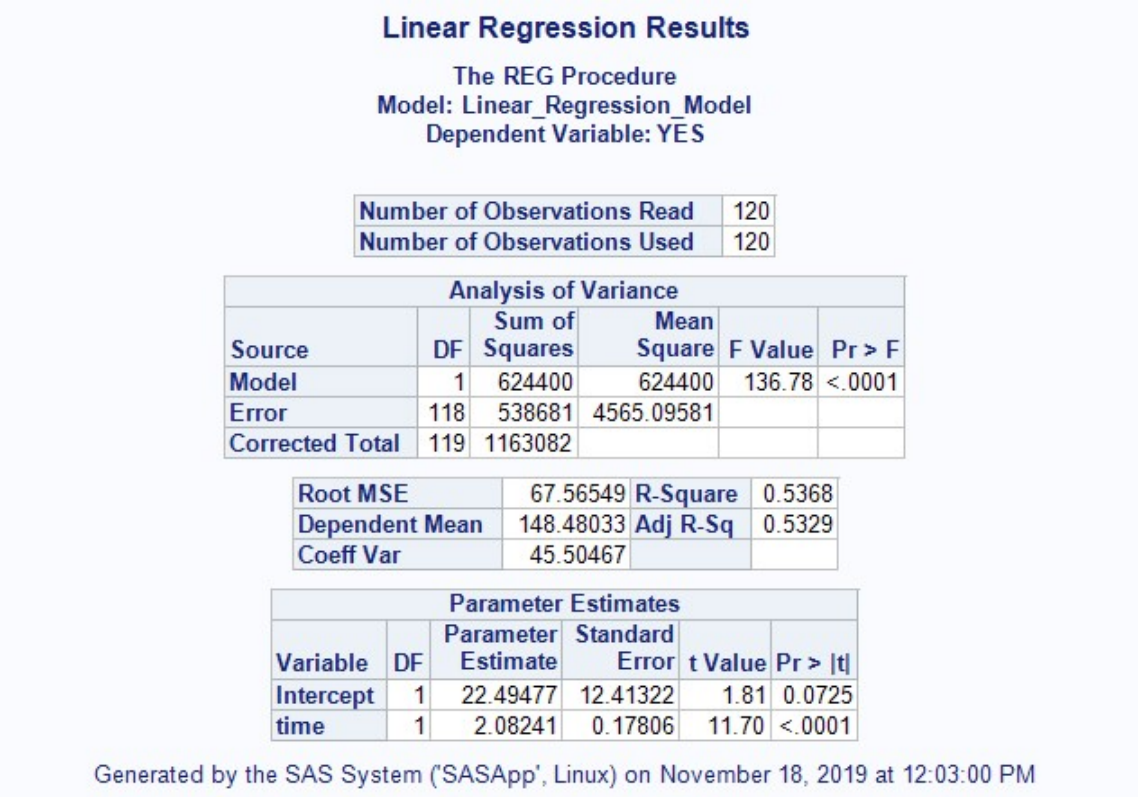
Y (130) = 327.31600 + 13.58409(130) ⇒2093.2477

Y (131) = 327.31600 + 13.58409(131) ⇒2106.83179

Y (132) = 327.31600 + 13.58409(132) ⇒2120.4158

Xt = time Yt = YES

Figure 17: Original Result YES.



Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: YES

Number of Observations Read	120
Number of Observations Used	120

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	624400	624400	136.78	<.0001
Error	118	538681	4565.09581		
Corrected Total	119	1163082			

Root MSE	67.56549	R-Square	0.5368
Dependent Mean	148.48033	Adj R-Sq	0.5329
Coeff Var	45.50467		

Parameter Estimates

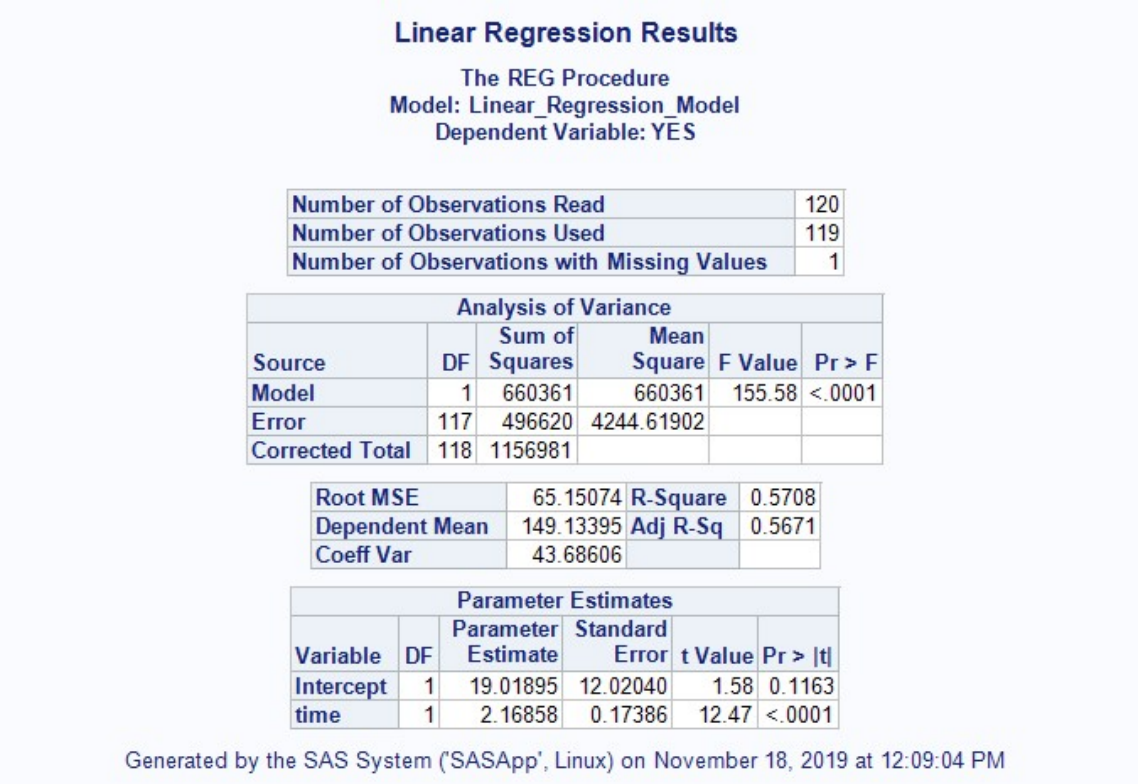
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	22.49477	12.41322	1.81	0.0725
time	1	2.08241	0.17806	11.70	<.0001

Generated by the SAS System ('SASApp', Linux) on November 18, 2019 at 12:03:00 PM

(SAS, own creation,2019)

Yt = 22.49477 + 2.08241xt

Figure 18: Missing Frequency Result YES.



Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: YES

Number of Observations Read	120
Number of Observations Used	119
Number of Observations with Missing Values	1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	660361	660361	155.58	<.0001
Error	117	496620	4244.61902		
Corrected Total	118	1156981			

Root MSE	65.15074	R-Square	0.5708
Dependent Mean	149.13395	Adj R-Sq	0.5671
Coeff Var	43.68606		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	19.01895	12.02040	1.58	0.1163
time	1	2.16858	0.17386	12.47	<.0001

Generated by the SAS System ('SASApp', Linux) on November 18, 2019 at 12:09:04 PM

(SAS, own creation,2019)

y't = 19.01895 + 2.16858x't

Forecasting: y' (120) = 19.01895 + 2.16858(120) ⇒279.24855

Y (121) = 22.49477 + 2.08241(121) ⇒274.46638

Y (122) = 22.49477 + 2.08241(122) ⇒276.54879

Y (123) = 22.49477 + 2.08241(123) ⇒278.6312

Y (124) = 22.49477 + 2.08241(124) ⇒280.71361

Y (125) = 22.49477 + 2.08241(125) ⇒282.79602

Y (126) = 22.49477 + 2.08241(126) ⇒284.87843

Y (127) = 22.49477 + 2.08241(127) ⇒286.96084

Y (128) = 22.49477 + 2.08241(128) ⇒289.04352

Y (129) = 22.49477 + 2.08241(129) ⇒291.12566

Y (130) = 22.49477 + 2.08241(130) ⇒293.20807

Y(131) = 22.49477 + 2.08241(131) ⇒295.29048

Y(132) = 22.49477 + 2.08241(132) ⇒297.37289

8.2 Industries

Stocks: NTPC, ONGC, TISC

Xt = time Yt= NTPC

Figure 19: Original Result NTPC.

Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: NTPC

Number of Observations Read	120
Number of Observations Used	120

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	1543.00858	1543.00858	5.27	0.0235
Error	118	34572	292.98209		
Corrected Total	119	36115			

Root MSE	17.11672	R-Square	0.0427
Dependent Mean	128.01783	Adj R-Sq	0.0346
Coeff Var	13.37057		

Parameter Estimates

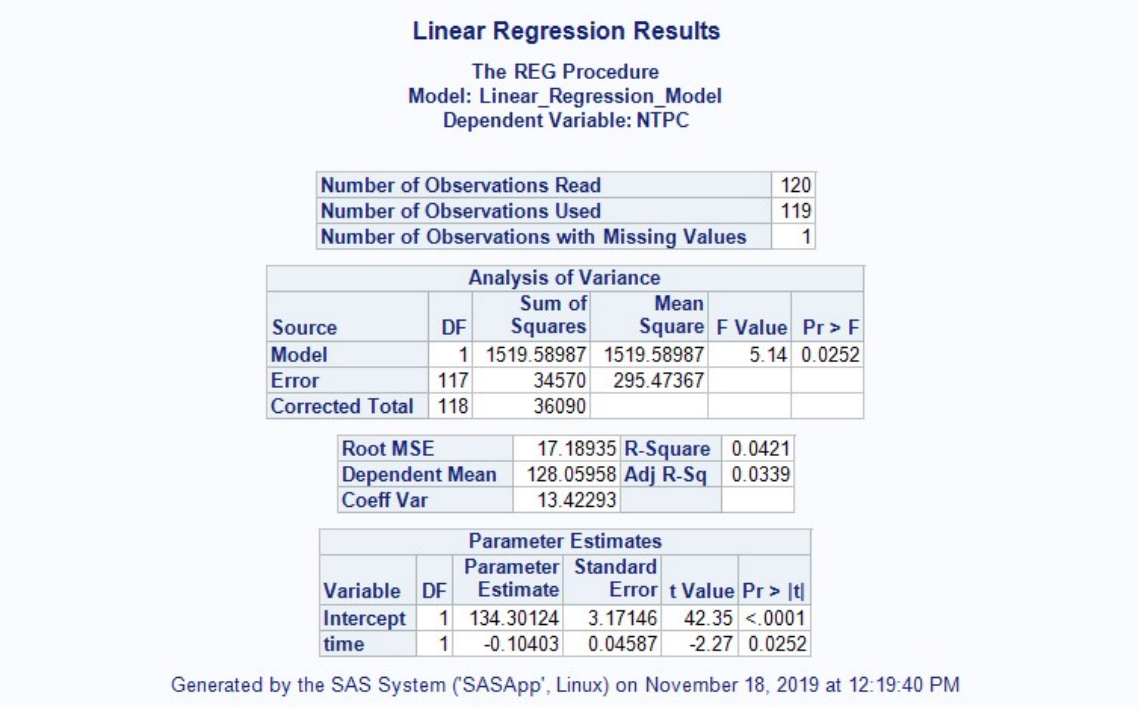
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	134.28070	3.14471	42.70	<.0001
time	1	-0.10352	0.04511	-2.29	0.0235

Generated by the SAS System ('SASApp', Linux) on November 18, 2019 at 12:13:41 PM

(SAS, own creation,2019)

Yt = 134.28070 - 0.10352xt

Figure 20: Missing Frequency Result NTPC.



Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: NTPC

Number of Observations Read	120
Number of Observations Used	119
Number of Observations with Missing Values	1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	1519.58987	1519.58987	5.14	0.0252
Error	117	34570	295.47367		
Corrected Total	118	36090			

Root MSE	17.18935	R-Square	0.0421
Dependent Mean	128.05958	Adj R-Sq	0.0339
Coeff Var	13.42293		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	134.30124	3.17146	42.35	<.0001
time	1	-0.10403	0.04587	-2.27	0.0252

Generated by the SAS System ('SASApp', Linux) on November 18, 2019 at 12:19:40 PM

(SAS, own creation,2019)

y't = 134.30124 - 0.10403xt

Forecasting : y'(120) = 134.30124 - 0.10403(120) ⇒121.81764

Y(121) = 134.28070 - 0.10352(121) ⇒121.75478

Y(122) = 134.28070 - 0.10352(122) ⇒121.65126

Y(123) = 134.28070 - 0.10352(123) ⇒121.54774

Y(124) = 134.28070 - 0.10352(124) ⇒121.44422

Y(125) = 134.28070 - 0.10352(125) ⇒121.3407

Y(126) = 134.28070 - 0.10352(126) ⇒121.23718

Y(127) = 134.28070 - 0.10352(127) ⇒121.13366

Y(128) = 134.28070 - 0.10352(128) ⇒121.03014

Y(129) = 134.28070 - 0.10352(129) ⇒120.92662

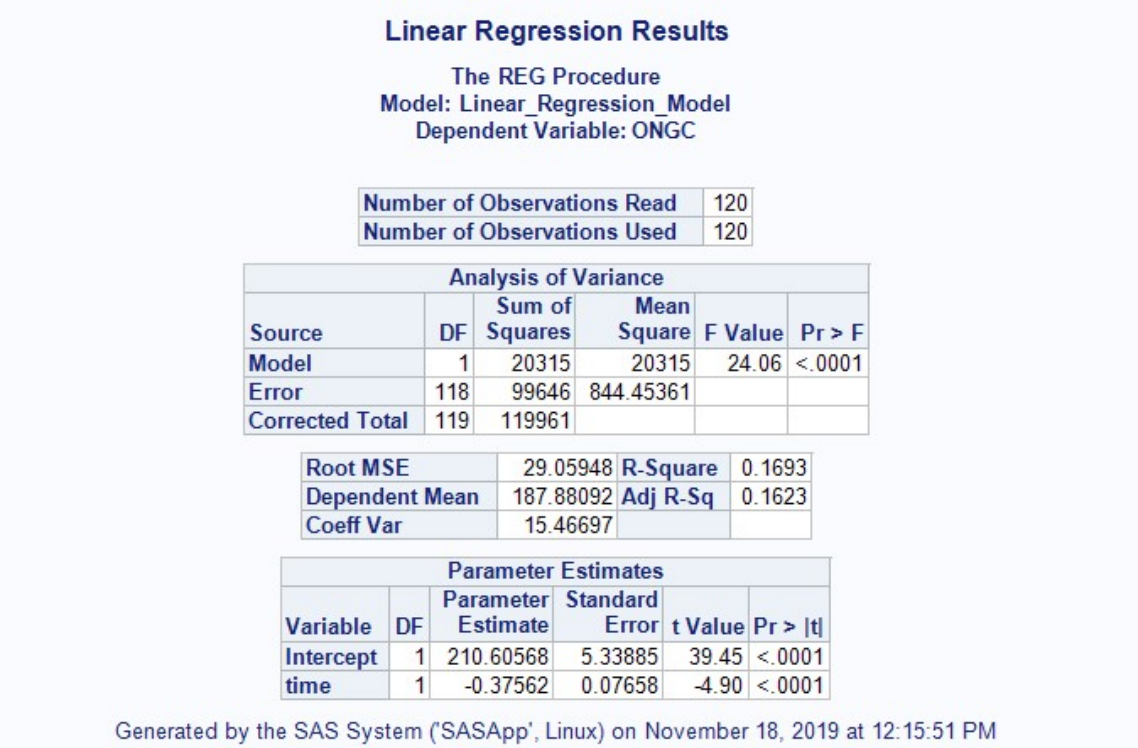
Y(130) = 134.28070 - 0.10352(130) ⇒120.82310

Y(131) = 134.28070 - 0.10352(131) ⇒120.71958

Y(132) = 134.28070 - 0.10352(132) ⇒120.61606

Xt = time Yt = ONGC

Figure 21: Original Result ONGC.



Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: ONGC

Number of Observations Read	120
Number of Observations Used	120

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	20315	20315	24.06	<.0001
Error	118	99646	844.45361		
Corrected Total	119	119961			

Root MSE	29.05948	R-Square	0.1693
Dependent Mean	187.88092	Adj R-Sq	0.1623
Coeff Var	15.46697		

Parameter Estimates

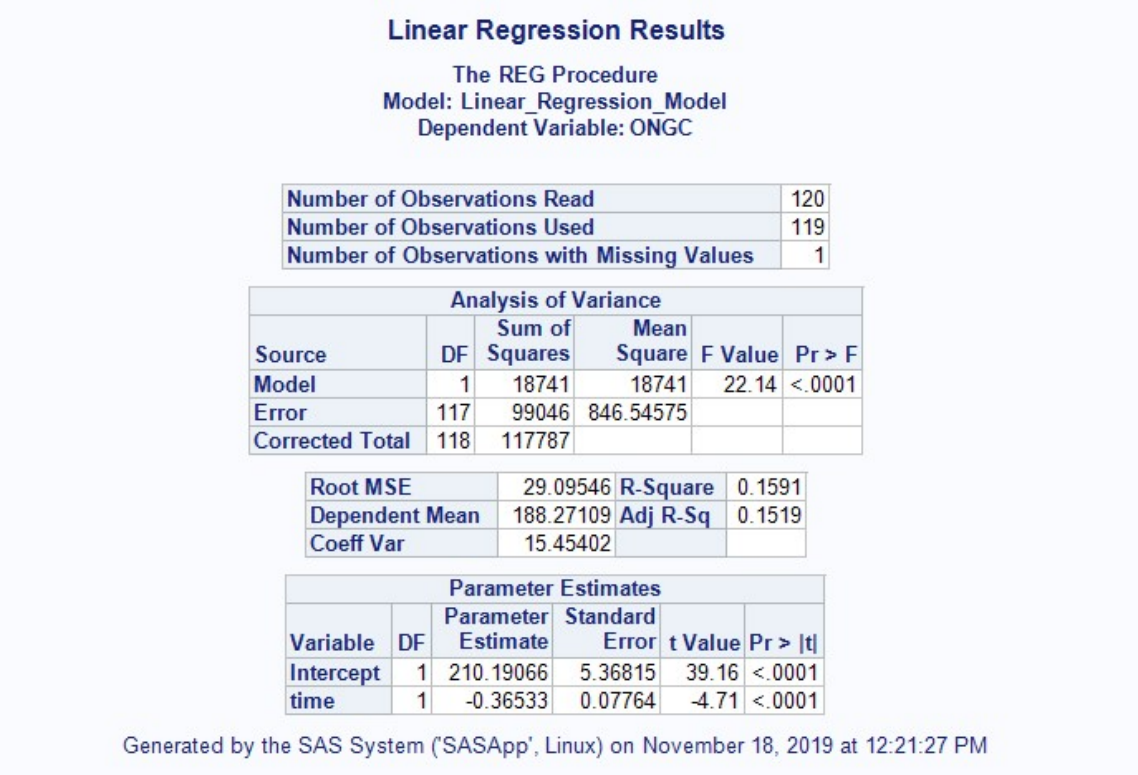
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	210.60568	5.33885	39.45	<.0001
time	1	-0.37562	0.07658	-4.90	<.0001

Generated by the SAS System ('SASApp', Linux) on November 18, 2019 at 12:15:51 PM

(SAS, own creation,2019)

Yt = 210.60568 - 0.37562xt

Figure 22: Missing Frequency Result ONGC.



Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: ONGC

Number of Observations Read	120
Number of Observations Used	119
Number of Observations with Missing Values	1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	18741	18741	22.14	<.0001
Error	117	99046	846.54575		
Corrected Total	118	117787			

Root MSE	29.09546	R-Square	0.1591
Dependent Mean	188.27109	Adj R-Sq	0.1519
Coeff Var	15.45402		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	210.19066	5.36815	39.16	<.0001
time	1	-0.36533	0.07764	-4.71	<.0001

Generated by the SAS System ('SASApp', Linux) on November 18, 2019 at 12:21:27 PM

(SAS, own creation,2019)

y't = 210.19066 - 0.36533xt

Forecasting : y'(120) = 210.19066 - 0.36533(120) ⇒166.35106

Y(121) = 210.60568 - 0.37562(121) ⇒165.15566

Y(122) = 210.60568 - 0.37562(122) ⇒164.78004

Y(123) = 210.60568 - 0.37562(123) ⇒164.40442

Y(124) = 210.60568 - 0.37562(124) ⇒164.02880

Y(125) = 210.60568 - 0.37562(125) ⇒163.63518

Y(126) = 210.60568 - 0.37562(126) ⇒163.27756

Y(127) = 210.60568 - 0.37562(127) ⇒162.90194

Y(128) = 210.60568 - 0.37562(128) ⇒162.52632

Y(129) = 210.60568 - 0.37562(129) ⇒162.1507

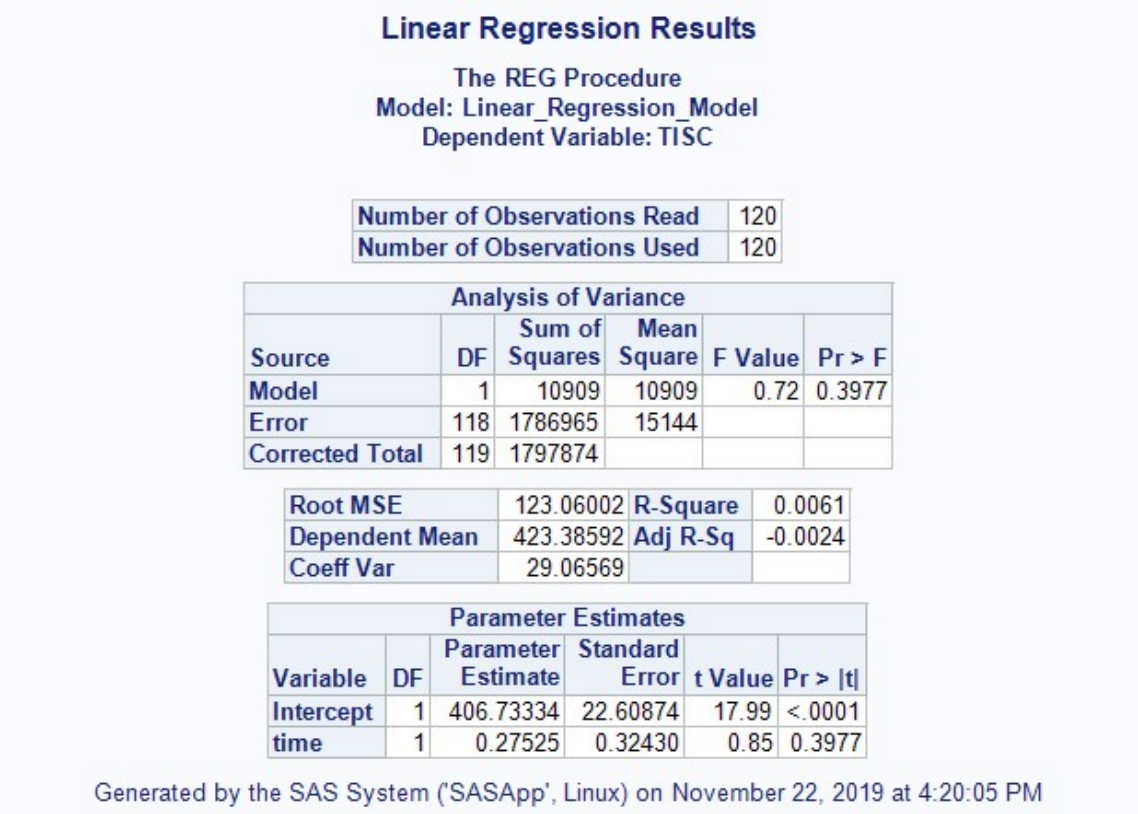
Y(130) = 210.60568 - 0.37562(130) ⇒161.77508

Y(131) = 210.60568 - 0.37562(131) ⇒161.39946

Y(132) = 210.60568 - 0.37562(132) ⇒161.02384

Xt= time Yt = TISC

Figure 23: Original Result TISC.



Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: TISC

Number of Observations Read	120
Number of Observations Used	120

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	10909	10909	0.72	0.3977
Error	118	1786965	15144		
Corrected Total	119	1797874			

Root MSE	123.06002	R-Square	0.0061
Dependent Mean	423.38592	Adj R-Sq	-0.0024
Coeff Var	29.06569		

Parameter Estimates

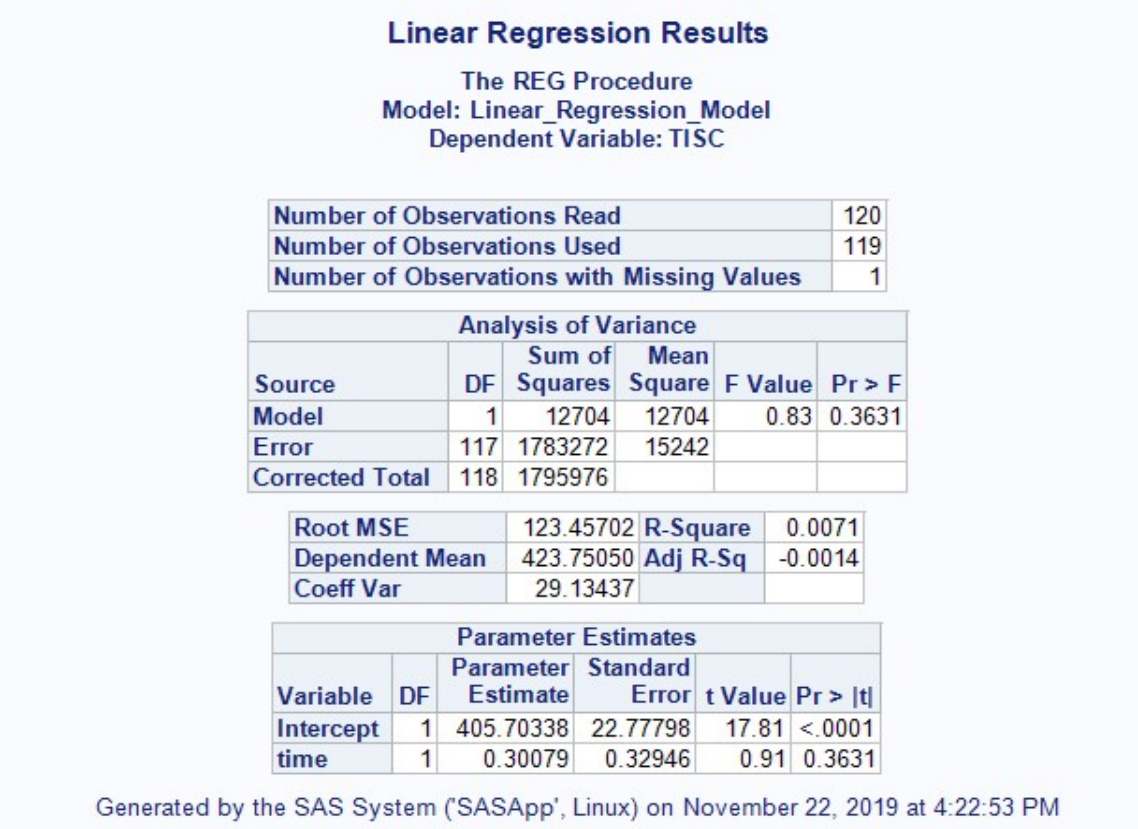
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	406.73334	22.60874	17.99	<.0001
time	1	0.27525	0.32430	0.85	0.3977

Generated by the SAS System ('SASApp', Linux) on November 22, 2019 at 4:20:05 PM

(SAS, own creation,2019)

Yt = 406.73334 + 0.27525xt

Figure 24: Missing Frequency Result TISC.



Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: TISC

Number of Observations Read	120
Number of Observations Used	119
Number of Observations with Missing Values	1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	12704	12704	0.83	0.3631
Error	117	1783272	15242		
Corrected Total	118	1795976			

Root MSE	123.45702	R-Square	0.0071
Dependent Mean	423.75050	Adj R-Sq	-0.0014
Coeff Var	29.13437		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	405.70338	22.77798	17.81	<.0001
time	1	0.30079	0.32946	0.91	0.3631

Generated by the SAS System ('SASApp', Linux) on November 22, 2019 at 4:22:53 PM

(SAS, own creation,2019)

$y't = 405.70338 + 0.30079x't$

Forecasting : $y(120) = 405.70338 + 0.30079(120) \Rightarrow 441.79818$

$Y(121) = 406.73334 + 0.27525(121) \Rightarrow 440.03859$

$Y(122) = 406.73334 + 0.27525(122) \Rightarrow 440.31384$

$Y(123) = 406.73334 + 0.27525(123) \Rightarrow 440.58909$

$Y(124) = 406.73334 + 0.27525(124) \Rightarrow 440.86434$

$Y(125) = 406.73334 + 0.27525(125) \Rightarrow 441.13959$

$Y(126) = 406.73334 + 0.27525(126) \Rightarrow 441.41484$

$Y(127) = 406.73334 + 0.27525(127) \Rightarrow 441.69009$

$Y(128) = 406.73334 + 0.27525(128) \Rightarrow 441.96534$

$Y(129) = 406.73334 + 0.27525(129) \Rightarrow 442.24059$

$Y(130) = 406.73334 + 0.27525(130) \Rightarrow 442.51584$

$Y(131) = 406.73334 + 0.27525(131) \Rightarrow 442.79109$

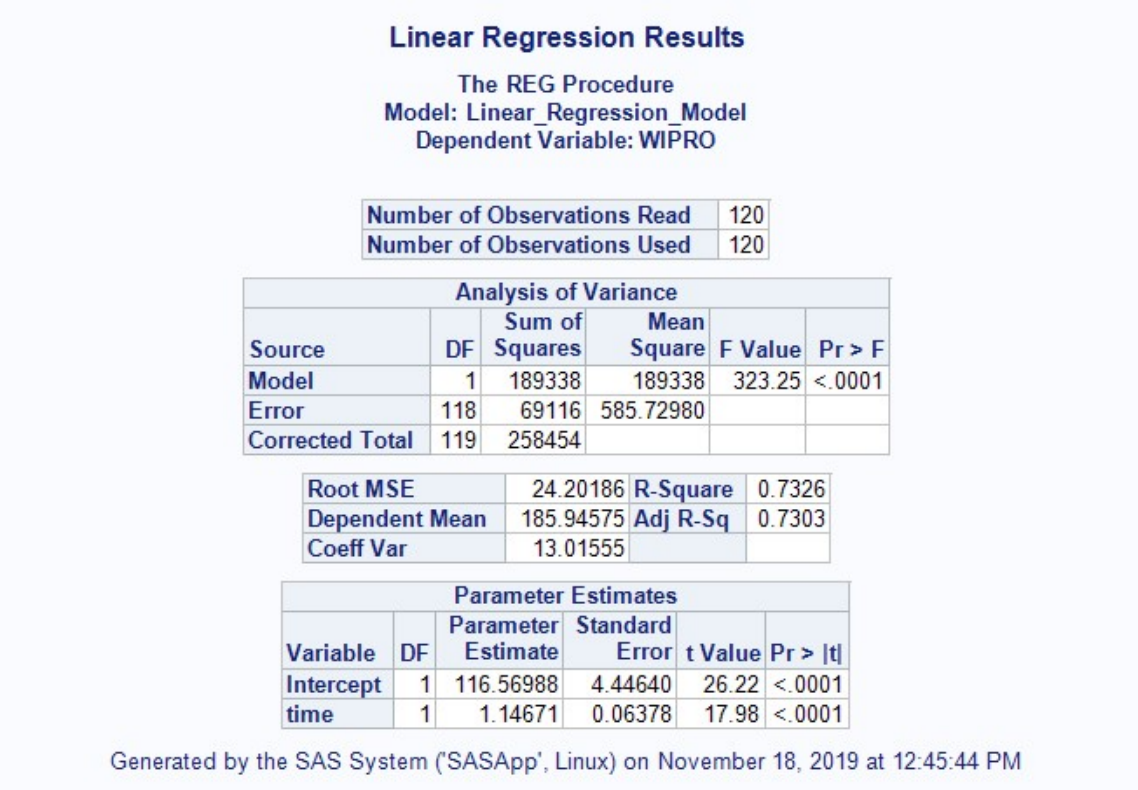
$Y(132) = 406.73334 + 0.27525(132) \Rightarrow 443.06634$

8.3 IT

Stocks: WIPRO, TCS, INFY

Xt= time Yt= WIPRO

Figure 25: Original Result WIPRO.



Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: WIPRO

Number of Observations Read	120
Number of Observations Used	120

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	189338	189338	323.25	<.0001
Error	118	69116	585.72980		
Corrected Total	119	258454			

Root MSE	24.20186	R-Square	0.7326
Dependent Mean	185.94575	Adj R-Sq	0.7303
Coeff Var	13.01555		

Parameter Estimates

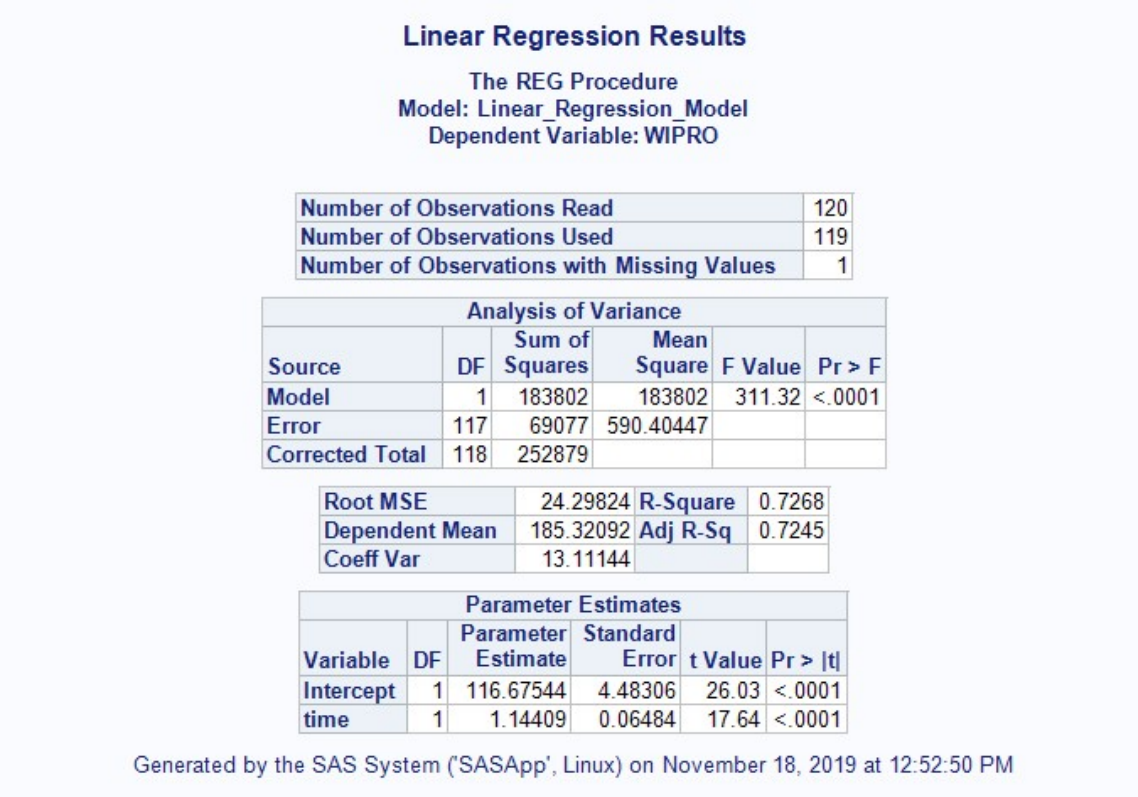
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	116.56988	4.44640	26.22	<.0001
time	1	1.14671	0.06378	17.98	<.0001

Generated by the SAS System ('SASApp', Linux) on November 18, 2019 at 12:45:44 PM

(SAS, own creation,2019)

Yt = 116.56988 + 1.14671xt

Figure 26: Missing Frequency Result WIPRO.



Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: WIPRO

Number of Observations Read	120
Number of Observations Used	119
Number of Observations with Missing Values	1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	183802	183802	311.32	<.0001
Error	117	69077	590.40447		
Corrected Total	118	252879			

Root MSE	24.29824	R-Square	0.7268
Dependent Mean	185.32092	Adj R-Sq	0.7245
Coeff Var	13.11144		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	116.67544	4.48306	26.03	<.0001
time	1	1.14409	0.06484	17.64	<.0001

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(SAS, own creation,2019)

y't = 116.67544 + 1.14409xt

Forecasting : y'(120) =116.67544 + 1.14409(120) ⇒253.96624

Y(121) = 116.56988 + 1.14671(121) ⇒255.32179

Y(122) = 116.56988 + 1.14671(122) ⇒256.46850

Y(123) = 116.56988 + 1.14671(123) ⇒257.61521

Y(124) = 116.56988 + 1.14671(124) ⇒258.76192

Y(125) = 116.56988 + 1.14671(125) ⇒259.90863

Y(126) = 116.56988 + 1.14671(126) ⇒261.05534

Y(127) = 116.56988 + 1.14671(127) ⇒262.20205

Y(128) = 116.56988 + 1.14671(128) ⇒263.34876

Y(129) = 116.56988 + 1.14671(129) ⇒264.49547

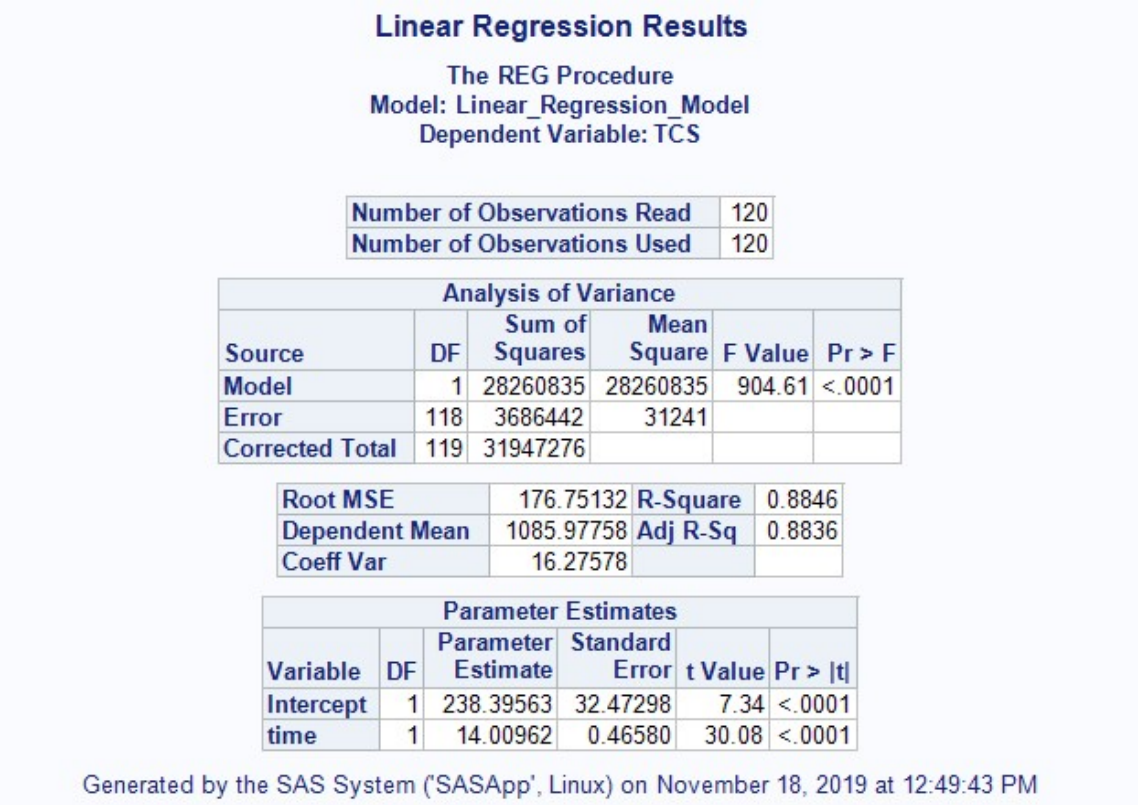
Y(130) = 116.56988 + 1.14671(130) ⇒265.64218

Y(131) = 116.56988 + 1.14671(131) ⇒266.78889

Y(132) = 116.56988 + 1.14671(132) ⇒267.93560

Xt = time Yt = TCS

Figure 27: Original Result TCS.



Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: TCS

Number of Observations Read	120
Number of Observations Used	120

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	28260835	28260835	904.61	<.0001
Error	118	3686442	31241		
Corrected Total	119	31947276			

Root MSE	176.75132	R-Square	0.8846
Dependent Mean	1085.97758	Adj R-Sq	0.8836
Coeff Var	16.27578		

Parameter Estimates

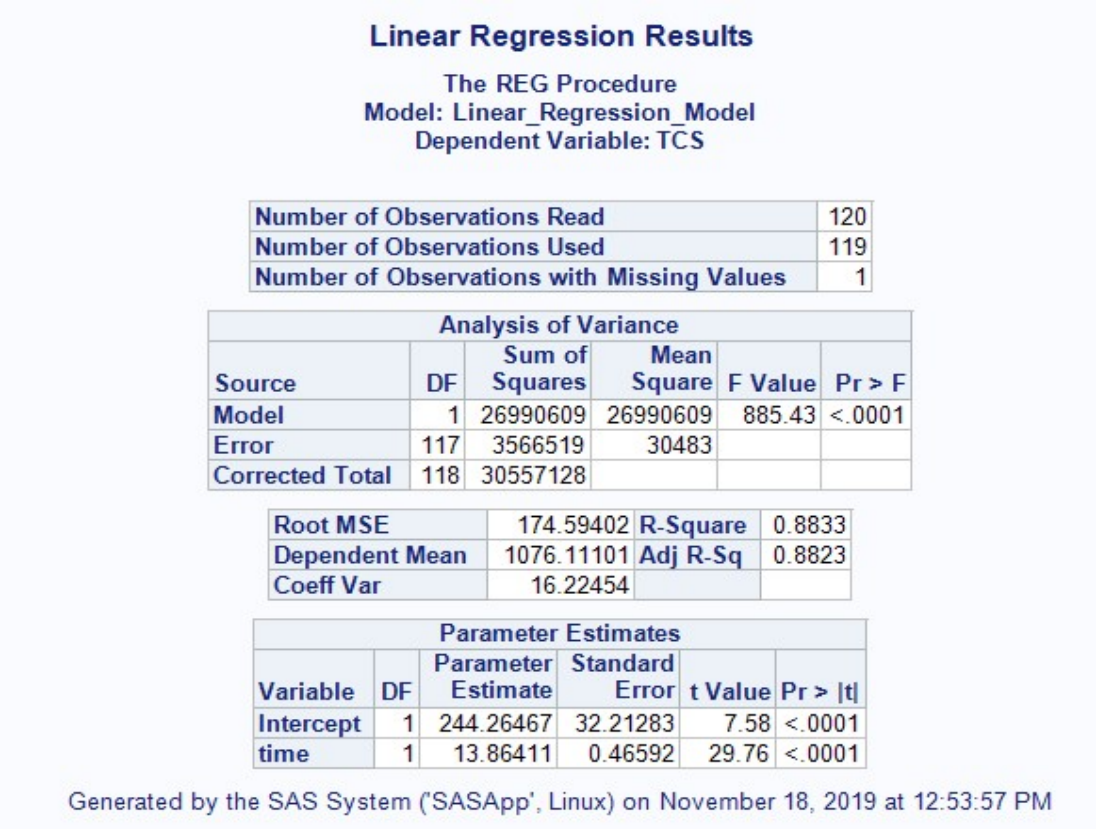
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	238.39563	32.47298	7.34	<.0001
time	1	14.00962	0.46580	30.08	<.0001

Generated by the SAS System ('SASApp', Linux) on November 18, 2019 at 12:49:43 PM

(SAS, own creation,2019)

Yt = 238.39563 + 14.00962xt

Figure 28: Missing Frequency Result TCS.



Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: TCS

Number of Observations Read	120
Number of Observations Used	119
Number of Observations with Missing Values	1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	26990609	26990609	885.43	<.0001
Error	117	3566519	30483		
Corrected Total	118	30557128			

Root MSE	174.59402	R-Square	0.8833
Dependent Mean	1076.11101	Adj R-Sq	0.8823
Coeff Var	16.22454		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	244.26467	32.21283	7.58	<.0001
time	1	13.86411	0.46592	29.76	<.0001

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(SAS, own creation,2019)

y't = 244.26467 + 13.86411xt

Forecasting : yt(120) = 244.26467 + 13.86411(120) ⇒1907.95787

Y(121) = 238.39563 + 14.00962(121) ⇒1933.55965

Y(122) = 238.39563 + 14.00962(122) ⇒1947.56927

Y(123) = 238.39563 + 14.00962(123) ⇒1961.57889

Y(124) = 238.39563 + 14.00962(124) ⇒1975.58851

Y(125) = 238.39563 + 14.00962(125) ⇒1989.59813

Y(126) = 238.39563 + 14.00962(126) ⇒2003.60775

Y(127) = 238.39563 + 14.00962(127) ⇒2017.61737

Y(128) = 238.39563 + 14.00962(128) ⇒2031.62699

Y(129) = 238.39563 + 14.00962(129) ⇒2045.63661

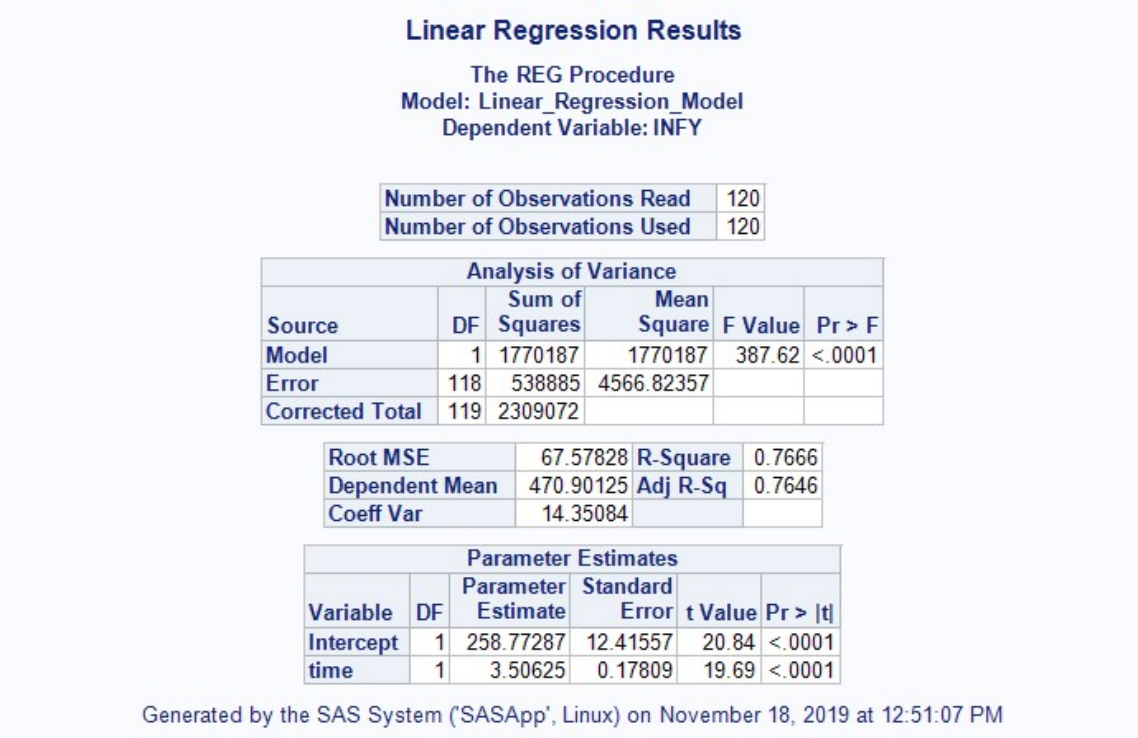
Y(130) = 238.39563 + 14.00962(130) ⇒2059.64623

Y(131) = 238.39563 + 14.00962(131) ⇒2073.65585

Y(132) = 238.39563 + 14.00962(132) ⇒2087.66547

Xt = time Yt = INFY

Figure 29: Original Result INFY.



Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: INFY

Number of Observations Read	120
Number of Observations Used	120

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	1770187	1770187	387.62	<.0001
Error	118	538885	4566.82357		
Corrected Total	119	2309072			

Root MSE	67.57828	R-Square	0.7666
Dependent Mean	470.90125	Adj R-Sq	0.7646
Coeff Var	14.35084		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	258.77287	12.41557	20.84	<.0001
time	1	3.50625	0.17809	19.69	<.0001

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(SAS, own creation,2019)

Yt = 258.77287 + 3.50625xt

Figure 30: Missing Frequency Result INFY.

Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: INFY

Number of Observations Read	120
Number of Observations Used	119
Number of Observations with Missing Values	1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	1721767	1721767	373.90	<.0001
Error	117	538765	4604.82985		
Corrected Total	118	2260532			

Root MSE	67.85890	R-Square	0.7617
Dependent Mean	469.05756	Adj R-Sq	0.7596
Coeff Var	14.46707		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	258.95859	12.52006	20.68	<.0001
time	1	3.50165	0.18109	19.34	<.0001

Generated by the SAS System ('SASApp', Linux) on November 18, 2019 at 12:55:15 PM

(SAS, own creation,2019)

y't = 258.95859 + 3.50165xt

Forecasting : y(120) = 258.95859 + 3.50165(120) ⇒679.15695

Y(121) = 258.77287 + 3.50625(121) ⇒683.02912

Y(122) = 258.77287 + 3.50625(122) ⇒686.53537

Y(123) = 258.77287 + 3.50625(123) ⇒690.04162

Y(124) = 258.77287 + 3.50625(124) ⇒693.54787

Y(125) = 258.77287 + 3.50625(125) ⇒697.05412

Y(126) = 258.77287 + 3.50625(126) ⇒700.56037

Y(127) = 258.77287 + 3.50625(127) ⇒704.06662

Y(128) = 258.77287 + 3.50625(128) ⇒707.57287

Y(129) = 258.77287 + 3.50625(129) ⇒711.07912

Y(130) = 258.77287 + 3.50625(130) ⇒714.58537

Y(131) = 258.77287 + 3.50625(131) ⇒718.09162

Y(132) = 258.77287 + 3.50625(132) ⇒721.59787

8.4 Automobiles

Stocks: HROM, MAHM, MRTI

Xt = time Yt = HROM

Figure 31: Original Result HROM.

Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: HROM

Number of Observations Read	120
Number of Observations Used	120

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	35084710	35084710	211.88	<.0001
Error	118	19539063	165585		
Corrected Total	119	54623773			

Root MSE	406.92171	R-Square	0.6423
Dependent Mean	2505.52917	Adj R-Sq	0.6393
Coeff Var	16.24095		

Parameter Estimates

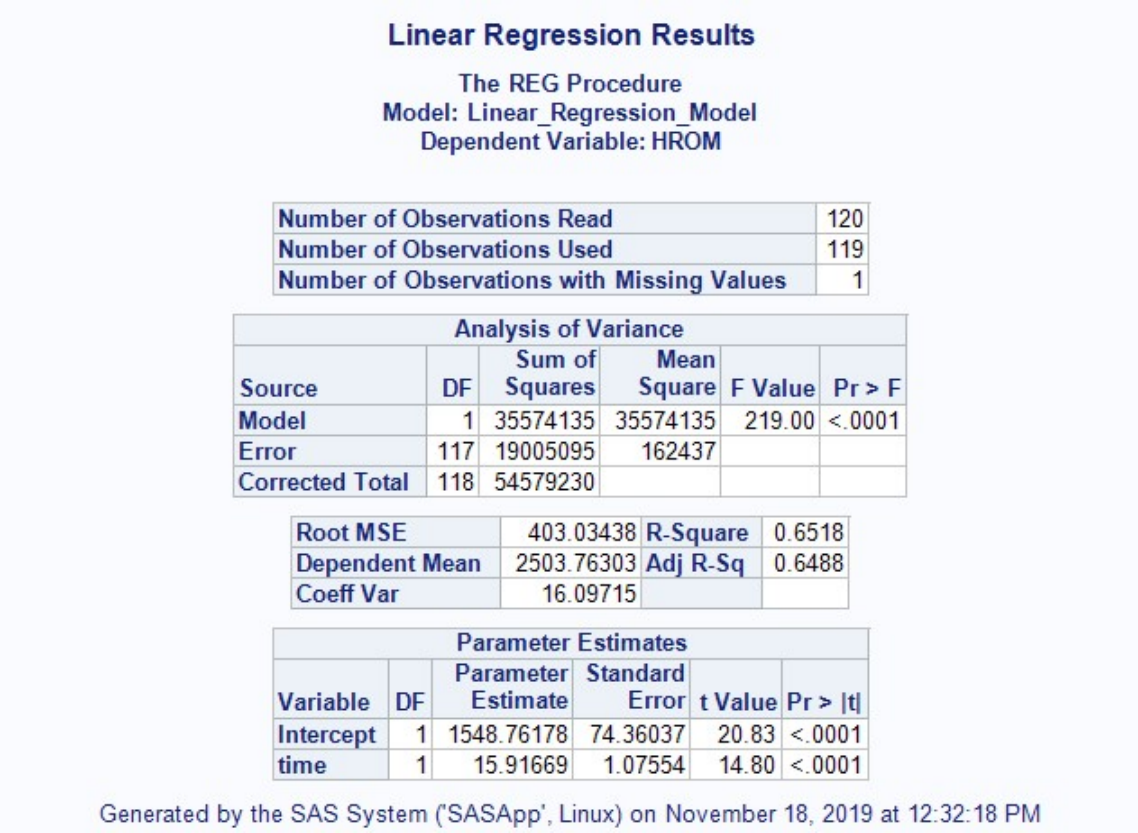
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	1561.14618	74.76017	20.88	<.0001
time	1	15.60964	1.07237	14.56	<.0001

Generated by the SAS System ('SASApp', Linux) on November 18, 2019 at 12:26:10 PM

(SAS, own creation,2019)

Yt = 1561.14618 + 15.60964xt

Figure 32: Missing Frequency Result HROM.



Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: HROM

Number of Observations Read	120
Number of Observations Used	119
Number of Observations with Missing Values	1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	35574135	35574135	219.00	<.0001
Error	117	19005095	162437		
Corrected Total	118	54579230			

Root MSE	403.03438	R-Square	0.6518
Dependent Mean	2503.76303	Adj R-Sq	0.6488
Coeff Var	16.09715		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	1548.76178	74.36037	20.83	<.0001
time	1	15.91669	1.07554	14.80	<.0001

Generated by the SAS System ('SASApp', Linux) on November 18, 2019 at 12:32:18 PM

(SAS, own creation,2019)

y't = 1548.76178 + 15.91669x't

Forecasting : y(120) =1548.76178 + 15.91669(120) ⇒3458.76458

Y(121)= 1561.14618 + 15.60964(121) ⇒3449.91262

Y(122)= 1561.14618 + 15.60964(122) ⇒3465.52226

Y(123)= 1561.14618 + 15.60964(123) ⇒3481.13190

Y(124)= 1561.14618 + 15.60964(124) ⇒3512.35118

Y(125)= 1561.14618 + 15.60964(125) ⇒3512.35118

Y(126)= 1561.14618 + 15.60964(126) ⇒3527.96082

Y(127)= 1561.14618 + 15.60964(127) ⇒3543.57046

Y(128)= 1561.14618 + 15.60964(128) ⇒3559.18010

Y(129)= 1561.14618 + 15.60964(129) ⇒3574.78974

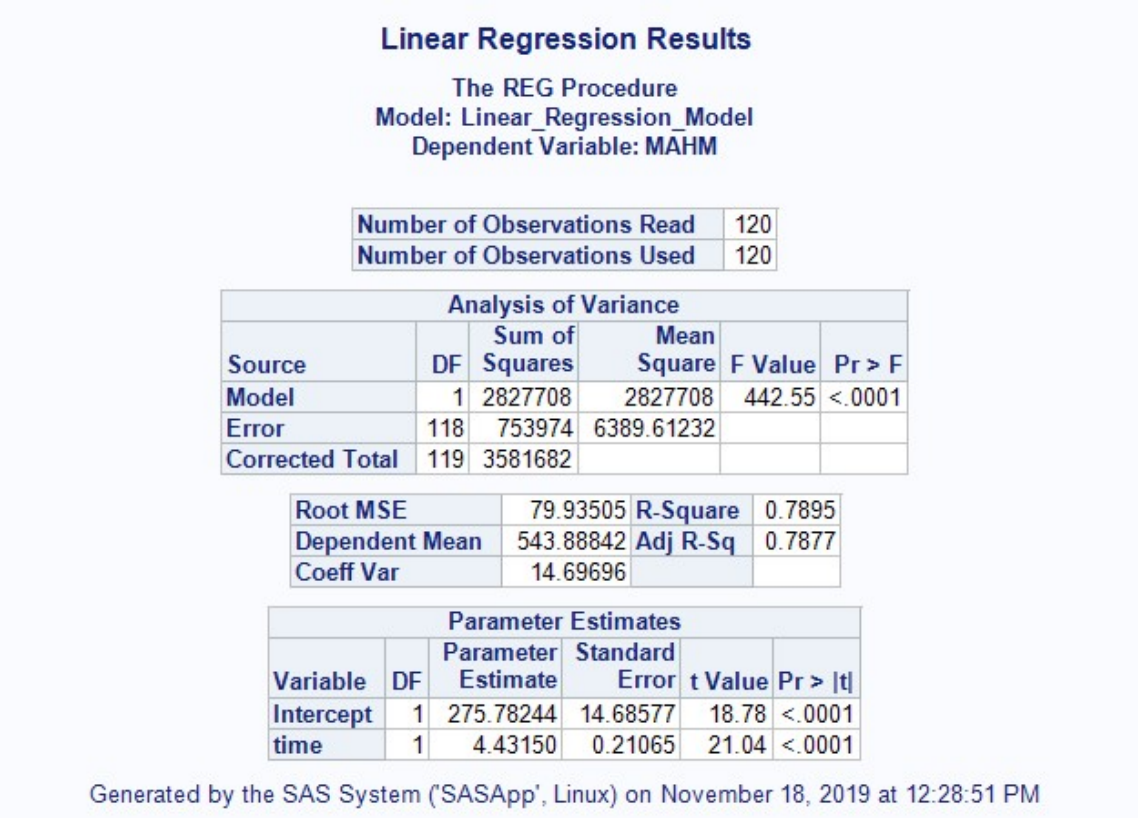
Y(130)= 1561.14618 + 15.60964(130) ⇒3590.39938

Y(131)= 1561.14618 + 15.60964(131) ⇒3606.00902

Y(132)= 1561.14618 + 15.60964(132) ⇒3621.61866

Xt = time Yt = MAHM

Figure 33: Original Result MAHM.



Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: MAHM

Number of Observations Read	120
Number of Observations Used	120

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	2827708	2827708	442.55	<.0001
Error	118	753974	6389.61232		
Corrected Total	119	3581682			

Root MSE	79.93505	R-Square	0.7895
Dependent Mean	543.88842	Adj R-Sq	0.7877
Coeff Var	14.69696		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	275.78244	14.68577	18.78	<.0001
time	1	4.43150	0.21065	21.04	<.0001

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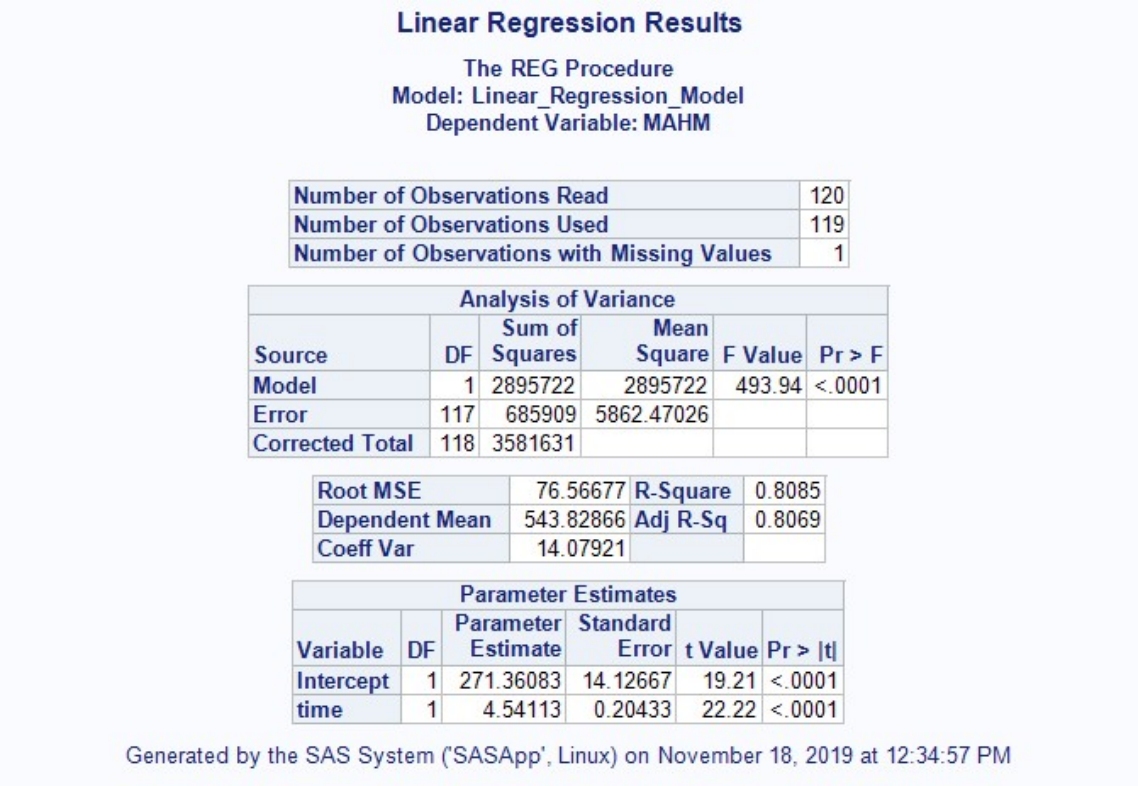
(SAS, own creation,2019)

Y = 257.78244 + 4.43150xt

Figure 34: Missing Frequency Result MAHM.



Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: MAHM

Number of Observations Read	120
Number of Observations Used	119
Number of Observations with Missing Values	1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	2895722	2895722	493.94	<.0001
Error	117	685909	5862.47026		
Corrected Total	118	3581631			

Root MSE	76.56677	R-Square	0.8085
Dependent Mean	543.82866	Adj R-Sq	0.8069
Coeff Var	14.07921		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	271.36083	14.12667	19.21	<.0001
time	1	4.54113	0.20433	22.22	<.0001

Generated by the SAS System ('SASApp', Linux) on November 18, 2019 at 12:34:57 PM

(SAS, own creation,2019)

y't = 271.36083 + 4.54113x't

Forecasting : y'(120) = 271.36083 + 4.54113(120) ⇒816.30363

Y(121) = 257.78244 + 4.43150(121) ⇒811.99394

Y(122) = 257.78244 + 4.43150(122) ⇒816.42544

Y(123) = 257.78244 + 4.43150(123) ⇒820.85694

Y(124) = 257.78244 + 4.43150(124) ⇒825.28844

Y(125) = 257.78244 + 4.43150(125) ⇒829.71994

Y(126) = 257.78244 + 4.43150(126) ⇒834.15144

Y(127) = 257.78244 + 4.43150(127) ⇒838.58294

Y(128) = 257.78244 + 4.43150(128) ⇒843.01444

Y(129) = 257.78244 + 4.43150(129) ⇒847.44594

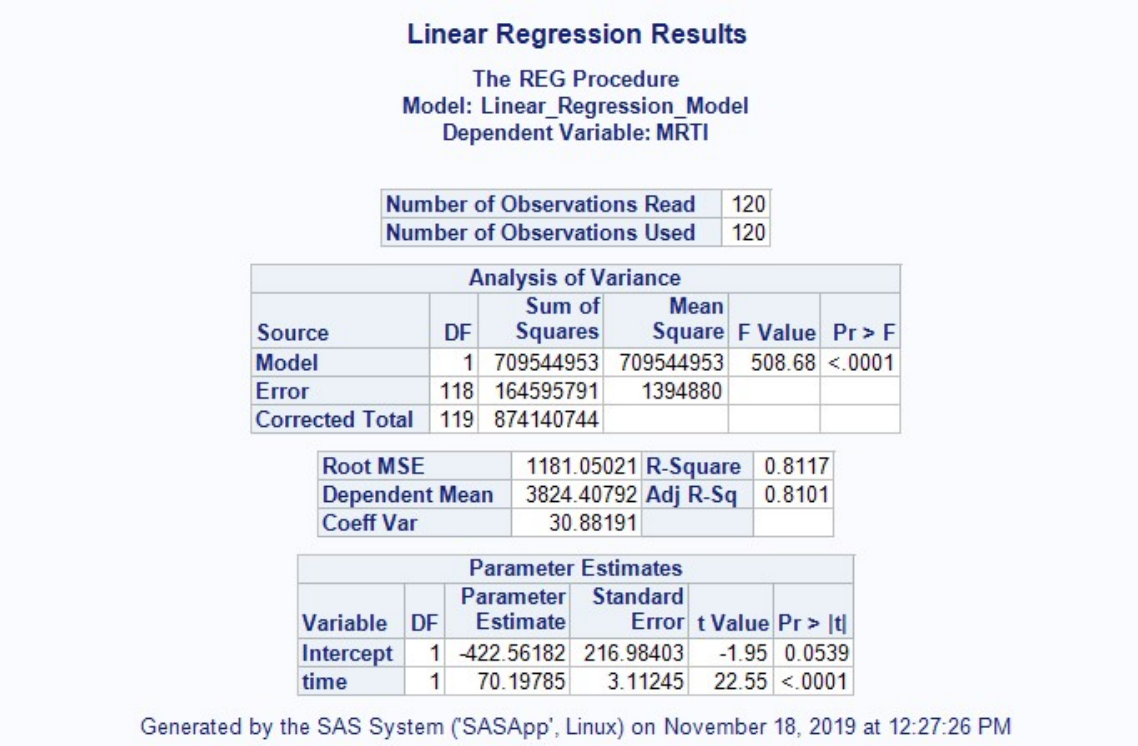
Y(130) = 257.78244 + 4.43150(130) ⇒851.87744

Y(131) = 257.78244 + 4.43150(131) ⇒856.30894

Y(132) = 257.78244 + 4.43150(132) ⇒860.74044

Xt = time Yt = MRTI

Figure 35: Original Result MRTI.



Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: MRTI

Number of Observations Read	120
Number of Observations Used	120

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	709544953	709544953	508.68	<.0001
Error	118	164595791	1394880		
Corrected Total	119	874140744			

Root MSE	1181.05021	R-Square	0.8117
Dependent Mean	3824.40792	Adj R-Sq	0.8101
Coeff Var	30.88191		

Parameter Estimates

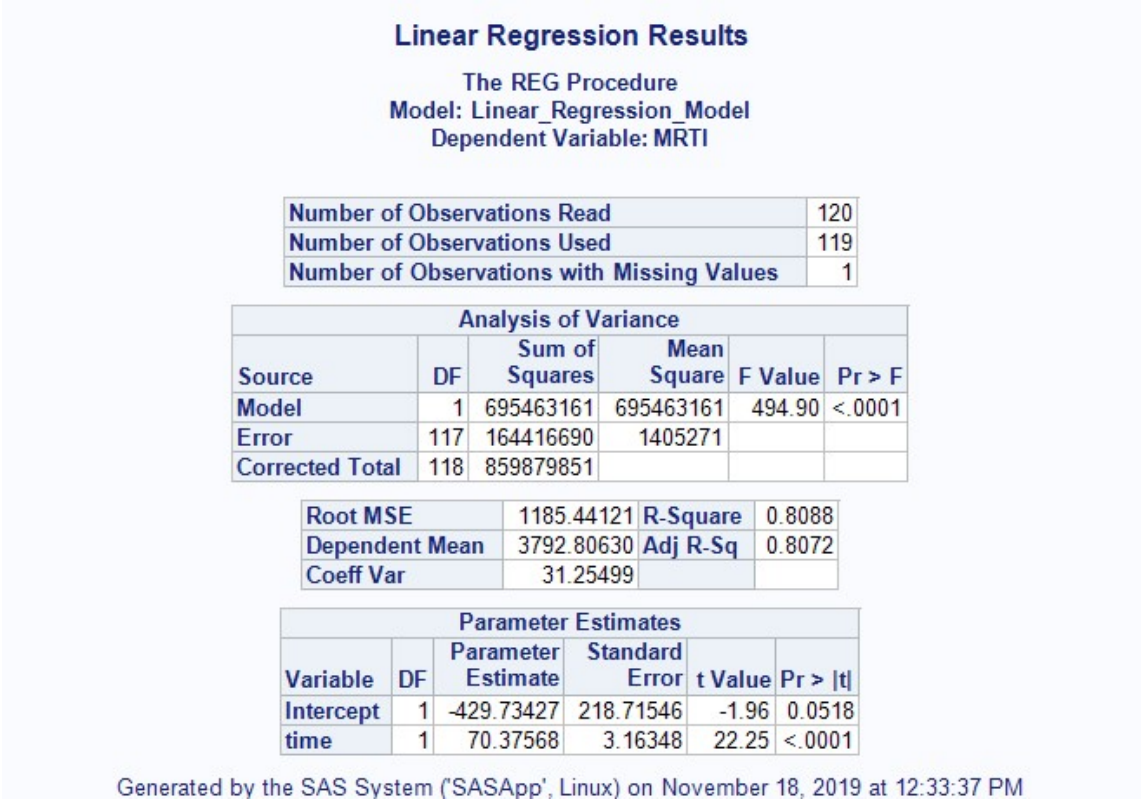
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-422.56182	216.98403	-1.95	0.0539
time	1	70.19785	3.11245	22.55	<.0001

Generated by the SAS System ('SASApp', Linux) on November 18, 2019 at 12:27:26 PM

(SAS, own creation,2019)

Yt = -422.56182 + 70.19785xt

Figure 36: Missing Frequency Result MRTI.



Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: MRTI

Number of Observations Read	120
Number of Observations Used	119
Number of Observations with Missing Values	1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	695463161	695463161	494.90	<.0001
Error	117	164416690	1405271		
Corrected Total	118	859879851			

Root MSE	1185.44121	R-Square	0.8088
Dependent Mean	3792.80630	Adj R-Sq	0.8072
Coeff Var	31.25499		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-429.73427	218.71546	-1.96	0.0518
time	1	70.37568	3.16348	22.25	<.0001

Generated by the SAS System ('SASApp', Linux) on November 18, 2019 at 12:33:37 PM

(SAS, own creation,2019)

y't = -429.73427 + 70.37568x't

Forecasting: y' (120) = -429.73427 + 70.37568(120) ⇒8015.34733

Y(121) = -422.56182 + 70.19785(121) ⇒8071.37803

Y(122) = -422.56182 + 70.19785(122) ⇒8141.57588

Y(123) = -422.56182 + 70.19785(123) ⇒8211.77373

Y(124) = -422.56182 + 70.19785(124) ⇒8281.97518

Y(125) = -422.56182 + 70.19785(125) ⇒8352.16943

Y(126) = -422.56182 + 70.19785(126) ⇒8422.36728

Y(127) = -422.56182 + 70.19785(127) ⇒8492.56513

Y(128) = -422.56182 + 70.19785(128) ⇒8562.76298

Y(129) = -422.56182 + 70.19785(129) ⇒8632.96083

Y(130) = -422.56182 + 70.19785(130) ⇒8703.15868

Y(131) = -422.56182 + 70.19785(131) ⇒8773.35653

Y(132) = -422.56182 + 70.19785(132) ⇒8843.55438

8.5 Healthcare

stocks: CIPL, REDY, SUN

Xt= time Yt= CIPL

Figure 37: Original Result CIPL.

Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: CIPL

Number of Observations Read	120
Number of Observations Used	120

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	1142856	1142856	167.97	<.0001
Error	118	802868	6803.96842		
Corrected Total	119	1945724			

Root MSE	82.48617	R-Square	0.5874
Dependent Mean	476.27167	Adj R-Sq	0.5839
Coeff Var	17.31914		

Parameter Estimates

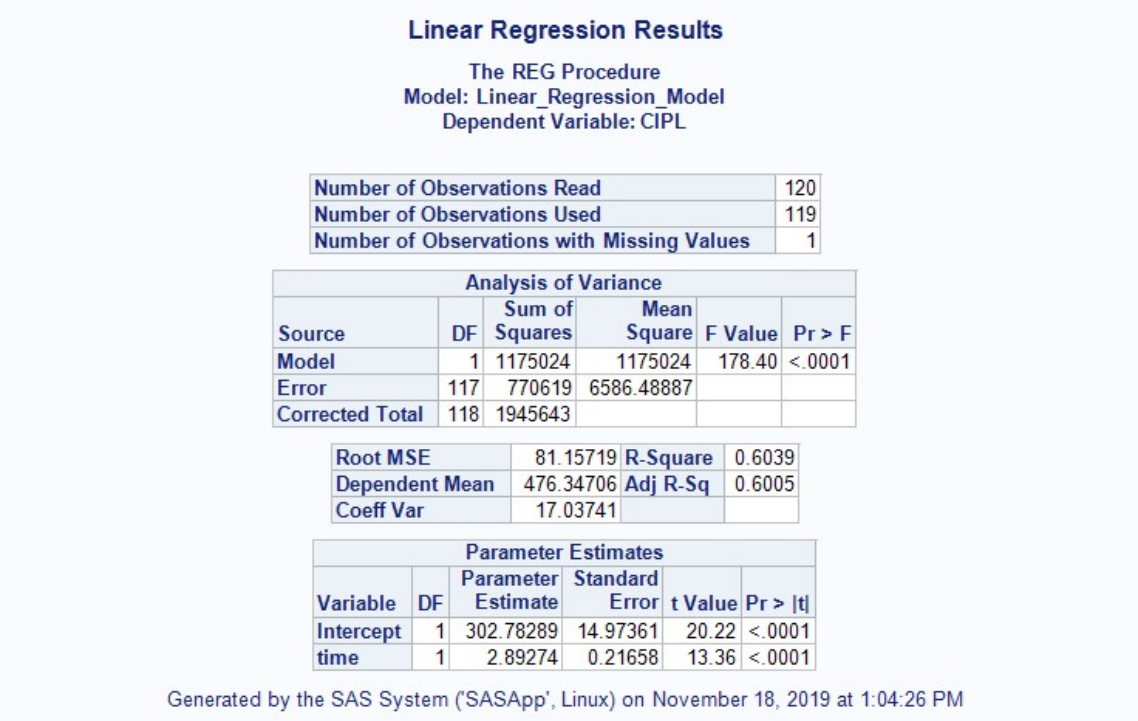
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	305.82641	15.15446	20.18	<.0001
time	1	2.81728	0.21738	12.96	<.0001

Generated by the SAS System ('SASApp', Linux) on November 18, 2019 at 1:00:02 PM

(SAS, own creation,2019)

Yt = 305.82641 + 2.81728xt

Figure 38: Missing Frequency Result CIPL.



Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: CIPL

Number of Observations Read	120
Number of Observations Used	119
Number of Observations with Missing Values	1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	1175024	1175024	178.40	<.0001
Error	117	770619	6586.48887		
Corrected Total	118	1945643			

Root MSE	81.15719	R-Square	0.6039
Dependent Mean	476.34706	Adj R-Sq	0.6005
Coeff Var	17.03741		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	302.78289	14.97361	20.22	<.0001
time	1	2.89274	0.21658	13.36	<.0001

Generated by the SAS System ('SASApp', Linux) on November 18, 2019 at 1:04:26 PM

(SAS, own creation,2019)

y't = 302.78289 + 2.89274x't

Forecasting: y'(120) = 302.78289 + 2.89274(120) ⇒649.91169

Y(121) = 305.82641 + 2.81728(121) ⇒646.78263

Y(122) = 305.82641 + 2.81728(122) ⇒649.60045

Y(123) = 305.82641 + 2.81728(123) ⇒652.41827

Y(124) = 305.82641 + 2.81728(124) ⇒655.23609

Y(125) = 305.82641 + 2.81728(125) ⇒658.05391

Y(126) = 305.82641 + 2.81728(126) ⇒660.87173

Y(127) = 305.82641 + 2.81728(127) ⇒663.68955

Y(128) = 305.82641 + 2.81728(128) ⇒666.50737

(129) = 305.82641 + 2.81728(129) ⇒ 669.32519

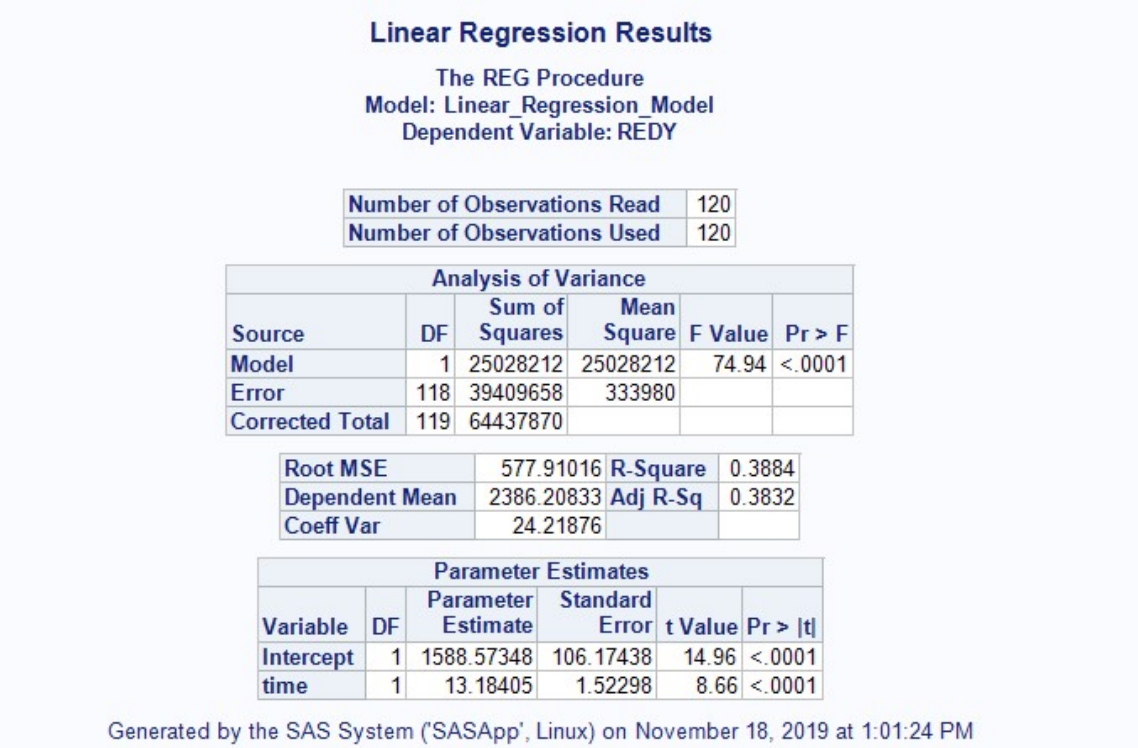
Y(130) = 305.82641 + 2.81728(130) ⇒672.14301

Y(131) = 305.82641 + 2.81728(131) ⇒674.96083

Y(132) = 305.82641 + 2.81728(132) ⇒677.77865

Xt = time Yt = REDY

Figure 39: Original Result REDY.



Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: REDY

Number of Observations Read	120
Number of Observations Used	120

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	25028212	25028212	74.94	<.0001
Error	118	39409658	333980		
Corrected Total	119	64437870			

Root MSE	577.91016	R-Square	0.3884
Dependent Mean	2386.20833	Adj R-Sq	0.3832
Coeff Var	24.21876		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	1588.57348	106.17438	14.96	<.0001
time	1	13.18405	1.52298	8.66	<.0001

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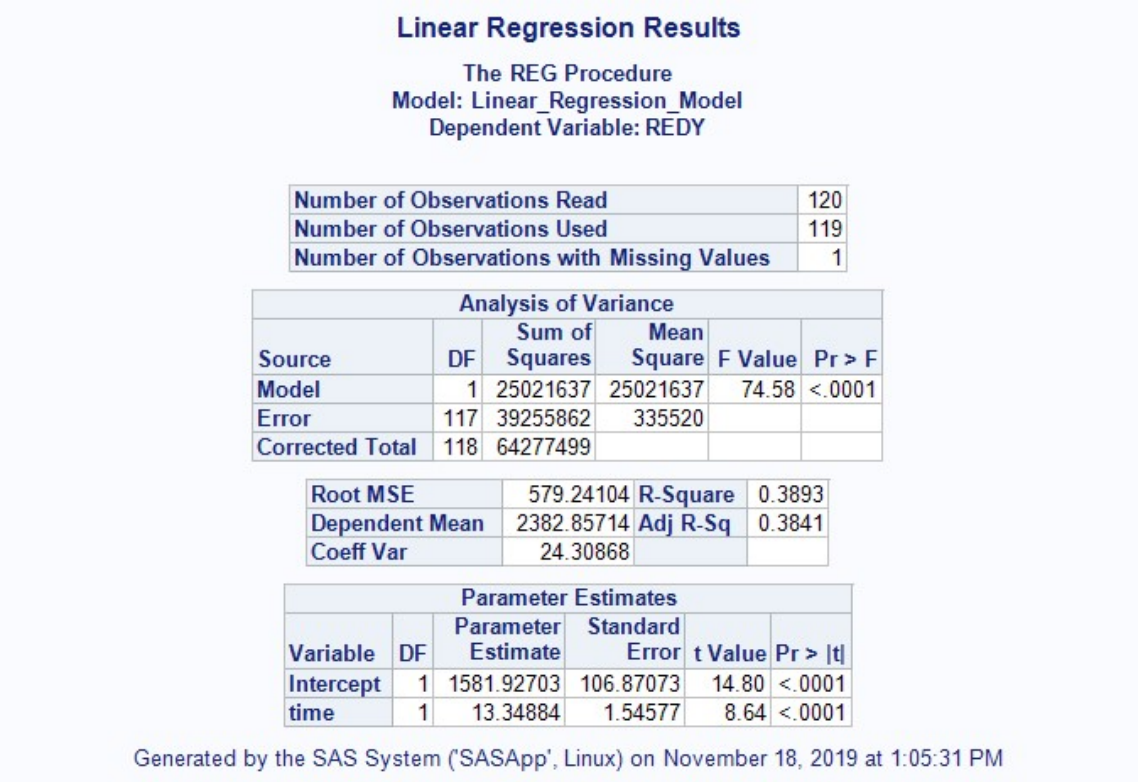
(SAS, own creation,2019)

Yt = 1588.57348 + 13.18405xt

Figure 40: Missing Frequency Result REDY.



Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: REDY

Number of Observations Read	120
Number of Observations Used	119
Number of Observations with Missing Values	1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	25021637	25021637	74.58	<.0001
Error	117	39255862	335520		
Corrected Total	118	64277499			

Root MSE	579.24104	R-Square	0.3893
Dependent Mean	2382.85714	Adj R-Sq	0.3841
Coeff Var	24.30868		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	1581.92703	106.87073	14.80	<.0001
time	1	13.34884	1.54577	8.64	<.0001

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(SAS, own creation,2019)

y't = 1581.92703 + 13.34884x't

Forecasting: y(120) = 1581.92703 + 13.34884(120) ⇒3183.78783

Y(121) = 1588.57348 + 13.18405(121) ⇒3183.84353

Y(122) = 1588.57348 + 13.18405(122) ⇒3197.02758

Y(123) = 1588.57348 + 13.18405(123) ⇒3210.21163

Y(124) = 1588.57348 + 13.18405(124) ⇒3223.39568

Y(125) = 1588.57348 + 13.18405(125) ⇒3263.57973

Y(126) = 1588.57348 + 13.18405(126) ⇒3249.76378

Y(127) = 1588.57348 + 13.18405(127) ⇒3262.94783

Y(128) = 1588.57348 + 13.18405(128) ⇒3276.13188

Y(129) = 1588.57348 + 13.18405(129) ⇒3289.31593

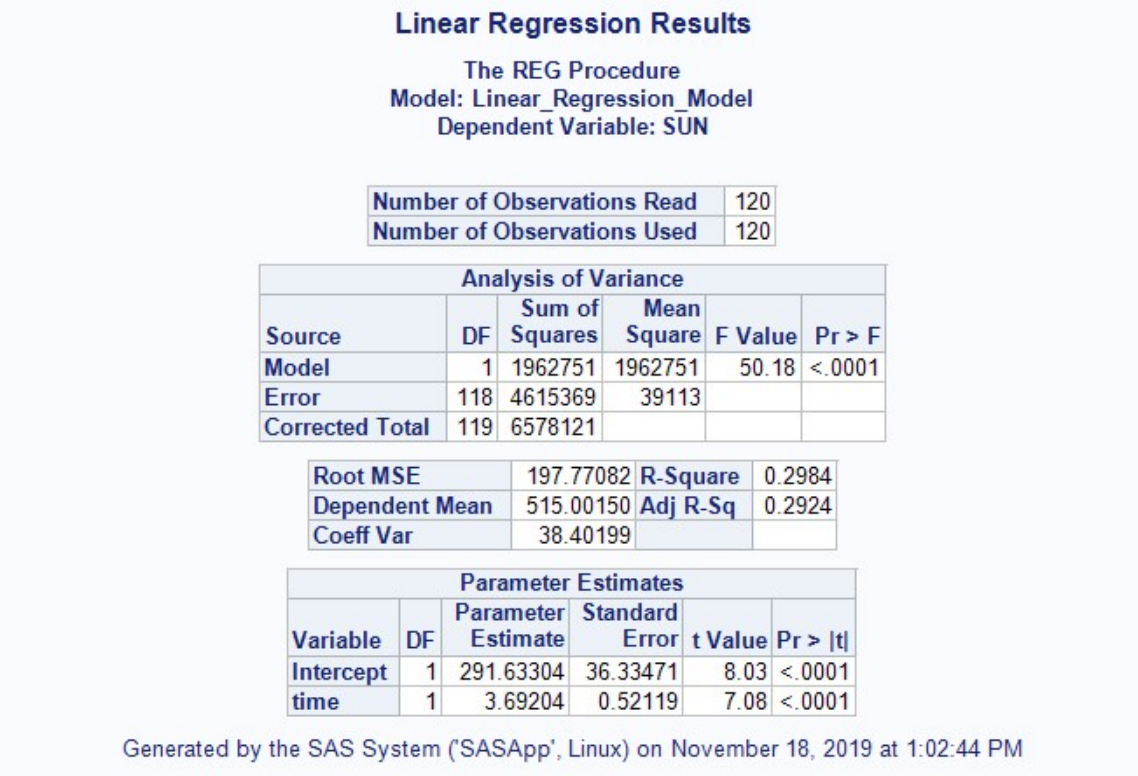
Y(130) = 1588.57348 + 13.18405(130) ⇒3302.49998

Y(131) = 1588.57348 + 13.18405(131) ⇒3315.68403

Y(132) = 1588.57348 + 13.18405(132) ⇒3328.86808

Xt= time Yt= Sun

Figure 41: Original Result SUN.



Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: SUN

Number of Observations Read	120
Number of Observations Used	120

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	1962751	1962751	50.18	<.0001
Error	118	4615369	39113		
Corrected Total	119	6578121			

Root MSE	197.77082	R-Square	0.2984
Dependent Mean	515.00150	Adj R-Sq	0.2924
Coeff Var	38.40199		

Parameter Estimates

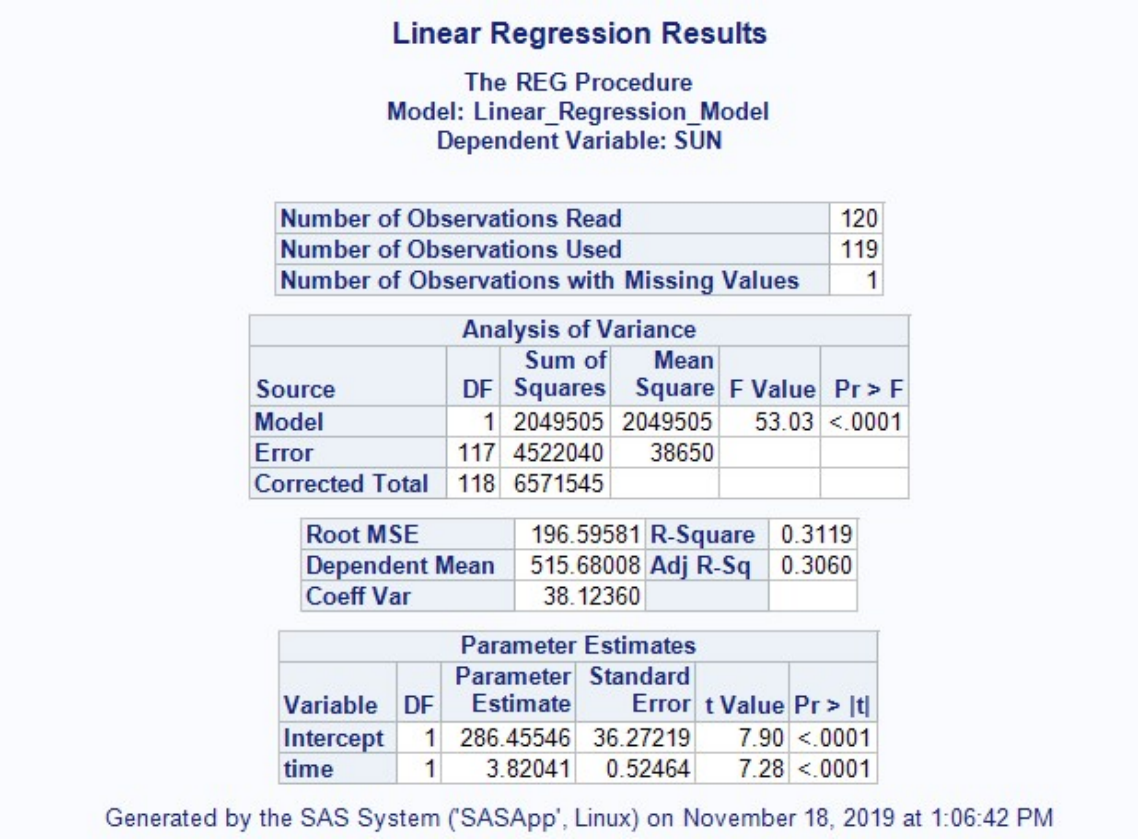
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	291.63304	36.33471	8.03	<.0001
time	1	3.69204	0.52119	7.08	<.0001

Generated by the SAS System ('SASApp', Linux) on November 18, 2019 at 1:02:44 PM

(SAS, own creation,2019)

Yt= 291.63304 + 3.69204xt

Figure 42: Missing Frequency Result SUN.



Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: SUN

Number of Observations Read	120
Number of Observations Used	119
Number of Observations with Missing Values	1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	2049505	2049505	53.03	<.0001
Error	117	4522040	38650		
Corrected Total	118	6571545			

Root MSE	196.59581	R-Square	0.3119
Dependent Mean	515.68008	Adj R-Sq	0.3060
Coeff Var	38.12360		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	286.45546	36.27219	7.90	<.0001
time	1	3.82041	0.52464	7.28	<.0001

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(SAS, own creation,2019)

y't = 286.45546 + 3.82041x't

Forecasting: y(120) = 286.45546 + 3.82041(120) ⇒744.90466

Y(121) = 291.63304 + 3.69204(121) ⇒738.36988

Y(122) = 291.63304 + 3.69204(122) ⇒742.06192

Y(123) = 291.63304 + 3.69204(123) ⇒745.75396

Y(124) = 291.63304 + 3.69204(124) ⇒749.44600

Y(125) = 291.63304 + 3.69204(125) ⇒753.13804

Y(126) = 291.63304 + 3.69204(126) ⇒756.83008

Y(127) = 291.63304 + 3.69204(127) ⇒760.52212

Y(128) = 291.63304 + 3.69204(128) ⇒764.21416

Y(129) = 291.63304 + 3.69204(129) ⇒767.90620

Y(130) = 291.63304 + 3.69204(130) ⇒771.59824

Y(131) = 291.63304 + 3.69204(131) ⇒775.29028

Y(132) = 291.63304 + 3.69204(132) ⇒778.98232