

บรรณานุกรม

การไฟฟ้านครหลวง . กองเศรษฐกิจพลังไฟฟ้า . การตั้งอัตราค่าไฟฟ้า . กรุงเทพมหานคร :

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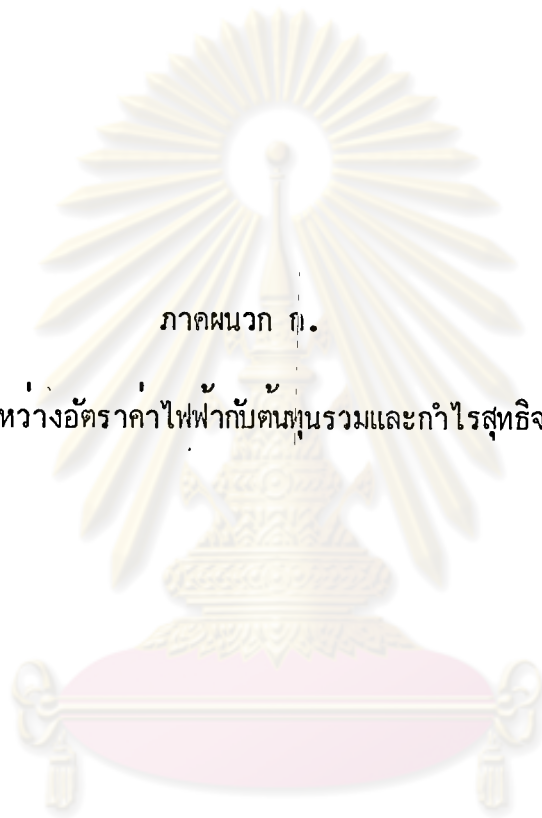
ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

สารบัญภาคผนวก

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ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

FILE NONAME (CREATION DATE = 05/15/85)
SUBFILE A1

VARIABLE	MEAN	STANDARD DEV	CASES
Y	30.7677	51.0000	10
X1	7.1594	1.0000	10
X2	3.7333	3.7333	10

FILE NONAME (CREATION DATE = 05/15/85)
SUBFILE A1

CORRELATION COEFFICIENTS
OR VALUE OF SIGNIFICANCE IS PRINTED
IF A COEFFICIENT CANNOT BE COMPUTED.

	Y	X1	X2
Y	1.00000	0.79930	0.71594
X1	0.79930	1.00000	0.63331
X2	0.71594	0.63331	1.00000

FILE NONAME (CREATION DATE = 05/15/85)
SUBFILE A1

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 1

DEPENDENT VARIABLE: Y
UNVARIABLE(S) ENTERED ON STEP NUMBER 1.. X1

MULTIPLE R	R SQUARE	ADJUSTED R SQUARE	STANDARD ERROR	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
0.79930	0.63904	0.59704	1.40795	REGRESSION	1.	3935.67477	3935.67477	6044.5916
				RESIDUAL	14.	66.79825	4.77130	

VARIABLES IN THE EQUATION				VARIABLES NOT IN THE EQUATION				
VARIABLE	B	DELTA	STD ERROR B	F	VARIABLE	DELTA IN	PARTIAL TOLERANCE	F
X1 (CONSTANT)	1.63717 3.71594		0.99890	6044.5916	X2	0.05937	0.92149	73.17

UNVARIABLE(S) ENTERED ON STEP NUMBER 2.. X2

MULTIPLE R	R SQUARE	ADJUSTED R SQUARE	STANDARD ERROR	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
0.92307	0.85204	0.80001	1.00151	REGRESSION	2.	3940.17942	1970.08971	19563.8290
				RESIDUAL	13.	13.33360	1.02566	

VARIABLES IN THE EQUATION				VARIABLES NOT IN THE EQUATION				
VARIABLE	B	DELTA	STD ERROR B	F	VARIABLE	DELTA IN	PARTIAL TOLERANCE	F
X1	0.92307		0.03731	1.00000	X2	0.02307	0.00000	
X2 (CONSTANT)	0.02307 1.00151		0.03657	73.173				

MAXIMUM STEP REACHED
STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.

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FILE NONAME (CREATION DATE = 05/15/85)

SUBFILE A1 AC
***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 1

DEPENDENT VARIABLE.. Y

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	S	BETA
X1	0.99720	0.99720	0.99720	0.99690	0.9955504	0.95822
X2	0.99975	0.99967	0.00187	0.71594	0.0203027	0.05937
(CONSTANT)					1.513250	

1011

05/15/85 PAGE 2

FILE NONAME (CREATION DATE = 05/15/85)

SUBFILE A1 AC
***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 2

DEPENDENT VARIABLE.. Y

UNVARIABLE(S) ENTERED ON STEP NUMBER 1.. X2
X1

MULTIPLE R	R SQUARE	ADJUSTED R SQUARE	STANDARD ERROR	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
0.99975	0.99967	0.99967	1.00335	REGRESSION	10.	3940.57542	19704.88971	19563.8290
				RESIDUAL	10.	15.00350	1.00022	

----- VARIABLES IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
X2	0.0203027	0.05937	0.07523	73.176
X1	0.9955504	0.95822	0.07041	19000.072
(CONSTANT)	1.513250			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
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ALL VARIABLES ARE IN THE EQUATION
STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.

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FILE NONAME (CREATION DATE = 05/15/85)

SUBFILE A1 AC
***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 2

DEPENDENT VARIABLE.. Y

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	S	BETA
X2	0.71594	0.51253	0.51253	0.71594	0.0203027	0.05937
X1	0.99975	0.99967	0.48709	0.99690	0.9955504	0.95822
(CONSTANT)					1.513250	

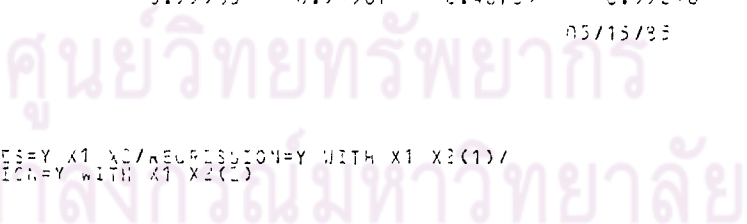
1011

05/15/85 PAGE 10

CPU TIME REQUIRED.. 0.07 SECONDS

- 10 RUN SUBFILE, EACH
- 11 REGRESSION VARIABLES=Y X1 X2/REGRESSION=Y WITH X1 X2(1)/
- 12 REGRESSION=Y WITH X1 X2(2)
- 13 STATISTICS

***** REGRESSION PROBLEMS REQUIRED 300 BYTES WORKSPACE, NOT INCLUDING RESIDUALS *****



FILE MNAME (CREATION DATE = 05/15/85)
SUBFILE A1

VARIABLE	MEAN	STANDARD DEV	CASES
Y	43.9000	3.1000	5
X1	33.1000	1.0000	5
X2	3.5000	2.4457	5

FILE MNAME (CREATION DATE = 05/15/85)
SUBFILE A1

CORRELATION COEFFICIENTS
OR VALUE OF P < .00000 IS PRINTED
IF A CORRELATION COEFFICIENT CANNOT BE COMPUTED.

	Y	X1	X2
Y	1.00000	0.60007	0.50170
X1	0.60007	1.00000	0.10000
X2	0.50170	0.10000	1.00000

FILE MNAME (CREATION DATE = 05/15/85)
SUBFILE A1

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 1

DEPENDENT VARIABLE(S)
VARIABLE(S) ENTERED ON STEP NUMBER 1.. X1

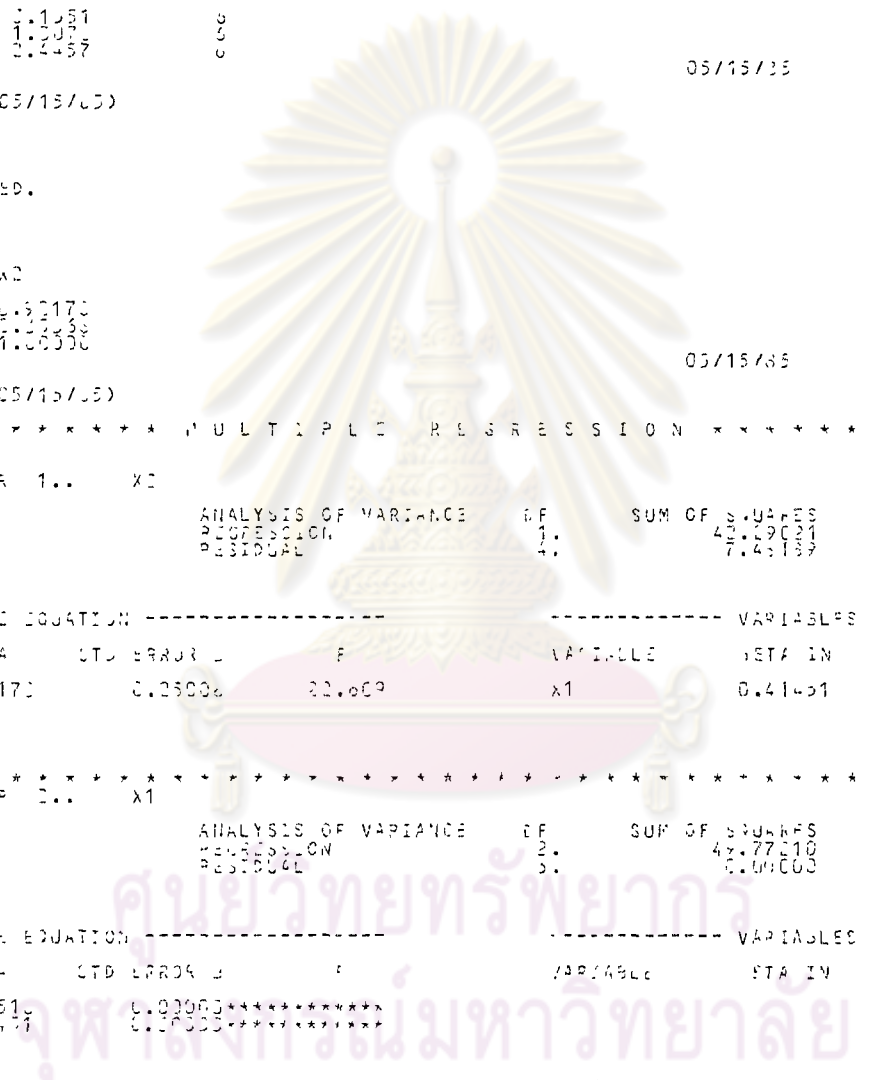
MULTIPLE R		ANALYSIS OF VARIANCE		DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	0.64170	REGRESSION	1.	42.20000	42.20000	22.6093	
ADJUSTED R SQUARE	0.51010	RESIDUAL	4.	7.40000	1.85000		
STANDARD ERROR	1.85000						

VARIABLES IN THE EQUATION				VARIABLES NOT IN THE EQUATION			
VARIABLE	B	STD. ERROR B	F	VARIABLE	ETA IN	PARTIAL TOLERANCE	F
X2	1.109117	0.42170	22.609	X1	0.41451	1.00000	99999.99
(CONSTANT)	33.40077						

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 1

MULTIPLE R		ANALYSIS OF VARIANCE		DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	1.00000	REGRESSION	2.	42.77000	21.38500	6157716120142.7425	
ADJUSTED R SQUARE	1.00000	RESIDUAL	3.	0.00000	0.00000		
STANDARD ERROR	0.00000						

VARIABLES IN THE EQUATION				VARIABLES NOT IN THE EQUATION			
VARIABLE	B	STD. ERROR B	F	VARIABLE	ETA IN	PARTIAL TOLERANCE	F
X2	0.999999	0.77510	0.00000*****				
X1	1.000001	0.41451	0.00000*****				
(CONSTANT)	-0.326220000						



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MAXIMUM STEP REACHED
 STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
 1011

05/15/85

PAGE 14

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FILE NONAME (CREATION DATE = 05/15/85)

SUBFILE A1
 ***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
 REGRESSION LIST 1

DEPENDENT VARIABLE... Y

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSG CHANGE	SIMPLE R	S	BETA
X2	0.92173	0.84968	0.84968	0.92173	0.0999996	0.77518
X1	1.00000	1.00000	0.15032	0.68867	1.000001	0.41451
(CONSTANT)					-0.262238E-04	

1011

05/15/85

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FILE NONAME (CREATION DATE = 05/15/85)

SUBFILE A1
 ***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
 REGRESSION LIST 2

DEPENDENT VARIABLE... Y
 VARIABLE(S) ENTERED ON STEP NUMBER 1.. X2
 X1

MULTIPLE R	R SQUARE	ADJUSTED R SQUARE	STANDARD ERROR	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
1.00000	1.00000	1.00000	0.00000	REGRESSION	2	46.77210	23.38605	6157716120142.7425
				RESIDUAL	1	0.00000	0.00000	

VARIABLES IN THE EQUATION				VARIABLES NOT IN THE EQUATION			
VARIABLE	B	T	STD ERROR	VARIABLE	T	PARTIAL	TOLERANCE
X2	0.9999996	0.77518	0.00000*****				
X1	1.0000001	0.41451	0.00000*****				
(CONSTANT)	-0.262238E-04						

ALL VARIABLES ARE IN THE EQUATION
 STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
 1011

05/15/85

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FILE NONAME (CREATION DATE = 05/15/85)

SUBFILE A1
 ***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
 REGRESSION LIST 2

DEPENDENT VARIABLE... Y

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSG CHANGE	SIMPLE R	S	BETA
X2	0.92173	0.84968	0.84968	0.92173	0.0999996	0.77518
X1	1.00000	1.00000	0.15032	0.68867	1.000001	0.41451
(CONSTANT)					-0.262238E-04	

1011

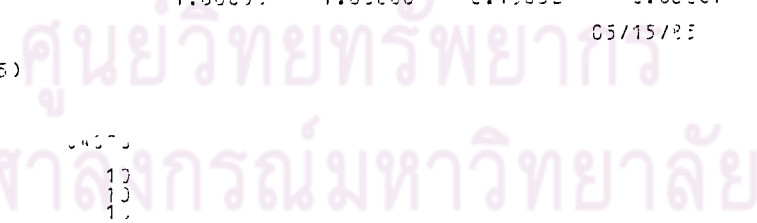
05/15/85

PAGE 17

FILE NONAME (CREATION DATE = 05/15/85)

SUBFILE A1

VARIABLE	MEAN	STANDARD DEV	COUNT
Y	102.0000	22.1111	10
X1	24.5210	35.3024	10
X2	2.0000	1.4142	10



1011

05/15/85

PAGE 18

FILE NAME (CREATION DATE = 05/15/85)
SOUFILE A2

OCORRELATION COEFFICIENTS
IF A VALUE OF 99.9999 IS PRINTED
IF A COEFFICIENT CANNOT BE COMPUTED.

	Y	X1	X2
Y	1.00000	0.99999	0.99997
X1	0.99999	1.00000	0.99997
X2	0.99997	0.99997	1.00000

1011

05/15/85

PAGE 19

FILE NAME (CREATION DATE = 05/15/85)
SOUFILE A2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 1

DEPENDENT VARIABLE... Y
UNVARIABLE(S) ENTERED ON STEP NUMBER 1... X1

		ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
MULTIPLE R	0.99980	REGRESSION	1.	26324.22833	26324.22833	9905.0981
R SQUARE	0.99960	RESIDUAL	2.	21.25115	2.65762	
ADJUSTED R SQUARE	0.99940					
STANDARD ERROR	1.62013					

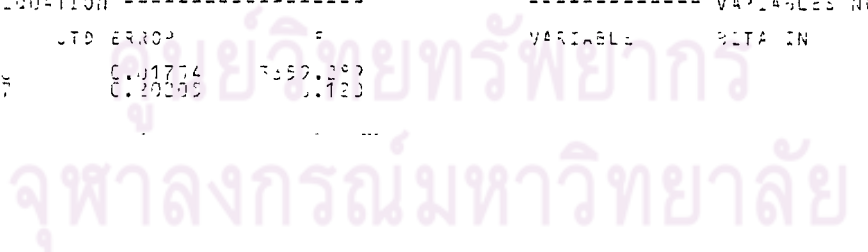
VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION				
VARIABLE	B	BETA	STD ERROR	F	VARIABLE	BETA IN	PARTIAL TOLERANCE	F	
X1	1.001272	0.99900	0.01066	9905.0981	X2	0.04707	0.73232	0.19562	8.12
(CONSTANT)	2.77447								

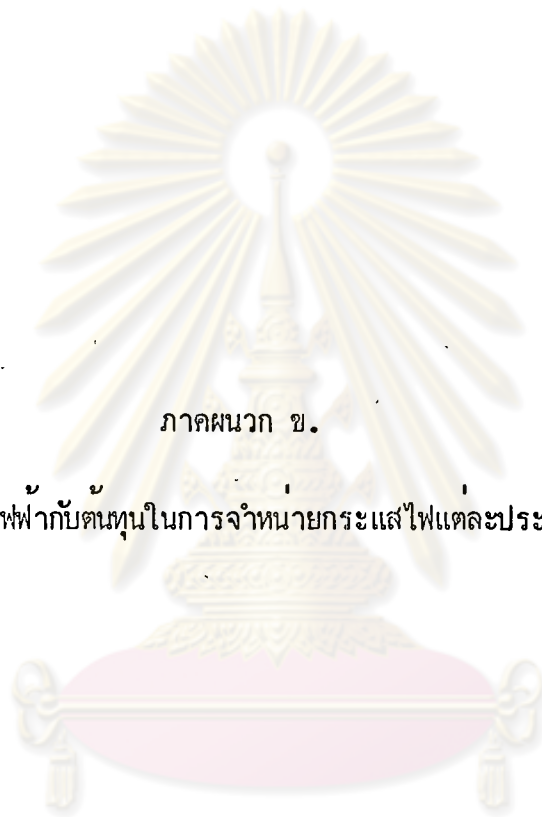
***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 1

DEPENDENT VARIABLE... Y
UNVARIABLE(S) ENTERED ON STEP NUMBER 1... X2

		ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
MULTIPLE R	0.99761	REGRESSION	2.	26335.64623	13167.82312	9364.2555
R SQUARE	0.99522	RESIDUAL	7.	9.84336	1.40518	
ADJUSTED R SQUARE	0.99383					
STANDARD ERROR	1.18008					

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION				
VARIABLE	B	BETA	STD ERROR	F	VARIABLE	BETA IN	PARTIAL TOLERANCE	F	
X1	1.010402	0.97777	0.01774	7352.389					
X2	0.973743	0.04737	0.20209	0.123					
(CONSTANT)	1.79177								





ภาคผนวก ข.

รายละเอียดความสัมพันธ์ระหว่างอัตราค่าไฟฟ้ากับต้นทุนในการจำหน่ายกระแสไฟแต่ละประเภทและกำไรสุทธิจากการจำหน่ายกระแสไฟ

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

1SPSS BATCH SYSTEM

03/11/85

PAGE 1

SPSS VERSION H, RELEASE 8.1, AUGUST 15, 1980. CPU IS A PERKIN-ELMER 3230

ORDER FROM MCGRAW-HILL: SPSS, 2ND ED. (PRINCIPAL TEXT) ORDER FROM SPSS INC.:

SPSS STATISTICAL ALGORITHMS
SPSS POCKET GUIDE, RELEASE 8
KEYWORDS: THE SPSS INC. NEWSLETTER

-DEFAULT SPACE ALLOCATION..
WORKSPACE 220893 BYTES
TRANSPACE 31552 BYTES

ALLOWS FOR.. 315 TRANSFORMATIONS
1262 RECODE VALUES + LAG VARIABLES
5049 IF/COMPUTE OPERATIONS

1 RUN NAME XX2
2 VARIABLE LIST Y X1 TO X6
3 INPUT FORMAT FREEFIELD
4 INPUT MEDIUM DISK
5 SUBFILE LIST G1(6) G2(10)
6 LIST CASES CASES=16/VARIABLES=Y TO X6
7 REGRESSION VARIABLES=Y TO X6/
REGRESSION=Y WITH X1 TO X6(2)/
REGRESSION=Y WITH X1 TO X6(1)
9 STATISTICS ALL

***** REGRESSION PROBLEM REQUIRES 1232 BYTES WORKSPACE, NOT INCLUDING RESIDUALS *****

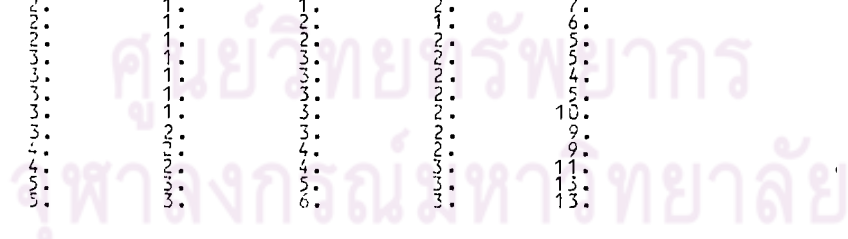
1XX2

03/11/85

PAGE 2

FILE NONAVE (CREATION DATE = 03/11/85)

FILE	NONAVE	(CREATION DATE = 03/11/85)							
SUBFILE	G1	C2	Y	X1	X2	X3	X4	X5	X6
0	CASE-N								
1			49.	29.	.	1.	1.	2.	13.
2			45.	29.	.	1.	1.	2.	8.
3			45.	29.	.	1.	1.	2.	10.
4			42.	28.	.	1.	1.	2.	8.
5			46.	28.	.	1.	1.	2.	7.
6			40.	27.	.	1.	1.	2.	6.
7			49.	27.	.	1.	1.	2.	5.
8			39.	49.	.	1.	1.	2.	5.
9			61.	48.	.	1.	1.	2.	4.
10			36.	50.	.	1.	1.	2.	5.
11			79.	60.	.	1.	1.	2.	10.
12			79.	60.	.	1.	1.	2.	9.
13			134.	61.	.	1.	1.	2.	9.
14			134.	133.	.	1.	1.	2.	11.
15			135.	150.	.	1.	1.	2.	13.
16			135.	174.	.	1.	1.	2.	13.



FILE NONAME (CREATION DATE = 03/11/85)
SUBFILE G1 G2

VARIABLE	MEAN	STANDARD DEV	CASES
Y	80.7675	51.2656	16
X1	62.7144	45.9363	16
X2	2.9031	1.2205	16
X3	1.3719	0.5525	16
X4	2.8251	1.4156	16
X5	2.1950	0.5723	16
X6	8.6431	3.0443	16

FILE NONAME (CREATION DATE = 03/11/85)
SUBFILE G1 G2

0CORRELATION COEFFICIENTS
0A VALUE OF .99.0000 IS PRINTED
IF A COEFFICIENT CANNOT BE COMPUTED.

	Y	X1	X2	X3	X4	X5	X6
Y	1.00000	0.99883	0.96941	0.96178	0.92823	0.88605	0.64929
X1	0.99883	1.00000	0.97006	0.96410	0.95160	0.87119	0.61509
X2	0.96941	0.97006	1.00000	0.99733	0.98011	0.81260	0.54375
X3	0.96178	0.96410	0.99733	1.00000	0.98155	0.77916	0.51461
X4	0.92823	0.95160	0.98011	0.98155	1.00000	0.73728	0.45615
X5	0.88605	0.87119	0.81260	0.77916	0.73728	1.00000	0.79180
X6	0.64929	0.61509	0.54375	0.51461	0.45615	0.79180	1.00000

FILE NONAME (CREATION DATE = 03/11/85)
SUBFILE G1 G2

0* * * * * M U L T I P L E R E G R E S S I O N * * * * * VARIABLE LIST 1
REGRESSION LIST 1

DEPENDENT VARIABLE.. Y
0VARIABLE(S) ENTERED ON STEP NUMBER 1..

X6
X1
X2
X3
X4
X5

ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
REGRESSION	6.	39417.59474	6569.59912	12120.3465
RESIDUAL	9.	4.87828	0.54203	

VARIABLES IN THE EQUATION				VARIABLES NOT IN THE EQUATION			
VARIABLE	B	BETA	STD ERROR B	VARIABLE	BETA IN	PARTIAL TOLERANCE	F
X6	0.9369543	0.05564	0.10906	X1			
X1	0.990071	0.00371	0.02350	X2			
X2	2.821931	0.06242	0.25505	X3			
X3	-0.3706580	-0.00726	0.65118	X4			
X4	0.3492425	0.00964	0.80856	X5			
X5	1.466274	0.01637	1.37669				
(CONSTANT)	-0.5000720						

ALL VARIABLES ARE IN THE EQUATION!
STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
1XX2

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FILE NONAME (CREATION DATE = 03/11/85)
SUBFILE G1 G2

0***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 1

DEPENDENT VARIABLE.. Y
0

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSC CHANGE	SIMPLE R	B	BETA
X6	0.64929	0.42158	C.42158	0.64929	0.9369543	0.05564
X1	0.99231	0.99962	C.57804	0.99887	0.9908073	0.88781
X2	0.00002	0.00002	C.00002	0.00002	2.621981	0.06242
X3	0.00002	0.00002	C.00002	0.00002	-0.5706480	0.00726
X4	0.00002	0.00002	C.00002	0.00002	0.3486457	0.00984
X5	0.99994	0.99988	C.00002	0.38603	1.4380274	0.01637
(CONSTANT)					-0.5020720	

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FILE NONAME (CREATION DATE = 03/11/85)
SUBFILE G1 G2

0***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 2

DEPENDENT VARIABLE.. Y
0 VARIABLE(S) ENTERED ON STEP NUMBER 1.. X1

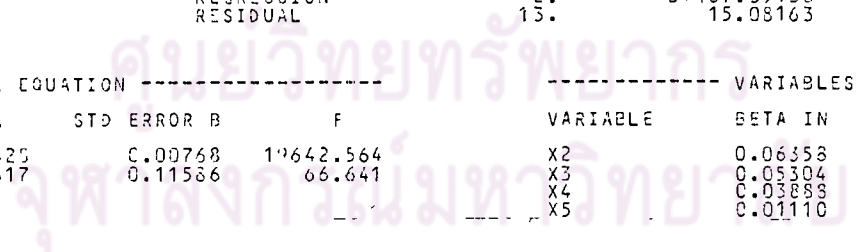
ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
MULTIPLE R	0.99231			
R SQUARE	0.99962	39330.07984	39330.07984	5959.5428
ADJUSTED R SQUARE	0.99747			
STANDARD ERROR	2.56395	92.39318	6.59951	

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X1	1.114706	0.99803	0.01444	5959.543	X2	0.00832	0.04176	0.05299	0.02
(CONSTANT)	10.85940				X3	-0.01685	-0.09244	0.07051	0.11
					X4	-0.01736	-0.12963	0.13212	0.22
					X5	0.06537	0.66817	0.24103	10.48
					X6	0.05617	0.91475	0.62166	66.64

(VARIABLE(S) ENTERED ON STEP NUMBER 2.. X6

ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
MULTIPLE R	0.99981			
R SQUARE	0.99962	39407.39138	19703.69569	16984.1055
ADJUSTED R SQUARE	0.99956			
STANDARD ERROR	1.07709	15.08163	1.16013	

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X1	1.076131	0.96425	0.00768	19642.564	X2	0.06358	0.75873	0.05448	16.28
X6	0.9458266	0.05617	0.11586	66.641	X3	0.05304	0.56768	0.06062	9.65
(CONSTANT)	5.102482				X4	0.03888	0.65976	0.11015	9.25
					X5	0.01110	0.20900	0.13566	0.54



1XX2

FILE NONAME (CREATION DATE = 03/11/85)
SUBFILE G1 G2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 2

DEPENDENT VARIABLE.. Y
OVARIABLE(S) ENTERED ON STEP NUMBER 3.. X2

		ANALYSIS OF VARIANCE		DF	SUM OF SQUARES	MEAN SQUARE	F
MULTIPLE R	0.99992	REGRESSION	3.	39416.07339	13138.69113	24636.4736	
R SQUARE	0.99984	RESIDUAL	12.	6.39963	0.53330		
ADJUSTED R SQUARE	0.99980						
STANDARD ERROR	0.73028						

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL TOLERANCE	F	
X1	1.003604	0.99923	0.01872	2874.582	X3	-0.07257	-0.37115	0.00425	
X6	1.036984	0.06158	0.03174	160.945	X4	0.00199	0.02910	0.00	
X2	2.670525	0.06353	0.66189	16.280	X5	0.01637	0.46967	0.13355	
(CONSTANT)	1.111234							3.11	

OVARIABLE(S) ENTERED ON STEP NUMBER 4.. X5

		ANALYSIS OF VARIANCE		DF	SUM OF SQUARES	MEAN SQUARE	F
MULTIPLE R	0.99994	REGRESSION	4.	39417.48507	9854.37127	21732.0049	
R SQUARE	0.99987	RESIDUAL	11.	4.98795	0.45345		
ADJUSTED R SQUARE	0.99983						
STANDARD ERROR	0.67339						

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL TOLERANCE	F	
X1	0.9886372	0.98536	0.01923	2642.492	X3	-0.01058	-0.04140	0.00194	
X6	0.9285763	0.05511	0.02742	20.753	X4	0.00982	0.14556	0.02781	
X2	2.310337	0.06630	0.61512	2.507					
X5	1.465331	0.01637	0.83136	3.115					
(CONSTANT)	-0.6213006								

1XX2

FILE NONAME (CREATION DATE = 03/11/85)
SUBFILE G1 G2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 2

DEPENDENT VARIABLE.. Y
OVARIABLE(S) ENTERED ON STEP NUMBER 5.. X4

		ANALYSIS OF VARIANCE		DF	SUM OF SQUARES	MEAN SQUARE	F
MULTIPLE R	0.99974	REGRESSION	5.	39417.59075	7883.51815	16147.2531	
R SQUARE	0.99982	RESIDUAL	10.	4.38227	0.43823		
ADJUSTED R SQUARE	0.99981						
STANDARD ERROR	0.69073						

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL TOLERANCE	F	
X1	0.9399442	0.98704	0.02015	2412.941	X3	-0.00726	-0.02859	0.00192	
X6	0.9555662	0.05556	0.10236	83.536					
X2	2.310325	0.05501	1.24077	3.469					
X5	1.553333	0.01774	0.83246	3.099					
X4	0.5554331	0.00931	0.76421	0.216					
(CONSTANT)	-0.5244897								

F-LEVEL OR TOLERANCE-LEVEL INSUFFICIENT FOR FURTHER COMPUTATION
STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
1XX2

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FILE NONAME (CREATION DATE = 03/11/85)
SUBFILE G1 G2

0***** MULTIPLE REGRESSION***** VARIABLE LIST 1
REGRESSION LIST 2

DEPENDENT VARIABLE.. Y

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RLC CHANGE	SIMPLE R	B	BETA
X1	0.99883	0.99766	0.99766	0.99883	0.9899442	0.88704
X6	0.99981	0.99962	0.00196	0.64929	0.9355662	0.05556
X2	0.99992	0.99984	0.00022	0.96941	2.310825	0.05501
X5	0.99994	0.99987	0.00004	0.88605	1.553380	0.01734
X4	0.99994	0.99988	0.00000	0.92823	0.3557482	0.00982
(CONSTANT)					-0.5247897	

1XX2

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OCPU TIME REQUIRED.. 2.13 SECONDS

- 11 RUN SUBFILES EACH
- 12 REGRESSION VARIABLES=Y TO X6/
- 13 REGRESSION=Y WITH X1 TO X6(2)/
- 14 REGRESSION=Y WITH X1 TO X6(1)
- 15 STATISTICS ALL

***** REGRESSION PROBLEM REQUIRES 1232 BYTES WORKSPACE, NOT INCLUDING RESIDUALS *****

1XX2

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FILE NONAME (CREATION DATE = 03/11/85)
SUBFILE G1

VARIABLE	MEAN	STANDARD DEV	CASES
Y	43.9500	3.1551	6
X1	28.5767	0.4355	6
X2	1.3500	0.0400	6
X3	0.7883	0.0496	6
X4	1.4733	0.1091	6
X5	2.0000	0.3233	6
X6	3.8000	2.4457	6

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1XX2

03/11/85 PAGE 13

FILE NONAME (CREATION DATE = 03/11/85)
SUBFILE G1

OCORRELATION COEFFICIENTS
0A VALUE OF 99.00000 IS PRINTED
IF A COEFFICIENT CANNOT BE COMPUTED.

	Y	X1	X2	X3	X4	X5	X6
Y	1.00000	C.93929	0.53786	-0.31935	-0.47898	0.90762	0.42178
X1	0.93929	1.00000	0.44316	-0.52009	-0.59103	0.93188	0.89709
X2	0.53786	0.44316	1.00000	C.29246	-0.36189	0.38357	0.49725
X3	-0.31935	-0.52009	0.29246	1.00000	0.72973	-0.62472	-0.29829
X4	-0.47898	-0.59103	-0.36189	0.72973	1.00000	-0.75293	-0.28186
X5	0.90762	0.93188	0.38357	-0.62472	-0.75293	1.00000	0.83667
X6	0.42178	0.89709	0.29725	-0.29829	-0.28186	0.83667	1.00000

1XX2

03/11/85 PAGE 14

FILE NONAME (CREATION DATE = 03/11/85)
SUBFILE G1

0* * * * * M U L T I P L E R E G R E S S I O N * * * * * VARIABLE LIST 1
REGRESSION LIST 1

DEPENDENT VARIABLE.. Y
OVARIABLE(S) ENTERED ON STEP NUMBER 1..

X6
X1
X2
X3
X4
X5

***** WARNING ***** X5 HAS TOLERANCE 0.00000. IT HAS BEEN DROPPED. THE SOLUTION IS NOT UNIQUE.

	1.00000	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
DMULTIPLE R	1.00000	REGRESSION	5.	49.77210	9.95442	99999.9999
R SQUARE	1.00000	RESIDUAL	0.	0.00000	0.00000	
ADJUSTED R SQUARE	0.00000					
STANDARD ERROR	0.00000					

----- VARIABLES IN THE EQUATION -----

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL TOLERANCE	F
X6	3.805719	2.95012	0.00000	99999.999	X5	999999.99999	99999.99999	0.00000 99999.99
X1	-29.74171	-4.10537	C.00000	99999.999				
X2	274.3279	3.42554	C.00000	99999.999				
X3	-267.7537	-4.20630	C.00000	99999.999				
X4	65.26962	2.25735	C.00000	99999.999				
(CONSTANT)	466.6573							

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จุฬาลงกรณ์มหาวิทยาลัย

F-LEVEL OR TOLERANCE-LEVEL INSUFFICIENT FOR FURTHER COMPUTATION
STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
1XX2

FILE NONAME (CREATION DATE = 03/11/85)
SUBFILE G1

***** MULTIPLE REGRESSION *****
DEPENDENT VARIABLE.. Y
0

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	PSG CHANGE	SIMPLE R	B	BETA
X6	0.92178	0.84968	C.84968	0.92178	3.805719	2.95012
X1	0.95622	0.91436	0.06469	0.93929	-29.74171	-4.10537
X2	0.97436	0.94937	0.03501	0.53786	274.9279	3.48554
X3	0.97822	0.95692	0.00754	-0.31935	-267.7537	-4.20630
X4	1.00000	1.00000	C.04303	-0.47898	65.26962	2.25735
(CONSTANT)					466.6573	

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FILE NONAME (CREATION DATE = 03/11/85)
SUBFILE G1

***** MULTIPLE REGRESSION *****
DEPENDENT VARIABLE.. Y
VARIABLE(S) ENTERED ON STEP NUMBER 1.. X1

	MULTIPLE R	R SQUARE	ADJUSTED R SQUARE	STANDARD ERROR	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
	0.93929	0.88237	0.85334	1.21032	REGRESSION	1.	43.91264	43.91264	29.9772
					RESIDUAL	4.	5.85946	1.46486	

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X1	6.804798	0.93929	1.24235	29.977	X2	0.15132	0.39535	0.80361	0.55
(CONSTANT)	-150.5234				X3	0.23189	0.57725	0.72951	1.49
					X4	0.11706	0.27521	0.65069	0.24
					X5	0.24549	0.25955	0.13160	0.21
					X6	0.40541	0.52208	0.19333	1.12

VARIABLE(S) ENTERED ON STEP NUMBER 2.. X3

	MULTIPLE R	R SQUARE	ADJUSTED R SQUARE	STANDARD ERROR	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
	0.95925	0.92150	0.86917	1.14119	REGRESSION	2.	45.86514	22.93257	17.6090
					RESIDUAL	3.	3.90696	1.30232	

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X1	7.678534	1.05990	1.37203	31.320	X2	0.00599	0.01424	0.44294	0.00
X3	14.79125	0.23189	12.05553	1.499	X4	-0.05359	-0.12191	0.40617	0.03
(CONSTANT)	-167.1337				X5	0.01868	0.71456	0.10471	2.08
					X6	0.25655	0.36215	0.15642	0.30

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FILE NONAME (CREATION DATE = 03/11/85)
SUBFILE G1

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 2
DEPENDENT VARIABLE Y
O VARIABLE(S) ENTERED ON STEP NUMBER 3.. X5

OMULTIPLE R	C.98060	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	0.96158	REGRESSION	3.	47.86004	15.95335	16.6871
ADJUSTED R SQUARE	0.95396	RESIDUAL	2.	1.91205	0.95603	
STANDARD ERROR	0.97777					

----- VARIABLES IN THE EQUATION -----					----- VARIABLES NOT IN THE EQUATION -----				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL TOLERANCE	F	
X1	3.949314	0.54514	2.83667	1.933	X2	-0.10086	-0.32438	0.39738	
X3	22.32207	0.55067	11.57955	3.716	X4	0.19965	0.52552	0.26617	
X5	6.033073	0.61808	4.17993	2.087	X6	0.13500	0.26320	0.14602	
(CONSTANT)	-98.63165							0.07	

O VARIABLE(S) ENTERED ON STEP NUMBER 4.. X4

OMULTIPLE R	0.98600	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	0.97219	REGRESSION	4.	48.38809	12.09702	8.7405
ADJUSTED R SQUARE	0.86097	RESIDUAL	1.	1.38401	1.38401	
STANDARD ERROR	1.17544					

----- VARIABLES IN THE EQUATION -----					----- VARIABLES NOT IN THE EQUATION -----				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL TOLERANCE	F	
X1	2.977171	0.41095	3.75845	0.627	X2	-1.19632	-1.00000	0.01943	
X3	17.72561	0.27940	15.74960	1.275	X6	-1.54169	-1.00000	0.01170	
X5	8.299978	0.34053	6.21266	1.781				99999.99	
X4	5.772630	0.19935	9.54562	0.382				99999.99	
(CONSTANT)	-30.29704								

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F-LEVEL OR TOLERANCE-LEVEL INSUFFICIENT FOR FURTHER COMPUTATION
STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
1XX2

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FILE NONAME (CREATION DATE = 03/11/85)
SUBFILE G1

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 2

DEPENDENT VARIABLE.. Y
0

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	R SQ CHANGE	SIMPLE R	B	BETA
X1	0.93929	0.88227	C.88227	0.93929	2.977171	0.41095
X3	0.95995	0.92150	C.03923	-0.31935	17.78561	0.27940
X5	0.98360	0.96158	C.04008	0.90762	8.290978	0.84953
X4	0.98600	0.97219	0.01061	-0.47898	5.772636	0.19965
(CONSTANT)					-80.29704	

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FILE NONAME (CREATION DATE = 03/11/85)
SUBFILE G2

VARIABLE	MEAN	STANDARD DEV	CASES
Y	102.8700	54.1043	10
X1	83.1970	47.6837	10
X2	3.5550	1.1396	10
X3	1.7220	0.5871	10
X4	3.0330	1.1790	10
X5	2.3090	0.6703	10
X6	3.5490	3.4781	10

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FILE NONAME (CREATION DATE = 03/11/85)
SUBFILE G2

0CORRELATION COEFFICIENTS
0A VALUE OF 99.00000 IS PRINTED
IF A COEFFICIENT CANNOT BE COMPUTED.

	Y	X1	X2	X3	X4	X5	X6
Y	1.00000	0.99935	0.96780	0.96671	0.93007	0.97484	0.90923
X1	0.99935	1.00000	0.96227	0.96121	0.92199	0.97552	0.89567
X2	0.96780	0.96227	1.00000	0.99732	0.97270	0.95535	0.88989
X3	0.96671	0.96121	0.99732	1.00000	0.96563	0.94560	0.89134
X4	0.93007	0.92199	0.97270	0.96563	1.00000	0.93223	0.86428
X5	0.97484	0.97552	0.95535	0.94560	0.93223	1.00000	0.84220
X6	0.90923	0.89567	0.88989	0.89134	0.86428	0.84220	1.00000

1XX2

FILE NONAME (CREATION DATE = 03/11/85)
SUBFILE G2

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***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 1

DEPENDENT VARIABLE.. Y
OVARIABLE(S) ENTERED ON STEP NUMBER 1..

X6
X1
X2
X3
X4
X5

OMULTIPLE R	1.00000	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	1.00000	REGRESSION	6.	26345.48563	4390.91427	3417873.6053
ADJUSTED R SQUARE	1.00000	RESIDUAL	3.	0.00385	0.00128	
STANDARD ERROR	0.03584					

----- VARIABLES IN THE EQUATION -----					----- VARIABLES NOT IN THE EQUATION -----				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL TOLERANCE	F	
X6	1.019221	0.06552	0.00902	12769.666					
X1	0.9936406	0.87572	0.00182	298150.292					
X2	0.6672393	0.01405	0.23246	8.239					
X3	1.641477	0.01731	0.40039	16.807					
X4	0.9200757	0.02005	0.34836	361.946					
X5	1.308659	0.01621	0.11998	118.970					
(CONSTANT)	-0.6095000E-01								

ALL VARIABLES ARE IN THE EQUATION
STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.

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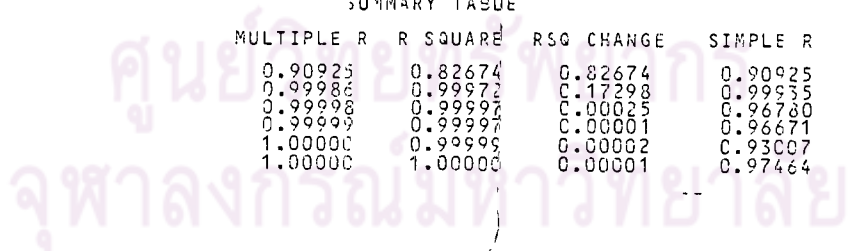
FILE NONAME (CREATION DATE = 03/11/85)
SUBFILE G2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 1

DEPENDENT VARIABLE.. Y
OVARIABLE(S) ENTERED ON STEP NUMBER 1..

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	R SQ CHANGE	SIMPLE R	B	BETA
X6	0.90925	0.82674	0.82674	0.90925	1.019221	0.06552
X1	0.99986	0.99971	0.17298	0.99955	0.9936406	0.87572
X2	0.99998	0.99997	0.00025	0.96780	0.6672393	0.01405
X3	0.99999	0.99999	0.00001	0.96671	1.641477	0.01781
X4	1.00000	0.99999	0.00002	0.93007	0.9200757	0.02005
X5	1.00000	1.00000	0.00001	0.97464	1.308659	0.01621
(CONSTANT)					-0.6095000E-01	



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FILE NONAME (CREATION DATE = 03/11/85)
SUBFILE G2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 2

DEPENDENT VARIABLE.. Y
O VARIABLE(S) ENTERED ON STEP NUMBER 1.. X1

		ANALYSIS OF VARIANCE			DF	SUM OF SQUARES	MEAN SQUARE	F
MULTIPLE R	0.99935	REGRESSION		1.	26311.40751	26311.40751	6176.0287	
R SQUARE	0.99871	RESIDUAL		8.	34.08198	4.26025		
ADJUSTED R SQUARE	0.99854							
STANDARD ERROR	2.06404							

----- VARIABLES IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
X1	1.153917	0.99905	0.01443	6176.029
(CONSTANT)	8.531524			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X2	0.08317	0.62925	0.07404	4.58
X3	0.08051	0.61743	0.07608	4.31
X4	0.05786	0.62288	0.14993	4.43
X5	-0.00516	-0.03154	0.04836	0.00
X6	0.07161	0.38545	0.19778	25.41

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 2

O VARIABLE(S) ENTERED ON STEP NUMBER 2.. X6

		ANALYSIS OF VARIANCE			DF	SUM OF SQUARES	MEAN SQUARE	F
MULTIPLE R	0.99986	REGRESSION		2.	26338.12826	13169.06413	12522.8360	
R SQUARE	0.99972	RESIDUAL		7.	7.36123	1.05160		
ADJUSTED R SQUARE	0.99964							
STANDARD ERROR	1.02548							

----- VARIABLES IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
X1	1.061141	0.93521	0.01612	4333.694
X6	1.113270	0.07161	0.22099	25.410
(CONSTANT)	5.062949			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X2	0.05925	0.93832	0.07007	44.18
X3	0.05490	0.87665	0.07124	19.91
X4	0.04156	0.93827	0.14244	44.14
X5	0.04636	0.57751	0.04334	2.99

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FILE NONAME (CREATION DATE = 03/11/85)
SUBFILE G2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 2

DEPENDENT VARIABLE.. Y
O VARIABLE(S) ENTERED ON STEP NUMBER 3.. X2

		ANALYSIS OF VARIANCE			DF	SUM OF SQUARES	MEAN SQUARE	F
MULTIPLE R	0.99998	REGRESSION		3.	26344.60940	8781.53647	59868.1352	
R SQUARE	0.99997	RESIDUAL		6.	0.38009	0.14668		
ADJUSTED R SQUARE	0.99995							
STANDARD ERROR	0.58279							

----- VARIABLES IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
X1	1.004979	0.88572	0.01037	9384.290
X6	0.9333843	0.06332	0.08484	134.351
X2	2.812977	0.05925	0.42312	44.105
(CONSTANT)	0.9078830			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X3	-0.03435	-0.38909	0.00429	0.89
X4	0.02307	0.90129	0.05100	21.64
X5	0.02051	0.68253	0.03693	4.35

OVARIABLE(S) ENTERED ON STEP NUMBER 4.. X4

MULTIPLE R	1.00000	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	0.99999	REGRESSION	4.	26345.32431	6586.33108	109379.3373
ADJUSTED R SQUARE	0.99999	RESIDUAL	5.	0.10517	0.03303	
STANDARD ERROR	0.10175					

----- VARIABLES IN THE EQUATION -----					----- VARIABLES NOT IN THE EQUATION -----				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X1	1.010335	0.89043	0.00506	39806.370	X3	-0.00917	-0.22655	0.00382	0.21
X6	0.9716496	0.06246	0.04034	580.127	X5	0.01274	0.91975	0.03266	21.96
X2	1.562030	0.03290	0.33562	21.661					
X4	1.058520	0.02307	0.22754	21.642					
(CONSTANT)	1.135017								

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FILE NONAME (CREATION DATE = 03/11/85)
SUBFILE G2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 2

DEPENDENT VARIABLE.. Y
OVARIABLE(S) ENTERED ON STEP NUMBER 5.. X5

MULTIPLE R	1.00000	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	1.00000	REGRESSION	5.	26345.46404	5269.09281	828266.0337
ADJUSTED R SQUARE	1.00000	RESIDUAL	4.	0.02545	0.00636	
STANDARD ERROR	0.07976					

----- VARIABLES IN THE EQUATION -----					----- VARIABLES NOT IN THE EQUATION -----				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X1	0.9969851	0.87867	0.00362	75862.503	X3	0.01781	99999.99999	0.00258	99999.99
X6	1.013599	0.06516	0.01984	2610.747					
X2	1.580809	0.03330	0.14734	115.118					
X4	0.3884570	0.01836	0.10624	69.934					
X5	1.023555	0.01274	0.21947	21.964					
(CONSTANT)	C.6771101E-C1								

OVARIABLE(S) ENTERED ON STEP NUMBER 6.. X5

MULTIPLE R	1.00000	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	1.00000	REGRESSION	6.	26345.48563	4390.91427	3417873.6051
ADJUSTED R SQUARE	1.00000	RESIDUAL	3.	0.00385	0.00128	
STANDARD ERROR	0.03534					

----- VARIABLES IN THE EQUATION -----					----- VARIABLES NOT IN THE EQUATION -----				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X1	0.9936406	0.87572	0.00182	298150.292					
X6	1.0192231	0.06552	0.00902	12769.666					
X2	0.6672593	0.01400	0.33246	3.239					
X4	0.9200757	0.02005	0.04836	361.946					
X5	1.303652	0.01621	0.11998	118.970					
X3	1.641477	0.01781	0.40039	16.307					
(CONSTANT)	-C.6095000E-C1								

MAXIMUM STEP REACHED
O STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
1XX2

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FILE NONAME (CREATION DATE = 03/11/85)
SUBFILE G2

O * * * * * M U L T I P L E R E G R E S S I O N * * * * * VARIABLE LIST 1
REGRESSION LIST 2

O DEPENDENT VARIABLE.. Y

SUMMARY TABLE

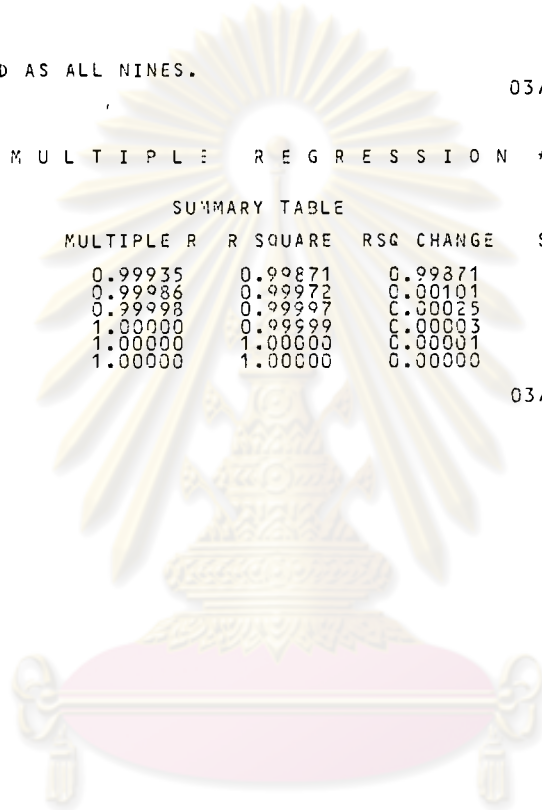
VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
X1	0.99935	0.99871	0.99871	0.99935	0.9936406	0.87572
X6	0.99986	0.99972	0.00101	0.90925	1.0192221	0.06552
X2	0.99998	0.99997	0.00025	0.99780	0.6672593	0.01405
X4	1.00000	0.99999	0.00003	0.93007	0.9200727	0.02005
X5	1.00000	1.00000	0.00001	0.97464	1.3086559	0.01621
X3	1.00000	1.00000	0.00000	0.96671	1.641477	0.01781
(CONSTANT)					-0.6095000E-01	

1XX2

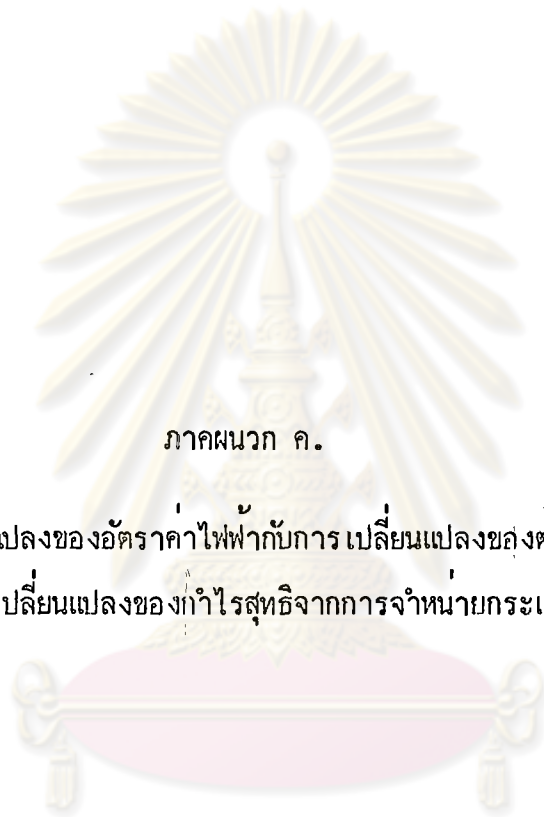
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O CPU TIME REQUIRED.. 3.32 SECONDS

O 16 FINISH
NORMAL END OF JOB.
16 CONTROL CARDS WERE PROCESSED.
0 ERRORS WERE DETECTED.



ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย



ภาคผนวก ค.

รายละเอียดความสัมพันธ์ระหว่างการเปลี่ยนแปลงของอัตราค่าไฟฟ้ากับการเปลี่ยนแปลงของต้นทุนในการจำหน่ายกระแสไฟแต่ละประเภท และการเปลี่ยนแปลงของกำไรสุทธิจากการจำหน่ายกระแสไฟในแต่ละปี

ศูนย์วิทยพัชกร
จุฬาลงกรณ์มหาวิทยาลัย

1SPSS BATCH SYSTEM

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SPSS VERSION H, RELEASE 8.1, AUGUST 15, 1980. CPU IS A PERKIN-ELMER 3230
 0 ORDER FROM MCGRAW-HILL: SPSS, 2ND ED. (PRINCIPAL TEXT) ORDER FROM SPSS INC.:
 SPSS PRIMER (BRIEF INTRO TO SPSS)
 SPSS UPDATE (USE W/SPSS, 2ND FOR REL. 7 & 8)
 -DEFAULT SPACE ALLOCATION..
 WORKSPACE 220888 BYTES
 TRANSSPACE 31552 BYTES

SPSS STATISTICAL ALGORITHMS
 SPSS POCKET GUIDE, RELEASE 8
 KEYWORDS: THE SPSS INC. NEWSLETTER

1 RUN NAME Q8
 2 VARIABLE LIST Y X1 TO X6
 3 INPUT FORMAT FREEFIELD
 4 SUBFILE LIST A1(6),A2(10)
 5 PRINT FORMAT ALL(2)
 6 LIST CASES CASES=16/VARIABLES=Y TO X6
 7 READ INPUT DATA

1Q8

04/19/85 PAGE 2

FILE NONAME (CREATION DATE = 04/19/85)

FILE	NONAME	(CREATION DATE = 04/19/85)						
SUBFILE	A1	A2	X1	X2	X3	X4	X5	X6
0	CASE-N	Y	X1	X2	X3	X4	X5	X6
1		-1.19	-0.75	-0.13	-0.05	-0.18	-0.39	0.31
2		-3.48	-0.47	-0.04	0.01	-0.09	-0.31	-5.23
3		-0.53	0.28	-0.03	0.65	0.06	-0.02	-1.78
4		-2.70	-0.56	-0.02	-0.66	-0.05	-0.07	-2.08
5		-0.53	-0.02	-0.07	-0.05	0.59	-0.13	-0.30
6		-1.44	0.46	0.15	0.15	0.20	-0.45	-0.95
7		9.15	8.76	0.09	0.09	0.68	-0.46	-1.34
8		9.84	9.25	0.36	0.26	0.34	-0.15	-0.10
9		1.97	2.35	-0.17	0.10	-0.17	-0.11	-0.94
10		2.76	1.80	-0.05	0.00	-0.02	-0.09	1.12
11		15.41	10.25	0.06	0.02	0.12	0.02	4.94
12		0.00	-0.26	0.67	0.33	0.51	0.05	-1.30
13		22.45	20.52	0.45	0.26	0.39	0.60	0.23
14		5.48	5.55	0.39	0.21	0.30	0.52	2.36
15		0.71	-16.89	0.96	0.43	0.72	0.29	1.56
16		-0.26	-2.79	0.20	0.08	1.28	0.18	0.31

1Q8

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8 REGRESSION VARIABLES=ALL/REGRESSION=Y WITH X1 TO X6/
 9 REGRESSION=Y WITH X1 TO X6(2)

***** REGRESSION PROBLEM REQUIRES 1232 BYTES WORKSPACE, NOT INCLUDING RESIDUALS *****

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FILE NONAME (CREATION DATE = 04/19/85)
SUBFILE A1 A2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 1

DEPENDENT VARIABLE.. Y
VARIABLE(S) ENTERED ON STEP NUMBER 1.. X1

	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
MULTIPLE R	0.99428	1.	4109.27740	4109.27740	1213.2554
R SQUARE	0.98859	14.	47.41778	3.38698	
ADJUSTED R SQUARE	0.98778				
STANDARD ERROR	1.84038				

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL TOLERANCE	F	
X1	1.035283	0.99428	0.03116	1213.255	X2	0.03795	0.32313	0.82693	
(CONSTANT)	-0.7475977E-02				X3	0.02539	0.23599	0.94769	
					X4	0.05034	0.46780	0.98492	
					X5	0.04542	0.32366	0.57916	
					X6	0.09379	0.80069	0.83141	

VARIABLE(S) ENTERED ON STEP NUMBER 2.. X6

	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
MULTIPLE R	0.99795	2.	4139.67731	2069.83866	1581.1561
R SQUARE	0.99591	13.	17.01787	1.30907	
ADJUSTED R SQUARE	0.99528				
STANDARD ERROR	1.14414				

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL TOLERANCE	F	
X1	1.043249	0.95577	0.02124	2411.618	X2	0.04818	0.68101	0.81811	
X6	0.7023754	0.09379	0.14575	23.223	X3	0.00391	0.05748	0.88697	
(CONSTANT)	0.3024949				X4	0.04449	0.68337	0.98003	
					X5	0.03930	0.46673	0.57739	

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FILE NONAME (CREATION DATE = 04/19/85)
SUBFILE A1 A2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 1

DEPENDENT VARIABLE.. Y
OVARIABLE(S) ENTERED ON STEP NUMBER 3.. X4

DMULTIPLE R	0.99892	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	0.99785	REGRESSION	3.	4147.74121	1382.58040	1352.9183
ADJUSTED R SQUARE	0.99731	RESIDUAL	12.	8.95396	0.74616	
STANDARD ERROR	0.86381					

----- VARIABLES IN THE EQUATION -----					----- VARIABLES NOT IN THE EQUATION -----				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X1	1.038815	0.95171	0.01610	4165.602	X2	0.02867	0.42612	0.47574	2.44
X6	0.6768125	0.09038	0.11031	37.642	X3	-0.51081	-0.20962	0.81000	0.50
X4	1.980153	0.04449	0.60234	10.807	X5	0.00519	0.06643	0.35308	0.04
(CONSTANT)	-C.2219021								

$$\Delta Y = -0.2219021 + 1.038815(\Delta X_1) + 0.6768125(\Delta X_6) + 1.980153(\Delta X_4)$$

OVARIABLE(S) ENTERED ON STEP NUMBER 4.. X2

DMULTIPLE R	0.99912	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	0.99824	REGRESSION	4.	4149.36706	1037.34176	1557.1198
ADJUSTED R SQUARE	0.99760	RESIDUAL	11.	7.32812	0.66619	
STANDARD ERROR	0.81621					

----- VARIABLES IN THE EQUATION -----					----- VARIABLES NOT IN THE EQUATION -----				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X1	1.026160	0.94011	0.01723	3546.480	X3	-0.02351	-0.46104	0.67805	2.69
X6	0.7086604	0.09463	0.10621	44.519	X5	-0.00024	-0.00340	0.34370	0.00
X4	1.225871	0.02754	0.74636	2.698					
X2	1.581610	0.02867	1.01242	2.441					
(CONSTANT)	-C.2523781								

FILE NONAME (CREATION DATE = 04/19/85)
SUBFILE A1 A2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 1

DEPENDENT VARIABLE.. Y
OVARIABLE(S) ENTERED ON STEP NUMBER 5.. X3

DMULTIPLE R	0.99931	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	0.99861	REGRESSION	5.	4150.92474	830.18495	1438.6853
ADJUSTED R SQUARE	0.99792	RESIDUAL	10.	5.77044	0.57704	
STANDARD ERROR	0.75963					

----- VARIABLES IN THE EQUATION -----					----- VARIABLES NOT IN THE EQUATION -----				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X1	1.023061	0.93728	0.01615	4014.146	X5	-0.00411	-0.06416	0.33913	0.03
X6	0.7662051	0.10231	0.10467	53.381					
X4	1.193410	0.02681	0.69491	2.949					
X2	2.264533	0.04105	1.02965	4.835					
X3	-1.398628	-0.02351	0.85127	2.699					
(CONSTANT)	-0.2077733								

 O V A R I A B L E (S) E N T E R E D O N S T E P N U M B E R 6 . . X 5

OMULTIPLE R	0.99931	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	0.99862	REGRESSION	6.	4150.94851	691.82475	1083.4838165
ADJUSTED R SQUARE	0.99770	RESIDUAL	9.	5.74667	0.63852	
STANDARD ERROR	0.79907					

----- VARIABLES IN THE EQUATION -----					----- VARIABLES NOT IN THE EQUATION -----				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X1	1.025389	0.93941	0.02083	2422.355					
X6	0.7679684	0.10255	0.11069	48.134					
X4	1.265212	0.02843	0.82026	2.379					
X2	2.306144	0.04181	1.10458	4.359					
X3	-1.418692	-0.02385	0.90149	2.477					
X5	-0.2196474	-0.00411	1.13835	0.037					
(CONSTANT)	-0.2443284								

MAXIMUM STEP REACHED
 OSTATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
 1Q8

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FILE NONAME (CREATION DATE = 04/19/85)
 SUBFILE A1 A2

O * * * * * M U L T I P L E R E G R E S S I O N * * * * * V A R I A B L E L I S T 1
 P E G R E S S I O N L I S T 1

DEPENDENT VARIABLE.. Y

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
X1	0.99428	0.98859	0.98859	0.99428	1.025389	0.93941
X6	0.99795	0.99591	0.00731	0.48523	0.7679684	0.10255
X4	0.99892	0.99725	0.00194	0.17167	1.265212	0.02843
X2	0.99912	0.99824	0.00039	0.44502	2.306144	0.04181
X3	0.99931	0.99861	0.00037	0.25194	-1.418692	-0.02385
X5	0.99931	0.99862	0.00001	0.67131	-0.2196474	-0.00411
(CONSTANT)					-0.2443284	

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FILE NONAME (CREATION DATE = 04/19/85)
 SUBFILE A1 A2

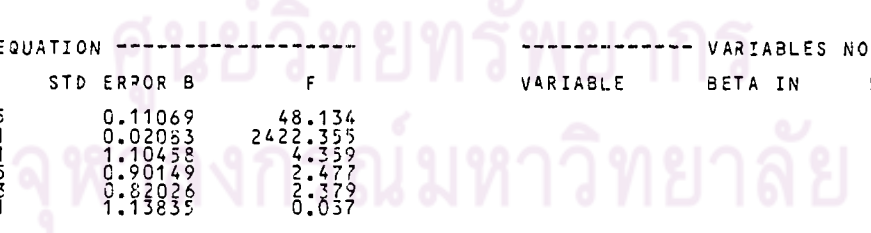
O * * * * * M U L T I P L E R E G R E S S I O N * * * * * V A R I A B L E L I S T 1
 R E G R E S S I O N L I S T 2

DEPENDENT VARIABLE.. Y

O V A R I A B L E (S) E N T E R E D C N S T E P N U M B E R 1 . .
 X6
 X1
 X2
 X3
 X4
 X5

OMULTIPLE R	0.99931	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	0.99862	REGRESSION	6.	4150.94851	691.82475	1083.4838
ADJUSTED R SQUARE	0.99770	RESIDUAL	9.	5.74667	0.63852	
STANDARD ERROR	0.79907					

----- VARIABLES IN THE EQUATION -----					----- VARIABLES NOT IN THE EQUATION -----				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X6	0.7679684	0.10255	0.11069	48.134					
X1	1.025389	0.93941	0.02083	2422.355					
X2	2.306144	0.04181	1.10458	4.359					
X3	-1.418692	-0.02385	0.90149	2.477					
X4	1.265212	0.02843	0.82026	2.379					
X5	-0.2196474	-0.00411	1.13835	0.037					
(CONSTANT)	-0.2443284								



ALL VARIABLES ARE IN THE EQUATION
STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
1Q8

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FILE NONAME (CREATION DATE = 04/19/85)
SUBFILE A1 A2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 2

DEPENDENT VARIABLE.. Y

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE..	SIMPLE R	B	BETA
X6	0.48623	0.23642	0.23642	0.48623	0.7679684	0.10255
X1	0.99795	0.99591	0.75949	0.99428	1.025389	0.93941
X2	0.99890	0.99780	0.00190	0.44502	2.306144	0.04181
X3	0.99910	0.99820	0.00040	0.25194	-1.418693	-0.02385
X4	0.99931	0.99861	0.00041	0.17167	-1.265212	0.02843
X5	0.99931	0.99862	0.00001	0.67131	-0.2196474	-0.00411
(CONSTANT)					-0.2443284	

1Q8

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OCPU TIME REQUIRED.. 1.33 SECONDS

10 RUN SUBFILES EACH
11 REGRESSION VARIABLES=ALL/REGRESSION=Y WITH X1 TO X6/
12 REGRESSION=Y WITH X1 TO X6(2)

***** REGRESSION PROBLEM REQUIRES 1232 BYTES WORKSPACE, NOT INCLUDING RESIDUALS *****

1Q8

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FILE NONAME (CREATION DATE = 04/19/85)
SUBFILE A1

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 1

DEPENDENT VARIABLE.. Y
VARIABLE(S) ENTERED ON STEP NUMBER 1.. X6

	MULTIPLE R	R SQUARE	ADJUSTED R SQUARE	STANDARD ERROR	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
	0.92614	0.85774	0.82218	0.50658	REGRESSION	1.	6.18924	6.18924	24.1176
					RESIDUAL	4.	1.02651	0.25663	

----- VARIABLES IN THE EQUATION -----

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
* X6	0.4622993	0.92614	0.09414	24.118	X1	0.16810	0.39107	0.76998	0.54
(CONSTANT)	-1.146487				X2	0.00530	0.01178	0.70360	0.00
					X3	0.12762	0.29836	0.77749	0.29
					X4	0.18292	0.46742	0.92696	0.83
					X5	-0.07206	-0.18348	0.92245	0.10

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*****
OVARIABLE(S) ENTERED ON STEP NUMBER 2.. X4
MULTIPLE R      0.94277
R SQUARE        0.88882
ADJUSTED R SQUARE 0.81470
STANDARD ERROR  0.51712
ANALYSIS OF VARIANCE
REGRESSION      2.
RESIDUAL        3.
SUM OF SQUARES  6.41352
MEAN SQUARE     3.20676
F               11.9918

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----- VARIABLES IN THE EQUATION -----
VARIABLE      B          BETA      STD ERROR B      F
X6            0.4379627    0.87739    0.09970          19.297
X4            1.397954        0.18292    1.74486          0.839
(CONSTANT)   -1.180720
----- VARIABLES NOT IN THE EQUATION -----
VARIABLE      BETA IN    PARTIAL    TOLERANCE      F
X1            0.09040    -0.20624    0.57862          0.08
X2           -0.55419    -0.77161    0.21552          2.94
X3            0.07764    0.19708    0.71631          0.08
X5           -0.06635    -0.19102    0.92154          0.07
04/19/85
PAGE 12

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FILE NONAME (CREATION DATE = 04/19/85)
SUBFILE A1
***** MULTIPLE REGRESSION *****
DEPENDENT VARIABLE.. Y
OVARIABLE(S) ENTERED ON STEP NUMBER 3.. X2
REGRESSION LIST 1

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MULTIPLE R      0.97725
R SQUARE        0.95501
ADJUSTED R SQUARE 0.88754
STANDARD ERROR  0.40287
ANALYSIS OF VARIANCE
REGRESSION      3.
RESIDUAL        2.
SUM OF SQUARES  6.89115
MEAN SQUARE     2.29705
F               14.1529

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----- VARIABLES IN THE EQUATION -----
VARIABLE      B          BETA      STD ERROR B      F
X6            0.2339119    0.46861    0.14206          2.711
X4            5.107191     0.58462    2.45611          4.324
X2           -9.301050    -0.55419    5.53844          2.943
(CONSTANT)   -1.655827
----- VARIABLES NOT IN THE EQUATION -----
VARIABLE      BETA IN    PARTIAL    TOLERANCE      F
X1            0.10793    0.38658    0.57712          0.17
X3            0.27693    0.98033    0.56373          24.66
X5           -0.07626    -0.34494    0.92031          0.13

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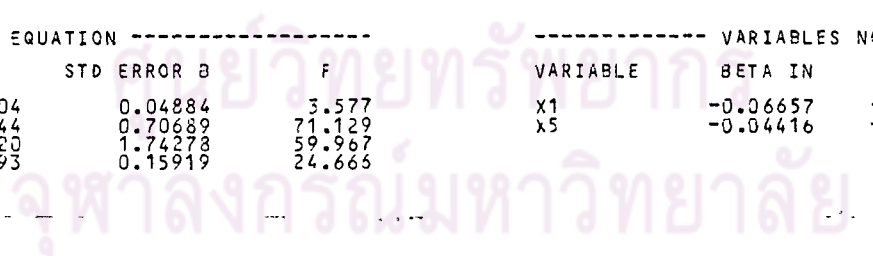
*****
OVARIABLE(S) ENTERED ON STEP NUMBER 4.. X3
MULTIPLE R      0.99912
R SQUARE        0.99825
ADJUSTED R SQUARE 0.99124
STANDARD ERROR  0.11246
ANALYSIS OF VARIANCE
REGRESSION      4.
RESIDUAL        1.
SUM OF SQUARES  7.20310
MEAN SQUARE     1.80078
F               142.3829

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----- VARIABLES IN THE EQUATION -----
VARIABLE      B          BETA      STD ERROR B      F
X6            0.9236819E-01  0.18504    0.04884          3.577
X4            5.961775     0.68244    0.70689          71.129
X2           -13.49577    -0.78720    1.74278          59.967
X3            0.7906253    0.27693    0.15919          24.666
(CONSTANT)   -1.919188
----- VARIABLES NOT IN THE EQUATION -----
VARIABLE      BETA IN    PARTIAL    TOLERANCE      F
X1           -0.06657    -1.00000    0.39548          99999.99
X5           -0.04416    -1.00000    0.89880          99999.99

```



F-LEVEL OR TOLERANCE-LEVEL INSUFFICIENT FOR FURTHER COMPUTATION
 STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
 108

FILE NONAME (CREATION DATE = 04/19/85)
 SUBFILE A1

0***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
 REGRESSION LIST 1

DEPENDENT VARIABLE.. Y

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
X6	0.92614	0.85774	0.35774	0.92614	0.9236819E-01	0.18504
X4	0.94277	0.88882	0.03108	0.41678	3.961775	0.68244
X2	0.97725	0.95501	0.06619	-0.50049	-13.49577	-0.78720
X3	0.99912	0.99825	0.04323	0.53609	0.7906253	0.27693
(CONSTANT)					-1.919188	

FILE NONAME (CREATION DATE = 04/19/85)
 SUBFILE A1

0***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
 REGRESSION LIST 2

DEPENDENT VARIABLE.. Y
 VARIABLE(S) ENTERED ON STEP NUMBER 1..

- X6
- X1
- X2
- X3
- X4
- X5

***** WARNING ***** X5 HAS TOLERANCE 0.0000. IT HAS BEEN DROPPED. THE SOLUTION IS NOT UNIQUE.

RESIDUAL SUM OF SQUARES IS NEGATIV
 TO CONTINUE ABSOLUTE VALUE IS TAKEN
 ANALYSIS OF VARIANCE, F, S AND BETA RESULTS ARE MEANINGLESS

MULTIPLE R	R SQUARE	ADJUSTED R SQUARE	STANDARD ERROR	ANALYSIS OF VARIANCE REGRESSION RESIDUAL	DF	SUM OF SQUARES	MEAN SQUARE	F
1.00000	1.00000	0.00000	0.00000		5.	7.21575	1.44315	99999.9999
					0.	0.00000	0.00000	

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL TOLERANCE	F	
X6	0.8701882E-01	0.17433	0.00000	99999.999	X5	999999.99999	99999.99999	0.00000 99999.99	
X1	-0.2097431	-0.06657	0.00000	99999.999					
X2	-13.94553	-0.81343	0.00000	99999.999					
X3	0.8985126	0.31472	0.00000	99999.999					
X4	6.307132	0.72197	0.00000	99999.999					
(CONSTANT)	-2.006992								

F-LEVEL OR TOLERANCE-LEVEL INSUFFICIENT FOR FURTHER COMPUTATION
 STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
 108

FILE NONAME (CREATION DATE = 04/19/85)
 SUBFILE A1

0***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
 REGRESSION LIST 2

DEPENDENT VARIABLE.. Y

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
X6	0.92614	0.85774	0.35774	0.92614	0.8701882E-01	0.17433
X1	0.93782	0.87950	0.02176	0.57361	-0.2097431	-0.06657
X2	0.94022	0.89402	0.00452	-0.50049	-13.94553	-0.81343
X3	0.94199	0.88735	0.00333	0.53609	0.8985126	0.31472
X4	1.00000	1.00000	0.11265	0.41678	6.307132	0.72197
(CONSTANT)					-2.006992	

FILE NONAME (CREATION DATE = 04/19/85)
SUBFILE A2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 169
REGRESSION LIST 1

DEPENDENT VARIABLE.. Y
O VARIABLE(S) ENTERED ON STEP NUMBER 1.. X1

OMULTIPLE R	0.99640	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	0.99281	REGRESSION	1.	3155.03822	3155.08822	1105.2702
ADJUSTED R SQUARE	0.99192	RESIDUAL	9.	22.83668	2.85459	
STANDARD ERROR	1.68955					

----- VARIABLES IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
X1	1.050235	0.99640	0.03159	1105.270
(CONSTANT)	1.205434			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X2	-0.00066	-0.00759	0.95520	0.00
X3	-0.00713	-0.08130	0.93347	0.04
X4	0.01027	0.11906	0.96546	0.10
X5	-0.01182	-0.11104	0.63397	0.08
X6	0.08299	0.90104	0.84702	30.20

O VARIABLE(S) ENTERED ON STEP NUMBER 2.. X6

OMULTIPLE R	0.99932	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	0.99865	REGRESSION	2.	3173.62878	1586.81439	2585.5138
ADJUSTED R SQUARE	0.99826	RESIDUAL	7.	4.29613	0.61373	
STANDARD ERROR	0.78341					

----- VARIABLES IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
X1	1.016021	0.96394	0.01592	4075.300
X6	0.8082042	0.08299	0.14704	30.209
(CONSTANT)	1.084133			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X2	0.03134	0.77793	0.83273	9.19
X3	0.02436	0.59749	0.81337	3.33
X4	0.03179	0.82234	0.90462	12.53
X5	0.03181	0.63087	0.53183	3.96

FILE NONAME (CREATION DATE = 04/19/85)
SUBFILE A2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 1

DEPENDENT VARIABLE.. Y
O VARIABLE(S) ENTERED ON STEP NUMBER 3.. X4

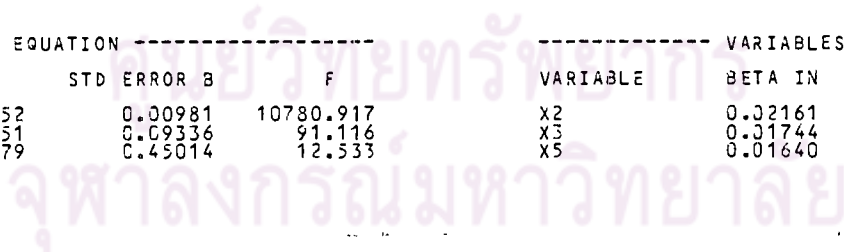
OMULTIPLE R	0.99978	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	0.99956	REGRESSION	3.	3176.53402	1058.84467	4567.6449
ADJUSTED R SQUARE	0.99934	RESIDUAL	6.	1.39088	0.23181	
STANDARD ERROR	0.48147					

----- VARIABLES IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
X1	1.018735	0.96652	0.00981	10780.917
X6	0.8911759	0.09151	0.09336	91.116
X4	1.593551	0.03179	0.45014	12.533
(CONSTANT)	0.2776399			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X2	0.02161	0.86533	0.70197	14.90
X3	0.01744	0.73085	0.76843	5.73
X5	0.01640	0.50970	0.42284	1.75



OVARIABLE(S) ENTERED ON STEP NUMBER 4.. X2

		ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
OMULTIPLE R	0.99995	REGRESSION	4.	3177.57550	794.39388	11367.9291
R SQUARE	0.99989	RESIDUAL	5.	0.34940	0.06988	
ADJUSTED R SQUARE	0.99980					
STANDARD ERROR	0.26435					

----- VARIABLES IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
X1	1.009826	0.95806	0.00586	29691.590
X6	0.9497415	0.09753	0.05346	315.647
X4	1.181755	0.02357	0.20918	19.274
X2	1.374078	0.02161	0.35593	14.904
(CONSTANT)	0.4017123E-01			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X3	-0.01559	-0.45591	0.09393	1.04
X5	0.01598	0.99074	0.42274	212.91

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FILE NONAME (CREATION DATE = 04/19/85)
SUBFILE A2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 1

DEPENDENT VARIABLE.. Y
OVARIABLE(S) ENTERED ON STEP NUMBER 5.. X5

		ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
OMULTIPLE R	1.00000	REGRESSION	5.	3177.91846	635.58369	394585.5203
R SQUARE	1.00000	RESIDUAL	4.	0.00644	0.00161	
ADJUSTED R SQUARE	1.00000					
STANDARD ERROR	0.04013					

----- VARIABLES IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
X1	0.9969546	0.94585	0.00125	633149.239
X6	0.9287844	0.10154	0.00355	13387.717
X4	0.9073568	0.01810	0.04499	406.801
X2	1.362052	0.02142	0.05404	635.161
X5	1.155043	0.01598	0.07916	212.917
(CONSTANT)	0.7348419E-01			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X3	0.00257	0.47339	0.06895	0.86

OVARIABLE(S) ENTERED ON STEP NUMBER 6.. X3

		ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
OMULTIPLE R	1.00000	REGRESSION	6.	3177.91091	529.65332	317845.2093
R SQUARE	1.00000	RESIDUAL	3.	0.00500	0.00167	
ADJUSTED R SQUARE	1.00000					
STANDARD ERROR	0.04082					

----- VARIABLES IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
X1	0.9963442	0.94527	0.00143	483314.831
X6	0.9914086	0.10181	0.00914	11771.320
X4	0.9159160	0.01827	0.04667	325.118
X2	1.201561	0.01889	0.18096	44.087
X5	1.200150	0.01680	0.09397	163.112
X3	0.3399918	0.00257	0.36525	0.866
(CONSTANT)	0.6322488E-01			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
----------	---------	---------	-----------	---

MAXIMUM STEP REACHED
STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
1Q8

04/19/85 PAGE 19

FILE NONAME (CREATION DATE = 04/19/85)
SUBFILE A2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 1

DEPENDENT VARIABLE.. Y

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
X1	0.99640	0.99281	0.99281	0.99640	0.9963442	0.94527
X6	0.99932	0.99865	0.00583	0.46001	0.9914086	0.10181
X4	0.99978	0.99956	0.00091	-0.17526	0.9159180	0.01827
X2	0.99995	0.99989	0.00033	0.21028	1.201561	0.01889
X5	1.00000	1.00000	0.00011	0.59533	1.200150	0.01660
X3	1.00000	1.00000	0.00000	0.25034	0.3389918	0.00257
(CONSTANT)					0.6382483E-01	

1Q8

04/19/85 PAGE 20

FILE NONAME (CREATION DATE = 04/19/85)
SUBFILE A2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 2

DEPENDENT VARIABLE.. Y
VARIABLE(S) ENTERED ON STEP NUMBER 1..

- X6
- X1
- X2
- X3
- X4
- X5

MULTIPLE R	R SQUARE	ADJUSTED R SQUARE	STANDARD ERROR	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
1.00000	1.00000	1.00000	0.04082	REGRESSION	6.	5177.91991	529.65332	317845.2093
				RESIDUAL	3.	0.00500	0.00167	

----- VARIABLES IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
X6	0.9914086	0.10181	0.00914	11771.320
X1	0.9963442	0.94527	0.00143	483314.831
X2	1.201561	0.01889	0.18096	44.087
X3	0.3389918	0.00257	0.36525	0.866
X4	0.9159180	0.01827	0.04667	385.118
X5	1.200150	0.01660	0.09397	163.112
(CONSTANT)	0.6382483E-01			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL TOLERANCE	F
----------	---------	-------------------	---

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ALL VARIABLES ARE IN THE EQUATION
STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
1Q8

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FILE NONAME (CREATION DATE = 04/19/85)
SUBFILE A2

0***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 2

DEPENDENT VARIABLE.. Y

0

SUMMARY TABLE

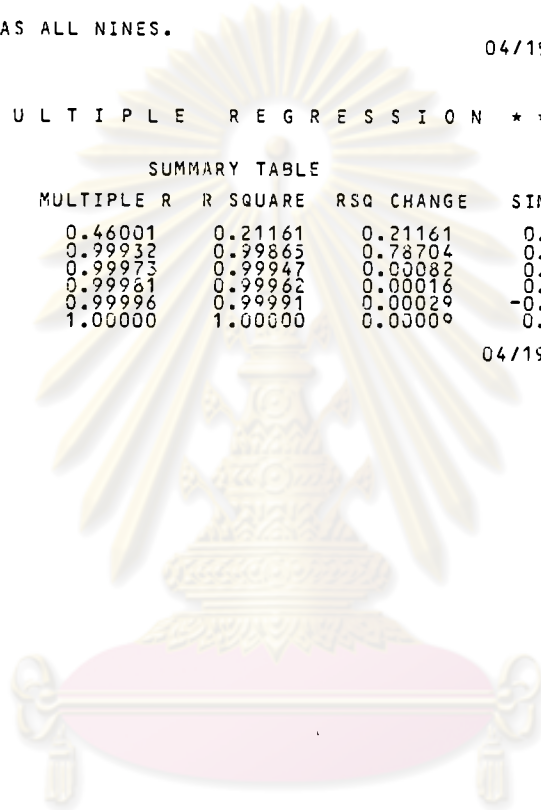
VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
X6	0.46001	0.21161	0.21161	0.46001	0.9914086	0.10191
X1	0.99932	0.99865	0.78704	0.99640	0.9963442	0.94527
X2	0.99973	0.99947	0.00082	0.21028	1.201561	0.01889
X3	0.99981	0.99962	0.00016	0.25034	0.3599918	0.00257
X4	0.99996	0.99991	0.00029	-0.17526	0.9159180	0.01827
X5	1.00000	1.00000	0.00000	0.59533	1.200150	0.01660
(CONSTANT)					0.638248E-01	

1Q8

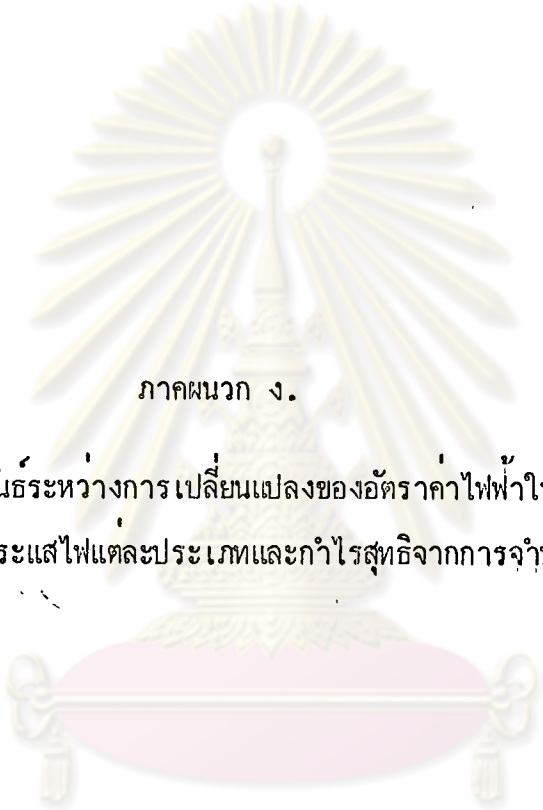
04/19/85 PAGE 22

OCPU TIME REQUIRED.. 2.25 SECONDS

0 13 FINISH
NORMAL END OF JOB.
13 CONTROL CARDS WERE PROCESSED.
0 ERRORS WERE DETECTED.



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จุฬาลงกรณ์มหาวิทยาลัย



ภาคผนวก ง.

รายละเอียดความสัมพันธ์ระหว่างการเปลี่ยนแปลงของอัตราค่าไฟฟ้าในแต่ละปี
กับต้นทุนในการจำหน่ายกระแสไฟแต่ละประเภทและกำไรสุทธิจากการจำหน่ายกระแสไฟ

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

1SPSS BATCH SYSTEM

04/19/85 PAGE 1

SPSS VERSION H, RELEASE 8.1, AUGUST 15, 1980. CPU IS A PERKIN-ELMER 3230
 0 CURRENT DOCUMENTATION FOR THE SPSS BATCH SYSTEM
 ORDER FROM MCGRAW-HILL: SPSS, 2ND ED. (PRINCIPAL TEXT) ORDER FROM SPSS INC.: SPSS STATISTICAL ALGORITHMS
 SPSS PRIMER (BRIEF INTRO TO SPSS) SPSS POCKET GUIDE, RELEASE 8
 SPSS UPDATE (USE W/SPSS, 2ND FOR REL. 7 & 8) KEYWORDS: THE SPSS INC. NEWSLETTER
 -DEFAULT SPACE ALLOCATION.. 315 TRANSFORMATIONS
 WORKSPACE 220888 BYTES 1262 RECODE VALUES + LAG VARIABLES
 TRANSSPACE 31552 BYTES 5049 IF/COMPUTE OPERATIONS

1 RUN NAME Q10
 2 VARIABLE LIST Y X1 TO X6
 3 INPUT FORMAT FREEFIELD
 4 SUBFILE LIST A1(6),A2(10)
 5 PRINT FCRMAT ALL(2)
 6 LIST CASES CASES=16/VARIABLES=Y TO X6
 7 READ INPUT DATA

1Q10

04/19/85 PAGE 2

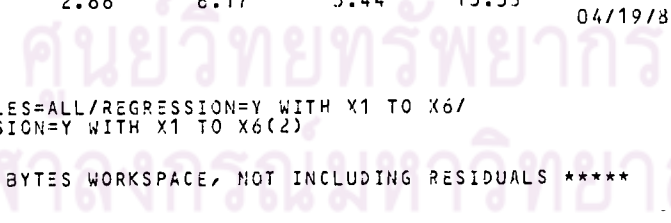
FILE	NONAME	(CREATION DATE = 04/19/85)							
0	SUBFILE	A1	A2	X1	X2	X3	X4	X5	X6
	CASE-N	Y							
1		-1.19		29.14	1.36	0.78	1.47	2.43	13.27
2		-0.48		28.87	1.90	0.79	1.38	2.12	13.04
3		-0.33		29.95	1.87	1.44	1.44	2.10	13.82
4		-0.70		28.39	1.85	0.78	1.39	2.03	7.74
5		-0.53		28.37	1.78	0.78	1.48	1.99	7.44
6		-1.44		27.94	1.84	0.88	1.68	1.91	8.49
7		9.15		36.70	2.53	0.88	2.36	1.91	9.15
8		9.84		45.95	2.50	1.23	2.70	1.76	5.05
9		1.97		48.30	2.76	1.33	2.27	1.87	4.11
10		2.76		50.10	2.71	1.33	2.85	1.78	3.23
11		15.41		60.35	2.77	1.35	2.97	1.80	10.17
12		0.00		60.09	3.44	1.68	3.48	1.85	6.67
13		20.43		80.61	3.89	1.94	4.07	1.85	9.10
14		20.43	1	19.46	5.58	1.91	4.17	1.99	11.46
15		20.71		36.35	5.24	2.58	4.89	1.26	13.02
16		-0.26		34.06	5.44	2.66	6.17	3.44	13.53

1Q10

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8 REGRESSION VARIABLES=ALL/REGRESSION=Y WITH X1 TO X6/
 9 REGRESSION=Y WITH X1 TO X6(2)

***** REGRESSION PROBLEM REQUIRES 1232 BYTES WORKSPACE, NOT INCLUDING RESIDUALS *****



FILE NONAME (CREATION DATE = 04/19/85)
SUBFILE A1 A2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 1

DEPENDENT VARIABLE.. Y
OVARIABLE(S) ENTERED ON STEP NUMBER 1.. X1

		ANALYSIS OF VARIANCE		DF	SUM OF SQUARES	MEAN SQUARE	F
DMULTIPLE R	0.60550	REGRESSION	1.	1523.96185	1523.96185	8.1039	
R SQUARE	0.36663	RESIDUAL	14.	2637.73332	188.05238		
ADJUSTED R SQUARE	0.32139						
STANDARD ERROR	13.71322						

VARIABLES IN THE EQUATION				VARIABLES NOT IN THE EQUATION					
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X1	0.2196556	0.60550	0.07716	8.104	X2	-1.37590	-0.42132	0.05939	2.80
(CONSTANT)	-5.374294				X3	-0.58353	-0.24245	0.10934	0.81
					X4	-0.83285	-0.38156	0.13294	2.91
					X5	-0.36798	-0.22644	0.23985	0.70
					X6	-0.14421	-0.14270	0.62017	0.27

OVARIABLE(S) ENTERED ON STEP NUMBER 2.. X2

		ANALYSIS OF VARIANCE		DF	SUM OF SQUARES	MEAN SQUARE	F
DMULTIPLE R	0.69214	REGRESSION	2.	1991.30970	995.65485	5.9774	
R SQUARE	0.47906	RESIDUAL	13.	2165.38547	166.56811		
ADJUSTED R SQUARE	0.39892						
STANDARD ERROR	12.90613						

VARIABLES IN THE EQUATION				VARIABLES NOT IN THE EQUATION					
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X1	0.7037390	1.93991	0.29798	5.578	X3	0.16883	0.05758	0.06059	0.04
X2	-18.76645	-1.37590	11.20361	2.806	X4	-0.14358	-0.03017	0.03306	0.01
(CONSTANT)	18.71784				X5	-0.90323	-0.39338	0.22154	2.49
					X6	-0.28662	-0.30011	0.57112	1.18

FILE NONAME (CREATION DATE = 04/19/85)
SUBFILE A1 A2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 1

DEPENDENT VARIABLE.. Y
OVARIABLE(S) ENTERED ON STEP NUMBER 3.. X5

		ANALYSIS OF VARIANCE		DF	SUM OF SQUARES	MEAN SQUARE	F
DMULTIPLE R	0.74811	REGRESSION	3.	2326.37759	775.45919	5.0842	
R SQUARE	0.55967	RESIDUAL	12.	1830.29759	152.52480		
ADJUSTED R SQUARE	0.44959						
STANDARD ERROR	12.35009						

VARIABLES IN THE EQUATION				VARIABLES NOT IN THE EQUATION					
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X1	1.012388	2.79073	0.35309	8.221	X3	0.16048	0.05953	0.06059	0.03
X2	-23.33542	-1.71088	11.15528	4.376	X4	-0.83971	-0.21361	0.02349	0.52
X5	-17.54727	-0.60323	11.83860	2.197	X6	-0.08228	-0.07269	0.34362	0.05
(CONSTANT)	31.12232								

 OVARIABLE(S) ENTERED ON STEP NUMBER 4.. X4 177

		ANALYSIS OF VARIANCE		DF	SUM OF SQUARES	MEAN SQUARE	F
OMULTIPLE R	0.76142	REGRESSION	4.	2409.91122	602.47781	3.7939	
R SQUARE	0.57977	RESIDUAL	11.	1746.78395	158.79854		
ADJUSTED R SQUARE	0.42693						
STANDARD ERROR	12.60153						

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL TOLERANCE	F	
X1	0.9745719	2.68649	0.36403	7.167	X3	0.09148	0.03447	0.05968	
X2	-9.595439	-0.68884	22.33961	0.177	X6	-0.12320	-0.11003	0.33518	
X5	-21.055300	-0.72335	13.01102	2.618					
X4	-9.874267	-0.93971	13.61600	0.526					
(CONSTANT)	48.59817								

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 FILE NONAME (CREATION DATE = 04/19/85)
 SUBFILE A1 A2
 ***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
 REGRESSION LIST 1

DEPENDENT VARIABLE Y
 OVARIABLE(S) ENTERED ON STEP NUMBER 5.. X6

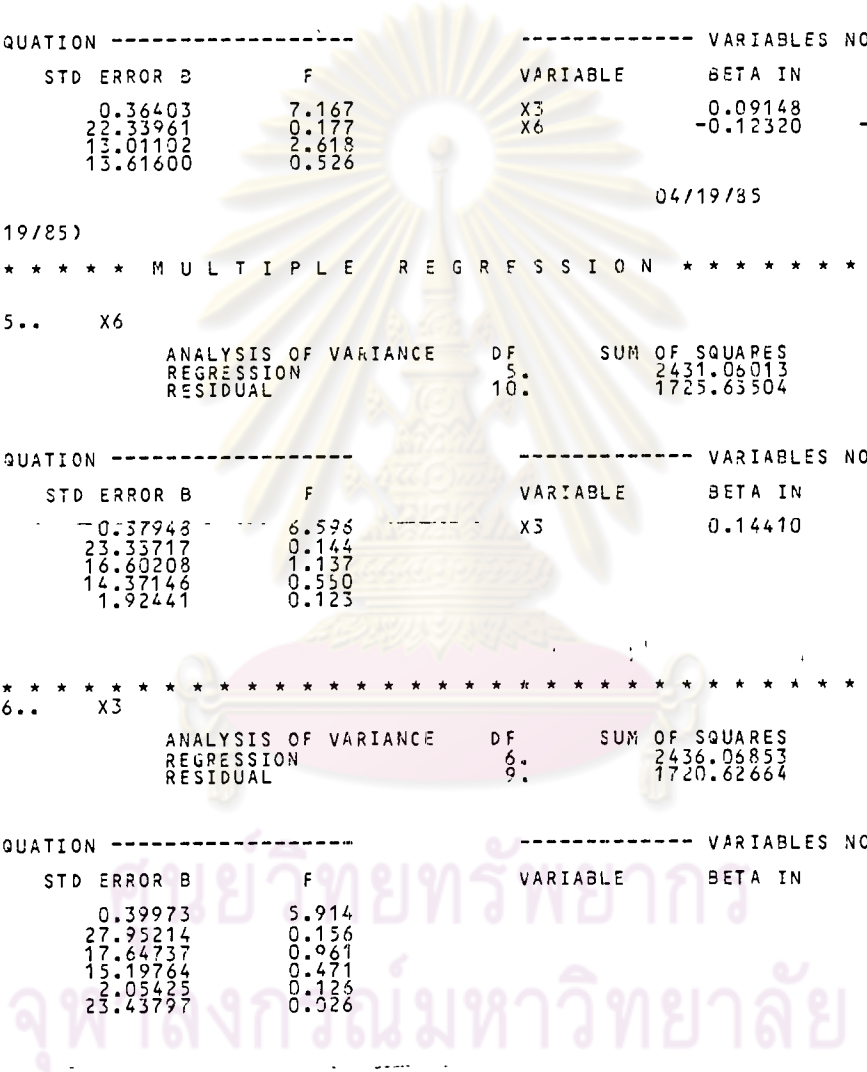
		ANALYSIS OF VARIANCE		DF	SUM OF SQUARES	MEAN SQUARE	F
OMULTIPLE R	0.76476	REGRESSION	5.	2431.06013	486.21203	2.8175	
R SQUARE	0.58485	RESIDUAL	10.	1725.63504	172.56350		
ADJUSTED R SQUARE	0.37728						
STANDARD ERROR	13.13634						

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL TOLERANCE	F	
X1	0.9746106	2.68659	0.37948	6.596	X3	0.14410	0.05387	0.05603	
X2	-8.863815	-0.64987	23.33717	0.144					
X5	-17.70119	-0.60852	16.60208	1.137					
X4	-10.66278	-0.98676	14.37146	0.550					
X6	-0.6737021	-0.12320	1.92441	0.123					
(CONSTANT)	47.74411								

 OVARIABLE(S) ENTERED ON STEP NUMBER 6.. X3

		ANALYSIS OF VARIANCE		DF	SUM OF SQUARES	MEAN SQUARE	F
OMULTIPLE R	0.76554	REGRESSION	6.	2436.05853	406.01142	2.1237	
R SQUARE	0.58606	RESIDUAL	9.	1720.62664	191.18074		
ADJUSTED R SQUARE	0.31010						
STANDARD ERROR	13.82681						

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL TOLERANCE	F	
X1	0.9720891	2.67964	0.39973	5.914					
X2	-11.02288	-0.80816	27.95214	0.156					
X5	-17.30261	-0.59482	17.64737	0.961					
X4	-10.42564	-0.86660	15.19764	0.471					
X6	-0.7390747	-0.13333	2.05425	0.126					
X3	3.793565	0.14410	23.43797	0.326					
(CONSTANT)	47.74154								



MAXIMUM STEP REACHED
 STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
 1Q10

FILE NONAME (CREATION DATE = 04/19/85)
 SUBFILE A1 A2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
 ***** REGRESSION LIST 1

DEPENDENT VARIABLE.. Y

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
X1	0.60550	0.36663	0.36663	0.60550	0.9720891	2.67964
X2	0.69214	0.47906	0.11243	0.50553	-11.02288	-0.80816
X3	0.74811	0.55987	0.08081	0.45365	-17.30261	-0.59482
X4	0.76142	0.57977	0.02009	0.45310	-10.42564	-0.88660
X5	0.76476	0.58485	0.00509	0.28374	-0.7290747	-0.13333
X3	0.76554	0.58606	0.00120	0.50763	3.793565	0.14410
(CONSTANT)					47.74154	

FILE NONAME (CREATION DATE = 04/19/85)
 SUBFILE A1 A2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
 ***** REGRESSION LIST 2

DEPENDENT VARIABLE.. Y

OVARIALE(S) ENTERED ON STEP NUMBER 1..

- X6
- X1
- X2
- X3
- X4
- X5

MULTIPLE R	R SQUARE	ADJUSTED R SQUARE	STANDARD ERROR	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
0.76554	0.58606	0.51010	13.82681	REGRESSION	6.	2436.06853	406.01142	2.1237
				RESIDUAL	9.	1720.82664	191.18074	

----- VARIABLES IN THE EQUATION -----

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL TOLERANCE	F
X6	-0.7290747	-0.13333	2.05425	0.126				
X1	0.9720891	2.67964	0.39973	5.914				
X2	-11.02288	-0.80816	27.95214	0.156				
X3	3.793565	0.14410	23.43797	0.026				
X4	-10.42564	-0.88660	13.19764	0.471				
X5	-17.30261	-0.59482	17.64737	0.961				
(CONSTANT)	47.74154							

ALL VARIABLES ARE IN THE EQUATION
 STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
 1Q10

FILE NONAME (CREATION DATE = 04/19/85)
 SUBFILE A1 A2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
 ***** REGRESSION LIST 2

DEPENDENT VARIABLE.. Y

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
X6	0.28374	0.08051	0.08051	0.28374	-0.7290747	-0.13333
X1	0.61606	0.37953	0.29902	0.60550	0.9720891	2.67964
X2	0.72524	0.52568	0.14646	0.50553	-11.02288	-0.80816
X3	0.72880	0.53115	0.00547	0.50763	3.793565	0.14410
X4	0.73610	0.54165	0.01070	0.45310	-10.42564	-0.88660
X5	0.76554	0.58606	0.04421	0.45365	-17.30261	-0.59482
(CONSTANT)					47.74154	

OCPU TIME REQUIRED.. 1.32 SECONDS

```

10 RUN SUBFILES      EACH
11 REGRESSION        VARIABLES=ALL/REGRESSION=Y WITH X1 TO X6/
12                   REGRESSION=Y WITH X1 TO X6(2)

```

***** REGRESSION PROBLEM REQUIRES 1232 BYTES WORKSPACE, NOT INCLUDING RESIDUALS *****

1Q10

04/19/85

PAGE 11

FILE NONAME (CREATION DATE = 04/19/85)

SUBFILE A1

```

0***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
                                REGRESSION LIST 1

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```

DEPENDENT VARIABLE.. Y
OVARIABLE(S) ENTERED ON STEP NUMBER 1.. X2

```

		ANALYSIS OF VARIANCE				
		DF	SUM OF SQUARES	MEAN SQUARE	F	
OMULTIPLE R	0.60351	1.	2.62814	2.62814	2.2915	
R SQUARE	0.36422	4.	4.58761	1.14690		
ADJUSTED R SQUARE	0.20528					
STANDARD ERROR	1.07094					

----- VARIABLES IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
X2	-13.12506	-0.60351	11.97343	2.292
(CONSTANT)	31.83637			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X1	0.70906	0.81027	0.83023	5.73
X3	0.66423	0.79436	0.90933	5.13
X4	0.22318	0.26092	0.86896	0.21
X5	0.16749	0.19020	0.85286	0.12
X6	0.47261	0.56593	0.91164	1.41

```

*****
OVARIABLE(S) ENTERED ON STEP NUMBER 2.. X1

```

		ANALYSIS OF VARIANCE				
		DF	SUM OF SQUARES	MEAN SQUARE	F	
OMULTIPLE R	0.88410	2.	5.64007	2.82004	5.3692	
R SQUARE	0.78163	3.	1.57567	0.52522		
ADJUSTED R SQUARE	0.63606					
STANDARD ERROR	0.72472					

----- VARIABLES IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
X2	-26.89941	-0.89567	8.89262	9.150
X1	1.197865	0.70906	0.50022	5.735
(CONSTANT)	13.68826			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X3	0.35987	0.49356	0.41076	0.64
X4	0.53286	0.99506	0.76147	200.99
X5	-0.37093	-0.59260	0.55736	1.08
X6	0.08103	0.12916	0.55489	0.03

1Q10

04/19/85

PAGE 12

FILE NONAME (CREATION DATE = 04/19/85)

SUBFILE A1

```

0***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
                                REGRESSION LIST 1

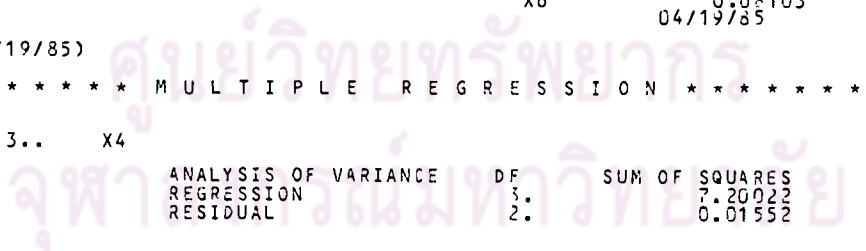
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DEPENDENT VARIABLE.. Y
OVARIABLE(S) ENTERED ON STEP NUMBER 3.. X4

```

		ANALYSIS OF VARIANCE				
		DF	SUM OF SQUARES	MEAN SQUARE	F	
OMULTIPLE R	0.99892	3.	7.20022	2.40007	309.2010	
R SQUARE	0.99785	2.	0.01552	0.00776		
ADJUSTED R SQUARE	0.99462					
STANDARD ERROR	0.08810					



VARIABLES IN THE EQUATION				
VARIABLE	B	BETA	STD ERROR B	F
X2	-23.47897	-0.78178	1.10765	449.315
X1	1.521778	0.90080	0.06496	548.784
X4	5.666462	0.53286	0.41379	200.994
(CONSTANT)	-10.59314			

VARIABLES NOT IN THE EQUATION				
VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X3	-0.08827	-0.39606	0.27393	126.22
X5	0.08286	0.99119	0.30786	55.9880
X6	0.06038	0.96909	0.35428	13.42

 DVARIABLE(S) ENTERED ON STEP NUMBER 4.. X3
 MULTIPLE R 0.99999 ANALYSIS OF VARIANCE DF SUM OF SQUARES MEAN SQUARE F
 R SQUARE 0.99998 REGRESSION 4. 7.21563 1.80391 14783.2999
 ADJUSTED R SQUARE 0.99992 RESIDUAL 1. 0.00012 0.00012
 STANDARD ERROR 0.01105

VARIABLES IN THE EQUATION				
VARIABLE	B	BETA	STD ERROR B	F
X2	-23.28698	-0.77538	0.13993	27697.112
X1	1.660087	0.98267	0.01476	12648.243
X4	6.278416	0.57028	0.06353	9766.265
X3	-0.3942182	-0.08827	0.03509	126.225
(CONSTANT)	-15.17591			

VARIABLES NOT IN THE EQUATION				
VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X5	0.03371	1.00000	0.01498	99999.99
X6	0.01665	1.00000	0.06097	99999.99

F-LEVEL OR TOLERANCE-LEVEL INSUFFICIENT FOR FURTHER COMPUTATION
 STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
 1Q10

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FILE NONAME (CREATION DATE = 04/19/85)
 SUBFILE A1
 ***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
 REGRESSION LIST 1

DEPENDENT VARIABLE.. Y

SUMMARY TABLE						
VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE P	B	BETA
X2	0.60351	0.36422	0.36422	-0.60351	-23.28698	-0.77538
X1	0.88410	0.78163	0.41741	0.34001	1.660087	0.98267
X4	0.99392	0.94785	0.21621	0.41240	6.278416	0.57028
X3	0.99999	0.99998	0.00213	0.42228	-0.3942182	-0.08827
(CONSTANT)					-15.17591	

1Q10 04/19/85 PAGE 14

FILE NONAME (CREATION DATE = 04/19/85)
 SUBFILE A1
 ***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
 REGRESSION LIST 1

DEPENDENT VARIABLE.. Y
 DVARIABLE(S) ENTERED ON STEP NUMBER 1.. X6
 X1
 X2
 X3
 X4
 X5

***** WARNING ***** X5 HAS TOLERANCE 0.00000. IT HAS BEEN DROPPED. THE SOLUTION IS NOT UNIQUE.

RESIDUAL SUM OF SQUARES IS NEGATIV
 TO CONTINUE ABSOLUTE VALUE IS TAKEN
 ANALYSIS OF VARIANCE, F, B AND BETA RESULTS ARE MEANINGLESS

ANALYSIS OF VARIANCE				
MULTIPLE R	R SQUARE	ADJUSTED R SQUARE	STANDARD ERROR	F
1.00000	1.00000	0.00000	0.00000	99999.9999

SUM OF SQUARES				
DF	SUM OF SQUARES	MEAN SQUARE	F	
5.	7.21575	1.44315		
0.	0.00000	0.00000		

----- VARIABLES IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
X6	0.8180375E-02	0.01665	0.00000	99999.999
X1	1.605339	0.95085	0.00000	99999.999
X2	-23.35220	-0.77756	0.00000	99999.999
X3	-0.2944090	-0.06592	0.00000	99999.999
X4	6.168922	0.56034	0.00000	99999.999
(CONSTANT)	-13.51085			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X5	999999.99999	99999.99999	0.00000	99999.9981

F-LEVEL OR TOLERANCE-LEVEL INSUFFICIENT FOR FURTHER COMPUTATION
 QSTATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
 1Q10

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FILE NONAME (CREATION DATE = 04/19/85)
 SUBFILE A1
 O***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
 REGRESSION LIST 2

DEPENDENT VARIABLE.. Y

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
X6	0.25146	0.06323	0.06323	0.25146	0.8180375E-02	0.01665
X1	0.34164	0.11671	0.05348	0.34001	1.605339	0.95085
X2	0.88616	0.78528	0.66856	-0.60331	-23.35220	-0.77756
X3	0.97971	0.95984	0.17456	0.42228	-0.2944090	-0.06592
X4	1.00000	1.00000	0.04016	0.41240	6.168922	0.56034
(CONSTANT)					-13.51085	

1Q10 04/19/85 PAGE 16

FILE NONAME (CREATION DATE = 04/19/85)
 SUBFILE A2
 O***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
 REGRESSION LIST 1

DEPENDENT VARIABLE.. Y
 QVARIABLE(S) ENTERED ON STEP NUMBER 1.. X1

		ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
MULTIPLE R	0.45258	REGRESSION	1.	650.92171	650.92171	2.0606
R SQUARE	0.20483	RESIDUAL	8.	2527.00319	315.87540	
ADJUSTED R SQUARE	0.10543					
STANDARD ERROR	17.77288					

----- VARIABLES IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
X1	0.1783502	0.45258	0.12424	2.061
(CONSTANT)	-0.3871988			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X2	-2.20272	-0.67216	0.07404	5.76
X3	-1.76592	-0.54622	0.07606	2.97
X4	-1.79515	-0.77949	0.14993	10.83
X5	-0.92524	-0.24298	0.04836	0.43
X6	-0.09706	-0.04841	0.19778	0.01

 QVARIABLE(S) ENTERED ON STEP NUMBER 2.. X4

		ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
MULTIPLE R	0.82945	REGRESSION	2.	2186.34791	1093.17396	7.7172
R SQUARE	0.68798	RESIDUAL	9.	991.57699	141.65386	
ADJUSTED R SQUARE	0.59883					
STANDARD ERROR	11.90184					

----- VARIABLES IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
X1	0.8305940	2.10770	0.21487	14.942
X4	-28.61150	-1.79515	8.69041	10.839
(CONSTANT)	49.29366			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X2	-0.38022	-0.10824	0.02529	0.07
X3	0.24057	0.07945	0.03403	0.03
X5	0.27298	0.09918	0.04119	0.06
X6	0.26544	0.20599	0.18791	0.26

FILE NONAME (CREATION DATE = 04/19/85)

SUBFILE A2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 182

REGRESSION LIST 1

DEPENDENT VARIABLE.. Y
OVARIABLE(S) ENTERED ON STEP NUMBER 3.. X6

		ANALYSIS OF VARIANCE		DF	SUM OF SQUARES	MEAN SQUARE	F
OMULTIPLE R	0.83739	REGRESSION	3.	2228.42168	742.80723	4.6938	
R SQUARE	0.70122	RESIDUAL	6.	949.50323	158.25054		
ADJUSTED R SQUARE	0.55183						
STANDARD ERRCR	12.57977						

----- VARIABLES IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
X1	0.7616557	1.93276	0.26354	8.352
X4	-29.69726	-1.86327	9.42369	9.931
X6	1.434091	0.26544	2.78127	0.266
(CONSTANT)	46.71362			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X2	-0.44751	-0.12968	0.02509	0.08
X3	0.16116	0.05391	0.03344	0.01
X5	0.66838	0.22108	0.03269	0.25

OVARIABLE(S) ENTERED ON STEP NUMBER 4.. X5

		ANALYSIS OF VARIANCE		DF	SUM OF SQUARES	MEAN SQUARE	F
OMULTIPLE R	0.84606	REGRESSION	4.	2274.82977	568.70744	3.1486	
R SQUARE	0.71562	RESIDUAL	5.	903.09513	180.61903		
ADJUSTED R SQUARE	0.48848						
STANDARD ERRCR	13.43946						

----- VARIABLES IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
X1	0.5209384	1.32192	0.55208	0.890
X4	-32.60962	-2.04600	11.59179	7.914
X6	2.201951	0.40756	3.33521	0.436
X5	18.73818	0.66838	36.96684	0.257
(CONSTANT)	27.49029			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X2	-0.42708	-0.12086	0.02507	0.06
X3	0.32053	0.10730	0.03185	0.04

FILE NONAME (CREATION DATE = 04/19/85)

SUBFILE A2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1

REGRESSION LIST 1

DEPENDENT VARIABLE.. Y
OVARIABLE(S) ENTERED ON STEP NUMBER 5.. X2

		ANALYSIS OF VARIANCE		DF	SUM OF SQUARES	MEAN SQUARE	F
OMULTIPLE R	0.84876	REGRESSION	5.	2289.36256	457.87251	2.0611	
R SQUARE	0.72040	RESIDUAL	4.	988.56235	222.14059		
ADJUSTED R SQUARE	0.37089						
STANDARD ERRCR	14.90438						

----- VARIABLES IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
X1	0.5944770	1.50853	0.67640	0.772
X4	-28.74008	-1.20322	19.35281	2.096
X6	2.264904	0.41922	3.70693	0.373
X5	18.45289	0.65820	41.01146	0.202
X2	-7.042044	-0.42708	27.53203	0.005
(CONSTANT)	32.32823			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X3	8.42880	0.81022	0.00258	5.73

 O V A R I A B L E (S) E N T E R E D O N S T E P N U M B E R 6 . . X 3

OMULTIPLE R	0.95076	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	0.90394	REGRESSION	6.	2872.66800	478.77800	4.705183
ADJUSTED R SQUARE	0.71183	RESIDUAL	3.	305.25691	101.75230	
STANDARD ERROR	10.08723					

----- VARIABLES IN THE EQUATION -----					----- VARIABLES NOT IN THE EQUATION -----				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL TOLERANCE	F	
X1	0.4476845E-01	0.11360	0.51213	0.008					
X4	-23.54319	-1.47715	13.61050	2.992					
X6	3.188908	0.59024	2.53835	1.578					
X5	64.49099	2.30035	33.76607	3.648					
X2	-157.1939	-9.53336	65.42234	5.773					
X3	269.7946	8.42880	112.68273	5.733					
(CONSTANT)	11.18139								

MAXIMUM STEP REACHED
 O STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
 1010

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FILE NONAME (CREATION DATE = 04/19/85)
 SUBFILE A2
 O ***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
 REGRESSION LIST 1

DEPENDENT VARIABLE.. Y

0

SUMMARY TABLE							
VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA	
X1	0.45258	0.20483	0.20483	0.45258	0.4476845E-01	0.11360	
X4	0.32945	0.68798	0.48315	0.14813	-23.54319	-1.47715	
X6	0.83739	0.70122	0.01324	0.38616	3.188908	0.59024	
X5	0.64606	0.71582	0.01460	0.33385	64.49099	2.30035	
X2	0.64876	0.72040	0.00457	0.27340	-157.1939	-9.53336	
X3	0.95076	0.90394	0.18355	0.30068	269.7946	8.42880	
(CONSTANT)					11.18139		

1010 04/19/85 PAGE 20 --

FILE NONAME (CREATION DATE = 04/19/85)
 SUBFILE A2
 O ***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
 REGRESSION LIST 2

DEPENDENT VARIABLE.. Y
 O V A R I A B L E (S) E N T E R E D O N S T E P N U M B E R 1 . . X 6
 X1
 X2
 X3
 X4
 X5

OMULTIPLE R	0.95076	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	0.90394	REGRESSION	6.	2872.66800	478.77800	4.7053
ADJUSTED R SQUARE	0.71183	RESIDUAL	3.	305.25691	101.75230	
STANDARD ERROR	10.08723					

----- VARIABLES IN THE EQUATION -----					----- VARIABLES NOT IN THE EQUATION -----				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL TOLERANCE	F	
X6	3.188908	0.59024	2.53835	1.578					
X1	0.4476845E-01	0.11360	0.51213	0.008					
X2	-157.1939	-9.53336	65.42234	5.773					
X3	269.7946	8.42880	112.68273	5.733					
X4	-23.54319	-1.47715	13.61050	2.992					
X5	64.49099	2.30035	33.76607	3.648					
(CONSTANT)	11.18139								

ALL VARIABLES ARE IN THE EQUATION
STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
1Q10

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FILE NONAME (CREATION DATE = 04/19/85)
SUBFILE A2

0***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 2

DEPENDENT VARIABLE.. Y
0

SUMMARY TABLE

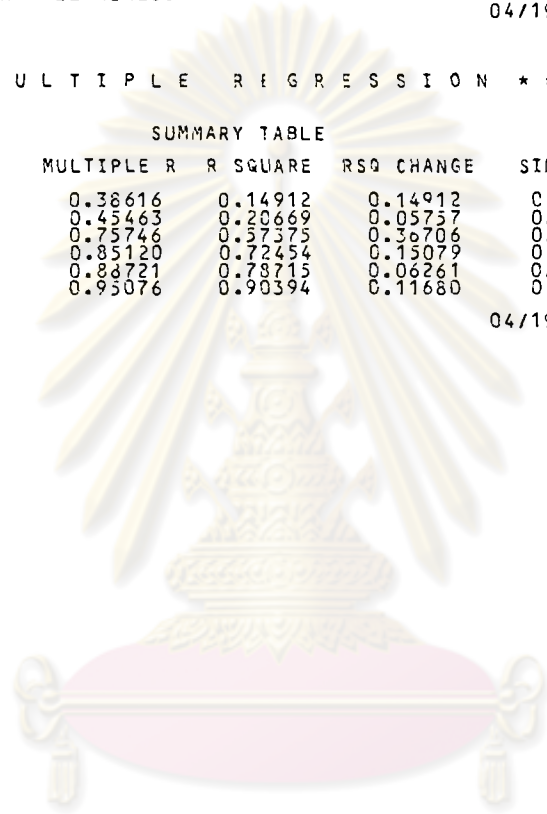
VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
X6	0.38616	0.14912	0.14912	0.38616	3.188908	0.59024
X1	0.45463	0.20669	0.05757	0.45258	0.4476845E-01	0.11360
X2	0.75746	0.57375	0.36706	0.27240	-157.1939	-9.53336
X3	0.85120	0.72454	0.15079	0.30068	269.7946	8.42880
X4	0.88721	0.78715	0.06261	0.14813	-23.54319	-1.47715
X5	0.95076	0.90394	0.11680	0.39385	64.49999	2.30035
(CONSTANT)					11.18130	

1Q10

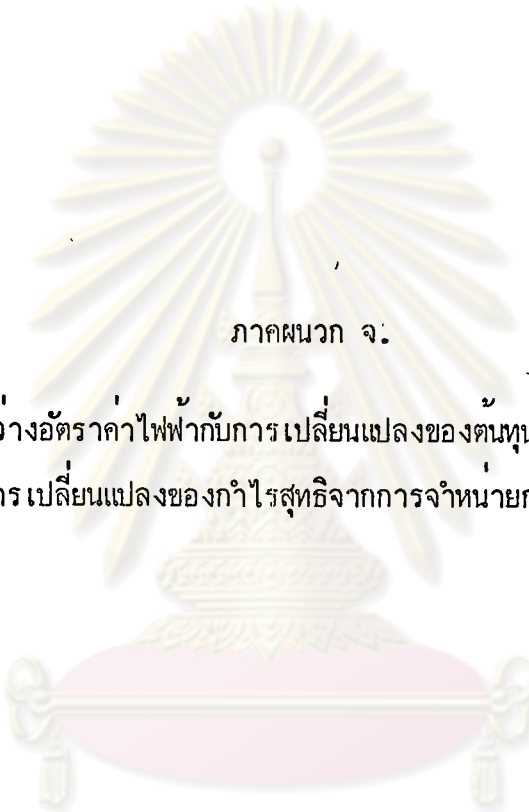
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OCPU TIME REQUIRED.. 2.26 SECONDS

0 13 FINISH
NORMAL END OF JOB.
13 CONTROL CARDS WERE PROCESSED.
0 ERRORS WERE DETECTED.



ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย



ภาคผนวก จ.

รายละเอียดความสัมพันธ์ระหว่างอัตราค่าไฟฟ้ากับการเปลี่ยนแปลงของต้นทุนในการจำหน่ายกระแสไฟแต่ละประเภท
และการเปลี่ยนแปลงของกำไรสุทธิจากการจำหน่ายกระแสไฟในแต่ละปี

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

1SPSS BATCH SYSTEM

04/19/85 PAGE 1

SPSS VERSION H, RELEASE 8.1, AUGUST 15, 1980. CPU IS A PERKIN-ELMER 3230
 0 CURRENT DOCUMENTATION FOR THE SPSS BATCH SYSTEM
 ORDER FROM MCGRAW-HILL: SPSS, 2ND ED. (PRINCIPAL TEXT) ORDER FROM SPSS INC.:
 SPSS PRIMER (BRIEF INTRO TO SPSS)
 SPSS UPDATE (USE W/SPSS, 2ND FOR REL. 7 & 8)
 -DEFAULT SPACE ALLOCATION.. 315 TRANSFORMATIONS
 WORKSPACE 220838 BYTES 1262 RECODE VALUES + LAG VARIABLES
 TRANSSPACE 51552 BYTES 5049 IF/COMPUTE OPERATIONS

SPSS STATISTICAL ALGORITHMS
 SPSS POCKET GUIDE, RELEASE 8
 KEYWORDS: THE SPSS INC. NEWSLETTER

- 1 RUN NAME Q9
- 2 VARIABLE LIST Y X1 TO X6
- 3 INPUT FORMAT FREEFIELD
- 4 SUBFILE LIST A1(6), A2(10)
- 5 PRINT FORMAT ALL(2)
- 6 LIST CASES CASES=16/VARIABLES=Y TO X6
- 7 READ INPUT DATA

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FILE NONAME (CREATION DATE = 04/19/85)

0	SUBFILE	NONAME	(CREATION DATE = 04/19/85)							
	A1	A2		Y	X1	X2	X3	X4	X5	X6
1				48.95	-0.75	-0.13	-0.05	-0.18	-0.39	0.31
2				45.47	-0.47	-0.04	0.01	-0.09	-0.31	-5.23
3				44.94	-0.28	-0.03	0.65	-0.06	-0.02	-1.78
4				42.24	-0.56	-0.02	-0.66	-0.05	-0.07	-2.08
5				41.71	-0.02	-0.07	-0.05	0.09	-0.13	-0.30
6				40.27	-0.43	0.06	0.15	0.20	-0.45	-0.27
7				49.42	8.76	0.39	0.09	0.68	-0.46	-1.34
8				59.26	9.25	0.36	0.26	0.34	-0.15	-0.10
9				61.25	2.35	0.17	0.10	0.17	0.11	-0.94
10				63.99	1.80	-0.05	0.00	-0.02	-0.09	1.12
11				79.40	10.25	0.06	0.02	0.12	0.02	4.94
12				79.40	-0.26	0.67	0.33	0.51	0.05	-1.30
13				101.85	20.55	0.45	0.26	0.39	0.60	0.33
14				164.33	58.85	0.39	0.21	0.30	0.52	2.36
15				135.04	16.69	0.96	0.43	0.72	0.29	1.56
16				184.78	-2.29	0.20	0.08	1.28	0.18	0.31

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8 REGRESSION VARIABLES=ALL/REGRESSION=Y WITH X1 TO X6/
 9 REGRESSION=Y WITH X1 TO X6(2)

***** REGRESSION PROBLEM REQUIRES 1232 BYTES WORKSPACE, NOT INCLUDING RESIDUALS *****

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FILE NONAME (CREATION DATE = 04/19/85)
SUBFILE A1 A2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 1

DEPENDENT VARIABLE.. Y
OVARIABLE(S) ENTERED ON STEP NUMBER 1.. X4

		ANALYSIS OF VARIANCE			DF	SUM OF SQUARES	MEAN SQUARE	F
OMULTIPLE R	0.71653	REGRESSION		1.	20240.30525	20240.30525	14.7722	
R SQUARE	0.51342	RESIDUAL		14.	19182.16776	1370.15484		
ADJUSTED R SQUARE	0.47866							
STANDARD ERROR	37.01560							

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL TOLERANCE	F	
X4	98.20963	0.71653	25.55232	14.772	X1	0.46302	0.65676	0.98492	
(CONSTANT)	53.02328				X2	0.28692	0.32150	0.61091	
					X3	0.07904	0.10735	0.89761	
					X5	0.29199	0.34918	0.69588	
					X6	0.31839	0.45345	0.98896	

OVARIABLE(S) ENTERED ON STEP NUMBER 2.. X1

		ANALYSIS OF VARIANCE			DF	SUM OF SQUARES	MEAN SQUARE	F
OMULTIPLE R	0.85122	REGRESSION		2.	28504.59179	14282.29590	17.1000	
R SQUARE	0.72458	RESIDUAL		13.	10857.89122	835.22163		
ADJUSTED R SQUARE	0.63220							
STANDARD ERROR	28.90020							

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL TOLERANCE	F	
X4	90.41713	0.65968	20.10228	20.231	X2	0.03669	0.04913	0.49394	
X1	1.556441	0.46302	0.49301	9.967	X3	-0.01940	-0.03441	0.86118	
(CONSTANT)	43.14570				X5	-0.18638	-0.21105	0.35316	
					X6	0.15786	0.27363	0.82728	

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FILE NONAME (CREATION DATE = 04/19/85)
SUBFILE A1 A2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 1

DEPENDENT VARIABLE.. Y
OVARIABLE(S) ENTERED ON STEP NUMBER 3.. X6

		ANALYSIS OF VARIANCE			DF	SUM OF SQUARES	MEAN SQUARE	F
OMULTIPLE R	0.86325	REGRESSION		3.	29377.54018	9792.51339	11.6984	
R SQUARE	0.74520	RESIDUAL		12.	10044.95283	837.07774		
ADJUSTED R SQUARE	0.68150							
STANDARD ERROR	28.93250							

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL TOLERANCE	F	
X4	89.01567	0.64945	20.17479	19.468	X2	0.37881	0.10769	0.47574	
X1	1.342749	0.39945	0.53910	6.204	X3	-0.36080	-0.10341	0.81000	
X6	3.641214	0.15788	3.69486	0.971	X5	-0.19000	-0.22366	0.55308	
(CONSTANT)	45.11580								

 QVARIABLE(S) ENTERED ON STEP NUMBER 4.. X5
 MULTIPLE R 0.87060 ANALYSIS OF VARIANCE DF SUM OF SQUARES MEAN SQUARE F
 R SQUARE 0.75794 REGRESSION 4. 29880.02930 7470.00732 8.6110
 ADJUSTED R SQUARE 0.66992 RESIDUAL 11. 9542.44372 867.49488
 STANDARD ERROR 29.45327

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X4	101.4743	0.74035	26.26364	14.928	X2	0.10836	-0.14990	0.46310	0.23
X1	1.717014	0.51079	0.73689	5.429	X3	-0.06571	-0.12011	0.80881	0.14
X6	3.683565	0.15972	3.76180	0.959					
X5	-31.29643	-0.19000	41.12112	0.579					
(CONSTANT)	39.90346								

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FILE NONAME (CREATION DATE = 04/19/85)
 SUBFILE A1 A2
 ***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
 REGRESSION LIST 1

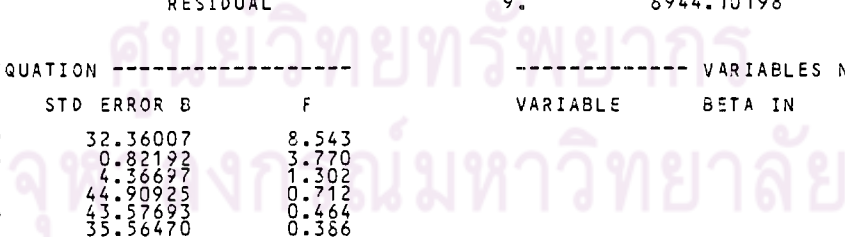
DEPENDENT VARIABLE Y
 QVARIABLE(S) ENTERED ON STEP NUMBER 5.. X2

MULTIPLE R 0.87372 ANALYSIS OF VARIANCE DF SUM OF SQUARES MEAN SQUARE F
 R SQUARE 0.76338 REGRESSION 5. 30094.45860 6018.89172 6.4524
 ADJUSTED R SQUARE 0.64507 RESIDUAL 10. 9328.01441 932.80144
 STANDARD ERROR 30.54180

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X4	94.05921	0.68611	31.33983	9.004	X3	-0.12065	-0.20287	0.66902	0.38
X1	1.610107	0.47899	0.79599	4.092					
X6	4.053841	0.17599	3.97858	1.041					
X5	-34.67439	-0.21051	43.21900	0.644					
X2	18.40986	0.10838	38.39751	0.250					
(CONSTANT)	38.93614								

 QVARIABLE(S) ENTERED ON STEP NUMBER 6.. X3
 MULTIPLE R 0.87927 ANALYSIS OF VARIANCE DF SUM OF SQUARES MEAN SQUARE F
 R SQUARE 0.77312 REGRESSION 6. 30478.37104 5079.72651 5.1114
 ADJUSTED R SQUARE 0.62187 RESIDUAL 9. 8944.10198 993.78911
 STANDARD ERROR 31.52442

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X4	94.53549	0.69009	32.36007	8.543					
X1	1.595895	0.47476	0.82192	3.770					
X6	4.982065	0.21602	4.36697	1.302					
X5	-37.89406	-0.23005	44.90925	0.712					
X2	29.66958	0.17466	43.57693	0.464					
X3	-22.10488	-0.12065	35.56470	0.386					
(CONSTANT)	39.14588								



MAXIMUM STEP REACHED
STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
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FILE NONAME (CREATION DATE = 04/19/85)

SUBFILE A1 A2
***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 1

DEPENDENT VARIABLE.. Y

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
X4	0.71653	0.51342	0.51342	0.71653	94.58549	0.69009
X1	0.85122	0.72458	0.21116	0.54402	1.595895	0.47476
X6	0.86325	0.74520	0.02062	0.32607	4.982063	0.21602
X5	0.87090	0.75794	0.01275	0.59833	-37.89406	-0.23005
X2	0.87372	0.76338	0.00544	0.62224	29.66958	0.17466
X3	0.87927	0.77312	0.00974	0.30022	-22.10488	-0.12065
(CONSTANT)					39.14588	

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FILE NONAME (CREATION DATE = 04/19/85)

SUBFILE A1 A2
***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 2

DEPENDENT VARIABLE.. Y

VARIABLE(S) ENTERED ON STEP NUMBER 1..

- X6
- X1
- X2
- X3
- X4
- X5

STATISTIC	VALUE	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
MULTIPLE R	0.87927	REGRESSION	6.	30478.37104	5079.72851	5.1114
R SQUARE	0.77312	RESIDUAL	9.	8944.10198	993.78911	
ADJUSTED R SQUARE	0.62187					
STANDARD ERROR	31.52442					

----- VARIABLES IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
X6	4.982063	0.21602	4.36697	1.302
X1	1.595895	0.47476	0.82192	3.770
X2	29.66958	0.17466	43.57693	0.464
X5	-22.10488	-0.12065	35.56470	0.386
X4	-37.89406	-0.69009	32.48007	8.543
X3	-37.89406	-0.23005	44.90925	0.712
(CONSTANT)	39.14588			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL TOLERANCE	F
X6			
X1			
X2			
X5			
X4			
X3			
(CONSTANT)			

ALL VARIABLES ARE IN THE EQUATION
STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
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FILE NONAME (CREATION DATE = 04/19/85)

SUBFILE A1 A2
***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 2

DEPENDENT VARIABLE.. Y

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
X6	0.39607	0.15687	0.15687	0.39607	4.982063	0.21602
X1	0.57605	0.33183	0.17496	0.54402	1.595895	0.47476
X2	0.73554	0.54102	0.20919	0.62224	29.66958	0.17466
X3	0.74187	0.55037	0.00935	0.30022	-22.10488	-0.12065
X4	0.84901	0.75517	0.20480	0.71653	94.58549	0.69009
X5	0.87927	0.77312	0.01795	0.59833	-37.89406	-0.23005
(CONSTANT)					39.14588	

10 RUN SUBFILES EACH
 11 REGRESSION VARIABLES=ALL/REGRESSION=Y WITH X1 TO X6/
 12 REGRESSION=Y WITH X1 TO X6(?)

***** REGRESSION PROBLEM REQUIRES 1232 BYTES WORKSPACE, NOT INCLUDING RESIDUALS *****

FILE NONAME (CREATION DATE = 04/19/85)
 SUBFILE A1

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
 REGRESSION LIST 1

DEPENDENT VARIABLE.. Y
 O VARIABLE(S) ENTERED ON STEP NUMBER 1.. X4

		ANALYSIS OF VARIANCE		DF	SUM OF SQUARES	MEAN SQUARE	F
MULTIPLE R	0.84307	REGRESSION		1.	35.37672	35.37672	9.8300
R SQUARE	0.71077	RESIDUAL		4.	14.39538	3.59884	
ADJUSTED R SQUARE	0.63847						
STANDARD ERROR	1.89706						

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X4	-19.34319	-0.84307	6.16951	9.830	X1	0.27267	0.42362	0.69810	0.65
(CONSTANT)	44.02672				X2	-0.20003	-0.31582	0.72096	0.33
					X3	0.54467	0.94325	0.86741	24.20
					X5	-0.10442	-0.19396	0.99796	0.11
					X6	0.32577	0.58383	0.92896	1.55

 O VARIABLE(S) ENTERED ON STEP NUMBER 2.. X3

		ANALYSIS OF VARIANCE		DF	SUM OF SQUARES	MEAN SQUARE	F
MULTIPLE R	0.98392	REGRESSION		2.	48.13457	24.06729	45.5279
R SQUARE	0.96810	RESIDUAL		3.	1.58753	0.52918	
ADJUSTED R SQUARE	0.94634						
STANDARD ERROR	0.72744						

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X4	-23.89369	-1.04141	2.54014	88.481	X1	-0.14725	-0.54936	0.44397	0.86
X3	4.084001	0.54467	0.23013	24.203	X2	-0.01420	0.71056	0.99766	1.21
(CONSTANT)	44.01544				X5	-0.09551	-0.53414	0.99766	0.79
					X6	0.12848	0.83010	0.76714	1.31

FILE NONAME (CREATION DATE = 04/19/85)
 SUBFILE A1

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
 REGRESSION LIST 1

DEPENDENT VARIABLE.. Y
 O VARIABLE(S) ENTERED ON STEP NUMBER 3.. X6

		ANALYSIS OF VARIANCE		DF	SUM OF SQUARES	MEAN SQUARE	F
MULTIPLE R	0.99034	REGRESSION		3.	48.81487	16.27162	33.9973
R SQUARE	0.98077	RESIDUAL		2.	0.95723	0.47861	
ADJUSTED R SQUARE	0.95192						
STANDARD ERROR	0.69182						

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 วิทยาลัยเกษตรศาสตร์

----- VARIABLES IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
X4	-24.21577	-1.05545	2.43199	99.145
X3	3.667897	0.48918	0.86876	17.825
X6	0.1684386	0.12848	0.14678	1.317
(CONSTANT)	44.20215			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X1	-0.19469	-0.91178	0.42182	4.92
X2	-0.05718	-0.16981	0.16962	0.03
X5	-0.14490	-0.99128	0.90013	56.60

 O V A R I A B L E (S) E N T E R E D O N S T E P N U M B E R 4 . . X 5
 O M U L T I P L E R 0.99983 ANALYSIS OF VARIANCE D F S U M O F S Q U A P E S M E A N S Q U A R E F
 R S Q U A R E 0.99967 REGRESSION 4. 49.75548 12.43887 748.5190
 A D J U S T E D R S Q U A R E 0.99833 RESIDUAL 1. 0.01662 0.01662
 S T A N D A R D E R R O R 0.12891

----- VARIABLES IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
X4	-24.17245	-1.05356	0.45320	2844.813
X3	3.480061	0.46413	0.16380	451.406
X6	0.2361683	0.18015	0.02879	67.275
X5	-2.554932	-0.14490	0.33960	56.602
(CONSTANT)	43.69316			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X1	0.039804	1.00000	0.03474	99999.99
X2	-0.04440	-1.00000	0.16936	99999.99

F-LEVEL OR TOLERANCE-LEVEL INSUFFICIENT FOR FURTHER COMPUTATION
 O S T A T I S T I C S W H I C H C A N N O T B E C O M P U T E D A R E P R I N T E D A S A L L N I N E S .
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FILE NONAME (CREATION DATE = 04/19/85)
 SUBFILE A1

O * * * * * M U L T I P L E R E G R E S S I O N * * * * * V A R I A B L E L I S T 1
 R E G R E S S I O N L I S T 1
 D E P E N D E N T V A R I A B L E . . Y
 0 S U M M A R Y T A B L E

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
X4	0.84307	0.71077	0.71077	-0.84307	-24.17245	-1.05356
X3	0.98392	0.96810	0.25733	0.15546	3.480061	0.46413
X6	0.99034	0.98077	0.01266	0.07791	0.2361683	0.18015
X5	0.99983	0.99967	0.01890	-0.14224	-2.554932	-0.14490
(CONSTANT)					43.69316	

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FILE NONAME (CREATION DATE = 04/19/85)
 SUBFILE A1

O * * * * * M U L T I P L E R E G R E S S I O N * * * * * V A R I A B L E L I S T 1
 R E G R E S S I O N L I S T 2
 D E P E N D E N T V A R I A B L E . . Y
 O V A R I A B L E (S) E N T E R E D O N S T E P N U M B E R 1 . .

X6
 X1
 X2
 X3
 X4
 X5

***** WARNING ***** X5 HAS TOLERANCE 0.00000. IT HAS BEEN DROPPED. THE SOLUTION IS NOT UNIQUE.

RESIDUAL SUM OF SQUARES IS NEGATIV
 TO CONTINUE ABSOLUTE VALUE IS TAKEN
 ANALYSIS OF VARIANCE, F, B AND BETA RESULTS ARE MEANINGLESS

OMULTIPLE R	1.00000	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	1.00000	REGRESSION	5.	49.77210	9.95442	99999.9999
ADJUSTED R SQUARE	0.00000	RESIDUAL	0.	0.00000	0.00000	
STANDARD ERROR	0.00000					

----- VARIABLES IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
X6	0.5962966E-01	0.04548	0.00000	99999.999
X1	-1.798214	-0.21732	0.00000	99999.999
X2	-6.430605	-0.14282	0.00000	99999.999
X3	4.701399	0.62701	0.00000	99999.999
X4	-20.38920	-0.88866	0.00000	99999.999
(CONSTANT)	43.31189			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL TOLERANCE	F
X5	999999.99999	99999.99999	0.00000

F-LEVEL OR TOLERANCE-LEVEL INSUFFICIENT FOR FURTHER COMPUTATION
 STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.

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FILE NONAME (CREATION DATE = 04/19/85)
 SUBFILE A1

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
 REGRESSION LIST 2

DEPENDENT VARIABLE.. Y

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
X6	0.07791	0.00607	0.00607	0.07791	0.5962966E-01	0.04548
X1	0.36205	0.13108	0.12501	-0.27238	-1.798214	-0.21732
X2	0.66112	0.43707	0.30600	-0.58956	-6.430605	-0.14282
X3	0.91068	0.82933	0.39226	0.16546	4.701399	0.62701
X4	1.00000	1.00000	0.17067	-0.84307	-20.38920	-0.88866
(CONSTANT)					43.31189	

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FILE NONAME (CREATION DATE = 04/19/85)
 SUBFILE A2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
 REGRESSION LIST 1

DEPENDENT VARIABLE.. Y
 VARIABLE(S) ENTERED ON STEP NUMBER 1.. X4

ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	1.	9530.49276	9530.49276	4.5342
ADJUSTED R SQUARE	8.	16814.97672	2101.87459	
STANDARD ERROR				

----- VARIABLES IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
X4	86.80919	0.60146	40.76725	4.534
(CONSTANT)	63.89267			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL TOLERANCE	F
X1	0.53604	0.65928	0.96546
X2	0.21439	0.24700	0.84719
X3	0.24660	0.29971	0.94280
X5	0.23842	0.28647	0.92138
X6	0.53076	0.63382	0.91018

***** VARIABLE(S) ENTERED ON STEP NUMBER 2.. X1 *****

ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	2.	16839.15493	8419.57747	6.1997
ADJUSTED R SQUARE	7.	9506.33456	1358.04779	
STANDARD ERROR				

----- VARIABLES IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
X4	101.1674	0.70108	33.35015	9.206
X1	1.626792	0.53604	0.70125	5.382
(CONSTANT)	36.91978			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL TOLERANCE	F
X2	0.03827	0.05567	0.76346
X3	0.08302	0.12728	0.84810
X5	-0.27958	-0.32049	0.47414
X6	0.38214	0.56673	0.79364

FILE NONAME (CREATION DATE = 04/19/85)
SUBFILE A2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 1

DEPENDENT VARIABLE.. Y
O VARIABLE(S) ENTERED ON STEP NUMBER 3.. X6

		ANALYSIS OF VARIANCE		DF	SUM OF SQUARES	MEAN SQUARE	F
OMULTIPLE R	0.86294	REGRESSION	3.	19892.45572	6630.81857		6.1653
R SQUARE	0.73506	RESIDUAL	6.	6453.03376	1075.50563		
ADJUSTED R SQUARE	0.63259						
STANDARD ERROR	32.79490						

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X4	114.1560	0.79093	30.66063	13.862	X2	0.16188	0.27405	0.70197	0.40
X1	1.223877	0.40328	0.66830	3.354	X3	0.21667	0.38377	0.76843	0.86
X6	10.71468	0.38214	6.35917	2.839	X5	-0.13116	-0.17233	0.42284	0.15
(CONSTANT)	28.84960								

***** O VARIABLE(S) ENTERED ON STEP NUMBER 4.. X3

		ANALYSIS OF VARIANCE		DF	SUM OF SQUARES	MEAN SQUARE	F
OMULTIPLE R	0.38946	REGRESSION	4.	20842.85464	5210.71616		4.7347
R SQUARE	0.79114	RESIDUAL	5.	5502.62465	1100.52497		
ADJUSTED R SQUARE	0.62404						
STANDARD ERROR	33.17416						

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X4	107.1861	0.74264	31.90918	11.234	X2	-0.41320	-0.26484	0.08580	0.30
X1	0.9455562	0.31157	0.73940	1.635	X5	-0.08502	-0.11929	0.41119	0.05
X6	12.63947	0.45078	6.75794	3.498					
X3	82.62694	0.21667	88.91322	0.864					
(CONSTANT)	19.46510								

FILE NONAME (CREATION DATE = 04/19/85)
SUBFILE A2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 1

DEPENDENT VARIABLE.. Y
O VARIABLE(S) ENTERED ON STEP NUMBER 5.. X2

		ANALYSIS OF VARIANCE		DF	SUM OF SQUARES	MEAN SQUARE	F
OMULTIPLE R	0.89766	REGRESSION	5.	21228.81005	4245.76201		3.3191
R SQUARE	0.80579	RESIDUAL	4.	5116.67943	1279.16986		
ADJUSTED R SQUARE	0.56302						
STANDARD ERROR	35.76548						

VARIABLES IN THE EQUATION					VARIABLES NOT IN THE EQUATION				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X4	117.9577	0.81727	39.59848	8.874	X5	0.01121	0.01417	0.31033	0.00
X1	0.9608258	0.31660	0.79764	1.451					
X6	12.70161	0.45300	7.28670	3.038					
X3	223.7273	0.58667	274.18226	0.666					
X2	-75.65237	-0.41320	137.73939	0.302					
(CONSTANT)	16.51469								

F-LEVEL OR TOLERANCE-LEVEL INSUFFICIENT FOR FURTHER COMPUTATION
 STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.

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FILE NONAME (CREATION DATE = 04/19/85)
 SUBFILE A2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
 REGRESSION LIST 1

DEPENDENT VARIABLE.. Y

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
X4	0.60146	0.36175	0.36175	0.60146	117.9577	0.81727
X1	0.79948	0.63917	0.27742	0.40575	0.9603258	0.31650
X6	0.86894	0.75506	0.11589	0.30283	12.70161	0.45300
X3	0.88946	0.79114	0.03607	0.37634	223.7273	0.58667
X2	0.89766	0.80579	0.01465	0.41675	-75.65837	-0.41320
(CONSTANT)					16.51469	

04/19/85 PAGE 20

FILE NONAME (CREATION DATE = 04/19/85)
 SUBFILE A2

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
 REGRESSION LIST 2

DEPENDENT VARIABLE.. Y

OVARIABLE(S) ENTERED ON STEP NUMBER 1.. X6
 X1
 X2
 X3
 X4
 X5

	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
MULTIPLE R	0.89768				
R SQUARE	0.80582				
ADJUSTED R SQUARE	0.71747				
STANDARD ERROR	41.29428				
REGRESSION		6.	21229.83754	3538.30626	2.0749
RESIDUAL		3.	5115.65195	1705.21732	

----- VARIABLES IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
X6	12.79561	0.45635	9.24362	1.916
X1	0.9333411	0.30754	1.44976	0.414
X2	-77.88391	-0.42535	183.06055	0.181
X3	223.7043	0.59894	369.48042	0.332
X4	117.6686	0.81527	47.21301	6.212
X5	2.333418	0.01121	95.05911	0.001
(CONSTANT)	16.43122			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL TOLERANCE	F
----------	---------	-------------------	---

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ALL VARIABLES ARE IN THE EQUATION
STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
1Q9

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FILE NONAME (CREATION DATE = 04/19/85)
SUBFILE A2

0***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 2

DEPENDENT VARIABLE.. Y
0

SUMMARY TABLE

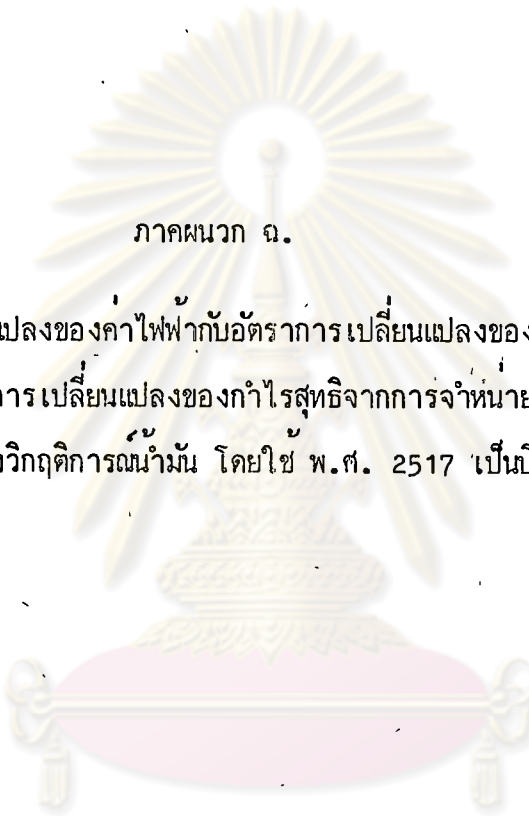
VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
X6	0.30283	0.09170	0.09170	0.30283	12.79561	0.45635
X1	0.43492	0.18916	0.09746	0.40575	0.9333411	0.30754
X2	0.60644	0.36777	0.17861	0.41675	-77.88391	-0.42535
X3	0.61233	0.37494	0.00717	0.37634	228.4043	0.59894
X4	0.89766	0.80579	0.43084	0.69146	117.66686	0.81527
X5	0.89768	0.80582	0.00004	0.38832	2.333418	0.01121
(CONSTANT)					16.43122	

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OCPU TIME REQUIRED.. 2.11 SECONDS

0 13 FINISH
NORMAL END OF JOB.
13 CONTROL CARDS WERE PROCESSED.
0 ERRORS WERE DETECTED.

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ภาคผนวก ฉ.

รายละเอียดความสัมพันธ์ระหว่างอัตราการเปลี่ยนแปลงของค่าไฟฟ้ากับอัตราการเปลี่ยนแปลงของต้นทุนในการจำหน่ายกระแสไฟแต่ละประเภท
และอัตราการเปลี่ยนแปลงของกำไรสุทธิจากการจำหน่ายกระแสไฟ
ในช่วงวิกฤติการณ์น้ำมัน โดยใช้ พ.ศ. 2517 เป็นปีฐาน

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1SPSS BATCH SYSTEM

05/17/85 PAGE 1

SPSS VERSION H, RELEASE 8.1, AUGUST 15, 198C. CPU IS A PERKIN-ELMER 323C
 0 CURRENT DOCUMENTATION FOR THE SPSS BATCH SYSTEM
 ORDER FROM MCGRAW-HILL: SPSS, 2ND ED. (PRINCIPAL TEXT) ORDER FROM SPSS INC.:
 SPSS PRIMER (BRIEF INTRO TO SPSS)
 SPSS UPDATE (USE W/SPSS, 2ND FOR REL. 7 & 8)
 -DEFAULT SPACE ALLOCATION.. SPSS UPDATE (USE W/SPSS, 2ND FOR REL. 7 & 8)
 WORKSPACE 220888 BYTES 315 TRANSFORMATIONS
 TRANSSPACE 31552 BYTES 1262 RECODE VALUES + LAG VARIABLES
 5049 IF/COMPUTE OPERATIONS

SPSS STATISTICAL ALGORITHMS
 SPSS POCKET GUIDE, RELEASE 8
 KEYWORDS: THE SPSS INC. NEWSLETTER

- 1 RUN NAME Q12
- 2 VARIABLE LIST Y X1 TO X6
- 3 INPUT FORMAT FREEFIELD
- 4 N OF CASES 9
- 5 INPUT MEDIUM CARD
- 6 PRINT FORMATS ALL(2)
- 7 LIST CASES CASES=9/VARIABLES=Y TO X6
- 8 READ INPUT DATA

1Q12

05/17/85 PAGE 2

FILE	NONAME	(CREATION DATE = 05/17/85)						
0	CASE-N	Y	X1	X2	X3	X4	X5	X6
	1	19.91	25.20	16.14	26.80	14.41	-7.85	-1.94
	2	23.48	31.61	23.77	37.11	21.61	-2.09	-20.19
	3	29.48	36.51	21.52	37.11	20.76	-6.81	1.55
	4	60.66	64.44	24.22	39.18	25.85	-2.76	97.48
	5	60.66	63.73	54.26	73.20	47.46	-2.14	72.23
	6	106.00	119.65	74.44	100.00	63.98	23.27	76.70
	7	232.52	280.00	91.93	121.65	76.69	55.50	122.52
	8	274.72	326.02	134.98	165.98	107.20	70.68	152.82
	9	273.90	319.78	143.95	174.23	161.44	80.10	158.83

1Q12

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- 9 REGRESSION VARIABLES=Y X1 TO X6/REGRESSION=Y WITH X1 TO X6/
- 10 REGRESSION=Y WITH X1 /REGRESSION=Y WITH X2/
- 11 REGRESSION=Y WITH X3 /REGRESSION=Y WITH X4/
- 12 REGRESSION=Y WITH X5 /REGRESSION=Y WITH X6/
- 13 STATISTICS ALL

***** REGRESSION PROBLEM REQUIRES 1232 BYTES WORKSPACE, NOT INCLUDING RESIDUALS *****



1Q12

05/17/85

PAGE 4

FILE NONAME (CREATION DATE = 05/17/85)

VARIABLE	MEAN	STANDARD DEV	CASES
Y	120.1578	109.0000	9
X1	140.7711	129.4687	9
X2	65.0233	49.6245	9
X3	86.1400	57.3249	9
X4	59.9333	49.0352	9
X5	23.2111	36.4586	9
X6	73.3333	67.2738	9

05/17/85

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FILE NONAME (CREATION DATE = 05/17/85)

OCORRELATION COEFFICIENTS
OA VALUE OF 99.00000 IS PRINTED
IF A COEFFICIENT CANNOT BE COMPUTED.

	Y	X1	X2	X3	X4	X5	X6
Y	1.00000	0.99926	0.96457	0.96779	0.91996	0.98348	0.89722
X1	0.99926	1.00000	0.95854	0.96193	0.91114	0.98385	0.88175
X2	0.96457	0.95854	1.00000	0.99903	0.96813	0.97313	0.87430
X3	0.96779	0.96193	0.99903	1.00000	0.96205	0.97505	0.87911
X4	0.91996	0.91114	0.96813	0.96205	1.00000	0.94261	0.84466
X5	0.98348	0.98385	0.97313	0.97505	0.94261	1.00000	0.83879
X6	0.89722	0.88175	0.87430	0.87911	0.84466	0.83879	1.00000

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PAGE 6

FILE NONAME (CREATION DATE = 05/17/85)

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 1

DEPENDENT VARIABLE.. Y
OVARIABLE(S) ENTERED ON STEP NUMBER 1.. X1

ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	1.	94908.07100	94908.07100	4750.3597
ADJUSTED R SQUARE	7.	139.85393	19.97913	
STANDARD ERROR				

----- VARIABLES IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
X1	0.8412825	0.99926	0.01221	4750.360
(CONSTANT)	1.729490			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
X2	0.08297	0.61637	0.08120	3.67
X3	0.08788	0.62610	0.07469	3.86
X4	0.05588	0.60031	0.16983	3.38
X5	0.01107	0.05165	0.03203	0.01
X6	0.07245	0.89098	0.22252	23.10

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*****
OVARIABLE(S) ENTERED ON STEP NUMBER 2.. X6
MULTIPLE R          0.99985      ANALYSIS OF VARIANCE      DF      SUM OF SQUARES      MEAN SQUARE      F
R SQUARE           0.99970      REGRESSION                 2.      95019.09367      47509.54684      9887.0909
ADJUSTED R SQUARE 0.99960      RESIDUAL                   6.      28.83126        4.80521
STANDARD ERROR     2.19208

```

```

----- VARIABLES IN THE EQUATION -----
VARIABLE      B          BETA      STD ERROR B      F
X1             0.7874974  0.93538      0.01269      3850.929
X6             0.1173875  0.07245      0.02442      23.105
(CONSTANT)    0.6924626

----- VARIABLES NOT IN THE EQUATION -----
VARIABLE      BETA IN      PARTIAL      TOLERANCE      F
X2             0.05981      0.95530      0.07740      52.21
X3             0.06141      0.93547      0.07039      35.03
X4             0.04008      0.92675      0.16217      30.42
X5             0.08598      0.33090      0.02833      11.15
05/17/85      PAGE 7

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FILE NONAME (CREATION DATE = 05/17/85)
***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 1

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DEPENDENT VARIABLE.. Y
OVARIABLE(S) ENTERED ON STEP NUMBER 3.. X2
MULTIPLE R          0.99999      ANALYSIS OF VARIANCE      DF      SUM OF SQUARES      MEAN SQUARE      F
R SQUARE           0.99997      REGRESSION                 3.      95045.40515      31681.80172      62866.2140
ADJUSTED R SQUARE 0.99996      RESIDUAL                   5.      2.51978        0.50396
STANDARD ERROR     0.70990

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```

----- VARIABLES IN THE EQUATION -----
VARIABLE      B          BETA      STD ERROR B      F
X1             0.7450413  0.88495      0.00717      10796.432
X6             0.1047136  0.06463      0.00810      167.082
X2             0.1313632  0.05981      0.01818      52.210
(CONSTANT)   -0.9432011

----- VARIABLES NOT IN THE EQUATION -----
VARIABLE      BETA IN      PARTIAL      TOLERANCE      F
X3             -0.02392    -0.18881     0.00165      0.14
X4             0.01958     0.92360     0.05897     23.21
X5             0.03046     0.68831     0.01354      3.60

```

```

*****
OVARIABLE(S) ENTERED ON STEP NUMBER 4.. X4
MULTIPLE R          1.00000      ANALYSIS OF VARIANCE      DF      SUM OF SQUARES      MEAN SQUARE      F
R SQUARE           1.00000      REGRESSION                 4.      95047.55461      23761.88865      256662.6905
ADJUSTED R SQUARE 0.99999      RESIDUAL                   4.      0.37032        0.09258
STANDARD ERROR     0.30427

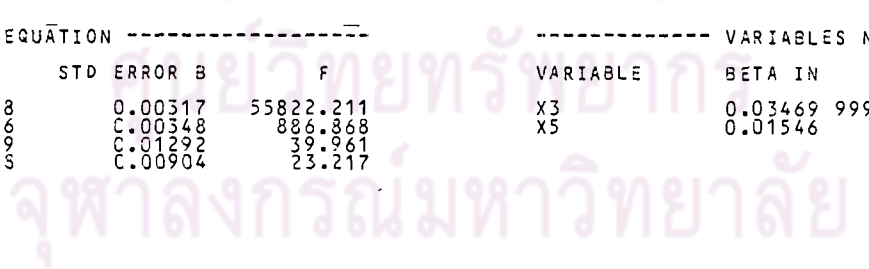
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----- VARIABLES IN THE EQUATION -----
VARIABLE      B          BETA      STD ERROR B      F
X1             0.7487689  0.88938      0.00317      55822.211
X6             0.1036222  0.06396      0.00348      886.868
X2             0.8169015E-01  0.03719      0.01292      39.961
X4             0.4354115E-01  0.01955      0.00904      23.217
(CONSTANT)   -0.7673658

----- VARIABLES NOT IN THE EQUATION -----
VARIABLE      BETA IN      PARTIAL      TOLERANCE      F
X3             0.03469    99999.99999  0.00133     99999.99
X5             0.01546     0.81799     0.01091      6.06

```



1Q12

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FILE Ncname (CREATION DATE = 05/17/85)
***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 1

DEPENDENT VARIABLE.. Y
O VARIABLE(S) ENTERED ON STEP NUMBER 5.. X5

OMULTIPLE R 1.00000 ANALYSIS OF VARIANCE DF SUM OF SQUARES MEAN SQUARE F
R SQUARE 1.00000 REGRESSION 5. 95047.80239 19009.56048 465406.6772
ADJUSTED R SQUARE 1.00000 RESIDUAL 3. 0.12234 0.04085
STANDARD ERROR 0.20210

VARIABLES IN THE EQUATION VARIABLE B BETA STD ERROR B F
X1 0.7386607 0.87737 0.00461 25647.291
X6 0.1084679 0.06695 0.00304 1277.146
X2 0.7512460E-C1 0.03420 0.00899 69.864
X4 0.3628895E-C1 0.01632 0.00669 29.464
X5 0.4628743E-C1 0.01546 0.01879 6.066
(CONSTANT) 0.8721286E-C1

O VARIABLE(S) ENTERED ON STEP NUMBER 6.. X3

OMULTIPLE R 1.00000 ANALYSIS OF VARIANCE DF SUM OF SQUARES MEAN SQUARE F
R SQUARE 1.00000 REGRESSION 6. 95047.83806 15841.30634 364715.6337
ADJUSTED R SQUARE 1.00000 RESIDUAL 2. 0.08687 0.04343
STANDARD ERROR 0.20841

VARIABLES IN THE EQUATION VARIABLE B BETA STD ERROR B F
X1 0.7401127 0.87910 0.00502 21744.959
X6 0.1070049 0.06604 0.00352 923.165
X2 0.3402712E-01 0.01549 0.04629 0.540
X4 0.4073646E-C1 0.01832 0.00846 23.171
X5 0.3761634E-C1 0.01256 0.02161 3.029
X3 0.3564421E-01 0.01875 0.03934 0.821
(CONSTANT) -0.4732897

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MAXIMUM STEP REACHED
 0 STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
 1012

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FILE NONAME (CREATION DATE = 05/17/85)

0***** MULTIPLE REGRESSION***** VARIABLE LIST 1
 REGRESSION LIST 1

DEPENDENT VARIABLE.. Y
 0

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSG CHANGE	SIMPLE R	B	BETA
X1	0.99926	0.99853	0.99853	0.99926	0.7401127	0.87910
X6	0.99985	0.99970	0.00117	0.89722	0.1070049	0.06604
X2	0.99999	0.99997	0.00028	0.96457	0.3402712E-01	0.01549
X4	1.00000	1.00000	0.00002	0.91996	0.4073646E-01	0.01932
X5	1.00000	1.00000	0.00000	0.98348	0.3761634E-01	0.01256
X3	1.00000	1.00000	0.00000	0.96779	0.3564421E-01	0.01875
(CONSTANT)					-0.4732897	

1012

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FILE NONAME (CREATION DATE = 05/17/85)

0***** MULTIPLE REGRESSION***** VARIABLE LIST 1
 REGRESSION LIST 2

DEPENDENT VARIABLE.. Y
 0 VARIABLE(S) ENTERED ON STEP NUMBER 1.. X1

		ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
MULTIPLE R.	0.99926	REGRESSION	1.	94908.07100	94908.07100	4750.3597
R SQUARE	0.99853	RESIDUAL	7.	139.85393	19.97913	
ADJUSTED R SQUARE	0.99832					
STANDARD ERROR	4.46980					

----- VARIABLE(S) IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
X1	0.8412825	0.99926	0.01221	4750.360
(CONSTANT)	1.729490			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL TOLERANCE	F
----------	---------	-------------------	---

MAXIMUM STEP REACHED
 0 STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
 1012

05/17/85 PAGE 11

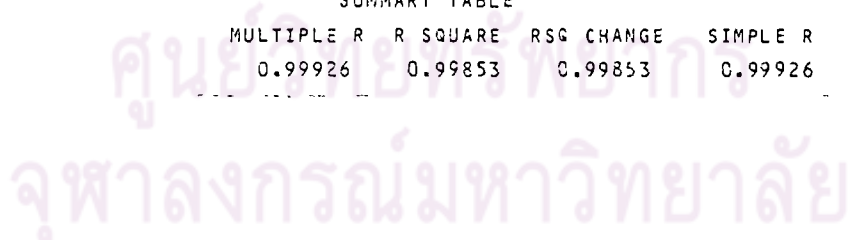
FILE NONAME (CREATION DATE = 05/17/85)

0***** MULTIPLE REGRESSION***** VARIABLE LIST 1
 REGRESSION LIST 2

DEPENDENT VARIABLE.. Y
 0

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSG CHANGE	SIMPLE R	B	BETA
X1	0.99926	0.99853	0.99853	0.99926	0.8412825	0.99926
(CONSTANT)					1.729490	



1012

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FILE NONAME (CREATION DATE = 05/17/85)
 0***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
 REGRESSION LIST 3

DEPENDENT VARIABLE.. Y
 0 VARIABLE(S) ENTERED ON STEP NUMBER 1.. X2

OMULTIPLE R	0.96457	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	0.93040	REGRESSION	1.	88432.38223	88432.38223	93.5715
ADJUSTED R SQUARE	0.92045	RESIDUAL	7.	6615.54270	945.07753	
STANDARD ERROR	30.74211					

----- VARIABLES IN THE EQUATION -----				----- VARIABLES NOT IN THE EQUATION -----				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL TOLERANCE	F
X2	2.118677	0.96457	0.21902	93.572				
(CONSTANT)	-17.60565							

MAXIMUM STEP REACHED
 0 STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
 1012

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FILE NONAME (CREATION DATE = 05/17/85)
 0***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
 REGRESSION LIST 3

DEPENDENT VARIABLE.. Y
 0 SUMMARY TABLE

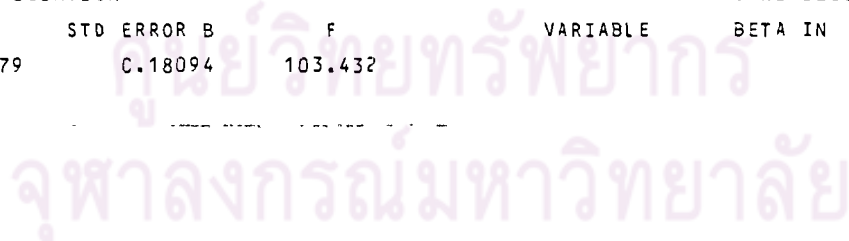
VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
X2	0.96457	0.93040	0.93040	0.96457	2.118677	0.96457
(CONSTANT)					-17.60565	
1012				05/17/85	PAGE 14	

FILE NONAME (CREATION DATE = 05/17/85)
 0***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
 REGRESSION LIST 4

DEPENDENT VARIABLE.. Y
 0 VARIABLE(S) ENTERED ON STEP NUMBER 1.. X3

OMULTIPLE R	0.96779	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	0.93661	REGRESSION	1.	89023.06450	89023.06450	103.4316
ADJUSTED R SQUARE	0.92756	RESIDUAL	7.	6024.86043	860.69435	
STANDARD ERROR	29.35759					

----- VARIABLES IN THE EQUATION -----				----- VARIABLES NOT IN THE EQUATION -----				
VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL TOLERANCE	F
X3	1.840192	0.96779	0.18094	103.432				
(CONSTANT)	-38.35637							



MAXIMUM STEP REACHED
OSTATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
1Q12

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FILE NONAME (CREATION DATE = 05/17/85)

***** MULTIPLE REGRESSION *****

VARIABLE LIST 1
REGRESSION LIST 4

DEPENDENT VARIABLE.. Y

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
X3	0.96779	0.93661	0.93661	0.96779	1.840192	0.96779
(CONSTANT)					-38.35637	

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FILE NONAME (CREATION DATE = 05/17/85)

***** MULTIPLE REGRESSION *****

VARIABLE LIST 1
REGRESSION LIST 5

DEPENDENT VARIABLE.. Y

OVARIABLE(S) ENTERED ON STEP NUMBER 1.. X4

MULTIPLE R	R SQUARE	ADJUSTED R SQUARE	STANDARD ERRCR	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
0.91996	0.84632	0.82437	45.68004	REGRESSION	1.	80441.25959	80441.25959	38.5501
				RESIDUAL	7.	14606.66534	2086.66648	

----- VARIABLES IN THE EQUATION -----

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL TOLERANCE	F
X4	2.045385	0.91996	0.32943	38.550				
(CONSTANT)	-2.428977							

MAXIMUM STEP REACHED
OSTATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
1Q12

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FILE NONAME (CREATION DATE = 05/17/85)

***** MULTIPLE REGRESSION *****

VARIABLE LIST 1
REGRESSION LIST 5

DEPENDENT VARIABLE.. Y

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
X4	0.91996	0.84632	0.84632	0.91996	2.045385	0.91996
(CONSTANT)					-2.428977	

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FILE NONAME (CREATION DATE = 05/17/85)

***** MULTIPLE REGRESSION *****

VARIABLE LIST 1
REGRESSION LIST 6

DEPENDENT VARIABLE.. Y

OVARIABLE(S) ENTERED ON STEP NUMBER 1.. X5

MULTIPLE R	R SQUARE	ADJUSTED R SQUARE	STANDARD ERRCR	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
0.98348	0.96724	0.96256	21.09081	REGRESSION	1.	91934.16920	91934.16920	206.6761
				RESIDUAL	7.	3113.75573	444.82225	

----- VARIABLES IN THE EQUATION -----

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL TOLERANCE	F
X5	2.945319	0.98348	0.20487	206.676				
(CONSTANT)	51.79304							

MAXIMUM STEP REACHED
OSTATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
1Q12

05/17/85 PAGE 19

FILE NONAME (CREATION DATE = 05/17/85)

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 6

DEPENDENT VARIABLE.. Y

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
X5	0.98348	0.96724	0.96724	0.98348	2.945319	0.98348
(CONSTANT)					51.79364	

1Q12

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FILE NONAME (CREATION DATE = 05/17/85)

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 7

DEPENDENT VARIABLE.. Y
OVARIABLE(S) ENTERED ON STEP NUMBER 1.. X6

OMULTIPLE R	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
0.89722	REGRESSION	1.	76514.57230	76514.57230	28.8993
R SQUARE 0.80501	RESIDUAL	7.	18533.35263	2647.62180	
ADJUSTED R SQUARE 0.77713					
STANDARD ERROR 51.45505					

----- VARIABLES IN THE EQUATION -----

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL TOLERANCE	F
X6	1.453678	0.89722	0.27041	28.899				
(CONSTANT)	13.55475							

MAXIMUM STEP REACHED
OSTATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.
1Q12

05/17/85 PAGE 21

FILE NONAME (CREATION DATE = 05/17/85)

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
REGRESSION LIST 7

DEPENDENT VARIABLE.. Y

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
X6	0.89722	0.80501	0.80501	0.89722	1.453678	0.89722
(CONSTANT)					13.55475	

1Q12

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O CPU TIME REQUIRED.. 2.19 SECONDS

0 14 FINISH (SPSS GENERATED)
NORMAL END OF JOB.
14 CONTROL CARDS WERE PROCESSED.
0 ERRORS WERE DETECTED.



ประวัติผู้เขียน

นางกรรณิการ์ สิงหะคเชนทร์ เกิดวันที่ 18 มกราคม 2493 สำเร็จการศึกษาบัณฑิต (เกียรตินิยมดี) คณะพาณิชยศาสตร์และการบัญชี มหาวิทยาลัยธรรมศาสตร์ เมื่อปีการศึกษา 2513 ทำงานในตำแหน่งนักบริหาร 8 รองหัวหน้ากองงบประมาณ การไฟฟ้านครหลวง



ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย