Multreg的軟體應用指令

Basic：AHED 指令

1.用以創造數據檔案

2. EXCEL檔案經轉換成文字檔，可直接輸入

Chap 2

Ex 2.1, Page 16

1.開啟 Multreg 程式
2. read ex\ex 2.1
3. spool
4. list

→以下練習題將省略

5. plot 1 vs 2 [x y散佈圖，對照課本p.18 figure2.3]
6. regr 1 on 2
7. anova brief [ANOVA表]
8. plot resi vs pred
9. plot stud vs rank [stud：標準化殘差(r_i)，常態分布機率圖]
10. end →以下練習題將省略

Ex 2.2, Page 27

1. read ex\ex2.2
2. plot 2 vs 1
3. regr 2 on 1
4. anova brief
5. plot resi vs pred
6. plot stud vs rank

Ex 2.5, Page 35

1. read ex\ex2.5
2. plot 2 vs 1
3. regr 2 on * 1
4. anova brief

Chap 3

Ex 3.1, Page 93

1. read ex\ex3.1
2. tran 5 = power 2 2 [v5項為v2項的二次方 → $v5 = x_1^2$]
3. tran 6 = power 3 2 [v6項為v3項的二次方 → $v6 = x_2^2$]
4. tran 7 = power 4 2 [v7項為v4項的二次方 → $v7 = x_3^2$]
5. tran 8 = prod 2 3 [v8項為v2項乘v3項 → $v8 = x_1 \cdot x_2$]
6. tran 9 = prod 2 4 [v9項為v2項乘v4項 → $v9 = x_1 \cdot x_3$]
7. tran 10 = prod 3 4 [v10項為v3項乘v4項 → $v10 = x_2 \cdot x_3$]
8. regr 1 on 2 3 4 5 6 7 8 9 10
9. anova brief
10. plot resi vs pred

Ex 3.2, Page 99

1. read ex\ex3.2
2. regr 6 on 1 2 3 4 5
3. anova brief
4. plot resi vs pred
5. 以下以t-test，自行練習刪選變數

Ex 3.5, Page 112

1. read ex\ex3.5
2. tran 5 = prod 1 3
3. tran 6 = rati 2 3 [v6項為v2項除以v3項 → $v6 = x_2 / x_3$]
4. regr 4 on 2 5 6
5. anova brief
6. plot resi vs pred

Ex 3.6, Page 118

1. read ex\ex3.6
2. regr 1 on 2 3 4 5 6 7 8 9 10
3. anova brief [可發現 SS_{res}]
4. oneway [可發現 $SS_{pure\ error}$]

} 計算SS_{LOF}

Ex 3.8, Page 130

1. regr 6 on 1 2 3 4 5
2. corr
3. regr 1 on 2 3 4 5
4. regr 2 on 1 3 4 5
5. regr 3 on 1 2 4 5
6. regr 4 on 1 2 3 5
7. regr 5 on 1 2 3 4

由R_i^2計算VIF，然後刪選變數

8. regr 6 on 2 3 4 5
9. regr 2 on 3 4 5
10. regr 3 on 2 4 5
11. regr 4 on 2 3 5
12. regr 5 on 2 3 4

由R_i^2計算VIF，然後刪選變數

Ex 3.9, Page 138

0.以 EXCEL 或 AHED 增加v6項(分類變數Z)

1. regr 1 on 2 3 4 5 6
   Z

Ex 3.10, Page 142

0.以 EXCEL 或 AHED 增加 v3、v4(分類變數)

1. regr 2 on 1 3 4
   y x Z_1 Z_2

Ex 3.11, Page 147

0.接續練習 Ex3.10

1. tran 5 = prod 1 3 [v5 = x・Z_1]
2. tran 6 = prod 1 4 [v6 = x・Z_2]
3. regr 2 on 1 3 4 5 6

Chap 4

Ex 4.1, Page 173

1. regr 5 on 2 3
2. resi [可發現 residual, Residual SS, PRESS]
3. yhat [可發現 Pred Res = PRESS residual = $e_{i,-i}$]
4. keep preres as 6 [v6 = $e_{i,-i}$]
5. tran 7 = abs 6 [v7 = $|e_{i,-i}|$]
6. stat 7 [對 v7 做敘述統計，自行計算 $n \times Ave = \sum |e_{i,-i}|$]

7. regr 5 on 1 2 3
8. resi
9. yhat
10. keep preres as 8
11. tran 9 = abs 8
12. stat 9
13. regr 5 on 1 2 3 4
14. resi
15. yhat
16. keep preres as 10
17. tran 11 = abs 10
18. stat 11

Ex 4.5, Page 194

1. read ex\ex3.8
2. regr 6 on 1 2 3 4 5
3. all
4. screen

Ex 4.6, Page 197

1. regr 1 on 2 3 4 5 6 7
2. screen
3. regr 1 on 2 3 4 5 7
4. resi
5. yhat
6. keep preres as 8
7. tran 8 = abs 8
8. stat 8

Chap 5

Ex 5.1, Page 213

1. regr 2 on 1
2. plot resi vs pred
3. plot stud vs pred
4. tran 4 = power 1 2
5. regr 2 on 1 4
6. plot stud vs pred
7. resi
8. regr 2 on 1 4 3
9. plot stud vs pred

Ex 5.2, Page 218

1. regr 8 on 1 2 3 4 5 6 7
2. resi
3. plot stud vs pred

Ex 5.3, Page 224

1. regr 4 on 1 2 3
2. resi

Ex 5.6, Page 234

1. regr 1 on 2 3
2. resi
3. regr 1 on 3
4. keep resi as 4 [v4項為 $e_{y|\mathbf{x}_{-1}}$]
5. regr 2 on 3
6. keep resi as 5 [v5項為 $e_{x_1|\mathbf{x}_{-1}}$]
7. plot 4 vs 5 [對照課本p.236 figure 5.7]
8. regr 1 on 2
9. keep resi as 6 [v6項為 $e_{y|\mathbf{x}_{-2}}$]
10. regr 3 on 2
11. keep resi as 7 [v7項為 $e_{x_2|\mathbf{x}_{-2}}$]
12. plot 6 vs 7 [對照課本p.236 figure 5.8]
13. tran 8 = power 2 0.3333
14. regr 1 on 8 3
15. resi

Ex 5.7, Page 238

1. read ex\ex5.6
2. regr 1 on 2 3 [可發現b_1 = 3.8750877e-2, b_2 = 5.8941691e-2]
3. keep resi as 4 [v4=$e_{y|\mathbf{x}}$]
4. tran 5 = line 2 3.8750877e-2 [v5 = v2 × 3.8750877E-2 = $b_1 \cdot x_1$]
5. tran 6 = sum 4 5 [v6 = v4＋v5 = $e_{y|\mathbf{x}} + b_1x_1$]
6. plot 6 vs 2 [對照課本p.239 figure 5.11]
7. tran 7 = line 3 5.8941691e-2 [v7 = v3 × 5.8941691E-2 = $b_2 \cdot x_2$]
8. tran 8 = sum 4 7 [v6 = v4＋v7 = $e_{y|\mathbf{x}} + b_2x_2$]
9. plot 8 vs 3 [對照課本p.239 figure 5.12]

Ex 5.8, Page 240

1. read ex/ex5.6
2. tran 4 = power 2 2
3. tran 5 = power 3 2
4. regr 1 on 2 3 4 [可發現b_1 = 9.0195602E-2, b_{11} = -1.2462167E-6]
5. keep resi as 6 [v6 = $e_{y|\mathbf{X},x_1^2}$]
7. tran 7 = line 2 9.0195602e-2 [v7 = v2・9.0195602E-2 = x_1・b_1]
8. tran 8 = line 4 -1.2462167e-6 [v8 = v4・-1.2462167E-6 = x_1^2・b_{11}]
9. tran 9 = sum 6 7
10. tran 10 = sum 9 8
11. plot 10 vs 2 [對照課本p.241 figure 5.13]
12. regr 1 on 2 3 5 [可發現b_2 = -2.0419242E-2, b_{22} = 2.9860703E-6]
13. keep resi as 11 [v11 = $e_{y|\mathbf{X},x_2^2}$]
14. tran 12 = line 3 -2.0419242E-02 [v12 = v3・-2.0419242E-2 = x_2・b_2]
15. tran 13 = line 5 2.9860703E-06 [v13 = v5・2.9860703E-6 = x_2^2・b_{22}]
16. tran 14 = sum 11 12
17. tran 15 = sum 14 13
18. plot 15 vs 3 [對照課本p.241 figure 5.14，課本此圖有誤！]

Chap 6

Ex 6.1, Page 254

1. read ex\ex5.2
2. regr 8 on 1 2 3 4 5 6 7
3. resi [可發現Distance = Cook's D = D_i]
4. yhat
5. delete 23
6. regr 8 on 1 2 3 4 5 6 7
7. resi

Ex 6.3, Page 266

1. read ex\ex5.3
2. regr 4 on 1 2 3
3. resi

Ex 6.4, Page 268

1. read ex\ex3.2
2. regr 6 on 1 2 3 4 5
3. resi
4. plot resi vs pred

Chap 7

Ex7.1, Page 281

1. list [v4數據為事先算好之加權指數w_i]
2. regr 3 on 1 2
3. plot stud vs pred
4. yhat [可發現Case wt (加權指數)，未設定前為1.000]
5. set weight 4 [將v4的數據設為加權指數]
6. yhat [觀察設定前後Case wt值的變化]
7. regr 3 on 1 2
8. plot stud vs pred
9. resi
10. plot stud vs rank

Ex 7.3, Page 290

0.接續Ex5.1的數據以及指令

11. resi [可發現Durbin-Watson (D-W值)]

Ex 7.4, Page 299

1. read ex\ex7.4
2. regr 1 on 2
3. resi
4. keep preres as 3 [v3為 $e_{i,-i}$]
5. tran 3 = abs 3 [v3為 $|e_{i,-i}|$]
6. stat 3 [由n、Ave計算 $\Sigma|e_{i,-i}|$]
7. tran 4 = power 2 -1 [v4 = 1/x]
8. tran 5 = ln 1 [v5 = ln y]
9. regr 5 on 4 [ln y 對 1/x 做迴歸]
10. resi
11. keep preres as 6 [v6 = $\ln y_i - \widehat{\ln y_{i,-i}}$]
12. tran 7 = diff 5 6 [v7 = v5-v6 = $\ln y_i - (\ln y - \widehat{\ln y_{i,-i}})$ = $\widehat{\ln y_{i,-i}}$]
13. tran 8 = exp 7 [v8 = $\exp(\widehat{\ln y_{i,-i}})$ = $\widehat{y_{i,-i}}$]
14. tran 9 = diff 1 8 [v9 = v1-v8 = $e_{i,-i}$ = $y_i - \widehat{y_{i,-i}}$]
15. tran 10 = power 9 2 [v10 = $(e_{i,-i})^2$]
16. stat 10 [由n、Ave計算PRESS]

17.練習計算 $\Sigma|e_{i,-i}|$]

18. tran 11 = power 1 -1
15. regr 11 on 4 [1/y 對 1/x 做迴歸]

16.練習計算 PRESS 以及 $\Sigma|e_{i,-i}|$

17. tran 12 = power 2 2
18. regr 1 on 2 12

16.練習計算 PRESS 以及 $\Sigma|e_{i,-i}|$

Ex 7.5, Page 309

1. read ex\ex7.4
2. regr 1 on 2
3. tran 3 = ln 2 [v3 = ln 2 = ln x]
4. tran 4 = prod 2 3 [v4 = v2・v3= x ln x]
5. regr 1 on 2 4

→ 計算 α_1 值 = $\frac{r_1}{b_1}+1$

6. tran 5 = power 2 0.022099 [v5 = w = $x^{0.022099}$]
7. regr 1 on 5
8. tran 6 = ln 5 [v6 = ln 5 = ln w]
9. tran 7 = prod 5 6 [v7 = w・ln w]
10. regr 1 on 5 7

→ 計算 α_2 值 = $(\frac{r_2}{b_2}+1)\times\alpha_1$

11. 自行練習計算 α_3、α_4

Ex 7.7, Page 319

1. read ex\ex7.7
2. set weight 3
3. regr 1 on 2
4. end