

```

1  clear all
2  cd "C:\Users\chenz\Desktop\EconometricsTA\TA2"
3  use WAGE2,clear
4
5  *****
6  *****1.GLS*****
7  *****
8
9  *1.1 Heteroscedasticity
10
11 *residual plot
12 use WAGE2,clear
13 reg lwage IQ educ exper
14 rvfplot
15
16 *Test
17
18 **Breusch and Pagan test
19 use WAGE2,clear
20 reg lwage IQ educ exper
21 estat hettest, rhs
22 *or
23 reg lwage IQ educ exper
24 predict uhat,residual
25 gen uhat2=uhat^2
26 reg uhat2 IQ educ exper
27 test IQ=educ=exper=0
28
29 **White test
30 use WAGE2,clear
31 reg lwage IQ educ exper
32 estat imtest, white
33 *or
34 reg lwage IQ educ exper
35 predict uhat,residual
36 gen uhat2=uhat^2
37 reg uhat2 IQ educ exper c.IQ#c.educ c.IQ#c.exper c.educ#c.exper
38 test IQ=educ=exper=c.IQ#c.educ=c.IQ#c.exper=c.educ#c.exper=0
39
40 *Solution
41
42 **WLS
43 use WAGE2,clear
44 gen w=1/(educ)^0.5
45 gen wlogwage=lwage*w
46 gen weduc=educ*w
47 gen wexper=exper*w
48 reg wlogwage weduc wexper w
49
50 **FGLS
51 use WAGE2,clear
52 reg lwage educ exper
53 predict e, residual
54 gen logesq=ln(e*e)
55 reg logesq educ exper
56 predict esqhat,xb
57 gen omega=exp(esqhat)
58 gen w=1/(omega)^0.5
59 gen wlogwage=lwage*w
60 gen weduc=educ*w
61 gen wexper=exper*w
62 reg wlogwage weduc wexper w
63
64 *Robust SE
65 use WAGE2,clear
66 reg wage IQ educ exper,vce(robust)
67 *or
68 reg wage IQ educ exper,r
69
70

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```

71  *1.2 Auto correlation
72
73  *Test
74
75  **DW test
76  use TRAFFIC2,clear
77  tsset t
78  reg totacc unem spdlaw wkends
79  estat dwatson
80
81  *BM test
82  use TRAFFIC2,clear
83  tsset t
84  reg totacc unem spdlaw wkends
85  estat bgodfrey,lag(2)
86
87  *Solution
88
89  **CO transformation
90  prais totacc unem spdlaw wkends, corc
91
92  **PW transformation
93  prais totacc unem spdlaw wkends
94
95  **auto correlated robust SE
96  newey totacc unem spdlaw wkends, lag(2)
97
98
99
100 *****
101 *****2.MLE*****
102 *****
103
104 *2.1 Estimation
105 use hsbdemo, clear
106 capture program drop lfols
107 program lfols
108     version 10.1
109     args lnf xb lnsigma
110     local y "$ML_y1"
111     *$ML_y1: name of first dependent variable
112     quietly replace `lnf' = ln(normalden(`y', `xb', exp(`lnsigma'))))
113 end
114 ml model lf lfols (xb: write = read female) (lnsigma:)
115 ml max
116 display exp([lnsigma]_cons)
117 reg write read female
118
119 *2.2 Test
120 ** LR test
121 ml model lf lfols (xb: write = read female) (lnsigma:)
122 ml max
123 est sto m1
124 ml model lf lfols (xb: write = female) (lnsigma:)
125 ml max
126 est sto m2
127 lrtest m1 m2
128
129 ** Wald test
130 ml model lf lfols (xb: write = read female) (lnsigma:)
131 ml max
132 test read=0
133
134
135
136
137
138 *****
139 *****DCM*****
140 *****

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```
141 use WAGE2, clear
142 logit married educ lwage urban
143 est sto r1
144 predict yhat1,xb
145 estpost margins,dydx(*)
146 est sto r2
147 probit married educ lwage urban,r
148 est sto r3
149 estpost margins,dydx(*)
150 est sto r4
151 hetprob married educ lwage urban,het(lwage)
152 est sto r5
153 estpost margins,dydx(*)
154 est sto r6
155 est tab r1 r2 r3 r4 r5 r6,se
156
157
```