```
  ___  ____  ____  ____  ____ (R)
 /__    /   ____/   /   ____/
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Notes:
      1. Unicode is supported; see help unicode_advice.

 1 . do "/var/folders/2l/fbt5472n7ks1xr82m33g3shw0000gn/T//SD01759.000000"

 2 . clear

 3 . set more off

 4 .
 5 . cd "/Users/guslipkin/Documents/Spring2020/CAP 4763 ~ Time Series/Problem Sets/Problem Set 5"
  /Users/guslipkin/Documents/Spring2020/CAP 4763 ~ Time Series/Problem Sets/Problem Set 5

 6 . import delimited "Assignment_1_Monthly.txt"
  (5 vars, 984 obs)

 7 .
 8 . rename lnu02300000 us_epr

 9 . rename flnan fl_nonfarm

10 . rename fllfn fl_lf

11 . rename flbppriv fl_bp

12 . rename date datestring

13 .
14 . log using "Problem Set 5", replace
  ------------------------------------------------------------------------------
      name:  <unnamed>
       log:  /Users/guslipkin/Documents/Spring2020/CAP 4763 ~ Time Series/Problem Sets/Problem Set 5
> /Problem Set 5.smcl
  log type:  smcl
 opened on:  29 Mar 2021, 19:05:12

15 .
16 . gen datec=date(datestring, "YMD")

17 . gen date=mofd(datec)

18 . gen month=month(datec)
```

```
19 . format date %tm

20 .
21 . tsset date
           time variable:  date, 1939m1 to 2020m12
                   delta:  1 month

22 .
23 . gen lnusepr=log(us_epr)
   (108 missing values generated)

24 . gen lnflnonfarm=log(fl_nonfarm)

25 . gen lnfllf=log(fl_lf)
   (444 missing values generated)

26 . gen lnflbp=log(fl_bp)
   (588 missing values generated)

27 .
28 . *1
29 . drop if !tin(1990m1,2019m12)
   (624 observations deleted)

30 .
31 . *2
32 . tsset date
           time variable:  date, 1990m1 to 2019m12
                   delta:  1 month

33 . tsappend, add(1)

34 . replace month=month(dofm(date)) if month==.
   (1 real change made)

35 .
36 . *3
37 . gen m1=0

38 . replace m1=1 if month==1
   (31 real changes made)

39 . gen m2=0

40 . replace m2=1 if month==2
   (30 real changes made)

41 . gen m3=0

42 . replace m3=1 if month==3
   (30 real changes made)

43 . gen m4=0

44 . replace m4=1 if month==4
   (30 real changes made)

45 . gen m5=0

46 . replace m5=1 if month==5
```

```
   (30 real changes made)

47 . gen m6=0

48 . replace m6=1 if month==6
   (30 real changes made)

49 . gen m7=0

50 . replace m7=1 if month==7
   (30 real changes made)

51 . gen m8=0

52 . replace m8=1 if month==8
   (30 real changes made)

53 . gen m9=0

54 . replace m9=1 if month==9
   (30 real changes made)

55 . gen m10=0

56 . replace m10=1 if month==10
   (30 real changes made)

57 . gen m11=0

58 . replace m11=1 if month==11
   (30 real changes made)

59 . gen m12=0

60 . replace m11=1 if month==12
   (30 real changes made)

61 .
62 . gen dlnflnonfarm=d.lnflnonfarm
   (2 missing values generated)

63 . gen l1dlnflnonfarm=l1d.lnflnonfarm
   (2 missing values generated)

64 . gen l2dlnflnonfarm=l2d.lnflnonfarm
   (3 missing values generated)

65 . gen l3dlnflnonfarm=l3d.lnflnonfarm
   (4 missing values generated)

66 . gen l4dlnflnonfarm=l4d.lnflnonfarm
   (5 missing values generated)

67 . gen l5dlnflnonfarm=l5d.lnflnonfarm
   (6 missing values generated)

68 . gen l6dlnflnonfarm=l6d.lnflnonfarm
   (7 missing values generated)

69 . gen l7dlnflnonfarm=l7d.lnflnonfarm
```

```
   (8 missing values generated)

70 . gen l8dlnflnonfarm=l8d.lnflnonfarm
   (9 missing values generated)

71 . gen l9dlnflnonfarm=l9d.lnflnonfarm
   (10 missing values generated)

72 . gen l10dlnflnonfarm=l10d.lnflnonfarm
   (11 missing values generated)

73 . gen l11dlnflnonfarm=l11d.lnflnonfarm
   (12 missing values generated)

74 . gen l12dlnflnonfarm=l12d.lnflnonfarm
   (13 missing values generated)

75 . gen l24dlnflnonfarm=l24d.lnflnonfarm
   (25 missing values generated)

76 .
77 . gen dlnfllf=d.lnfllf
   (2 missing values generated)

78 . gen l1dlnfllf=l1d.lnfllf
   (2 missing values generated)

79 . gen l2dlnfllf=l2d.lnfllf
   (3 missing values generated)

80 . gen l3dlnfllf=l3d.lnfllf
   (4 missing values generated)

81 . gen l4dlnfllf=l4d.lnfllf
   (5 missing values generated)

82 . gen l5dlnfllf=l5d.lnfllf
   (6 missing values generated)

83 . gen l6dlnfllf=l6d.lnfllf
   (7 missing values generated)

84 . gen l7dlnfllf=l7d.lnfllf
   (8 missing values generated)

85 . gen l8dlnfllf=l8d.lnfllf
   (9 missing values generated)

86 . gen l9dlnfllf=l9d.lnfllf
   (10 missing values generated)

87 . gen l10dlnfllf=l10d.lnfllf
   (11 missing values generated)

88 . gen l11dlnfllf=l11d.lnfllf
   (12 missing values generated)

89 . gen l12dlnfllf=l12d.lnfllf
   (13 missing values generated)
```

```
 90 . gen l24dlnfllf=l24d.lnfllf
    (25 missing values generated)

 91 .
 92 . gen dlnusepr=d.lnusepr
    (2 missing values generated)

 93 . gen l1dlnusepr=l1d.lnusepr
    (2 missing values generated)

 94 . gen l2dlnusepr=l2d.lnusepr
    (3 missing values generated)

 95 . gen l3dlnusepr=l3d.lnusepr
    (4 missing values generated)

 96 . gen l4dlnusepr=l4d.lnusepr
    (5 missing values generated)

 97 . gen l5dlnusepr=l5d.lnusepr
    (6 missing values generated)

 98 . gen l6dlnusepr=l6d.lnusepr
    (7 missing values generated)

 99 . gen l7dlnusepr=l7d.lnusepr
    (8 missing values generated)

100 . gen l8dlnusepr=l8d.lnusepr
    (9 missing values generated)

101 . gen l9dlnusepr=l9d.lnusepr
    (10 missing values generated)

102 . gen l10dlnusepr=l10d.lnusepr
    (11 missing values generated)

103 . gen l11dlnusepr=l11d.lnusepr
    (12 missing values generated)

104 . gen l12dlnusepr=l12d.lnusepr
    (13 missing values generated)

105 . gen l24dlnusepr=l24d.lnusepr
    (25 missing values generated)

106 .
107 . /*
    > gsreg dlnflnonfarm l1dlnflnonfarm l3dlnflnonfarm l6dlnflnonfarm l9dlnflnonfarm ///
    >       l12dlnflnonfarm l24dlnflnonfarm ///
    >           l1dlnfllf l3dlnfllf l6dlnfllf l9dlnfllf ///
    >       l12dlnfllf l24dlnfllf ///
    >           l1dlnusepr l3dlnusepr l6dlnusepr l9dlnusepr ///
    >       l12dlnusepr l24dlnusepr if tin(1990m1,2019m12), ///
    >         ncomb(1,6) aic outsample(24) fix(m1 m3 m6 m9 m12) ///
    >         samesample nindex( -1 aic -1 bic -1 rmse_out) results(gsreg_dlnrer) replace
    > */
108 .
109 . *5
110 . /*
```

```
    > Best model
    > reg dlnflnonfarm l3dlnflnonfarm l6dlnflnonfarm l12dlnflnonfarm l24dlnflnonfarm
    >         l24dlnfllf l6dlnusepr m1 m3 m6 m9 m12
    > */
111 . scalar drop _all

112 . quietly forval w=48(12)240 {
    --Break--
    r(1);

    end of do-file

    --Break--
    r(1);

113 . log close
          name:  <unnamed>
           log:  /Users/guslipkin/Documents/Spring2020/CAP 4763 ~ Time Series/Problem Sets/Problem Set 5
    > /Problem Set 5.smcl
      log type:  smcl
     closed on:  29 Mar 2021, 19:07:33
    ------------------------------------------------------------------------------------------------------


114 . do "/var/folders/2l/fbt5472n7ks1xr82m33g3shw0000gn/T//SD01759.000000"

115 . clear

116 . set more off

117 .
118 . cd "/Users/guslipkin/Documents/Spring2020/CAP 4763 ~ Time Series/Problem Sets/Problem Set 5"
    /Users/guslipkin/Documents/Spring2020/CAP 4763 ~ Time Series/Problem Sets/Problem Set 5

119 . import delimited "Assignment_1_Monthly.txt"
    (5 vars, 984 obs)

120 .
121 . rename lnu02300000 us_epr

122 . rename flnan fl_nonfarm

123 . rename fllfn fl_lf

124 . rename flbppriv fl_bp

125 . rename date datestring

126 .
127 . log using "Problem Set 5", replace
    ------------------------------------------------------------------------------------------------------
          name:  <unnamed>
           log:  /Users/guslipkin/Documents/Spring2020/CAP 4763 ~ Time Series/Problem Sets/Problem Set 5
    > /Problem Set 5.smcl
      log type:  smcl
     opened on:  29 Mar 2021, 19:07:40

128 .
129 . gen datec=date(datestring, "YMD")

130 . gen date=mofd(datec)
```

```
131 . gen month=month(datec)

132 . format date %tm

133 .
134 . tsset date
            time variable:  date, 1939m1 to 2020m12
                    delta:  1 month

135 .
136 . gen lnusepr=log(us_epr)
    (108 missing values generated)

137 . gen lnflnonfarm=log(fl_nonfarm)

138 . gen lnfllf=log(fl_lf)
    (444 missing values generated)

139 . gen lnflbp=log(fl_bp)
    (588 missing values generated)

140 .
141 . *1
142 . drop if !tin(1990m1,2019m12)
    (624 observations deleted)

143 .
144 . *2
145 . tsset date
            time variable:  date, 1990m1 to 2019m12
                    delta:  1 month

146 . tsappend, add(1)

147 . replace month=month(dofm(date)) if month==.
    (1 real change made)

148 .
149 . *3
150 . gen m1=0

151 . replace m1=1 if month==1
    (31 real changes made)

152 . gen m2=0

153 . replace m2=1 if month==2
    (30 real changes made)

154 . gen m3=0

155 . replace m3=1 if month==3
    (30 real changes made)

156 . gen m4=0

157 . replace m4=1 if month==4
    (30 real changes made)
```

```
158 . gen m5=0

159 . replace m5=1 if month==5
    (30 real changes made)

160 . gen m6=0

161 . replace m6=1 if month==6
    (30 real changes made)

162 . gen m7=0

163 . replace m7=1 if month==7
    (30 real changes made)

164 . gen m8=0

165 . replace m8=1 if month==8
    (30 real changes made)

166 . gen m9=0

167 . replace m9=1 if month==9
    (30 real changes made)

168 . gen m10=0

169 . replace m10=1 if month==10
    (30 real changes made)

170 . gen m11=0

171 . replace m11=1 if month==11
    (30 real changes made)

172 . gen m12=0

173 . replace m11=1 if month==12
    (30 real changes made)

174 .
175 . gen dlnflnonfarm=d.lnflnonfarm
    (2 missing values generated)

176 . gen l1dlnflnonfarm=l1d.lnflnonfarm
    (2 missing values generated)

177 . gen l2dlnflnonfarm=l2d.lnflnonfarm
    (3 missing values generated)

178 . gen l3dlnflnonfarm=l3d.lnflnonfarm
    (4 missing values generated)

179 . gen l4dlnflnonfarm=l4d.lnflnonfarm
    (5 missing values generated)

180 . gen l5dlnflnonfarm=l5d.lnflnonfarm
    (6 missing values generated)

181 . gen l6dlnflnonfarm=l6d.lnflnonfarm
```

```
    (7 missing values generated)

182 . gen l7dlnflnonfarm=l7d.lnflnonfarm
    (8 missing values generated)

183 . gen l8dlnflnonfarm=l8d.lnflnonfarm
    (9 missing values generated)

184 . gen l9dlnflnonfarm=l9d.lnflnonfarm
    (10 missing values generated)

185 . gen l10dlnflnonfarm=l10d.lnflnonfarm
    (11 missing values generated)

186 . gen l11dlnflnonfarm=l11d.lnflnonfarm
    (12 missing values generated)

187 . gen l12dlnflnonfarm=l12d.lnflnonfarm
    (13 missing values generated)

188 . gen l24dlnflnonfarm=l24d.lnflnonfarm
    (25 missing values generated)

189 .
190 . gen dlnfllf=d.lnfllf
    (2 missing values generated)

191 . gen l1dlnfllf=l1d.lnfllf
    (2 missing values generated)

192 . gen l2dlnfllf=l2d.lnfllf
    (3 missing values generated)

193 . gen l3dlnfllf=l3d.lnfllf
    (4 missing values generated)

194 . gen l4dlnfllf=l4d.lnfllf
    (5 missing values generated)

195 . gen l5dlnfllf=l5d.lnfllf
    (6 missing values generated)

196 . gen l6dlnfllf=l6d.lnfllf
    (7 missing values generated)

197 . gen l7dlnfllf=l7d.lnfllf
    (8 missing values generated)

198 . gen l8dlnfllf=l8d.lnfllf
    (9 missing values generated)

199 . gen l9dlnfllf=l9d.lnfllf
    (10 missing values generated)

200 . gen l10dlnfllf=l10d.lnfllf
    (11 missing values generated)

201 . gen l11dlnfllf=l11d.lnfllf
    (12 missing values generated)
```

```
202 . gen l12dlnfllf=l12d.lnfllf
    (13 missing values generated)

203 . gen l24dlnfllf=l24d.lnfllf
    (25 missing values generated)

204 .
205 . gen dlnusepr=d.lnusepr
    (2 missing values generated)

206 . gen l1dlnusepr=l1d.lnusepr
    (2 missing values generated)

207 . gen l2dlnusepr=l2d.lnusepr
    (3 missing values generated)

208 . gen l3dlnusepr=l3d.lnusepr
    (4 missing values generated)

209 . gen l4dlnusepr=l4d.lnusepr
    (5 missing values generated)

210 . gen l5dlnusepr=l5d.lnusepr
    (6 missing values generated)

211 . gen l6dlnusepr=l6d.lnusepr
    (7 missing values generated)

212 . gen l7dlnusepr=l7d.lnusepr
    (8 missing values generated)

213 . gen l8dlnusepr=l8d.lnusepr
    (9 missing values generated)

214 . gen l9dlnusepr=l9d.lnusepr
    (10 missing values generated)

215 . gen l10dlnusepr=l10d.lnusepr
    (11 missing values generated)

216 . gen l11dlnusepr=l11d.lnusepr
    (12 missing values generated)

217 . gen l12dlnusepr=l12d.lnusepr
    (13 missing values generated)

218 . gen l24dlnusepr=l24d.lnusepr
    (25 missing values generated)

219 .
220 . /*
    > gsreg dlnflnonfarm l1dlnflnonfarm l3dlnflnonfarm l6dlnflnonfarm l9dlnflnonfarm ///
    >       l12dlnflnonfarm l24dlnflnonfarm ///
    >           l1dlnfllf l3dlnfllf l6dlnfllf l9dlnfllf ///
    >       l12dlnfllf l24dlnfllf ///
    >           l1dlnusepr l3dlnusepr l6dlnusepr l9dlnusepr ///
    >       l12dlnusepr l24dlnusepr if tin(1990m1,2019m12), ///
    >         ncomb(1,6) aic outsample(24) fix(m1 m3 m6 m9 m12) ///
    >         samesample nindex( -1 aic -1 bic -1 rmse_out) results(gsreg_dlnrer) replace
    > */
```

```
221 .
222 . *5
223 . /*
    > Best model
    > reg dlnflnonfarm l3dlnflnonfarm l6dlnflnonfarm l12dlnflnonfarm l24dlnflnonfarm
    >         l24dlnfllf l6dlnusepr m1 m3 m6 m9 m12
    > */
224 . scalar drop _all

225 . quietly forval w=48(12)144 {

226 . scalar list
    RWmaxobs144 =        144
    RWminobs144 =        144
     RWrmse144 =  .00396645
    RWmaxobs132 =        132
    RWminobs132 =        132
     RWrmse132 =  .00390407
    RWmaxobs120 =        120
    RWminobs120 =        120
     RWrmse120 =  .00388926
    RWmaxobs108 =        108
    RWminobs108 =        108
     RWrmse108 =  .00388844
    RWmaxobs96 =         96
    RWminobs96 =         96
      RWrmse96 =  .00403691
    RWmaxobs84 =         84
    RWminobs84 =         84
      RWrmse84 =  .00406426
    RWmaxobs72 =         72
    RWminobs72 =         72
      RWrmse72 =  .00411873
    RWmaxobs60 =         60
    RWminobs60 =         60
      RWrmse60 =  .00431692
    RWmaxobs48 =         48
    RWminobs48 =         48
      RWrmse48 =  .00460352

227 . /*
    > RWmaxobs156 =        156
    > RWminobs156 =         47
    > RWrmse156 =  .00387308
    > */
228 .
229 . /*
    > Smallest / best model
    > reg dlnflnonfarm l12dlnflnonfarm m1 m3 m6 m9 m12
    > */
230 . scalar drop _all

231 . quietly forval w=48(12)144 {

232 . scalar list
    RWmaxobs144 =        144
    RWminobs144 =        144
     RWrmse144 =  .00431666
    RWmaxobs132 =        132
    RWminobs132 =        132
```

```
     RWrmse132 =  .00426742
    RWmaxobs120 =        120
    RWminobs120 =        120
     RWrmse120 =  .00423688
    RWmaxobs108 =        108
    RWminobs108 =        108
     RWrmse108 =  .00428159
    RWmaxobs96 =         96
    RWminobs96 =         96
      RWrmse96 =  .00436091
    RWmaxobs84 =         84
    RWminobs84 =         84
      RWrmse84 =  .00439555
    RWmaxobs72 =         72
    RWminobs72 =         72
      RWrmse72 =  .00443487
    RWmaxobs60 =         60
    RWminobs60 =         60
      RWrmse60 =  .00453048
    RWmaxobs48 =         48
    RWminobs48 =         48
      RWrmse48 =  .00458215

233 . /*
    > RWmaxobs228 =        228
    > RWminobs228 =         59
    > RWrmse228 =  .00407004
    >
    > */
234 .
235 . /*
    > Best medium length model
    > reg dlnflnonfarm l3dlnflnonfarm l12dlnflnonfarm l24dlnflnonfarm l6dlnusepr
    >         m1 m3 m6 m9 m12
    > */
236 . scalar drop _all

237 . quietly forval w=48(12)144 {

238 . scalar list
    RWmaxobs144 =        144
    RWminobs144 =        144
     RWrmse144 =  .00412303
    RWmaxobs132 =        132
    RWminobs132 =        132
     RWrmse132 =  .00407538
    RWmaxobs120 =        120
    RWminobs120 =        120
     RWrmse120 =  .00406735
    RWmaxobs108 =        108
    RWminobs108 =        108
     RWrmse108 =  .00406403
    RWmaxobs96 =         96
    RWminobs96 =         96
      RWrmse96 =  .00419684
    RWmaxobs84 =         84
    RWminobs84 =         84
      RWrmse84 =  .00423362
    RWmaxobs72 =         72
    RWminobs72 =         72
```

```
      RWrmse72 =  .00429113
    RWmaxobs60 =         60
    RWminobs60 =         60
      RWrmse60 =  .00448591
    RWmaxobs48 =         48
    RWminobs48 =         48
      RWrmse48 =  .00478837

239 .
    end of do-file

240 .
```