```
 *CORRIGE DE L'EXERCICE CHAPITRE 7- EXERCICE 2
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.
. * Tout d'abord s'assurer d'avoir ouvert le fichier de données stata C7EX2 avant d'ouvrir
le do.fileC7EX2 qui est le fichier programme.
.
. * Une fois le fichier de données ouvert ainsi que le do-file apppuyer sur Run
. *(Execute en haut à droite de la barre de menu du dofile) pour démarrer le programme. Il
sera exécuté dans son intégralité.
.
. * Toutefois il est possible en sélectionnant les parties du programme de l'exécuter pas à
pas afin de voir apparaître pas à pas les
. * différents résultats.
.
.
.   *                                CHAPITRE 7 EXERCICE 2
.                           *Détermination du nombre de retards dans un modèle à retards
échelonnés.
.
.  * A chaque régression le programme donne  la valeur des critères d'information. Une fois
les AIC, SC calculés. Un calcul des Fishers
.  * est proposé en fin de programme.
.
.  * Il n'est pas proposé le calcul des critères d'information selon la programmation Stata
(avec le code estat ic après la régression)
.  * car stata n'utilise pas la même méthode que l'ouvrage (passage par le maximum de
vraisemblance). Dès lors pour plus de cohérence
.  * avec l'ouvrage il est ici proposé un calcul pas à pas des AIC et SC comme dans l'ouvrage.
.
.  */////// Le calcul des AIC , SC
.
.  * On  précise  tout d'abord la variable du temps
.  tsset date
        time variable:  date, 1 to 44
                delta:  1 unit


.
.  * On démarre ensuite la série des régressions pour chaque retards.
.
.  *avec 0 retard
.  regress y x

      Source |       SS           df       MS      Number of obs   =        44
-------------+----------------------------------   F(1, 42)        =      6.73
       Model |   1102371.6         1   1102371.6   Prob > F        =    0.0130
    Residual |  6876310.13        42   163721.67   R-squared       =    0.1382
-------------+----------------------------------   Adj R-squared   =    0.1176
       Total |  7978681.73        43  185550.738   Root MSE        =    404.63

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           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           x |   .2402365   .0925823     2.59   0.013     .0533978    .4270752
       _cons |   1874.984   248.1841     7.55   0.000     1374.128    2375.839
------------------------------------------------------------------------------


.
.  scalar rss0=e(rss)

.  gen aic0= log(rss0/_N) +  ((2*0)/_N)

.  display aic0
11.959403

.  scalar aic0=aic0

.   gen sc0=log(rss0/_N) + (0*log(_N))/_N

.  display sc0
11.959403
```

```
.  scalar sc0=sc0

.
.  * Avec 1 retard
.  regress y x L.x

      Source |       SS           df       MS      Number of obs   =        43
-------------+----------------------------------   F(2, 40)        =     18.62
       Model |  3756302.35         2  1878151.17   Prob > F        =    0.0000
    Residual |  4035611.52        40  100890.288   R-squared       =    0.4821
-------------+----------------------------------   Adj R-squared   =    0.4562
       Total |  7791913.86        42  185521.759   Root MSE        =    317.63

------------------------------------------------------------------------------
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           x |
         --. |  -.4563838   .1500574    -3.04   0.004    -.7596611   -.1531064
        L1. |   .8009221   .1521145     5.27   0.000     .4934872    1.108357
            |
       _cons |   1645.565    207.084     7.95   0.000     1227.033    2064.098
------------------------------------------------------------------------------

.
.  scalar rss1=e(rss)

.  gen aic1= log(rss1/_N) +  ((2*1)/_N)

.  display aic1
11.471933

.   scalar aic1=aic1

.   gen sc1=log(rss1/_N) + (1*log(_N))/_N

.  display sc1
11.512483

.  scalar sc1=sc1

.
.   * Avec 2 retards
.  regress y x L.x L2.x

      Source |       SS           df       MS      Number of obs   =        42
-------------+----------------------------------   F(3, 38)        =     27.77
       Model |  5219798.53         3  1739932.84   Prob > F        =    0.0000
    Residual |  2380903.87        38  62655.3651   R-squared       =    0.6868
-------------+----------------------------------   Adj R-squared   =    0.6620
       Total |   7600702.4        41  185382.985   Root MSE        =    250.31

------------------------------------------------------------------------------
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           x |
         --. |  -.1872308   .1294469    -1.45   0.156    -.4492823    .0748207
        L1. |  -.0208556   .2005248    -0.10   0.918    -.4267969    .3850857
        L2. |   .6742182   .1312111     5.14   0.000     .4085952    .9398412
            |
       _cons |   1347.663   177.5427     7.59   0.000     988.2462    1707.079
------------------------------------------------------------------------------

.
.   scalar rss2=e(rss)

.  gen aic2= log(rss2/_N) +  ((2*2)/_N)

. display aic2
10.98971

.  scalar aic2=aic2
```

```
.   gen sc2=log(rss2/_N) + (2*log(_N))/_N

.  display sc2
11.070809

.  scalar sc2=sc2

.
.  * Avec 3 retards
.  regress y x L.x L2.x L3.x

      Source |       SS           df       MS      Number of obs   =        41
-------------+----------------------------------   F(4, 36)        =     40.11
       Model |  6044616.37         4  1511154.09   Prob > F        =    0.0000
    Residual |  1356452.66        36  37679.2405   R-squared       =    0.8167
-------------+----------------------------------   Adj R-squared   =    0.7964
       Total |  7401069.02        40  185026.726   Root MSE        =    194.11

------------------------------------------------------------------------------
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           x |
         --. |  -.1008742     .10175    -0.99   0.328    -.3072328    .1054844
         L1. |   .0840521   .1568931     0.54   0.595    -.2341419    .4022461
         L2. |   .0612419   .1569798     0.39   0.699    -.2571279    .3796117
         L3. |     .53678   .1031376     5.20   0.000     .3276073    .7459527
             |
       _cons |   1059.079   150.7391     7.03   0.000     753.3659    1364.792
------------------------------------------------------------------------------

.
.   scalar rss3=e(rss)

.  gen aic3= log(rss3/_N) +  ((2*3)/_N)

. display aic3
10.472557

.  scalar aic3=aic3

.   gen sc3=log(rss3/_N) + (3*log(_N))/_N

.  display sc3
10.594207

.   scalar sc3=sc3

.
.  * Avec 4 retards
.  regress y x L.x L2.x L3.x L4.x

      Source |       SS           df       MS      Number of obs   =        40
-------------+----------------------------------   F(5, 34)        =     45.77
       Model |  6231872.11         5  1246374.42   Prob > F        =    0.0000
    Residual |  925879.492        34  27231.7498   R-squared       =    0.8706
-------------+----------------------------------   Adj R-squared   =    0.8516
       Total |   7157751.6        39  183532.092   Root MSE        =    165.02

------------------------------------------------------------------------------
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           x |
         --. |  -.0252095   .0924411    -0.27   0.787    -.2130725    .1626535
         L1. |   .0463596   .1372743     0.34   0.738    -.2326153    .3253345
         L2. |   .1490935   .1352898     1.10   0.278    -.1258484    .4240354
         L3. |    .138065   .1339635     1.03   0.310    -.1341816    .4103115
         L4. |   .3591676   .0903616     3.97   0.000     .1755308    .5428044
             |
       _cons |   838.9658   145.7749     5.76   0.000     542.7155    1135.216
------------------------------------------------------------------------------
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```
.
.    scalar rss4=e(rss)

.  gen aic4= log(rss4/_N) +  ((2*4)/_N)

. display aic4
10.136127

.  scalar aic4=aic4

.   gen sc4=log(rss4/_N) + (4*log(_N))/_N

.  display sc4
10.298327

.   scalar sc4=sc4

.
. * Avec 5 retards
.  regress y x L.x L2.x L3.x L4.x L5.x

      Source |       SS           df       MS      Number of obs   =        39
-------------+----------------------------------   F(6, 32)        =     50.55
       Model |  6260551.13         6  1043425.19   Prob > F        =    0.0000
    Residual |  660498.769        32  20640.5865   R-squared       =    0.9046
-------------+----------------------------------   Adj R-squared   =    0.8867
       Total |   6921049.9        38  182132.892   Root MSE        =    143.67

------------------------------------------------------------------------------
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           x |
         --. |  -.0818963   .0844071    -0.97   0.339     -.253828    .0900354
         L1. |   .1882567   .1258975     1.50   0.145    -.0681881    .4447015
         L2. |   .1002571   .1208038     0.83   0.413    -.1458122    .3463264
         L3. |   .2283448    .119325     1.91   0.065    -.0147123    .4714019
         L4. |  -.0072525   .1301338    -0.06   0.956    -.2723264    .2578213
         L5. |   .3067295   .0855606     3.58   0.001     .1324482    .4810108
             |
       _cons |   674.5727   144.6416     4.66   0.000     379.9475    969.1979
------------------------------------------------------------------------------

.
.   scalar rss5=e(rss)

.  gen aic5= log(rss5/_N) +  ((2*5)/_N)

. display aic5
9.8438339

.  scalar aic5=aic5

.   gen sc5=log(rss5/_N) + (5*log(_N))/_N

.  display sc5
10.046582

.   scalar sc5=sc5

.
. * Avec 6 retards
. regress y x L.x L2.x L3.x L4.x L5.x L6.x

      Source |       SS           df       MS      Number of obs   =        38
-------------+----------------------------------   F(7, 30)        =     50.63
       Model |  6155805.34         7  879400.763   Prob > F        =    0.0000
    Residual |  521116.052        30  17370.5351   R-squared       =    0.9220
-------------+----------------------------------   Adj R-squared   =    0.9037
       Total |  6676921.39        37  180457.335   Root MSE        =     131.8
```

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------------------------------------------------------------------------------
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           x |
         --. |   -.011389   .0815322    -0.14   0.890       -.1779    .1551221
         L1. |    .061265   .1249063     0.49   0.627    -.1938278    .3163577
         L2. |   .2275692   .1196352     1.90   0.067    -.0167584    .4718968
         L3. |   .1679316   .1129971     1.49   0.148    -.0628393    .3987026
         L4. |   .1187338   .1274542     0.93   0.359    -.1415624    .3790301
         L5. |   .0001691   .1369068     0.00   0.999    -.2794319    .2797702
         L6. |   .2371737   .0840651     2.82   0.008     .0654899    .4088575
             |
       _cons |   501.5414   154.8486     3.24   0.003     185.2984    817.7845
------------------------------------------------------------------------------

.  scalar rss6=e(rss)

.  gen aic6= log(rss6/_N) +  ((2*6)/_N)

. display aic6
9.6522655

.  scalar aic6=aic6

.   gen sc6=log(rss6/_N) + (6*log(_N))/_N

.  display sc6
9.8955641

.  scalar sc6=sc6

.
. * Avec 7 retards
. regress y x L.x L2.x L3.x L4.x L5.x L6.x L7.x

      Source |       SS           df       MS      Number of obs   =        37
-------------+----------------------------------   F(8, 28)        =     40.84
       Model |  5805254.47         8  725656.808   Prob > F        =    0.0000
    Residual |  497545.858        28  17769.4949   R-squared       =    0.9211
-------------+----------------------------------   Adj R-squared   =    0.8985
       Total |  6302800.32        36  175077.787   Root MSE        =     133.3

------------------------------------------------------------------------------
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           x |
         --. |  -.0198398   .0838703    -0.24   0.815    -.1916403    .1519607
         L1. |   .1046478   .1321359     0.79   0.435    -.1660202    .3753158
         L2. |   .1705322   .1325735     1.29   0.209    -.1010323    .4420966
         L3. |   .2249273   .1247243     1.80   0.082    -.0305589    .4804136
         L4. |   .0798818   .1340312     0.60   0.556    -.1946686    .3544322
         L5. |   .0651983   .1497885     0.44   0.667    -.2416295    .3720262
         L6. |   .1065063   .1472321     0.72   0.475    -.1950849    .4080975
         L7. |   .0981118   .0862072     1.14   0.265    -.0784757    .2746993
             |
       _cons |   428.3283    180.866     2.37   0.025     57.84099    798.8156
------------------------------------------------------------------------------

.
.  scalar rss7=e(rss)

.  gen aic7= log(rss7/_N) +  ((2*7)/_N)

. display aic7
9.6514349

.  scalar aic7=aic7

.   gen sc7=log(rss7/_N) + (7*log(_N))/_N

.  display sc7
```

```
9.9352837

.   scalar sc7=sc7

.
. * Avec 8 retards
. regress y x L.x L2.x L3.x L4.x L5.x L6.x L7.x L8.x

      Source |       SS           df       MS      Number of obs   =        36
-------------+----------------------------------   F(9, 26)        =     32.17
       Model |  5440704.84         9   604522.76   Prob > F        =    0.0000
    Residual |  488553.717        26  18790.5276   R-squared       =    0.9176
-------------+----------------------------------   Adj R-squared   =    0.8891
       Total |  5929258.56        35  169407.387   Root MSE        =    137.08

------------------------------------------------------------------------------
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           x |
         --. |  -.0237937   .0905861    -0.26   0.795     -.209996    .1624087
         L1. |   .1188279   .1412771     0.84   0.408    -.1715714    .4092271
         L2. |   .1609177   .1449412     1.11   0.277    -.1370133    .4588487
         L3. |   .2435813   .1417395     1.72   0.098    -.0477685    .5349311
         L4. |   .0711337   .1497154     0.48   0.639    -.2366107     .378878
         L5. |   .0581081    .159509     0.36   0.719    -.2697674    .3859837
         L6. |   .0960181   .1667328     0.58   0.570    -.2467061    .4387423
         L7. |   .1323792   .1601308     0.83   0.416    -.1967744    .4615329
         L8. |   -.013717   .0955553    -0.14   0.887    -.2101337    .1826996
             |
       _cons |   390.1807   223.1171     1.75   0.092    -68.44304    848.8044
------------------------------------------------------------------------------

.
.   scalar rss8=e(rss)

.  gen aic8= log(rss8/_N) +  ((2*8)/_N)

. display aic8
9.6786518

.  scalar aic8=aic8

.   gen sc8=log(rss8/_N) + (8*log(_N))/_N

.  display sc8
10.00305

.   scalar sc8=sc8

.
. * Avec 9 retards
.  regress y x L.x L2.x L3.x L4.x L5.x L6.x L7.x L8.x L9.x

      Source |       SS           df       MS      Number of obs   =        35
-------------+----------------------------------   F(10, 24)       =     25.01
       Model |  4967688.71        10  496768.871   Prob > F        =    0.0000
    Residual |  476665.457        24  19861.0607   R-squared       =    0.9124
-------------+----------------------------------   Adj R-squared   =    0.8760
       Total |  5444354.17        34  160128.064   Root MSE        =    140.93

------------------------------------------------------------------------------
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           x |
         --. |  -.0242367   .0931995    -0.26   0.797    -.2165909    .1681176
         L1. |   .0980225   .1483248     0.66   0.515    -.2081048    .4041498
         L2. |   .1835456   .1544687     1.19   0.246    -.1352622    .5023534
         L3. |   .2085955   .1544567     1.35   0.189    -.1101874    .5273784
         L4. |   .1103696   .1663424     0.66   0.513    -.2329442    .4536835
         L5. |   .0137496    .175203     0.08   0.938    -.3478517    .3753508
         L6. |   .1293426    .176749     0.73   0.471    -.2354494    .4941347
```

```
         L7. |   .0824645   .1797268     0.46   0.650    -.2884733    .4534023
         L8. |   .0741216   .1690431     0.44   0.665    -.2747662    .4230093
         L9. |  -.0698256   .0982589    -0.71   0.484    -.2726221    .1329708
             |
       _cons |   487.9784   265.3323     1.84   0.078    -59.64053    1035.597
------------------------------------------------------------------------------

.
.   scalar rss9=e(rss)

.  gen aic9= log(rss9/_N) +  ((2*9)/_N)

. display aic9
9.6994715

.  scalar aic9=aic9

.   gen sc9=log(rss9/_N) + (9*log(_N))/_N

.  display sc9
10.06442

.   scalar sc9=sc9

.
.  * Avec 10 retards
.  regress y x L.x L2.x L3.x L4.x L5.x L6.x L7.x L8.x L9.x L10.x  in 11/44

      Source |       SS           df       MS      Number of obs   =        34
-------------+----------------------------------   F(11, 22)       =     19.90
       Model |  4576729.64        11  416066.331   Prob > F        =    0.0000
    Residual |   460050.98        22  20911.4082   R-squared       =    0.9087
-------------+----------------------------------   Adj R-squared   =    0.8630
       Total |  5036780.62        33  152629.716   Root MSE        =    144.61

------------------------------------------------------------------------------
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           x |
         --. |  -.0323918   .1023602    -0.32   0.755    -.2446738    .1798901
         L1. |   .1023771   .1588289     0.64   0.526    -.2270139    .4317681
         L2. |   .1652953    .166692     0.99   0.332    -.1804028    .5109934
         L3. |   .2205499   .1691771     1.30   0.206     -.130302    .5714017
         L4. |   .0845428   .1882434     0.45   0.658    -.3058502    .4749358
         L5. |   .0358937   .2015973     0.18   0.860    -.3821935     .453981
         L6. |   .0908094   .2021712     0.45   0.658    -.3284679    .5100868
         L7. |   .1238304   .1951368     0.63   0.532    -.2808584    .5285193
         L8. |   .0322287   .1966194     0.16   0.871    -.3755349    .4399923
         L9. |  -.0153138   .1818102    -0.08   0.934     -.392365    .3617375
        L10. |  -.0541123   .1073447    -0.50   0.619    -.2767317    .1685071
             |
       _cons |   627.3554   323.2835     1.94   0.065    -43.09348    1297.804
------------------------------------------------------------------------------

.
. scalar rss10=e(rss)

.  gen aic10= log(rss10/_N) +  ((2*10)/_N)

. display aic10
9.7094488

.  scalar aic10=aic10

.   gen sc10=log(rss10/_N) + (10*log(_N))/_N

.  display sc10
10.114946

.   scalar sc10=sc10
```

```
.
.  * Il est possible de proposer un tableau récapitulatif des résultats de AIC et SC
.
.  matrix AIC=[aic0\aic2\aic3\aic4\aic5\aic6\aic7\aic8\aic9\aic10]

.
.  matrix BIC=[sc0\sc2\sc3\sc4\sc5\sc6\sc7\sc8\sc9\sc10]

.
.
.  matrix  Critère=[AIC,BIC]

.  matlist Critère

             |        c1         c1
-------------+----------------------
          r1 |   11.9594    11.9594
          r2 |  10.98971   11.07081
          r3 |  10.47256   10.59421
          r4 |  10.13613   10.29833
          r5 |  9.843834   10.04658
          r6 |  9.652266   9.895564
          r7 |  9.651435   9.935284
          r8 |  9.678652   10.00305
          r9 |  9.699471   10.06442
         r10 |  9.709449   10.11495


.
.  * On peut pointer 6 retards comme étant le minimum des retards.
.
.
.  * ***************************Le calcul des Fishers.
.  * Il faut à chaque fois faire les tests mais avec le même nombre d'observations. Donc il
faut supprimer les 10 premières observations
.  * de l'échantillon et faire les régressions de la 11 à la 44 donnée.
.  * Chaque fois il faut récupérer la somme des carrés des résidus (rss) pour effectuer le
test de Fisher
.
.  * Avec 0 retard
.  regress y x  in 11/44

      Source |       SS           df       MS      Number of obs   =        34
-------------+----------------------------------   F(1, 32)        =      1.02
       Model |  155596.582         1  155596.582   Prob > F        =    0.3201
    Residual |  4881184.04        32  152537.001   R-squared       =    0.0309
-------------+----------------------------------   Adj R-squared   =    0.0006
       Total |  5036780.62        33  152629.716   Root MSE        =    390.56

------------------------------------------------------------------------------
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           x |   .1077961    .106731     1.01   0.320    -.1096079    .3252001
       _cons |   2341.732   301.6007     7.76   0.000     1727.391    2956.072
------------------------------------------------------------------------------

.  scalar SCR0=e(rss)

.
.
.  * Avec 1 retard
.  regress y x L.x  in 11/44

      Source |       SS           df       MS      Number of obs   =        34
-------------+----------------------------------   F(2, 31)        =      9.17
       Model |  1872748.55         2  936374.277   Prob > F        =    0.0007
    Residual |  3164032.06        31   102065.55   R-squared       =    0.3718
-------------+----------------------------------   Adj R-squared   =    0.3313
       Total |  5036780.62        33  152629.716   Root MSE        =    319.48

------------------------------------------------------------------------------
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
```

```
-------------+----------------------------------------------------------------
           x |
         --. |  -.4724531   .1662369    -2.84   0.008    -.8114955   -.1334107
         L1. |   .7051811   .1719238     4.10   0.000     .3545403    1.055822
             |
       _cons |   2010.208   259.6112     7.74   0.000     1480.728    2539.689
------------------------------------------------------------------------------

.   scalar SCR1=e(rss)

.
.    scalar F1= (SCR0-SCR1)/(SCR1/(34-10+10-3))

.   display F1
16.824011

.
.
.   * Avec 2 retards
.  regress y x L.x L2.x  in  11/44

      Source |       SS           df       MS      Number of obs   =        34
-------------+----------------------------------   F(3, 30)        =     15.96
       Model |  3096315.14         3  1032105.05   Prob > F        =    0.0000
    Residual |  1940465.48        30  64682.1827   R-squared       =    0.6147
-------------+----------------------------------   Adj R-squared   =    0.5762
       Total |  5036780.62        33  152629.716   Root MSE        =    254.33

------------------------------------------------------------------------------
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           x |
         --. |   -.239804   .1427385    -1.68   0.103    -.5313148    .0517069
         L1. |  -.0060938   .2132512    -0.03   0.977    -.4416108    .4294232
         L2. |   .6209513   .1427697     4.35   0.000     .3293766    .9125259
             |
       _cons |   1632.751   224.1515     7.28   0.000     1174.973     2090.53
------------------------------------------------------------------------------

.   scalar SCR2=e(rss)

.
.   scalar F2= (SCR1-SCR2)/(SCR2/(34-10+9-3))

.   display F2
18.916594

.
.  * Avec 3 retards
.  regress y x L.x L2.x L3.x in 11/44

      Source |       SS           df       MS      Number of obs   =        34
-------------+----------------------------------   F(4, 29)        =     24.02
       Model |  3868905.83         4  967226.457   Prob > F        =    0.0000
    Residual |  1167874.79        29  40271.5445   R-squared       =    0.7681
-------------+----------------------------------   Adj R-squared   =    0.7361
       Total |  5036780.62        33  152629.716   Root MSE        =    200.68

------------------------------------------------------------------------------
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           x |
         --. |  -.1352276   .1151313    -1.17   0.250    -.3706975    .1002423
         L1. |    .071493   .1691965     0.42   0.676    -.2745527    .4175388
         L2. |   .0723074   .1684665     0.43   0.671    -.2722452      .41686
         L3. |   .5014569   .1144875     4.38   0.000     .2673037    .7356102
             |
       _cons |   1274.651     194.85     6.54   0.000      876.138    1673.164
------------------------------------------------------------------------------

. scalar SCR3=e(rss)
```

```
.
.   scalar F3= (SCR2-SCR3)/(SCR3/(34-10+8-3))

.   display F3
19.184531

.
.    * Avec 4 retards
.  regress y x L.x L2.x L3.x L4.x in 11/44

      Source |       SS           df       MS      Number of obs   =        34
-------------+----------------------------------   F(5, 28)        =     27.95
       Model |  4196104.43         5  839220.885   Prob > F        =    0.0000
    Residual |  840676.191        28  30024.1497   R-squared       =    0.8331
-------------+----------------------------------   Adj R-squared   =    0.8033
       Total |  5036780.62        33  152629.716   Root MSE        =    173.27

------------------------------------------------------------------------------
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           x |
         --. |  -.0362193   .1038356    -0.35   0.730    -.2489168    .1764782
         L1. |   .0375792   .1464532     0.26   0.799    -.2624166    .3375749
         L2. |   .1332135   .1466274     0.91   0.371    -.1671392    .4335662
         L3. |   .1457326   .1462312     1.00   0.327    -.1538084    .4452736
         L4. |   .3388194   .1026356     3.30   0.003       .12858    .5490588
             |
       _cons |   983.8646    189.907     5.18   0.000     594.8576    1372.871
------------------------------------------------------------------------------

.   scalar SCR4=e(rss)

.
.    scalar F4= (SCR3-SCR4)/(SCR4/(34-10+7-3))

.   display F4
10.897847

.
. *  Avec 5 retards
.  regress y x L.x L2.x L3.x L4.x L5.x in 11/44

      Source |       SS           df       MS      Number of obs   =        34
-------------+----------------------------------   F(6, 27)        =     31.04
       Model |  4399021.26         6   733170.21   Prob > F        =    0.0000
    Residual |  637759.359        27   23620.717   R-squared       =    0.8734
-------------+----------------------------------   Adj R-squared   =    0.8452
       Total |  5036780.62        33  152629.716   Root MSE        =    153.69

------------------------------------------------------------------------------
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           x |
         --. |   -.073246   .0929619    -0.79   0.438     -.263988     .117496
         L1. |   .1764462   .1382709     1.28   0.213    -.1072623    .4601548
         L2. |   .0926315   .1307898     0.71   0.485    -.1757269    .3609899
         L3. |   .2147858   .1318257     1.63   0.115    -.0556983    .4852698
         L4. |    .010182   .1444283     0.07   0.944    -.2861604    .3065244
         L5. |   .2935945   .1001695     2.93   0.007     .0880637    .4991253
             |
       _cons |   734.3414   188.7342     3.89   0.001     347.0908    1121.592
------------------------------------------------------------------------------

.  scalar SCR5=e(rss)

.
.  scalar F5= (SCR4-SCR5)/(SCR5/(34-10+6-3))

.   display F5
8.5906296
```

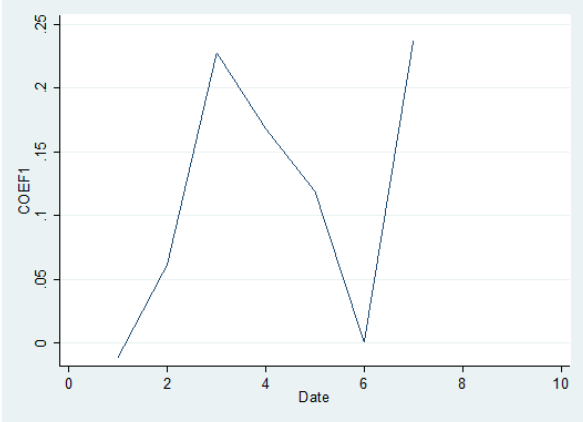
```
.
. * Avec 6 retards
. regress y x L.x L2.x L3.x L4.x L5.x L6.x  in 11/44

      Source |       SS           df       MS      Number of obs   =        34
-------------+----------------------------------   F(7, 26)        =     33.36
       Model |  4532182.51         7  647454.644   Prob > F        =    0.0000
    Residual |   504598.11        26  19407.6196   R-squared       =    0.8998
-------------+----------------------------------   Adj R-squared   =    0.8728
       Total |  5036780.62        33  152629.716   Root MSE        =    139.31

------------------------------------------------------------------------------
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           x |
         --. |   .0018025   .0890021     0.02   0.984     -.181144    .1847489
         L1. |   .0554629   .1335739     0.42   0.681    -.2191023     .330028
         L2. |   .2280905   .1293413     1.76   0.090    -.0377743    .4939553
         L3. |   .1626539   .1211383     1.34   0.191    -.0863496    .4116573
         L4. |   .1211661   .1376014     0.88   0.387    -.1616776    .4040098
         L5. |  -.0174677   .1494874    -0.12   0.908    -.3247436    .2898081
         L6. |   .2538306   .0969039     2.62   0.015     .0546418    .4530195
             |
       _cons |   493.0047   194.3086     2.54   0.018     93.59766    892.4118
------------------------------------------------------------------------------

.  scalar SCR6=e(rss)

.   scalar F6= (SCR5-SCR6)/(SCR6/(34-10+5-3))

.   display F6
6.8612871

.
. * Avec 7 retards
. regress y x L.x L2.x L3.x L4.x L5.x L6.x L7.x in 11/44

      Source |       SS           df       MS      Number of obs   =        34
-------------+----------------------------------   F(8, 25)        =     29.43
       Model |  4553296.39         8  569162.049   Prob > F        =    0.0000
    Residual |  483484.227        25  19339.3691   R-squared       =    0.9040
-------------+----------------------------------   Adj R-squared   =    0.8733
       Total |  5036780.62        33  152629.716   Root MSE        =    139.07

------------------------------------------------------------------------------
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           x |
         --. |   -.010106   .0895735    -0.11   0.911    -.1945861    .1743741
         L1. |   .1014822   .1404245     0.72   0.477    -.1877275    .3906919
         L2. |   .1741471   .1390527     1.25   0.222    -.1122373    .4605316
         L3. |   .2216944   .1334755     1.66   0.109    -.0532036    .4965925
         L4. |   .0881352     .14095     0.63   0.537    -.2021567    .3784272
         L5. |   .0402624   .1591244     0.25   0.802    -.2874605    .3679852
         L6. |   .1226812   .1584675     0.77   0.446    -.2036887     .449051
         L7. |   .1024407   .0980414     1.04   0.306    -.0994794    .3043607
             |
       _cons |   400.1607   213.3509     1.88   0.072    -39.24378    839.5651
------------------------------------------------------------------------------


.
.  scalar SCR7=e(rss)

.  scalar F7= (SCR6-SCR7)/(SCR7/(34-10+4-3))

.   display F7
1.0917566

.
. * Avec 8 retards
```

```
. regress y x L.x L2.x L3.x L4.x L5.x L6.x L7.x L8.x in 11/44

      Source |       SS           df       MS      Number of obs   =        34
-------------+----------------------------------   F(9, 24)        =     25.26
       Model |  4555835.97         9  506203.997   Prob > F        =    0.0000
    Residual |  480944.647        24  20039.3603   R-squared       =    0.9045
-------------+----------------------------------   Adj R-squared   =    0.8687
       Total |  5036780.62        33  152629.716   Root MSE        =    141.56

------------------------------------------------------------------------------
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           x |
         --. |  -.0186931   .0943169    -0.20   0.845    -.2133537    .1759674
         L1. |   .1127768    .146422     0.77   0.449    -.1894233    .4149768
         L2. |    .156068   .1503817     1.04   0.310    -.1543047    .4664407
         L3. |   .2412809   .1465869     1.65   0.113    -.0612596    .5438215
         L4. |   .0669916   .1552856     0.43   0.670    -.2535021    .3874853
         L5. |   .0516438   .1651037     0.31   0.757    -.2891134     .392401
         L6. |   .1002745   .1731546     0.58   0.568    -.2570992    .4576481
         L7. |   .1507647   .1684838     0.89   0.380    -.1969688    .4984982
         L8. |   -.037924   .1065308    -0.36   0.725    -.2577927    .1819448
             |
       _cons |   446.3518   252.9865     1.76   0.090    -75.78672    968.4903
------------------------------------------------------------------------------

.   scalar SCR8=e(rss)

.  scalar F8= (SCR7-SCR8)/(SCR8/(34-10+3-3))

.   display F8
.12672955

.
. * Avec 9 retards
.  regress y x L.x L2.x L3.x L4.x L5.x L6.x L7.x L8.x L9.x  in 11/44

      Source |       SS           df       MS      Number of obs   =        34
-------------+----------------------------------   F(10, 23)       =     22.59
       Model |  4571415.73        10  457141.573   Prob > F        =    0.0000
    Residual |  465364.887        23   20233.256   R-squared       =    0.9076
-------------+----------------------------------   Adj R-squared   =    0.8674
       Total |  5036780.62        33  152629.716   Root MSE        =    142.24

------------------------------------------------------------------------------
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           x |
         --. |  -.0150944   .0948608    -0.16   0.875    -.2113289    .1811401
         L1. |   .0822113   .1511957     0.54   0.592    -.2305607    .3949833
         L2. |   .1908289   .1562137     1.22   0.234    -.1323237    .5139815
         L3. |   .1927627   .1573301     1.23   0.233    -.1326995    .5182249
         L4. |   .1235312   .1688149     0.73   0.472    -.2256891    .4727515
         L5. |  -.0076813   .1791471    -0.04   0.966    -.3782752    .3629126
         L6. |   .1356361   .1785961     0.76   0.455    -.2338181    .5050903
         L7. |   .0924085   .1818903     0.51   0.616    -.2838603    .4686772
         L8. |   .0787918    .170734     0.46   0.649    -.2743984    .4319821
         L9. |  -.0902795   .1028825    -0.88   0.389    -.3031081    .1225492
             |
       _cons |   550.7418   280.6664     1.96   0.062    -29.86083    1131.344
------------------------------------------------------------------------------

.   scalar SCR9=e(rss)

.  scalar F9= (SCR8-SCR9)/(SCR9/(34-10+2-3))

.   display F9
.77000757

.
.  * Avec 10 retards
```

```
.   regress y x L.x L2.x L3.x L4.x L5.x L6.x L7.x L8.x L9.x L10.x  in 11/44

      Source |       SS           df       MS      Number of obs   =        34
-------------+----------------------------------   F(11, 22)       =     19.90
       Model |  4576729.64        11  416066.331   Prob > F        =    0.0000
    Residual |   460050.98        22  20911.4082   R-squared       =    0.9087
-------------+----------------------------------   Adj R-squared   =    0.8630
       Total |  5036780.62        33  152629.716   Root MSE        =    144.61

------------------------------------------------------------------------------
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           x |
         --. |  -.0323918   .1023602    -0.32   0.755    -.2446738    .1798901
         L1. |   .1023771   .1588289     0.64   0.526    -.2270139    .4317681
         L2. |   .1652953    .166692     0.99   0.332    -.1804028    .5109934
         L3. |   .2205499   .1691771     1.30   0.206     -.130302    .5714017
         L4. |   .0845428   .1882434     0.45   0.658    -.3058502    .4749358
         L5. |   .0358937   .2015973     0.18   0.860    -.3821935     .453981
         L6. |   .0908094   .2021712     0.45   0.658    -.3284679    .5100868
         L7. |   .1238304   .1951368     0.63   0.532    -.2808584    .5285193
         L8. |   .0322287   .1966194     0.16   0.871    -.3755349    .4399923
         L9. |  -.0153138   .1818102    -0.08   0.934     -.392365    .3617375
        L10. |  -.0541123   .1073447    -0.50   0.619    -.2767317    .1685071
             |
       _cons |   627.3554   323.2835     1.94   0.065    -43.09348    1297.804
------------------------------------------------------------------------------

.
.    scalar SCR10=e(rss)

.  scalar F10= (SCR9-SCR10)/(SCR10/(34-10+1-3))

.   display F10
.25411523

.
.  * On peut faire un récapitulatif des résultats des test de Fisher
.
.  matrix F=[F1\F2\F3\F4\F5\F6\F7\F8\F9\F10]

.  matlist F

             |       c1
-------------+-----------
          r1 |  16.82401
          r2 |  18.91659
          r3 |  19.18453
          r4 |  10.89785
          r5 |   8.59063
          r6 |  6.861287
          r7 |  1.091757
          r8 |  .1267296
          r9 |  .7700076
         r10 |  .2541152

.
.  * Pour une synthèse des critères  AIC , SC et F
.  matrix Synthèse=[Critère, F]

.  matlist Synthèse

             |       c1         c1         c1
-------------+------------------------------
          r1 |   11.9594    11.9594   16.82401
          r2 |  10.98971   11.07081   18.91659
          r3 |  10.47256   10.59421   19.18453
          r4 |  10.13613   10.29833   10.89785
          r5 |  9.843834   10.04658    8.59063
          r6 |  9.652266   9.895564   6.861287
          r7 |  9.651435   9.935284   1.091757
```

```
          r8 |  9.678652   10.00305   .1267296
          r9 |  9.699471   10.06442   .7700076
         r10 |  9.709449   10.11495   .2541152

.
.
.  * On retient donc 6 retards.
.
.  */// L'analyse se poursuit avec la régression avec 6 retards où les coefficients estimés
seront analysés
.
. regress y x L.x L2.x L3.x L4.x L5.x L6.x

      Source |       SS           df       MS      Number of obs   =        38
-------------+----------------------------------   F(7, 30)        =     50.63
       Model |  6155805.34         7  879400.763   Prob > F        =    0.0000
    Residual |  521116.052        30  17370.5351   R-squared       =    0.9220
-------------+----------------------------------   Adj R-squared   =    0.9037
       Total |  6676921.39        37  180457.335   Root MSE        =     131.8

------------------------------------------------------------------------------
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           x |
         --. |   -.011389   .0815322    -0.14   0.890       -.1779    .1551221
         L1. |    .061265   .1249063     0.49   0.627    -.1938278    .3163577
         L2. |   .2275692   .1196352     1.90   0.067    -.0167584    .4718968
         L3. |   .1679316   .1129971     1.49   0.148    -.0628393    .3987026
         L4. |   .1187338   .1274542     0.93   0.359    -.1415624    .3790301
         L5. |   .0001691   .1369068     0.00   0.999    -.2794319    .2797702
         L6. |   .2371737   .0840651     2.82   0.008     .0654899    .4088575
             |
       _cons |   501.5414   154.8486     3.24   0.003     185.2984    817.7845
------------------------------------------------------------------------------

. scalar coef0=_b[x]

. scalar coef1=_b[L.x]

. scalar coef2=_b[L2.x]

. scalar coef3=_b[L3.x]

. scalar coef4=_b[L4.x]

. scalar coef5=_b[L5.x]

. scalar coef6=_b[L6.x]

.
. *Le tableau des coefficients est donné par :
.
. matrix COEF=[coef0\coef1\coef2\coef3\coef4\coef5\coef6]

. matlist COEF

             |        c1
-------------+-----------
          r1 |  -.011389
          r2 |   .061265
          r3 |  .2275692
          r4 |  .1679316
          r5 |  .1187338
          r6 |  .0001691
          r7 |  .2371737

.
. svmat COEF

.
. * Le graphique illustre la structure de pondération de retards pour le modèle 6 estimé
```

```
.
. twoway (line  COEF date if date <10)

.
```




```
. * Le retard moyen est égal à :
.
. gen D =
(coef1+2*coef2+3*coef3+4*coef4+5*coef5+6*coef6)/(coef0+coef1+coef2+coef3+coef4+coef5+coef6)

. display D
3.6421595

.
. * Le délai moyen de réaction est 3.64 trimestres, soit presque une année.
.
end of do-file

. exit, clear
```