```
 1   1 . import delimited "Spring_21_Midterm_Monthly.txt"
 2   (19 vars, 985 obs)
 3   2 . /*
 4   > Monthly data from Florida from FRED
 5   > Dictionary for variables we will use
 6   > date: date of observation in YMD form
 7   > medlispripersqufeefl: Median list price of single family homes
 8   >   per square foot in Florida
 9   > flbp1fh: New building permits for single family residential homes in Florida.
10   > fii10: 10 year inflation indexed treasure security rate
11   >   A measure of the real (inflation adjusted) cost of borrowing.
12   > t10yiem: 10 year break even inflation rate.
13   >   Inflation rate investors currently expect over next decade.
14   > */
15   3 .
16   4 . rename medlispripersqufeefl list
17   5 . rename flbp1fh permits
18   6 . gen interest=fii10/100
19   (768 missing values generated)
20   7 . gen inflation=t10yiem/100
21   (768 missing values generated)
22   8 .
23   9 . keep date list permits interest inflation
24   10 .
25   11 . rename date datestring
26   12 . generate datec=date(datestring,"YMD")
27   13 . gen date=mofd(datec)
28   14 . format date %tm
29   15 . tsset date
30   time variable: date, 1939m1 to 2021m1
31   delta: 1 month
32   16 . gen month=month(datec)
33   17 .
34   18 . keep if tin(2015m1,2019m12)
35   (925 observations deleted)
36   19 . summ list permits interest inflation
37   Variable | Obs   Mean   Std. Dev.   Min   Max
38   -------------+--
39   list | 42   173.5337   6.529057   160.9375   183.4688
40   permits | 60   6948.217   1298.702   4334   9667
41   interest | 60   .0048417   .0026991   .0004   .0111
42   inflation | 60   .0178833   .0021596   .0131   .0214
43   20 .
44   21 . gen lnlist=ln(list)
45   (18 missing values generated)
46   22 . gen lnpermits=ln(permits)
47   23 .
48
```

```
1   24 . twoway (tsline list) (tsline d.lnlist, yaxis(2)) if(list~=.), scheme(s1mono)
2   25 . graph export "List tslines.emf", replace
```
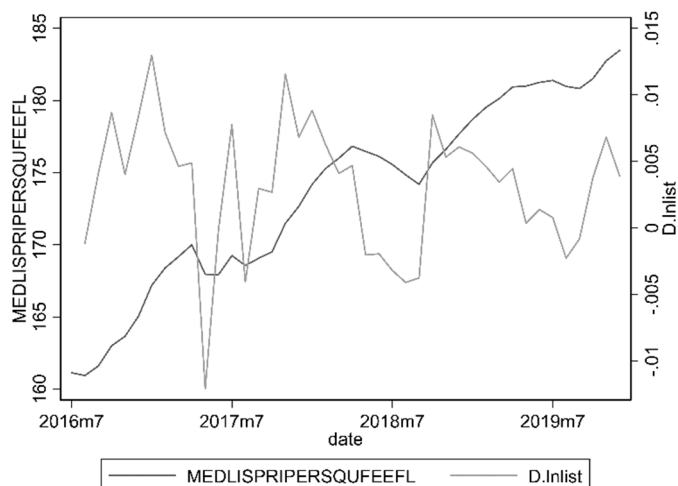


```
3    26 .
4    27 . ac lnlist, scheme(s1mono) ylab(-1(.5)1) saving("ac lnlist", replace)
5       (file ac lnlist.gph saved)
6    28 . pac lnlist, scheme(s1mono) ylab(-1(.5)1) saving("pac lnlist", replace)
7       (file pac lnlist.gph saved)
8    29 . ac d.lnlist, scheme(s1mono) ylab(-1(.5)1) saving("ac d.lnlist", replace)
9       (file ac d.lnlist saved)
10   30 . pac d.lnlist, scheme(s1mono) ylab(-1(.5)1) saving("pac d.lnlist", replace)
11      (file pac d.lnlist saved)
12   31 . graph combine "ac lnlist" "ac d.lnlist" ///
13    >          "pac lnlist" "pac d.lnlist", scheme(s1mono)
14   32 . graph export "lnlist ac pac.emf", replace
```
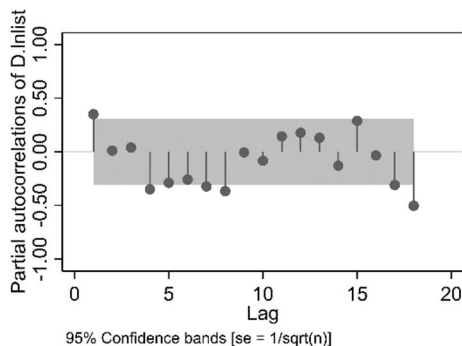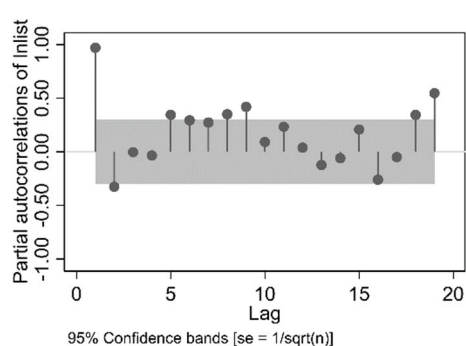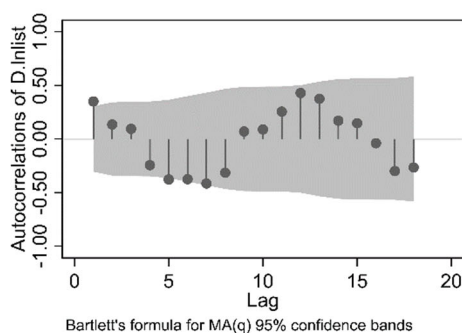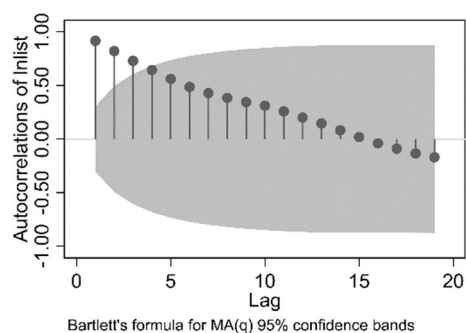


```
15
16
```

```
1    33 .
2    34 . dfuller lnlist, trend regress lag(12)
3      Augmented Dickey-Fuller test for unit root      Number of obs   =        29
4                                     ---------- Interpolated Dickey-Fuller ---------
5                       Test         1% Critical      5% Critical     10% Critical
6                     Statistic         Value            Value            Value
7      ------------------------------------------------------------------------------
8       Z(t)            -1.384          -4.343          -3.584           -3.230
9      ------------------------------------------------------------------------------
10     MacKinnon approximate p-value for Z(t) = 0.8654
11     ------------------------------------------------------------------------------
12     D.lnlist    |     Coef.    Std. Err.      t    P>|t|    [95% Conf. Interval]
13     ------------+-----------------------------------------------------------------
14          lnlist |
15            L1. |  -.3651796   .2637837    -1.38   0.188    -.9309393    .2005802
16            LD. |   .0935839   .2630464     0.36   0.727    -.4705945    .6577624
17           L2D. |    .223131   .2749908     0.81   0.431    -.3666657    .8129276
18           L3D. |   .1328124   .2610698     0.51   0.619    -.4271266    .6927515
19           L4D. |    .135574   .2513441     0.54   0.598    -.4035055    .6746535
20           L5D. |   .0316428   .2215005     0.14   0.888    -.4434285    .5067141
21           L6D. |  -.1913517   .1918116    -1.00   0.335    -.6027468    .2200433
22           L7D. |  -.1160268    .180078    -0.64   0.530    -.5022558    .2702022
23           L8D. |  -.1918405   .1780807    -1.08   0.300    -.5737856    .1901045
24           L9D. |   -.016458   .1814863    -0.09   0.929    -.4057074    .3727913
25          L10D. |  -.0775433   .1828028    -0.42   0.678    -.4696164    .3145298
26          L11D. |   .0353885   .1736183     0.20   0.841    -.3369857    .4077626
27          L12D. |   .1441991     .16969     0.85   0.410    -.2197496    .5081479
28         _trend |   .0009485   .0007384     1.28   0.220    -.0006354    .0025323
29          _cons |   1.866038   1.342264     1.39   0.186    -1.012833    4.744908
30     ------------------------------------------------------------------------------
31   35 .
32   36 .
33
```

```
1   37 . *Model Set 1
2   38 .
3   39 . *Model 1.1
4   40 . reg lnlist l.lnpermits l.interest l.inflation
5          Source |       SS          df        MS         Number of obs  =       42
6   -------------+------------------------------         F(3, 38)       =      9.69
7           Model | .025537323         3  .008512441     Prob > F       =    0.0001
8        Residual | .033380068        38  .000878423     R-squared      =    0.4334
9   -------------+------------------------------         Adj R-squared  =    0.3887
10         Total | .05891739         41   .00143701      Root MSE       =    .02964
11  --------------------------------------------------------------------------------
12        lnlist |     Coef.   Std. Err.      t     P>|t|     [95% Conf. Interval]
13  -------------+----------------------------------------------------------------
14      lnpermits |
15          L1. |    .1315246   .0305554     4.30   0.000     .0696685    .1933807
16       interest |
17          L1. |    3.940768   2.629855     1.50   0.142    -1.383095    9.264631
18      inflation |
19          L1. |   -.3091365   3.687244    -0.08   0.934    -7.773572    7.155299
20         _cons |    3.969767    .280281    14.16   0.000     3.402368    4.537166
21  --------------------------------------------------------------------------------
22  41 . testparm l.interest l.inflation
23     ( 1)   L.interest = 0
24     ( 2)   L.inflation = 0
25         F(  2,    38) =    2.69
26            Prob > F =    0.0810
27  42 . estat bgodfrey , lag(12)
28    Breusch-Godfrey LM test for autocorrelation
29    ---------------------------------------------------------------------------
30      lags(p)  |         chi2              df             Prob > chi2
31    -------------+-------------------------------------------------------------
32       12      |        32.575             12                0.0011
33    ---------------------------------------------------------------------------
34                        H0: no serial correlation
35  43 . predict res11
36    (option xb assumed; fitted values)
37    (1 missing value generated)
38  44 . pac res11 , scheme(s1mono) saving(res11pac, replace)
39    (file res11pac.gph saved)
40  45 . newey d.lnlist l.lnpermits l.interest l.inflation , lag(12)
41    Regression with Newey-West standard errors    Number of obs  =       41
42    maximum lag: 12                                F(  3,       37) =     8.98
43                                                   Prob > F        =    0.0001
44    --------------------------------------------------------------------------------
45              |             Newey-West
46       D.lnlist |    Coef.   Std. Err.      t     P>|t|     [95% Conf. Interval]
47    -------------+----------------------------------------------------------------
48      lnpermits |
49          L1. |   -.0141607   .0036532    -3.88   0.000    -.0215628   -.0067585
50       interest |
51          L1. |    .5277624   .1451927     3.63   0.001     .2335741    .8219507
52      inflation |
53          L1. |   -.7270889   .2491396    -2.92   0.006    -1.231894   -.2222842
54         _cons |    .1400895   .0321637     4.36   0.000     .0749196    .2052594
55    --------------------------------------------------------------------------------
56
```

```
1    46 . testparm l.interest l.inflation
2       ( 1)  L.interest = 0
3       ( 2)  L.inflation = 0
4            F(  2,    37) =    9.66
5                 Prob > F =    0.0004
6    47 .
7    48 . *Model 1.2
8    49 . reg lnlist l.lnlist l(1,2).lnpermits ///
9       >        l(1,2).interest l(1,2).inflation
10        Source |      SS           df       MS      Number of obs   =        41
11   -------------+----------------------------------   F(7, 33)        =    565.96
12         Model | .052943338         7  .007563334   Prob > F        =    0.0000
13      Residual | .000441006        33  .000013364   R-squared       =    0.9917
14   -------------+----------------------------------   Adj R-squared   =    0.9900
15         Total | .053384345        40  .001334609   Root MSE        =    .00366
16   ----------------------------------------------------------------------------
17        lnlist |     Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
18   -------------+--------------------------------------------------------------
19        lnlist |
20           L1. |  1.057643   .0243911    43.36   0.000    1.008019    1.107267
21     lnpermits |
22           L1. | -.0079621   .0054745    -1.45   0.155      -.0191    .0031759
23           L2. | -.0193459   .0051657    -3.75   0.001   -.0298557   -.0088362
24      interest |
25           L1. |  1.868586   .6500434     2.87   0.007    .5460629    3.191109
26           L2. | -1.435976   .6206896    -2.31   0.027   -2.698779    -.173174
27     inflation |
28           L1. | -1.056955   .9232286    -1.14   0.261   -2.935277    .8213681
29           L2. | -.1440433   .9860958    -0.15   0.885    -2.15027    1.862184
30         _cons | -.0306055   .0964453    -0.32   0.753    -.226825     .165614
31   ----------------------------------------------------------------------------
32   50 . testparm l.lnlist l2.lnpermits l2.interest l2.inflation
33       ( 1)  L.lnlist = 0
34       ( 2)  L2.lnpermits = 0
35       ( 3)  L2.interest = 0
36       ( 4)  L2.inflation = 0
37            F(  4,    33) =  553.62
38                 Prob > F =    0.0000
39   51 . testparm l2.lnpermits l(1,2).interest l(1,2).inflation
40       ( 1)  L2.lnpermits = 0
41       ( 2)  L.interest = 0
42       ( 3)  L2.interest = 0
43       ( 4)  L.inflation = 0
44       ( 5)  L2.inflation = 0
45            F(  5,    33) =    5.16
46                 Prob > F =    0.0013
47   52 . estat bgodfrey , lag(12)
48      Breusch-Godfrey LM test for autocorrelation
49      ---------------------------------------------------------------------------
50         lags(p)  |         chi2               df              Prob > chi2
51      -------------+-------------------------------------------------------------
52          12     |        19.898              12                 0.0690
53      ---------------------------------------------------------------------------
54                            H0: no serial correlation
55   53 . predict res12
56      (option xb assumed; fitted values)
57      (19 missing values generated)
58   54 . pac res12 , scheme(s1mono) saving(res12pac, replace)
59      (file res12pac.gph saved)
```

```
 1   55 . newey lnlist l.lnlist l(1,2).lnpermits ///
 2      >          l(1,2).interest l(1,2).inflation , lag(12)
 3      Regression with Newey-West standard errors      Number of obs    =         41
 4      maximum lag: 12                                  F(  7,        33) =    5298.29
 5                                                       Prob > F         =     0.0000
 6      -------------------------------------------------------------------------------
 7                  |               Newey-West
 8         lnlist   |    Coef.    Std. Err.      t     P>|t|     [95% Conf. Interval]
 9      ------------+------------------------------------------------------------------
10         lnlist   |
11            L1.   |   1.057643   .0112018    94.42   0.000     1.034853    1.080433
12      lnpermits   |
13            L1.   |  -.0079621   .0042762    -1.86   0.072    -.0166621     .000738
14            L2.   |  -.0193459   .0054181    -3.57   0.001    -.0303691   -.0083227
15       interest   |
16            L1.   |   1.868586   .3462785     5.40   0.000     1.164077    2.573095
17            L2.   |  -1.435976   .4355058    -3.30   0.002     -2.32202   -.5499333
18      inflation   |
19            L1.   |  -1.056955   .4881886    -2.17   0.038    -2.050182   -.0637275
20            L2.   |  -.1440433   .7555401    -0.19   0.850    -1.681201    1.393115
21          _cons   |  -.0306055   .0469315    -0.65   0.519    -.1260883    .0648772
22      -------------------------------------------------------------------------------
23   56 . testparm l.lnlist l2.lnpermits l2.interest l2.inflation
24      ( 1)   L.lnlist = 0
25      ( 2)   L2.lnpermits = 0
26      ( 3)   L2.interest = 0
27      ( 4)   L2.inflation = 0
28            F(  4,    33) = 5176.39
29                Prob > F =    0.0000
30   57 . testparm l2.lnpermits l(1,2).interest l(1,2).inflation
31      ( 1)   L2.lnpermits = 0
32      ( 2)   L.interest = 0
33      ( 3)   L2.interest = 0
34      ( 4)   L.inflation = 0
35      ( 5)   L2.inflation = 0
36            F(  5,    33) =   57.30
37                Prob > F =    0.0000
38   58 .
39   59 . *Model 1.3
40   60 . reg lnlist l.lnlist l(1,2).lnpermits
41          Source  |      SS          df       MS        Number of obs    =         41
42      ------------+------------------------------        F(3, 37)         =    1114.84
43           Model  |  .052800222       3   .017600074    Prob > F         =     0.0000
44        Residual  |  .000584122      37   .000015787    R-squared        =     0.9891
45      ------------+------------------------------        Adj R-squared    =     0.9882
46           Total  |  .053384345      40   .001334609    Root MSE         =     .00397
47      -------------------------------------------------------------------------------
48         lnlist   |    Coef.    Std. Err.      t     P>|t|     [95% Conf. Interval]
49      ------------+------------------------------------------------------------------
50         lnlist   |
51            L1.   |   1.044564   .0239421    43.63   0.000     .9960531    1.093076
52      lnpermits   |
53            L1.   |  -.0087612    .005592    -1.57   0.126    -.0200916    .0025692
54            L2.   |  -.0192303   .0053765    -3.58   0.001    -.0301242   -.0083364
55          _cons   |    .022781   .0921708     0.25   0.806    -.1639748    .2095369
56      -------------------------------------------------------------------------------
57
```
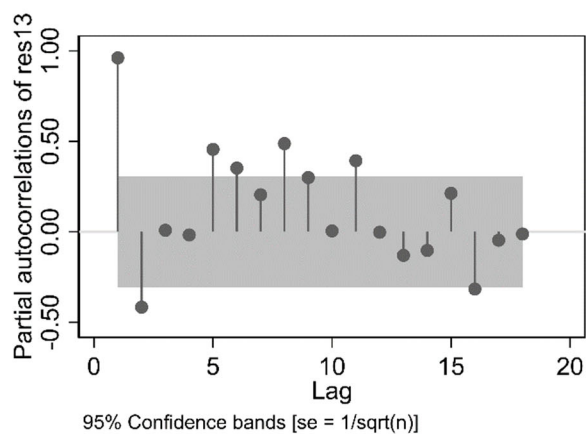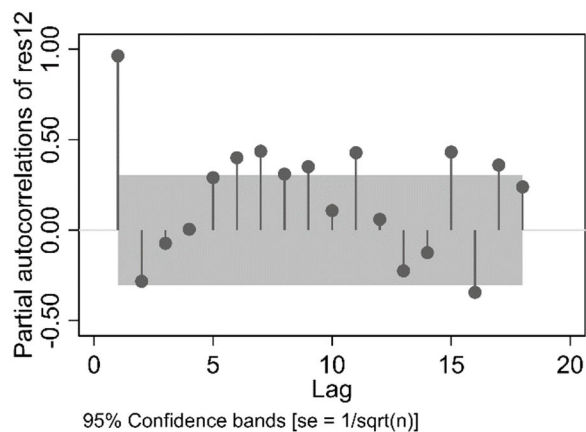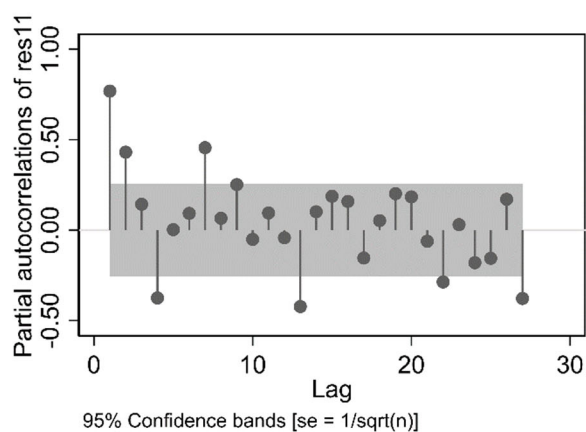
```
61 . test l.lnlist l2.lnpermits
   ( 1)  L.lnlist = 0
   ( 2)  L2.lnpermits = 0
         F(  2,    37) = 1046.35
              Prob > F =    0.0000
62 . estat bgodfrey , lag(12)
  Breusch-Godfrey LM test for autocorrelation
  ---------------------------------------------------------------------------
      lags(p)  |          chi2               df              Prob > chi2
  -------------+-------------------------------------------------------------
        12     |         16.269              12                  0.1792
  ---------------------------------------------------------------------------
                          H0: no serial correlation
63 . predict res13
  (option xb assumed; fitted values)
  (19 missing values generated)
64 . pac res13 , scheme(s1mono) saving(res13pac, replace)
  (file res13pac.gph saved)
65 . newey lnlist l.lnlist l(1,2).lnpermits , lag(12)
  Regression with Newey-West standard errors      Number of obs    =        41
  maximum lag: 12                                 F(  3,        37) =    3387.49
                                                  Prob > F         =     0.0000
  ---------------------------------------------------------------------------
               |            Newey-West
       lnlist  |     Coef.    Std. Err.       t     P>|t|    [95% Conf. Interval]
  -------------+-------------------------------------------------------------
       lnlist  |
          L1.  |   1.044564   .0130261    80.19    0.000     1.018171    1.070958
     lnpermits |
          L1.  |  -.0087612    .005117    -1.71    0.095    -.0191293    .0016069
          L2.  |  -.0192303   .0044524    -4.32    0.000    -.0282517   -.0102089
        _cons  |    .022781   .0520173     0.44    0.664    -.0826159    .128178
  ---------------------------------------------------------------------------
66 . test l.lnlist l2.lnpermits
   ( 1)  L.lnlist = 0
   ( 2)  L2.lnpermits = 0
         F(  2,    37) = 3215.44
              Prob > F =    0.0000
```

```
1    67 . graph combine "res11pac" "res12pac" "res13pac", scheme(s1mono)
2    68 . graph export "Models 1 Residual PACs.emf", replace
```


95% Confidence bands [se = 1/sqrt(n)]

95% Confidence bands [se = 1/sqrt(n)]

95% Confidence bands [se = 1/sqrt(n)]

```
3    69 .
4    70 .
5
```

```
 1   71 . *Model Set 2
 2   72 .
 3   73 . *Model 2.1
 4   74 . reg lnlist l.lnpermits l.interest l.inflation date i.month
 5          Source |       SS           df       MS      Number of obs   =        42
 6      -------------+------------------------------   F(15, 26)       =    246.07
 7           Model |  .058505275       15  .003900352   Prob > F        =    0.0000
 8        Residual |  .000412115       26  .000015851   R-squared       =    0.9930
 9      -------------+------------------------------   Adj R-squared   =    0.9890
10           Total |   .05891739       41   .00143701   Root MSE        =    .00398
11      -------------------------------------------------------------------------------
12          lnlist |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
13      -------------+------------------------------------------------------------------
14       lnpermits |
15             L1. |   .0162101   .0097853     1.66   0.110    -.003904    .0363241
16        interest |
17             L1. |  -1.025764   .3955062    -2.59   0.015   -1.838739   -.2127896
18       inflation |
19             L1. |   2.590495   .5545403     4.67   0.000    1.450621    3.730369
20            date |   .0028926   .0000932    31.05   0.000    .0027011    .0030841
21           month | **Coefficients not shown to save space**
22           _cons |   2.958662    .051842    57.07   0.000    2.852099    3.065225
23      -------------------------------------------------------------------------------
24   75 . testparm l.interest l.inflation
25       ( 1)  L.interest = 0
26       ( 2)  L.inflation = 0
27           F(  2,    26) =   12.05
28              Prob > F =    0.0002
29   76 . estat bgodfrey , lag(12)
30      Breusch-Godfrey LM test for autocorrelation
31      ---------------------------------------------------------------------------
32         lags(p)   |        chi2              df               Prob > chi2
33      -------------+-------------------------------------------------------------
34          12      |      34.675             12                  0.0005
35      ---------------------------------------------------------------------------
36                            H0: no serial correlation
37   77 . predict res21
38      (option xb assumed; fitted values)
39      (1 missing value generated)
40   78 . pac res21 , scheme(s1mono) saving(res21pac, replace)
41      (file res21pac.gph saved)
42   79 . newey lnlist l.lnpermits l.interest l.inflation date i.month , lag(12)
43      Regression with Newey-West standard errors     Number of obs    =        42
44      maximum lag: 12                                F( 15,       26) =   1628.65
45                                                     Prob > F         =    0.0000
46      -------------------------------------------------------------------------------
47                 |              Newey-West
48          lnlist |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
49      -------------+------------------------------------------------------------------
50       lnpermits |
51             L1. |   .0162101   .0062276     2.60   0.015    .0034091    .0290111
52        interest |
53             L1. |  -1.025764   .3546302    -2.89   0.008   -1.754717   -.2968114
54       inflation |
55             L1. |   2.590495   .3596627     7.20   0.000    1.851198    3.329792
56            date |   .0028926   .0000565    51.21   0.000    .0027765    .0030087
57           month | **Coefficients not shown to save space.**
58           _cons |   2.958662    .047473    62.32   0.000     2.86108    3.056244
59      -------------------------------------------------------------------------------
```

```
1    80 . testparm l.interest l.inflation
2       ( 1)   L.interest = 0
3       ( 2)   L.inflation = 0
4             F(  2,    26) =   27.35
5                  Prob > F =    0.0000
6    81 .
7    82 . *Model 2.2
8    83 . reg lnlist l.lnlist l(1,2).lnpermits ///
9       >        l(1,2).interest l(1,2).inflation date i.month
10           Source |      SS           df       MS      Number of obs   =        41
11      -------------+----------------------------------   F(19, 21)       =    420.03
12           Model |  .053244238       19  .002802328   Prob > F        =    0.0000
13        Residual |  .000140107       21  6.6717e-06   R-squared       =    0.9974
14      -------------+----------------------------------   Adj R-squared   =    0.9950
15           Total |  .053384345       40  .001334609   Root MSE        =    .00258
16      ----------------------------------------------------------------------------
17          lnlist |      Coef.    Std. Err.      t    P>|t|     [95% Conf. Interval]
18      -------------+--------------------------------------------------------------
19          lnlist |
20            L1. |   .8075272    .1377946     5.86   0.000     .5209676    1.094087
21       lnpermits |
22            L1. |   .0119226    .0074165     1.61   0.123    -.0035008    .0273461
23            L2. |  -.0202169    .0068455    -2.95   0.008    -.0344528   -.0059809
24        interest |
25            L1. |   .0575109     .684248     0.08   0.934    -1.365461    1.480482
26            L2. |  -.0447407    .6412646    -0.07   0.945    -1.378323    1.288842
27       inflation |
28            L1. |   .5730996    .8135433     0.70   0.489    -1.118756    2.264955
29            L2. |  -.5306669    .8312814    -0.64   0.530    -2.259411    1.198077
30            date |    .000603    .0004054     1.49   0.152     -.00024     .001446
31           month |   **Coefficients not shown to save space**
32           _cons |   .6514796    .4034289     1.61   0.121    -.1874967    1.490456
33      ----------------------------------------------------------------------------
34    84 . testparm l.lnlist l2.lnpermits l2.interest l2.inflation
35       ( 1)   L.lnlist = 0
36       ( 2)   L2.lnpermits = 0
37       ( 3)   L2.interest = 0
38       ( 4)   L2.inflation = 0
39             F(  4,    21) =    9.02
40                  Prob > F =    0.0002
41    85 . testparm l2.lnpermits l(1,2).interest l(1,2).inflation
42       ( 1)   L2.lnpermits = 0
43       ( 2)   L.interest = 0
44       ( 3)   L2.interest = 0
45       ( 4)   L.inflation = 0
46       ( 5)   L2.inflation = 0
47             F(  5,    21) =    2.34
48                  Prob > F =    0.0772
49    86 . estat bgodfrey , lag(12)
50      Breusch-Godfrey LM test for autocorrelation
51      ----------------------------------------------------------------------------
52          lags(p)  |         chi2              df            Prob > chi2
53      -------------+--------------------------------------------------------------
54          12      |        35.737             12               0.0004
55      ----------------------------------------------------------------------------
56                          H0: no serial correlation
57    87 . predict res22
58      (option xb assumed; fitted values)
59      (19 missing values generated)
```

```
1   88 . pac res22 , scheme(s1mono) saving(res22pac, replace)
2      (file res22pac.gph saved)
3   89 . newey lnlist l.lnlist l(1,2).lnpermits ///
4      >        l(1,2).interest l(1,2).inflation date i.month , lag(12)
5      Regression with Newey-West standard errors      Number of obs    =      41
6      maximum lag: 12                                 F( 19,      21) =  14179.76
7                                                      Prob > F         =    0.0000
8      ------------------------------------------------------------------------------
9                   |               Newey-West
10         lnlist |    Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
11     ------------+-----------------------------------------------------------------
12         lnlist |
13            L1. |  .8075272   .1364945     5.92   0.000    .5236713    1.091383
14      lnpermits |
15            L1. |  .0119226   .0066649     1.79   0.088   -.0019378    .0257831
16            L2. | -.0202169   .0047751    -4.23   0.000   -.0301473   -.0102864
17       interest |
18            L1. |  .0575109   .4960624     0.12   0.909   -.9741074    1.089129
19            L2. | -.0447407   .4495683    -0.10   0.922   -.9796691    .8901878
20      inflation |
21            L1. |  .5730996   .6063329     0.95   0.355   -.6878386    1.834038
22            L2. | -.5306669   .7257958    -0.73   0.473   -2.040042    .978708
23           date |   .000603   .0004114     1.47   0.158   -.0002525    .0014585
24          month |   **Coefficients not shown to save space.**
25          _cons |  .6514796   .3980809     1.64   0.117   -.1763749    1.479334
26     ------------------------------------------------------------------------------
27   90 . testparm l.lnlist l2.lnpermits l2.interest l2.inflation
28      ( 1)   L.lnlist = 0
29      ( 2)   L2.lnpermits = 0
30      ( 3)   L2.interest = 0
31      ( 4)   L2.inflation = 0
32           F(  4,    21) =   14.63
33               Prob > F =    0.0000
34   91 . testparm l2.lnpermits l(1,2).interest l(1,2).inflation
35      ( 1)   L2.lnpermits = 0
36      ( 2)   L.interest = 0
37      ( 3)   L2.interest = 0
38      ( 4)   L.inflation = 0
39      ( 5)   L2.inflation = 0
40           F(  5,    21) =    7.48
41               Prob > F =   0.0004
42   92 .
43   93 . *Model 2.3
44   94 . reg lnlist l.lnlist l(1,2).lnpermits date i.month
45          Source |      SS          df      MS        Number of obs   =      41
46     ------------+------------------------------   F(15, 25)        =    611.75
47          Model | .053239299       15  .003549287   Prob > F         =    0.0000
48       Residual | .000145046       25  5.8018e-06   R-squared        =    0.9973
49     ------------+------------------------------   Adj R-squared    =    0.9957
50          Total | .053384345       40  .001334609   Root MSE         =    .00241
51     ------------------------------------------------------------------------------
52         lnlist |    Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
53     ------------+-----------------------------------------------------------------
54         lnlist |
55            L1. |  .8316262   .0880315     9.45   0.000    .6503219     1.01293
56      lnpermits |
57            L1. |     .0118   .0058448     2.02   0.054   -.0002377    .0238376
58            L2. | -.0213689   .0060161    -3.55   0.002   -.0337594   -.0089785
59           date |  .0005299    .000254     2.09   0.047    6.82e-06    .0010529
```
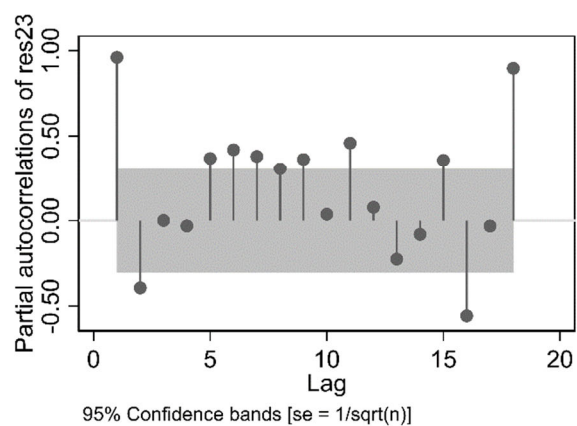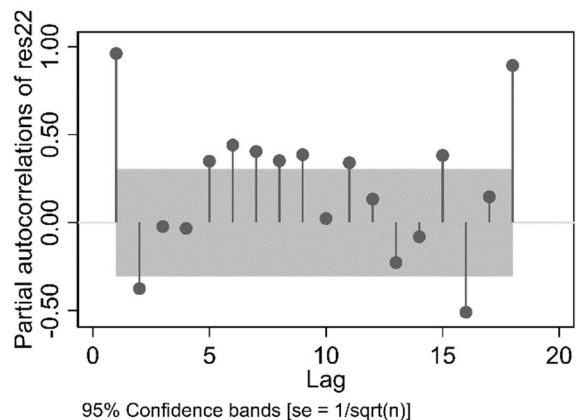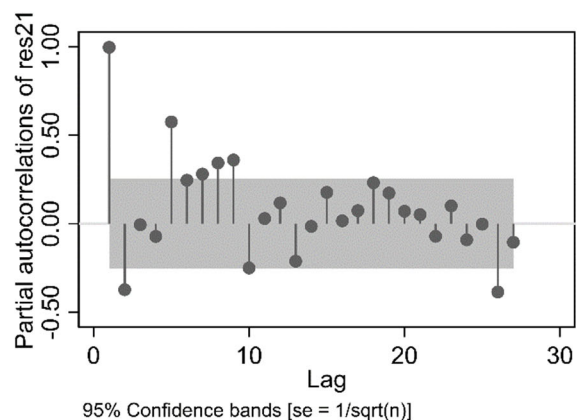
```
 1            month |  **Coefficients not shown to save space.**
 2            _cons |   .5903254    .2616123     2.26   0.033     .0515247    1.129126
 3        ------------------------------------------------------------------------------
 4    95 . test l.lnlist l2.lnpermits
 5       ( 1)   L.lnlist = 0
 6       ( 2)   L2.lnpermits = 0
 7            F(  2,    25) =   45.03
 8                 Prob > F =    0.0000
 9    96 . estat bgodfrey , lag(12)
10       Breusch-Godfrey LM test for autocorrelation
11       ---------------------------------------------------------------------------
12          lags(p)  |          chi2               df              Prob > chi2
13       -------------+-------------------------------------------------------------
14            12      |        19.041              12                 0.0876
15       ---------------------------------------------------------------------------
16                          H0: no serial correlation
17    97 . predict res23
18       (option xb assumed; fitted values)
19       (19 missing values generated)
20    98 . pac res23 , scheme(s1mono) saving(res23pac, replace)
21       (file res23pac.gph saved)
22    99 . newey lnlist l.lnlist l(1,2).lnpermits date i.month , lag(12)
23       Regression with Newey-West standard errors      Number of obs   =        41
24       maximum lag: 12                                  F( 15,      25) =  12202.75
25                                                        Prob > F        =    0.0000
26       ------------------------------------------------------------------------------
27                  |             Newey-West
28          lnlist  |     Coef.    Std. Err.      t     P>|t|     [95% Conf. Interval]
29       -------------+----------------------------------------------------------------
30          lnlist  |
31             L1.  |   .8316262    .0576133    14.43   0.000     .7129694    .9502829
32       lnpermits  |
33             L1.  |      .0118    .0047314     2.49   0.020     .0020555    .0215444
34             L2.  |  -.0213689    .0041762    -5.12   0.000    -.0299699   -.0127679
35            date  |   .0005299    .0001794     2.95   0.007     .0001604    .0008993
36           month  |  **Coefficients not shown to save space.**
37           _cons  |   .5903254    .1693522     3.49   0.002     .2415379    .9391128
38       ------------------------------------------------------------------------------
39   100 . test l.lnlist l2.lnpermits
40       ( 1)   L.lnlist = 0
41       ( 2)   L2.lnpermits = 0
42            F(  2,    25) =  105.00
43                 Prob > F =    0.0000
44   101 .
45
```

```
1    102 . graph combine "res21pac" "res22pac" "res23pac", scheme(s1mono)
2    103 . graph export "Models 2 Residual PACs.emf", replace
```


95% Confidence bands [se = 1/sqrt(n)]

95% Confidence bands [se = 1/sqrt(n)]

95% Confidence bands [se = 1/sqrt(n)]

```
3    104 .
4    105 .
5
```

```
1    106 . *Model Set 3
2    107 .
3    108 . *Model 3.1
4    109 . reg d.lnlist ld.lnpermits ld.interest ld.inflation
5           Source |       SS           df       MS        Number of obs   =        41
6      -------------+------------------------------------   F(4, 36)        =      2.11
7            Model |  .000182831         4  .000045708      Prob > F        =    0.1002
8         Residual |  .000781194        36    .0000217      R-squared       =    0.1897
9      -------------+------------------------------------   Adj R-squared   =    0.0996
10           Total |  .000964025        40  .000024101      Root MSE        =    .00466
11     ----------------------------------------------------------------------------------
12        D.lnlist |     Coef.    Std. Err.      t    P>|t|     [95% Conf. Interval]
13     -------------+--------------------------------------------------------------------
14       lnpermits |
15             LD. |  .0050285    .0052791     0.95   0.347   -.0056781      .015735
16        interest |
17             LD. |  1.341638    .7357885     1.82   0.077   -.1506101     2.833887
18       inflation |
19             LD. |  1.017966    1.055104     0.96   0.341   -1.121885     3.157817
20           _cons |  .0068295    .0461851     0.15   0.883   -.0868382     .1004971
21     ----------------------------------------------------------------------------------
22    110 . testparm ld.interest ld.inflation
23      ( 1)  LD.interest = 0
24      ( 2)  LD.inflation = 0
25            F( 2,    36) =    3.11
26               Prob > F =    0.0566
27    111 . estat bgodfrey , lag(12)
28      Breusch-Godfrey LM test for autocorrelation
29      ---------------------------------------------------------------------------
30         lags(p)  |        chi2               df             Prob > chi2
31      -------------+-------------------------------------------------------------
32           12     |       22.815             12               0.0293
33      ---------------------------------------------------------------------------
34                          H0: no serial correlation
35    112 . predict res31
36      (option xb assumed; fitted values)
37      (2 missing values generated)
38    113 . pac res31 , scheme(s1mono) saving(res31pac, replace)
39      (file res31pac.gph saved)
40    114 . newey d.lnlist ld.lnpermits ld.interest ld.inflation , lag(12)
41      Regression with Newey-West standard errors    Number of obs   =        41
42      maximum lag: 12                               F( 3,      37) =     22.38
43                                                    Prob > F        =    0.0000
44      ----------------------------------------------------------------------------------
45               |             Newey-West
46        D.lnlist |     Coef.    Std. Err.      t    P>|t|     [95% Conf. Interval]
47      -------------+--------------------------------------------------------------------
48       lnpermits |
49             LD. |  .0050379    .0041645     1.21   0.234   -.0034002     .0134761
50        interest |
51             LD. |  1.350918    .2419499     5.58   0.000    .8606806     1.841155
52       inflation |
53             LD. |  1.039515    1.177174     0.88   0.383   -1.345666     3.424696
54           _cons |    .00312    .0004549     6.86   0.000    .0021982     .0040418
55      ----------------------------------------------------------------------------------
56
```

```
1   115 . testparm ld.interest ld.inflation
2      ( 1)  LD.interest = 0
3      ( 2)  LD.inflation = 0
4            F(  2,    37) =   17.61
5              Prob > F =    0.0000
6   116 .
7   117 . *Model 3.2
8   118 . reg d.lnlist ld.lnlist l(1,2)d.lnpermits ///
9      >       l(1,2)d.interest l(1,2)d.inflation
10          Source |      SS          df       MS       Number of obs   =       40
11     -------------+------------------------------   F(8, 31)        =     2.55
12          Model |   .00037463        8  .000046829   Prob > F        =   0.0294
13       Residual |   .00057016       31  .000018392   R-squared       =   0.3965
14     -------------+------------------------------   Adj R-squared   =   0.2408
15          Total |  .000944791       39  .000024225   Root MSE        =   .00429
16     ----------------------------------------------------------------------------
17      D.lnlist |    Coef.   Std. Err.     t    P>|t|    [95% Conf. Interval]
18     -------------+--------------------------------------------------------------
19         lnlist |
20            LD. |   .3500193   .1706404    2.05   0.049    .0019959   .6980427
21      lnpermits |
22            LD. |  -.0024077   .0058821   -0.41   0.685   -.0144044    .009589
23           L2D. |   -.015305   .0063894   -2.40   0.023   -.0283362  -.0022738
24       interest |
25            LD. |   .9725423   .7222908    1.35   0.188   -.5005795   2.445664
26           L2D. |    .323242   .7779932    0.42   0.681   -1.263486    1.90997
27      inflation |
28            LD. |  -.2536711   1.188716   -0.21   0.832   -2.678074   2.170732
29           L2D. |   .9673888    1.10657    0.87   0.389   -1.289476   3.224254
30          _cons |   -.005747   .0479018   -0.12   0.905   -.1034434   .0919493
31     ----------------------------------------------------------------------------
32   119 . testparm ld.lnlist l2d.lnpermits l2d.interest l2d.inflation
33      ( 1)  LD.lnlist = 0
34      ( 2)  L2D.lnpermits = 0
35      ( 3)  L2D.interest = 0
36      ( 4)  L2D.inflation = 0
37            F(  4,    31) =    2.80
38              Prob > F =    0.0427
39   120 . testparm l2d.lnpermits l(1,2)d.interest l(1,2)d.inflation
40      ( 1)  L2D.lnpermits = 0
41      ( 2)  LD.interest = 0
42      ( 3)  L2D.interest = 0
43      ( 4)  LD.inflation = 0
44      ( 5)  L2D.inflation = 0
45            F(  5,    31) =    2.25
46              Prob > F =    0.0739
47   121 . estat bgodfrey , lag(12)
48      Breusch-Godfrey LM test for autocorrelation
49      ----------------------------------------------------------------------------
50         lags(p)  |        chi2              df              Prob > chi2
51      -------------+--------------------------------------------------------------
52          12     |       15.493             12                0.2156
53      ----------------------------------------------------------------------------
54                          H0: no serial correlation
55   122 . predict res32
56      (option xb assumed; fitted values)
57      (20 missing values generated)
58   123 . pac res32 , scheme(s1mono) saving(res32pac, replace)
59      (file res32pac.gph saved)
```

```
1   124 . newey d.lnlist ld.lnlist l(1,2)d.lnpermits ///
2     >           l(1,2)d.interest l(1,2)d.inflation , lag(12)
3     Regression with Newey-West standard errors     Number of obs    =        40
4     maximum lag: 12                                 F(  7,        32) =     11.06
5                                                     Prob > F         =    0.0000
6     ------------------------------------------------------------------------------
7                  |               Newey-West
8       D.lnlist |     Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
9     -------------+----------------------------------------------------------------
10         lnlist |
11            LD. |   .3520572   .1533704     2.30   0.028    .0396518    .6644626
12      lnpermits |
13            LD. |  -.0024387   .0046365    -0.53   0.603    -.011883    .0070056
14           L2D. |  -.0152995   .0047415    -3.23   0.003    -.0249577   -.0056413
15       interest |
16            LD. |   .9533475   .3563669     2.68   0.012    .2274519    1.679243
17           L2D. |   .2948896   .3188997     0.92   0.362    -.3546878    .944467
18      inflation |
19            LD. |  -.2964911   .4474559    -0.66   0.512    -1.207929    .6149467
20           L2D. |   .9407211    .657165     1.43   0.162    -.3978803    2.279322
21          _cons |    .002262   .0007521     3.01   0.005    .0007301    .0037939
22     ------------------------------------------------------------------------------
23   125 . testparm ld.lnlist l2d.lnpermits l2d.interest l2d.inflation
24     ( 1)  LD.lnlist = 0
25     ( 2)  L2D.lnpermits = 0
26     ( 3)  L2D.interest = 0
27     ( 4)  L2D.inflation = 0
28           F(  4,    32) =   12.67
29                 Prob > F =     0.0000
30   126 . testparm l2d.lnpermits l(1,2)d.interest l(1,2)d.inflation
31     ( 1)  L2D.lnpermits = 0
32     ( 2)  LD.interest = 0
33     ( 3)  L2D.interest = 0
34     ( 4)  LD.inflation = 0
35     ( 5)  L2D.inflation = 0
36           F(  5,    32) =   11.10
37                 Prob > F =     0.0000
38   127 .
39   128 . *Model 3.3
40   129 . reg d.lnlist ld.lnlist l(1,2)d.lnpermits
41         Source |       SS           df       MS      Number of obs    =        40
42     -------------+----------------------------------    F(3, 36)         =      5.41
43          Model |  .000293546        3  .000097849    Prob > F         =    0.0035
44       Residual |  .000651245       36   .00001809    R-squared        =    0.3107
45     -------------+----------------------------------    Adj R-squared    =    0.2533
46          Total |  .000944791       39  .000024225    Root MSE         =    .00425
47     ------------------------------------------------------------------------------
48       D.lnlist |     Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
49     -------------+----------------------------------------------------------------
50         lnlist |
51            LD. |   .4290127   .1393909     3.08   0.004    .1463148    .7117105
52      lnpermits |
53            LD. |  -.0017387   .0056767    -0.31   0.761    -.0132516    .0097742
54           L2D. |  -.0168548   .0060225    -2.80   0.008    -.0290689   -.0046407
55          _cons |    .002067   .0008016     2.58   0.014    .0004412    .0036927
56     ------------------------------------------------------------------------------
57
```
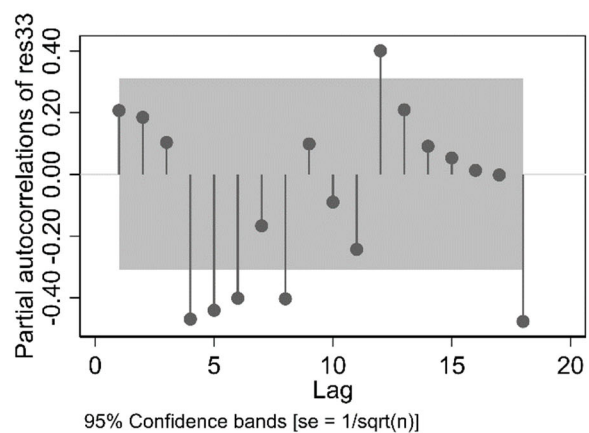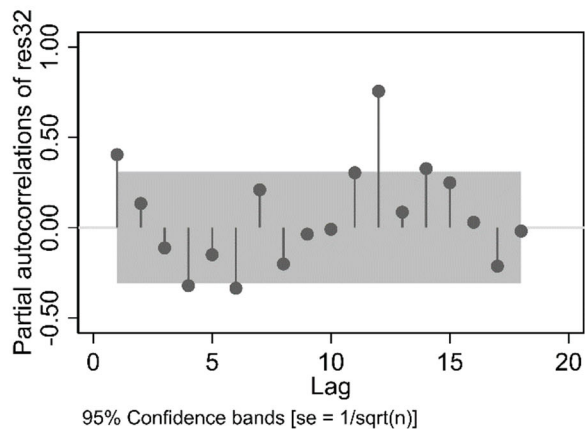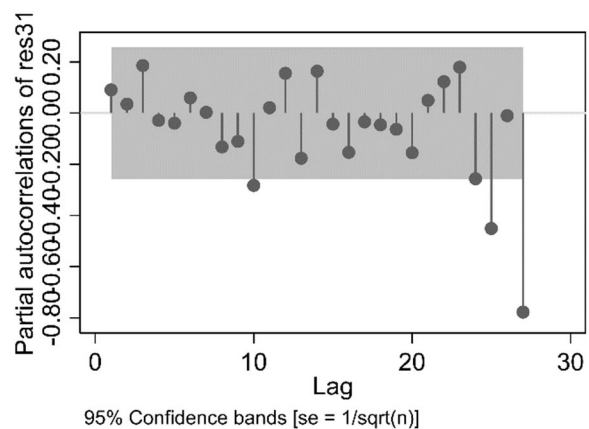
```
1   130 . test ld.lnlist l2d.lnpermits
2      ( 1)   LD.lnlist = 0
3      ( 2)   L2D.lnpermits = 0
4           F(  2,    36) =    7.53
5                Prob > F =    0.0019
6   131 . estat bgodfrey , lag(12)
7      Breusch-Godfrey LM test for autocorrelation
8      ---------------------------------------------------------------------------
9          lags(p)  |         chi2                 df              Prob > chi2
10     -------------+-------------------------------------------------------------
11          12      |        17.171                12                 0.1433
12     ---------------------------------------------------------------------------
13                         H0: no serial correlation
14  132 . predict res33
15     (option xb assumed; fitted values)
16     (20 missing values generated)
17  133 . pac res33 , scheme(s1mono) saving(res33pac, replace)
18     (file res33pac.gph saved)
19  134 . newey d.lnlist ld.lnlist l(1,2)d.lnpermits , lag(12)
20     Regression with Newey-West standard errors     Number of obs    =         40
21     maximum lag: 12                                F(  3,       36) =      14.81
22                                                    Prob > F         =     0.0000
23     ---------------------------------------------------------------------------
24                |            Newey-West
25       D.lnlist |    Coef.    Std. Err.      t     P>|t|     [95% Conf. Interval]
26     -------------+-------------------------------------------------------------
27         lnlist |
28            LD. |   .4290127   .0891678    4.81    0.000    .2481719    .6098534
29      lnpermits |
30            LD. |  -.0017387   .0054957   -0.32    0.754   -.0128845    .0094071
31           L2D. |  -.0168548   .0033709   -5.00    0.000   -.0236913   -.0100183
32          _cons |   .002067    .0004924    4.20    0.000    .0010684    .0030656
33     ---------------------------------------------------------------------------
34  135 . test ld.lnlist l2d.lnpermits
35     ( 1)   LD.lnlist = 0
36     ( 2)   L2D.lnpermits = 0
37          F(  2,    36) =   17.96
38               Prob > F =    0.0000
39
```

```
1   136 . graph combine "res31pac" "res32pac" "res33pac", scheme(s1mono)
2   137 . graph export "Models 3 Residual PACs.emf", replace
```


95% Confidence bands [se = 1/sqrt(n)]

95% Confidence bands [se = 1/sqrt(n)]

95% Confidence bands [se = 1/sqrt(n)]

```
3   138 .
4   139 .
5
```

```
 1    140 . *Model Set 4
 2    141 .
 3    142 . *Model 4.1
 4    143 . reg d.lnlist ld.lnpermits ld.interest ld.inflation date i.month
 5          Source |       SS           df       MS      Number of obs   =        41
 6    -------------+----------------------------------   F(15, 25)       =      7.32
 7           Model |  .000785225       15  .000052348    Prob > F        =    0.0000
 8        Residual |    .0001788       25  7.1520e-06    R-squared       =    0.8145
 9    -------------+----------------------------------   Adj R-squared   =    0.7032
10           Total |  .000964025       40  .000024101    Root MSE        =    .00267
11    ------------------------------------------------------------------------------
12        D.lnlist |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
13    -------------+----------------------------------------------------------------
14       lnpermits |
15             LD. |   .0186286   .0052801     3.53   0.002     .0077541    .0295032
16        interest |
17             LD. |  -.371503    .5744302    -0.65   0.524    -1.554564    .8115581
18       inflation |
19             LD. |    .734974   .7285158     1.01   0.323    -.7654324     2.23538
20            date |  -.0000518   .0000396    -1.31   0.202    -.0001334    .0000297
21           month |   **Coefficients not shown to save space.**
22           _cons |   .0455309   .0276611     1.65   0.112    -.0114382    .1024999
23    ------------------------------------------------------------------------------
24    144 . testparm ld.interest ld.inflation
25        ( 1)  LD.interest = 0
26        ( 2)  LD.inflation = 0
27           F(  2,    25) =    0.56
28               Prob > F =    0.5788
29    145 . estat bgodfrey , lag(12)
30        Breusch-Godfrey LM test for autocorrelation
31        ---------------------------------------------------------------------------
32          lags(p)  |        chi2             df              Prob > chi2
33        -------------+-------------------------------------------------------------
34            12     |      33.131             12                 0.0009
35        ---------------------------------------------------------------------------
36                            H0: no serial correlation
37    146 . predict res41
38        (option xb assumed; fitted values)
39        (2 missing values generated)
40    147 . pac res41 , scheme(s1mono) saving(res41pac, replace)
41        (file res41pac.gph saved)
42    148 . newey d.lnlist ld.lnpermits ld.interest ld.inflation date i.month , lag(12)
43        Regression with Newey-West standard errors    Number of obs    =        41
44        maximum lag: 12                               F( 15,       25) =    127.61
45                                                      Prob > F         =    0.0000
46        ------------------------------------------------------------------------------
47                     |             Newey-West
48        D.lnlist |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
49        -------------+----------------------------------------------------------------
50       lnpermits |
51             LD. |   .0186286   .0034717     5.37   0.000     .0114785    .0257787
52        interest |
53             LD. |  -.371503    .2984874    -1.24   0.225    -.9862494    .2432434
54       inflation |
55             LD. |    .734974   .6032548     1.22   0.234    -.5074525    1.977401
56            date |  -.0000518   .0000263    -1.97   0.060    -.0001059    2.27e-06
57           month |   **Coefficients not shown to save space.**
58           _cons |   .0455309   .0182091     2.50   0.019     .0080284    .0830333
59        ------------------------------------------------------------------------------
```

```
1    149 . testparm ld.interest ld.inflation
2        ( 1)   LD.interest = 0
3        ( 2)   LD.inflation = 0
4              F(  2,    25) =     1.08
5                 Prob > F =     0.3545
6    150 .
7    151 . *Model 4.2
8    152 . reg d.lnlist ld.lnlist l(1,2)d.lnpermits ///
9        >        l(1,2)d.interest l(1,2)d.inflation date i.month
10         Source |      SS           df       MS      Number of obs   =        40
11    -------------+----------------------------------   F(19, 20)       =      5.20
12          Model |  .000785793        19  .000041358   Prob > F        =    0.0003
13       Residual |  .000158997        20  7.9499e-06   R-squared       =    0.8317
14    -------------+----------------------------------   Adj R-squared   =    0.6718
15          Total |  .000944791        39  .000024225   Root MSE        =    .00282
16    ------------------------------------------------------------------------------
17       D.lnlist |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
18    -------------+----------------------------------------------------------------
19         lnlist |
20            LD. |   .1468064   .2129235     0.69   0.498    -.2973443    .5909571
21      lnpermits |
22            LD. |   .0192282   .0062194     3.09   0.006     .0062548    .0322017
23           L2D. |  -.0016262    .00759     -0.21   0.833    -.0174587    .0142063
24       interest |
25            LD. |  -.1941753   .6385342    -0.30   0.764    -1.526134    1.137784
26           L2D. |  -.1792444   .6479527    -0.28   0.785     -1.53085    1.172361
27      inflation |
28            LD. |   .3237347   .9266839     0.35   0.730    -1.609294    2.256763
29           L2D. |   .9064311   .9390059     0.97   0.346    -1.052301    2.865163
30           date |  -.0000204   .0000496    -0.41   0.686    -.0001239    .0000832
31          month |   **Coefficients not shown to save space.**
32          _cons |   .0222841   .0354333     0.63   0.537    -.0516285    .0961968
33    ------------------------------------------------------------------------------
34    153 . testparm ld.lnlist l2d.lnpermits l2d.interest l2d.inflation
35        ( 1)   LD.lnlist = 0
36        ( 2)   L2D.lnpermits = 0
37        ( 3)   L2D.interest = 0
38        ( 4)   L2D.inflation = 0
39              F(  4,    20) =     0.42
40                 Prob > F =     0.7901
41    154 . testparm l2d.lnpermits l(1,2)d.interest l(1,2)d.inflation
42        ( 1)   L2D.lnpermits = 0
43        ( 2)   LD.interest = 0
44        ( 3)   L2D.interest = 0
45        ( 4)   LD.inflation = 0
46        ( 5)   L2D.inflation = 0
47              F(  5,    20) =     0.41
48                 Prob > F =     0.8383
49    155 . estat bgodfrey , lag(12)
50       Breusch-Godfrey LM test for autocorrelation
51    ---------------------------------------------------------------------------
52         lags(p)  |          chi2               df              Prob > chi2
53    -------------+-------------------------------------------------------------
54           12     |         29.876              12                 0.0029
55    ---------------------------------------------------------------------------
56                          H0: no serial correlation
57    156 . predict res42
58       (option xb assumed; fitted values)
59       (20 missing values generated)
```

```
1   157 . pac res42 , scheme(s1mono) saving(res42pac, replace)
2       (file res42pac.gph saved)
3   158 . newey d.lnlist ld.lnlist l(1,2)d.lnpermits ///
4       >           l(1,2)d.interest l(1,2)d.inflation date i.month , lag(12)
5       Regression with Newey-West standard errors      Number of obs    =          40
6       maximum lag: 12                                 F( 19,       20) =     1311.47
7                                                       Prob > F         =      0.0000
8       ------------------------------------------------------------------------------
9                    |               Newey-West
10          D.lnlist |     Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
11      -------------+----------------------------------------------------------------
12            lnlist |
13               LD. |   .1468064   .0690162     2.13   0.046     .0028411    .2907717
14         lnpermits |
15               LD. |   .0192282    .004881     3.94   0.001     .0090467    .0294098
16              L2D. |  -.0016262   .0044401    -0.37   0.718    -.0108881    .0076357
17          interest |
18               LD. |  -.1941753   .2526213    -0.77   0.451    -.7211341    .3327834
19              L2D. |  -.1792444    .34289     -0.52   0.607    -.8945003    .5360116
20         inflation |
21               LD. |   .3237347    .604733     0.54   0.598    -.9377163    1.585186
22              L2D. |   .9064311   .6152145     1.47   0.156    -.3768839    2.189746
23              date |  -.0000204    .000034    -0.60   0.556    -.0000914    .0000506
24             month |   **Coefficients not shown to save space.**
25             _cons |   .0222841   .0242439     0.92   0.369    -.0282877    .0728559
26      ------------------------------------------------------------------------------
27  159 . testparm ld.lnlist l2d.lnpermits l2d.interest l2d.inflation
28       ( 1)  LD.lnlist = 0
29       ( 2)  L2D.lnpermits = 0
30       ( 3)  L2D.interest = 0
31       ( 4)  L2D.inflation = 0
32            F(  4,     20) =     2.67
33                 Prob > F =     0.0622
34  160 . testparm l2d.lnpermits l(1,2)d.interest l(1,2)d.inflation
35       ( 1)  L2D.lnpermits = 0
36       ( 2)  LD.interest = 0
37       ( 3)  L2D.interest = 0
38       ( 4)  LD.inflation = 0
39       ( 5)  L2D.inflation = 0
40            F(  5,     20) =     1.49
41                 Prob > F =     0.2359
42  161 .
43  162 . *Model 4.3
44  163 . reg d.lnlist ld.lnlist l(1,2)d.lnpermits date i.month
45             Source |       SS           df       MS      Number of obs    =          40
46      -------------+------------------------------   F(15, 24)        =        7.11
47             Model |   .00077125        15  .000051417   Prob > F         =      0.0000
48          Residual |   .000173541        24  7.2309e-06   R-squared        =      0.8163
49      -------------+------------------------------   Adj R-squared    =      0.7015
50             Total |   .000944791        39  .000024225   Root MSE         =      .00269
51      ------------------------------------------------------------------------------
52          D.lnlist |     Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
53      -------------+----------------------------------------------------------------
54            lnlist |
55               LD. |   .2045711   .1982448     1.03   0.312    -.2045861    .6137283
56         lnpermits |
57               LD. |   .0184862   .0054007     3.42   0.002     .0073398    .0296327
58              L2D. |  -.0030569   .0064431    -0.47   0.639    -.0163548     .010241
59              date |  -.0000351    .0000394    -0.89   0.382    -.0001164    .0000463
```
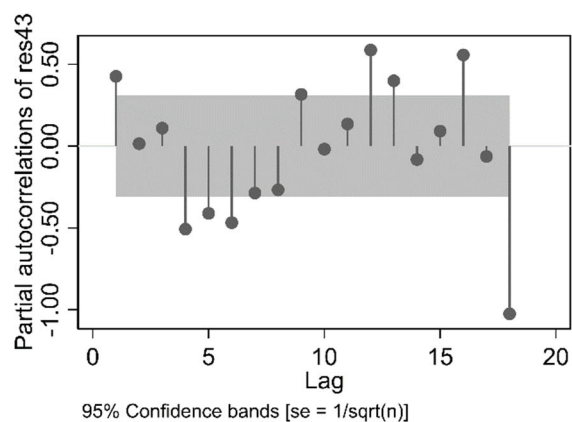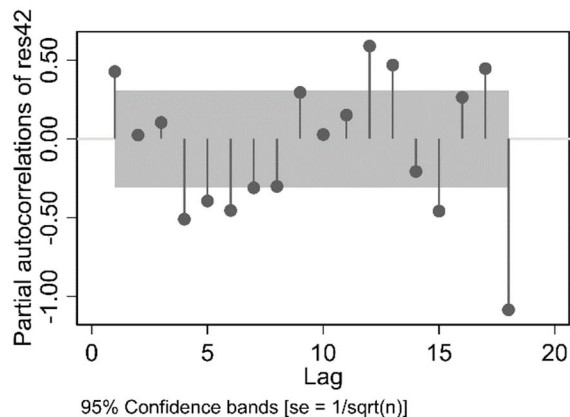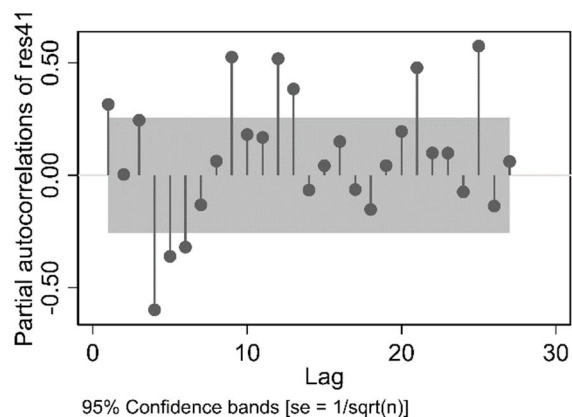
```
 1         month |  **Coefficients not shown to save space.**
 2         _cons |   .0317874    .0281043     1.13   0.269    -.026217     .0897917
 3    ------------------------------------------------------------------------------
 4   164 . test ld.lnlist l2d.lnpermits
 5      ( 1)  LD.lnlist = 0
 6      ( 2)  L2D.lnpermits = 0
 7           F(  2,    24) =    0.53
 8                 Prob > F =    0.5928
 9   165 . estat bgodfrey , lag(12)
10      Breusch-Godfrey LM test for autocorrelation
11      ------------------------------------------------------------------------------
12         lags(p)  |          chi2             df            Prob > chi2
13      -------------+----------------------------------------------------------------
14           12     |         24.669           12                 0.0165
15      ------------------------------------------------------------------------------
16                         H0: no serial correlation
17   166 . predict res43
18      (option xb assumed; fitted values)
19      (20 missing values generated)
20   167 . pac res43 , scheme(s1mono) saving(res43pac, replace)
21      (file res43pac.gph saved)
22   168 . newey d.lnlist ld.lnlist l(1,2)d.lnpermits date i.month , lag(12)
23      Regression with Newey-West standard errors     Number of obs     =         40
24      maximum lag: 12                                F( 15,        24) =     430.97
25                                                     Prob > F          =     0.0000
26      ------------------------------------------------------------------------------
27                   |            Newey-West
28       D.lnlist    |    Coef.    Std. Err.      t     P>|t|     [95% Conf. Interval]
29      -------------+----------------------------------------------------------------
30         lnlist |
31             LD. |   .2045711    .1089078     1.88   0.073    -.0202035    .4293457
32       lnpermits |
33             LD. |   .0184862    .0047907     3.86   0.001     .0085988    .0283737
34            L2D. |  -.0030569    .0045179    -0.68   0.505    -.0123815    .0062676
35            date |  -.0000351    .0000226    -1.55   0.134    -.0000817    .0000116
36           month |  **Coefficients not shown to save space.**
37           _cons |   .0317874    .0168039     1.89   0.071    -.0028942    .0664689
38      ------------------------------------------------------------------------------
39   169 . test ld.lnlist l2d.lnpermits
40      ( 1)  LD.lnlist = 0
41      ( 2)  L2D.lnpermits = 0
42           F(  2,    24) =    1.88
43                 Prob > F =    0.1738
44   170 .
45
```

```
1   171 . graph combine "res41pac" "res42pac" "res43pac", scheme(s1mono)
2   172 . graph export "Models 4 Residual PACs.emf", replace
```


95% Confidence bands [se = 1/sqrt(n)]

95% Confidence bands [se = 1/sqrt(n)]

95% Confidence bands [se = 1/sqrt(n)]

3