*Note: I did not update my dataset from last year, so your numbers will differ. But, the difference should not be pronounced and the reasoning will be similar.

2) Prepare to analyze the data:

See the do file, Appendix A

3) Static Model

a) Explain why the size of Florida's labor force, the prime age employment to population ratio, and Florida building permits, might be closely related to the number of nonfarm jobs in Florida in a static long run sense.

We can think of the number employed as the product of the portion of those in the labor market that are employed and the number that want work and so are in the market. Then the log of total employment is the sum of the logs of those two pieces. From there:

- The number that want to work should closely track labor force in Florida.
- The fraction of those that want to be employed that are employed tracks the strength of the Florida economy, which closely tracks the strength of the national economy, for which the employment to population ratio is a good proxy.
- Construction is a large part of Florida's economic base, due to constant in-migration. So, variations in the strength of the economy may be reflected somewhat in building permits.

b) Estimate the static model relating monthly nonfarm employment in Florida to the other three variables (all in logs) without controlling for seasonal impacts or a time trend.

Results in the table on the next page.

c) Estimate the static model with month indicators and a time trend.

See the do file for the code. Results in the table on the next page.

d) Compare your results from b and c and interpret any differences. What do the seasonal and time trend variables contribute?

All three coefficients change slightly. The time trend controls for growth at a constant rate over time, while the month indicators control for seasonality. For example, construction employment varies with the weather, employment always varies with holidays, and in Florida employment also varies with tourist season. Presumably, controlling for these effects allows the model to better reveal the underlying relationships between the other variables. (The caveat is we have not checked this data for stationarity or weak dependence, which comes later.)

e) Why should you be cautious using the results of these models for testing any hypotheses about the underlying relationships?

The sampling independence required for the standard error calculations is obviously violated in time series data, so it is likely the standard errors are incorrect.

Models for question 3

Question	3A	3B
lnfllf	1.116***	0.921***
	(0.00921)	(0.0353)
lnusepr	0.784***	1.230***
	(0.0587)	(0.0476)
lnflbp	0.0442***	0.0351***
	(0.00317)	(0.00191)
2.month		0.00314
		(0.00312)
3.month		-0.00324
		(0.00312)
4.month		-0.00936**
		(0.00314)
5.month		-0.0212***
		(0.00315)
6.month		-0.0436***
		(0.00318)
7.month		-0.0611***
		(0.00321)
8.month		-0.0443***
		(0.00317)
9.month		-0.0315***
		(0.00316)
10.month		-0.0277***
		(0.00318)
11.month		-0.00891**
		(0.00321)
12.month		0.000140
		(0.00317)
date		0.000349***
		(0.0000550)
_cons	-12.56***	-11.38***
	(0.328)	(0.433)
N	384	384
R^2	0.979	0.994

4) Finite Distributed Lag Model

a) Estimate the distributed lag model relating monthly nonfarm employment to lags 0 to 12 of the three predictor variables without month indicators and a time trend.

See do file and the table below.

b) Estimate the model in (a) but add month indicators and a time trend.

See the do file and the results table below.

c) Compare your results from a and b and interpret any differences. What do the seasonal and time trend variables contribute?

This is largely the same as it was for question 3. The difference is that since we are controlling for one year ago, the lags themselves may capture some of the seasonal difference in the first model, and that adding seasonal effects purges that, changing the results potentially at all lags. This, though, it just more of the same basic thing.

d) Estimate two alternative models that contain month indicators and a time trend but that impose a more parsimonious lag structure for the predictor variables. Explain your choices.

Results are below. The most important lags would seem to be the most recent month, and the same month a year ago. So, in one version I include only the first lag, in the other I include lags 1 and 12. You may have chosen something else. As long as you can defend it, that is fine.

5) Provide a neat report writing up your answers to 3 and 4. Do not simply post screenshots of the Stata results window. Rather, provide neat professional looking tables of the results you obtain. Estout and esttab are probably the easiest tools for this. Make sure any results you refer to in your answers appear near enough to the answers so that your overall submission is easy to make sense of. One exception to that might be when you need exceptionally long tables.

Your report should not look like this solution. This solution just describes what should be in your report. The report itself needs to look more like a professional work product—though we will evolve toward that over time.

6) As Appendix A, include the clean do file to replicate your analysis.

See appendix A below.

7) As Appendix B, include the log file of a run of your clean do file to your write up.

See appendix B below.

Models for question 4

Question	4A	4B	4D1	4D2
lnfllf	0.248	0.402	1.006***	0.729*
	(0.257)	(0.273)	(0.296)	(0.294)
L.lnfllf	0.0109	0.0216	-0.0917	-0.0327
	(0.340)	(0.361)	(0.300)	(0.311)
L2.lnfllf	0.392	-0.0949		
	(0.340)	(0.365)		
L3.lnfllf	0.668	0.172		
	(0.342)	(0.369)		
L4.lnfllf	-0.267	-0.0254		
	(0.343)	(0.374)		
L5.lnfllf	-0.528	0.0327		
	(0.342)	(0.372)		
L6.lnfllf	-0.0941	0.0871		
	(0.343)	(0.371)		
L7.lnfllf	0.202	0.184		
	(0.345)	(0.372)		
L8.lnfllf	-0.114	0.0890		
	(0.347)	(0.372)		
L9.lnfllf	0.382	0.197		
	(0.345)	(0.375)		
L10.lnfllf	-0.0175	0.0444		
	(0.342)	(0.378)		
L11.lnfllf	-0.0136	-0.275		
	(0.341)	(0.381)		
L12.lnfllf	0.276	0.0831		0.181
	(0.259)	(0.288)		(0.0935)
lnusepr	0.766**	0.436	-0.148	0.0469
	(0.281)	(0.350)	(0.370)	(0.372)
L.lnusepr	-0.403	0.119	1.352***	0.977*
	(0.394)	(0.464)	(0.368)	(0.394)
L2.lnusepr	-0.340	0.0714		
	(0.390)	(0.469)		
L3.lnusepr	-0.453	0.0791		
	(0.388)	(0.470)		
L4.lnusepr	0.262	0.211		
	(0.399)	(0.475)		

L5.lnusepr	1.044**	-0.105		
	(0.400)	(0.476)		
L6.lnusepr	0.857*	0.402		
	(0.398)	(0.474)		
L7.lnusepr	-0.203	0.0309		
	(0.398)	(0.475)		
L8.lnusepr	0.466	-0.103		
	(0.399)	(0.475)		
L9.lnusepr	-0.185	-0.114		
	(0.393)	(0.477)		
L10.lnusepr	-0.282	0.114		
	(0.388)	(0.478)		
L11.lnusepr	0.110	0.497		
	(0.387)	(0.477)		
L12.lnusepr	-0.600*	-0.405		0.195*
	(0.269)	(0.351)		(0.0856)
lnflbp	0.0202***	0.0182***	0.0254***	0.0248***
	(0.00470)	(0.00438)	(0.00416)	(0.00414)
L.lnflbp	0.00939	0.00924	0.0125**	0.0140**
	(0.00502)	(0.00474)	(0.00423)	(0.00427)
L2.lnflbp	0.0118*	0.00547		
	(0.00518)	(0.00485)		
L3.lnflbp	0.00267	0.00610		
	(0.00534)	(0.00497)		
L4.lnflbp	0.00128	0.00341		
	(0.00535)	(0.00497)		
L5.lnflbp	0.00650	0.00401		
	(0.00542)	(0.00497)		
L6.lnflbp	0.00699	0.00659		
	(0.00544)	(0.00497)		
L7.lnflbp	0.00228	0.00487		
	(0.00542)	(0.00494)		
L8.lnflbp	-0.000869	-0.00531		
	(0.00544)	(0.00497)		
L9.lnflbp	0.00159	-0.000821		
	(0.00544)	(0.00493)		
L10.lnflbp	-0.00657	-0.000485		
	(0.00527)	(0.00480)		

L11.lnflbp	-0.00350	-0.00568		
	(0.00521)	(0.00471)		
L12.lnflbp	-0.00590	-0.00338		0.00388
	(0.00498)	(0.00447)		(0.00289)
2.month		0.00921	0.0229***	0.0171**
		(0.00706)	(0.00513)	(0.00535)
3.month		0.0128	0.0194***	0.0129*
		(0.00770)	(0.00511)	(0.00531)
4.month		0.00990	0.0119*	0.00508
		(0.00853)	(0.00595)	(0.00623)
5.month		0.00526	-0.00109	-0.00688
		(0.00612)	(0.00448)	(0.00458)
6.month		-0.00853	-0.0187**	-0.0259***
		(0.00744)	(0.00577)	(0.00598)
7.month		-0.0163*	-0.0423***	-0.0474***
		(0.00726)	(0.00471)	(0.00482)
8.month		-0.00797	-0.0344***	-0.0367***
		(0.00774)	(0.00400)	(0.00405)
9.month		-0.00807	-0.0213***	-0.0241***
		(0.00614)	(0.00377)	(0.00382)
10.month		-0.00658	-0.00723	-0.0130*
		(0.00834)	(0.00600)	(0.00626)
11.month		0.00936	0.00453	0.000589
		(0.00768)	(0.00492)	(0.00510)
12.month		0.0184*	0.0135**	0.0101*
		(0.00730)	(0.00424)	(0.00434)
date		0.000358***	0.000359***	0.000416***
		(0.0000504)	(0.0000526)	(0.0000571)
_cons	-14.10***	-11.44***	-11.20***	-10.75***
	(0.209)	(0.428)	(0.416)	(0.480)
N	372	372	383	372
R^2	0.995	0.997	0.995	0.995

Appendix A: Do File

```
*Time Series - Problem Set 1 Solution
*Spring 2020

clear
set more off

cd "C:\Users\jdewey\Documents\A S20 Time Series\Problem Sets\"
log using "Problem Set 2 Work", replace
import delimited using "us and florida economic time series.txt"


**2 - data prep

rename observation_date datestring
gen dateday=date(datestring,"YMD")
gen date=mofd(dateday)
format date %tm
tsset date
generate month=month(dateday)

rename flbppriv fl_bp
rename fllfn fl_lf
rename flnan fl_nonfarm
rename lnu02300000_20200110 us_epr

gen lnflnonfarm=ln( fl_nonfarm)
gen lnfllf=ln( fl_lf)
gen lnusepr = ln(us_epr)
gen lnflbp=ln( fl_bp)

estimates clear


**3 - Static Model

**3b
reg lnflnonfarm lnfllf lnusepr lnflbp
eststo model3b

**3c
reg lnflnonfarm lnfllf lnusepr lnflbp i.month date
eststo model3c

esttab model3* using models3.rtf , se r2 onecell compress replace


**4 Distributed Lag Model

**4a
reg lnflnonfarm l(0/12).lnfllf l(0/12).lnusepr l(0/12).lnflbp
eststo model4a

**4b
reg lnflnonfarm l(0/12).lnfllf l(0/12).lnusepr l(0/12).lnflbp i.month date
eststo model4b

**4d
reg lnflnonfarm l(0,1).lnfllf l(0,1).lnusepr l(0,1).lnflbp i.month date
eststo model4e1
reg lnflnonfarm l(0,1,12).lnfllf l(0,1,12).lnusepr l(0,1,12).lnflbp i.month date
```

```
eststo model4e2

esttab model4* using models4.rtf , se r2 onecell compress replace

clear
log close
```

Appendix B: Log File

```
-------------------------------------------------------------------------------------
log:  C:\Users\jdewey\Documents\A S20 Time Series\Problem Sets\Problem Set 2 Work.smcl
  log type:  smcl
 opened on:   3 Feb 2020, 17:19:56

. import delimited using "us and florida economic time series.txt"
(5 vars, 972 obs)

.
.
. **2 - data prep
.
. rename observation_date datestring

. gen dateday=date(datestring,"YMD")

. gen date=mofd(dateday)

. format date %tm

. tsset date
        time variable:  date, 1939m1 to 2019m12
                delta:  1 month

. generate month=month(dateday)

.
. rename flbppriv fl_bp

. rename fllfn fl_lf

. rename flnan fl_nonfarm

. rename lnu02300000_20200110 us_epr

.
. gen lnflnonfarm=ln( fl_nonfarm)

. gen lnfllf=ln( fl_lf)
(444 missing values generated)

. gen lnusepr = ln(us_epr)
(108 missing values generated)

. gen lnflbp=ln( fl_bp)
(588 missing values generated)

.
. estimates clear

.
. **3 - Static Model
.
. **3b
. reg lnflnonfarm lnfllf lnusepr lnflbp

      Source |       SS           df       MS      Number of obs   =       384
-------------+----------------------------------   F(3, 380)       =   5989.79
       Model |  10.0439101         3  3.34797004   Prob > F        =    0.0000
    Residual |  .212399492       380  .000558946   R-squared       =    0.9793
```

```
-------------+----------------------------------   Adj R-squared   =    0.9791
       Total |  10.2563096       383  .026778876   Root MSE        =    .02364

------------------------------------------------------------------------------
 lnflnonfarm |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      lnfllf |   1.116328   .0092075   121.24   0.000     1.098223    1.134432
     lnusepr |   .7841477    .058693    13.36   0.000     .6687439    .8995515
      lnflbp |   .0441864   .0031657    13.96   0.000     .0379619    .0504109
       _cons |  -12.56463   .3275278   -38.36   0.000    -13.20863   -11.92064
------------------------------------------------------------------------------

. eststo model3b

.
. **3c
. reg lnflnonfarm lnfllf lnusepr lnflbp i.month date

      Source |       SS           df       MS      Number of obs   =       384
-------------+----------------------------------   F(15, 368)      =   4384.23
       Model |  10.1992366        15  .679949103   Prob > F        =    0.0000
    Residual |  .057073047       368   .00015509   R-squared       =    0.9944
-------------+----------------------------------   Adj R-squared   =    0.9942
       Total |  10.2563096       383  .026778876   Root MSE        =    .01245

------------------------------------------------------------------------------
 lnflnonfarm |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      lnfllf |   .9212237   .0352984    26.10   0.000     .8518118    .9906356
     lnusepr |   1.229715   .0476496    25.81   0.000     1.136015    1.323415
      lnflbp |   .0351044   .0019115    18.36   0.000     .0313455    .0388633
             |
       month |
          2  |   .0031354   .0031186     1.01   0.315    -.0029971    .0092678
          3  |  -.0032363   .0031202    -1.04   0.300    -.0093719    .0028993
          4  |  -.0093573   .0031364    -2.98   0.003    -.0155247   -.0031898
          5  |  -.0212137   .0031465    -6.74   0.000    -.0274011   -.0150264
          6  |  -.0435719   .0031755   -13.72   0.000    -.0498163   -.0373275
          7  |  -.0610547   .0032086   -19.03   0.000    -.0673642   -.0547452
          8  |  -.0442749   .0031661   -13.98   0.000    -.0505008   -.0380491
          9  |  -.0314627   .0031552    -9.97   0.000    -.0376673   -.0252582
         10  |  -.0277233   .0031775    -8.72   0.000    -.0339716   -.0214751
         11  |   -.008915   .0032122    -2.78   0.006    -.0152316   -.0025984
         12  |   .0001403   .0031694     0.04   0.965    -.0060921    .0063727
             |
        date |   .0003493    .000055     6.35   0.000     .0002411    .0004574
       _cons |  -11.37522   .4325196   -26.30   0.000    -12.22574    -10.5247
------------------------------------------------------------------------------

. eststo model3c

.
. esttab model3* using models3.rtf , se r2 onecell compress replace
(output written to models3.rtf)

.
.
. **4 Distributed Lag Model
.
. **4a
. reg lnflnonfarm l(0/12).lnfllf l(0/12).lnusepr l(0/12).lnflbp
```

```
      Source |       SS           df       MS      Number of obs   =       372
-------------+----------------------------------   F(39, 332)      =   1833.96
       Model |   9.0020926        39  .230822887   Prob > F        =    0.0000
    Residual |  .041785606       332   .00012586   R-squared       =    0.9954
-------------+----------------------------------   Adj R-squared   =    0.9948
       Total |  9.04387821       371   .02437703   Root MSE        =    .01122

------------------------------------------------------------------------------
 lnflnonfarm |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      lnfllf |
         --. |   .2484859    .256641     0.97   0.334    -.2563617    .7533334
         L1. |   .0109242    .339549     0.03   0.974    -.6570145    .6788629
         L2. |   .3924249   .3395465     1.16   0.249     -.275509    1.060359
         L3. |   .6684095   .3417729     1.96   0.051    -.0039039    1.340723
         L4. |  -.2666747   .3430333    -0.78   0.437    -.9414675     .408118
         L5. |  -.5278119   .3421766    -1.54   0.124    -1.200919    .1452957
         L6. |  -.0941471    .342526    -0.27   0.784    -.7679421    .5796479
         L7. |   .2018592   .3446162     0.59   0.558    -.4760475    .8797658
         L8. |  -.1144874   .3468577    -0.33   0.742    -.7968033    .5678284
         L9. |   .3824765   .3448778     1.11   0.268    -.2959448    1.060898
        L10. |  -.0174709   .3416669    -0.05   0.959    -.6895758     .654634
        L11. |  -.0135512   .3411563    -0.04   0.968    -.6846517    .6575492
        L12. |   .2758329   .2587045     1.07   0.287    -.2330738    .7847396
             |
     lnusepr |
         --. |   .7664839   .2811081     2.73   0.007     .2135064    1.319461
         L1. |   -.402973    .394163    -1.02   0.307    -1.178345    .3723989
         L2. |  -.3402653   .3895914    -0.87   0.383    -1.106644    .4261135
         L3. |  -.4526223   .3879255    -1.17   0.244    -1.215724    .3104796
         L4. |   .2622366   .3985003     0.66   0.511    -.5216672     1.04614
         L5. |   1.044102   .4002439     2.61   0.010     .2567681    1.831436
         L6. |   .8574051   .3976835     2.16   0.032      .075108    1.639702
         L7. |  -.2025326   .3977182    -0.51   0.611    -.9848981    .5798328
         L8. |   .4659802   .3992073     1.17   0.244    -.3193145    1.251275
         L9. |  -.1851727   .3930261    -0.47   0.638    -.9583082    .5879628
        L10. |  -.2823105   .3882628    -0.73   0.468    -1.046076    .4814548
        L11. |   .1096577   .3869829     0.28   0.777    -.6515899    .8709053
        L12. |   -.600008   .2687647    -2.23   0.026    -1.128704   -.0713115
             |
      lnflbp |
         --. |   .0202182   .0046996     4.30   0.000     .0109734     .029463
         L1. |   .0093884   .0050239     1.87   0.063    -.0004943    .0192712
         L2. |   .0117593   .0051824     2.27   0.024     .0015649    .0219537
         L3. |   .0026682   .0053362     0.50   0.617    -.0078287    .0131652
         L4. |   .0012799   .0053486     0.24   0.811    -.0092415    .0118014
         L5. |   .0064967   .0054228     1.20   0.232    -.0041707     .017164
         L6. |   .0069897   .0054356     1.29   0.199    -.0037029    .0176823
         L7. |   .0022828   .0054189     0.42   0.674    -.0083769    .0129424
         L8. |  -.0008686   .0054353    -0.16   0.873    -.0115607    .0098234
         L9. |   .0015926   .0054429     0.29   0.770    -.0091144    .0122995
        L10. |  -.0065654   .0052727    -1.25   0.214    -.0169374    .0038067
        L11. |   -.003495   .0052083    -0.67   0.503    -.0137405    .0067505
        L12. |  -.0058967   .0049827    -1.18   0.237    -.0156983    .0039049
             |
       _cons |  -14.10318   .2086937   -67.58   0.000    -14.51371   -13.69265
------------------------------------------------------------------------------

. eststo model4a

.
. **4b
```

```
. reg lnflnonfarm l(0/12).lnfllf l(0/12).lnusepr l(0/12).lnflbp i.month date

      Source |       SS           df       MS      Number of obs   =       372
-------------+----------------------------------   F(51, 320)      =   1851.87
       Model |  9.01333924        51  .176732142   Prob > F        =    0.0000
    Residual |  .030538967       320  .000095434   R-squared       =    0.9966
-------------+----------------------------------   Adj R-squared   =    0.9961
       Total |  9.04387821       371   .02437703   Root MSE        =    .00977

------------------------------------------------------------------------------
 lnflnonfarm |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      lnfllf |
         --. |   .4022129   .2732552     1.47   0.142    -.1353907    .9398166
         L1. |   .0215758   .3606161     0.06   0.952    -.6879021    .7310536
         L2. |  -.0948631   .3652309    -0.26   0.795    -.8134202     .623694
         L3. |   .1723664   .3690394     0.47   0.641    -.5536835    .8984163
         L4. |  -.0253954   .3736455    -0.07   0.946    -.7605074    .7097167
         L5. |    .032669   .3722284     0.09   0.930     -.699655     .764993
         L6. |   .0871132    .370946     0.23   0.814    -.6426879    .8169143
         L7. |   .1836039   .3720899     0.49   0.622    -.5484476    .9156554
         L8. |   .0890093   .3721137     0.24   0.811     -.643089    .8211076
         L9. |    .197165   .3753167     0.53   0.600     -.541235    .9355651
        L10. |   .0444438   .3776373     0.12   0.906    -.6985216    .7874093
        L11. |  -.2746825   .3805238    -0.72   0.471    -1.023327     .473962
        L12. |   .0831178   .2875688     0.29   0.773    -.4826465    .6488822
             |
     lnusepr |
         --. |   .4356027   .3503781     1.24   0.215    -.2537329    1.124938
         L1. |   .1191917   .4636369     0.26   0.797    -.7929698    1.031353
         L2. |   .0713731   .4690234     0.15   0.879    -.8513858    .9941321
         L3. |   .0791026   .4702414     0.17   0.867    -.8460526    1.004258
         L4. |    .210954   .4747179     0.44   0.657    -.7230083    1.144916
         L5. |  -.1047653   .4756131    -0.22   0.826    -1.040489    .8309584
         L6. |   .4023734   .4737444     0.85   0.396    -.5296736     1.33442
         L7. |   .0308766   .4745537     0.07   0.948    -.9027628     .964516
         L8. |  -.1029041    .474868    -0.22   0.829    -1.037162    .8313536
         L9. |   -.113734   .4765677    -0.24   0.812    -1.051336    .8238676
        L10. |   .1141626    .477637     0.24   0.811    -.8255429    1.053868
        L11. |    .497261   .4765765     1.04   0.298    -.4403581     1.43488
        L12. |  -.4053088   .3511232    -1.15   0.249     -1.09611    .2854927
             |
      lnflbp |
         --. |   .0181623   .0043772     4.15   0.000     .0095506    .0267739
         L1. |   .0092362   .0047446     1.95   0.052    -.0000982    .0185707
         L2. |   .0054748   .0048536     1.13   0.260    -.0040741    .0150237
         L3. |   .0061002   .0049693     1.23   0.221    -.0036764    .0158768
         L4. |   .0034054   .0049669     0.69   0.493    -.0063666    .0131774
         L5. |   .0040145     .00497     0.81   0.420    -.0057635    .0137925
         L6. |   .0065861   .0049727     1.32   0.186    -.0031973    .0163695
         L7. |   .0048746   .0049436     0.99   0.325    -.0048515    .0146007
         L8. |  -.0053079   .0049686    -1.07   0.286    -.0150833    .0044674
         L9. |  -.0008209   .0049335    -0.17   0.868    -.0105271    .0088854
        L10. |  -.0004853   .0048019    -0.10   0.920    -.0099325     .008962
        L11. |   -.005678   .0047093    -1.21   0.229     -.014943     .003587
        L12. |  -.0033832   .0044686    -0.76   0.450    -.0121747    .0054083
             |
       month |
          2  |   .0092051   .0070556     1.30   0.193    -.0046761    .0230863
          3  |   .0128215   .0076985     1.67   0.097    -.0023246    .0279675
          4  |   .0098972   .0085302     1.16   0.247    -.0068851    .0266795
          5  |   .0052627   .0061186     0.86   0.390     -.006775    .0173004
```

```
           6  |  -.0085299   .0074359    -1.15   0.252    -.0231594    .0060996
           7  |  -.0163274   .0072572    -2.25   0.025    -.0306052   -.0020496
           8  |  -.0079749   .0077393    -1.03   0.304    -.0232012    .0072514
           9  |   -.008067   .0061448    -1.31   0.190    -.0201563    .0040224
          10  |  -.0065847   .0083379    -0.79   0.430    -.0229888    .0098194
          11  |   .0093559   .0076758     1.22   0.224    -.0057455    .0244573
          12  |   .0184165   .0072988     2.52   0.012     .0040569    .0327761
              |
        date  |    .000358   .0000504     7.10   0.000     .0002588    .0004573
       _cons  |  -11.43514   .4276261   -26.74   0.000    -12.27645   -10.59382
------------------------------------------------------------------------------

. eststo model4b

.
. **4d
. reg lnflnonfarm l(0,1).lnfllf l(0,1).lnusepr l(0,1).lnflbp i.month date

      Source |       SS           df       MS      Number of obs   =       383
-------------+----------------------------------   F(18, 364)      =   4091.26
       Model |  10.0933617        18  .560742318   Prob > F        =    0.0000
    Residual |  .049889362       364  .000137059   R-squared       =    0.9951
-------------+----------------------------------   Adj R-squared   =    0.9948
       Total |  10.1432511       382  .026553013   Root MSE        =    .01171

------------------------------------------------------------------------------
 lnflnonfarm |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      lnfllf |
         --. |   1.005734   .2960054     3.40   0.001     .4236382    1.587829
         L1. |  -.0917364   .2997884    -0.31   0.760    -.6812711    .4977982
             |
     lnusepr |
         --. |  -.1481019   .3703225    -0.40   0.689    -.8763421    .5801383
         L1. |   1.351803   .3683321     3.67   0.000     .6274767    2.076129
             |
      lnflbp |
         --. |   .0254374   .0041611     6.11   0.000     .0172545    .0336203
         L1. |   .0125023   .0042286     2.96   0.003     .0041867    .0208179
             |
       month |
          2  |   .0229252   .0051295     4.47   0.000     .0128379    .0330124
          3  |   .0193888   .0051092     3.79   0.000     .0093415     .029436
          4  |   .0118636    .005949     1.99   0.047     .0001649    .0235623
          5  |  -.0010886   .0044823    -0.24   0.808     -.009903    .0077258
          6  |  -.0186915   .0057707    -3.24   0.001    -.0300395   -.0073434
          7  |  -.0422895   .0047089    -8.98   0.000    -.0515495   -.0330296
          8  |  -.0343521   .0040015    -8.58   0.000     -.042221   -.0264832
          9  |  -.0212841   .0037678    -5.65   0.000    -.0286936   -.0138747
         10  |  -.0072332   .0060024    -1.21   0.229    -.0190369    .0045706
         11  |   .0045345   .0049203     0.92   0.357    -.0051414    .0142103
         12  |   .0135397   .0042449     3.19   0.002     .0051922    .0218872
             |
        date |   .0003593   .0000526     6.83   0.000     .0002558    .0004628
       _cons |  -11.20074   .4162832   -26.91   0.000    -12.01936   -10.38212
------------------------------------------------------------------------------

. eststo model4d1

. reg lnflnonfarm l(0,1,12).lnfllf l(0,1,12).lnusepr l(0,1,12).lnflbp i.month date

      Source |       SS           df       MS      Number of obs   =       372
```

```
-------------+----------------------------------   F(21, 350)      =   3390.28
       Model |  8.99963587        21  .428554089   Prob > F        =    0.0000
    Residual |  .044242336       350  .000126407   R-squared       =    0.9951
-------------+----------------------------------   Adj R-squared   =    0.9948
       Total |  9.04387821       371   .02437703   Root MSE        =    .01124

------------------------------------------------------------------------------
 lnflnonfarm |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      lnfllf |
         --. |   .7292202   .2943467     2.48   0.014     .1503094    1.308131
         L1. |  -.0326746    .311443    -0.10   0.917    -.6452097    .5798605
        L12. |   .1809366   .0934679     1.94   0.054    -.0028928    .3647661
             |
     lnusepr |
         --. |   .0468984   .3719194     0.13   0.900    -.6845797    .7783765
         L1. |   .9767191   .3942439     2.48   0.014     .2013341    1.752104
        L12. |   .1954712   .0855985     2.28   0.023      .027119    .3638234
             |
      lnflbp |
         --. |   .0247686   .0041362     5.99   0.000     .0166337    .0329034
         L1. |   .0140107   .0042693     3.28   0.001      .005614    .0224074
        L12. |   .0038842   .0028946     1.34   0.181    -.0018088    .0095771
             |
       month |
          2  |   .0171205   .0053484     3.20   0.001     .0066015    .0276394
          3  |   .0129469   .0053059     2.44   0.015     .0025114    .0233824
          4  |   .0050828   .0062317     0.82   0.415    -.0071735     .017339
          5  |  -.0068836   .0045836    -1.50   0.134    -.0158986    .0021313
          6  |  -.0258619   .0059779    -4.33   0.000    -.0376191   -.0141047
          7  |  -.0474425   .0048209    -9.84   0.000     -.056924   -.0379609
          8  |  -.0367457   .0040455    -9.08   0.000    -.0447023    -.028789
          9  |  -.0241094    .003824    -6.30   0.000    -.0316304   -.0165884
         10  |  -.0129705   .0062624    -2.07   0.039    -.0252873   -.0006538
         11  |   .0005892   .0051016     0.12   0.908    -.0094444    .0106228
         12  |   .0100853   .0043352     2.33   0.021     .0015591    .0186115
             |
        date |   .0004157   .0000571     7.28   0.000     .0003034     .000528
       _cons |  -10.74832   .4799099   -22.40   0.000    -11.69219   -9.804451
------------------------------------------------------------------------------

. eststo model4d2

.
. esttab model4* using models4.rtf , se r2 onecell compress replace
(output written to models4.rtf)

.
. clear

. log close
      name:  <unnamed>
       log:  C:\Users\jdewey\Documents\A S20 Time Series\Problem Sets\Problem Set 2
Work.smcl
  log type:  smcl
 closed on:   3 Feb 2020, 17:19:56
-------------------------------------------------------------------------------------
```