

Problem Set 4

Gus Lipkin

All corrections are underlined

Problems

1. Drop any observations after December 2019.

```
1 drop if tin(2020m1,)
```

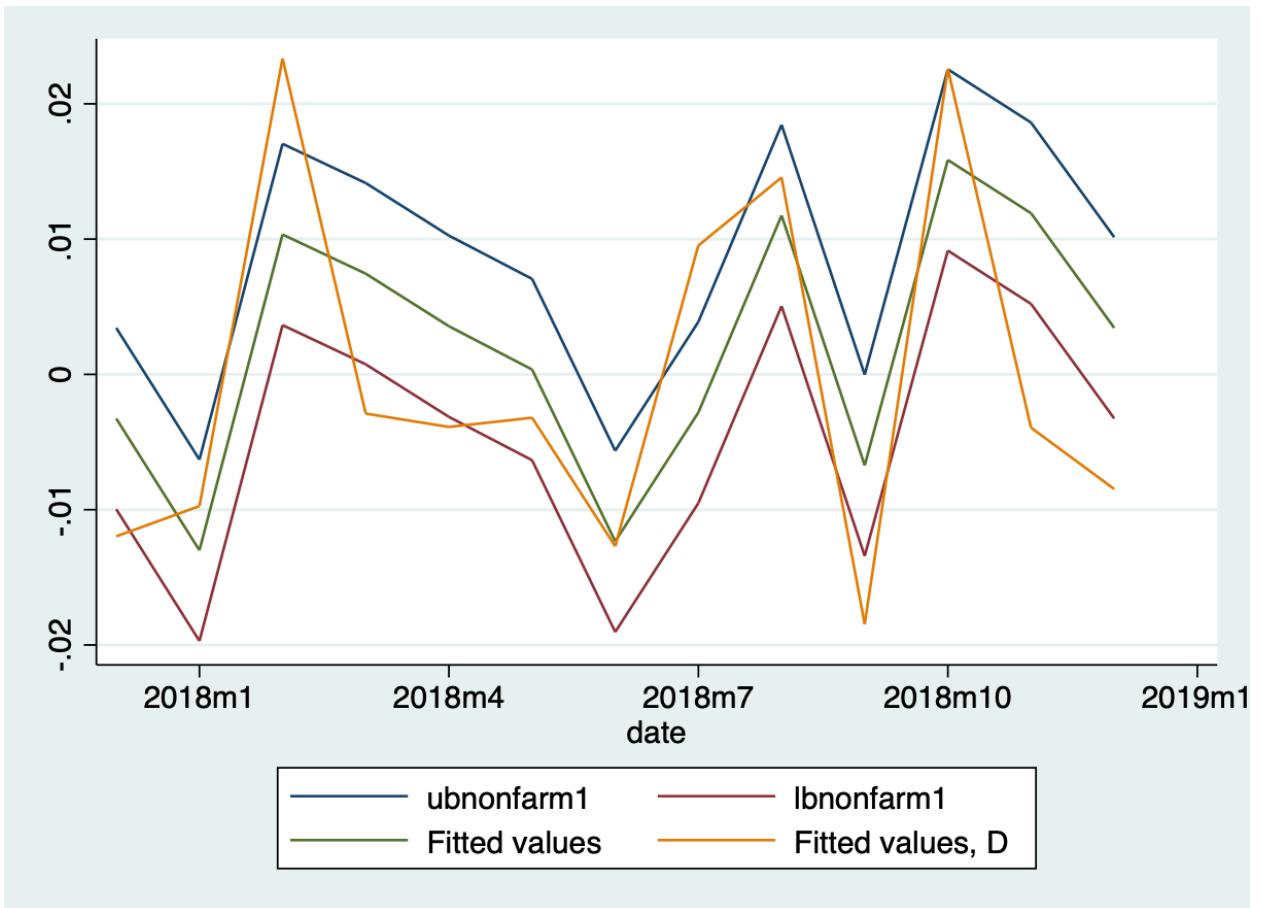
2. Refer to homework 3, question 2. Adapt the four models used there so they will be appropriate for making a one period ahead forecast.

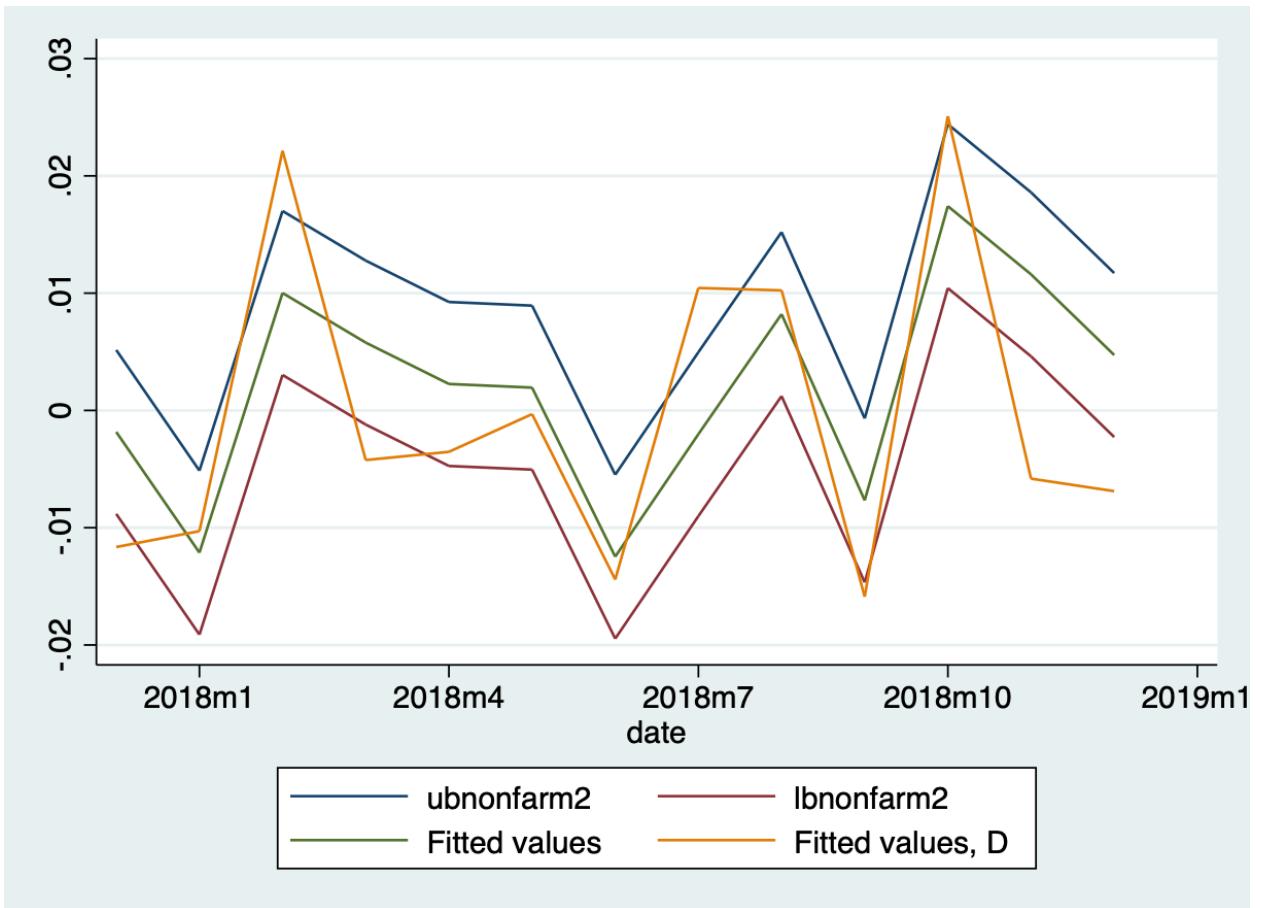
```
1 reg d.lnflnonfarm l(1/12)d.lnflnonfarm l(1/12)d.lnfllf l(1/12)d.lnusepr  
l(1/12)d.lnflbp i.month date  
2 reg d.lnflnonfarm l(1/12)d.lnflnonfarm l(1/2)d.lnfllf l(1/2)d.lnusepr  
l(1/2)d.lnflbp i.month date  
3 reg d.lnflnonfarm l(1/12)d.lnflnonfarm l(1/2,12)d.lnfllf l(1/2,12)d.lnflbp i.month  
date  
4 reg d.lnflnonfarm l(1/12,24)d.lnflnonfarm l(1/2,12,24)d.lnfllf  
l(1/2,12,24)d.lnusepr i.month
```

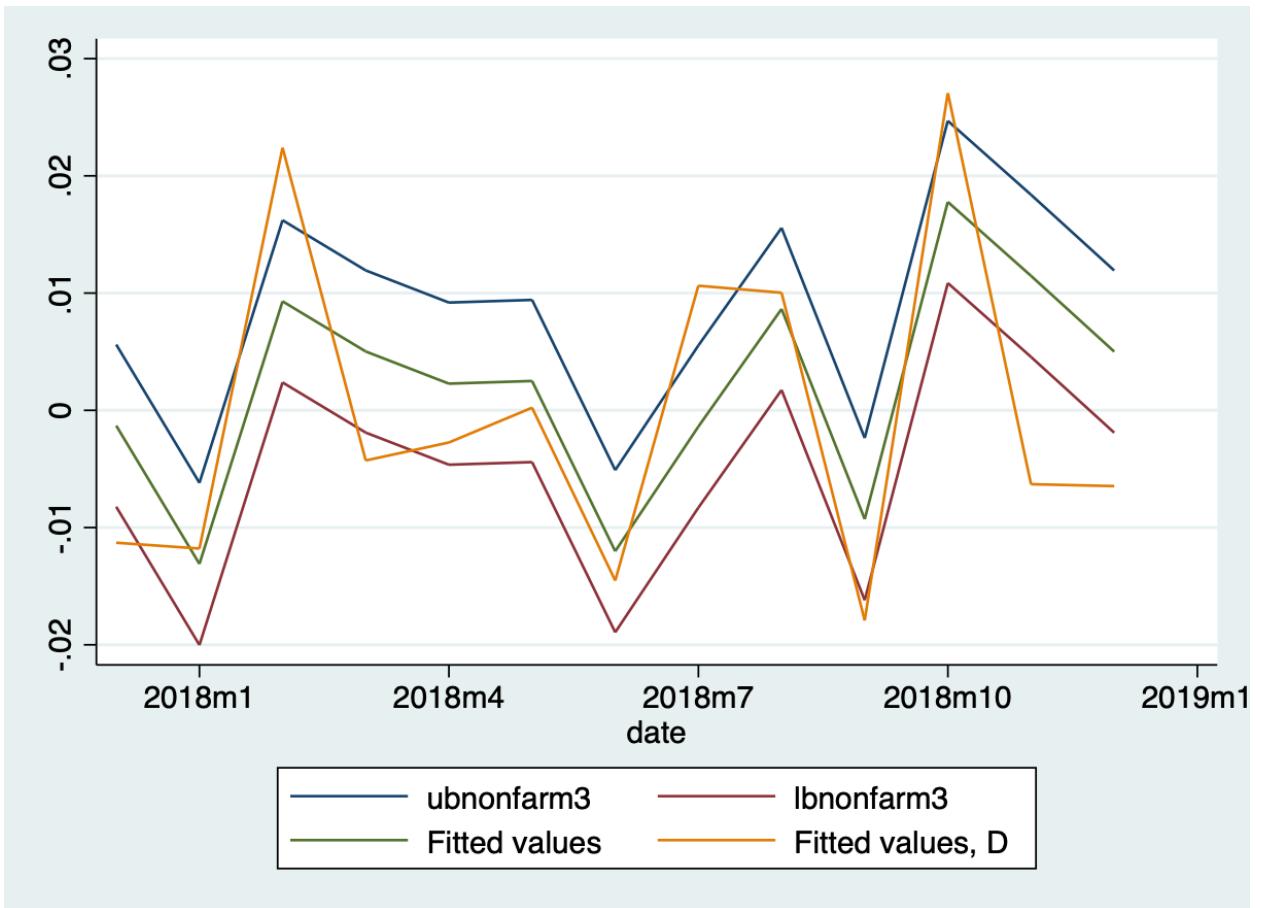
3. For each model, calculate the out of sample RMSE for the last year of observations (last 12 observations). To do this, you must not include these observations in the model estimation.

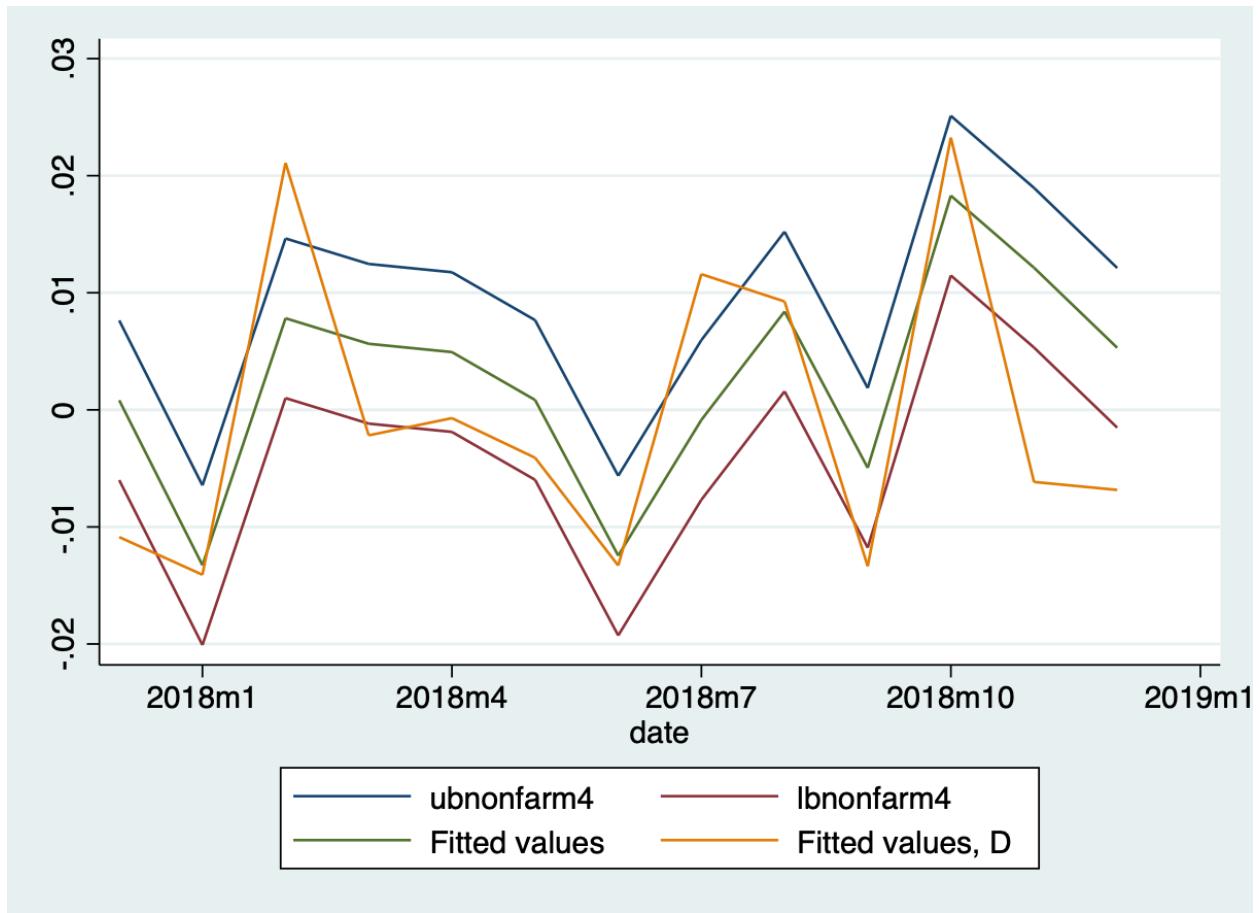
	c1	c2	c3	c4
r1	.00341856	.00356652	.00352901	.00347889

4. For each model, prepare a figure with the actual change in the log of nonfarm employment for the last 24 months, and for the last year the point forecast and the forecast interval, again using the model fit excluding the last 12 months.







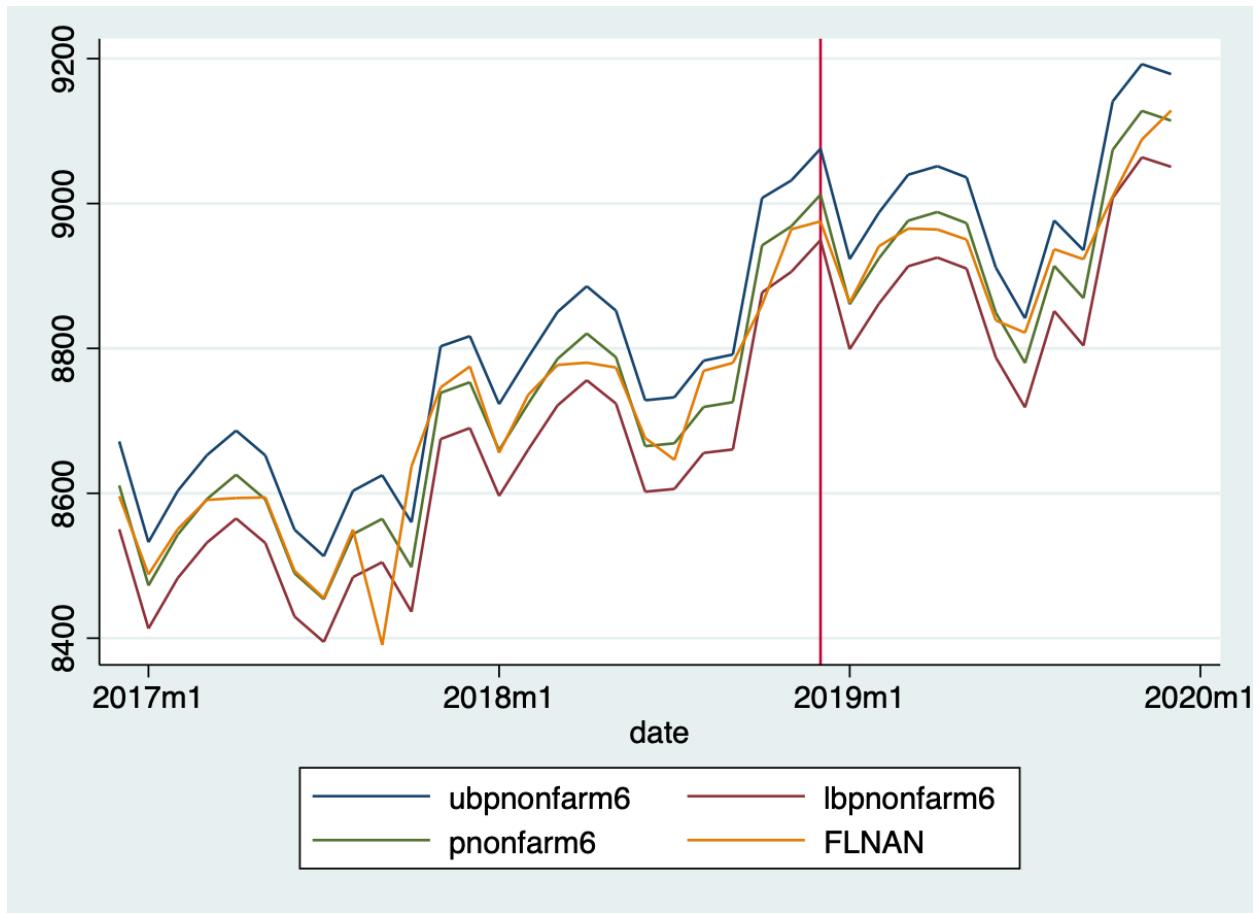


5. Select the best model for forecasting purposes based on AIC, BIC, LOOCV, and out of sample RMSE for the final year of data. Justify your choice.

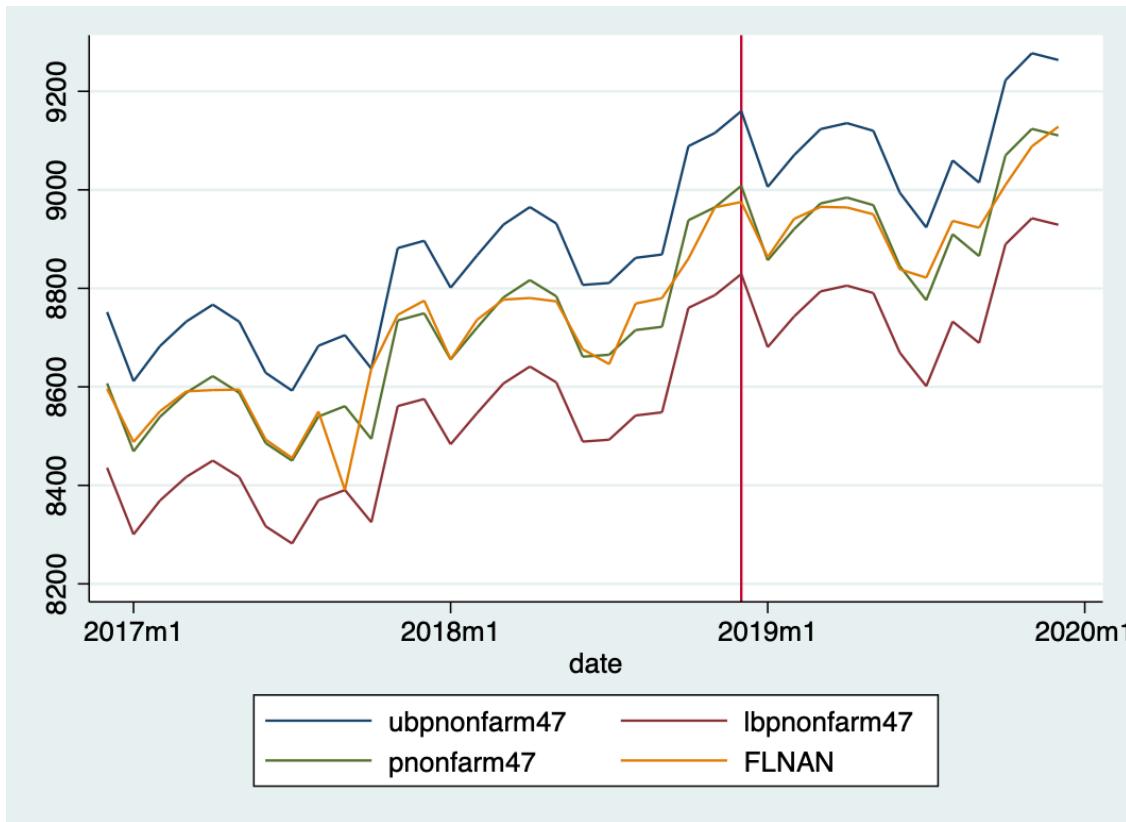
	df	AIC	BIC	RMSE	LOORMSE
Model 1	61	-3114.0527	-2875.1644	.00341856	.00380836
Model 2	31	-3190.9568	-3068.7301	.00356652	.00371849
Model 3	31	-3115.1451	-2993.7429	.00352901	.00375319
Model 4	33	-4236.6004	-4097.3209	.00347889	.00355785

I chose model four because the AIC, BIC, and LOORMSE were the lowest. The only difference was that the lowest RMSE was model 1. However, the difference in RMSE for model 1 and model 4 is very low so I'm comfortable choosing model 4 over model 3.

6. For the best model, transform the values appropriately and prepare a figure with the actual level of nonfarm employment (not the log) for the last 24 months, and for the last 12 months the point forecast and the forecast interval for nonfarm employment. For the interval forecast, assume approximate normality, and use the standard error of the forecast.



- Now prepare another figure, again for the best model, with the actual level of nonfarm employment for the last 24 months, and for the last 12 months the point forecast and the forecast interval for nonfarm employment. This time, use the empirical approach, based on the data used to fit the model, to construct the forecast interval.

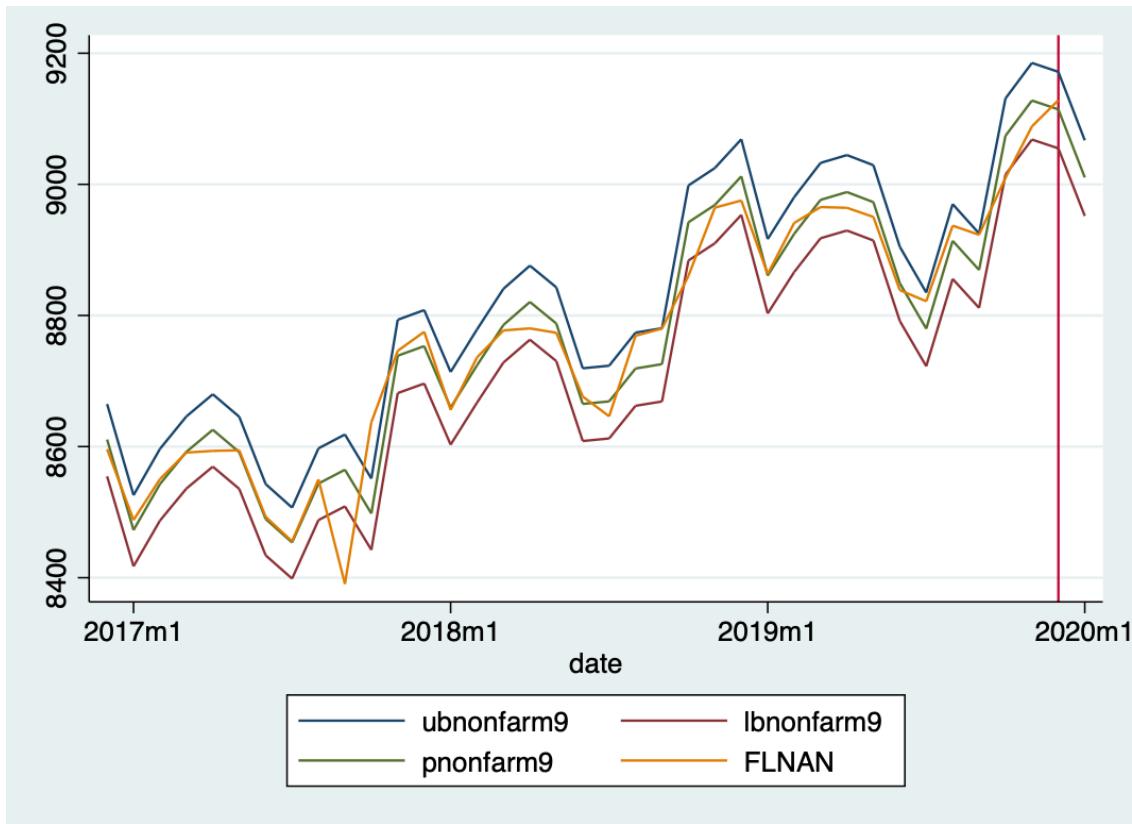


8. Run these commands to add January 2020 to the data (for which you will generate a forecast) and fill in the corresponding values for year and month:

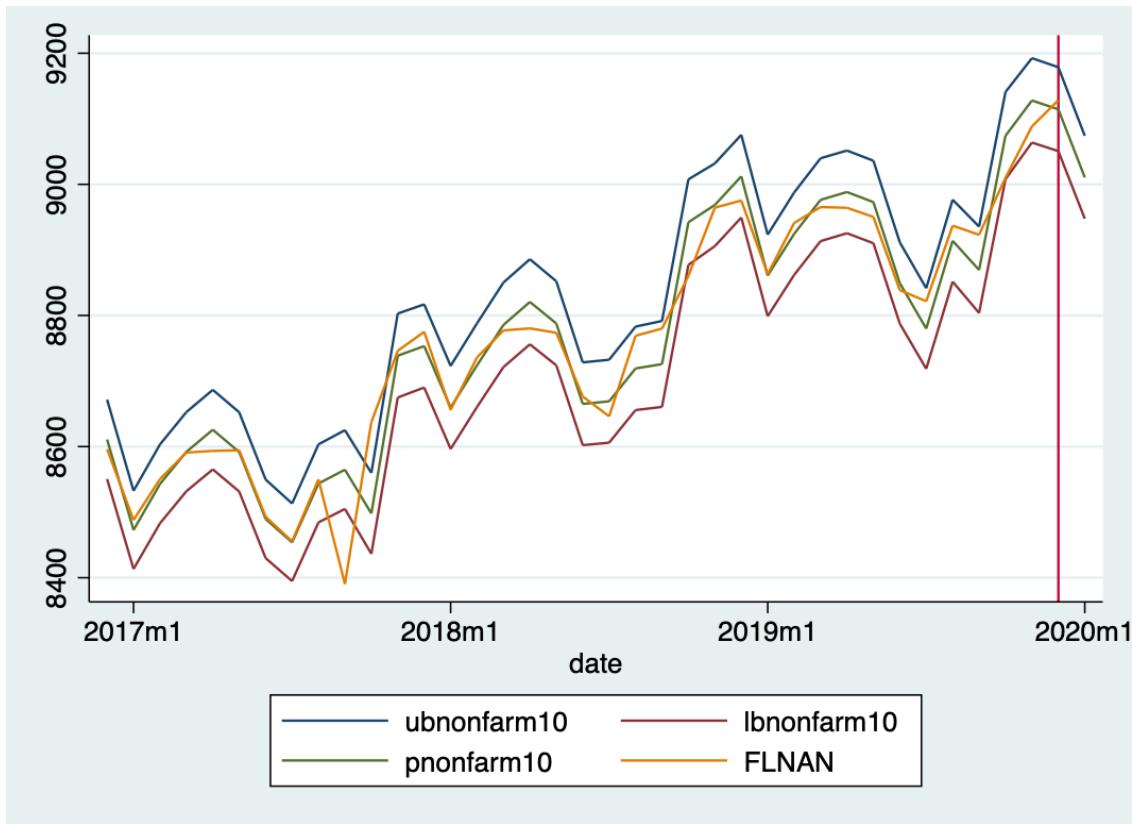
```
tsappend, add(1)
replace month=month(dofm(date)) if month==.
```

```
1 tsappend, add(1)
2 replace month=month(dofm(date)) if month==.
```

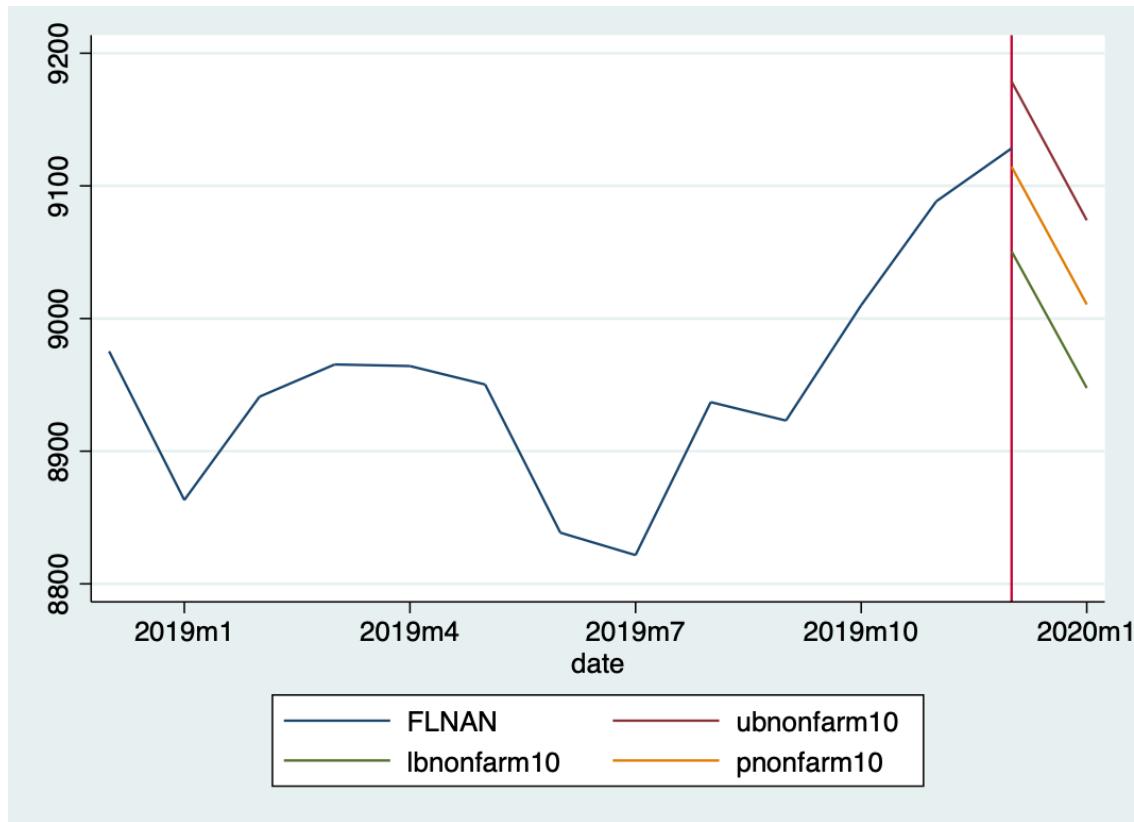
9. Run your selected model on the full sample and use it to forecast January 2020. Create point and interval forecasts for the change in the log of non-farm employment. Use the empirical approach.



10. Transform the point and interval forecast of the January 2020 change in the log of non-farm employment to create a point and interval forecast of non-farm employment for January 2020.



11. Generate a figure showing the last 12 months of non-farm employment and the January 2020 point and interval forecasts. (The figure shows actual for January 2019 through December 2019 and then the point and interval forecast for January 2020.)



The point forecast is 9093.688, and the empirical interval is 8923.5 to 9215.6.

Appendix A

```

1 clear
2 set more off
3
4 cd "/Users/guslipkin/Documents/Spring2020/CAP 4763 ~ Time Series/Problem
Sets/Problem Set 4"
5
6 *2a
7 *Done
8
9 *2b Load the data
10 import delimited "Assignment_1_Monthly.txt"
11
12 rename lnu02300000 us_epr
13 rename flnan fl_nonfarm
14 rename fllfn fl_lf
15 rename flbpriv fl_bp
16 rename date datestring
17
18 *2c Turn on a log file
19 log using "Problem Set 4", replace

```

```

20
21 *2d Generate a monthly date variable (make its display format monthly time, %tm)
22 gen datec=date(datestring, "YMD")
23 gen date=mofd(datec)
24 gen month=month(datec)
25 format date %tm
26
27 *2e tsset your data
28 tsset date
29
30 *2f
31 gen lnusepr=log(us_epr)
32 gen lnflnonfarm=log(f1_nonfarm)
33 gen lnflif=log(f1_if)
34 gen lnflbp=log(f1_bp)
35
36 *1
37 drop if tin(2020m1,)
38
39 *2
40 reg d.lnflnonfarm l(1/12)d.lnflnonfarm l(1/12)d.lnflif l(1/12)d.lnusepr
   l(1/12)d.lnflbp i.month date
41 reg d.lnflnonfarm l(1/12)d.lnflnonfarm l(1/2)d.lnflif l(1/2)d.lnusepr
   l(1/2)d.lnflbp i.month date
42 reg d.lnflnonfarm l(1/12)d.lnflnonfarm l(1/2,12)d.lnflif l(1/2,12)d.lnflbp
   i.month date
43 reg d.lnflnonfarm l(1/12,24)d.lnflnonfarm l(1/2,12,24)d.lnflif
   l(1/2,12,24)d.lnusepr i.month
44
45 *3
46 reg d.lnflnonfarm l(1/12)d.lnflnonfarm l(1/12)d.lnflif l(1/12)d.lnusepr
   l(1/12)d.lnflbp i.month date if tin(,2018m12)
47 scalar define rmse1=e(rmse)
48 reg d.lnflnonfarm l(1/12)d.lnflnonfarm l(1/2)d.lnflif l(1/2)d.lnusepr
   l(1/2)d.lnflbp i.month date if tin(,2018m12)
49 scalar define rmse2=e(rmse)
50 reg d.lnflnonfarm l(1/12)d.lnflnonfarm l(1/2,12)d.lnflif l(1/2,12)d.lnflbp
   i.month date if tin(,2018m12)
51 scalar define rmse3=e(rmse)
52 reg d.lnflnonfarm l(1/12,24)d.lnflnonfarm l(1/2,12,24)d.lnflif
   l(1/2,12,24)d.lnusepr i.month if tin(,2018m12)
53 scalar define rmse4=e(rmse)
54
55 matrix drop _all
56 matrix row=(rmse1, rmse2, rmse3, rmse4)
57 matrix RMSE = row
58 matrix list RMSE
59

```

```

60 *4
61 reg d.lnflnonfarm l(1/12)d.lnflnonfarm l(1/12)d.lnfllf l(1/12)d.lnusepr
62 l(1/12)d.lnflbp i.month date if tin(,2018m12)
63 predict nonfarm1
64 gen ubnonfarm1=nonfarm1+1.96*e(rmse)
65 gen lbnonfarm1=nonfarm1-1.96*e(rmse)
66 tsline ubnonfarm1 lbnonfarm1 nonfarm1 d.nonfarm1 if tin(2017m12, 2018m12)
67 reg d.lnflnonfarm l(1/12)d.lnflnonfarm l(1/2)d.lnfllf l(1/2)d.lnusepr
68 l(1/2)d.lnflbp i.month date if tin(,2018m12)
69 predict nonfarm2
70 gen ubnonfarm2=nonfarm2+1.96*e(rmse)
71 gen lbnonfarm2=nonfarm2-1.96*e(rmse)
72 tsline ubnonfarm2 lbnonfarm2 nonfarm2 d.nonfarm2 if tin(2017m12, 2018m12)
73 reg d.lnflnonfarm l(1/12)d.lnflnonfarm l(1/2,12)d.lnfllf l(1/2,12)d.lnflbp
74 i.month date if tin(,2018m12)
75 predict nonfarm3
76 gen ubnonfarm3=nonfarm3+1.96*e(rmse)
77 gen lbnonfarm3=nonfarm3-1.96*e(rmse)
78 tsline ubnonfarm3 lbnonfarm3 nonfarm3 d.nonfarm3 if tin(2017m12, 2018m12)
79 reg d.lnflnonfarm l(1/12,24)d.lnflnonfarm l(1/2,12,24)d.lnfllf
80 l(1/2,12,24)d.lnusepr i.month if tin(,2018m12)
81 predict nonfarm4
82 gen ubnonfarm4=nonfarm4+1.96*e(rmse)
83 gen lbnonfarm4=nonfarm4-1.96*e(rmse)
84 tsline ubnonfarm4 lbnonfarm4 nonfarm4 d.nonfarm4 if tin(2017m12, 2018m12)

85 *5
86 reg d.lnflnonfarm l(1/12)d.lnflnonfarm l(1/12)d.lnfllf l(1/12)d.lnusepr
87 l(1/12)d.lnflbp i.month date
88 estat ic
89 scalar define df1=el(r(S),1,4)
90 scalar define aic1=el(r(S),1,5)
91 scalar define bic1=el(r(S),1,6)
92 loocv reg d.lnflnonfarm l(1/12)d.lnflnonfarm l(1/12)d.lnfllf l(1/12)d.lnusepr
93 l(1/12)d.lnflbp i.month date
94 scalar define loormse1=r(rmse)

95 reg d.lnflnonfarm l(1/12)d.lnflnonfarm l(1/2)d.lnfllf l(1/2)d.lnusepr
96 l(1/2)d.lnflbp i.month date
97 estat ic
98 scalar define df2=el(r(S),1,4)
99 scalar define aic2=el(r(S),1,5)
100 scalar define bic2=el(r(S),1,6)
101 loocv reg d.lnflnonfarm l(1/12)d.lnflnonfarm l(1/2)d.lnfllf l(1/2)d.lnusepr
102 l(1/2)d.lnflbp i.month date
103 scalar define loormse2=r(rmse)

```

```

99  reg d.lnflnonfarm l(1/12)d.lnflnonfarm l(1/2,12)d.lnfllf l(1/2,12)d.lnflbp
100 i.month date
101 estat ic
102 scalar define df3=el(r(S),1,4)
103 scalar define aic3=el(r(S),1,5)
104 scalar define bic3=el(r(S),1,6)
105 loocv reg d.lnflnonfarm l(1/12)d.lnflnonfarm l(1/2,12)d.lnfllf l(1/2,12)d.lnflbp
106 i.month date
107 scalar define loormse3=r(rmse)
108
109 reg d.lnflnonfarm l(1/12,24)d.lnflnonfarm l(1/2,12,24)d.lnfllf
110 l(1/2,12,24)d.lnusepr i.month
111 estat ic
112 scalar define df4=el(r(S),1,4)
113 scalar define aic4=el(r(S),1,5)
114 scalar define bic4=el(r(S),1,6)
115 loocv reg d.lnflnonfarm l(1/12,24)d.lnflnonfarm l(1/2,12,24)d.lnfllf
116 l(1/2,12,24)d.lnusepr i.month
117 scalar define loormse4=r(rmse)
118
119 matrix drop _all
120 matrix fit1=(df1,aic1,bic1,rmse1,loormse1)
121 matrix fit2=(df2,aic2,bic2,rmse2,loormse2)
122 matrix fit3=(df3,aic3,bic3,rmse3,loormse3)
123 matrix fit4=(df4,aic4,bic4,rmse4,loormse4)
124 matrix FIT=fit1\fit2\fit3\fit4
125 matrix rownames FIT="Model 1" "Model 2" "Model 3" "Model 4"
126 matrix colnames FIT=df AIC BIC RMSE LOORMSE
127 matrix list FIT
128
129 *6
130 reg d.lnflnonfarm l(1/12,24)d.lnflnonfarm l(1/2,12,24)d.lnfllf
131 l(1/2,12,24)d.lnusepr i.month if tin(,2018m12)
132 predict nonfarm6
133 predict stdfore6, stdf
134 gen pnonfarm6=exp(l.lnflnonfarm+nonfarm6)*exp(.5*e(rmse)^2)
135 gen ubpnonfarm6=exp(l.lnflnonfarm+nonfarm6+1.96*stdfore6)*exp(.5*e(rmse)^2)
136 gen lbpnonfarm6=exp(l.lnflnonfarm+nonfarm6-1.96*stdfore6)*exp(.5*e(rmse)^2)
137 tsline ubpnonfarm6 lbpnonfarm6 pnonfarm6 fl_nonfarm if tin(2016m12,2019m12),
138 tline(2018m12)
139
140 *7
141 reg d.lnflnonfarm l(1/12,24)d.lnflnonfarm l(1/2,12,24)d.lnfllf
142 l(1/2,12,24)d.lnusepr i.month if tin(,2018m12)
143 predict nonfarm47
144 predict pres47 if tin(2016m12,2018m12), residual
145 gen expres47=exp(pres47) if tin(2016m12,2018m12)
146 summ expres47

```

```

140 gen pnonfarm47=r(mean)*exp(l.lnflnonfarm+nonfarm47)
141 _pctile expres47, percentile(2.5,97.5)
142 gen lbpnonfarm47=r(r1)*exp(l.lnflnonfarm+nonfarm47)
143 gen ubpnonfarm47=r(r2)*exp(l.lnflnonfarm+nonfarm47)
144 tsline ubpnonfarm47 lbpnonfarm47 pnonfarm47 fl_nonfarm if tin(2016m12,2019m12),
tline(2018m12)

145
146 *8
147 tsappend, add(1)
148 replace month=month(dofm(date)) if month==.

149
150 *9
151 reg d.lnflnonfarm l(1/12,24)d.lnflnonfarm l(1/2,12,24)d.lnfl1f
l(1/2,12,24)d.lnusepr i.month if tin(,2018m12)
152 predict nonfarm9
153 predict pres9 if tin(,2019m12), residual
154 gen expres9=exp(pres9) if tin(,2019m12)
155 summ expres9
156 gen pnonfarm9=r(mean)*exp(l.lnflnonfarm+nonfarm9)
157 _pctile expres9, percentile(2.5,97.5)
158 gen lbnonfarm9=r(r1)*exp(l.lnflnonfarm+nonfarm9)
159 gen ubnonfarm9=r(r2)*exp(l.lnflnonfarm+nonfarm9)
160 tsline ubnonfarm9 lbnonfarm9 pnonfarm9 fl_nonfarm if tin(2016m12,2020m1),
tline(2019m12)

161
162 *10
163 reg d.lnflnonfarm l(1/12,24)d.lnflnonfarm l(1/2,12,24)d.lnfl1f
l(1/2,12,24)d.lnusepr i.month if tin(,2018m12)
164 predict nonfarm10
165 predict stdfore10, stdf
166 gen pnonfarm10=exp(l.lnflnonfarm+nonfarm10)*exp(.5*e(rmse)^2)
167 gen ubnonfarm10=exp(l.lnflnonfarm+nonfarm10+1.96*stdfore10)*exp(.5*e(rmse)^2)
168 gen lbnonfarm10=exp(l.lnflnonfarm+nonfarm10-1.96*stdfore10)*exp(.5*e(rmse)^2)
169 tsline ubnonfarm10 lbnonfarm10 pnonfarm10 fl_nonfarm if tin(2016m12,2020m1),
tline(2019m12)

170
171 *11
172 tsline fl_nonfarm if tin(2018m12,2020m1) || tsline ubnonfarm10 lbnonfarm10
pnonfarm10 if tin(2019m12,), tline(2019m12)

173
174 log close

```

Appendix B

```

name: <unnamed>
log: /Users/guslipkin/Documents/Spring2020/CAP 4763 ~ Time Series/Problem Sets/Problem Set 4/Problem Set 4.smcl
log type: smcl
opened on: 23 Mar 2021, 21:24:45

```

```

* Add generate a monthly date variable (make it a directory format monthly time var)

```

```

. *to generate a monthly date variable (more its already turned monthly same, so)
. gen date=date(datestring, "YMD")
. gen date=mofd(datec)
. gen month=month(datec)
. format date %tm
.
. *2e tset your data
. tset date
    time variable: date, 1939m1 to 2020m12
    delta: 1 month
.
. *2f
. gen lnusepr=log(us_epr)
(108 missing values generated)
.
. gen lnflnonfarm=log(f1_nonfarm)
.
. gen lnfllf=log(f1_lf)
(444 missing values generated)
.
. gen lnflbp=log(f1_bp)
(588 missing values generated)
.
. *1
. drop if tin(2020m1,)
(12 observations deleted)
.
. *2
. reg d.lnflnonfarm l(1/12)d.lnflnonfarm l(1/12)d.lnfllf l(1/12)d.lnusepr l(1/12)d.lnflbp i.month date

```

Source	SS	df	MS	Number of obs	=	371
Model	.033628663	60	.000560478	F(60, 310)	=	49.11
Residual	.003538017	310	.000011413	Prob > F	=	0.0000
Total	.03716668	370	.00010045	R-squared	=	0.9048
				Adj R-squared	=	0.8864
				Root MSE	=	.00338

D.	lnflnonfarm	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
lnflnonfarm						
L0D.	-.1709382	.0544484	-3.14	0.002	-.2780734	-.063893
L2D.	-.1482615	.0563272	-2.63	0.009	-.2599935	-.0374296
L3D.	.162612	.057373	2.83	0.005	.0497221	.2755018
L4D.	.1338157	.0578492	2.31	0.021	.0199889	.2476424
L5D.	.0485865	.0586353	0.83	0.468	-.0667878	.1639599
L6D.	.1034826	.0583736	1.77	0.077	-.0113761	.2183412
L7D.	-.0017194	.0587605	-0.83	0.977	-.1173393	.1139085
L8D.	-.0661616	.0589687	-1.12	0.263	-.1821911	.049868
L9D.	.0703003	.0570451	1.23	0.219	-.0419442	.1825448
L10D.	-.2131464	.0557377	-3.82	0.000	-.3228184	-.1034745
L11D.	-.0492711	.0559229	-0.88	0.379	-.1593075	.0607653
L12D.	.3160254	.0547464	5.77	0.000	.2083039	.4237469
lnfllf						
L0D.	-.1446453	.0983821	-1.47	0.143	-.3382263	.0489358
L2D.	-.1262282	.0987995	-1.28	0.282	-.3206305	.0681742
L3D.	-.0938871	.0998186	-0.94	0.348	-.2902948	.1025286
L4D.	-.0237969	.1021375	-0.23	0.816	-.2247673	.1771735
L5D.	.069078	.1014128	0.69	0.929	-.1984666	.2086226
L6D.	-.1064011	.1005346	-1.06	0.291	-.3042177	.0914155
L7D.	-.0363673	.1001261	-0.36	0.717	-.2333801	.1606454
L8D.	-.0227181	.0999956	-0.23	0.820	-.219289	.1738688
L9D.	.1419096	.0991963	1.43	0.154	-.0532736	.3370929
L10D.	.2356432	.0995816	2.37	0.019	.0397018	.4315847
L11D.	-.0156215	.1005373	-0.16	0.877	-.2134433	.1822003
L12D.	-.1496896	.0991977	-1.51	0.132	-.3448754	.0454963
lnusepr						
L0D.	.2160403	.1318859	1.64	0.102	-.0434644	.4755451
L2D.	.0596176	.1342172	0.44	0.657	-.2044743	.3237096
L3D.	.1365192	.1332945	1.02	0.307	-.1257572	.3987956
L4D.	.146566	.1327682	1.06	0.291	-.1266748	.4018068
L5D.	-.0429764	.1313909	-0.33	0.744	-.3015071	.2155544
L6D.	.3174743	.1387471	2.43	0.016	.0662104	.5747382
L7D.	.1643272	.1319288	1.25	0.214	-.0952619	.4239164
L8D.	-.0363099	.1388968	-0.28	0.782	-.2938562	.2212364
L9D.	-.1104225	.1311797	-0.84	0.401	-.3685377	.1476927
L10D.	-.3143018	.1317767	-2.39	0.018	-.5735916	-.055012
L11D.	.1870841	.1321575	1.42	0.158	-.072955	.4471232
L12D.	.1595031	.127988	1.25	0.214	-.092332	.4113382
lnflbp						
L0D.	.0014899	.0015781	0.94	0.346	-.0016152	.004595
L2D.	.0048244	.0018575	2.68	0.010	.0011694	.0084793
L3D.	.0005472	.0019601	3.34	0.001	.0026984	.018404
L4D.	.0049279	.001984	2.48	0.014	.0010242	.0088316
L5D.	.0050421	.0019821	2.54	0.011	.001142	.0089422
L6D.	.0049581	.0020017	2.48	0.014	.0010194	.0088969
L7D.	.0043549	.0020066	2.17	0.031	.0004067	.0083031
L8D.	.0036467	.0020487	1.78	0.077	-.0003905	.0076719
L9D.	.0033308	.0020403	1.63	0.184	-.0006839	.0073454
L10D.	.004421	.0020019	2.21	0.028	.000482	.00836
L11D.	.0031925	.0019124	1.67	0.096	-.0005706	.0069555
L12D.	.0030942	.0015700	1.97	0.050	.0001862	.0061862

month						
2	.0096471	.0035242	2.74	0.007	.0027127	.0165816
3	.0085261	.00368	2.32	0.021	.0012851	.0157671
4	.0092646	.0040143	2.31	0.022	.0013658	.0171635
5	.0035453	.0031449	1.13	0.260	-.0026427	.0097333
6	-.0026169	.0037248	-0.70	0.483	-.0099459	.0047121
7	.0042083	.0035921	1.17	0.243	-.0028678	.0112683
8	.0133789	.0037305	3.59	0.000	.0000387	.0207191
9	.0108298	.0031587	3.43	0.001	.00041646	.0170845
10	.0165185	.0040273	4.10	0.000	.0085942	.0244428
11	.0098475	.0037037	2.44	0.015	.0017599	.0163351
12	.0154964	.0034704	4.47	0.000	.0086679	.022325
date	-3.66e-06	1.92e-06	-1.90	0.058	-7.43e-06	1.22e-07
_cons	-.0044454	.0028196	-1.58	0.116	-.0099933	.0011025

. reg d.lnflnonfarm l(1/12)d.lnflnonfarm l(1/2)d.lnfllf l(1/2)d.lnusepr l(1/2)d.lnflbp i.month date

Source	SS	df	MS	Number of obs	=	381
Model	.033990108	30	.001133004	F(30, 350)	=	90.75
Residual	.004369869	350	.000012485	Prob > F	=	0.0000
Total	.038359977	380	.000100947	R-squared	=	0.8861
				Adj R-squared	=	0.8763
				Root MSE	=	.00353

D. lnflnonfarm	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
lnflnonfarm					
LD.	-.1252994	.0491434	-2.55	0.011	-.2219529 -.0286459
L2D.	-.0958662	.0518133	-1.85	0.065	-.1977648 .0606443
L3D.	.2398422	.0515342	4.65	0.000	.1384866 .3411978
L4D.	.1709118	.0489573	3.49	0.001	.0746243 .2671992
L5D.	.1515931	.0495961	3.06	0.002	.0540493 .249137
L6D.	.1371627	.0507474	2.70	0.007	.0373545 .2369708
L7D.	.0720218	.0527616	1.37	0.173	-.0317478 .1757914
L8D.	.0100887	.0513147	0.20	0.844	-.0988432 .1110847
L9D.	.0796876	.0488054	1.63	0.183	-.0163013 .1756764
L10D.	-.1886880	.047519	-3.97	0.000	-.2821391 -.0952217
L11D.	-.0844174	.0497603	-1.70	0.091	-.1822842 .0134493
L12D.	.388731	.0497483	7.81	0.000	.2988879 .4865741
lnfllf					
LD.	-.19426	.0941693	-2.06	0.040	-.3794688 -.0090513
L2D.	-.1402653	.0944467	-1.49	0.138	-.3260199 .0454893
lnusepr					
LD.	.2273847	.1224594	1.86	0.064	-.0134641 .4682334
L2D.	.0344122	.123157	0.28	0.780	-.2078086 .276633
lnflbp					
LD.	.0002646	.0014455	0.18	0.855	-.0025784 .0031076
L2D.	.0014358	.0014491	0.99	0.322	-.0014143 .0042858
month					
2	.0089123	.0022594	3.94	0.000	.0044686 .0133561
3	.0063439	.0027078	2.34	0.020	.0010183 .0116696
4	.0081387	.0027662	2.94	0.003	.0026983 .0135792
5	.002026	.0026956	0.75	0.453	-.0032757 .0073277
6	.0005971	.0024291	0.25	0.886	-.0041804 .0053746
7	.0012385	.0021082	0.59	0.557	-.0029078 .0053847
8	.011499	.0024647	4.67	0.000	.00066515 .0163465
9	.0150089	.002545	5.98	0.000	.0100036 .0200143
10	.0207091	.0025776	8.03	0.000	.0156395 .0257787
11	.0124833	.0024281	5.14	0.000	.0077077 .0172588
12	.0125059	.0019735	6.34	0.000	.0086245 .0163873
date	-9.9e-07	1.73e-06	-0.57	0.568	-4.4e-06 2.42e-06
_cons	-.0069309	.0019081	-3.63	0.000	-.0106838 -.0031781

. reg d.lnflnonfarm l(1/12)d.lnflnonfarm l(1/2,12)d.lnfllf l(1/2,12)d.lnflbp i.month date

Source	SS	df	MS	Number of obs	=	371
Model	.033019839	30	.001100661	F(30, 340)	=	90.24
Residual	.004146841	340	.000012197	Prob > F	=	0.0000
Total	.03716668	370	.00010045	R-squared	=	0.8884
				Adj R-squared	=	0.8786
				Root MSE	=	.00349

D. lnflnonfarm	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
lnflnonfarm					
LD.	-.1007022	.0496694	-2.03	0.043	-.1984002 -.0030042
L2D.	-.0776112	.0500347	-1.55	0.122	-.1760278 .0208054
L3D.	.2495718	.0489276	5.10	0.000	.153333 .3458107
L4D.	.1659053	.0490998	3.38	0.001	.0693277 .2624828
L5D.	.1576085	.0494045	3.19	0.002	.0664315 .2547854
L6D.	.1606861	.0504142	3.19	0.002	.0615231 .2598491
L7D.	.0928285	.0512561	1.80	0.073	-.0087985 .1928394
L8D.	.0257082	.0504855	0.51	0.611	-.073595 .1250115
L9D.	.0816557	.0485929	1.68	0.094	-.013925 .1772363
L10D.	-.1982253	.0474658	-4.18	0.000	-.2915889 -.1048616
L11D.	-.1022931	.049168	-2.08	0.038	-.199005 -.0055813
L12D.	.3672239	.0495416	7.41	0.000	.2697773 .4646706
lnfllf					

LD.	-.0415721	.0517745	-0.80	0.423	-.1434108	.0602666
L2D.	-.1119071	.0515073	-2.17	0.030	-.2132203	-.0105939
L12D.	-.1255582	.0492626	-2.55	0.011	-.2224562	-.0286603
lnflbp						
LD.	.0007479	.0014387	0.52	0.604	-.0020821	.0035778
L2D.	.0019096	.0014405	1.33	0.186	-.0009239	.004743
L12D.	.0016474	.0012703	1.30	0.196	-.0008512	.0041461
month						
2	.0086958	.0020531	4.24	0.000	.0046573	.0127342
3	.0077648	.0024066	3.23	0.001	.0030311	.0124985
4	.0089026	.0027229	3.27	0.001	.0035469	.0142584
5	.0038752	.0026664	1.45	0.147	-.0013695	.0091199
6	.0016548	.0023999	0.44	0.661	-.0036568	.0057754
7	.0048191	.0020623	1.95	0.052	-.0000374	.0088755
8	.0127434	.0023612	5.49	0.000	.008099	.0173878
9	.0156048	.0025314	6.16	0.000	.0186256	.0205839
10	.0204691	.0025295	8.09	0.000	.0154936	.0254446
11	.0136586	.0022928	5.96	0.000	.0091487	.0181685
12	.0133801	.001901	7.04	0.000	.0096408	.0171194
date	-6.31e-07	1.73e-06	-0.37	0.715	-4.03e-06	2.76e-06
_cons	-.0082167	.0018377	-4.47	0.000	-.0118314	-.0046019

```
. reg d.lnflnonfarm l(1/12,24)d.lnflnonfarm l(1/2,12,24)d.lnfllf l(1/2,12,24)d.lnusepr i.month
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Source	SS	df	MS	Number of obs	=	503
Model	.043188967	32	.001349655	F(32, 470)	=	111.72
Residual	.005677954	470	.000012081	Prob > F	=	0.0000
Total	.048866921	502	.000097344	R-squared	=	0.8838
				Adj R-squared	=	0.8759
				Root MSE	=	.00348

D. lnflnonfarm	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
lnflnonfarm					
LD.	-.0255499	.03766	-0.68	0.498	-.0995527 .0484528
L2D.	-.0022421	.038345	-0.86	0.953	-.0775999 .0731068
L3D.	.1749722	.0380384	4.60	0.000	.1002259 .2497186
L4D.	.1177758	.0368875	3.19	0.002	.045291 .1902607
L5D.	.1127275	.0389003	2.98	0.004	.0362875 .1891675
L6D.	.099976	.0406874	2.24	0.026	.0110242 .1709278
L7D.	.0099996	.0405277	0.22	0.822	-.0705384 .0887376
L8D.	-.0366038	.0392974	-0.93	0.352	-.1138241 .0406165
L9D.	.0766282	.0372788	2.06	0.040	.0033744 .1498819
L10D.	-.1156119	.0372913	-3.10	0.002	-.1888982 -.0423337
L11D.	-.0153338	.0383706	-0.40	0.690	-.090737 .0600611
L12D.	.3692339	.0461555	8.00	0.000	.2785372 .4599307
L24D.	.1970316	.0414188	4.76	0.000	.1156426 .2784205
lnfllf					
LD.	-.1283352	.068539	-1.87	0.002	-.243016 .0063457
L2D.	-.2126246	.0677924	-3.13	0.002	-.3452383 -.0788189
L12D.	-.032049	.0699833	-0.46	0.647	-.1695679 .10547
L24D.	.2125143	.0650669	3.27	0.001	.0846562 .3403724
lnusepr					
LD.	.1405225	.0907752	1.55	0.122	-.0378531 .318898
L2D.	.2347858	.0984615	2.60	0.010	.0570268 .4125448
L12D.	-.0236969	.0938261	-0.25	0.801	-.2080674 .1606736
L24D.	-.4061036	.0863262	-4.70	0.000	-.5757366 -.2364706
month					
2	.0130388	.0021912	5.95	0.000	.0087331 .0173445
3	.0143267	.0024097	5.95	0.000	.0095916 .0198618
4	.0133539	.0024757	5.39	0.000	.008489 .0182188
5	.00797333	.0022518	3.52	0.000	.0035084 .0123582
6	.0089776	.0023234	3.86	0.000	.004412 .0135431
7	.007944	.0019343	4.11	0.000	.0041431 .011745
8	.012699	.0019881	6.07	0.000	.0081632 .0159766
9	.0139913	.0019658	7.12	0.000	.0181286 .0178541
10	.0232689	.0024957	9.32	0.000	.0183568 .028165
11	.0157873	.0022757	6.94	0.000	.0113154 .0202591
12	.0128769	.0018317	7.03	0.000	.0092715 .0164702
_cons	-.01163	.0016815	-6.92	0.000	-.0149341 -.0083258

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. *3
. reg d.lnflnonfarm l(1/12)d.lnflnonfarm l(1/12)d.lnfllf l(1/12)d.lnusepr l(1/12)d.lnflbp i.month date if tin(,2018m12)
```

Source	SS	df	MS	Number of obs	=	359
Model	.032942734	60	.000549046	F(60, 298)	=	46.98
Residual	.003482599	298	.000011687	Prob > F	=	0.0000
Total	.036425333	358	.000101747	R-squared	=	0.9044
				Adj R-squared	=	0.8851
				Root MSE	=	.00342

D. lnflnonfarm	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
lnflnonfarm					
LD.	-.1785286	.0557606	-3.20	0.002	-.2882631 -.0687941
L2D.	-.1456054	.0575841	-2.53	0.012	-.2589285 -.0322823
L3D.	.1670832	.0584604	2.86	0.005	.0520358 .2821307
L4D.	.135403	.0590676	2.29	0.023	.0191604 .2516456

L5D.	.0424067	.0600114	0.71	0.480	-.0756932	.1605066
L6D.	.0976656	.0600038	1.63	0.105	-.0204193	.2157504
L7D.	-.0007543	.0600507	-0.01	0.990	-.1198289	.1183294
L8D.	-.0676289	.0600776	-1.11	0.267	-.1872346	.0519769
L9D.	.0724574	.0588007	1.23	0.219	-.0432598	.1881745
L10D.	-.2140965	.0571111	-3.75	0.000	-.3264888	-.1017043
L11D.	-.0568776	.0572337	-0.98	0.328	-.1687111	.0565558
L12D.	.3073789	.0560997	5.48	0.000	.1969771	.4177807
lnfl1f						
LD.	-.14462	.1008735	-1.43	0.153	-.3431346	.0538946
L2D.	-.1332598	.1011166	-1.32	0.189	-.3322529	.0657332
L3D.	-.075505	.1025333	-0.74	0.462	-.277286	.126276
L4D.	.0025049	.1051978	0.92	0.981	-.2045197	.2095296
L5D.	.0257598	.1045744	0.25	0.886	-.1800381	.2315577
L6D.	-.1051399	.1040557	-1.01	0.313	-.369917	.0996372
L7D.	-.0521678	.1035065	-0.50	0.615	-.2559861	.1516505
L8D.	-.0353629	.1034667	-0.34	0.733	-.238981	.1682551
L9D.	.1257419	.1027424	1.22	0.222	-.0764507	.3279346
L10D.	.2264423	.102592	2.21	0.028	.0245458	.4283389
L11D.	-.0115823	.1034951	-0.11	0.911	-.2152562	.1929917
L12D.	-.1366552	.1019729	-1.34	0.181	-.3373335	.0648231
lnusepr						
LD.	.2199635	.1351476	1.63	0.105	-.0460011	.4859281
L2D.	.0824764	.1374525	0.68	0.549	-.1880241	.3529769
L3D.	.1238781	.1364468	0.91	0.365	-.1446433	.3923995
L4D.	.1231339	.135751	0.91	0.365	-.1440181	.398286
L5D.	-.0608881	.1344611	-0.45	0.651	-.3255017	.2037254
L6D.	.3128869	.1348904	2.32	0.021	.0474224	.5783393
L7D.	.1899949	.1365232	1.39	0.165	-.0786769	.4586667
L8D.	-.0198292	.1356228	-0.14	0.889	-.285929	.2478787
L9D.	-.0831357	.1358476	-0.61	0.541	-.3584779	.1842066
L10D.	-.3110896	.1355495	-2.30	0.022	-.5778451	-.0443342
L11D.	.186931	.1358319	1.38	0.170	-.0883884	.4542423
L12D.	.1507345	.1311892	1.15	0.251	-.1074402	.4089092
lnflbp						
LD.	.0018889	.0016344	1.16	0.249	-.0013275	.0051053
L2D.	.0052161	.0019412	2.68	0.008	.00139	.0098303
L3D.	.0065958	.0020468	3.22	0.001	.0025678	.0106239
L4D.	.0046902	.0020526	2.28	0.023	.0006508	.0087297
L5D.	.0048948	.0020293	2.41	0.016	.0009013	.0088882
L6D.	.0051713	.0020424	2.53	0.012	.0011519	.0091908
L7D.	.0045419	.0020457	2.22	0.027	.000516	.0085678
L8D.	.0034397	.002088	1.65	0.181	-.0006694	.0075488
L9D.	.0030855	.0020819	1.48	0.139	-.0010115	.0071825
L10D.	.0043761	.0020469	2.14	0.033	.0003479	.0084043
L11D.	.0033752	.0019615	1.72	0.086	-.000485	.0072353
L12D.	.0034007	.0016181	2.10	0.036	.0002164	.0065849
month						
2	.0099863	.0036814	2.71	0.007	.0027416	.0172311
3	.0093392	.0038138	2.45	0.015	.0018338	.0168446
4	.0098405	.0042053	2.34	0.020	.0015647	.0181163
5	.0035298	.0032546	1.08	0.279	-.0028751	.0099346
6	-.0029861	.0038815	-0.77	0.442	-.0162427	.0046525
7	.0039106	.0036724	1.06	0.288	-.0033164	.0111377
8	.0138735	.0038896	3.57	0.000	.0062188	.0215281
9	.0114154	.0032689	3.49	0.001	.0049823	.0178485
10	.017388	.004233	4.11	0.000	.0098577	.0257183
11	.0094232	.0038365	2.46	0.015	.0018732	.0169733
12	.0153423	.0036493	4.20	0.000	.0081607	.0225239
date	-3.47e-06	2.01e-06	-1.73	0.085	-7.42e-06	4.85e-07
_cons	-.0047857	.0029217	-1.64	0.102	-.0105354	.0009641

```
. scalar define rmse1=e(rmse)

. reg d.lnflnonfarm l(1/12).lnflnonfarm l(1/2).lnfl1f l(1/2).lnusepr l(1/2).lnflbp i.month date if tin(,2018m12)
```

Source	SS	df	MS	Number of obs	=	369
Model	.033319208	30	.00111064	F(30, 338)	=	87.31
Residual	.004299377	338	.00001272	Prob > F	=	0.0000
Total	.037618585	368	.000102224	R-squared	=	0.8857
				Adj R-squared	=	0.8756
				Root MSE	=	.003537

D. lnflnonfarm	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
lnfl1f						
LD.	-.133326	.0503841	-2.65	0.009	-.2324319	-.03422
L2D.	-.0952298	.0529421	-1.80	0.073	-.1993672	.0089076
L3D.	.2422019	.0525438	4.61	0.000	.1388477	.345556
L4D.	.1739116	.0500588	3.47	0.001	.0754456	.2723777
L5D.	.1496013	.0509462	2.94	0.004	.0493898	.2498129
L6D.	.1332644	.0521479	2.56	0.011	.0306691	.2358398
L7D.	.0738712	.0540717	1.35	0.177	-.0332882	.1794305
L8D.	.0161971	.0524574	0.31	0.758	-.086987	.1193812
L9D.	.0861744	.0499333	1.73	0.085	-.0120448	.1843937
L10D.	-.1843262	.048657	-3.79	0.000	-.2800348	-.0886175
L11D.	-.0933289	.0508022	-1.84	0.067	-.1932573	.0065995
L12D.	.3768875	.0508592	7.41	0.000	.276847	.476928
lnusepr						
LD.	-.1958536	.096245	-2.03	0.043	-.3851683	-.0065389
L2D.	-.1507978	.0964317	-1.56	0.119	-.3404796	.038884

LD.	.231098	.1251978	1.85	0.066	-.0151669	.477363
L2D.	.0576833	.1260438	0.46	0.648	-.1982458	.3056124
lnflbp						
LD.	.0006178	.0014964	0.41	0.680	-.0023257	.0035613
L2D.	.0017963	.0014942	1.20	0.230	-.0011428	.0047354
month						
2	.0092417	.0023322	3.96	0.000	.0046542	.0138292
3	.0070536	.0028086	2.51	0.012	.0015291	.0125782
4	.0084227	.0028514	2.95	0.003	.0028141	.0140314
5	.00280872	.0027842	0.75	0.454	-.0033893	.0075638
6	.0002948	.0025009	0.12	0.986	-.0046246	.0052141
7	.0008253	.0021584	0.38	0.702	-.0034284	.0058709
8	.011443	.0025191	4.54	0.000	.0064878	.0163981
9	.0154884	.002613	5.93	0.000	.0103487	.0266282
10	.0212612	.0026556	8.01	0.000	.0100376	.0264847
11	.0130249	.0025092	5.19	0.000	.0088894	.0179605
12	.0123947	.0020234	6.13	0.000	.0084147	.0163747
date	-1.01e-06	1.84e-06	-0.55	0.581	-4.62e-06	2.60e-06
_cons	-.00780518	.0019605	-3.68	0.000	-.010988	-.0031955

```
. scalar define rmse2=e(rmse)

. reg d.lnflnonfarm l(1/12).lnflnonfarm l(1/2,12).lnfllf l(1/2,12)d.lnflbp i.month date if tin(,2018m12)
```

Source	SS	df	MS	Number of obs	=	359
Model	.032340453	30	.001078015	F(30, 328)	=	86.56
Residual	.00408488	328	.000012454	Prob > F	=	0.0000
Total	.036425333	358	.000101747	R-squared	=	0.8879
				Adj R-squared	=	0.8776
				Root MSE	=	.00353

D. lnflnonfarm	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
lnflnonfarm						
LD.	-.1087415	.050957	-2.13	0.034	-.2089852	-.0084978
L2D.	-.0783122	.0511855	-1.53	0.127	-.1790055	.0223811
L3D.	.2541334	.0499623	5.09	0.000	.1558465	.3524202
L4D.	.1689731	.0502832	3.36	0.001	.0700648	.2678914
L5D.	.1560811	.0507562	3.08	0.002	.0562324	.2559298
L6D.	.1559908	.0518295	3.01	0.003	.0540308	.2579569
L7D.	.0943777	.0527031	1.79	0.074	-.0093018	.1988557
L8D.	.0330789	.0518367	0.64	0.524	-.0688954	.1358533
L9D.	.0893751	.0498407	1.79	0.074	-.0086727	.1874229
L10D.	-.1928458	.0486649	-3.97	0.000	-.2884625	-.0697291
L11D.	-.1106264	.0502767	-2.20	0.028	-.2095318	-.0117269
L12D.	.3558321	.050687	7.02	0.000	.2561195	.4555448
lnfllf						
LD.	-.0438007	.0531291	-0.82	0.410	-.1483174	.0607159
L2D.	-.1078659	.052828	-2.04	0.042	-.2117983	-.0039414
L12D.	-.121337	.0512128	-2.37	0.018	-.2220841	-.02059
lnflbp						
LD.	.0010857	.0014897	0.73	0.467	-.001845	.0040163
L2D.	.0022613	.0014885	1.52	0.130	-.0006669	.0051896
L12D.	.0017602	.0012989	1.36	0.176	-.0007949	.0043154
month						
2	.0088945	.0021089	4.22	0.000	.0047459	.0130431
3	.0081923	.0024954	3.28	0.001	.0032832	.0131013
4	.0093013	.0028146	3.30	0.001	.0037643	.0143382
5	.0039283	.0027567	1.42	0.156	-.0015028	.0093433
6	.0008107	.0024749	0.33	0.743	-.004058	.0056794
7	.0035539	.0021131	1.67	0.095	-.0006179	.0076959
8	.0127989	.0024143	5.30	0.000	.0080414	.0175493
9	.0168119	.0026	6.16	0.000	.0188971	.0211268
10	.0209367	.0026979	8.03	0.000	.0158063	.026067
11	.0141242	.0023658	5.97	0.000	.0094702	.0187783
12	.0133079	.0019471	6.83	0.000	.0094775	.0171383
date	-6.06e-07	1.84e-06	-0.33	0.742	-4.22e-06	3.01e-06
_cons	-.0083676	.0018948	-4.42	0.000	-.012095	-.0046401

```
. scalar define rmse3=e(rmse)

. reg d.lnflnonfarm l(1/12,24).lnflnonfarm l(1/2,12,24).lnfllf l(1/2,12,24)d.lnusepr i.month if tin(,2018m12)
```

Source	SS	df	MS	Number of obs	=	491
Model	.042575775	32	.001330493	F(32, 458)	=	109.93
Residual	.005543023	458	.000012103	Prob > F	=	0.0000
Total	.048118799	490	.0000098202	R-squared	=	0.8848
				Adj R-squared	=	0.8768
				Root MSE	=	.00348

D. lnflnonfarm	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
lnflnonfarm						
LD.	-.0311684	.0380987	-0.82	0.414	-.1060383	.0437014
L2D.	.0011509	.0387186	0.03	0.976	-.0749371	.077239
L3D.	.1810109	.0383354	4.72	0.000	.1057668	.2564371
L4D.	.122168	.0372877	3.28	0.001	.0488919	.195444
L5D.	.1131335	.0394764	2.87	0.004	.0355562	.1907107
L6D.	.0897111	.0411525	2.18	0.030	.00888401	.1705822

L7D.	.0046318	.0409493	0.11	0.910	-.0758401	.0851037
L8D.	-.0345244	.0396846	-0.87	0.385	-.1125109	.043462
L9D.	.0809663	.0376451	2.15	0.032	.0069878	.1549448
L10D.	-.1108451	.0375797	-2.95	0.003	-.1846951	-.0369951
L11D.	-.0221662	.03865	-0.57	0.567	-.0981196	.0537872
L12D.	.3376832	.0476368	7.89	0.000	.2440695	.4312969
L24D.	.2364096	.04478	5.28	0.000	.14841	.3244093
lnfllf						
LD.	-.1308766	.0692757	-1.88	0.001	-.2662142	.0068699
L2D.	-.2188669	.0684865	-3.20	0.001	-.3534536	-.0842802
L12D.	-.0319786	.070685	-0.45	0.651	-.1788776	.1069365
L24D.	.2248965	.06562	3.43	0.001	.0959428	.3538501
lnusepr						
LD.	.1537422	.092086	1.67	0.096	-.0272212	.3347056
L2D.	.2542549	.0916164	2.78	0.006	.0742143	.4342955
L12D.	-.0218538	.0949163	-0.23	0.818	-.2083793	.1646718
L24D.	-.4432243	.0880674	-5.03	0.000	-.6162905	-.2701581
month						
2	.0133765	.002229	6.00	0.000	.0089962	.0177569
3	.0158211	.0024611	6.10	0.000	.0181847	.0198576
4	.0140381	.0025223	5.57	0.000	.0090814	.0189949
5	.0082786	.0023045	3.59	0.000	.0037499	.0128072
6	.0092759	.0023797	3.90	0.000	.0045993	.0139524
7	.0081629	.0019705	4.14	0.000	.0042985	.01208353
8	.0119157	.0020208	5.98	0.000	.0079446	.0158868
9	.0141217	.0020005	7.06	0.000	.0181984	.0180853
10	.0242635	.0025397	9.55	0.000	.0192726	.0292543
11	.0162918	.0023257	7.01	0.000	.0117215	.0208621
12	.012759	.0018054	6.84	0.000	.0099932	.0164248
_cons	-.0119962	.0017171	-6.99	0.000	-.0153705	-.0086219

```

. scalar define rmse4=e(rmse)

. matrix drop _all

. matrix row=(rmse1, rmse2, rmse3, rmse4)

. matrix RMSE = row

. matrix list RMSE

RMSE[1,4]
      c1          c2          c3          c4
r1 .00341856  .00356652  .00352901  .00347889

.
. *4
. reg d.lnflnonfarm l(1/12)d.lnflnonfarm l(1/12)d.lnfllf l(1/12)d.lnusepr l(1/12)d.lnflbp i.month date if tin(,2018m12)

Source |      SS        df       MS   Number of obs   =      359
       | F(60, 298) =    46.98
Model | .032942734     60  .000549046  Prob > F   =  0.0000
Residual | .003482599    298  .000011687  R-squared   =  0.9044
           |                               Adj R-squared =  0.8851
           |                               Root MSE   =  .00342

D.
lnflnonfarm |      Coef.  Std. Err.      t   P>|t| [95% Conf. Interval]
lnflnonfarm
LD.  -.1785286  .0557606  -3.20  0.002  -.2882631  -.0687941
L2D.  -.1466054  .0575841  -2.53  0.012  -.2589285  -.0322823
L3D.  .1678832  .0584604  2.86  0.005  .0520358  .2821387
L4D.  .1354803  .0590676  2.29  0.023  .0191684  .2516456
L5D.  .0424067  .0600114  0.71  0.480  -.0756932  .1605066
L6D.  .0976656  .0600038  1.63  0.185  -.0204193  .2157584
L7D.  -.0007543  .0600507  -0.01  0.990  -.1198289  .1183294
L8D.  -.0676289  .0607766  -1.11  0.267  -.1872346  .0519769
L9D.  .0724574  .0588007  1.23  0.219  -.0432598  .1881745
L10D.  -.2140965  .0571111  -3.75  0.000  -.3264888  -.1017043
L11D.  -.0568776  .0572337  -0.98  0.328  -.168711  .0565558
L12D.  .3073789  .0560997  5.48  0.000  .1969771  .4177807

lnfllf
LD.  -.14462  .1008735  -1.43  0.153  -.3431346  .0538946
L2D.  -.1332598  .1011166  -1.32  0.189  -.3322529  .0657332
L3D.  -.0750055  .1025333  -0.74  0.462  -.277286  .126276
L4D.  .0025049  .1051978  0.02  0.981  -.2045197  .2095296
L5D.  .0257598  .1045744  0.25  0.886  -.1800381  .2315577
L6D.  -.1051399  .1040557  -1.01  0.313  -.309917  .0996372
L7D.  -.0521678  .1035685  -0.50  0.615  -.2559861  .1516565
L8D.  -.0353629  .1034667  -0.34  0.733  -.238981  .1682551
L9D.  .1257419  .1027424  1.22  0.222  -.0764587  .3279346
L10D.  .2264423  .102592  2.21  0.028  .0245458  .4283389
L11D.  -.0115823  .1034951  -0.11  0.911  -.2125262  .1920917
L12D.  -.1366552  .1019729  -1.34  0.181  -.3373335  .0640231

lnusepr
LD.  .2199635  .1351476  1.63  0.185  -.0460011  .4859281
L2D.  .0824764  .1374525  0.60  0.549  -.1880241  .3529769
L3D.  .1238781  .1364468  0.91  0.365  -.1446433  .3923995
L4D.  .1231339  .135751  0.91  0.365  -.1440181  .39286
L5D.  -.0608881  .1346411  -0.45  0.651  -.3255017  .2037254
L6D.  .3128889  .1348904  2.32  0.021  .0474224  .5783393
L7D.  .1899949  .1365232  1.39  0.165  -.0786769  .4586667

```

L8D.	-.0190292	.1356228	-0.14	0.889	-.285929	.2478707
L9D.	-.0831357	.1358476	-0.61	0.541	-.3504779	.1842066
L10D.	-.3110896	.1355495	-2.39	0.022	-.5778451	-.0443342
L11D.	.186931	.1358319	1.38	0.170	-.0883804	.4542423
L12D.	.1507345	.1311892	1.15	0.251	-.1074402	.4089092
lnflbp						
LD.	.0018889	.0016344	1.16	0.249	-.0013275	.0051053
L2D.	.0052181	.0019412	2.68	0.098	.00139	.0098303
L3D.	.0065958	.0020468	3.22	0.001	.0025678	.0106239
L4D.	.0046902	.0020526	2.28	0.023	.0006588	.0087297
L5D.	.0048948	.0020293	2.41	0.016	.0009013	.0088882
L6D.	.0051713	.0020424	2.53	0.012	.0011519	.0091968
L7D.	.0045419	.0020457	2.22	0.027	.000516	.0085678
L8D.	.0034397	.002088	1.65	0.181	-.0006694	.0075488
L9D.	.0038855	.0020819	1.48	0.139	-.0010115	.0071825
L10D.	.0043761	.0020469	2.14	0.053	.0003479	.0084043
L11D.	.0033752	.0019615	1.72	0.086	-.000485	.0072353
L12D.	.0034007	.0016181	2.10	0.036	.0002164	.0065849
month						
2	.0099863	.0036814	2.71	0.007	.0027416	.0172311
3	.0093392	.0038138	2.45	0.015	.0018338	.0168446
4	.0098405	.0042053	2.34	0.020	.0015647	.0181163
5	.0035298	.0032546	1.08	0.279	-.0028751	.0099346
6	-.0029861	.0038815	-0.77	0.442	-.0166247	.0046525
7	.0039186	.0036724	1.06	0.288	-.0033164	.0111377
8	.0138735	.0038896	3.57	0.000	.0062188	.0215281
9	.0114154	.0032689	3.49	0.001	.0049823	.0178485
10	.017388	.004233	4.11	0.000	.0098577	.0257183
11	.0094232	.0038365	2.46	0.015	.0018732	.0169733
12	.0153423	.0036493	4.20	0.000	.0001607	.0225239
date						
_cons	-3.47e-06	2.01e-06	-1.73	0.085	-7.42e-06	4.85e-07

```
. predict nonfarm1
(option xb assumed; fitted values)
(601 missing values generated)

. gen ubnonfarm1=nonfarm1+1.96*e(rmse)
(601 missing values generated)

. gen lbnonfarm1=nonfarm1-1.96*e(rmse)
(601 missing values generated)

. tsline ubnonfarm1 lbnonfarm1 nonfarm1 d.nonfarm1 if tin(2017m12, 2018m12)

. reg d.lnflnonfarm 1(1/12)d.lnflnonfarm 1(1/2)d.lnfl1f 1(1/2)d.lnusepr 1(1/2)d.lnflbp i.month date if tin(,2018m12)
```

Source	SS	df	MS	Number of obs	=	369
Model	.033319208	30	.00111064	F(30, 338)	=	87.31
Residual	.004299377	338	.00001272	Prob > F	=	0.0000
Total	.037618585	368	.000102224	R-squared	=	0.8857
				Adj R-squared	=	0.8756
				Root MSE	=	.008357
D.lnflnonfarm						
Coef.	Std. Err.	t	P> t	[95% Conf. Interval]		
lnflnonfarm						
LD.	-.133326	.0503841	-2.65	0.009	-.2324319	-.03422
L2D.	-.0952298	.0529421	-1.80	0.073	-.1993672	.0089876
L3D.	.2422019	.0525438	4.61	0.000	.1388477	.345556
L4D.	.1739116	.0508058	3.47	0.001	.0754546	.2723777
L5D.	.1496013	.0509462	2.94	0.004	.0493898	.2498129
L6D.	.1332644	.0521479	2.56	0.011	.0306891	.2358398
L7D.	.0730712	.0540717	1.35	0.177	-.0332882	.1794305
L8D.	.0161971	.0524574	0.31	0.758	-.086987	.1193812
L9D.	.0861744	.0499333	1.73	0.085	-.01020448	.1843937
L10D.	-.1843262	.048657	-3.79	0.000	-.2800348	-.0886175
L11D.	-.0933289	.0508022	-1.84	0.067	-.1932573	.0065995
L12D.	.3768875	.0508592	7.41	0.000	.276847	.476928
lnfl1f						
LD.	-.1958536	.096245	-2.03	0.043	-.3851683	-.0065389
L2D.	-.1507978	.0964317	-1.56	0.119	-.3404796	.038884
lnusepr						
LD.	.231098	.1251978	1.85	0.066	-.0151669	.477363
L2D.	.0576833	.1260438	0.46	0.648	-.1902458	.3056124
lnflbp						
LD.	.0006178	.0014964	0.41	0.680	-.0023257	.0035613
L2D.	.0017963	.0014942	1.20	0.230	-.0011428	.0047354
month						
2	.0092417	.0023322	3.96	0.000	.0046542	.0138292
3	.0070536	.0028086	2.51	0.012	.0015291	.0125782
4	.0084227	.0028514	2.95	0.003	.0028141	.0148314
5	.0028872	.0027842	0.75	0.454	-.0033893	.0075638
6	.0002948	.0025009	0.12	0.906	-.0006246	.0052141
7	.0008253	.0021584	0.38	0.762	-.0034204	.0050769
8	.011443	.0025191	4.54	0.000	.0004878	.0163981
9	.0154884	.002613	5.93	0.000	.0103487	.0206282
10	.0212612	.0026556	8.01	0.000	.0100376	.0264847
11	.0130249	.0025092	5.19	0.000	.0088894	.0179695
12	.0123947	.0020234	6.13	0.000	.0084147	.0163747
date						
-----	-1.01e-06	1.84e-06	-0.55	0.581	-4.62e-06	2.60e-06

_cons	-0.0010518	.0019005	-3.00	0.000	-0.010908	-0.0031605
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```
. predict nonfarm2
(option xb assumed; fitted values)
(591 missing values generated)

. gen ubnonfarm2=nonfarm2+1.96*e(rmse)
(591 missing values generated)

. gen lbnonfarm2=nonfarm2-1.96*e(rmse)
(591 missing values generated)

. tsline ubnonfarm2 lbnonfarm2 nonfarm2 d.nonfarm2 if tin(2017m12, 2018m12)

. reg d.lnlnonfarm l(1/12)d.lnlnonfarm l(1/2,12)d.lnlllf l(1/2,12)d.lnflbp i.month date if tin(,2018m12)
```

Source	SS	df	MS	Number of obs	=	359
Model	.032340453	30	.001078015	F(30, 328)	=	86.56
Residual	.00408488	328	.000012454	Prob > F	=	0.0000
Total	.036425333	358	.000101747	R-squared	=	0.8879
				Adj R-squared	=	0.8776
				Root MSE	=	.00353

D. lnlnonfarm	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
lnlnonfarm					
LD.	-.1087415	.050957	-2.13	0.034	-.2089852 -.0084978
L2D.	-.0783122	.0511855	-1.53	0.127	-.1798055 .0223811
L3D.	.2541334	.0499623	5.09	0.000	.1558465 .3524202
L4D.	.1689731	.0502832	3.36	0.001	.0700548 .2678914
L5D.	.1568811	.0507562	3.08	0.002	.0562324 .2559298
L6D.	.1559908	.0518295	3.01	0.003	.0540308 .2579509
L7D.	.0943377	.0527831	1.79	0.074	-.0093018 .1988557
L8D.	.0330789	.0518367	0.64	0.524	-.0688954 .1350533
L9D.	.0893751	.0498407	1.79	0.074	-.0086727 .1874229
L10D.	-.1928458	.0486049	-3.97	0.000	-.2884625 -.0972291
L11D.	-.1106264	.0502767	-2.20	0.028	-.2095318 -.0117209
L12D.	.3558321	.050687	7.02	0.000	.2561195 .4555448
lnlllf					
LD.	-.0438007	.0531291	-0.82	0.410	-.1483174 .0607159
L2D.	-.1078659	.052828	-2.04	0.042	-.2117983 -.0039414
L12D.	-.1213337	.0512128	-2.37	0.018	-.2220841 -.02059
lnflbp					
LD.	.0010857	.0014897	0.73	0.467	-.001845 .0040163
L2D.	.0022613	.0014885	1.52	0.130	-.0006669 .0051896
L12D.	.0017602	.0012989	1.36	0.176	-.0007949 .0043154
month					
2	.0088945	.0021089	4.22	0.000	.0047459 .0130431
3	.0081923	.0024954	3.28	0.001	.0032832 .0131013
4	.0093013	.0028146	3.39	0.001	.0037643 .0148382
5	.0039283	.0027567	1.42	0.156	-.0015028 .0093433
6	.0008107	.0024749	0.33	0.743	-.004058 .0056794
7	.0035339	.0021131	1.67	0.095	-.0006179 .0076959
8	.0127989	.0024143	5.30	0.000	.0080414 .0175403
9	.0160119	.0026	6.16	0.000	.0108971 .0211268
10	.0209367	.0026079	8.03	0.000	.0158063 .026067
11	.0141242	.0023658	5.97	0.000	.0094702 .0187783
12	.0133079	.0019471	6.83	0.000	.0094775 .0171383
date	-6.06e-07	1.84e-06	-0.33	0.742	-4.22e-06 3.01e-06
_cons	-.0083676	.0018948	-4.42	0.000	-.012095 -.0046401

```
. predict nonfarm3
(option xb assumed; fitted values)
(601 missing values generated)

. gen ubnonfarm3=nonfarm3+1.96*e(rmse)
(601 missing values generated)

. gen lbnonfarm3=nonfarm3-1.96*e(rmse)
(601 missing values generated)

. tsline ubnonfarm3 lbnonfarm3 nonfarm3 d.nonfarm3 if tin(2017m12, 2018m12)

. reg d.lnlnonfarm l(1/12,24)d.lnlnonfarm l(1/2,12,24)d.lnlllf l(1/2,12,24)d.lnusepr i.month if tin(,2018m12)
```

Source	SS	df	MS	Number of obs	=	491
Model	.042575775	32	.001330493	F(32, 458)	=	109.93
Residual	.005543023	458	.000012103	Prob > F	=	0.0000
Total	.048118799	490	.0000098292	R-squared	=	0.8848
				Adj R-squared	=	0.8768
				Root MSE	=	.00348

D. lnlnonfarm	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
lnlnonfarm					
LD.	-.0311684	.0380987	-0.82	0.414	-.1060383 .0437014
L2D.	.0011569	.0387186	0.03	0.976	-.0749371 .077239
L3D.	.1811019	.0383354	4.72	0.000	.1057668 .2564371
L4D.	.122168	.0372877	3.28	0.001	.0488919 .195444
L5D.	.1131335	.0394764	2.87	0.004	.0355562 .1907107
L6D.	.0897111	.0411525	2.18	0.030	.0088401 .1705822
L7D.	.0046318	.0489493	0.11	0.910	-.0758401 .0851037
L8D.	-.0216211	.0304062	0.07	0.985	-.1125100 .072242

L00.	-.0345244	.0370040	-0.07	0.005	-.1140107	.043404
L9D.	.0809663	.0376451	2.15	0.032	.0069878	.1549448
L10D.	-.1108451	.0375797	-2.95	0.003	-.1846951	-.0369951
L11D.	-.0221662	.03865	-0.57	0.567	-.0981196	.0537872
L12D.	.3376832	.0476368	7.09	0.000	.2440695	.4312969
L24D.	.2364096	.04478	5.28	0.000	.14841	.3244093
lnflf						
LD.	-.1300766	.0692757	-1.88	0.061	-.2662142	.0060609
L2D.	-.2188669	.0684865	-3.28	0.001	-.3534536	-.0842892
L12D.	-.0319786	.070085	-0.45	0.651	-.1708776	.1069365
L24D.	.2248965	.06562	3.43	0.001	.0959428	.3538501
lnusepr						
LD.	.1537422	.092086	1.67	0.096	-.0272212	.3347056
L2D.	.2542549	.0916164	2.78	0.006	.0742143	.4342955
L12D.	-.0218538	.0949163	-0.23	0.818	-.2083793	.1646718
L24D.	-.4432243	.0880674	-5.03	0.000	-.6162905	-.2701581
month						
2	.0133765	.002229	6.00	0.000	.0089962	.0177569
3	.0158211	.0024611	6.10	0.000	.0181847	.0198576
4	.0146381	.0025223	5.57	0.000	.0098814	.0189949
5	.0082786	.0023045	3.59	0.000	.0037499	.0128072
6	.0092759	.0023797	3.98	0.000	.0045993	.0139524
7	.0081629	.0019705	4.14	0.000	.0042985	.0120353
8	.0119157	.0020208	5.98	0.000	.0079446	.0158868
9	.0141217	.0020005	7.06	0.000	.0101904	.018053
10	.0242635	.0025397	9.55	0.000	.0192726	.0292543
11	.0162918	.0023257	7.01	0.000	.0117215	.0208621
12	.012759	.0018654	6.84	0.000	.0090932	.0164248
_cons	-.0119962	.0017171	-6.99	0.000	-.0153705	-.0086219

```
. predict nonfarm4
(option xb assumed; fitted values)
(469 missing values generated)

. gen ubnonfarm4=nonfarm4+1.96*e(rmse)
(469 missing values generated)

. gen lbnonfarm4=nonfarm4-1.96*e(rmse)
(469 missing values generated)

. tsline ubnonfarm4 lbnonfarm4 nonfarm4 d.nonfarm4 if tin(2017m12, 2018m12)

.
.
. *5
. reg d.lnflnonfarm l(1/12)d.lnflnonfarm l(1/12)d.lnflf l(1/12)d.lnusepr l(1/12)d.lnflbp i.month date
```

Source	SS	df	MS	Number of obs =	371
Model	.033628663	60	.000560478	F(60, 310) =	49.11
Residual	.003538017	310	.000011413	Prob > F =	0.0000
Total	.03716668	370	.00010045	R-squared =	0.9048
				Adj R-squared =	0.8864
				Root MSE =	.003338

D. lnflnonfarm	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
lnflnonfarm						
LD.	-.1709382	.0544484	-3.14	0.002	-.2780734	-.063803
L2D.	-.1482615	.0563272	-2.63	0.009	-.2599035	-.0374296
L3D.	.162612	.057373	2.83	0.005	.0497221	.2755018
L4D.	.1338157	.0578492	2.31	0.021	.0199889	.2476424
L5D.	.0485865	.0586353	0.83	0.488	-.066787	.1639599
L6D.	.1034826	.0583736	1.77	0.077	-.0113761	.2183412
L7D.	-.0017194	.0587065	-0.03	0.977	-.1173393	.1139005
L8D.	-.0661616	.0589687	-1.12	0.263	-.1821911	.049868
L9D.	.0703003	.0570451	1.23	0.219	-.0419442	.1825448
L10D.	-.2131464	.0557373	-3.82	0.000	-.3228184	-.1034745
L11D.	-.0492711	.0559229	-0.88	0.379	-.1593075	.0607653
L12D.	.3160254	.0547464	5.77	0.000	.2083039	.4237469
lnflf						
LD.	-.1446453	.0983821	-1.47	0.143	-.3382263	.0489358
L2D.	-.1262282	.0987995	-1.28	0.202	-.3206305	.0681742
L3D.	-.0938871	.0998186	-0.94	0.348	-.2902948	.1025286
L4D.	-.0237969	.1021375	-0.23	0.816	-.2247673	.1771735
L5D.	.009078	.1014128	0.09	0.929	-.1904666	.2086226
L6D.	-.1064011	.1005346	-1.06	0.291	-.3042177	.0914155
L7D.	-.0363673	.1001261	-0.36	0.717	-.2333801	.1606454
L8D.	-.0227181	.0999956	-0.23	0.820	-.219289	.1738688
L9D.	.1419096	.0991963	1.43	0.154	-.0532736	.3370929
L10D.	.2356432	.0995816	2.37	0.019	.0397018	.4315847
L11D.	-.0156215	.1005373	-0.16	0.877	-.2134433	.1822003
L12D.	-.1496896	.0991977	-1.51	0.132	-.3448754	.0454963
lnusepr						
LD.	.2160403	.1318859	1.64	0.102	-.0434644	.4755451
L2D.	.0596176	.1342172	0.44	0.657	-.2044743	.3237096
L3D.	.1365192	.1332945	1.02	0.307	-.1255752	.3987956
L4D.	.148566	.1327682	1.06	0.291	-.1266748	.4018068
L5D.	-.0429764	.1313909	-0.33	0.744	-.3015071	.2155544
L6D.	.3174743	.1387471	2.43	0.016	.0662014	.5747382
L7D.	.1643272	.1319288	1.25	0.214	-.0952619	.4239164
L8D.	-.0363099	.1308906	-0.28	0.782	-.2938562	.2212364
L9D.	-.1104225	.1311797	-0.84	0.401	-.3685377	.1476927
L10D.	-.3143018	.1317767	-2.39	0.018	-.5735916	-.055012
L11D.	.1870841	.1321575	1.42	0.158	-.072955	.4471232
L12D.	.1505021	.127088	1.25	0.214	-.002322	.1113382

lnflbp						
LD.	.0014899	.0015781	0.94	0.346	-.0016152	.004595
L2D.	.0048244	.0018575	2.60	0.010	.0011694	.0084793
L3D.	.0065472	.0019601	3.34	0.001	.0026984	.018494
L4D.	.0049279	.001984	2.48	0.014	.0010242	.0088316
L5D.	.0058421	.0019821	2.54	0.011	.001142	.0089422
L6D.	.0049581	.0020017	2.48	0.014	.0010194	.0088969
L7D.	.0043549	.0020066	2.17	0.031	.0004867	.0083031
L8D.	.0036497	.0020487	1.78	0.077	-.0003985	.0076719
L9D.	.0033308	.0020403	1.63	0.104	-.0006839	.0073454
L10D.	.004421	.0020019	2.21	0.028	.000482	.00836
L11D.	.0031925	.0019124	1.67	0.096	-.0005706	.0069555
L12D.	.0038942	.0015709	1.97	0.050	3.18e-06	.0061882
month						
2	.0096471	.0035242	2.74	0.007	.0027127	.0165816
3	.0085261	.00368	2.32	0.021	.0012851	.0157671
4	.0092646	.0040143	2.31	0.022	.0013658	.0171635
5	.0035453	.0031449	1.13	0.260	-.0026427	.0097333
6	-.0026169	.0037248	-0.70	0.483	-.0099459	.0047121
7	.0042083	.0035921	1.17	0.243	-.0028678	.0112683
8	.0133789	.0037305	3.59	0.000	.00068387	.0207191
9	.0108298	.0031587	3.43	0.001	.0046146	.017045
10	.0165185	.0040273	4.10	0.000	.0085942	.0244428
11	.0090475	.0037037	2.44	0.015	.0017599	.0163351
12	.0154964	.0034704	4.47	0.000	.0086679	.022325
date	-3.66e-06	1.92e-06	-1.98	0.058	-7.43e-06	1.22e-07
_cons	-.0044454	.0028196	-1.58	0.116	-.0099933	.0011025

. estat ic

Akaike's information criterion and Bayesian information criterion

Model	N	ll(null)	ll(model)	df	AIC	BIC
.	371	1181.759	1618.026	61	-3114.053	-2875.164

Note: BIC uses N = number of observations. See [R] BIC note.

```
. scalar define df1=el(r(S),1,4)
. scalar define aic1=el(r(S),1,5)
. scalar define bic1=el(r(S),1,6)
. loocv reg d.lnflnonfarm l(1/12).lnflnonfarm l(1/12).lnfllf l(1/12).lnusepr l(1/12).lnflbp i.month date
```

Leave-One-Out Cross-Validation Results

Method	Value
Root Mean Squared Errors	.00380836
Mean Absolute Errors	.00278549
Pseudo-R2	.85500572

. scalar define loormse1=r(rmse)

```
. reg d.lnflnonfarm l(1/12).lnflnonfarm l(1/2).lnfllf l(1/2).lnusepr l(1/2).lnflbp i.month date
```

Source	SS	df	MS	Number of obs	=	381
Model	.033990108	30	.001133004	F(30, 350)	=	90.75
Residual	.004369869	350	.000012485	Prb > F	=	0.0000
Total	.038359977	380	.000100947	R-squared	=	0.8861
				Adj R-squared	=	0.8763
				Root MSE	=	.00353

D. lnflnonfarm	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
lnflnonfarm						
LD.	-.1252994	.0491434	-2.55	0.011	-.2219529	-.0286459
L2D.	-.0958602	.0518133	-1.85	0.065	-.1977648	.0068443
L3D.	.2398422	.0515342	4.65	0.000	.1384866	.3411978
L4D.	.1789118	.0489573	3.49	0.001	.0746243	.2671992
L5D.	.1515931	.0495961	3.06	0.002	.0540493	.249137
L6D.	.1371627	.0507474	2.70	0.007	.0373545	.2369708
L7D.	.0728218	.0527616	1.37	0.173	-.0317478	.1757914
L8D.	.0108807	.0513147	0.20	0.844	-.0908432	.1110047
L9D.	.0796876	.0488654	1.63	0.183	-.0163013	.1756764
L10D.	-.1886884	.047519	-3.97	0.000	-.2821391	-.0952217
L11D.	-.0844174	.0497603	-1.70	0.091	-.1822842	.0134493
L12D.	.388731	.0497483	7.81	0.000	.2908879	.4865741
lnfllf						
LD.	-.19426	.0941693	-2.06	0.040	-.3794688	-.0090513
L2D.	-.1402653	.0944467	-1.49	0.138	-.3260199	.0454893
lnusepr						
LD.	.2273847	.1224594	1.86	0.064	-.0134641	.4682334
L2D.	.0344122	.123157	0.28	0.780	-.2078886	.276633
lnflbp						
LD.	.0002646	.0014455	0.18	0.855	-.0025784	.0031076
L2D.	.0014358	.0014491	0.99	0.322	-.0014143	.0042858

month						
2	.0089123	.0022594	3.94	0.000	.0044686	.0133561
3	.0063439	.0027078	2.34	0.020	.0010183	.0116696
4	.0081387	.0027662	2.94	0.003	.0026983	.0135792
5	.002026	.0026956	0.75	0.453	-.0032757	.0073277
6	.0005971	.0024291	0.25	0.806	-.0041804	.0053746
7	.0012385	.0021082	0.59	0.557	-.0029078	.0053847
8	.011499	.0024647	4.67	0.000	.0066515	.0163465
9	.0150089	.002545	5.98	0.000	.0100036	.0200143
10	.0207091	.0025776	8.03	0.000	.0156395	.0257787
11	.0124833	.0024281	5.14	0.000	.0077077	.0172588
12	.0125059	.0019735	6.34	0.000	.0086245	.0163873
date	-9.91e-07	1.73e-06	-0.57	0.568	-4.40e-06	2.42e-06
_cons	-.0069309	.0019081	-3.63	0.000	-.0106838	-.0031781

. estat ic

Akaike's information criterion and Bayesian information criterion

Model	N	ll(null)	ll(model)	df	AIC	BIC
.	381	1212.659	1626.478	31	-3190.957	-3068.73

Note: BIC uses N = number of observations. See [R] BIC note.

```
. scalar define df2=el(r(S),1,4)
. scalar define aic2=el(r(S),1,5)
. scalar define bic2=el(r(S),1,6)
```

```
. loocv reg d.lnflnonfarm l(1/12)d.lnflnonfarm l(1/2)d.lnfllf l(1/2)d.lnusepr l(1/2)d.lnflbp i.month date
```

Leave-One-Out Cross-Validation Results

Method	Value
Root Mean Squared Errors	.00371849
Mean Absolute Errors	.00266976
Pseudo-R2	.86242412

```
. scalar define loormse2=r(rmse)
```

```
. reg d.lnflnonfarm l(1/12)d.lnflnonfarm l(1/2,12)d.lnfllf l(1/2,12)d.lnflbp i.month date
```

Source	SS	df	MS	Number of obs	=	371
Model	.033019839	30	.001100661	F(30, 340)	=	.90.24
Residual	.004146841	340	.000012197	Prob > F	=	0.0000
Total	.03716668	370	.00010045	R-squared	=	0.8884
				Adj R-squared	=	0.8786
				Root MSE	=	.00349

D. lnflnonfarm	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
lnflnonfarm						
LD.	-.1007022	.0496694	-2.03	0.043	-.1984002	-.0030042
L2D.	-.0776112	.0500347	-1.55	0.122	-.1760278	.0208054
L3D.	.2495718	.0489276	5.10	0.000	.153333	.3458107
L4D.	.1659053	.0490998	3.38	0.001	.0693277	.2624282
L5D.	.1576085	.0494045	3.19	0.002	.0664315	.2547854
L6D.	.1606861	.0504142	3.19	0.002	.0615231	.2598491
L7D.	.0928205	.0512561	1.80	0.073	-.0087985	.1928394
L8D.	.0257082	.0504855	0.51	0.611	-.073595	.1250115
L9D.	.0816557	.0485929	1.68	0.094	-.013925	.1772363
L10D.	-.1982253	.0474658	-4.18	0.000	-.2915889	-.1048616
L11D.	-.1022931	.049168	-2.08	0.038	-.199005	-.0055813
L12D.	.3672239	.0495416	7.41	0.000	.2697773	.4646706
lnfllf						
LD.	-.0415721	.0517745	-0.80	0.423	-.1434108	.0602666
L2D.	-.1119071	.0515073	-2.17	0.030	-.2132203	-.0105939
L12D.	-.1255582	.0492626	-2.55	0.011	-.2224562	-.0286603
lnflbp						
LD.	.0007479	.0014387	0.52	0.604	-.0020821	.0035778
L2D.	.0019096	.0014405	1.33	0.186	-.0009239	.004743
L12D.	.0016474	.0012703	1.30	0.196	-.0008512	.0041461
month						
2	.0086958	.0020531	4.24	0.000	.0046573	.0127342
3	.0077648	.0024066	3.23	0.001	.0030311	.0124985
4	.0089026	.0027229	3.27	0.001	.0035469	.0142584
5	.0038752	.0026664	1.45	0.147	-.0013695	.0091199
6	.0010548	.0023999	0.44	0.661	-.0036568	.0057754
7	.0040191	.0020623	1.95	0.052	-.0000374	.0080755
8	.0127434	.0023612	5.48	0.000	.0088099	.0173878
9	.0156048	.0025314	6.16	0.000	.0106256	.0205839
10	.0204691	.0025295	8.09	0.000	.0154936	.0254446
11	.0136586	.0022928	5.96	0.000	.0091487	.0181685
12	.0133801	.001901	7.04	0.000	.0096408	.0171194
date	-6.31e-07	1.73e-06	-0.37	0.715	-4.03e-06	2.76e-06
cons	-.0082167	.0018377	-4.47	0.000	-.0118314	-.0046019

```
. estat ic
```

Akaike's information criterion and Bayesian information criterion

Model	N	ll(null)	ll(model)	df	AIC	BIC
.	371	1181.759	1588.573	31	-3115.145	-2993.743

Note: BIC uses N = number of observations. See [R] BIC note.

```
. scalar define df3=el(r(S),1,4)
```

```
. scalar define aic3=el(r(S),1,5)
```

```
. scalar define bic3=el(r(S),1,6)
```

```
. loocv reg d.lnflnonfarm l(1/12)d.lnflnonfarm l(1/2,12)d.lnfllf l(1/2,12)d.lnflbp i.month date
```

Leave-One-Out Cross-Validation Results

Method	Value
Root Mean Squared Errors	.00375319
Mean Absolute Errors	.0026647
Pseudo-R2	.85864965

```
. scalar define loormse3=r(rmse)
```

```
. reg d.lnflnonfarm l(1/12,24)d.lnflnonfarm l(1/2,12,24)d.lnfllf l(1/2,12,24)d.lnusepr i.month
```

Source	SS	df	MS	Number of obs	=	503
Model	.043188967	32	.001349655	F(32, 470)	=	111.72
Residual	.005677954	470	.000012081	Prob > F	=	0.0000
Total	.048866921	502	.0000097344	R-squared	=	0.8838
				Adj R-squared	=	0.8759
				Root MSE	=	.00348

D. lnflnonfarm	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
lnflnonfarm					
LD.	-.0255499	.03766	-0.68	0.498	-.0995527 .0484528
L2D.	-.0022421	.038345	-0.06	0.953	-.0775989 .0731068
L3D.	.1749722	.0380384	4.68	0.000	.1002259 .2497186
L4D.	.1177758	.0368875	3.19	0.002	.045291 .1902697
L5D.	.1127275	.0389003	2.98	0.004	.0362875 .1891675
L6D.	.090976	.0406874	2.24	0.026	.0110242 .1709278
L7D.	.0098996	.0485277	0.22	0.822	-.0765384 .0887376
L8D.	-.0366038	.0392974	-0.93	0.352	-.1138241 .0406165
L9D.	.0766282	.0372788	2.06	0.040	.0033744 .1498819
L10D.	-.1156119	.0372913	-3.10	0.002	-.1888902 -.0423337
L11D.	-.015338	.0383706	-8.49	0.699	-.098737 .0608611
L12D.	.3692339	.0461555	8.00	0.000	.2785372 .4599367
L24D.	.1970316	.0414188	4.76	0.000	.1156426 .2784205
lnfllf					
LD.	-.1283352	.068539	-1.87	0.062	-.263016 .0063457
L2D.	-.2120246	.0677924	-3.13	0.002	-.3452383 -.0788189
L12D.	-.032049	.0699833	-0.46	0.647	-.1695679 .18547
L24D.	.2125143	.0650669	3.27	0.001	.0846562 .3403724
lnusepr					
LD.	.1405225	.0907752	1.55	0.122	-.0378531 .318898
L2D.	.2347858	.0904615	2.60	0.010	.0570268 .4125448
L12D.	-.0236969	.0938261	-0.25	0.801	-.2088674 .1606736
L24D.	-.4061036	.0863262	-4.70	0.000	-.5757366 -.2364706
month					
2	.0130388	.0021912	5.95	0.000	.0087331 .0173445
3	.0142367	.0024097	5.95	0.000	.0095916 .0196618
4	.0133539	.0024757	5.39	0.000	.008489 .0182188
5	.0079333	.0022518	3.52	0.000	.0035084 .0123582
6	.0089776	.0023234	3.86	0.000	.0044142 .0135431
7	.007944	.0019343	4.11	0.000	.0041431 .011745
8	.0120699	.0019881	6.87	0.000	.0081632 .0159766
9	.0139913	.0019658	7.12	0.000	.0181286 .0178541
10	.0232689	.0024957	9.32	0.000	.0183568 .028165
11	.0157873	.0022757	6.94	0.000	.0113154 .0202591
12	.0128709	.0018317	7.03	0.000	.0092715 .0164702
_cons	-.01163	.0016815	-6.92	0.000	-.0149341 -.0083258

```
. estat ic
```

Akaike's information criterion and Bayesian information criterion

Model	N	ll(null)	ll(model)	df	AIC	BIC
.	503	1609.944	2151.3	33	-4236.6	-4097.321

Note: BIC uses N = number of observations. See [R] BIC note.

```
. scalar define df4=el(r(S),1,4)
```

```

. scalar define aic4=el(r(S),1,5)
. scalar define bic4=el(r(S),1,6)
. loocv reg d.lnflnonfarm l(1/12,24)d.lnflnonfarm l(1/2,12,24)d.lnflf l(1/2,12,24)d.lnusepr i.month

Leave-One-Out Cross-Validation Results


| Method                   | Value     |
|--------------------------|-----------|
| Root Mean Squared Errors | .00355785 |
| Mean Absolute Errors     | .00260948 |
| Pseudo-R2                | .86890552 |


. scalar define loormse4=r(rmse)

.
. matrix drop _all

. matrix fit1=(df1,aic1,bic1,rmse1,loormse1)
. matrix fit2=(df2,aic2,bic2,rmse2,loormse2)
. matrix fit3=(df3,aic3,bic3,rmse3,loormse3)
. matrix fit4=(df4,aic4,bic4,rmse4,loormse4)
. matrix FIT=fit1\fit2\fit3\fit4
. matrix rownames FIT="Model 1" "Model 2" "Model 3" "Model 4"
. matrix colnames FIT=df AIC BIC RMSE LOORMSE
. matrix list FIT
FIT[4,5]
      df          AIC          BIC          RMSE        LOORMSE
Model 1       61 -3114.0527 -2875.1644 .00341856 .00380836
Model 2       31 -3190.9568 -3068.7301 .00356652 .00371849
Model 3       31 -3115.1451 -2993.7429 .00352981 .00375319
Model 4       33 -4236.6004 -4097.3289 .00347889 .00355785

.
. *6
. reg d.lnflnonfarm l(1/12,24)d.lnflnonfarm l(1/2,12,24)d.lnflf l(1/2,12,24)d.lnusepr i.month if tin(,2018m12)



| Source   | SS         | df  | MS          | Number of obs | = | 491    |
|----------|------------|-----|-------------|---------------|---|--------|
| Model    | .042575775 | 32  | .001330493  | F(32, 458)    | = | 109.93 |
| Residual | .005543023 | 458 | .000012103  | Prob > F      | = | 0.0000 |
| Total    | .048118799 | 490 | .0000098202 | R-squared     | = | 0.8848 |
|          |            |     |             | Adj R-squared | = | 0.8768 |
|          |            |     |             | Root MSE      | = | .00348 |



| D.<br>lnflnonfarm | Coef.     | Std. Err. | t     | P> t  | [95% Conf. Interval] |
|-------------------|-----------|-----------|-------|-------|----------------------|
| lnflnonfarm       |           |           |       |       |                      |
| LD.               | -.0311684 | .0380987  | -0.82 | 0.414 | -.1060383 .0437014   |
| L2D.              | .0011509  | .0387186  | 0.03  | 0.976 | -.0749371 .077239    |
| L3D.              | .1811019  | .0383354  | 4.72  | 0.000 | .1057668 .2564371    |
| L4D.              | .122168   | .0372877  | 3.28  | 0.001 | .0488919 .195444     |
| L5D.              | .1131335  | .0394764  | 2.87  | 0.004 | .0355562 .1907187    |
| L6D.              | .0897111  | .0411525  | 2.18  | 0.030 | .0088481 .1705822    |
| L7D.              | .0046318  | .0409493  | 0.11  | 0.910 | -.0758481 .0851037   |
| L8D.              | -.0345244 | .0396846  | -0.87 | 0.385 | -.1125109 .043462    |
| L9D.              | .0809663  | .0376451  | 2.15  | 0.032 | .0069878 .1549448    |
| L10D.             | -.1108451 | .0375797  | -2.95 | 0.003 | -.1846951 -.0369581  |
| L11D.             | -.0221662 | .03865    | -0.57 | 0.567 | -.0981196 .0537872   |
| L12D.             | .3376832  | .0476368  | 7.09  | 0.000 | .2440695 .4312969    |
| L24D.             | .2364096  | .04478    | 5.28  | 0.000 | .14841 .3244093      |
| lnflf             |           |           |       |       |                      |
| LD.               | -.1300766 | .0692757  | -1.88 | 0.061 | -.2662142 .0060609   |
| L2D.              | -.2188669 | .0684865  | -3.20 | 0.001 | -.3534536 -.0842802  |
| L12D.             | -.0319786 | .070685   | -0.45 | 0.651 | -.1788776 .1069365   |
| L24D.             | .2248965  | .06562    | 3.43  | 0.001 | .0959428 .3538501    |
| lnusepr           |           |           |       |       |                      |
| LD.               | .1537422  | .092086   | 1.67  | 0.096 | -.0272212 .3347086   |
| L2D.              | .2542549  | .0916164  | 2.78  | 0.006 | .0742143 .4342955    |
| L12D.             | -.0218538 | .0949163  | -0.23 | 0.818 | -.2083793 .1646718   |
| L24D.             | -.4432243 | .0880674  | -5.03 | 0.000 | -.6162905 -.2701581  |
| month             |           |           |       |       |                      |
| 2                 | .0133765  | .002229   | 6.00  | 0.000 | .0089962 .0177569    |
| 3                 | .0150211  | .0024611  | 6.10  | 0.000 | .0181847 .0198576    |
| 4                 | .0140381  | .0025223  | 5.57  | 0.000 | .0090814 .0189449    |
| 5                 | .0082786  | .0023845  | 3.59  | 0.000 | .0037499 .0128072    |
| 6                 | .0092759  | .0023797  | 3.90  | 0.000 | .0045993 .0139524    |
| 7                 | .0081629  | .0019705  | 4.14  | 0.000 | .0042985 .0128353    |
| 8                 | .0119157  | .0020208  | 5.98  | 0.000 | .0079446 .0158868    |
| 9                 | .0141217  | .0020005  | 7.06  | 0.000 | .0181984 .0180853    |
| 10                | .0242635  | .0025397  | 9.55  | 0.000 | .0192726 .0292543    |
| 11                | .0162918  | .0023257  | 7.01  | 0.000 | .0117215 .0208621    |
| 12                | .012759   | .0018654  | 6.84  | 0.000 | .0099932 .0164248    |
| _cons             | -.0119962 | .0017171  | -6.99 | 0.000 | -.0153705 -.0086219  |


```

```

. predict nonfarm6
(option xb assumed; fitted values)
(469 missing values generated)

. predict stdfore6, stdf
(469 missing values generated)

. gen pnonfarm6=exp(l.lnlnonfarm+nonfarm6)*exp(.5*e(rmse)^2)
(469 missing values generated)

. gen ubnonfarm6=exp(l.lnlnonfarm+nonfarm6+1.96*stdfore6)*exp(.5*e(rmse)^2)
(469 missing values generated)

. gen lbpnonfarm6=exp(l.lnlnonfarm+nonfarm6-1.96*stdfore6)*exp(.5*e(rmse)^2)
(469 missing values generated)

. tsline ubpnonfarm6 lbpnonfarm6 pnonfarm6 fl_nonfarm if tin(2016m12,2019m12), tline(2018m12)

.

. *7
. reg d.lnlnonfarm l(1/12,24)d.lnlnonfarm l(1/2,12,24)d.lnllf l(1/2,12,24)d.lnusepr i.month if tin(,2018m12)

Source |      SS       df      MS   Number of obs =     491
Model  | .042575775   32  .001330493   F(32, 458) =    109.93
Residual | .005543023  458  .000012103   Prob > F    =    0.0000
          |                         R-squared =    0.8848
          |                         Adj R-squared =  0.8768
Total   | .048118799   490  .0000098292  Root MSE   =    .00348

D.
lnlnonfarm |      Coef.   Std. Err.      t     P>|t|   [95% Conf. Interval]
lnlnonfarm
LD.    -.0311684  .0380987  -0.82  0.414  -.1060383  .0437014
L2D.   .0011569  .0387186   0.03  0.976  -.0749371  .077239
L3D.   .1811019  .0383354   4.72  0.000  .1057668  .2564371
L4D.   .122168  .0372877   3.28  0.001  .0488919  .195444
L5D.   .1131335  .0394764   2.87  0.004  .0355562  .1907107
L6D.   .0897111  .0411525   2.18  0.030  .0088401  .1705822
L7D.   .0046318  .0489493   0.11  0.910  -.0758401  .0851037
L8D.   -.0345244  .0396846  -0.87  0.385  -.1125189  .043462
L9D.   .0809663  .0376451   2.15  0.032  .0069878  .1549448
L10D.  -.1108451  .0375797  -2.95  0.003  -.1846951  -.0369951
L11D.  -.0221662  .03865   -0.57  0.567  -.0981196  .0537872
L12D.  .3376832  .0476368   7.09  0.000  .2440695  .4312969
L24D.  .2364096  .04478    5.28  0.000  .14841   .3244093

lnllf
LD.    -.1300766  .0692757  -1.88  0.061  -.2662142  .0060609
L2D.   -.2188669  .0684865  -3.20  0.001  -.3534536  -.0842892
L12D.  -.0319706  .070085  -0.45  0.651  -.1708776  .1069365
L24D.  .2248965  .06562    3.43  0.001  .0959428  .3538501

lnusepr
LD.    .1537422  .092086   1.67  0.096  -.0272212  .3347056
L2D.   .2542549  .0916164   2.78  0.006  .0742143  .4342955
L12D.  -.0218538  .0949163  -0.23  0.818  -.2083793  .1646718
L24D.  -.4432243  .0880674  -5.03  0.000  -.6162905  -.2701581

month
2      .0133765  .002229   6.00  0.000  .0089962  .0177569
3      .0156211  .0024611   6.19  0.000  .0101847  .0198576
4      .0140381  .0025223   5.57  0.000  .0098014  .0189949
5      .0082786  .0023045   3.59  0.000  .0037499  .0128072
6      .0092759  .0023797   3.90  0.000  .0045993  .0139524
7      .0081629  .0019705   4.14  0.000  .0042985  .0128353
8      .0119157  .0020208   5.98  0.000  .0079446  .0158868
9      .0141217  .0020005   7.06  0.000  .0181984  .018053
10     .0242635  .0025397   9.55  0.000  .0192726  .0292543
11     .0162918  .0023257   7.01  0.000  .0117215  .0208621
12     .012759  .0018654   6.84  0.000  .0099932  .0164248

_cons  -.0119962  .0017171  -6.99  0.000  -.0153705  -.0086219

.

. predict nonfarm47
(option xb assumed; fitted values)
(469 missing values generated)

. predict pres47 if tin(2016m12,2018m12), residual
(947 missing values generated)

. gen expres47=exp(pres47) if tin(2016m12,2018m12)
(947 missing values generated)

. summ expres47

Variable |      Obs       Mean     Std. Dev.      Min      Max
expres47 |      25  .9995604  .0061667  .9796714  1.016379

. gen pnonfarm47=r(mean)*exp(l.lnlnonfarm+nonfarm47)
(469 missing values generated)

. _pctile expres47, percentile(2.5,97.5)

. gen lbpnonfarm47=r(r1)*exp(l.lnlnonfarm+nonfarm47)
(469 missing values generated)

. gen ubpnonfarm47=r(r2)*exp(l.lnlnonfarm+nonfarm47)

```

```

(469 missing values generated)

. tsline ubpnnonfarm47 lbpnonfarm47 pnonfarm47 fl_nonfarm if tin(2016m12,2019m12), tline(2018m12)

. *8
. tsappend, add(1)

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

. *9
. reg d.lnflnonfarm l(1/12,24)d.lnflnonfarm l(1/2,12,24)d.lnfllf l(1/2,12,24)d.lnusepr i.month if tin(,2018m12)

Source |      SS        df       MS   Number of obs =      491
       Model | .042575775    32  .001330493   F(32, 458) =  109.93
       Residual | .005543023   458  .000012103   Prob > F =  0.0000
                    R-squared =  0.8848
                    Adj R-squared =  0.8768
                    Root MSE =  .00348

D.
lnflnonfarm |      Coef.  Std. Err.      t     P>|t| [95% Conf. Interval]
lnflnonfarm
LD.          -.0311684  .0380987  -0.82  0.414  -.1060383  .0437014
L2D.         .0011569  .0387186   0.63  0.976  -.0749371  .0772339
L3D.         .1811019  .0383354   4.72  0.000  .1057668  .2564371
L4D.         .122168  .0372877   3.28  0.001  .0488919  .195444
L5D.         .1131335  .0394764   2.87  0.004  .0355562  .1907187
L6D.         .0897111  .0411525   2.18  0.030  .0088401  .1705822
L7D.         .0046318  .0409493   0.11  0.910  -.0758401  .0851037
L8D.         -.0345244  .0396846  -0.87  0.385  -.1125189  .043462
L9D.         .0809663  .0376451   2.15  0.032  .0069878  .1549448
L10D.        -.1108451  .0375797  -2.95  0.003  -.1846951  -.0369951
L11D.        -.0221662  .03865   -0.57  0.567  -.0981196  .0537872
L12D.        .3376832  .0476368   7.09  0.000  .2440695  .4312969
L24D.        .2364096  .04478    5.28  0.000  .14841  .3244093

lnfllf
LD.          -.1300766  .0692757  -1.88  0.061  -.2662142  .0066699
L2D.         -.2188669  .0684865  -3.20  0.001  -.3534536  -.0842892
L12D.        -.0319786  .070685  -0.45  0.651  -.1708776  .1069365
L24D.        .2248965  .06562    3.43  0.001  .0959428  .3538501

lnusepr
LD.          .1537422  .092086   1.67  0.096  -.0272212  .3347056
L2D.         .2542549  .0916164   2.78  0.006  .0742143  .4342955
L12D.        -.0218538  .0949163  -0.23  0.818  -.2083793  .1646718
L24D.        -.4432243  .0880674  -5.03  0.000  -.6162985  -.2701581

month
2           .0133765  .002229   6.00  0.000  .0089962  .0177569
3           .0156211  .0024611   6.10  0.000  .0101847  .0198576
4           .0140381  .0025223   5.57  0.000  .0099814  .0189494
5           .0082786  .0023045   3.59  0.000  .0037499  .0128072
6           .0092759  .0023797   3.90  0.000  .0045993  .0139524
7           .0081629  .0019705   4.14  0.000  .0042985  .0120353
8           .0119157  .0020208   5.90  0.000  .0079446  .0158868
9           .0141217  .0020005   7.06  0.000  .0101984  .0108053
10          .0242635  .0025397   9.55  0.000  .0192726  .0292543
11          .0162918  .0023257   7.81  0.000  .0117215  .0208621
12          .012759  .0018654   6.84  0.000  .0090932  .0164248

_cons  -.0119962  .0017171  -6.99  0.000  -.0153705  -.0086219

. predict nonfarm9
(option xb assumed; fitted values)
(469 missing values generated)

. predict pres9 if tin(,2019m12), residual
(470 missing values generated)

. gen expres9=exp(pres9) if tin(,2019m12)
(470 missing values generated)

. summ expres9

Variable |      Obs        Mean      Std. Dev.       Min       Max
expres9 |      503  1.000002  .0033683  .9796714  1.016379

. gen pnonfarm9=r(mean)*exp(l.lnflnonfarm+nonfarm9)
(469 missing values generated)

. _pctile expres9, percentile(2.5,97.5)

. gen lbnonfarm9=r(r1)*exp(l.lnflnonfarm+nonfarm9)
(469 missing values generated)

. gen ubnonfarm9=r(r2)*exp(l.lnflnonfarm+nonfarm9)
(469 missing values generated)

. tsline ubnonfarm9 lbnonfarm9 pnonfarm9 fl_nonfarm if tin(2016m12,2020m1), tline(2019m12)

. *10
. reg d.lnflnonfarm l(1/12,24)d.lnflnonfarm l(1/2,12,24)d.lnfllf l(1/2,12,24)d.lnusepr i.month if tin(,2018m12)

```

Source	SS	ST	MS	NUMBER OF ODS	=	491
Model	.042575775	32	.001330493	F(32, 458)	=	109.93
Residual	.005543023	458	.000012103	Prob > F	=	0.0000
Total	.048118799	490	.0000098202	R-squared	=	0.8848
				Adj R-squared	=	0.8768
				Root MSE	=	.00348

D. lnflnonfarm	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
lnflnonfarm					
LD.	-.0311684	.0380987	-0.82	0.414	-.1060383 .0437014
L2D.	.0011569	.0387186	0.03	0.976	-.0749371 .077239
L3D.	.1811019	.0383354	4.72	0.000	.1057668 .2564371
L4D.	.122168	.0372877	3.28	0.001	.0488919 .195444
L5D.	.1131335	.0394764	2.87	0.004	.0355562 .1907107
L6D.	.0897111	.0411525	2.18	0.030	.0088401 .1705822
L7D.	.0046318	.0489493	0.11	0.910	-.0758401 .0851037
L8D.	-.0345244	.0396846	-0.87	0.385	-.1125109 .043462
L9D.	.0809663	.0376451	2.15	0.032	.0069878 .1549448
L10D.	-.1108451	.0375797	-2.95	0.003	-.1846951 -.0369951
L11D.	-.0221662	.03865	-0.57	0.567	-.0981196 .0537872
L12D.	.3376832	.0476368	7.09	0.000	.2440695 .4312969
L24D.	.2364096	.04478	5.28	0.000	.14841 .3244093
lnflif					
LD.	-.1300766	.0692757	-1.88	0.061	-.2662142 .0060609
L2D.	-.2188669	.0684865	-3.20	0.001	-.3534536 -.0842802
L12D.	-.0319706	.0706085	-0.45	0.651	-.1708776 .1069365
L24D.	.2248965	.06562	3.43	0.001	.0959428 .3538501
lnusepr					
LD.	.1537422	.092086	1.67	0.096	-.0272212 .3347056
L2D.	.2542549	.0916164	2.78	0.006	.0742143 .4342955
L12D.	-.0218538	.0949163	-0.23	0.818	-.2083793 .1646718
L24D.	-.4432243	.0880674	-5.03	0.000	-.612905 -.2701581
month					
2	.0133765	.002229	6.00	0.000	.0089962 .0177569
3	.0158211	.0024611	6.19	0.000	.0181847 .0198576
4	.0140381	.0025223	5.57	0.000	.0090814 .0189949
5	.0082786	.0023045	3.59	0.000	.0037499 .0128072
6	.0092759	.0023797	3.98	0.000	.0045993 .0139524
7	.0081629	.0019705	4.14	0.000	.0042985 .0128353
8	.0119157	.0020208	5.98	0.000	.0079446 .0158868
9	.0141217	.0020005	7.06	0.000	.0101904 .018053
10	.0242635	.0025397	9.55	0.000	.0192726 .0292543
11	.0162918	.0023257	7.01	0.000	.0117215 .0208621
12	.012759	.0018654	6.84	0.000	.0090932 .0164248
_cons	-.0119962	.0017171	-6.99	0.000	-.0153705 -.0086219

```

. predict nonfarm10
(option xb assumed; fitted values)
(469 missing values generated)

. predict stdfore10, stdf
(469 missing values generated)

. gen pnonfarm10=exp(1.lnflnonfarm+nonfarm10)*exp(.5*e(rmse)^2)
(469 missing values generated)

. gen ubnonfarm10=exp(1.lnflnonfarm+nonfarm10+1.96*stdfore10)*exp(.5*e(rmse)^2)
(469 missing values generated)

. gen lbnonfarm10=exp(1.lnflnonfarm+nonfarm10-1.96*stdfore10)*exp(.5*e(rmse)^2)
(469 missing values generated)

. tsline ubnonfarm10 lbnonfarm10 pnonfarm10 fl_nonfarm if tin(2016m12,2020m1), tline(2019m12)

.
. *11
. tsline fl_nonfarm if tin(2018m12,2020m1) || tsline ubnonfarm10 lbnonfarm10 pnonfarm10 if tin(2019m12,), tline(2019m12)

.
. log close
    name: <unnamed>
    log: /Users/guslipkin/Documents/Spring2020/CAP 4763 ~ Time Series/Problem Sets/Problem Set 4/Problem Set 4.smcl
log type: smcl
closed on: 23 Mar 2021, 21:25:10

```