

## Appendix B.1: Log-file-for-Project-PrivEmployment

```

      _ _ _ _ _      (R)
     / / / / /
    _/ / / / /_ 16.1  Copyright 1985-2019 StataCorp LLC
      Statistics/Data Analysis  StataCorp
                               4905 Lakeway Drive
                               College Station, Texas 77845 USA
                               800-STATA-PC      http://www.stata.com
                               979-696-4600     stata@stata.com
                               979-696-4601 (fax)
```

```
Single-user Stata license expires 1 Oct 2020:
  Serial number: 301609236389
  Licensed to: Luiz Gustavo Fagundes Malpele
              Florida Polytechnic University
```

### Notes:

```
1. Unicode is supported; see help unicode_advice.

. doedit "C:\Users\luizg\Desktop\TimeSeries\Project\do-file-project - priv emp.do"

. do "C:\Users\luizg\AppData\Local\Temp\STD4974_000000.tmp"

. * Variable will be loaded by using FRED use, so the most recent data can be captured
.
. freduse FLNAN SMU124530005000000001 SMU124530005000000002 SMU124530005000000003
SMU124530005000000011 SMU124530007000000001 SMU124530060540000001 TAMP312BPPRIV
TAMP312NAN TAMP312
> URN
(974 observations read)
(362 observations read)
(158 observations read)
note: label truncated to 80 characters
(158 observations read)
note: label truncated to 80 characters
(158 observations read)
note: label truncated to 80 characters
(362 observations read)
(278 observations read)
note: label truncated to 80 characters
(386 observations read)
note: label truncated to 80 characters
(602 observations read)
(362 observations read)

.
. *Datestring generation
. rename date datestring

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

. gen date=mofd(datec)

. format date %tm

. tsset date
    time variable:  date, 1939m1 to 2020m2
                delta: 1 month
```

```

.
. *Adjusting Observations
. keep if tin(1990m1,)
(612 observations deleted)

. tsappend, add(1)

. tsset date
      time variable:  date, 1990m1 to 2020m3
              delta:  1 month

.
. * Month indicators
. generate month=month(datec)
(1 missing value generated)

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

. gen m1=0

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

. gen m2=0

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

. gen m3=0

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

. gen m4=0

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

. gen m5=0

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

. gen m6=0

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

. gen m7=0

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

. gen m8=0

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

. gen m9=0

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

```

```

. gen m10=0

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

. gen m11=0

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

. gen m12=0

. replace m12=1 if month==12
(30 real changes made)

.
. * FLNAN = Florida Non Farm Employees
. rename FLNAN fl_nonfarm

. gen lnfl_nonfarm=ln(fl_nonfarm)
(1 missing value generated)

.
. *SMU12453000500000001 = Total Private Employees in Tampa-St. Petersburg-Clearwater,
FL (MSA)
. rename SMU12453000500000001 tpa_priv

. gen lntpa_priv=ln(tpa_priv)
(1 missing value generated)

.
. *SMU12453000500000002 = Average Weekly Hours of All Employees: Total Private in
Tampa-St. Petersburg-Clearwater, FL (MSA)
. rename SMU12453000500000002 tpa_aveweek_hour

. label variable tpa_aveweek_hour "Average Weekly Hours - Tampa MSA"

. gen lntpa_aveweek_hour=ln(tpa_aveweek_hour)
(205 missing values generated)

.
. *SMU12453000500000003 = Average Hourly Earnings of All Employees: Total Private in
Tampa-St. Petersburg-Clearwater, FL (MSA)
. rename SMU12453000500000003 tpa_avehour_earn

. label variable tpa_avehour_earn "Average Hourly Earnings - Tampa MSA"

. gen lntpa_avehour_earn=ln(tpa_avehour_earn)
(205 missing values generated)

.
. *SMU12453000500000011 = Average Weekly Earnings of All Employees: Total Private in
Tampa-St. Petersburg-Clearwater, FL (MSA)
. rename SMU12453000500000011 tpa_aveweek_earn

. label variable tpa_aveweek_earn "Average Weekly Earnings - Tampa MSA"

. gen lntpa_aveweek_earn=ln(tpa_aveweek_earn)
(205 missing values generated)

.

```

```

. * SMU12453000700000001 = All Employees: Service-Providing in Tampa-St. Petersburg-
Clearwater, FL (MSA)
. rename SMU12453000700000001 tpa_serv

. gen ln_tpa_serv=ln(tpa_serv)
(1 missing value generated)

. label variable tpa_serv "Service-Providing Employees"

.
. * SMU12453006054000001 = All Employees: Professional, Scientific, and Technical
Services in Tampa-St. Petersburg-Clearwater, FL (MSA)
. rename SMU12453006054000001 tpa_tech

. gen ln_tpa_tech=ln(tpa_tech)
(85 missing values generated)

. label variable tpa_tech "Total Technical Employees"

.
. * TAMP312BPPRIV = New Private Housing Units Authorized by Building Permits for
Tampa-St. Petersburg-Clearwater, FL (MSA)
. rename TAMP312BPPRIV tpa_bp

. gen ln_tpa_bp=ln(tpa_bp)
(1 missing value generated)

. label variable tpa_bp "Private Housing Authorized"

.
. * TAMP312NAN = All Employees: Total Nonfarm in Tampa-St. Petersburg-Clearwater, FL
(MSA)
. rename TAMP312NAN tpa_nonfarm

. gen ln_tpa_nonfarm=ln(tpa_nonfarm)
(1 missing value generated)

. label variable fl_nonfarm "Total Florida Nonfarm Employees"

.
. * TAMP312URN = Unemployment Rate in Tampa-St. Petersburg-Clearwater, FL (MSA)
. rename TAMP312URN tpa_unemp

. gen ln_tpa_unemp=ln(tpa_unemp)
(1 missing value generated)

. label variable tpa_unemp "Unemployment"

. label variable tpa_priv "Total Private Employees"

.
. * Total Weekly earning
. gen tpa_totalweek_earn = tpa_priv*tpa_aveweek_earn
(205 missing values generated)

. label variable tpa_totalweek_earn "Total Weekly Earnings"

. gen ln_tpa_totalweek_earn = ln(tpa_totalweek_earn)
(205 missing values generated)

. label variable ln_tpa_totalweek_earn "Log of Total Weekly Earnings"

.

```

```
. * Summary of all variables
. summarize *
```

Variable	Obs	Mean	Std. Dev.	Min	Max
datestring	0				
tpa_unemp	362	5.480939	2.238568	2.6	11.7
daten	362	16451.14	3185.122	10958	21946
tpa_nonfarm	362	1119.723	148.1235	818.4	1414.5
tpa_bp	362	1361.785	660.8929	279	3441
tpa_tech	278	83.6054	16.10053	55.5	122.8
tpa_serv	362	980.0917	143.7926	692.5	1261.2
tpa_avewee~n	158	811.5703	61.61877	711.83	961.15
tpa_avehou~n	158	23.42785	1.89221	20.28	27.61
tpa_avewee~r	158	34.65696	.4727433	33.1	37
tpa_priv	362	976.3992	136.3528	711	1251.7
fl_nonfarm	362	7146.765	1032.391	5172.4	9128.3
datec	362	16451.14	3185.122	10958	21946
date	363	541	104.9333	360	722
month	363	6.46281	3.467389	1	12
m1	363	.0853994	.2798609	0	1
m2	363	.0853994	.2798609	0	1
m3	363	.0853994	.2798609	0	1
m4	363	.0826446	.2757244	0	1
m5	363	.0826446	.2757244	0	1
m6	363	.0826446	.2757244	0	1
m7	363	.0826446	.2757244	0	1
m8	363	.0826446	.2757244	0	1
m9	363	.0826446	.2757244	0	1
m10	363	.0826446	.2757244	0	1
m11	363	.0826446	.2757244	0	1
m12	363	.0826446	.2757244	0	1
lnfl_nonfarm	362	8.863485	.1500698	8.551092	9.119135
lntpa_priv	362	6.873648	.1452021	6.566672	7.132258
lntpa_avew~r	158	3.545407	.0135923	3.499533	3.610918
lntpa_aveh~n	158	3.150826	.0781112	3.009635	3.318178
lntpa_avew~n	158	6.696233	.0734145	6.567839	6.868131
lntpa_serv	362	6.87627	.1534834	6.540308	7.139819
lntpa_tech	278	4.408014	.1899448	4.016383	4.810557
lntpa_bp	362	7.094134	.5109137	5.631212	8.143517
lntpa_nonf~m	362	7.011641	.1377669	6.707351	7.254531
lntpa_unemp	362	1.628043	.3741786	.9555115	2.459589
tpa_totalw~n	158	874546.3	139803.7	711021.4	1203072
lntpa_tota~n	158	13.66956	.1523199	13.47446	14.00039

```
.
. * Variables description
. describe *
```

variable name	storage type	display format	value label
-----			
--			
datestring	str10	%10s	fed string date
tpa unemp	double	%10.0g	Unemployment

daten	float	%td	numeric (daily) date
tpa_nonfarm	double	%10.0g	All Employees: Total Nonfarm in Tampa-
St. Petersburg-Clearwater, FL (MSA)			
tpa_bp	double	%10.0g	Private Housing Authorized
tpa_tech	double	%10.0g	Total Technical Employees
tpa_serv	double	%10.0g	Service-Providing Employees
tpa_aveweek_e~n	double	%10.0g	Average Weekly Earnings - Tampa MSA
tpa_avehour_e~n	double	%10.0g	Average Hourly Earnings - Tampa MSA
tpa_aveweek_h~r	double	%10.0g	Average Weekly Hours - Tampa MSA
tpa_priv	double	%10.0g	Total Private Employees
fl_nonfarm	double	%10.0g	Total Florida Nonfarm Employees
datec	float	%9.0g	
date	float	%tm	
month	float	%9.0g	
m1	float	%9.0g	
m2	float	%9.0g	
m3	float	%9.0g	
m4	float	%9.0g	
m5	float	%9.0g	
m6	float	%9.0g	
m7	float	%9.0g	
m8	float	%9.0g	
m9	float	%9.0g	
m10	float	%9.0g	
m11	float	%9.0g	
m12	float	%9.0g	
lnfl_nonfarm	float	%9.0g	
lntpa_priv	float	%9.0g	
lntpa_aveweek~r	float	%9.0g	
lntpa_avehour~n	float	%9.0g	
lntpa_aveweek~n	float	%9.0g	
lntpa_serv	float	%9.0g	
lntpa_tech	float	%9.0g	
lntpa_bp	float	%9.0g	
lntpa_nonfarm	float	%9.0g	
lntpa_unemp	float	%9.0g	
tpa_totalweek~n	float	%9.0g	Total Weekly Earnings
lntpa_totalwe~n	float	%9.0g	Log of Total Weekly Earnings

```

.
. * Tsline for predictors
. twoway (tsline tpa_priv if tin(1990m1,2020m2) , ///
> lcolor(gs6)) ///
> (tsline tpa_unemp, yaxis(2)), ///
> scheme(slmono) ///
> title("Time Series Plot of" ///
> "Unemployment and Total Private Employees") legend(on) xtitle("")
saving(var1, replace)
(file var1.gph saved)

.
. twoway (tsline tpa_priv if tin(1990m1,2020m2) , ///
> lcolor(gs6)) ///
> (tsline tpa_tech, yaxis(2)), ///
> scheme(slmono) ///
> title("Time Series Plot of" ///
> "Unemployment and Total Technical Employees") legend(on) xtitle("")
saving(var2, replace)
(file var2.gph saved)

.
. twoway (tsline tpa_priv if tin(1990m1,2020m2) , ///
> lcolor(gs6)) ///

```

```
>      (tsline tpa_serv, yaxis(2)), ///
>      scheme(slmono) ///
>      title("Time Series Plot of" ///
>      "Total Private Employees and" ///
>      "Service-Providing Employees") legend(on) xtitle("") saving(var3, replace)
(file var3.gph saved)
```

```
. * Tslines for predictors
. twoway (tsline lntpa_aveweek_earn) if tin(2007m1,)

. twoway (tsline lntpa_avehour_earn) if tin(2007m1,)

. twoway (tsline lntpa_totalweek_earn) if tin(2007m1,)

. twoway (tsline lntpa_priv) if tin(1990m1,)

. *Extra explanatory variables
. twoway (tsline lntpa_tech) (tsline lntpa_priv) if tin(1997m1,)

. twoway (tsline tpa_unemp) if tin(1990m1,)

. twoway (tsline lntpa_bp) (tsline lntpa_priv) if tin(1990m1,)

. twoway (tsline lntpa_serv) (tsline lntpa_priv) if tin(1990m1,)

. twoway (tsline lntpa_nonfarm) (tsline lntpa_priv) if tin(1990m1,)

. twoway (tsline fl nonfarm) if tin(1990m1,)
```

Dickey-Fuller test for unit root                      Number of obs    =         157

MacKinnon approximate p-value for Z(t) = 0.0000

MacKinnon approximate p-value for  $Z(t) = 0.9813$







	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-2.092	-3.452	-2.876	-2.570

MacKinnon approximate p-value for Z(t) = 0.2477

```
. *retain null, rho = 1
.
. ac lnfl_nonfarm
.
. pac lnfl_nonfarm
.
. *rho approximately 1
. dfuller lnfl_nonfarm, lag (12)
```

Augmented Dickey-Fuller test for unit root                      Number of obs       =            349

	Test Statistic	----- 1% Critical Value	----- 5% Critical Value	----- 10% Critical Value
Z(t)	-2.208	-3.452	-2.876	-2.570

MacKinnon approximate p-value for Z(t) = 0.2033

```
. *retain null, rho = 1
. */
.
. graph combine pac1.gph pac2.gph pac3.gph pac4.gph, ///
>     saving(pacgen1, replace)
(file pacgen1.gph saved)

. graph combine ac1.gph ac2.gph ac3.gph ac4.gph, ///
>     saving(pacgen3, replace)
(file pacgen3.gph saved)

. graph combine ac5.gph pac5.gph ac6.gph pac6.gph, ///
>     saving(pacgen2, replace)
(file pacgen2.gph saved)

.
. *Predicting lntpa_priv
. set seed 22045

. reg d.lntpa_priv d.l(1/12,18,24)lntpa_priv d.l(1/12)lntpa_unemp d.l(1/12)lntpa_unemp
d.l(1/12)lntpa_serv
note: L10D.lntpa_unemp omitted because of collinearity
note: LD.lntpa_unemp omitted because of collinearity
note: L2D.lntpa_unemp omitted because of collinearity
note: L3D.lntpa_unemp omitted because of collinearity
note: L4D.lntpa_unemp omitted because of collinearity
note: L5D.lntpa_unemp omitted because of collinearity
note: L6D.lntpa_unemp omitted because of collinearity
note: L7D.lntpa_unemp omitted because of collinearity
note: L8D.lntpa_unemp omitted because of collinearity
note: L9D.lntpa_unemp omitted because of collinearity
note: L11D.lntpa_unemp omitted because of collinearity
note: L12D.lntpa_unemp omitted because of collinearity
```

Source	SS	df	MS	Number of obs	=	337
Model	.020476908	38	.000538866	F(38, 298)	=	35.14
				Prob > F	=	0.0000

Residual		.004569697	298	.000015335	R-squared	=	0.8176
<hr/>							
Total		.025046605	336	.000074543	Adj R-squared	=	0.7943
					Root MSE	=	.00392

D.lntpa_priv		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
<hr/>							
lntpa_priv							
LD.		-.2348072	.0987503	-2.38	0.018	-.4291436	-.0404709
L2D.		-.0989006	.1002416	-0.99	0.325	-.2961717	.0983704
L3D.		.1239705	.0996732	1.24	0.215	-.072182	.3201229
L4D.		.1931381	.10056	1.92	0.056	-.0047596	.3910357
L5D.		.1300387	.0992395	1.31	0.191	-.0652602	.3253377
L6D.		.1937964	.099634	1.95	0.053	-.0022789	.3898717
L7D.		-.0869785	.098125	-0.89	0.376	-.2800841	.1061272
L8D.		.0509038	.1000486	0.51	0.611	-.1459876	.2477951
L9D.		.0146287	.0966726	0.15	0.880	-.1756187	.2048762
L10D.		-.1159656	.092572	-1.25	0.211	-.2981433	.0662121
L11D.		-.1416672	.091515	-1.55	0.123	-.3217647	.0384304
L12D.		.0880131	.0977692	0.90	0.369	-.1043924	.2804186
L18D.		-.1270597	.0546457	-2.33	0.021	-.2346001	-.0195193
L24D.		.2058702	.0527637	3.90	0.000	.1020336	.3097069
<hr/>							
lntpa_unemp							
LD.		-.004562	.0053154	-0.86	0.391	-.0150224	.0058984
L2D.		-.0121293	.0053589	-2.26	0.024	-.0226754	-.0015831
L3D.		-.015317	.0055905	-2.74	0.007	-.0263189	-.0043151
L4D.		-.0098469	.0055953	-1.76	0.079	-.0208581	.0011644
L5D.		-.0062563	.0055891	-1.12	0.264	-.0172554	.0047427
L6D.		-.00806	.0057242	-1.41	0.160	-.0193249	.0032049
L7D.		-.0050349	.0056505	-0.89	0.374	-.0161549	.0060851
L8D.		-.0152582	.0057414	-2.66	0.008	-.026557	-.0039594
L9D.		-.005465	.0058356	-0.94	0.350	-.0169492	.0060193
L10D.		0	(omitted)				
L11D.		.0024791	.0057443	0.43	0.666	-.0088254	.0137836
L12D.		-.0274771	.0056789	-4.84	0.000	-.0386531	-.0163012
LD.		0	(omitted)				
L2D.		0	(omitted)				
L3D.		0	(omitted)				
L4D.		0	(omitted)				
L5D.		0	(omitted)				
L6D.		0	(omitted)				
L7D.		0	(omitted)				
L8D.		0	(omitted)				
L9D.		0	(omitted)				
L10D.		.0032647	.005727	0.57	0.569	-.0080059	.0145352
L11D.		0	(omitted)				
L12D.		0	(omitted)				
<hr/>							
lntpa_serv							
LD.		.1352703	.0810299	1.67	0.096	-.0241929	.2947336
L2D.		.057447	.0836912	0.69	0.493	-.1072537	.2221477
L3D.		.006031	.0835138	0.07	0.942	-.1583204	.1703825
L4D.		-.0947652	.0828639	-1.14	0.254	-.2578379	.0683074
L5D.		-.1370476	.0822915	-1.67	0.097	-.2989938	.0248986
L6D.		-.0087608	.0830302	-0.11	0.916	-.1721605	.154639
L7D.		.0616077	.081319	0.76	0.449	-.0984245	.2216399
L8D.		-.055585	.0830016	-0.67	0.504	-.2189285	.1077585
L9D.		-.0882431	.0814399	-1.08	0.279	-.2485132	.0720271
L10D.		-.0117987	.0805031	-0.15	0.884	-.1702253	.1466278
L11D.		.0338087	.079052	0.43	0.669	-.1217621	.1893796
L12D.		.2338883	.078086	3.00	0.003	.0802184	.3875582

_cons		.0008999	.0003586	2.51	0.013	.0001943	.0016056
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```
. predict res1 if e(sample)==1, residual
(26 missing values generated)
```

```
. pac res1
```

```
. bgodfrey, lag(1/12)
```

Breusch-Godfrey LM test for autocorrelation

lags (p)	chi2	df	Prob > chi2
1	3.178	1	0.0746
2	5.412	2	0.0668
3	7.144	3	0.0674
4	7.160	4	0.1277
5	9.002	5	0.1090
6	10.085	6	0.1211
7	10.085	7	0.1838
8	10.227	8	0.2495
9	20.044	9	0.0176
10	23.847	10	0.0080
11	24.002	11	0.0127
12	26.976	12	0.0078

H0: no serial correlation

```
. drop res1
```

```
. reg d.lntpa_priv d.l(1/12,24)lntpa_priv d.l(1/12)lntpa_unemp d.l(1/12)lntpa_bp
```

Source	SS	df	MS	Number of obs	=	337
Model	.020085303	37	.000542846	F(37, 299)	=	32.72
Residual	.004961303	299	.000016593	Prob > F	=	0.0000
				R-squared	=	0.8019
				Adj R-squared	=	0.7774
Total	.025046605	336	.000074543	Root MSE	=	.00407

D.lntpa_priv	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
lntpa_priv					
LD.	-.0590413	.0455007	-1.30	0.195	-.1485834 .0305009
L2D.	-.1039511	.0453786	-2.29	0.023	-.1932531 -.0146492
L3D.	.0629685	.0451237	1.40	0.164	-.0258317 .1517687
L4D.	.0485974	.0447574	1.09	0.278	-.039482 .1366769
L5D.	-.0163284	.0444737	-0.37	0.714	-.1038495 .0711928
L6D.	.1038053	.0444067	2.34	0.020	.0164161 .1911945
L7D.	-.0470441	.0440453	-1.07	0.286	-.1337221 .0396339
L8D.	-.0087511	.0438628	-0.20	0.842	-.09507 .0775679
L9D.	-.0760176	.0434761	-1.75	0.081	-.1615755 .0095402
L10D.	-.1259029	.0423223	-2.97	0.003	-.2091901 -.0426156
L11D.	-.0695036	.0435991	-1.59	0.112	-.1553035 .0162963
L12D.	.3887164	.056144	6.92	0.000	.2782289 .4992038
L24D.	.1834821	.0519486	3.53	0.000	.0812509 .2857134
lntpa_unemp					
LD.	-.0072815	.005428	-1.34	0.181	-.0179634 .0034005
L2D.	-.0129353	.0055016	-2.35	0.019	-.0237621 -.0021084
L3D.	-.0113045	.0055962	-2.02	0.044	-.0223174 -.0002917

L4D.		-.0068519	.0055883	-1.23	0.221	-.0178494	.0041456
L5D.		-.0039843	.0056228	-0.71	0.479	-.0150496	.0070811
L6D.		-.0064073	.0056922	-1.13	0.261	-.0176091	.0047946
L7D.		-.0046299	.0056892	-0.81	0.416	-.0158259	.006566
L8D.		-.0122487	.0057786	-2.12	0.035	-.0236205	-.0008769
L9D.		-.0008996	.0058531	-0.15	0.878	-.0124181	.010619
L10D.		.0027687	.0058118	0.48	0.634	-.0086685	.0142059
L11D.		-.0028742	.005775	-0.50	0.619	-.0142389	.0084905
L12D.		-.0322391	.0057191	-5.64	0.000	-.0434938	-.0209843
lntpa_bp							
LD.		.0008319	.0008352	1.00	0.320	-.0008118	.0024756
L2D.		.0009081	.0010792	0.84	0.401	-.0012157	.0030318
L3D.		.0010765	.0011533	0.93	0.351	-.0011932	.0033461
L4D.		.0014709	.0011763	1.25	0.212	-.000844	.0037859
L5D.		.00213	.0012011	1.77	0.077	-.0002336	.0044936
L6D.		.0023987	.0012312	1.95	0.052	-.0000243	.0048216
L7D.		.0032986	.0012236	2.70	0.007	.0008906	.0057066
L8D.		.0030983	.0012044	2.57	0.011	.0007281	.0054685
L9D.		.0031858	.0011834	2.69	0.008	.0008569	.0055148
L10D.		.002008	.0011486	1.75	0.081	-.0002525	.0042684
L11D.		.0026668	.0010768	2.48	0.014	.0005476	.0047859
L12D.		.0011543	.0008427	1.37	0.172	-.0005039	.0028126
_cons		.0009726	.0003101	3.14	0.002	.0003623	.0015829

. predict res2 if e(sample)==1, residual  
(26 missing values generated)

. pac res2

. bgodfrey, lag(1/12)

Breusch-Godfrey LM test for autocorrelation

lags (p)	chi2	df	Prob > chi2
1	2.714	1	0.0995
2	9.543	2	0.0085
3	22.496	3	0.0001
4	23.566	4	0.0001
5	24.265	5	0.0002
6	24.902	6	0.0004
7	25.795	7	0.0005
8	25.837	8	0.0011
9	33.222	9	0.0001
10	35.818	10	0.0001
11	36.595	11	0.0001
12	42.862	12	0.0000

H0: no serial correlation

. drop res2

. reg d.lntpa\_priv d.l(1/12,18,24)lntpa\_priv d.l(1/12)lntpa\_unemp d.l(1/12)lntpa\_tech

Source	SS	df	MS	Number of obs	=	265
Model	.015477156	38	.000407294	F(38, 226)	=	27.59
Residual	.00333626	226	.000014762	Prob > F	=	0.0000
				R-squared	=	0.8227
				Adj R-squared	=	0.7928

Total | .018813416      264   .000071263   Root MSE      =      .00384

D.lntpa_priv	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
lntpa_priv					
LD.	-.10785	.059695	-1.81	0.072	-.2254799 .0097799
L2D.	-.0681098	.0605913	-1.12	0.262	-.1875059 .0512862
L3D.	.0627873	.0597749	1.05	0.295	-.0550001 .1805747
L4D.	.0490487	.0592809	0.83	0.409	-.0677654 .1658628
L5D.	-.0010314	.0593367	-0.02	0.986	-.1179553 .1158925
L6D.	.2600798	.0671031	3.88	0.000	.1278522 .3923075
L7D.	-.0043444	.0583773	-0.07	0.941	-.1193778 .110689
L8D.	-.009925	.0589563	-0.17	0.866	-.1260992 .1062493
L9D.	-.0732598	.0599985	-1.22	0.223	-.1914879 .0449682
L10D.	-.0632009	.0598625	-1.06	0.292	-.1811611 .0547592
L11D.	-.0588606	.0616711	-0.95	0.341	-.1803844 .0626632
L12D.	.3286285	.0702955	4.67	0.000	.1901101 .4671469
L18D.	-.0972093	.0578898	-1.68	0.094	-.2112821 .0168636
L24D.	.2730407	.0572446	4.77	0.000	.1602392 .3858421
lntpa_unemp					
LD.	-.00539	.0058531	-0.92	0.358	-.0169236 .0061437
L2D.	-.0156349	.0059243	-2.64	0.009	-.0273088 -.003961
L3D.	-.0168504	.0060524	-2.78	0.006	-.0287768 -.0049241
L4D.	-.0089272	.0060697	-1.47	0.143	-.0208877 .0030333
L5D.	-.0087842	.0060824	-1.44	0.150	-.0207696 .0032012
L6D.	-.0106789	.0060808	-1.76	0.080	-.0226612 .0013034
L7D.	-.0080691	.0061144	-1.32	0.188	-.0201176 .0039794
L8D.	-.0202394	.0063236	-3.20	0.002	-.0327001 -.0077788
L9D.	-.0038519	.0064191	-0.60	0.549	-.0165009 .0087971
L10D.	-.0016079	.0061882	-0.26	0.795	-.0138019 .010586
L11D.	-.0062928	.0061864	-1.02	0.310	-.0184833 .0058976
L12D.	-.0304497	.0061945	-4.92	0.000	-.0426561 -.0182432
lntpa_tech					
LD.	-.0174781	.0353941	-0.49	0.622	-.0872229 .0522666
L2D.	-.0262119	.0362055	-0.72	0.470	-.0975555 .0451316
L3D.	.0004296	.0352979	0.01	0.990	-.0691255 .0699847
L4D.	-.0185462	.0362975	-0.51	0.610	-.090071 .0529786
L5D.	-.0523671	.0357812	-1.46	0.145	-.1228746 .0181404
L6D.	-.1357466	.0360934	-3.76	0.000	-.2068692 -.064624
L7D.	-.08797	.0372703	-2.36	0.019	-.1614118 -.0145282
L8D.	-.0111286	.0376351	-0.30	0.768	-.0852893 .063032
L9D.	.0269244	.0369568	0.73	0.467	-.0458996 .0997484
L10D.	-.0255679	.0364384	-0.70	0.484	-.0973703 .0462345
L11D.	-.0448333	.0366962	-1.22	0.223	-.1171437 .0274771
L12D.	-.0462749	.0366646	-1.26	0.208	-.1185232 .0259734
_cons	.0015936	.0003763	4.24	0.000	.0008522 .0023351

. predict res3 if e(sample)==1, residual  
(98 missing values generated)

. pac res3

. bgodfrey, lag(1/12)

Breusch-Godfrey LM test for autocorrelation

lags(p)	chi2	df	Prob > chi2
---------	------	----	-------------

1		0.010	1	0.9195
2		0.169	2	0.9189
3		1.243	3	0.7427
4		1.269	4	0.8667
5		3.641	5	0.6022
6		3.641	6	0.7252
7		3.641	7	0.8200
8		3.687	8	0.8842
9		7.415	9	0.5940
10		9.397	10	0.4949
11		9.718	11	0.5559
12		11.741	12	0.4667

-----  
H0: no serial correlation

. drop res3

.  
. reg d.lntpa\_priv d.l(1/8,11,12,18,24)lntpa\_priv d.l(1,2,12)lntpa\_unemp  
d.l(1,2,12)lntpa\_tech

Source	SS	df	MS	Number of obs	=	265
Model	.014622388	18	.000812355	F(18, 246)	=	47.68
Residual	.004191028	246	.000017037	Prob > F	=	0.0000
				R-squared	=	0.7772
				Adj R-squared	=	0.7609
Total	.018813416	264	.000071263	Root MSE	=	.00413

D.lntpa_priv	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
-----						
lntpa_priv						
LD.	-.0399252	.0550767	-0.72	0.469	-.1484074	.0685569
L2D.	-.0714182	.0559732	-1.28	0.203	-.1816661	.0388296
L3D.	.1097598	.034428	3.19	0.002	.0419487	.177571
L4D.	.0282023	.0365755	0.77	0.441	-.0438388	.1002435
L5D.	-.0077725	.0452604	-0.17	0.864	-.0969199	.0813748
L6D.	.1924048	.0594028	3.24	0.001	.0754018	.3094078
L7D.	-.065972	.0420381	-1.57	0.118	-.1487724	.0168284
L8D.	.0688343	.0420197	1.64	0.103	-.0139299	.1515986
L11D.	-.0524516	.0409794	-1.28	0.202	-.1331669	.0282638
L12D.	.4190699	.0674955	6.21	0.000	.286127	.5520127
L18D.	-.167077	.0566011	-2.95	0.003	-.2785615	-.0555925
L24D.	.2874074	.0562131	5.11	0.000	.176687	.3981278
lntpa_unemp						
LD.	-.0161226	.0053926	-2.99	0.003	-.0267442	-.005501
L2D.	-.0156046	.0053478	-2.92	0.004	-.0261379	-.0050713
L12D.	-.0293359	.0058328	-5.03	0.000	-.0408245	-.0178473
lntpa_tech						
LD.	-.0216386	.0327592	-0.66	0.510	-.0861629	.0428857
L2D.	-.0306916	.0337366	-0.91	0.364	-.0971411	.0357579
L12D.	-.0242112	.0337215	-0.72	0.473	-.090631	.0422085
cons	.0004419	.0003049	1.45	0.149	-.0001587	.0010425

-----  
. predict res4 if e(sample)==1, residual  
(98 missing values generated)

. pac res4



```
. bgodfrey, lag(1/12)
```

Breusch-Godfrey LM test for autocorrelation

lags (p)	chi2	df	Prob > chi2
1	0.536	1	0.4639
2	4.732	2	0.0939
3	5.857	3	0.1188
4	6.778	4	0.1481
5	11.707	5	0.0390
6	11.912	6	0.0640
7	12.003	7	0.1005
8	12.071	8	0.1481
9	15.023	9	0.0903
10	15.024	10	0.1312
11	15.375	11	0.1660
12	15.416	12	0.2195

H0: no serial correlation

```
. drop res4
```

```
.
. *Generating dummy variables
. gen dlntpa_priv = d.lntpa_priv
(2 missing values generated)

. gen l1dlntpa_priv = l1d.lntpa_priv
(2 missing values generated)

. gen l2dlntpa_priv = l2d.lntpa_priv
(3 missing values generated)

. gen l3dlntpa_priv = l3d.lntpa_priv
(4 missing values generated)

. gen l4dlntpa_priv = l4d.lntpa_priv
(5 missing values generated)

. gen l5dlntpa_priv = l5d.lntpa_priv
(6 missing values generated)

. gen l6dlntpa_priv = l6d.lntpa_priv
(7 missing values generated)

. gen l7dlntpa_priv = l7d.lntpa_priv
(8 missing values generated)

. gen l8dlntpa_priv = l8d.lntpa_priv
(9 missing values generated)

. gen l9dlntpa_priv = l9d.lntpa_priv
(10 missing values generated)

. gen l10dlntpa_priv = l10d.lntpa_priv
(11 missing values generated)

. gen l11dlntpa_priv = l11d.lntpa_priv
(12 missing values generated)

. gen l12dlntpa_priv = l12d.lntpa_priv
(13 missing values generated)
```

```

. gen l18dlntpa_priv = l18d.lntpa_priv
(19 missing values generated)

. gen l24dlntpa_priv = l24d.lntpa_priv
(25 missing values generated)

.
. gen l1dlntpa_unemp = l1d.lntpa_unemp
(2 missing values generated)

. gen l2dlntpa_unemp = l2d.lntpa_unemp
(3 missing values generated)

. gen l12dlntpa_unemp = l12d.lntpa_unemp
(13 missing values generated)

.
. gen l1dlntpa_tech = l1d.lntpa_tech
(86 missing values generated)

. gen l2dlntpa_tech = l2d.lntpa_tech
(87 missing values generated)

. gen l12dlntpa_tech = l12d.lntpa_tech
(97 missing values generated)

.
. *GSREG
. gsreg dlntpa_priv l1dlntpa_priv l2dlntpa_priv l3dlntpa_priv l4dlntpa_priv ///
>      l5dlntpa_priv l6dlntpa_priv l7dlntpa_priv l8dlntpa_priv l9dlntpa_priv
l11dlntpa_priv ///
>      l10dlntpa_priv l12dlntpa_priv l24dlntpa_priv ///
>      l1dlntpa_unemp l2dlntpa_unemp l12dlntpa_unemp l1dlntpa_tech ///
>      l2dlntpa_tech l12dlntpa_tech if tin(1990m1, 2020m3), ///
>      ncomb(1,8) aic outsample(24) fix(m2 m3 m4 m5 m6 m7 m8 m9 m10 m11 m12)
samesample ///
>      nindex( -0.3 aic -0.3 bic -0.4 rmse_out) results(gsreg_dlntpa_priv3) replace
-----
Total Number of Estimations: 169765
-----
Warning: Estimation could take about 323 minutes
-----

Computing combinations...
Preparing regression list...
--Break--
r(1);

end of do-file

--Break--
r(1);

. do "C:\Users\luizg\AppData\Local\Temp\STD4974_000000.tmp"

.
. *t-initial = 1997 due tpa_tech
. *Baseline Model fro RW - w = 60
. scalar drop _all

. quietly forval w=60(12)120 {

```

```

. scalar list
RWmaxobs120 =      120
RWminobs120 =      120
  RWrmse120 = .00451773
RWmaxobs108 =      108
RWminobs108 =      108
  RWrmse108 = .00457871
RWmaxobs96 =       96
RWminobs96 =       96
  RWrmse96 = .00471478
RWmaxobs84 =       84
RWminobs84 =       84
  RWrmse84 = .00518395
RWmaxobs72 =       72
RWminobs72 =       72
  RWrmse72 = .00563933
RWmaxobs60 =       60
RWminobs60 =       60
  RWrmse60 = .00888157

.
. *Selected models for RW - w = 60
. *1
. scalar drop _all

. quietly forval w=60(12)120 {

. scalar list
RWmaxobs120 =      120
RWminobs120 =      120
  RWrmse120 = .00392907
RWmaxobs108 =      108
RWminobs108 =      108
  RWrmse108 = .00382717
RWmaxobs96 =       96
RWminobs96 =       96
  RWrmse96 = .00375942
RWmaxobs84 =       84
RWminobs84 =       84
  RWrmse84 = .00379678
RWmaxobs72 =       72
RWminobs72 =       72
  RWrmse72 = .00372879
RWmaxobs60 =       60
RWminobs60 =       60
  RWrmse60 = .00383464

.
. *2
. scalar drop _all

. quietly forval w=60(12)120 {

. scalar list
RWmaxobs120 =      120
RWminobs120 =      120
  RWrmse120 = .00393194
RWmaxobs108 =      108
RWminobs108 =      108
  RWrmse108 = .00387396
RWmaxobs96 =       96
RWminobs96 =       96

```

```

    RWrmse96 = .00377484
    RWmaxobs84 =      84
    RWminobs84 =      84
    RWrmse84 = .00379584
    RWmaxobs72 =      72
    RWminobs72 =      72
    RWrmse72 = .00374256
    RWmaxobs60 =      60
    RWminobs60 =      60
    RWrmse60 = .00381513

.
. *3
. scalar drop _all

. quietly forval w=60(12)120 {

. scalar list
RWmaxobs120 =      120
RWminobs120 =      120
  RWrmse120 = .0039818
RWmaxobs108 =      108
RWminobs108 =      108
  RWrmse108 = .00392259
RWmaxobs96 =       96
RWminobs96 =       96
  RWrmse96 = .00386432
RWmaxobs84 =       84
RWminobs84 =       84
  RWrmse84 = .00389678
RWmaxobs72 =       72
RWminobs72 =       72
  RWrmse72 = .00385698
RWmaxobs60 =       60
RWminobs60 =       60
  RWrmse60 = .00396325

.
. *4
. scalar drop _all

. quietly forval w=60(12)120 {

. scalar list
RWmaxobs120 =      120
RWminobs120 =      120
  RWrmse120 = .00406722
RWmaxobs108 =      108
RWminobs108 =      108
  RWrmse108 = .00397389
RWmaxobs96 =       96
RWminobs96 =       96
  RWrmse96 = .0039089
RWmaxobs84 =       84
RWminobs84 =       84
  RWrmse84 = .00393827
RWmaxobs72 =       72
RWminobs72 =       72
  RWrmse72 = .00384226
RWmaxobs60 =       60
RWminobs60 =       60
  RWrmse60 = .00391004

```

```

.
. *5
. scalar drop _all

. quietly forval w=60(12)120 {

. scalar list
RWmaxobs120 =      120
RWminobs120 =      120
  RWrmse120 = .00400219
RWmaxobs108 =      108
RWminobs108 =      108
  RWrmse108 = .00390318
RWmaxobs96 =       96
RWminobs96 =       96
  RWrmse96 = .00385202
RWmaxobs84 =       84
RWminobs84 =       84
  RWrmse84 = .0039162
RWmaxobs72 =       72
RWminobs72 =       72
  RWrmse72 = .00386631
RWmaxobs60 =       60
RWminobs60 =       60
  RWrmse60 = .00401386

.
. *6
. scalar drop _all

. quietly forval w=60(12)120 {

. scalar list
RWmaxobs120 =      120
RWminobs120 =      120
  RWrmse120 = .00385133
RWmaxobs108 =      108
RWminobs108 =      108
  RWrmse108 = .00376505
RWmaxobs96 =       96
RWminobs96 =       96
  RWrmse96 = .00367144
RWmaxobs84 =       84
RWminobs84 =       84
  RWrmse84 = .00366814
RWmaxobs72 =       72
RWminobs72 =       72
  RWrmse72 = .003658
RWmaxobs60 =       60
RWminobs60 =       60
  RWrmse60 = .00368501

.
. *11
. scalar drop _all

. quietly forval w=60(12)120 {

. scalar list
RWmaxobs120 =      120
RWminobs120 =      120
  RWrmse120 = .00410725
RWmaxobs108 =      108

```

```

RWminobs108 =      108
  RWrmse108 = .00406398
RWmaxobs96 =       96
RWminobs96 =       96
  RWrmse96 = .00385379
RWmaxobs84 =       84
RWminobs84 =       84
  RWrmse84 = .00385437
RWmaxobs72 =       72
RWminobs72 =       72
  RWrmse72 = .00392266
RWmaxobs60 =       60
RWminobs60 =       60
  RWrmse60 = .004078

.
. *18
. scalar drop _all

. quietly forval w=60(12)120 {

. scalar list
RWmaxobs120 =      120
RWminobs120 =      120
  RWrmse120 = .00393141
RWmaxobs108 =      108
RWminobs108 =      108
  RWrmse108 = .00388581
RWmaxobs96 =       96
RWminobs96 =       96
  RWrmse96 = .00378974
RWmaxobs84 =       84
RWminobs84 =       84
  RWrmse84 = .00381343
RWmaxobs72 =       72
RWminobs72 =       72
  RWrmse72 = .00375184
RWmaxobs60 =       60
RWminobs60 =       60
  RWrmse60 = .00383306

.
. *25
. scalar drop _all

. quietly forval w=60(12)120 {

. scalar list
RWmaxobs120 =      120
RWminobs120 =      120
  RWrmse120 = .00398072
RWmaxobs108 =      108
RWminobs108 =      108
  RWrmse108 = .00393291
RWmaxobs96 =       96
RWminobs96 =       96
  RWrmse96 = .0038783
RWmaxobs84 =       84
RWminobs84 =       84
  RWrmse84 = .00391779
RWmaxobs72 =       72
RWminobs72 =       72
  RWrmse72 = .00386714

```

```

RWmaxobs60 =          60
RWminobs60 =          60
  RWmse60 = .00397699

.
. *63
. scalar drop _all

. quietly forval w=60(12)120 {

. scalar list
RWmaxobs120 =          120
RWminobs120 =          120
  RWmse120 = .0041615
RWmaxobs108 =          108
RWminobs108 =          108
  RWmse108 = .0041407
RWmaxobs96 =           96
RWminobs96 =           96
  RWmse96 = .00379024
RWmaxobs84 =           84
RWminobs84 =           84
  RWmse84 = .00378773
RWmaxobs72 =           72
RWminobs72 =           72
  RWmse72 = .0038201
RWmaxobs60 =           60
RWminobs60 =           60
  RWmse60 = .00402472

.
. * Fixed W = 72
.
. *1
. scalar drop _all

. quietly forval w=72(12)72 {

. scalar list
RWmaxobs72 =           72
RWminobs72 =           72
  RWmse72 = .00373772

.
. *2
. scalar drop _all

. quietly forval w=72(12)72 {

. scalar list
RWmaxobs72 =           72
RWminobs72 =           72
  RWmse72 = .00381512

.
. *6
. scalar drop _all

. quietly forval w=72(12)72 {

. scalar list
RWmaxobs72 =           72
RWminobs72 =           72

```

```

RWrmse72 = .00366889

.
. *11
.
. scalar drop _all

. quietly forval w=72(12)72 {

. scalar list
RWmaxobs72 =          72
RWminobs72 =          72
RWrmse72 = .00385047

.
.
. *Baseline w =72
.
. scalar drop _all

. quietly forval w=72(12)72 {

. scalar list
RWmaxobs72 =          72
RWminobs72 =          72
RWrmse72 = .00519887

.
. *Model 6
. scalar drop _all

. quietly forval w=72(12)72 {

. scalar list
RWmaxobs72 = .01147977
RWminobs72 = -.02126985
RWrmse72 = .00366889

.
. scalar rwrmsel = 0.00366889

.
. *Constructing a empirical interval - w = 72
. *reg dlnfl_nonfarm l1dlnfl_nonfarm l2dlnfl_nonfarm l3dlnfl_nonfarm l5dlnfl_nonfarm
l6dlnfl_nonfarm l12dlnfl_nonfarm l2dlnfl_1f l2dlnus_epr m2 m3 m4 m5 m6 m7 m8 m9 m10
m11 m
> 12 if tin(2014m2,2020m2)

.
. gen residual=(d.lntpa_priv-rwpred)
(212 missing values generated)

. gen expres=exp(residual)
(212 missing values generated)

. summ expres

      Variable |          Obs          Mean      Std. Dev.          Min          Max
-----+-----
      expres |          151      1.000229      .0036757      .9825895      1.018286

. scalar meanexpres=r(mean)

. _pctile residual, percentiles(2.5,97.5)

```



```

. gen pye=meanexpres*exp(1.lntpa_priv+rwpred)
(211 missing values generated)

. gen ubye=meanexpres*exp(1.lntpa_priv+rwpred+r(r2))
(211 missing values generated)

. gen lbye=meanexpres*exp(1.lntpa_priv+rwpred+r(r1))
(211 missing values generated)

.
. twoway (tsline tpa_priv if tin(2019m1,2020m4)) ///
> (tsline pye ubye lbye if tin(2018m1,2020m4)), ///
> title("Actual and Empirical Forecast Florida for Private Workers for Tampa-
St.Pt-Cl.") ytitle("") xtitle("") legend(label(1 "Actual") label(2 "Forecast") ///
> label(3 "Upper Bound") label(4 "Lower Bound")) saving(m3yemp, replace)
(file m3yemp.gph saved)

.
. twoway (tsline tpa_priv if tin(2019m1,2020m4)) ///
> (tsline pye ubye lbye if tin(2019m1,2020m4)), ///
> title("Empirical Forecast") ytitle("") xtitle("") legend(label(1 "Actual")
label(2 "Forecast") ///
> label(3 "Upper Bound") label(4 "Lower Bound")) saving(m3yemp, replace)
(file m3yemp.gph saved)

.
. *Constructing a Gaussian intervar - w = 72
.
. gen pyn=exp(1.lntpa_priv+rwpred+(rwrmsel^2)/2)
(211 missing values generated)

. gen ubyn=exp(1.lntpa_priv+rwpred+1.96*rwrmsel+(rwrmsel^2)/2)
(211 missing values generated)

. gen lbyn=exp(1.lntpa_priv+rwpred-1.96*rwrmsel+(rwrmsel^2)/2)
(211 missing values generated)

. twoway (tsline tpa_priv if tin(2019m1,2020m2)) ///
> (tsline pyn ubyn lbyn if tin(2019m1,2020m3)), ///
> title("Actual and Approx. Normal Forecast Florida for Nonfarm-Workers")
ytitle("") xtitle("") legend(label(1 "Actual") label(2 "Forecast") ///
> label(3 "Upper Bound") label(4 "Lower Bound")) saving(m3ynorm, replace)
(file m3ynorm.gph saved)

.
. twoway (tsline tpa_priv if tin(2019m1,2020m2)) ///
> (tsline pyn ubyn lbyn if tin(2019m1,2020m3)), ///
> title("Approximately Normal Forecast") ytitle("") xtitle("") legend(label(1
"Actual") label(2 "Forecast") ///
> label(3 "Upper Bound") label(4 "Lower Bound")) saving(m3ynorm, replace)
(file m3ynorm.gph saved)

.
. twoway (tsline tpa_priv if tin(2018m1,2020m2)) ///
> (tsline pyn ubyn lbyn if tin(2019m1,2020m3)), ///
> title("Approximately Normal Forecast") ytitle("") xtitle("") legend(label(1
"Actual") label(2 "Forecast") ///
> label(3 "Upper Bound") label(4 "Lower Bound")) saving(m3ynorm2, replace)
(file m3ynorm2.gph saved)

.
. graph combine m3ynorm.gph m3yemp.gph , ///

```

```

>         saving(m3yen, replace)
(file m3yen.gph saved)

.
. *Chart one month ahead - Empirical
. gen fub=ubye if tin(2020m3,)
(362 missing values generated)

. gen flb=lbye if tin(2020m3,)
(362 missing values generated)

. gen fcst=pye if tin(2020m3,)
(362 missing values generated)

. replace fcst=tpa_priv if tin(2020m2,2020m2)
(1 real change made)

. replace fub=tpa_priv if tin(2020m2,2020m2)
(1 real change made)

. replace flb=tpa_priv if tin(2020m2,2020m2)
(1 real change made)

.
. *Chart one month ahead - Normal
. twoway(tslne tpa_priv if tin(2019m1,2020m2))(tsline fub flb fcst if
tin(2020m2,2020m3) ), title("Empirical Forecast") ytitle("") xtitle("") legend(label(1
"Actual") label(
> 2 "Upper Bound") ///
> label(3 "Lower Bound") label(4 "Forecast")) saving(fcste, replace)
(file fcste.gph saved)

.
. replace fub=ubyn if tin(2020m3,)
(1 real change made)

. replace flb=lbyn if tin(2020m3,)
(1 real change made)

. replace fcst=pyn if tin(2020m3,)
(1 real change made)

. replace fcst=tpa_priv if tin(2020m2,2020m2)
(0 real changes made)

. replace fub=tpa_priv if tin(2020m2,2020m2)
(0 real changes made)

. replace flb=tpa_priv if tin(2020m2,2020m2)
(0 real changes made)

.
. twoway(tslne tpa_priv if tin(2019m1,2020m2))(tsline fub flb fcst if
tin(2020m2,2020m3) ), title("Approximately Normal Forecast") ytitle("") xtitle("")
legend(label(1 "Actu
> al") label(2 "Upper Bound") ///
> label(3 "Lower Bound") label(4 "Forecast")) saving(fcstn, replace)
(file fcstn.gph saved)

.
. graph combine fcstn.gph fcste.gph , ///
> saving(fcts, replace)
(file fcts.gph saved)

```

```

.
. *FAN CHART
.
. *H=1
. scalar rwrms2 = 0.00366889

. gen ptpae=exp((rwrms2^2)/2)*exp(l.lntpa_priv+rwpred)
(211 missing values generated)

. gen ub1=exp((rwrms2^2)/2)*exp(l.lntpa_priv+rwpred+1*rwrms2)
(211 missing values generated)

. gen lb1=exp((rwrms2^2)/2)*exp(l.lntpa_priv+rwpred-1*rwrms2)
(211 missing values generated)

. gen ub2=exp((rwrms2^2)/2)*exp(l.lntpa_priv+rwpred+2*rwrms2)
(211 missing values generated)

. gen lb2=exp((rwrms2^2)/2)*exp(l.lntpa_priv+rwpred-2*rwrms2)
(211 missing values generated)

. gen ub3=exp((rwrms2^2)/2)*exp(l.lntpa_priv+rwpred+3*rwrms2)
(211 missing values generated)

. gen lb3=exp((rwrms2^2)/2)*exp(l.lntpa_priv+rwpred-3*rwrms2)
(211 missing values generated)

.
.
. *Fan Charts
.
. twoway (tsrline ub3 ub2 if tin(2019m1,2020m3), ///
> recast(rarea) fcolor(red) fintensity(5) lwidth(none) ) ///
> (tsrline ub2 ub1 if tin(2019m1,2020m3), ///
> recast(rarea) fcolor(red) fintensity(15) lwidth(none) ) ///
> (tsrline ub1 ptpae if tin(2019m1,2020m3), ///
> recast(rarea) fcolor(red) fintensity(35) lwidth(none) ) ///
> (tsrline ptpae lb1 if tin(2019m1,2020m3), ///
> recast(rarea) fcolor(red) fintensity(35) lwidth(none) ) ///
> (tsrline lb1 lb2 if tin(2019m1,2020m3), ///
> recast(rarea) fcolor(red) fintensity(15) lwidth(none) ) ///
> (tsrline lb2 lb3 if tin(2019m1,2020m3), ///
> recast(rarea) fcolor(red) fintensity(5) lwidth(none) ) ///
> (tsline ptpae if tin(2019m1,2020m3) , ///
> lcolor(gs12) lwidth(thick thick) ) ///
> (scatter tpa_priv date if tin(2019m1,2020m3), lcolor(gs6)), ///
> scheme(slmono) legend(off) ///
> title("Tampa-St.Petersburg-Clearwater" ///
> "Private Employment (Thousands) Forecast Interval") legend(off) ///
> xtitle("") ylabel(grid) ///
> note("Bands at 1, 2, and 3 sigma")

.
. gen fptpae=tpa_priv if tin(2020m2,2020m2)
(362 missing values generated)

. gen fub1=tpa_priv if tin(2020m2,2020m2)
(362 missing values generated)

. gen fub2=tpa_priv if tin(2020m2,2020m2)
(362 missing values generated)

```

```

. gen fub3=tpa_priv if tin(2020m2,2020m2)
(362 missing values generated)

. gen flb1=tpa_priv if tin(2020m2,2020m2)
(362 missing values generated)

. gen flb2=tpa_priv if tin(2020m2,2020m2)
(362 missing values generated)

. gen flb3=tpa_priv if tin(2020m2,2020m2)
(362 missing values generated)

.
. replace fptpae=ptpae if tin(2020m3,2020m3)
(1 real change made)

. replace fub1=ub1 if tin(2020m3,2020m3)
(1 real change made)

. replace fub2=ub2 if tin(2020m3,2020m3)
(1 real change made)

. replace fub3=ub3 if tin(2020m3,2020m3)
(1 real change made)

. replace flb1=lb1 if tin(2020m3,2020m3)
(1 real change made)

. replace flb2=lb2 if tin(2020m3,2020m3)
(1 real change made)

. replace flb3=lb3 if tin(2020m3,2020m3)
(1 real change made)

.
. twoway (tsrline fub3 fub2 if tin(2020m2,2020m3), ///
> recast(rarea) fcolor(red) fintensity(5) lwidth(none) ) ///
> (tsrline fub2 fub1 if tin(2020m2,2020m3), ///
> recast(rarea) fcolor(red) fintensity(15) lwidth(none) ) ///
> (tsrline fub1 fptpae if tin(2020m2,2020m3), ///
> recast(rarea) fcolor(red) fintensity(35) lwidth(none) ) ///
> (tsrline fptpae flb1 if tin(2020m2,2020m3), ///
> recast(rarea) fcolor(red) fintensity(35) lwidth(none) ) ///
> (tsrline flb1 flb2 if tin(2020m2,2020m3), ///
> recast(rarea) fcolor(red) fintensity(15) lwidth(none) ) ///
> (tsrline flb2 flb3 if tin(2020m2,2020m3), ///
> recast(rarea) fcolor(red) fintensity(5) lwidth(none) ) ///
> (tsline fptpae if tin(2020m2,2020m3) , ///
> lcolor(gs12) lwidth(thick thick) ) ///
> (tsline tpa_priv if tin(2019m1,2020m3) , ///
> lcolor(gs6) lwidth(thick thick) ), scheme(slmono) legend(off) ///
> title("Tampa-St.Petersburg-Clearwater" ///
> "Private Employment (thousands)" ///
> "Fan Chart for 1 Month Horizon") legend(off) ///
> xtitle("") ylabel(,grid) ///
> note("Bands at 1, 2, and 3 sigma")

.
end of do-file

.

```

## Appendix B.2: Log-file-for-Project-AveWeekEarns

```
_____ (R)
/_ / ____/ / ____/
____/ / /____/ / /____/ 16.1 Copyright 1985-2019 StataCorp LLC
Statistics/Data Analysis StataCorp
4905 Lakeway Drive
College Station, Texas 77845 USA
800-STATA-PC http://www.stata.com
979-696-4600 stata@stata.com
979-696-4601 (fax)
```

Single-user Stata license expires 1 Oct 2020:

Serial number: 301609236389

Licensed to: Luiz Gustavo Fagundes Malpele  
Florida Polytechnic University

Notes:

1. Unicode is supported; see help unicode\_advice.

```
. doedit "C:\Users\luizg\Desktop\TimeSeries\Project\do-file-project - weekly earns.do"
```

```
. do "C:\Users\luizg\AppData\Local\Temp\STD2adc_000000.tmp"
```

```
. * Variable will be loaded by using FRED use, so the most recent data can be captured
```

```
.
```

```
. freduse FLNAN SMU124530005000000001 SMU124530005000000002 SMU124530005000000003
SMU124530005000000011 SMU124530007000000001 SMU124530060540000001 TAMP312BPPRIV
TAMP312NAN TAMP312
```

```
> URN
```

```
(974 observations read)
```

```
(362 observations read)
```

```
(158 observations read)
```

```
note: label truncated to 80 characters
```

```

(158 observations read)
note: label truncated to 80 characters
(158 observations read)
note: label truncated to 80 characters
(362 observations read)
(278 observations read)
note: label truncated to 80 characters
(386 observations read)
note: label truncated to 80 characters
(602 observations read)
(362 observations read)

.

. *Datestring generation
. rename date datestring

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

. gen date=mofd(datec)

. format date %tm

. tsset date
      time variable:  date, 1939m1 to 2020m2
              delta:  1 month

.

. *Adjusting Observations
. keep if tin(2007m1,)
(816 observations deleted)

. tsappend, add(1)

. tsset date

```

```
time variable: date, 2007m1 to 2020m3
```

```
delta: 1 month
```

```
.
```

```
. * Month indicators
```

```
. generate month=month(datec)
```

```
(1 missing value generated)
```

```
. replace month=month(dofm(date)) if month==.
```

```
(1 real change made)
```

```
. gen m1=0
```

```
. replace m1=1 if month==1
```

```
(14 real changes made)
```

```
. gen m2=0
```

```
. replace m2=1 if month==2
```

```
(14 real changes made)
```

```
. gen m3=0
```

```
. replace m3=1 if month==3
```

```
(14 real changes made)
```

```
. gen m4=0
```

```
. replace m4=1 if month==4
```

```
(13 real changes made)
```

```
. gen m5=0
```

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

(13 real changes made)

. gen m6=0

. replace m6=1 if month==6

(13 real changes made)

. gen m7=0

. replace m7=1 if month==7

(13 real changes made)

. gen m8=0

. replace m8=1 if month==8

(13 real changes made)

. gen m9=0

. replace m9=1 if month==9

(13 real changes made)

. gen m10=0

. replace m10=1 if month==10

(13 real changes made)

. gen m11=0

. replace m11=1 if month==11

(13 real changes made)

. gen m12=0



```

. replace m12=1 if month==12
(13 real changes made)

.

. * FLNAN = Florida Non Farm Employees
. rename FLNAN fl_nonfarm

. gen lnfl_nonfarm=ln(fl_nonfarm)
(1 missing value generated)

.

. *SMU12453000500000001 = Total Private Employees in Tampa-St. Petersburg-Clearwater,
FL (MSA)
. rename SMU12453000500000001 tpa_priv

. gen lntpa_priv=ln(tpa_priv)
(1 missing value generated)

. label variable tpa_priv "Total Private Employees"

.

. *SMU12453000500000002 = Average Weekly Hours of All Employees: Total Private in
Tampa-St. Petersburg-Clearwater, FL (MSA)
. rename SMU12453000500000002 tpa_aveweek_hour

. label variable tpa_aveweek_hour "Average Weekly Hours"

. gen lntpa_aveweek_hour=ln(tpa_aveweek_hour)
(1 missing value generated)

.

. *SMU12453000500000003 = Average Hourly Earnings of All Employees: Total Private in
Tampa-St. Petersburg-Clearwater, FL (MSA)
. rename SMU12453000500000003 tpa_avehour_earn

```

```

. label variable tpa_avehour_earn "Average Hourly Earnings"

. gen ln_tpa_avehour_earn=ln(tpa_avehour_earn)
(1 missing value generated)

.

. *SMU12453000500000011 = Average Weekly Earnings of All Employees: Total Private in
Tampa-St. Petersburg-Clearwater, FL (MSA)
. rename SMU12453000500000011 tpa_aveweek_earn

. label variable tpa_aveweek_earn "Average Weekly Earnings"

. gen ln_tpa_aveweek_earn=ln(tpa_aveweek_earn)
(1 missing value generated)

.

. * SMU12453000700000001 = All Employees: Service-Providing in Tampa-St. Petersburg-
Clearwater, FL (MSA)
. rename SMU12453000700000001 tpa_serv

. gen ln_tpa_serv=ln(tpa_serv)
(1 missing value generated)

. label variable tpa_serv "Service-Providing Employees"

.

. * SMU12453006054000001 = All Employees: Professional, Scientific, and Technical
Services in Tampa-St. Petersburg-Clearwater, FL (MSA)
. rename SMU12453006054000001 tpa_tech

. gen ln_tpa_tech=ln(tpa_tech)
(1 missing value generated)

. label variable tpa_tech "Total Technical Employees"

```

```

.
. * TAMP312BPPRIV = New Private Housing Units Authorized by Building Permits for
Tampa-St. Petersburg-Clearwater, FL (MSA)
. rename TAMP312BPPRIV tpa_bp

. gen ln_tpa_bp=ln(tpa_bp)
(1 missing value generated)

. label variable tpa_bp "Private Housing Authorized"

.
. * TAMP312NAN = All Employees: Total Nonfarm in Tampa-St. Petersburg-Clearwater, FL
(MSA)
. rename TAMP312NAN tpa_nonfarm

. gen ln_tpa_nonfarm=ln(tpa_nonfarm)
(1 missing value generated)

. label variable tpa_nonfarm "Total Nonfarm Employees"

.
. * TAMP312URN = Unemployment Rate in Tampa-St. Petersburg-Clearwater, FL (MSA)
. rename TAMP312URN tpa_unemp

. gen ln_tpa_unemp=ln(tpa_unemp)
(1 missing value generated)

. label variable tpa_unemp "Unemployment"

.
. * Total Weekly earning
. gen tpa_totalweek_earn = tpa_priv*tpa_aveweek_earn
(1 missing value generated)

. label variable tpa_totalweek_earn "Total Weekly Earnings (thousands)"

```

```
. gen ln_tpa_totalweek_earn = ln(tpa_totalweek_earn)
```

```
(1 missing value generated)
```

```
. label variable ln_tpa_totalweek_earn "Log of Total Weekly Earnings"
```

```
.
```

```
. * Summary of all variables
```

```
. summarize *
```

Variable	Obs	Mean	Std. Dev.	Min	Max
-----+-----					
datestring	0				
tpa_unemp	158	6.477848	2.73779	2.6	11.7
daten	158	19555.75	1392.655	17167	21946
tpa_nonfarm	158	1225.691	92.02533	1089.8	1414.5
tpa_bp	158	1067.886	506.5849	279	2649
-----+-----					
tpa_tech	158	94.47975	12.17906	78.3	122.8
tpa_serv	158	1093.972	81.1661	974.9	1261.2
tpa_avewee~n	158	811.5703	61.61877	711.83	961.15
tpa_avehou~n	158	23.42785	1.89221	20.28	27.61
tpa_avewee~r	158	34.65696	.4727433	33.1	37
-----+-----					
tpa_priv	158	1071.522	90.58331	935.3	1251.7
fl_nonfarm	158	7937.906	602.522	7060.4	9128.3
datec	158	19555.75	1392.655	17167	21946
date	159	643	46.04346	564	722
month	159	6.415094	3.486505	1	12
-----+-----					
m1	159	.0880503	.2842634	0	1
m2	159	.0880503	.2842634	0	1
m3	159	.0880503	.2842634	0	1
m4	159	.081761	.274866	0	1

m5	159	.081761	.274866	0	1
-----+-----					
m6	159	.081761	.274866	0	1
m7	159	.081761	.274866	0	1
m8	159	.081761	.274866	0	1
m9	159	.081761	.274866	0	1
m10	159	.081761	.274866	0	1
-----+-----					
m11	159	.081761	.274866	0	1
m12	159	.081761	.274866	0	1
lnfl_nonfarm	158	8.976575	.0752557	8.862257	9.119135
lntpa_priv	158	6.973327	.083798	6.840868	7.132258
lntpa_avew~r	158	3.545407	.0135923	3.499533	3.610918
-----+-----					
lntpa_aveh~n	158	3.150826	.0781112	3.009635	3.318178
lntpa_avew~n	158	6.696233	.0734145	6.567839	6.868131
lntpa_serv	158	6.99488	.0732869	6.882335	7.139819
lntpa_tech	158	4.540386	.1259129	4.360548	4.810557
lntpa_bp	158	6.853074	.5082406	5.631212	7.881938
-----+-----					
lntpa_nonf~m	158	7.108495	.074366	6.99375	7.254531
lntpa_unemp	158	1.779296	.4254402	.9555115	2.459589
tpa_totalw~n	158	874546.3	139803.7	711021.4	1203072
lntpa_tota~n	158	13.66956	.1523199	13.47446	14.00039

```
.
. * Variables description
. describe *
```

	storage	display	value	
variable name	type	format	label	variable label
-----				
-----				
--				
datestring	str10	%10s		fed string date

tpa_unemp	double	%10.0g	Unemployment
daten	float	%td	numeric (daily) date
tpa_nonfarm	double	%10.0g	Total Nonfarm Employees
tpa_bp	double	%10.0g	Private Housing Authorized
tpa_tech	double	%10.0g	Total Technical Employees
tpa_serv	double	%10.0g	Service-Providing Employees
tpa_aveweek_e~n	double	%10.0g	Average Weekly Earnings
tpa_avehour_e~n	double	%10.0g	Average Hourly Earnings
tpa_aveweek_h~r	double	%10.0g	Average Weekly Hours
tpa_priv	double	%10.0g	Total Private Employees
fl_nonfarm	double	%10.0g	All Employees: Total Nonfarm in Florida
datec	float	%9.0g	
date	float	%tm	
month	float	%9.0g	
m1	float	%9.0g	
m2	float	%9.0g	
m3	float	%9.0g	
m4	float	%9.0g	
m5	float	%9.0g	
m6	float	%9.0g	
m7	float	%9.0g	
m8	float	%9.0g	
m9	float	%9.0g	
m10	float	%9.0g	
m11	float	%9.0g	
m12	float	%9.0g	
lnfl_nonfarm	float	%9.0g	
lntpa_priv	float	%9.0g	
lntpa_aveweek~r	float	%9.0g	
lntpa_avehour~n	float	%9.0g	
lntpa_aveweek~n	float	%9.0g	
lntpa_serv	float	%9.0g	
lntpa_tech	float	%9.0g	
lntpa_bp	float	%9.0g	

```

lntpa_nonfarm    float    %9.0g
lntpa_unemp      float    %9.0g
tpa_totalweek~n float    %9.0g          Total Weekly Earnings (thousands)
lntpa_totalwe~n float    %9.0g          Log of Total Weekly Earnings

```

```

.
. * Tslne for predictors
. twoway (tsline tpa_aveweek_earn if tin(2007m1,2020m2) , ///
>         lcolor(gs6)) ///
>         (tsline tpa_unemp, yaxis(2)), ///
>         scheme(slmono) ///
>         title("Time Series Plot of" ///
>               "Unemployment and Average Weekly Earnings") legend(on) xtitle("")
saving(var1, replace)
(file var1.gph saved)

.
. twoway (tsline tpa_aveweek_earn if tin(2007m1,2020m2) , ///
>         lcolor(gs6)) ///
>         (tsline tpa_tech, yaxis(2)), ///
>         scheme(slmono) ///
>         title("Time Series Plot of" ///
>               "Total Technical Employees and" ///
>               "Average Weekly Earnings") legend(on) xtitle("") saving(var2, replace)
(file var2.gph saved)

.
. twoway (tsline tpa_aveweek_earn if tin(2007m1,2020m2) , ///
>         lcolor(gs6)) ///
>         (tsline tpa_priv, yaxis(2)), ///
>         scheme(slmono) ///
>         title("Time Series Plot of" ///
>               "Total Private Employees and" ///
>               "Average Weekly Earnings") legend(on) xtitle("") saving(var3, replace)

```

```
(file var3.gph saved)
```

```
.  
. twoway (tsline tpa_aveweek_earn if tin(2007m1,2020m2) , ///  
>         lcolor(gs6)) ///  
>         (tsline tpa_bp, yaxis(2)), ///  
>         scheme(slmono) legend(off) ///  
>         title("Time Series Plot of" ///  
>         "New Private Housing Authorized" ///  
>         "and Average Weekly Earnings") legend(on) xtitle("") saving(var4, replace)  
(file var4.gph saved)
```

```
.  
. twoway (tsline lntpa_aveweek_hour) if tin(2007m1,)   
  
. twoway (tsline lntpa_aveweek_earn) if tin(2007m1,)   
  
. twoway (tsline tpa_avehour_earn) if tin(2007m1,)   
  
. twoway (tsline tpa_totalweek_earn) if tin(2007m1,)   
  
. twoway (tsline tpa_aveweek_earn) if tin(2007m1,)   
  
. twoway (tsline lntpa_priv) if tin(1990m1,)   
  
. *Extra explanatory variables  
. twoway (tsline lntpa_tech) if tin(1997m1,)   
  
. twoway (tsline lntpa_unemp) if tin(1990m1,)   
  
. twoway (tsline lntpa_bp) if tin(1990m1,)   
  
. twoway (tsline lntpa_serv) if tin(1990m1,)
```



```

. twoway (tsline lntpa_nonfarm) if tin(1990m1,)

. twoway (tsline fl_nonfarm) if tin(1990m1,)

.

. graph combine var1.gph var2.gph var3.gph var4.gph , ///
>         saving(vars, replace)
(file vars.gph saved)

.

. *Predicting lntpa_aveweek_earn
. set seed 22045

. reg d.lntpa_aveweek_earn d.l(1/12,24,36)lntpa_aveweek_earn d.l(1,2,12)tpa_unemp
d.l(1,2,12)lntpa_tech d.l(1,2,12)lntpa_totalweek_earn d.l(1,2,12)lntpa_priv m2 m3 m4
m5 m6 m
> 7 m8 m9 m10 m11 m12

```

```

note: LD.lntpa_aveweek_earn omitted because of collinearity
note: L2D.lntpa_aveweek_earn omitted because of collinearity
note: L12D.lntpa_aveweek_earn omitted because of collinearity

```

Source	SS	df	MS	Number of obs	=	121
-----+-----				F(34, 86)	=	3.14
Model	.015362675	34	.000451843	Prob > F	=	0.0000
Residual	.012361179	86	.000143735	R-squared	=	0.5541
-----+-----				Adj R-squared	=	0.3779
Total	.027723854	120	.000231032	Root MSE	=	.01199

  

D.lntpa_aveweek_earn	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
-----+-----					
lntpa_aveweek_earn					
LD.	0	(omitted)			
L2D.	0	(omitted)			
L3D.	.0304647	.1199382	0.25	0.800	-.2079645 .2688939

L4D.		.1842896	.1174714	1.57	0.120	-.0492357	.4178149
L5D.		.1381159	.1170735	1.18	0.241	-.0946185	.3708502
L6D.		.1042755	.1180795	0.88	0.380	-.1304588	.3390097
L7D.		-.1576855	.1171299	-1.35	0.182	-.3905321	.075161
L8D.		-.0295755	.1198145	-0.25	0.806	-.2677589	.2086079
L9D.		.1857117	.1164842	1.59	0.115	-.0458511	.4172745
L10D.		.2031133	.1201553	1.69	0.095	-.0357476	.4419741
L11D.		.1173748	.1099112	1.07	0.289	-.1011216	.3358711
L12D.		0	(omitted)				
L24D.		-.0129326	.0773109	-0.17	0.868	-.1666215	.1407563
L36D.		-.1778961	.0609889	-2.92	0.005	-.2991381	-.0566542
tpa_unemp							
LD.		.0028363	.0088597	0.32	0.750	-.0147762	.0204487
L2D.		.0011563	.0084443	0.14	0.891	-.0156305	.0179431
L12D.		-.0008647	.0072238	-0.12	0.905	-.0152251	.0134956
lntpa_tech							
LD.		.17907	.2117927	0.85	0.400	-.2419599	.6000999
L2D.		.0348572	.2480718	0.14	0.889	-.4582933	.5280077
L12D.		.2132602	.2214886	0.96	0.338	-.2270445	.6535649
lntpa_totalweek_earn							
LD.		-.5547084	.1050974	-5.28	0.000	-.7636351	-.3457816
L2D.		-.2891699	.1189541	-2.43	0.017	-.5256429	-.0526969
L12D.		.1072992	.0930698	1.15	0.252	-.0777174	.2923158
lntpa_priv							
LD.		1.101417	.4403786	2.50	0.014	.2259736	1.976861
L2D.		.0256666	.472074	0.05	0.957	-.9127855	.9641188
L12D.		-.2225531	.3986958	-0.56	0.578	-1.015134	.5700278
m2		.0128593	.0144844	0.89	0.377	-.0159348	.0416533
m3		-.0104234	.0158916	-0.66	0.514	-.0420149	.0211681

m4		.0024135	.0098232	0.25	0.807	-.0171143	.0219413
m5		-.0027636	.0099085	-0.28	0.781	-.0224611	.0169339
m6		-.0034233	.0089912	-0.38	0.704	-.0212972	.0144506
m7		-.0026777	.009972	-0.27	0.789	-.0225012	.0171459
m8		-.0008291	.0124266	-0.07	0.947	-.0255325	.0238742
m9		-.0032652	.0112915	-0.29	0.773	-.025712	.0191815
m10		.0065901	.0111557	0.59	0.556	-.0155868	.028767
m11		-.0059814	.0114532	-0.52	0.603	-.0287495	.0167868
m12		-.000094	.0094205	-0.01	0.992	-.0188213	.0186333
_cons		.0010918	.0093036	0.12	0.907	-.0174031	.0195868

```
. predict res1 if e(sample)==1, residual
```

```
(38 missing values generated)
```

```
. pac res1
```

```
. bgodfrey, lag(1/24)
```

```
Breusch-Godfrey LM test for autocorrelation
```

lags (p)		chi2	df	Prob > chi2
1		0.004	1	0.9510
2		0.561	2	0.7552
3		0.624	3	0.8910
4		3.059	4	0.5479
5		6.437	5	0.2660
6		6.479	6	0.3717
7		11.587	7	0.1150
8		12.963	8	0.1131
9		13.357	9	0.1471
10		13.367	10	0.2039
11		13.696	11	0.2502

12		18.027	12	0.1149
13		18.193	13	0.1503
14		22.965	14	0.0608
15		32.418	15	0.0056
16		32.840	16	0.0078
17		32.858	17	0.0117
18		32.862	18	0.0173
19		34.667	19	0.0153
20		36.278	20	0.0143
21		38.894	21	0.0101
22		39.888	22	0.0111
23		39.965	23	0.0155
24		42.518	24	0.0113

-----

H0: no serial correlation

. drop res1

.

end of do-file

.

.

. reg d.lntpa\_aveweek\_earn d.l(1/12,24,36)lntpa\_aveweek\_earn d.l(1,2,4,12)tpa\_unemp  
d.l(1,2,4,12)lntpa\_priv d.l(1,2,

> 4,12,24)lntpa\_totalweek\_earn m2 m3 m4 m5 m6 m7 m8 m9 m10 m11 m12

note: LD.lntpa\_aveweek\_earn omitted because of collinearity

note: L4D.lntpa\_aveweek\_earn omitted because of collinearity

note: L12D.lntpa\_aveweek\_earn omitted because of collinearity

Source		SS	df	MS	Number of obs	=	121
-----+-----					F(35, 85)	=	3.07
Model		.015482452	35	.000442356	Prob > F	=	0.0000
Residual		.012241402	85	.000144016	R-squared	=	0.5585

```

-----+-----
Total | .027723854      120 .000231032  Adj R-squared = 0.3766
Root MSE = .012

```

```

-----+-----
D.lntpa_aveweek_earn |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-----+-----

```

```
lntpa_aveweek_earn |
```

```

      LD. |           0 (omitted)
      L2D. |  -3822.527   3073.581   -1.24   0.217   -9933.63    2288.576
      L3D. |   .0286171   .1219201    0.23   0.815   - .2137926    .2710269
      L4D. |           0 (omitted)
      L5D. |   .1308323   .1180536    1.11   0.271   - .1038899    .3655545
      L6D. |   .092135    .1194974    0.77   0.443   - .1454577    .3297278
      L7D. |  - .1702646   .1180824   -1.44   0.153   - .4050441    .0645149
      L8D. |  - .0112663   .1223594   -0.09   0.927   - .2545496    .232017
      L9D. |   .1705969   .1216567    1.40   0.164   - .0712891    .4124829
      L10D. |  .1794115   .1212751    1.48   0.143   - .0617159    .420539
      L11D. |  .0909062   .1106022    0.82   0.413   - .1290007    .3108131
      L12D. |           0 (omitted)
      L24D. |   .0018772   .3035055    0.01   0.995   - .6015731    .6053275
      L36D. |  - .2024084   .0599551   -3.38   0.001   - .3216152   - .0832015

```

```
|
tpa_unemp |
```

```

      LD. |   .0030264   .0086177    0.35   0.726   - .014108    .0201607
      L2D. |   .0026292   .0082579    0.32   0.751   - .0137898    .0190482
      L4D. |   .0073413   .0083409    0.88   0.381   - .0092426    .0239251
      L12D. |  - .0023582   .007352   -0.32   0.749   - .0169759    .0122595

```

```
|
lntpa_priv |
```

```

      LD. |   1.129624   .4217403    2.68   0.009    .291091    1.968156
      L2D. |  -3822.589   3073.598   -1.24   0.217   -9933.726    2288.548
      L4D. |  - .0281388   .4021503   -0.07   0.944   - .8277214    .7714437
      L12D. |   .0348604   .3605508    0.10   0.923   - .6820111    .7517319

```

```

lntpa_totalweek_earn |
      LD. |   -.5200016   .1080515   -4.81   0.000   -.7348369   -.3051663
      L2D. |    3822.247   3073.588    1.24   0.217   -2288.87   9933.364
      L4D. |    .1720336   .1208259    1.42   0.158   -.0682007    .412268
      L12D. |    .0992441   .0922533    1.08   0.285   -.0841802    .2826685
      L24D. |   -.0332975   .2919577   -0.11   0.909   -.6137877    .5471927
      |
      m2 |    .0048215   .0152583    0.32   0.753   -.0255161    .0351591
      m3 |   -.0232974   .0154125   -1.51   0.134   -.0539415    .0073467
      m4 |   -.0065024   .0096521   -0.67   0.502   -.0256934    .0126887
      m5 |   -.013252   .0120687   -1.10   0.275   -.0372478    .0107439
      m6 |   -.0118165   .0092913   -1.27   0.207    -.03029    .0066571
      m7 |   -.0092355   .010267   -0.90   0.371   -.029649    .0111779
      m8 |   -.0091356   .0121012   -0.75   0.452   -.033196    .0149248
      m9 |   -.0155532   .0110617   -1.41   0.163   -.0375468    .0064405
      m10 |   -.0038079   .0129663   -0.29   0.770   -.0295883    .0219726
      m11 |   -.0127009   .0126783   -1.00   0.319   -.0379089    .012507
      m12 |   -.0066735   .010056   -0.66   0.509   -.0266676    .0133205
      _cons |    .0106957   .0097753    1.09   0.277   -.0087401    .0301316

```

```

-----

. predict res2 if e(sample)==1, residual
(38 missing values generated)

```

```

. pac res2

```

```

. bgodfrey, lag(1/24)

```

```

Breusch-Godfrey LM test for autocorrelation

```

```

-----
      lags (p) |             chi2             df             Prob > chi2
-----+-----
      1      |             0.001             1             0.9781
      2      |             0.435             2             0.8044

```

3		0.808	3	0.8476
4		3.237	4	0.5190
5		4.846	5	0.4349
6		4.903	6	0.5563
7		8.973	7	0.2546
8		10.653	8	0.2222
9		10.761	9	0.2924
10		10.999	10	0.3576
11		12.075	11	0.3580
12		17.617	12	0.1278
13		18.256	13	0.1481
14		20.944	14	0.1031
15		28.765	15	0.0172
16		28.796	16	0.0253
17		29.002	17	0.0345
18		29.014	18	0.0482
19		29.638	19	0.0566
20		30.662	20	0.0598
21		32.893	21	0.0474
22		36.231	22	0.0287
23		36.286	23	0.0386
24		40.112	24	0.0208

-----

H0: no serial correlation

. drop res2

.

. reg d.lntpa\_aveweek\_earn d.l(1/12,36)lntpa\_aveweek\_earn d.l(1,2,4,12)tpa\_unemp  
d.l(1,2,4,12)lntpa\_priv d.l(1,2,4,1

> 2)lntpa\_bp m2 m3 m4 m5 m6 m7 m8 m9 m10 m11 m12

Source		SS	df	MS	Number of obs	=	121
-----+-----					F(36, 84)	=	3.04

Model		.015684814	36	.000435689	Prob > F	=	0.0000
Residual		.01203904	84	.000143322	R-squared	=	0.5658
-----+-----					Adj R-squared	=	0.3796
Total		.027723854	120	.000231032	Root MSE	=	.01197

  

-----							
D.							
lntpa_aveweek_earn		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
-----+-----							
lntpa_aveweek_earn							
LD.		-.5344379	.108413	-4.93	0.000	-.750029	-.3188468
L2D.		-.2691014	.1194584	-2.25	0.027	-.5066576	-.0315452
L3D.		.0383168	.1208832	0.32	0.752	-.2020727	.2787063
L4D.		.1866233	.1173411	1.59	0.115	-.0467223	.419969
L5D.		.1541103	.1179811	1.31	0.195	-.0805081	.3887288
L6D.		.0926495	.1186267	0.78	0.437	-.1432527	.3285517
L7D.		-.1551472	.1174083	-1.32	0.190	-.3886265	.0783321
L8D.		-.0182358	.1219758	-0.15	0.882	-.2607981	.2243264
L9D.		.1635526	.1162258	1.41	0.163	-.0675753	.3946804
L10D.		.1854417	.1191889	1.56	0.124	-.0515785	.4224619
L11D.		.0835307	.1110421	0.75	0.454	-.1372888	.3043501
L12D.		.0673721	.0943705	0.71	0.477	-.1202939	.2550381
L36D.		-.2065345	.0612859	-3.37	0.001	-.3284082	-.0846607
tpa_unemp							
LD.		.0013203	.0086492	0.15	0.879	-.0158796	.0185201
L2D.		.0014083	.0088906	0.16	0.875	-.0162716	.0190882
L4D.		.0071657	.0085178	0.84	0.403	-.0097729	.0241043
L12D.		-.0001598	.0073642	-0.02	0.983	-.0148042	.0144847
lntpa_priv							
LD.		.4739289	.4006645	1.18	0.240	-.3228364	1.270694
L2D.		-.2945314	.4135868	-0.71	0.478	-1.116994	.5279313
L4D.		.0252304	.4036486	0.06	0.950	-.7774691	.8279298



L12D.		.1608549	.332234	0.48	0.630	-.4998289	.8215386
lntpa_bp							
LD.		.0032915	.0039313	0.84	0.405	-.0045263	.0111093
L2D.		.0044823	.0040477	1.11	0.271	-.0035669	.0125315
L4D.		.0034764	.0030434	1.14	0.257	-.0025757	.0095285
L12D.		-.0008411	.0029896	-0.28	0.779	-.0067862	.0051041
m2		.0042965	.0146681	0.29	0.770	-.0248727	.0334657
m3		-.0206806	.0152516	-1.36	0.179	-.0510102	.0096489
m4		-.005197	.0092316	-0.56	0.575	-.0235551	.0131611
m5		-.0169536	.0122038	-1.39	0.168	-.0412222	.007315
m6		-.0104572	.0089352	-1.17	0.245	-.0282259	.0073115
m7		-.0081368	.0101783	-0.80	0.426	-.0283776	.012104
m8		-.0073501	.0119906	-0.61	0.542	-.0311948	.0164946
m9		-.0122251	.0104474	-1.17	0.245	-.033001	.0085507
m10		-.0055866	.0123399	-0.45	0.652	-.0301259	.0189526
m11		-.0111851	.0121424	-0.92	0.360	-.0353316	.0129613
m12		-.0044262	.0093379	-0.47	0.637	-.0229956	.0141432
_cons		.0100392	.0092064	1.09	0.279	-.0082687	.0283472

```

. predict res3 if e(sample)==1, residual
(38 missing values generated)

```

```

. pac res3

```

```

. bgodfrey, lag(1/24)

```

Breusch-Godfrey LM test for autocorrelation

lags (p)		chi2	df	Prob > chi2
1		0.437	1	0.5085

2		0.622	2	0.7327
3		0.700	3	0.8732
4		1.672	4	0.7958
5		5.382	5	0.3711
6		5.391	6	0.4948
7		9.179	7	0.2401
8		10.474	8	0.2333
9		10.482	9	0.3129
10		10.483	10	0.3992
11		10.614	11	0.4761
12		16.191	12	0.1826
13		16.586	13	0.2189
14		20.100	14	0.1270
15		28.162	15	0.0206
16		28.296	16	0.0291
17		28.345	17	0.0411
18		29.175	18	0.0463
19		31.632	19	0.0344
20		34.976	20	0.0202
21		37.958	21	0.0130
22		39.463	22	0.0125
23		39.574	23	0.0171
24		45.685	24	0.0048

-----

H0: no serial correlation

. drop res3

.

. reg d.lntpa\_aveweek\_earn d.l(1/12,36)lntpa\_aveweek\_earn d.l(1,2,4,12)tpa\_unemp  
d.l(1,2,4,12)lntpa\_priv d.l(1,2,4,1

> 2)lntpa\_bp m2 m3 m4 m5 m6 m7 m8 m9 m10 m11 m12

Source		SS	df	MS	Number of obs	=	121
--------	--	----	----	----	---------------	---	-----

```

-----+-----
Model | .015684814      36 .000435689  Prob > F      =    0.0000
Residual | .01203904      84 .000143322  R-squared     =    0.5658
-----+-----
Adj R-squared =    0.3796
Total | .027723854     120 .000231032  Root MSE     =    .01197

```

```

-----
D. |
lntpa_aveweek_earn |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-----+-----
lntpa_aveweek_earn |
    LD. |  -.5344379   .108413   -4.93   0.000   - .750029   -.3188468
    L2D. |  -.2691014   .1194584   -2.25   0.027   - .5066576   -.0315452
    L3D. |   .0383168   .1208832    0.32   0.752   - .2020727   .2787063
    L4D. |   .1866233   .1173411    1.59   0.115   - .0467223   .419969
    L5D. |   .1541103   .1179811    1.31   0.195   - .0805081   .3887288
    L6D. |   .0926495   .1186267    0.78   0.437   - .1432527   .3285517
    L7D. |  -.1551472   .1174083   -1.32   0.190   - .3886265   .0783321
    L8D. |  -.0182358   .1219758   -0.15   0.882   - .2607981   .2243264
    L9D. |   .1635526   .1162258    1.41   0.163   - .0675753   .3946804
    L10D. |   .1854417   .1191889    1.56   0.124   - .0515785   .4224619
    L11D. |   .0835307   .1110421    0.75   0.454   - .1372888   .3043501
    L12D. |   .0673721   .0943705    0.71   0.477   - .1202939   .2550381
    L36D. |  -.2065345   .0612859   -3.37   0.001   - .3284082   -.0846607
    |
    tpa_unemp |
    LD. |   .0013203   .0086492    0.15   0.879   - .0158796   .0185201
    L2D. |   .0014083   .0088906    0.16   0.875   - .0162716   .0190882
    L4D. |   .0071657   .0085178    0.84   0.403   - .0097729   .0241043
    L12D. |  -.0001598   .0073642   -0.02   0.983   - .0148042   .0144847
    |
    lntpa_priv |
    LD. |   .4739289   .4006645    1.18   0.240   - .3228364   1.270694
    L2D. |  -.2945314   .4135868   -0.71   0.478   -1.116994   .5279313

```

L4D.		.0252304	.4036486	0.06	0.950	-.7774691	.8279298
L12D.		.1608549	.332234	0.48	0.630	-.4998289	.8215386
lntpa_bp							
LD.		.0032915	.0039313	0.84	0.405	-.0045263	.0111093
L2D.		.0044823	.0040477	1.11	0.271	-.0035669	.0125315
L4D.		.0034764	.0030434	1.14	0.257	-.0025757	.0095285
L12D.		-.0008411	.0029896	-0.28	0.779	-.0067862	.0051041
m2		.0042965	.0146681	0.29	0.770	-.0248727	.0334657
m3		-.0206806	.0152516	-1.36	0.179	-.0510102	.0096489
m4		-.005197	.0092316	-0.56	0.575	-.0235551	.0131611
m5		-.0169536	.0122038	-1.39	0.168	-.0412222	.007315
m6		-.0104572	.0089352	-1.17	0.245	-.0282259	.0073115
m7		-.0081368	.0101783	-0.80	0.426	-.0283776	.012104
m8		-.0073501	.0119906	-0.61	0.542	-.0311948	.0164946
m9		-.0122251	.0104474	-1.17	0.245	-.033001	.0085507
m10		-.0055866	.0123399	-0.45	0.652	-.0301259	.0189526
m11		-.0111851	.0121424	-0.92	0.360	-.0353316	.0129613
m12		-.0044262	.0093379	-0.47	0.637	-.0229956	.0141432
_cons		.0100392	.0092064	1.09	0.279	-.0082687	.0283472

-----

```
. predict res3 if e(sample)==1, residual
```

```
(38 missing values generated)
```

```
. pac res3
```

```
. bgodfrey, lag(1/24)
```

```
Breusch-Godfrey LM test for autocorrelation
```

```
-----
lags(p) |          chi2          df          Prob > chi2
-----+-----
```

1		0.437	1	0.5085
2		0.622	2	0.7327
3		0.700	3	0.8732
4		1.672	4	0.7958
5		5.382	5	0.3711
6		5.391	6	0.4948
7		9.179	7	0.2401
8		10.474	8	0.2333
9		10.482	9	0.3129
10		10.483	10	0.3992
11		10.614	11	0.4761
12		16.191	12	0.1826
13		16.586	13	0.2189
14		20.100	14	0.1270
15		28.162	15	0.0206
16		28.296	16	0.0291
17		28.345	17	0.0411
18		29.175	18	0.0463
19		31.632	19	0.0344
20		34.976	20	0.0202
21		37.958	21	0.0130
22		39.463	22	0.0125
23		39.574	23	0.0171
24		45.685	24	0.0048

---

H0: no serial correlation

```
. drop res3
```

```
.
```

```
. *Generating dummy variables
```

```
.
```

```
. gen dlntpa_avehour_earn = d.lntpa_totalweek_earn
```

```
(2 missing values generated)
```

```
. gen l1dlntpa_avehour_earn = l1d.lntpa_totalweek_earn  
(2 missing values generated)
```

```
. gen l2dlntpa_avehour_earn = l2d.lntpa_totalweek_earn  
(3 missing values generated)
```

```
. gen l3dlntpa_avehour_earn = l3d.lntpa_totalweek_earn  
(4 missing values generated)
```

```
. gen l4dlntpa_avehour_earn = l4d.lntpa_totalweek_earn  
(5 missing values generated)
```

```
. gen l5dlntpa_avehour_earn = l5d.lntpa_totalweek_earn  
(6 missing values generated)
```

```
. gen l6dlntpa_avehour_earn = l6d.lntpa_totalweek_earn  
(7 missing values generated)
```

```
. gen l7dlntpa_avehour_earn = l7d.lntpa_totalweek_earn  
(8 missing values generated)
```

```
. gen l8dlntpa_avehour_earn = l8d.lntpa_totalweek_earn  
(9 missing values generated)
```

```
. gen l9dlntpa_avehour_earn = l9d.lntpa_totalweek_earn  
(10 missing values generated)
```

```
. gen l10dlntpa_avehour_earn = l10d.lntpa_totalweek_earn  
(11 missing values generated)
```

```
. gen l11dlntpa_avehour_earn = l11d.lntpa_totalweek_earn  
(12 missing values generated)
```

```
. gen l12dlntpa_avehour_earn = l12d.lntpa_totalweek_earn  
(13 missing values generated)
```

```
. gen l24dlntpa_avehour_earn = l24d.lntpa_totalweek_earn  
(25 missing values generated)
```

```
. gen l36dlntpa_avehour_earn = l36d.lntpa_totalweek_earn  
(37 missing values generated)
```

```
.  
. gen l1dlntpa_totalweek_earn = l1d.lntpa_totalweek_earn  
(2 missing values generated)
```

```
. gen l2dlntpa_totalweek_earn = l2d.lntpa_totalweek_earn  
(3 missing values generated)
```

```
. gen l4dlntpa_totalweek_earn = l4d.lntpa_totalweek_earn  
(5 missing values generated)
```

```
. gen l12dlntpa_totalweek_earn = l12d.lntpa_totalweek_earn  
(13 missing values generated)
```

```
.  
. gen l1dlntpa_priv = l1d.lntpa_priv  
(2 missing values generated)
```

```
. gen l2dlntpa_priv = l2d.lntpa_priv  
(3 missing values generated)
```

```
. gen l4dlntpa_priv = l4d.lntpa_priv  
(5 missing values generated)
```

```
. gen l12dlntpa_priv = l12d.lntpa_priv  
(13 missing values generated)
```

```
.  
. gen l1dlntpa_unemp = l1d.lntpa_unemp  
(2 missing values generated)  
  
. gen l2dlntpa_unemp = l2d.lntpa_unemp  
(3 missing values generated)  
  
. gen l4dlntpa_unemp = l4d.lntpa_unemp  
(5 missing values generated)  
  
. gen l12dlntpa_unemp = l12d.lntpa_unemp  
(13 missing values generated)  
  
.   
. gen l1dlntpa_tech = l1d.lntpa_tech  
(2 missing values generated)  
  
. gen l2dlntpa_tech = l2d.lntpa_tech  
(3 missing values generated)  
  
. gen l4dlntpa_tech = l4d.lntpa_tech  
(5 missing values generated)  
  
. gen l12dlntpa_tech = l12d.lntpa_tech  
(13 missing values generated)  
  
.   
. gen l1dlntpa_bp = l1d.lntpa_bp  
(2 missing values generated)  
  
. gen l2dlntpa_bp = l2d.lntpa_bp  
(3 missing values generated)
```



```

. gen l4dlntpa_bp = l4d.lntpa_bp
(5 missing values generated)

. gen l12dlntpa_bp = l12d.lntpa_bp
(13 missing values generated)

.

. *GSREG

. gsreg dlntpa_avehour_earn l1dlntpa_avehour_earn l2dlntpa_avehour_earn
l3dlntpa_avehour_earn ///
> /*
>         l4dlntpa_avehour_earn l6dlntpa_avehour_earn   ///
>         l11dlntpa_avehour_earn l12dlntpa_avehour_earn l24dlntpa_avehour_earn ///
>         l1dlntpa_totalweek_earn ///
>         l12dlntpa_totalweek_earn l1dlntpa_priv l12dlntpa_priv ///
>         l1dlntpa_unemp l2dlntpa_unemp l12dlntpa_unemp l1dlntpa_tech l2dlntpa_tech
///
>         l12dlntpa_tech if tin(2007m1, 2020m3), ///
>         ncomb(1,7) aic outsample(24) fix(m2 m3 m4 m5 m6 m7 m8 m9 m10 m11 m12)
samesample ///
>         nindex( -0.3 aic -0.3 bic -0.4 rmse_out) results(gsreg_dlntpa_earn) replace
> */

file gsreg.dta already exists

r(602);

end of do-file

r(602);

. do "C:\Users\luizg\AppData\Local\Temp\STD3b4_000000.tmp"

. /*
>         l4dlntpa_avehour_earn l6dlntpa_avehour_earn   ///
>         l12dlntpa_avehour_earn l36dlntpa_avehour_earn ///
>         l1dlntpa_priv l2dlntpa_priv l4dlntpa_priv l12dlntpa_priv ///

```

```

>      l1dlntpa_unemp l2dlntpa_unemp l12dlntpa_unemp ///
>      l1dlntpa_bp l2dlntpa_bp l4dlntpa_bp l12dlntpa_bp if tin(2007m1, 2020m3), ///
>      ncomb(1,7) aic outsample(24) fix(m2 m3 m4 m5 m6 m7 m8 m9 m10 m11 m12)
samesample ///
>      nindex( -0.3 aic -0.3 bic -0.4 rmse_out) results(gsreg_dlntpa_earn2) replace
>      */
. *Best models
. *1 - M1
. reg d.lntpa_aveweek_earn l1d.lntpa_aveweek_earn l2d.lntpa_aveweek_earn
l6d.lntpa_aveweek_earn l1d.lntpa_priv l2d.l
> ntpa_unemp m2 m3 m4 m5 m6 m7 m8 m9 m10 m11 m12

```

Source		SS	df	MS	Number of obs	=	151
-----+-----					F(16, 134)	=	3.50
Model		.01556503	16	.000972814	Prob > F	=	0.0000
Residual		.037259678	134	.000278057	R-squared	=	0.2947
-----+-----					Adj R-squared	=	0.2104
Total		.052824709	150	.000352165	Root MSE	=	.01668

```

D.          |
lntpa_aveweek_earn |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-----+-----
lntpa_aveweek_earn |
      LD. |   -.5602859   .0812198    -6.90   0.000   -.7209245   -.3996473
      L2D. |   -.2524651   .0812317    -3.11   0.002   -.4131273   -.091803
      L6D. |   -.0520357   .0686509    -0.76   0.450   -.1878152   .0837438
      |
      lntpa_priv |
      LD. |    .2756167   .3384225     0.81   0.417   -.393724   .9449575
      |
      lntpa_unemp |
      L2D. |   -.030947    .039775    -0.78   0.438   -.109615   .047721
      |
      m2 |    .0100638   .0095071     1.06   0.292   -.0087396   .0288672

```

m3		.0026086	.0076287	0.34	0.733	-.0124796	.0176969
m4		.0034105	.0069105	0.49	0.622	-.0102573	.0170783
m5		.0006935	.0068758	0.10	0.920	-.0129057	.0142926
m6		-.0001922	.0070733	-0.03	0.978	-.0141819	.0137975
m7		.0039627	.006997	0.57	0.572	-.0098762	.0178016
m8		.0090767	.0073604	1.23	0.220	-.0054809	.0236342
m9		-.0011658	.0066371	-0.18	0.861	-.0142929	.0119612
m10		.0025224	.006947	0.36	0.717	-.0112175	.0162624
m11		.0048508	.00686	0.71	0.481	-.008717	.0184186
m12		.0034509	.0067425	0.51	0.610	-.0098846	.0167864
_cons		-.001395	.0048239	-0.29	0.773	-.0109358	.0081457

.

end of do-file

. do "C:\Users\luizg\AppData\Local\Temp\STD3b4\_000000.tmp"

. \*2 - M2

. reg d.lntpa\_aveweek\_earn l2d.lntpa\_aveweek\_earn l6d.lntpa\_aveweek\_earn  
l1d.lntpa\_totalweek\_earn l1d.lntpa\_priv l2d

> .lntpa\_unemp m2 m3 m4 m5 m6 m7 m8 m9 m10 m11 m12

Source		SS	df	MS	Number of obs	=	151
-----+-----					F(16, 134)	=	3.50
Model		.015564999	16	.000972812	Prob > F	=	0.0000
Residual		.037259709	134	.000278058	R-squared	=	0.2947
-----+-----					Adj R-squared	=	0.2104
Total		.052824709	150	.000352165	Root MSE	=	.01668

D.lntpa_aveweek_earn		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
-----+-----						
lntpa_aveweek_earn						

L2D.		-.2524643	.0812317	-3.11	0.002	-.4131265	-.0918021
L6D.		-.0520345	.0686509	-0.76	0.450	-.1878141	.0837451
lntpa_totalweek_earn							
LD.		-.5602852	.0812198	-6.90	0.000	-.7209238	-.3996466
lntpa_priv							
LD.		.8359034	.3521736	2.37	0.019	.1393654	1.532441
lntpa_unemp							
L2D.		-.0309467	.039775	-0.78	0.438	-.1096148	.0477214
m2		.0100637	.0095071	1.06	0.292	-.0087397	.0288672
m3		.0026085	.0076287	0.34	0.733	-.0124798	.0176968
m4		.0034103	.0069105	0.49	0.622	-.0102575	.0170781
m5		.0006935	.0068758	0.10	0.920	-.0129056	.0142926
m6		-.0001924	.0070733	-0.03	0.978	-.0141821	.0137973
m7		.0039627	.006997	0.57	0.572	-.0098762	.0178016
m8		.0090766	.0073604	1.23	0.220	-.0054809	.0236341
m9		-.001166	.0066371	-0.18	0.861	-.014293	.011961
m10		.0025224	.006947	0.36	0.717	-.0112176	.0162624
m11		.0048508	.00686	0.71	0.481	-.0087171	.0184186
m12		.0034507	.0067425	0.51	0.610	-.0098848	.0167861
_cons		-.001395	.0048239	-0.29	0.773	-.0109357	.0081458

```

-----

. *4 - M3

. reg d.lntpa_aveweek_earn l1d.lntpa_aveweek_earn l2d.lntpa_aveweek_earn
l6d.lntpa_aveweek_earn l1d.lntpa_priv m2 m3

> m4 m5 m6 m7 m8 m9 m10 m11 m12

```

Source		SS	df	MS	Number of obs	=	151
-----+-----					F(15, 135)	=	3.70
Model		.015396704	15	.001026447	Prob > F	=	0.0000

Residual		.037428004	135	.000277244	R-squared	=	0.2915
-----+-----					Adj R-squared	=	0.2127
Total		.052824709	150	.000352165	Root MSE	=	.01665

  

-----							
D.							
lntpa_aveweek_earn		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
-----+-----							
lntpa_aveweek_earn							
LD.		-.5645896	.0809127	-6.98	0.000	-.72461	-.4045692
L2D.		-.2496796	.0810341	-3.08	0.002	-.4099401	-.0894191
L6D.		-.0532953	.0685314	-0.78	0.438	-.1888294	.0822387
lntpa_priv							
LD.		.3784171	.3111092	1.22	0.226	-.2368611	.9936953
m2		.0123607	.009024	1.37	0.173	-.0054859	.0302072
m3		-.0000696	.006798	-0.01	0.992	-.013514	.0133747
m4		.0046503	.0067144	0.69	0.490	-.0086288	.0179294
m5		.0017502	.0067304	0.26	0.795	-.0115605	.015061
m6		.0013447	.0067819	0.20	0.843	-.0120679	.0147572
m7		.0034775	.006959	0.50	0.618	-.0102853	.0172402
m8		.0076368	.0071135	1.07	0.285	-.0064315	.0217051
m9		-.0018349	.0065715	-0.28	0.781	-.0148314	.0111616
m10		.0032856	.0068674	0.48	0.633	-.010296	.0168671
m11		.00594	.0067058	0.89	0.377	-.007322	.019202
m12		.0031561	.006722	0.47	0.639	-.0101379	.0164501
_cons		-.0016074	.0048091	-0.33	0.739	-.0111183	.0079034

  

-----							
-------	--	--	--	--	--	--	--

```

. *5 - M4

. reg d.lntpa_aveweek_earn l2d.lntpa_aveweek_earn l6d.lntpa_aveweek_earn
l1d.lntpa_priv l1d.lntpa_totalweek_earn m2

> m3 m4 m5 m6 m7 m8 m9 m10 m11 m12

```

Source	SS	df	MS	Number of obs	=	151
				F(15, 135)	=	3.70
Model	.015396677	15	.001026445	Prob > F	=	0.0000
Residual	.037428032	135	.000277245	R-squared	=	0.2915
				Adj R-squared	=	0.2127
Total	.052824709	150	.000352165	Root MSE	=	.01665
D.lntpa_aveweek_earn	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
lntpa_aveweek_earn						
L2D.	-.2496789	.0810341	-3.08	0.002	-.4099393	-.0894184
L6D.	-.0532941	.0685314	-0.78	0.438	-.1888282	.08224
lntpa_priv						
LD.	.9430064	.3236814	2.91	0.004	.3028643	1.583149
lntpa_totalweek_earn						
LD.	-.5645889	.0809127	-6.98	0.000	-.7246093	-.4045685
m2	.0123606	.009024	1.37	0.173	-.005486	.0302072
m3	-.0000697	.006798	-0.01	0.992	-.0135141	.0133746
m4	.0046501	.0067144	0.69	0.490	-.008629	.0179292
m5	.0017503	.0067304	0.26	0.795	-.0115605	.015061
m6	.0013445	.0067819	0.20	0.843	-.012068	.0147571
m7	.0034774	.006959	0.50	0.618	-.0102853	.0172401
m8	.0076367	.0071135	1.07	0.285	-.0064316	.0217051
m9	-.0018351	.0065715	-0.28	0.780	-.0148315	.0111614
m10	.0032855	.0068674	0.48	0.633	-.010296	.016867
m11	.0059399	.0067058	0.89	0.377	-.0073221	.0192019
m12	.0031559	.006722	0.47	0.639	-.0101382	.0164499
_cons	-.0016074	.0048091	-0.33	0.739	-.0111183	.0079035

```
. *17 - M5
```

```
. reg d.lntpa_aveweek_earn l1d.lntpa_aveweek_earn l2d.lntpa_aveweek_earn  
l3d.lntpa_aveweek_earn l6d.lntpa_aveweek_ea
```

```
> rn l1d.lntpa_priv l2d.lntpa_unemp m2 m3 m4 m5 m6 m7 m8 m9 m10 m11 m12
```

Source		SS	df	MS	Number of obs	=	151
-----+-----					F(17, 133)	=	3.27
Model		.015584529	17	.000916737	Prob > F	=	0.0001
Residual		.03724018	133	.000280001	R-squared	=	0.2950
-----+-----					Adj R-squared	=	0.2049
Total		.052824709	150	.000352165	Root MSE	=	.01673

```
-----
```

D.							
lntpa_aveweek_earn		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
-----+-----							
lntpa_aveweek_earn							
LD.		-.5665797	.0849211	-6.67	0.000	-.7345504	-.3986089
L2D.		-.2651469	.0946269	-2.80	0.006	-.4523153	-.0779786
L3D.		-.0222482	.0843092	-0.26	0.792	-.1890085	.1445121
L6D.		-.0500236	.0693111	-0.72	0.472	-.1871183	.0870712
lntpa_priv							
LD.		.2771971	.3396563	0.82	0.416	-.3946299	.9490241
lntpa_unemp							
L2D.		-.0310642	.0399163	-0.78	0.438	-.110017	.0478887
m2		.0101169	.0095424	1.06	0.291	-.0087577	.0289914
m3		.0024732	.0076725	0.32	0.748	-.0127028	.0176492
m4		.0032797	.0069523	0.47	0.638	-.0104717	.0170311
m5		.0006747	.0069002	0.10	0.922	-.0129735	.014323
m6		-.0002858	.0071068	-0.04	0.968	-.0143428	.0137711

m7		.0039333	.0070223	0.56	0.576	-.0099565	.0178232
m8		.0088897	.0074199	1.20	0.233	-.0057867	.0235661
m9		-.0012038	.0066618	-0.18	0.857	-.0143806	.011973
m10		.0025031	.0069716	0.36	0.720	-.0112865	.0162927
m11		.0047119	.006904	0.68	0.496	-.008944	.0183678
m12		.0033154	.0067855	0.49	0.626	-.010106	.0167368
_cons		-.0012802	.0048602	-0.26	0.793	-.0108935	.008333

. \*Good BIC and AIC

. \*24 - M6

. reg d.lntpa\_aveweek\_earn l1d.lntpa\_aveweek\_earn l2d.lntpa\_aveweek\_earn  
l6d.lntpa\_aveweek\_earn l1d.lntpa\_priv l2d.l

> ntpa\_unemp l2d.lntpa\_tech l12.lntpa\_tech m2 m3 m4 m5 m6 m7 m8 m9 m10 m11 m12

Source		SS	df	MS	Number of obs	=	146
-----+-----					F(18, 127)	=	3.27
Model		.015952448	18	.000886247	Prob > F	=	0.0000
Residual		.034375413	127	.000270673	R-squared	=	0.3170
-----+-----					Adj R-squared	=	0.2202
Total		.05032786	145	.000347089	Root MSE	=	.01645

D. |

lntpa_aveweek_earn		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
-----+-----						
lntpa_aveweek_earn						
LD.		-.5862536	.0855283	-6.85	0.000	-.7554987 -.4170084
L2D.		-.3094983	.0846788	-3.65	0.000	-.4770623 -.1419343
L6D.		-.0278427	.0728797	-0.38	0.703	-.1720585 .1163731
lntpa_priv						
LD.		.0820913	.3497003	0.23	0.815	-.6099024 .774085



```

lntpa_unemp |
      L2D. |  -.0222141   .0405925   -0.55   0.585   - .1025393   .058111
      |
lntpa_tech |
      L2D. |   .1277369   .1886001    0.68   0.499   - .2454687   .5009424
      L12. |   .0197463   .0129382    1.53   0.129   - .0058562   .0453487
      |
      m2 |   .0059993   .0096363    0.62   0.535   - .0130692   .0250678
      m3 |   .0040264   .0078618    0.51   0.609   - .0115307   .0195834
      m4 |   .0043041   .0068565    0.63   0.531   - .0092636   .0178718
      m5 |   .0018064   .0070899    0.25   0.799   - .0122232   .015836
      m6 |   .0015007   .0074753    0.20   0.841   - .0132916   .016293
      m7 |   .0053085   .0080083    0.66   0.509   - .0105384   .0211555
      m8 |   .0078572   .0075198    1.04   0.298   - .0070231   .0227374
      m9 |  -.0002999   .0068178   -0.04   0.965   - .0137912   .0131913
      m10 |   .0048743   .0071015    0.69   0.494   - .0091783   .0189268
      m11 |   .008899    .0078026    1.14   0.256   - .0065409   .024339
      m12 |   .0055905   .0068374    0.82   0.415   - .0079395   .0191206
      _cons | -.0911153   .0582764   -1.56   0.120   - .2064338   .0242033

```

```

. *27 - M7

```

```

. reg d.lntpa_aveweek_earn l1.lntpa_totalweek_earn l2d.lntpa_aveweek_earn
l6d.lntpa_aveweek_earn l1d.lntpa_priv l2d.

```

```

> lntpa_tech l12.lntpa_tech m2 m3 m4 m5 m6 m7 m8 m9 m10 m11 m12

```

```

      Source |          SS          df           MS      Number of obs      =          146
-----+-----
      Model |   .008839128           17   .000519949      F(17, 128)      =          1.60
      Residual |   .041488732          128   .000324131      Prob > F      =          0.0721
-----+-----
                        Adj R-squared      =          0.1756
                        R-squared      =          0.0661
      Total |   .05032786          145   .000347089      Root MSE      =          .018

```

D.lntpa_aveweek_earn	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
-----+-----						
lntpa_totalweek_earn						
L1.	-.2092964	.0489535	-4.28	0.000	-.3061593	-.1124335
lntpa_aveweek_earn						
L2D.	-.0436981	.0821288	-0.53	0.596	-.2062039	.1188076
L6D.	.034192	.078971	0.43	0.666	-.1220655	.1904496
lntpa_priv						
LD.	.3118586	.367336	0.85	0.397	-.4149784	1.038696
lntpa_tech						
L2D.	.3604375	.2042183	1.76	0.080	-.0436432	.7645182
L12.	.2929844	.0677798	4.32	0.000	.1588704	.4270984
m2	.0080924	.0101964	0.79	0.429	-.012083	.0282677
m3	-.0003006	.0079198	-0.04	0.970	-.0159712	.0153701
m4	.0030648	.0073175	0.42	0.676	-.0114141	.0175436
m5	.0060718	.0075939	0.80	0.425	-.0089539	.0210976
m6	.0090323	.0078242	1.15	0.250	-.0064492	.0245139
m7	.013717	.0087051	1.58	0.118	-.0035076	.0309416
m8	.0096232	.0079766	1.21	0.230	-.0061599	.0254062
m9	.0028544	.0074518	0.38	0.702	-.0118902	.017599
m10	.0085141	.0076784	1.11	0.270	-.0066789	.0237072
m11	.010005	.0082943	1.21	0.230	-.0064067	.0264168
m12	-.0022551	.0075198	-0.30	0.765	-.0171343	.012624
_cons	1.530742	.3746965	4.09	0.000	.789341	2.272143
-----						

. \*Good RMSE out

. \*35 - M8

. reg d.lntpa\_aveweek\_earn l1d.lntpa\_aveweek\_earn l2d.lntpa\_aveweek\_earn  
l6d.lntpa\_aveweek\_earn l24d.lntpa\_aveweek\_e

```
> arn l1d.lntpa_priv l2d.lntpa_unemp m2 m3 m4 m5 m6 m7 m8 m9 m10 m11 m12
```

Source		SS		df		MS		Number of obs	=	133
-----+-----										
								F(17, 115)	=	4.92
Model		.015343767		17		.000902575		Prob > F	=	0.0000
Residual		.021115958		115		.000183617		R-squared	=	0.4208
-----+-----										
								Adj R-squared	=	0.3352
Total		.036459725		132		.00027621		Root MSE	=	.01355
-----										
D.										
lntpa_aveweek_earn		Coef.		Std. Err.		t		P> t		[95% Conf. Interval]
-----+-----										
lntpa_aveweek_earn										
LD.		-.5941035		.0877711		-6.77		0.000		-.7679613 -.4202457
L2D.		-.3621348		.0824591		-4.39		0.000		-.5254703 -.1987992
L6D.		.2056718		.0717471		2.87		0.005		.0635545 .347789
L24D.		-.0754246		.0622923		-1.21		0.228		-.1988137 .0479645
lntpa_priv										
LD.		.4028122		.3274493		1.23		0.221		-.2458019 1.051426
lntpa_unemp										
L2D.		-.0506565		.0364409		-1.39		0.167		-.1228389 .0215259
m2		.0088069		.0086298		1.02		0.310		-.0082871 .0259008
m3		-.0001278		.0068194		-0.02		0.985		-.0136356 .0133801
m4		-.0046848		.0060797		-0.77		0.443		-.0167274 .0073579
m5		-.0062174		.0059034		-1.05		0.294		-.017911 .0054762
m6		-.0089057		.0060617		-1.47		0.145		-.0209128 .0031014
m7		-.0015356		.0062741		-0.24		0.807		-.0139634 .0108921
m8		.0067568		.0066762		1.01		0.314		-.0064676 .0199811
m9		-.0045399		.0058432		-0.78		0.439		-.0161142 .0070344
m10		.0018456		.0062058		0.30		0.767		-.010447 .0141381

m11		-.0024178	.006264	-0.39	0.700	-.0148255	.0099899
m12		.003445	.0060681	0.57	0.571	-.0085749	.0154648
_cons		.0024448	.0043406	0.56	0.574	-.006153	.0110426

. \*36 -M9

. reg d.lntpa\_aveweek\_earn l1d.lntpa\_totalweek\_earn l2d.lntpa\_aveweek\_earn  
l6d.lntpa\_aveweek\_earn l24d.lntpa\_aveweek

> \_earn l1d.lntpa\_priv l2d.lntpa\_unemp m2 m3 m4 m5 m6 m7 m8 m9 m10 m11 m12

Source		SS	df	MS	Number of obs	=	133
-----+-----					F(17, 115)	=	4.92
Model		.015343839	17	.000902579	Prob > F	=	0.0000
Residual		.021115886	115	.000183616	R-squared	=	0.4208
-----+-----					Adj R-squared	=	0.3352
Total		.036459725	132	.00027621	Root MSE	=	.01355

D.lntpa_aveweek_earn		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
-----+-----							
lntpa_totalweek_earn							
LD.		-.5941048	.0877708	-6.77	0.000	-.7679619	-.4202477
lntpa_aveweek_earn							
L2D.		-.3621356	.0824589	-4.39	0.000	-.5254709	-.1988004
L6D.		.2056734	.071747	2.87	0.005	.0635565	.3477903
L24D.		-.0754245	.0622922	-1.21	0.228	-.1988134	.0479643
lntpa_priv							
LD.		.9969169	.3415076	2.92	0.004	.3204561	1.673378
lntpa_unemp							
L2D.		-.0506561	.0364408	-1.39	0.167	-.1228383	.0215262

m2		.0088069	.0086298	1.02	0.310	-.008287	.0259008
m3		-.0001279	.0068194	-0.02	0.985	-.0136357	.0133799
m4		-.0046849	.0060797	-0.77	0.443	-.0167276	.0073577
m5		-.0062173	.0059034	-1.05	0.294	-.0179109	.0054762
m6		-.0089058	.0060617	-1.47	0.145	-.0209129	.0031012
m7		-.0015356	.0062741	-0.24	0.807	-.0139634	.0108921
m8		.0067567	.0066762	1.01	0.314	-.0064676	.0199811
m9		-.0045401	.0058432	-0.78	0.439	-.0161144	.0070342
m10		.0018456	.0062058	0.30	0.767	-.010447	.0141381
m11		-.0024178	.006264	-0.39	0.700	-.0148255	.0099899
m12		.0034448	.0060681	0.57	0.571	-.008575	.0154646
_cons		.0024448	.0043405	0.56	0.574	-.006153	.0110426

-----

. \*337-M10

. reg d.lntpa\_aveweek\_earn l1d.lntpa\_aveweek\_earn l2d.lntpa\_aveweek\_earn  
l1d.lntpa\_priv l2d.lntpa\_unemp l12d.lntpa\_t

> ech m2 m3 m4 m5 m6 m7 m8 m9 m10 m11 m12

Source		SS	df	MS	Number of obs	=	145
-----+-----					F(16, 128)	=	4.56
Model		.016207545	16	.001012972	Prob > F	=	0.0000
Residual		.028460239	128	.000222346	R-squared	=	0.3628
-----+-----					Adj R-squared	=	0.2832
Total		.044667785	144	.000310193	Root MSE	=	.01491

-----

D. |

lntpa_aveweek_earn		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
-----+-----						
lntpa_aveweek_earn						
LD.		-.6070119	.0761273	-7.97	0.000	-.7576428    -.4563809
L2D.		-.3065107	.0759813	-4.03	0.000	-.4568528    -.1561687

|

```

      lntpa_priv |
            LD. |   .2858444   .3108393    0.92   0.360   -.3292043   .9008931
            |
lntpa_unemp |
            L2D. |  -.0133469   .0366729   -0.36   0.716   -.0859105   .0592167
            |
lntpa_tech |
            L12D. |   .163669   .1721137    0.95   0.343   -.1768874   .5042253
            |
            m2 |   .0015451   .008879    0.17   0.862   -.0160235   .0191138
            m3 |  -.0056431   .0070088   -0.81   0.422   -.0195112   .008225
            m4 |  -.0020799   .006313   -0.33   0.742   -.0145713   .0104114
            m5 |   -.00407   .0065178   -0.62   0.533   -.0169667   .0088266
            m6 |  -.0065829   .006427   -1.02   0.308   -.0192999   .006134
            m7 |  -.0036226   .0063957   -0.57   0.572   -.0162775   .0090323
            m8 |   .0000375   .0068698    0.01   0.996   -.0135556   .0136306
            m9 |  -.0075779   .0061785   -1.23   0.222   -.0198032   .0046473
            m10 | -.0038687   .0068785   -0.56   0.575   -.017479    .0097416
            m11 | -.0019944   .0067675   -0.29   0.769   -.015385    .0113962
            m12 | -.0026056   .006547   -0.40   0.691   -.01556     .0103488
            _cons |   .0056454   .0044769    1.26   0.210   -.0032128   .0145036

```

```
-----
```

```

.
. *GSREG 2 - Selected models
.
. *1st - M11
. reg d.lntpa_aveweek_earn d.l(1,2,6,36)lntpa_aveweek_earn l1d.lntpa_priv
l1d.lntpa_unemp m2 m3 m4 m5 m6 m7 m8 m9 m1
> 0 m11 m12

```

```

Source |          SS          df           MS      Number of obs      =          121
-----+-----
Model |   .013311042          17   .000783002      F(17, 103)          =          5.60

```

```

Prob > F          =          0.0000

```

Residual		.014412812	103	.00013993	R-squared	=	0.4801
-----+-----					Adj R-squared	=	0.3943
Total		.027723854	120	.000231032	Root MSE	=	.01183
-----							
D.							
lntpa_aveweek_earn		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
-----+-----							
lntpa_aveweek_earn							
LD.		-.5157063	.0846161	-6.09	0.000	-.6835223	-.3478903
L2D.		-.3241496	.0813466	-3.98	0.000	-.4854813	-.1628178
L6D.		.141524	.0698237	2.03	0.045	.0030451	.2800029
L36D.		-.2002071	.0545783	-3.67	0.000	-.3084502	-.091964
lntpa_priv							
LD.		.6681009	.3641872	1.83	0.069	-.0541785	1.39038
lntpa_unemp							
LD.		.0498988	.034032	1.47	0.146	-.0175956	.1173933
m2		.0114938	.0098171	1.17	0.244	-.0079761	.0309636
m3		-.0054037	.0057132	-0.95	0.346	-.0167346	.0059271
m4		.0001549	.0055187	0.03	0.978	-.0107902	.0111
m5		-.0076524	.0053441	-1.43	0.155	-.0182513	.0029464
m6		-.0090408	.0058054	-1.56	0.122	-.0205545	.0024728
m7		-.0057567	.0068444	-0.84	0.402	-.0193309	.0078176
m8		.0012829	.0059798	0.21	0.831	-.0105766	.0131424
m9		-.0042772	.0053484	-0.80	0.426	-.0148844	.00633
m10		.0078946	.0057746	1.37	0.175	-.003558	.0193472
m11		-.002799	.0057868	-0.48	0.630	-.0142757	.0086777
m12		.00038	.00575	0.07	0.947	-.0110236	.0117837
_cons		.0033244	.0042541	0.78	0.436	-.0051126	.0117615

.

. \*2nd - M12

. reg d.lntpa\_aveweek\_earn d.l(1,2,6,36)lntpa\_aveweek\_earn l1d.lntpa\_priv m2 m3 m4 m5  
m6 m7 m8 m9 m10 m11 m12

Source		SS	df	MS	Number of obs	=	121
-----+					F(16, 104)	=	5.75
Model		.013010215	16	.000813138	Prob > F	=	0.0000
Residual		.014713639	104	.000141477	R-squared	=	0.4693
-----+					Adj R-squared	=	0.3876
Total		.027723854	120	.000231032	Root MSE	=	.01189

-----						
D.						
lntpa_aveweek_earn		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
-----+						
lntpa_aveweek_earn						
LD.		-.5178009	.0850704	-6.09	0.000	-.6864987 -.349103
L2D.		-.3182785	.0816959	-3.90	0.000	-.4802844 -.1562725
L6D.		.1298121	.0697477	1.86	0.066	-.0085003 .2681244
L36D.		-.2138983	.05407	-3.96	0.000	-.3211211 -.1066755
lntpa_priv						
LD.		.782098	.3577528	2.19	0.031	.0726607 1.491535
m2		.0190248	.0084123	2.26	0.026	.0023429 .0357067
m3		-.0077437	.0055161	-1.40	0.163	-.0186822 .0031949
m4		-.0005663	.0055271	-0.10	0.919	-.0115267 .0103942
m5		-.0085218	.0053404	-1.60	0.114	-.0191121 .0020684
m6		-.006195	.0055015	-1.13	0.263	-.0171047 .0047147
m7		-.0002475	.0057524	-0.04	0.966	-.0116547 .0111597
m8		.0036298	.0057934	0.63	0.532	-.0078587 .0151183
m9		-.0039278	.0053725	-0.73	0.466	-.0145817 .006726
m10		.0067121	.0057496	1.17	0.246	-.0046895 .0181137



m11		-.0028511	.0058186	-0.49	0.625	-.0143896	.0086873
m12		.0003405	.0057816	0.06	0.953	-.0111246	.0118056
_cons		.0013849	.0040655	0.34	0.734	-.0066772	.0094469

.

. \*3rd - M13

. reg d.lntpa\_aveweek\_earn d.l(1,2,6,36)lntpa\_aveweek\_earn l1d.lntpa\_unemp m2 m3 m4 m5  
m6 m7 m8 m9 m10 m11 m12

Source		SS	df	MS	Number of obs	=	121
-----+					F(16, 104)	=	5.61
Model		.012840123	16	.000802508	Prob > F	=	0.0000
Residual		.014883731	104	.000143113	R-squared	=	0.4631
-----+					Adj R-squared	=	0.3806
Total		.027723854	120	.000231032	Root MSE	=	.01196

D.

lntpa_aveweek_earn		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
-----+						
lntpa_aveweek_earn						
LD.		-.5054902	.0853874	-5.92	0.000	-.6748166 -.3361638
L2D.		-.3229341	.0822637	-3.93	0.000	-.4860662 -.1598021
L6D.		.1364699	.0705583	1.93	0.056	-.0034499 .2763896
L36D.		-.2002204	.0551954	-3.63	0.000	-.309675 -.0907657
lntpa_unemp						
LD.		.063227	.0336234	1.88	0.063	-.0034494 .1299035
m2		-.0022414	.0064214	-0.35	0.728	-.0149753 .0104925
m3		-.0023727	.005531	-0.43	0.669	-.0133408 .0085954
m4		.0022353	.005462	0.41	0.683	-.0085961 .0130667
m5		-.0075433	.0054042	-1.40	0.166	-.0182601 .0031734

m6		-.0115454	.0057064	-2.02	0.046	-.0228615	-.0002294
m7		-.010411	.0064287	-1.62	0.108	-.0231593	.0023373
m8		-.0032463	.0055079	-0.59	0.557	-.0141688	.0076761
m9		-.0035029	.005392	-0.65	0.517	-.0141954	.0071896
m10		.0045503	.0055413	0.82	0.413	-.0064383	.0155389
m11		.0011643	.0054291	0.21	0.831	-.0096017	.0119304
m12		.0042528	.0054089	0.79	0.434	-.0064732	.0149788
_cons		.0062634	.0039855	1.57	0.119	-.00164	.0141668

.

. \*4th - M14

. reg d.lntpa\_aveweek\_earn d.l(1,2,4,6,36)lntpa\_aveweek\_earn l1d.lntpa\_priv  
l1d.lntpa\_unemp m2 m3 m4 m5 m6 m7 m8 m9

> m10 m11 m12

Source		SS	df	MS	Number of obs	=	121
-----+-----					F(18, 102)	=	5.39
Model		.013509144	18	.000750508	Prob > F	=	0.0000
Residual		.01421471	102	.00013936	R-squared	=	0.4873
-----+-----					Adj R-squared	=	0.3968
Total		.027723854	120	.000231032	Root MSE	=	.01181

D.							
lntpa_aveweek_earn		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
		-----+-----					
lntpa_aveweek_earn							
LD.		-.5291559	.0851936	-6.21	0.000	-.698137	-.3601747
L2D.		-.3212607	.0812168	-3.96	0.000	-.4823538	-.1601676
L4D.		.0887373	.0744272	1.19	0.236	-.0588887	.2363633
L6D.		.1555646	.0706694	2.20	0.030	.0153922	.295737
L36D.		-.2031711	.0545236	-3.73	0.000	-.3113185	-.0950238

```

lntpa_priv |
      LD. |   .6603279   .3635028   1.82   0.072   -.0606781   1.381334
      |
lntpa_unemp |
      LD. |   .0566382   .0344298   1.65   0.103   -.011653   .1249295
      |
      m2 |   .0099945   .0098774   1.01   0.314   -.0095973   .0295863
      m3 |  -.0054809   .005702   -0.96   0.339   -.0167906   .0058289
      m4 |  -.0003268   .0055223   -0.06   0.953   -.0112802   .0106266
      m5 |  -.0077302   .0053336   -1.45   0.150   -.0183094   .002849
      m6 |  -.0100973   .0058609   -1.72   0.088   -.0217224   .0015279
      m7 |  -.0062322   .0068421   -0.91   0.365   -.0198034   .007339
      m8 |   .000354   .0060182   0.06   0.953   -.0115831   .0122912
      m9 |  -.0039049   .0053466   -0.73   0.467   -.0145098   .0067
      m10 |   .0081297   .0057662   1.41   0.162   -.0033076   .0195671
      m11 |  -.0029205   .0057759   -0.51   0.614   -.0143769   .0085359
      m12 |  -.0000603   .0057501   -0.01   0.992   -.0114656   .011345
      _cons |   .0036494   .0042542   0.86   0.393   -.0047887   .0120876

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.

. \*5th - M15

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. reg d.lntpa_aveweek_earn d.l(1,2,36)lntpa_aveweek_earn l1d.lntpa_priv m2 m3 m4 m5 m6
m7 m8 m9 m10 m11 m12

```

```

Source |      SS      df      MS      Number of obs      =      121
-----+-----
Model |   .012520146      15   .000834676      Prob > F      =      0.0000
Residual |   .015203708     105   .000144797      R-squared      =      0.4516
-----+-----
Total |   .027723854     120   .000231032      Adj R-squared   =      0.3733
Root MSE      =      .01203

```

D.

|

lntpa_aveweek_earn	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
-----+-----						
lntpa_aveweek_earn						
LD.	-.5204863	.0860504	-6.05	0.000	-.6911083	-.3498643
L2D.	-.3281068	.082476	-3.98	0.000	-.4916415	-.1645721
L36D.	-.218431	.0546452	-4.00	0.000	-.3267823	-.1100796
lntpa_priv						
LD.	.7382731	.3611412	2.04	0.043	.0221968	1.454349
m2	.0186475	.008508	2.19	0.031	.0017777	.0355172
m3	-.0085188	.0055645	-1.53	0.129	-.0195521	.0025146
m4	.000208	.0055757	0.04	0.970	-.0108476	.0112636
m5	-.0082844	.0054012	-1.53	0.128	-.018994	.0024251
m6	-.0060899	.0055654	-1.09	0.276	-.017125	.0049453
m7	-.000602	.0058163	-0.10	0.918	-.0121346	.0109306
m8	.0037045	.0058608	0.63	0.529	-.0079163	.0153254
m9	-.0046332	.0054216	-0.85	0.395	-.0153833	.0061168
m10	.0069981	.0058146	1.20	0.231	-.0045312	.0185273
m11	-.0034916	.0058761	-0.59	0.554	-.0151429	.0081597
m12	.0000541	.005847	0.01	0.993	-.0115394	.0116475
_cons	.0018478	.0041052	0.45	0.654	-.0062921	.0099877
-----						

```

.
. *11 - M16
. reg d.lntpa_aveweek_earn d.l(1,2,3,6,36)lntpa_aveweek_earn l1d.lntpa_priv
l1d.lntpa_unemp m2 m3 m4 m5 m6 m7 m8 m9
> m10 m11 m12

```

Source	SS	df	MS	Number of obs	=	121
-----+-----				F(18, 102)	=	5.33
Model	.013433118	18	.000746284	Prob > F	=	0.0000
Residual	.014290736	102	.000140105	R-squared	=	0.4845

```

-----+-----
Total | .027723854      120 .000231032  Adj R-squared = 0.3936
                                Root MSE = .01184

-----+-----

D. |
lntpa_aveweek_earn |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-----+-----
lntpa_aveweek_earn |
      LD. |   -.546208   .0907557    -6.02   0.000   -.7262216   -.3661945
      L2D. |  -.3740412   .0973774    -3.84   0.000   -.5671888   -.1808937
      L3D. |  -.0827304   .0886294    -0.93   0.353   -.2585263    .0930655
      L6D. |   .1563192   .0716427     2.18   0.031    .0142162    .2984222
      L36D. |  -.200858   .0546168    -3.68   0.000   -.3091902   -.0925258
      |
      lntpa_priv |
      LD. |   .6539008   .3647323     1.79   0.076   -.0695439    1.377346
      |
      lntpa_unemp |
      LD. |   .0483881   .0340917     1.42   0.159   -.0192327    .1160088
      |
      m2 |   .0112314   .0098272     1.14   0.256   -.0082608    .0307237
      m3 |  -.005514   .005718     -0.96   0.337   -.0168557    .0058277
      m4 |  -.0003817   .005552     -0.07   0.945   -.0113942    .0106307
      m5 |  -.0080592   .0053652    -1.50   0.136   -.0187011    .0025826
      m6 |  -.0099506   .0058902    -1.69   0.094   -.0216338    .0017327
      m7 |  -.0062569   .0068696     -0.91   0.365   -.0198827    .0073689
      m8 |  -.0000458   .0061505     -0.01   0.994   -.0122453    .0121537
      m9 |  -.004899   .005393     -0.91   0.366   -.015596    .005798
      m10 |   .0072681   .0058171     1.25   0.214   -.0042701    .0188063
      m11 |  -.0028887   .0057912     -0.50   0.619   -.0143755    .0085981
      m12 |   .0000911   .0057619     0.02   0.987   -.0113376    .0115197
      _cons |   .0040627   .0043296     0.94   0.350   -.0045251    .0126505
-----+-----

```

```
.
. *13 - M17

. reg d.lntpa_aveweek_earn d.l(1,2,6,36)lntpa_aveweek_earn l1d.lntpa_priv
l1d.lntpa_unemp l4d.lntpa_bp m2 m3 m4 m5 m
> 6 m7 m8 m9 m10 m11 m12
```

Source	SS	df	MS	Number of obs	=	121
				F(18, 102)	=	5.45
Model	.013587052	18	.000754836	Prob > F	=	0.0000
Residual	.014136802	102	.000138596	R-squared	=	0.4901
				Adj R-squared	=	0.4001
Total	.027723854	120	.000231032	Root MSE	=	.01177

  

D.		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
lntpa_aveweek_earn							
LD.		-.4791528	.0881054	-5.44	0.000	-.6539094	-.3043962
L2D.		-.308806	.0816847	-3.78	0.000	-.4708273	-.1467848
L6D.		.1382805	.0695281	1.99	0.049	.0003719	.2761891
L36D.		-.2150481	.0553262	-3.89	0.000	-.3247872	-.1053089
lntpa_priv							
LD.		.5729324	.3686674	1.55	0.123	-.1583177	1.304183
lntpa_unemp							
LD.		.0444661	.0340875	1.30	0.195	-.0231463	.1120784
lntpa_bp							
L4D.		.0039846	.0028235	1.41	0.161	-.0016159	.009585
m2		.0103675	.0098027	1.06	0.293	-.0090761	.0298111
m3		-.0050939	.0056902	-0.90	0.373	-.0163803	.0061926

m4		.0010122	.0055259	0.18	0.855	-.0099483	.0119727
m5		-.0084511	.0053486	-1.58	0.117	-.01906	.0021579
m6		-.0083915	.005796	-1.45	0.151	-.0198878	.0031047
m7		-.0051261	.0068263	-0.75	0.454	-.0186661	.0084138
m8		.0010759	.005953	0.18	0.857	-.0107319	.0128837
m9		-.0039486	.0053279	-0.74	0.460	-.0145164	.0066193
m10		.0070873	.0057755	1.23	0.223	-.0043683	.0185428
m11		-.0013537	.0058495	-0.23	0.817	-.0129561	.0102487
m12		.001294	.005759	0.22	0.823	-.0101289	.012717
_cons		.0031803	.004235	0.75	0.454	-.0052198	.0115804

-----

.

. \*14 - M18

. reg d.lntpa\_aveweek\_earn d.l(1,2,6,12,36)lntpa\_aveweek\_earn l1d.lntpa\_priv  
l1d.lntpa\_unemp m2 m3 m4 m5 m6 m7 m8 m9

> m10 m11 m12

Source		SS	df	MS	Number of obs	=	121
-----+-----					F(18, 102)	=	5.24
Model		.01332097	18	.000740054	Prob > F	=	0.0000
Residual		.014402884	102	.000141205	R-squared	=	0.4805
-----+-----					Adj R-squared	=	0.3888
Total		.027723854	120	.000231032	Root MSE	=	.01188

-----

D.						
		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]

-----+-----

lntpa_aveweek_earn						
LD.		-.5147436	.085078	-6.05	0.000	-.6834955    -.3459917
L2D.		-.3204131	.0829223	-3.86	0.000	-.4848891    -.1559371
L6D.		.1379414	.0714305	1.93	0.056	-.0037405    .2796234
L12D.		.0192035	.0724235	0.27	0.791	-.1244483    .1628552

L36D.		-.1977824	.0555836	-3.56	0.001	-.3080323	-.0875325
lntpa_priv							
LD.		.6754917	.3669023	1.84	0.069	-.0522573	1.403241
lntpa_unemp							
LD.		.047484	.0353789	1.34	0.183	-.02269	.1176579
m2		.011876	.0099665	1.19	0.236	-.0078924	.0316444
m3		-.0055105	.0057533	-0.96	0.340	-.0169221	.0059012
m4		.0000703	.005553	0.01	0.990	-.010944	.0110846
m5		-.0076385	.0053687	-1.42	0.158	-.0182872	.0030102
m6		-.0087247	.0059524	-1.47	0.146	-.0205313	.0030819
m7		-.0055296	.0069286	-0.80	0.427	-.0192725	.0082134
m8		.0013774	.0060176	0.23	0.819	-.0105583	.0133132
m9		-.0041356	.0053991	-0.77	0.445	-.0148448	.0065735
m10		.0077504	.0058263	1.33	0.186	-.003806	.0193069
m11		-.0029164	.0058299	-0.50	0.618	-.01448	.0086472
m12		.000315	.0057813	0.05	0.957	-.0111521	.0117822
_cons		.0031901	.0043034	0.74	0.460	-.0053457	.0117258

-----

```

.
. *17 - M19
. reg d.lntpa_aveweek_earn d.l(1,2,6,36)lntpa_aveweek_earn l1d.lntpa_priv
l1d.lntpa_unemp l1d.lntpa_bp m2 m3 m4 m5 m
> 6 m7 m8 m9 m10 m11 m12

```

Source	SS	df	MS	Number of obs	=	121
-----+-----				F(18, 102)	=	5.26
Model	.013350314	18	.000741684	Prob > F	=	0.0000
Residual	.01437354	102	.000140917	R-squared	=	0.4815
-----+-----				Adj R-squared	=	0.3901
Total	.027723854	120	.000231032	Root MSE	=	.01187



D.							
lntpa_aveweek_earn		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
-----+-----							
lntpa_aveweek_earn							
LD.		-.5100139	.0855958	-5.96	0.000	-.6797928	-.340235
L2D.		-.3221078	.0817245	-3.94	0.000	-.4842079	-.1600076
L6D.		.1402547	.0701107	2.00	0.048	.0011904	.2793191
L36D.		-.1956099	.0554584	-3.53	0.001	-.3056113	-.0856085
lntpa_priv							
LD.		.6462061	.3678149	1.76	0.082	-.0833531	1.375765
lntpa_unemp							
LD.		.0512887	.0342531	1.50	0.137	-.0166522	.1192296
lntpa_bp							
LD.		.0014505	.0027476	0.53	0.599	-.0039994	.0069003
m2		.0107341	.0099561	1.08	0.284	-.0090138	.0304821
m3		-.0051589	.0057521	-0.90	0.372	-.0165681	.0062503
m4		.0002854	.0055437	0.05	0.959	-.0107104	.0112813
m5		-.0076265	.0053632	-1.42	0.158	-.0182643	.0030113
m6		-.0090765	.0058262	-1.56	0.122	-.0206328	.0024798
m7		-.006087	.0068969	-0.88	0.380	-.019767	.007593
m8		.0013483	.0060021	0.22	0.823	-.0105569	.0132536
m9		-.0041743	.0053707	-0.78	0.439	-.0148271	.0064785
m10		.0078519	.0057955	1.35	0.178	-.0036435	.0193474
m11		-.0028397	.0058077	-0.49	0.626	-.0143592	.0086797
m12		.0008006	.0058249	0.14	0.891	-.0107531	.0123543
_cons		.003393	.0042711	0.79	0.429	-.0050787	.0118646

```
.
. *18 - M20
. reg d.lntpa_aveweek_earn d.l(1,2,6,36)lntpa_aveweek_earn l1d.lntpa_priv
l1d.lntpa_unemp l2d.lntpa_bp m2 m3 m4 m5 m
> 6 m7 m8 m9 m10 m11 m12
```

Source		SS		df		MS		Number of obs	=	121
-----+-----							F(18, 102)	=	5.28	
Model		.013367526		18		.00074264		Prob > F	=	0.0000
Residual		.014356328		102		.000140748		R-squared	=	0.4822
-----+-----							Adj R-squared	=	0.3908	
Total		.027723854		120		.000231032		Root MSE	=	.01186

  

-----										
D.										
lntpa_aveweek_earn		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]				
-----+-----										
lntpa_aveweek_earn										
LD.		-.52295	.08563	-6.11	0.000	-.6927967	-.3531034			
L2D.		-.3205147	.0817856	-3.92	0.000	-.4827359	-.1582934			
L6D.		.1363792	.0704969	1.93	0.056	-.003451	.2762095			
L36D.		-.201759	.0547924	-3.68	0.000	-.3104394	-.0930786			
lntpa_priv										
LD.		.658327	.365576	1.80	0.075	-.0667912	1.383445			
lntpa_unemp										
LD.		.0489077	.0341672	1.43	0.155	-.0188627	.1166781			
lntpa_bp										
L2D.		.0017462	.0027565	0.63	0.528	-.0037213	.0072138			
m2		.0110598	.0098695	1.12	0.265	-.0085163	.0306359			
m3		-.0061301	.0058435	-1.05	0.297	-.0177207	.0054605			

m4		-.000096	.005549	-0.02	0.986	-.0111025	.0109104
m5		-.0079582	.0053814	-1.48	0.142	-.0186322	.0027158
m6		-.0094769	.0058629	-1.62	0.109	-.021106	.0021522
m7		-.0060474	.0068797	-0.88	0.381	-.0196932	.0075985
m8		.0007674	.0060522	0.13	0.899	-.0112371	.012772
m9		-.0043952	.0053672	-0.82	0.415	-.015041	.0062506
m10		.0074989	.0058251	1.29	0.201	-.0040551	.019053
m11		-.0030791	.0058205	-0.53	0.598	-.014624	.0084658
m12		-.0001055	.0058174	-0.02	0.986	-.0116443	.0114334
_cons		.0036958	.0043066	0.86	0.393	-.0048463	.012238

-----

```

.
. *t-initial = 2007 due tpa_tech
. *Baseline Model for RW
. scalar drop _all

. quietly forval w=60(12)84 {

. scalar list
RWmaxobs84 =      84
RWminobs84 =      71
  RWrmse84 = .0283272
RWmaxobs72 =      72
RWminobs72 =      71
  RWrmse72 = .02607599
RWmaxobs60 =      60
RWminobs60 =      60
  RWrmse60 = .03382393

.
. *Selected models for RW - w = 60(12)84
. *Model 1
. scalar drop _all

```

```
. quietly forval w=60(12)84 {
```

```
. scalar list
```

```
RWmaxobs84 =      84
```

```
RWminobs84 =      77
```

```
    RWmse84 = .01540982
```

```
RWmaxobs72 =      72
```

```
RWminobs72 =      72
```

```
    RWmse72 = .01515101
```

```
RWmaxobs60 =      60
```

```
RWminobs60 =      60
```

```
    RWmse60 = .01638406
```

```
.
```

```
. *Model 2
```

```
. scalar drop _all
```

```
. quietly forval w=60(12)84 {
```

```
. scalar list
```

```
RWmaxobs84 =      84
```

```
RWminobs84 =      77
```

```
    RWmse84 = .0154098
```

```
RWmaxobs72 =      72
```

```
RWminobs72 =      72
```

```
    RWmse72 = .015151
```

```
RWmaxobs60 =      60
```

```
RWminobs60 =      60
```

```
    RWmse60 = .01638404
```

```
.
```

```
. *Model 3
```

```
. scalar drop _all
```

```
. quietly forval w=60(12)84 {
```

```
. scalar list
```

```
RWmaxobs84 =      84
```

```
RWminobs84 =      77
```

```
    RWrmse84 = .01522987
```

```
RWmaxobs72 =      72
```

```
RWminobs72 =      72
```

```
    RWrmse72 = .01468432
```

```
RWmaxobs60 =      60
```

```
RWminobs60 =      60
```

```
    RWrmse60 = .01570439
```

```
.
```

```
. *Model 4
```

```
. scalar drop _all
```

```
. quietly forval w=60(12)84 {
```

```
. scalar list
```

```
RWmaxobs84 =      84
```

```
RWminobs84 =      77
```

```
    RWrmse84 = .01522985
```

```
RWmaxobs72 =      72
```

```
RWminobs72 =      72
```

```
    RWrmse72 = .01468431
```

```
RWmaxobs60 =      60
```

```
RWminobs60 =      60
```

```
    RWrmse60 = .01570437
```

```
.
```

```
. *Model 5
```

```
. scalar drop _all
```

```
. quietly forval w=60(12)84 {
```

```
. scalar list
```

```
RWmaxobs84 =      84
```

```
RWminobs84 =      77
```

```
    RWmse84 = .01570657
```

```
RWmaxobs72 =      72
```

```
RWminobs72 =      72
```

```
    RWmse72 = .0150868
```

```
RWmaxobs60 =      60
```

```
RWminobs60 =      60
```

```
    RWmse60 = .016456
```

```
.
```

```
. *Model 6
```

```
. scalar drop _all
```

```
. quietly forval w=60(12)84 {
```

```
. scalar list
```

```
RWmaxobs84 =      84
```

```
RWminobs84 =      72
```

```
    RWmse84 = .01567691
```

```
RWmaxobs72 =      72
```

```
RWminobs72 =      72
```

```
    RWmse72 = .01554505
```

```
RWmaxobs60 =      60
```

```
RWminobs60 =      60
```

```
    RWmse60 = .01729146
```

```
.
```

```
. *Model 7
```

```
. scalar drop _all
```

```
. quietly forval w=60(12)84 {
```

```
. scalar list
```

```
RWmaxobs84 =      84
```

```
RWminobs84 =      72
```

```
    RWmse84 = .01839848
```

```
RWmaxobs72 =      72
```

```
RWminobs72 =      72
```

```
    RWmse72 = .01788451
```

```
RWmaxobs60 =      60
```

```
RWminobs60 =      60
```

```
    RWmse60 = .01862166
```

```
.
```

```
. *Model 8
```

```
. scalar drop _all
```

```
. quietly forval w=60(12)84 {
```

```
. scalar list
```

```
RWmaxobs84 =      84
```

```
RWminobs84 =      59
```

```
    RWmse84 = .01580735
```

```
RWmaxobs72 =      72
```

```
RWminobs72 =      59
```

```
    RWmse72 = .01555186
```

```
RWmaxobs60 =      60
```

```
RWminobs60 =      59
```

```
    RWmse60 = .01645905
```

```
.
```

```
. *Model 9
```

```
. scalar drop _all
```

```
. quietly forval w=60(12)84 {
```

```
. scalar list
```

```
RWmaxobs84 =      84
```

```
RWminobs84 =      59
```

```
    RWmse84 = .01580732
```

```
RWmaxobs72 =      72
```

```
RWminobs72 =      59
```

```
    RWmse72 = .01555184
```

```
RWmaxobs60 =      60
```

```
RWminobs60 =      59
```

```
    RWmse60 = .01645903
```

```
.
```

```
. *Model 10
```

```
.
```

```
. scalar drop _all
```

```
. quietly forval w=60(12)84 {
```

```
. scalar list
```

```
RWmaxobs84 =      84
```

```
RWminobs84 =      71
```

```
    RWmse84 = .01629558
```

```
RWmaxobs72 =      72
```

```
RWminobs72 =      71
```

```
    RWmse72 = .0160951
```

```
RWmaxobs60 =      60
```

```
RWminobs60 =      60
```

```
    RWmse60 = .01682444
```

```
.
```

```
. * Fixed W = 72
```



```

.
. *Baseline Model for RW
. scalar drop _all

. quietly forval w=72(12)72 {

. scalar list
RWmaxobs72 =          72
RWminobs72 =          59
  RWmse72 = .02628608

.
. *Model 1
. scalar drop _all

. quietly forval w=72(12)72 {

. scalar list
RWmaxobs72 =          72
RWminobs72 =          65
  RWmse72 = .01523177

.
. *Model 2
. scalar drop _all

. quietly forval w=72(12)72 {

. scalar list
RWmaxobs72 =          72
RWminobs72 =          65
  RWmse72 = .01523177

.

```

```

. *Model 3
. scalar drop _all

. quietly forval w=72(12)72 {

. scalar list
RWmaxobs72 =          72
RWminobs72 =          65
    RWmse72 = .01479594

.
. *Model 4
. scalar drop _all

. quietly forval w=72(12)72 {

. scalar list
RWmaxobs72 =          72
RWminobs72 =          65
    RWmse72 = .01479594

.
. *Model 5
. scalar drop _all

. quietly forval w=72(12)72 {

. scalar list
RWmaxobs72 =          72
RWminobs72 =          65
    RWmse72 = .01518784

.
. *Fixed W =60

```

```

.
.
. *Baseline Model for RW
. scalar drop _all

. quietly forval w=60(12)60 {

. scalar list
RWmaxobs60 =          60
RWminobs60 =          47
    RWmse60 = .03430798

.
. scalar drop _all

. quietly forval w=60(12)60 {

. scalar list
RWmaxobs60 =          60
RWminobs60 =          53
    RWmse60 = .0165593

.
. *Model 2
. scalar drop _all

. quietly forval w=60(12)60 {

. scalar list
RWmaxobs60 =          60
RWminobs60 =          53
    RWmse60 = .01655927

.

```

```

. *Model 3
. scalar drop _all

. quietly forval w=60(12)60 {

. scalar list
RWmaxobs60 =          60
RWminobs60 =          53
    RWmse60 = .01611956

.
. *Model 4
. scalar drop _all

. quietly forval w=60(12)60 {

. scalar list
RWmaxobs60 =          60
RWminobs60 =          53
    RWmse60 = .01611953

.
. *Model 5
. scalar drop _all

. quietly forval w=60(12)60 {

. scalar list
RWmaxobs60 =          60
RWminobs60 =          53
    RWmse60 = .0166585

.
. * GSREG 2 - ROLLING WINDOWS

```

```

.
. *t-initial = 2007
. *Baseline Model for RW
.
. *Selected models for RW - w = 60(12)84
. *Model 11
. scalar drop _all

. quietly forval w=60(12)84 {

. scalar list
RWmaxobs84 =          84
RWminobs84 =          47
    RWmse84 =   .0149134
RWmaxobs72 =          72
RWminobs72 =          47
    RWmse72 =   .01468636
RWmaxobs60 =          60
RWminobs60 =          47
    RWmse60 =   .015374

.
. *Model 12
. scalar drop _all

. quietly forval w=60(12)84 {

. scalar list
RWmaxobs84 =          84
RWminobs84 =          47
    RWmse84 =   .01482404
RWmaxobs72 =          72
RWminobs72 =          47
    RWmse72 =   .01439983

```

```

RWmaxobs60 =          60
RWminobs60 =          47
    RWmse60 = .01525857

.

. *Model 13
. scalar drop _all

. quietly forval w=60(12)84 {

. scalar list
RWmaxobs84 =          84
RWminobs84 =          47
    RWmse84 = .01431506
RWmaxobs72 =          72
RWminobs72 =          47
    RWmse72 = .01410208
RWmaxobs60 =          60
RWminobs60 =          47
    RWmse60 = .01410615

.

. *Model 14
. scalar drop _all

. quietly forval w=60(12)84 {

. scalar list
RWmaxobs84 =          84
RWminobs84 =          47
    RWmse84 = .0149313
RWmaxobs72 =          72
RWminobs72 =          47
    RWmse72 = .01478661

```

```

RWmaxobs60 =          60
RWminobs60 =          47
    RWmse60 = .01554007

.

. *Model 15
. scalar drop _all

. quietly forval w=60(12)84 {

. scalar list
RWmaxobs84 =          84
RWminobs84 =          47
    RWmse84 = .01492783
RWmaxobs72 =          72
RWminobs72 =          47
    RWmse72 = .01450512
RWmaxobs60 =          60
RWminobs60 =          47
    RWmse60 = .01501677

.

. *Model 16
. scalar drop _all

. quietly forval w=60(12)84 {

. scalar list
RWmaxobs84 =          84
RWminobs84 =          47
    RWmse84 = .01503064
RWmaxobs72 =          72
RWminobs72 =          47
    RWmse72 = .01464437

```

```

RWmaxobs60 =          60
RWminobs60 =          47
    RWmse60 = .01552508

.

. *Model 17
. scalar drop _all

. quietly forval w=60(12)84 {

. scalar list
RWmaxobs84 =          84
RWminobs84 =          47
    RWmse84 = .01489845
RWmaxobs72 =          72
RWminobs72 =          47
    RWmse72 = .01473219
RWmaxobs60 =          60
RWminobs60 =          47
    RWmse60 = .01550527

.

. *Model 18
. scalar drop _all

. quietly forval w=60(12)84 {

. scalar list
RWmaxobs84 =          84
RWminobs84 =          47
    RWmse84 = .01553025
RWmaxobs72 =          72
RWminobs72 =          47
    RWmse72 = .01527138

```



```

RWmaxobs60 =          60
RWminobs60 =          47
    RWmse60 = .01692899

.

. *Model 19
. scalar drop _all

. quietly forval w=60(12)84 {

. scalar list
RWmaxobs84 =          84
RWminobs84 =          47
    RWmse84 = .01536322
RWmaxobs72 =          72
RWminobs72 =          47
    RWmse72 = .01529544
RWmaxobs60 =          60
RWminobs60 =          47
    RWmse60 = .0157835

.

. *Model 20
.

. scalar drop _all

. quietly forval w=60(12)84 {

. scalar list
RWmaxobs84 =          84
RWminobs84 =          47
    RWmse84 = .01522844
RWmaxobs72 =          72
RWminobs72 =          47

```

```

    RWrmse72 = .01500541
RWmaxobs60 =      60
RWminobs60 =      47
    RWrmse60 = .01571638

.

.
. *Fixed Windows
.
. * Fixed W = 72
.
. *Model 11
. scalar drop _all

. quietly forval w=72(12)72 {

. scalar list
RWmaxobs72 =      72
RWminobs72 =      35
    RWrmse72 = .01469695

.
. *Model 12
. scalar drop _all

. quietly forval w=72(12)72 {

. scalar list
RWmaxobs72 =      72
RWminobs72 =      35
    RWrmse72 = .01439978

.
. *Model 13

```

```

. scalar drop _all

. quietly forval w=72(12)72 {

. scalar list
RWmaxobs72 =          72
RWminobs72 =          35
  RWmse72 =  .01415321

.
. *Model 15
. scalar drop _all

. quietly forval w=72(12)72 {

. scalar list
RWmaxobs72 =          72
RWminobs72 =          35
  RWmse72 =  .0144085

.
. *Model 16
. scalar drop _all

. quietly forval w=72(12)72 {

. scalar list
RWmaxobs72 =          72
RWminobs72 =          35
  RWmse72 =  .01474412

.
. *Fixed W =60
.

```

```

. *Model 11

.

. scalar drop _all

. quietly forval w=60(12)60 {

. scalar list
RWmaxobs60 =          60
RWminobs60 =          23
  RWmse60 =  .01528468

.

. *Model 12

. scalar drop _all

. quietly forval w=60(12)60 {

. scalar list
RWmaxobs60 =          60
RWminobs60 =          23
  RWmse60 =  .01502587

.

. *Model 3

. scalar drop _all

. quietly forval w=60(12)60 {

. scalar list
RWmaxobs60 =          60
RWminobs60 =          23
  RWmse60 =  .01425654

.

```

```

. *Model 15
. scalar drop _all

. quietly forval w=60(12)60 {

. scalar list
RWmaxobs60 =          60
RWminobs60 =          23
  RWmse60 = .01493113

.
. *Model 16
. scalar drop _all

. quietly forval w=60(12)60 {

. scalar list
RWmaxobs60 =          60
RWminobs60 =          23
  RWmse60 = .01613783

.
. *SELECTED ONE
. *MODEL 13
.
. scalar drop _all

. quietly forval w=96(12)96 {

. scalar list
RWmaxobs96 =          96
RWminobs96 =          61
  RWmse96 = .01429153

```

```

.
. *Model 13
.
. scalar drop _all

. quietly forval w=72(12)72 {

. scalar list
RWmaxobs72 = .0296545
RWminobs72 = -.02688138
    RWrmse72 = .01415321

.
. scalar rwrmse2 = 0.01415321

.
. *Constructing a empirical interval - w = 72
.
. gen residual=(d.lntpa_aveweek_earn-rwpred)
(73 missing values generated)

. gen expres=exp(residual)
(73 missing values generated)

. summ expres

      Variable |           Obs      Mean    Std. Dev.      Min      Max
-----+-----
      expres |           86    1.002942    .0139512    .9657952    1.028939

. scalar meanexpres=r(mean)

. _pctile residual, percentiles(2.5,97.5)

```

```

. gen pye=meanexpres*exp(l.lntpa_aveweek_earn+rwpred)
(72 missing values generated)

. gen ubye=meanexpres*exp(l.lntpa_aveweek_earn+rwpred+r(r2))
(72 missing values generated)

. gen lbye=meanexpres*exp(l.lntpa_aveweek_earn+rwpred+r(r1))
(72 missing values generated)

.

. twoway (tsline tpa_aveweek_earn if tin(2018m1,2020m4)) ///
>         (tsline pye ubye lbye if tin(2019m1,2020m4)), ///
>         title("Actual and Empirical Forecast Florida for MSA's Average Weekly
Earnings") ytitle("") xtitle("") leg
> end(label(1 "Actual") label(2 "Forecast")) ///
>         label(3 "Upper Bound") label(4 "Lower Bound")) saving(m4yemp, replace)
(file m4yemp.gph saved)

.

. twoway (tsline tpa_aveweek_earn if tin(2019m1,2020m4)) ///
>         (tsline pye ubye lbye if tin(2019m1,2020m4)), ///
>         title("Empirical Forecast") ytitle("") xtitle("") legend(label(1 "Actual")
label(2 "Forecast")) ///
>         label(3 "Upper Bound") label(4 "Lower Bound")) saving(m4yemp, replace)
(file m4yemp.gph saved)

.

. *Constructing a Gaussian intervar - w = 72
.

. gen pyn=exp(l.lntpa_aveweek_earn+rwpred+(rwrms2^2)/2)
(72 missing values generated)

. gen ubyn=exp(l.lntpa_aveweek_earn+rwpred+1.96*rwrms2+(rwrms2^2)/2)
(72 missing values generated)

```

```

. gen lbyn=exp(1.1ln tpa_aveweek_earn+rwprpred-1.96*rwrmse2+(rwrmse2^2)/2)
(72 missing values generated)

. twoway (tsline tpa_aveweek_earn if tin(2019m1,2020m2)) ///
>      (tsline pyn ubyn lbyn if tin(2019m1,2020m3)), ///
>      title("Actual and Approx. Normal Forecast for MSA's Average Weekly
Earnings") ytitle("") xtitle("") legend
> (label(1 "Actual") label(2 "Forecast")) ///
>      label(3 "Upper Bound") label(4 "Lower Bound")) saving(m4ynorm, replace)
(file m4ynorm.gph saved)

.

. twoway (tsline tpa_aveweek_earn if tin(2019m1,2020m2)) ///
>      (tsline pyn ubyn lbyn if tin(2019m1,2020m3)), ///
>      title("Approximately Normal Forecast") ytitle("") xtitle("") legend(label(1
"Actual") label(2 "Forecast"))
> ///
>      label(3 "Upper Bound") label(4 "Lower Bound")) saving(m4ynorm, replace)
(file m4ynorm.gph saved)

.

. twoway (tsline tpa_aveweek_earn if tin(2018m1,2020m2)) ///
>      (tsline pyn ubyn lbyn if tin(2019m1,2020m3)), ///
>      title("Actual and Gaussian Forecast Florida for MSA's Average Weekly
Earnings") ytitle("") xtitle("") lege
> nd(label(1 "Actual") label(2 "Forecast")) ///
>      label(3 "Upper Bound") label(4 "Lower Bound")) saving(m4ynorm2, replace)
(file m4ynorm2.gph saved)

.

. graph combine m4ynorm.gph m4yemp.gph , ///
>      saving(m4yen, replace)
(file m4yen.gph saved)

.

```



```

. *Chart one month ahead - Empirical
. gen fub=ubye if tin(2020m3,)
(158 missing values generated)

. gen flb=lbye if tin(2020m3,)
(158 missing values generated)

. gen fcst=pye if tin(2020m3,)
(158 missing values generated)

. replace fcst=tpa_aveweek_earn if tin(2020m2,2020m2)
(1 real change made)

. replace fub=tpa_aveweek_earn if tin(2020m2,2020m2)
(1 real change made)

. replace flb=tpa_aveweek_earn if tin(2020m2,2020m2)
(1 real change made)

.

. *Chart one month ahead - Normal

. twoway(tslne tpa_aveweek_earn if tin(2019m1,2020m2))(tsline fub flb fcst if
tin(2020m2,2020m3) ), title("Empirica
> 1 Forecast") ytitle("") xtitle("") legend(label(1 "Actual") label(2 "Upper Bound")
///
> label(3 "Lower Bound") label(4 "Forecast")) saving(fcste, replace)
(file fcste.gph saved)

.

. replace fub=ubyn if tin(2020m3,)
(1 real change made)

. replace flb=lbyn if tin(2020m3,)
(1 real change made)

```

```

. replace fcst=pyn if tin(2020m3,)
(1 real change made)

. replace fcst=tpa_aveweek_earn if tin(2020m2,2020m2)
(0 real changes made)

. replace fub=tpa_aveweek_earn if tin(2020m2,2020m2)
(0 real changes made)

. replace flb=tpa_aveweek_earn if tin(2020m2,2020m2)
(0 real changes made)

.

. twoway(tslines tpa_aveweek_earn if tin(2019m1,2020m2))(tsline fub flb fcst if
tin(2020m2,2020m3) ), title("Aproxima
> tely Normal Forecast") ytitle("") xtitle("") legend(label(1 "Actual") label(2 "Upper
Bound") ///

>          label(3 "Lower Bound") label(4 "Forecast")) saving(fcstn, replace)
(file fcstn.gph saved)

.

. graph combine fcstn.gph fcste.gph , ///
>          saving(fcts, replace)
(file fcts.gph saved)

.

. *FAN CHART

. *H=1

.

. gen ptpae=exp((rwrms2^2)/2)*exp(1.lntpa_aveweek_earn+rwpred)
(72 missing values generated)

. gen ub1=exp((rwrms2^2)/2)*exp(1.lntpa_aveweek_earn+rwpred+1*rwrms2)
(72 missing values generated)

```

```

. gen lb1=exp((rwrms2^2)/2)*exp(1.lntpa_aveweek_earn+rwpred-1*rwrms2)
(72 missing values generated)

. gen ub2=exp((rwrms2^2)/2)*exp(1.lntpa_aveweek_earn+rwpred+2*rwrms2)
(72 missing values generated)

. gen lb2=exp((rwrms2^2)/2)*exp(1.lntpa_aveweek_earn+rwpred-2*rwrms2)
(72 missing values generated)

. gen ub3=exp((rwrms2^2)/2)*exp(1.lntpa_aveweek_earn+rwpred+3*rwrms2)
(72 missing values generated)

. gen lb3=exp((rwrms2^2)/2)*exp(1.lntpa_aveweek_earn+rwpred-3*rwrms2)
(72 missing values generated)

.
.
. *Fan Charts
.
. twoway (tsrline ub3 ub2 if tin(2019m1,2020m3), ///
>         recast(rarea) fcolor(red) fintensity(5) lwidth(none) ) ///
>         (tsrline ub2 ub1 if tin(2019m1,2020m3), ///
>         recast(rarea) fcolor(red) fintensity(15) lwidth(none) ) ///
>         (tsrline ub1 ptpae if tin(2019m1,2020m3), ///
>         recast(rarea) fcolor(red) fintensity(35) lwidth(none) ) ///
>         (tsrline ptpae lb1 if tin(2019m1,2020m3), ///
>         recast(rarea) fcolor(red) fintensity(35) lwidth(none) ) ///
>         (tsrline lb1 lb2 if tin(2019m1,2020m3), ///
>         recast(rarea) fcolor(red) fintensity(15) lwidth(none) ) ///
>         (tsrline lb2 lb3 if tin(2019m1,2020m3), ///
>         recast(rarea) fcolor(red) fintensity(5) lwidth(none) ) ///
>         (tsline ptpae if tin(2019m1,2020m3) , ///
>         lcolor(gs12) lwidth(thick thick) ) ///
>         (scatter tpa_aveweek_earn date if tin(2019m1,2020m3), lcolor(gs6)), ///

```

```

>         scheme(slmono) legend(off) ///
>         title("Tampa-St.Petersburg-Clearwater" ///
>         "Average Weekly Earnings" ///
>         "Forecast Interval") legend(off) ///
>         xtitle("") ylabel(,grid) ///
>         note("Bands at 1, 2, and 3 sigma")

```

```

.

```

```

. gen fptpae=tpa_aveweek_earn if tin(2020m2,2020m2)
(158 missing values generated)

```

```

. gen fub1=tpa_aveweek_earn if tin(2020m2,2020m2)
(158 missing values generated)

```

```

. gen fub2=tpa_aveweek_earn if tin(2020m2,2020m2)
(158 missing values generated)

```

```

. gen fub3=tpa_aveweek_earn if tin(2020m2,2020m2)
(158 missing values generated)

```

```

. gen flb1=tpa_aveweek_earn if tin(2020m2,2020m2)
(158 missing values generated)

```

```

. gen flb2=tpa_aveweek_earn if tin(2020m2,2020m2)
(158 missing values generated)

```

```

. gen flb3=tpa_aveweek_earn if tin(2020m2,2020m2)
(158 missing values generated)

```

```

.

```

```

. replace fptpae=ptpae if tin(2020m3,2020m3)
(1 real change made)

```

```

. replace fub1=ub1 if tin(2020m3,2020m3)

```

```
(1 real change made)
```

```
. replace fub2=ub2 if tin(2020m3,2020m3)
```

```
(1 real change made)
```

```
. replace fub3=ub3 if tin(2020m3,2020m3)
```

```
(1 real change made)
```

```
. replace flb1=lb1 if tin(2020m3,2020m3)
```

```
(1 real change made)
```

```
. replace flb2=lb2 if tin(2020m3,2020m3)
```

```
(1 real change made)
```

```
. replace flb3=lb3 if tin(2020m3,2020m3)
```

```
(1 real change made)
```

```
.
```

```
. twoway (tsrline fub3 fub2 if tin(2020m2,2020m3), ///
```

```
> recast(rarea) fcolor(red) fintensity(5) lwidth(none) ) ///
```

```
> (tsrline fub2 fub1 if tin(2020m2,2020m3), ///
```

```
> recast(rarea) fcolor(red) fintensity(15) lwidth(none) ) ///
```

```
> (tsrline fub1 fptpae if tin(2020m2,2020m3), ///
```

```
> recast(rarea) fcolor(red) fintensity(35) lwidth(none) ) ///
```

```
> (tsrline fptpae flb1 if tin(2020m2,2020m3), ///
```

```
> recast(rarea) fcolor(red) fintensity(35) lwidth(none) ) ///
```

```
> (tsrline flb1 flb2 if tin(2020m2,2020m3), ///
```

```
> recast(rarea) fcolor(red) fintensity(15) lwidth(none) ) ///
```

```
> (tsrline flb2 flb3 if tin(2020m2,2020m3), ///
```

```
> recast(rarea) fcolor(red) fintensity(5) lwidth(none) ) ///
```

```
> (tsline fptpae if tin(2020m2,2020m3) , ///
```

```
> lcolor(gs12) lwidth(thick thick) ) ///
```

```
> (tsline tpa_aveweek_earn if tin(2019m1,2020m3) , ///
```

```
> lcolor(gs6) lwidth(thick thick) ), scheme(slmono) legend(off) ///
```

```
> title("Tampa-St.Petersburg-Clearwater" ///
> "Average Weekly Earnings Forecast" ///
> "Fan Chart for 1 Month Horizon") legend(off) ///
> xtitle("") ylabel(,grid) ///
> note("Bands at 1, 2, and 3 sigma")

.

.

. graph export "Fan Chart.pdf", replace
(file Fan Chart.pdf written in PDF format)

.

end of do-file
```