```
       F41. |   .6562083   .2312158     2.84   0.005     .2030337    1.109383
     name:  <unnamed>
      log:  C:\Users\jamel\Dropbox\latex\PROJECTS\23-05-geopolitical-risk-pol-tension-oil-price\Data and command\Co
  log type:  smcl
 opened on:  13 Jul 2025, 12:27:34

.
. import excel .\data_svar.xlsx,/*
> */ sheet("data") firstrow clear
(9 vars, 759 obs)

.
. generate Period = tm(1960m1) + _n-1

. format %tm Period

.
. drop if Period > tm(2019m12)
(39 observations deleted)

.
. label variable pri "Political Relationship Index"

. label variable pri_s "PRI Standardized"

. label variable gop "Global Oil Production"

. label variable rspri "Real Spot Price"

. label variable wip "World Industrial Production"

. label variable dinv "Variation of Inventories"

. label variable gprcn ///
>           "Percent of Articles on China in the Bil. GPR"

. label variable igrea ///
>           "Index of Global Real Economic Activity"

.
. rename gop pro

. rename wip dem

. rename rspri rpo

.
. capture generate lpro = log(pro)

. la var lpro "Natural log of PRO"

. capture generate lrpo = log(rpo)

. la var lrpo "Natural log of RPO"

. capture generate ldem = log(dem)

. la var ldem "Natural log of DEM"

.
. drop t
```

```
. order Period, first

.
. /* Another transformation for the PRI index */
. gen lpri = sign(pri) * log(1 + abs(pri))

.
. label variable lpri "Political Relationship Index"

.
. gen ligrea = sign(igrea) * log(1 + abs(igrea))
(96 missing values generated)

.
. label variable ligrea "Global Real Economic Activity"

.
. summarize lpri lpro ldem lrpo gprcn ligrea if Period>tm(2000m1)
```

Variable	Obs	Mean	Std. dev.	Min	Max
lpri	**239**	**.2934882**	**.8635308**	**-2.054124**	**1.193923**
lpro	**239**	**4.318169**	**.0624468**	**4.192786**	**4.438475**
ldem	**239**	**4.702075**	**.1403389**	**4.450089**	**4.904061**
lrpo	**239**	**3.268457**	**.3928032**	**2.388421**	**4.120459**
gprcn	**239**	**.4806391**	**.2381402**	**.1612948**	**1.521136**
ligrea	**239**	**.0950085**	**3.844319**	**-5.093765**	**5.246595**

```
. /*
> outreg2   using sum.doc if Period>tm(2000m1), replace sum(log) ///
>           keep(lpri lpro ldem lrpo gprcn) dec(3)
> */
.
. **#  Declare time series
.
. tsset Period, monthly

Time variable: Period, 1960m1 to 2019m12
        Delta: 1 month

.
. save database_pri_gpr.dta, replace
file database_pri_gpr.dta saved

.
. twoway (tsline lpri if Period>tm(2000m1)) ///
>        (tsline gprcn if Period>tm(2000m1), yaxis(2)), ///
>            name(G0, replace) legend(off)

.
. graph export "G0.svg", as(svg) replace
file G0.svg saved as SVG format

. graph export "G0.pdf", as(pdf) replace
file G0.pdf saved as PDF format

. graph export "G0.png", as(png) width(4000) replace
file G0.png saved as PNG format

.
```

```
. matrix A = (1,0,0,0\.,1,0,0\.,.,1,0\.,.,.,1)

. matlist A
```

	c1	c2	c3	c4
r1	**1**	**0**	**0**	**0**
r2	**.**	**1**	**0**	**0**
r3	**.**	**.**	**1**	**0**
r4	**.**	**.**	**.**	**1**

```
.
. matrix B = (.,0,0,0\0,.,0,0\0,0,.,0\0,0,0,.)

. matlist B
```

	c1	c2	c3	c4
r1	**.**			
r2	**0**	**.**		
r3	**0**	**0**	**.**	
r4	**0**	**0**	**0**	**.**

```
.
. svar lpri lpro ldem lrpo if Period>tm(2000m1), aeq(A) beq(B) ///
> lags(1/24)
Estimating short-run parameters

Iteration 0:  Log likelihood = -1089.3698
Iteration 1:  Log likelihood =  988.23688
Iteration 2:  Log likelihood =  1255.9806
Iteration 3:  Log likelihood =  1738.8122
Iteration 4:  Log likelihood =  2153.2785
Iteration 5:  Log likelihood =  2359.5949
Iteration 6:  Log likelihood =  2436.0247
Iteration 7:  Log likelihood =  2462.6683
Iteration 8:  Log likelihood =  2464.6814
Iteration 9:  Log likelihood =   2464.694
Iteration 10: Log likelihood =   2464.694

Structural vector autoregression

 ( 1)  [/A]1_1 = 1
 ( 2)  [/A]1_2 = 0
 ( 3)  [/A]1_3 = 0
 ( 4)  [/A]1_4 = 0
 ( 5)  [/A]2_2 = 1
 ( 6)  [/A]2_3 = 0
 ( 7)  [/A]2_4 = 0
 ( 8)  [/A]3_3 = 1
 ( 9)  [/A]3_4 = 0
 (10)  [/A]4_4 = 1
 (11)  [/B]1_2 = 0
 (12)  [/B]1_3 = 0
 (13)  [/B]1_4 = 0
 (14)  [/B]2_1 = 0
 (15)  [/B]2_3 = 0
 (16)  [/B]2_4 = 0
 (17)  [/B]3_1 = 0
 (18)  [/B]3_2 = 0
 (19)  [/B]3_4 = 0
 (20)  [/B]4_1 = 0
 (21)  [/B]4_2 = 0
 (22)  [/B]4_3 = 0

Sample: 2000m2 thru 2019m12                     Number of obs     =        239
Exactly identified model                        Log likelihood    =   2464.694
```

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
/A						
1_1	**1**	(constrained)				
2_1	**-.0126754**	**.0047564**	**-2.66**	**0.008**	**-.0219977**	**-.0033531**
3_1	**.0007724**	**.0031607**	**0.24**	**0.807**	**-.0054225**	**.0069673**
4_1	**.0836298**	**.0493863**	**1.69**	**0.090**	**-.0131656**	**.1804253**
1_2	**0**	(constrained)				
2_2	**1**	(constrained)				
3_2	**-.0649535**	**.0423596**	**-1.53**	**0.125**	**-.1479769**	**.0180698**
4_2	**1.620257**	**.6650372**	**2.44**	**0.015**	**.3168079**	**2.923706**
1_3	**0**	(constrained)				
2_3	**0**	(constrained)				
3_3	**1**	(constrained)				
4_3	**-2.33248**	**1.010576**	**-2.31**	**0.021**	**-4.313173**	**-.3517882**
1_4	**0**	(constrained)				
2_4	**0**	(constrained)				
3_4	**0**	(constrained)				
4_4	**1**	(constrained)				
/B						
1_1	**.0808577**	**.0036983**	**21.86**	**0.000**	**.0736091**	**.0881063**
2_1	**0**	(constrained)				
3_1	**0**	(constrained)				
4_1	**0**	(constrained)				
1_2	**0**	(constrained)				
2_2	**.0059456**	**.0002719**	**21.86**	**0.000**	**.0054126**	**.0064786**
3_2	**0**	(constrained)				
4_2	**0**	(constrained)				
1_3	**0**	(constrained)				
2_3	**0**	(constrained)				
3_3	**.0038936**	**.0001781**	**21.86**	**0.000**	**.0035445**	**.0042426**
4_3	**0**	(constrained)				
1_4	**0**	(constrained)				
2_4	**0**	(constrained)				
3_4	**0**	(constrained)				
4_4	**.0608295**	**.0027823**	**21.86**	**0.000**	**.0553764**	**.0662827**

```
.
. /* compute the inv(B)*A matrix */
. matrix A=e(A)

. matrix B=e(B)

. matrix BA = inv(B)*A

. /* compute reduced form epsilon_t residuals */
. var lpri lpro ldem lrpo if Period>tm(2000m1)

Vector autoregression

Sample: 2000m2 thru 2019m12                     Number of obs     =       239
Log likelihood =   2190.165                     AIC               =  -18.02649
FPE            =   1.74e-13                     HQIC              =  -17.81547
Det(Sigma_ml)  =   1.29e-13                     SBIC              =  -17.50284

Equation           Parms      RMSE     R-sq      chi2     P>chi2
------------------------------------------------------------------
lpri                   9     .113468   0.9833   14084.61   0.0000
lpro                   9     .007845   0.9847    15430.2   0.0000
ldem                   9     .005659   0.9984   151862.9   0.0000
lrpo                   9     .080528   0.9594   5645.453   0.0000
------------------------------------------------------------------
```

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
lpri						
lpri						
L1.	1.02088	.065043	15.70	0.000	.8933984	1.148362
L2.	-.0404373	.0649793	-0.62	0.534	-.1677943	.0869197
lpro						
L1.	-.5662178	.9375872	-0.60	0.546	-2.403855	1.271419
L2.	.4591511	.9410169	0.49	0.626	-1.385208	2.30351
ldem						
L1.	2.328491	1.235075	1.89	0.059	-.0922117	4.749194
L2.	-2.516937	1.222366	-2.06	0.039	-4.91273	-.1211443
lrpo						
L1.	.0197547	.0909455	0.22	0.828	-.1584951	.1980046
L2.	.0561329	.0913182	0.61	0.539	-.1228475	.2351133
_cons	1.092742	1.088601	1.00	0.315	-1.040876	3.22636
lpro						
lpri						
L1.	.0046979	.0044971	1.04	0.296	-.0041163	.0135122
L2.	-.0051903	.0044927	-1.16	0.248	-.0139959	.0036153
lpro						
L1.	.8960902	.0648256	13.82	0.000	.7690342	1.023146
L2.	.0002203	.0650628	0.00	0.997	-.1273004	.127741
ldem						
L1.	.1852567	.0853942	2.17	0.030	.0178871	.3526264
L2.	-.1393035	.0845155	-1.65	0.099	-.3049508	.0263439
lrpo						
L1.	.0084163	.0062881	1.34	0.181	-.003908	.0207407
L2.	-.0104668	.0063138	-1.66	0.097	-.0228417	.001908
_cons	.2392245	.0752669	3.18	0.001	.0917042	.3867448
ldem						
lpri						
L1.	.004107	.0032438	1.27	0.205	-.0022508	.0104649
L2.	-.0032437	.0032407	-1.00	0.317	-.0095953	.0031079
lpro						
L1.	.0922844	.0467596	1.97	0.048	.0006372	.1839315
L2.	-.0690136	.0469307	-1.47	0.141	-.160996	.0229688
ldem						
L1.	1.151338	.061596	18.69	0.000	1.030612	1.272064
L2.	-.1602631	.0609622	-2.63	0.009	-.2797468	-.0407795
lrpo						
L1.	.0238001	.0045357	5.25	0.000	.0149103	.0326898
L2.	-.0253468	.0045542	-5.57	0.000	-.0342729	-.0164206
_cons	-.0522002	.054291	-0.96	0.336	-.1586086	.0542082
lrpo						
lpri						
L1.	-.0363973	.0461606	-0.79	0.430	-.1268704	.0540758
L2.	.0459971	.0461153	1.00	0.319	-.0443872	.1363815
lpro						
L1.	-.476452	.6653989	-0.72	0.474	-1.78061	.8277059
L2.	-.0750901	.6678329	-0.11	0.910	-1.384019	1.233838
ldem						
L1.	2.394223	.876524	2.73	0.006	.6762673	4.112178
L2.	-2.102661	.8675043	-2.42	0.015	-3.802938	-.4023834

lrpo						
L1.	**1.170197**	**.0645433**	**18.13**	**0.000**	**1.043694**	**1.2967**
L2.	**-.232986**	**.0648079**	**-3.60**	**0.000**	**-.3600071**	**-.1059649**
_cons	**1.209696**	**.772572**	**1.57**	**0.117**	**-.3045171**	**2.72391**

```
. capture drop epsilon*

. predict double epsilon1 if Period>tm(2000m1),residual eq(#1)
(481 missing values generated)

. predict double epsilon2 if Period>tm(2000m1),residual eq(#2)
(481 missing values generated)

. predict double epsilon3 if Period>tm(2000m1),residual eq(#3)
(481 missing values generated)

. predict double epsilon4 if Period>tm(2000m1),residual eq(#4)
(481 missing values generated)

. /* store the epsilon* variables in the epsilon matrix */
. mkmat epsilon*, matrix(epsilon)

. /* compute e_t matrix of structural shocks */
. matrix e = (BA*epsilon')'

. /* store columns of e as variables e1, e2, and e3 */
. svmat double e

.
. label variable epsilon1 "Reduced-form shocks - PRI"

. label variable e1 "Structural shocks - PRI"

.
. twoway (tsline e1 if Period>tm(2000m1)) (tsline epsilon1 ///
> if Period>tm(2000m1), yaxis(1)), ///
>  name(G1, replace) legend(position(6)) graphregion(margin(r+5))

.
. graph export "G1.svg", as(svg) replace
file G1.svg saved as SVG format

. graph export "G1.png", as(png) width(4000) replace
file G1.png saved as PNG format

. graph export "G1.pdf", as(pdf) replace
file G1.pdf saved as PDF format

.
. irf set comparemodels.irf, replace
(file comparemodels.irf created)
(file comparemodels.irf now active)

.
. lpirf lpro ldem lrpo, step(48) lags(1/24) ///
>   exog(L(0/24).e1) vce(robust)

Local-projection impulse responses

Sample: 2002m2 thru 2016m1                          Number of obs       = 168
                                                    Number of impulses  =   4
                                                    Number of responses =   3
                                                    Number of controls  =  93
```

	IRF coefficient	Robust std. err.	z	P>|z|	[95% conf.	interval]
lpro						
lpro						
F1.	.7280321	.0749194	9.72	0.000	.5811929	.8748714
F2.	.4216241	.1017658	4.14	0.000	.2221668	.6210814
F3.	.5446221	.1237814	4.40	0.000	.302015	.7872291
F4.	.6010137	.1142347	5.26	0.000	.3771179	.8249096
F5.	.4057281	.1361754	2.98	0.003	.1388292	.6726269
F6.	.2547685	.1614373	1.58	0.115	-.0616427	.5711797
F7.	.4332713	.1710729	2.53	0.011	.0979746	.768568
F8.	.3279943	.1727271	1.90	0.058	-.0105446	.6665332
F9.	.0853209	.1960551	0.44	0.663	-.2989401	.4695819
F10.	.044739	.2021815	0.22	0.825	-.3515294	.4410074
F11.	-.048991	.1967516	-0.25	0.803	-.434617	.336635
F12.	-.1641304	.2136171	-0.77	0.442	-.5828122	.2545514
F13.	-.1940814	.201404	-0.96	0.335	-.5888259	.2006631
F14.	-.1584372	.1916641	-0.83	0.408	-.5340919	.2172175
F15.	.0240363	.1916473	0.13	0.900	-.3515856	.3996581
F16.	.0328429	.1845682	0.18	0.859	-.3289041	.3945899
F17.	-.0571032	.1794828	-0.32	0.750	-.4088831	.2946767
F18.	-.3762281	.1787397	-2.10	0.035	-.7265515	-.0259047
F19.	-.3368972	.1694677	-1.99	0.047	-.6690477	-.0047467
F20.	-.3018486	.1747246	-1.73	0.084	-.6443024	.0406052
F21.	-.3896337	.1775804	-2.19	0.028	-.7376849	-.0415826
F22.	-.3669813	.1798814	-2.04	0.041	-.7195423	-.0144203
F23.	-.1899652	.1754854	-1.08	0.279	-.5339101	.1539798
F24.	.163075	.1759515	0.93	0.354	-.1817836	.5079336
F25.	.0813748	.1746958	0.47	0.641	-.2610227	.4237722
F26.	.0461432	.1767044	0.26	0.794	-.3001911	.3924774
F27.	-.1375089	.1667166	-0.82	0.409	-.4642674	.1892497
F28.	-.4095511	.1567865	-2.61	0.009	-.716847	-.1022552
F29.	-.5810485	.1617619	-3.59	0.000	-.898096	-.264001
F30.	-.5698554	.1758353	-3.24	0.001	-.9144863	-.2252244
F31.	-.4317491	.188808	-2.29	0.022	-.801806	-.0616922
F32.	-.4025284	.1824437	-2.21	0.027	-.7601116	-.0449452
F33.	-.4473601	.1879825	-2.38	0.017	-.815799	-.0789212
F34.	-.4458647	.193643	-2.30	0.021	-.8253979	-.0663315
F35.	-.4427674	.207807	-2.13	0.033	-.8500617	-.0354731
F36.	-.4072453	.2235559	-1.82	0.069	-.8454069	.0309162
F37.	-.3217304	.2248056	-1.43	0.152	-.7623413	.1188806
F38.	-.4207483	.2129525	-1.98	0.048	-.8381275	-.0033691
F39.	-.2608648	.2008349	-1.30	0.194	-.654494	.1327643
F40.	-.2470077	.2014503	-1.23	0.220	-.6418431	.1478278
F41.	-.2858679	.1998949	-1.43	0.153	-.6776547	.1059189
F42.	-.4435064	.2134803	-2.08	0.038	-.8619202	-.0250927
F43.	-.4191426	.2262433	-1.85	0.064	-.8625713	.0242861
F44.	-.4810465	.2237437	-2.15	0.032	-.9195761	-.042517
F45.	-.2815818	.2182647	-1.29	0.197	-.7093728	.1462093
F46.	-.2744714	.2294095	-1.20	0.232	-.7241057	.1751629
F47.	.119039	.2219973	0.54	0.592	-.3160678	.5541458
F48.	.2256926	.2265898	1.00	0.319	-.2184153	.6698005
ldem						
F1.	.0597481	.0610714	0.98	0.328	-.0599496	.1794459
F2.	.0764188	.0984725	0.78	0.438	-.1165839	.2694214
F3.	.1802088	.1356174	1.33	0.184	-.0855964	.446014
F4.	.2640022	.1675983	1.58	0.115	-.0644844	.5924888
F5.	.1379775	.1876172	0.74	0.462	-.2297454	.5057005
F6.	-.0081502	.2131958	-0.04	0.970	-.4260063	.4097059
F7.	-.0920868	.2283933	-0.40	0.687	-.5397294	.3555558
F8.	-.4135047	.2449428	-1.69	0.091	-.8935837	.0665742
F9.	-.4613096	.2657147	-1.74	0.083	-.9821008	.0594817
F10.	-.6488176	.2763185	-2.35	0.019	-1.190392	-.1072433
F11.	-.6737534	.2891718	-2.33	0.020	-1.24052	-.106987
F12.	-.710195	.2938893	-2.42	0.016	-1.286207	-.1341826
F13.	-.6733811	.2926073	-2.30	0.021	-1.246881	-.0998814
F14.	-.6891024	.2974604	-2.32	0.021	-1.272114	-.1060906
F15.	-.7397593	.3050139	-2.43	0.015	-1.337576	-.141943
F16.	-.6046277	.3127799	-1.93	0.053	-1.217665	.0084097
F17.	-.488427	.3033024	-1.61	0.107	-1.082889	.1060347

F18.	-.2412143	.2986678	-0.81	0.419	-.8265924	.3441638
F19.	-.1476582	.2988297	-0.49	0.621	-.7333535	.4380372
F20.	.1400835	.3133009	0.45	0.655	-.4739749	.7541419
F21.	.1758731	.3140751	0.56	0.575	-.4397029	.791449
F22.	.214252	.3231867	0.66	0.507	-.4191823	.8476862
F23.	.3665076	.3433977	1.07	0.286	-.3065395	1.039555
F24.	.4957079	.360947	1.37	0.170	-.2117352	1.203151
F25.	.4839559	.3663718	1.32	0.187	-.2341197	1.202032
F26.	.5916974	.3615727	1.64	0.102	-.1169721	1.300367
F27.	.4647469	.356857	1.30	0.193	-.23468	1.164174
F28.	.4304474	.3458491	1.24	0.213	-.2474044	1.108299
F29.	.3186042	.3425461	0.93	0.352	-.3527738	.9899822
F30.	.282719	.3496811	0.81	0.419	-.4026434	.9680813
F31.	.2272734	.3368142	0.67	0.500	-.4328703	.8874171
F32.	.0744691	.3289434	0.23	0.821	-.5702481	.7191862
F33.	.0182027	.3132934	0.06	0.954	-.595841	.6322464
F34.	-.0797312	.2913393	-0.27	0.784	-.6507457	.4912833
F35.	-.0556459	.2860831	-0.19	0.846	-.6163584	.5050667
F36.	-.2721601	.2664515	-1.02	0.307	-.7943956	.2500753
F37.	-.1410422	.2623644	-0.54	0.591	-.6552671	.3731826
F38.	-.1084543	.2510607	-0.43	0.666	-.6005243	.3836156
F39.	.1826222	.2496815	0.73	0.465	-.3067444	.6719889
F40.	.2257937	.2471161	0.91	0.361	-.2585451	.7101324
F41.	.1803455	.2388026	0.76	0.450	-.2876989	.64839
F42.	.252917	.2370821	1.07	0.286	-.2117555	.7175894
F43.	.2810814	.2286969	1.23	0.219	-.1671563	.729319
F44.	.2822592	.2293478	1.23	0.218	-.1672542	.7317726
F45.	.2405543	.2316017	1.04	0.299	-.2133766	.6944853
F46.	.3791943	.2263498	1.68	0.094	-.0644432	.8228318
F47.	.2754352	.2261968	1.22	0.223	-.1679023	.7187728
F48.	.2835059	.2122776	1.34	0.182	-.1325505	.6995624
lrpo						
F1.	-1.035297	.8678237	-1.19	0.233	-2.7362	.6656065
F2.	-.5091918	1.523481	-0.33	0.738	-3.495159	2.476776
F3.	-.4777561	2.071499	-0.23	0.818	-4.53782	3.582308
F4.	.0617415	2.335946	0.03	0.979	-4.516629	4.640112
F5.	-1.510964	2.284877	-0.66	0.508	-5.98924	2.967313
F6.	-2.775944	2.296182	-1.21	0.227	-7.276378	1.72449
F7.	-2.76583	2.304106	-1.20	0.230	-7.281796	1.750135
F8.	-3.386153	2.389143	-1.42	0.156	-8.068787	1.29648
F9.	-4.971245	2.625522	-1.89	0.058	-10.11717	.1746845
F10.	-7.09296	2.746076	-2.58	0.010	-12.47517	-1.710749
F11.	-8.003618	2.606425	-3.07	0.002	-13.11212	-2.895118
F12.	-7.133534	2.632172	-2.71	0.007	-12.2925	-1.974572
F13.	-9.154084	2.907605	-3.15	0.002	-14.85289	-3.455282
F14.	-10.51889	3.019684	-3.48	0.000	-16.43736	-4.600421
F15.	-8.190792	3.280113	-2.50	0.013	-14.6197	-1.761888
F16.	-6.40707	3.457894	-1.85	0.064	-13.18442	.3702778
F17.	-2.504367	3.489385	-0.72	0.473	-9.343435	4.334701
F18.	2.028867	3.301231	0.61	0.539	-4.441426	8.49916
F19.	5.18026	3.290029	1.57	0.115	-1.268079	11.6286
F20.	6.402893	3.313162	1.93	0.053	-.0907844	12.89657
F21.	7.82877	3.316296	2.36	0.018	1.32895	14.32859
F22.	8.529253	3.561709	2.39	0.017	1.548432	15.51007
F23.	9.926737	3.790632	2.62	0.009	2.497234	17.35624
F24.	8.187615	3.849058	2.13	0.033	.6436001	15.73163
F25.	7.562161	4.08725	1.85	0.064	-.4487005	15.57302
F26.	3.798006	4.172022	0.91	0.363	-4.379007	11.97502
F27.	2.671851	4.074515	0.66	0.512	-5.314053	10.65775
F28.	4.945822	4.134448	1.20	0.232	-3.157547	13.04919
F29.	6.103774	4.296959	1.42	0.155	-2.318111	14.52566
F30.	7.365064	4.406186	1.67	0.095	-1.270902	16.00103
F31.	4.813972	4.421213	1.09	0.276	-3.851447	13.47939
F32.	6.423049	4.246002	1.51	0.130	-1.898962	14.74506
F33.	4.557719	4.075308	1.12	0.263	-3.429738	12.54518
F34.	5.710266	3.864101	1.48	0.139	-1.863233	13.28376
F35.	5.009091	3.683661	1.36	0.174	-2.210753	12.22893
F36.	4.219673	3.542324	1.19	0.234	-2.723155	11.1625
F37.	3.745311	3.318376	1.13	0.259	-2.758587	10.24921
F38.	4.173278	3.350137	1.25	0.213	-2.392871	10.73943
F39.	5.129436	3.267089	1.57	0.116	-1.273941	11.53281
F40.	5.430991	3.274658	1.66	0.097	-.9872198	11.8492

F41.	6.453963	3.220705	2.00	0.045	.1414974	12.76643
F42.	7.098078	3.248848	2.18	0.029	.7304519	13.4657
F43.	7.469213	3.178055	2.35	0.019	1.24034	13.69809
F44.	7.73923	3.199261	2.42	0.016	1.468793	14.00967
F45.	9.558716	3.318485	2.88	0.004	3.054606	16.06283
F46.	10.88257	3.669217	2.97	0.003	3.691032	18.0741
F47.	8.530855	3.935616	2.17	0.030	.8171888	16.24452
F48.	6.254434	3.937757	1.59	0.112	-1.463428	13.9723

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F1.	.3218579	.0910807	3.53	0.000	.143343	.5003727
F2.	.4428703	.1334749	3.32	0.001	.1812642	.7044763
F3.	.3195908	.1426911	2.24	0.025	.0399215	.5992602
F4.	.4915388	.1554505	3.16	0.002	.1868614	.7962162
F5.	.7269921	.1626585	4.47	0.000	.4081873	1.045797
F6.	.7564078	.1874509	4.04	0.000	.3890109	1.123805
F7.	.5879759	.1972382	2.98	0.003	.2013963	.9745556
F8.	.4602799	.2064895	2.23	0.026	.0555679	.8649919
F9.	.6524492	.2050842	3.18	0.001	.2504915	1.054407
F10.	.591629	.2187036	2.71	0.007	.1629777	1.02028
F11.	.5738532	.2178568	2.63	0.008	.1468617	1.000845
F12.	.6057503	.2212695	2.74	0.006	.17207	1.039431
F13.	.4983642	.2038757	2.44	0.015	.098775	.8979533
F14.	.5570758	.2145951	2.60	0.009	.1364771	.9776745
F15.	.5056131	.2028804	2.49	0.013	.1079747	.9032514
F16.	.4177053	.196318	2.13	0.033	.0329292	.8024814
F17.	.408629	.1966107	2.08	0.038	.0232791	.7939788
F18.	.5966669	.1871414	3.19	0.001	.2298765	.9634572
F19.	.58759	.1771672	3.32	0.001	.2403486	.9348313
F20.	.5188852	.184892	2.81	0.005	.1565036	.8812668
F21.	.5649462	.1908402	2.96	0.003	.1909062	.9389862
F22.	.561033	.1948505	2.88	0.004	.1791331	.9429329
F23.	.7656009	.1883894	4.06	0.000	.3963644	1.134837
F24.	.4079868	.204855	1.99	0.046	.0064784	.8094953
F25.	.2598199	.186693	1.39	0.164	-.1060916	.6257313
F26.	.331356	.1719945	1.93	0.054	-.0057471	.668459
F27.	.4525581	.1763741	2.57	0.010	.1068712	.7982451
F28.	.6538103	.1880163	3.48	0.001	.2853051	1.022316
F29.	.8910809	.1807428	4.93	0.000	.5368315	1.24533
F30.	.9407266	.1861336	5.05	0.000	.5759115	1.305542
F31.	.8617307	.2108947	4.09	0.000	.4483846	1.275077
F32.	.945135	.1989665	4.75	0.000	.5551678	1.335102
F33.	.8910511	.217999	4.09	0.000	.4637808	1.318321
F34.	.9575819	.2260582	4.24	0.000	.514516	1.400648
F35.	.8644397	.2208256	3.91	0.000	.4316295	1.29725
F36.	.888287	.2250398	3.95	0.000	.447217	1.329357
F37.	.7420386	.2448387	3.03	0.002	.2621636	1.221914
F38.	.7204428	.2654041	2.71	0.007	.2002603	1.240625
F39.	.7580354	.2554207	2.97	0.003	.2574201	1.258651
F40.	.6823911	.2442358	2.79	0.005	.2036978	1.161084
F41.	.6562083	.2312158	2.84	0.005	.2030337	1.109383
F42.	.950369	.2340493	4.06	0.000	.4916409	1.409097
F43.	.9629309	.2462152	3.91	0.000	.480358	1.445504
F44.	.9633353	.2502064	3.85	0.000	.4729397	1.453731
F45.	1.050868	.2512891	4.18	0.000	.5583507	1.543386
F46.	1.053585	.2576562	4.09	0.000	.5485877	1.558581
F47.	.8059982	.2465543	3.27	0.001	.3227607	1.289236
F48.	.763417	.2353578	3.24	0.001	.3021242	1.22471

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F1.	1.046875	.0948236	11.04	0.000	.8610236	1.232725
F2.	1.138593	.123139	9.25	0.000	.8972455	1.379941
F3.	1.133209	.1377055	8.23	0.000	.8633117	1.403107
F4.	1.247688	.167295	7.46	0.000	.9197959	1.57558
F5.	1.44092	.2036789	7.07	0.000	1.041717	1.840124
F6.	1.392128	.2255071	6.17	0.000	.9501422	1.834114
F7.	1.429536	.2452196	5.83	0.000	.9489145	1.910158
F8.	1.47513	.2531021	5.83	0.000	.9790591	1.971201
F9.	1.355504	.2669248	5.08	0.000	.8323407	1.878667
F10.	1.235131	.2944097	4.20	0.000	.6580985	1.812164
F11.	1.214894	.3291087	3.69	0.000	.5698525	1.859935
F12.	1.028053	.3463392	2.97	0.003	.3492408	1.706866

F13.	1.199871	.3272665	3.67	0.000	.5584406	1.841302
F14.	1.226998	.3312339	3.70	0.000	.5777915	1.876204
F15.	1.103731	.3384474	3.26	0.001	.4403866	1.767076
F16.	1.207987	.3370149	3.58	0.000	.5474499	1.868524
F17.	1.092354	.3202961	3.41	0.001	.4645856	1.720123
F18.	1.226818	.3231715	3.80	0.000	.5934133	1.860222
F19.	1.205697	.328559	3.67	0.000	.5617332	1.849661
F20.	1.123586	.3234526	3.47	0.001	.4896307	1.757542
F21.	1.279156	.3222445	3.97	0.000	.6475686	1.910744
F22.	1.050508	.3222613	3.26	0.001	.4188873	1.682128
F23.	.9477445	.336092	2.82	0.005	.2890163	1.606473
F24.	.7361169	.340933	2.16	0.031	.0679005	1.404333
F25.	.564407	.3657621	1.54	0.123	-.1524735	1.281288
F26.	.6102541	.380518	1.60	0.109	-.1355474	1.356056
F27.	.733565	.3768517	1.95	0.052	-.0050507	1.472181
F28.	.7551864	.3750475	2.01	0.044	.0201067	1.490266
F29.	.7898558	.3808331	2.07	0.038	.0434366	1.536275
F30.	.8608661	.3791527	2.27	0.023	.1177404	1.603992
F31.	.8479831	.3699377	2.29	0.022	.1229186	1.573048
F32.	1.042335	.3556897	2.93	0.003	.3451959	1.739474
F33.	.9019358	.3379331	2.67	0.008	.2395991	1.564272
F34.	1.038526	.3224536	3.22	0.001	.4065285	1.670523
F35.	.9466069	.3106914	3.05	0.002	.3376629	1.555551
F36.	1.045411	.3085663	3.39	0.001	.4406319	1.650189
F37.	.7412342	.2902894	2.55	0.011	.1722775	1.310191
F38.	.596118	.2927171	2.04	0.042	.022403	1.169833
F39.	.4660992	.2868851	1.62	0.104	-.0961853	1.028384
F40.	.4273622	.2837572	1.51	0.132	-.1287916	.9835161
F41.	.4508696	.2755601	1.64	0.102	-.0892182	.9909575
F42.	.3472458	.2716963	1.28	0.201	-.1852691	.8797607
F43.	.4315119	.262933	1.64	0.101	-.0838272	.9468511
F44.	.4113413	.2513728	1.64	0.102	-.0813403	.9040229
F45.	.3240129	.2517879	1.29	0.198	-.1694822	.8175081
F46.	.2229858	.2475456	0.90	0.368	-.2621946	.7081663
F47.	.1982591	.2381288	0.83	0.405	-.2684648	.6649829
F48.	.2268915	.2352574	0.96	0.335	-.2342045	.6879875
lrpo						
F1.	1.689508	1.118601	1.51	0.131	-.5029093	3.881926
F2.	3.641443	1.781668	2.04	0.041	.1494385	7.133447
F3.	6.059927	2.397912	2.53	0.011	1.360105	10.75975
F4.	5.830916	2.655073	2.20	0.028	.6270688	11.03476
F5.	4.562135	2.777301	1.64	0.100	-.8812742	10.00554
F6.	3.624713	2.849752	1.27	0.203	-1.960697	9.210124
F7.	3.630378	2.638742	1.38	0.169	-1.541462	8.802218
F8.	4.280426	2.748472	1.56	0.119	-1.106481	9.667332
F9.	1.869367	2.699248	0.69	0.489	-3.421062	7.159796
F10.	.5613656	2.851775	0.20	0.844	-5.02801	6.150741
F11.	-4.080022	2.99243	-1.36	0.173	-9.945077	1.785032
F12.	-5.24124	3.323472	-1.58	0.115	-11.75513	1.272647
F13.	-4.077873	3.525243	-1.16	0.247	-10.98722	2.831476
F14.	-2.267105	3.649733	-0.62	0.534	-9.42045	4.88624
F15.	-1.118864	3.805283	-0.29	0.769	-8.577083	6.339354
F16.	.9258585	3.743501	0.25	0.805	-6.411269	8.262986
F17.	-.8571546	3.627721	-0.24	0.813	-7.967358	6.253049
F18.	-1.33632	3.567704	-0.37	0.708	-8.328893	5.656252
F19.	-.6736052	3.424858	-0.20	0.844	-7.386204	6.038993
F20.	.5451716	3.431301	0.16	0.874	-6.180056	7.270399
F21.	-1.101258	3.508483	-0.31	0.754	-7.977758	5.775242
F22.	-1.647044	3.698109	-0.45	0.656	-8.895204	5.601116
F23.	-3.361666	3.817995	-0.88	0.379	-10.8448	4.121467
F24.	-4.490175	4.215046	-1.07	0.287	-12.75151	3.771163
F25.	-4.524242	4.613686	-0.98	0.327	-13.5669	4.518416
F26.	-3.605187	4.843228	-0.74	0.457	-13.09774	5.887365
F27.	-2.689425	4.961399	-0.54	0.588	-12.41359	7.034739
F28.	-6.419297	4.978141	-1.29	0.197	-16.17627	3.33768
F29.	-6.65785	5.05813	-1.32	0.188	-16.5716	3.255902
F30.	-7.081197	4.977401	-1.42	0.155	-16.83672	2.67433
F31.	-4.754398	5.073191	-0.94	0.349	-14.69767	5.188874
F32.	-4.723033	4.812308	-0.98	0.326	-14.15498	4.708917
F33.	-1.843157	4.628529	-0.40	0.690	-10.91491	7.228593
F34.	-2.449906	4.518413	-0.54	0.588	-11.30583	6.40602
F35.	-2.059151	4.419265	-0.47	0.641	-10.72075	6.602449

F36.	-3.11107	4.138521	-0.75	0.452	-11.22242	5.000281
F37.	-5.189581	3.94664	-1.31	0.189	-12.92485	2.545691
F38.	-7.095076	3.871436	-1.83	0.067	-14.68295	.4927996
F39.	-9.542277	3.868521	-2.47	0.014	-17.12444	-1.960116
F40.	-11.38773	3.651754	-3.12	0.002	-18.54504	-4.230425
F41.	-9.759108	3.690208	-2.64	0.008	-16.99178	-2.526432
F42.	-10.7876	3.772677	-2.86	0.004	-18.18191	-3.393288
F43.	-12.9678	3.73216	-3.47	0.001	-20.2827	-5.652905
F44.	-13.89193	3.920096	-3.54	0.000	-21.57518	-6.208685
F45.	-13.4807	4.006229	-3.36	0.001	-21.33276	-5.628633
F46.	-11.89431	4.132063	-2.88	0.004	-19.99301	-3.795617
F47.	-11.00377	4.566892	-2.41	0.016	-19.95471	-2.052824
F48.	-11.75092	4.622477	-2.54	0.011	-20.81081	-2.691034

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F1.	.0052053	.0060159	0.87	0.387	-.0065858	.0169963
F2.	.004056	.0074946	0.54	0.588	-.0106331	.0187451
F3.	.0036249	.0094164	0.38	0.700	-.0148309	.0220807
F4.	.00405	.0110565	0.37	0.714	-.0176203	.0257204
F5.	-.0024532	.0122807	-0.20	0.842	-.026523	.0216166
F6.	-.0023882	.0148443	-0.16	0.872	-.0314825	.026706
F7.	-.0168234	.0144413	-1.16	0.244	-.0451278	.011481
F8.	-.0254675	.015771	-1.61	0.106	-.0563781	.0054431
F9.	-.0168313	.0167993	-1.00	0.316	-.0497572	.0160947
F10.	-.0153133	.0172554	-0.89	0.375	-.0491332	.0185065
F11.	-.0426611	.0162281	-2.63	0.009	-.0744677	-.0108545
F12.	-.0412498	.0164066	-2.51	0.012	-.073406	-.0090935
F13.	-.0109932	.0156672	-0.70	0.483	-.0417004	.0197139
F14.	-.0126838	.0144843	-0.88	0.381	-.0410725	.0157049
F15.	-.0141398	.0147833	-0.96	0.339	-.0431145	.014835
F16.	-.0129845	.0137483	-0.94	0.345	-.0399306	.0139617
F17.	-.0118767	.0132293	-0.90	0.369	-.0378056	.0140522
F18.	-.0186488	.0129739	-1.44	0.151	-.0440772	.0067795
F19.	-.0160467	.0132708	-1.21	0.227	-.042057	.0099637
F20.	-.0182938	.0125949	-1.45	0.146	-.0429794	.0063919
F21.	-.0067059	.0127548	-0.53	0.599	-.0317048	.0182931
F22.	-.0011373	.0141506	-0.08	0.936	-.028872	.0265974
F23.	-.0245262	.0145592	-1.68	0.092	-.0530618	.0040093
F24.	-.0104283	.0149199	-0.70	0.485	-.0396706	.0188141
F25.	.0122388	.0146589	0.83	0.404	-.016492	.0409697
F26.	.0146134	.0148915	0.98	0.326	-.0145734	.0438002
F27.	.0024358	.0129899	0.19	0.851	-.0230239	.0278955
F28.	.0095651	.0136662	0.70	0.484	-.0172201	.0363503
F29.	.016853	.0137069	1.23	0.219	-.0100119	.043718
F30.	.0139468	.0145667	0.96	0.338	-.0146033	.0424969
F31.	.0150546	.0154627	0.97	0.330	-.0152518	.0453611
F32.	.0047796	.0147977	0.32	0.747	-.0242233	.0337825
F33.	-.0017073	.0154474	-0.11	0.912	-.0319837	.0285691
F34.	-.0046839	.016364	-0.29	0.775	-.0367568	.0273889
F35.	-.0147507	.0165896	-0.89	0.374	-.0472657	.0177642
F36.	-.0242607	.016498	-1.47	0.141	-.0565962	.0080748
F37.	-.0376792	.0163459	-2.31	0.021	-.0697165	-.0056419
F38.	-.0305346	.0153913	-1.98	0.047	-.060701	-.0003682
F39.	-.0342551	.0149231	-2.30	0.022	-.0635038	-.0050063
F40.	-.0369034	.015505	-2.38	0.017	-.0672926	-.0065141
F41.	-.032139	.0154745	-2.08	0.038	-.0624684	-.0018096
F42.	-.0297801	.0154501	-1.93	0.054	-.0600619	.0005016
F43.	-.0334148	.0168765	-1.98	0.048	-.0664922	-.0003374
F44.	-.0462841	.0170157	-2.72	0.007	-.0796343	-.0129339
F45.	-.0373983	.0173081	-2.16	0.031	-.0713216	-.003475
F46.	-.0274242	.0181836	-1.51	0.132	-.0630634	.0082151
F47.	-.0226437	.0181548	-1.25	0.212	-.0582265	.0129391
F48.	-.0318031	.0185742	-1.71	0.087	-.0682078	.0046016
ldem						
F1.	.0229185	.0064968	3.53	0.000	.0101851	.0356519
F2.	.0361475	.0093631	3.86	0.000	.0177961	.0544988
F3.	.0551467	.0130568	4.22	0.000	.0295559	.0807376
F4.	.0596056	.014453	4.12	0.000	.0312783	.0879329
F5.	.0482406	.016917	2.85	0.004	.0150839	.0813973
F6.	.0261639	.0194368	1.35	0.178	-.0119316	.0642593
F7.	.0157703	.0201046	0.78	0.433	-.0236339	.0551745

F8.	-.0062569	.0211992	-0.30	0.768	-.0478065	.0352927
F9.	-.0115381	.0225068	-0.51	0.608	-.0556506	.0325744
F10.	-.016903	.0229836	-0.74	0.462	-.06195	.028144
F11.	-.0174367	.0225497	-0.77	0.439	-.0616332	.0267598
F12.	-.0183244	.0228272	-0.80	0.422	-.0630648	.0264161
F13.	-.0169214	.0222881	-0.76	0.448	-.0606052	.0267624
F14.	-.0166759	.0222032	-0.75	0.453	-.0601934	.0268416
F15.	-.0270606	.0220921	-1.22	0.221	-.0703603	.0162392
F16.	-.0216806	.0236303	-0.92	0.359	-.0679951	.0246339
F17.	-.0207023	.0233685	-0.89	0.376	-.0665037	.0250991
F18.	-.0053528	.0228147	-0.23	0.815	-.0500688	.0393633
F19.	.0045592	.0232285	0.20	0.844	-.0409679	.0500863
F20.	.0215173	.0238017	0.90	0.366	-.0251331	.0681678
F21.	.0312246	.0240958	1.30	0.195	-.0160024	.0784516
F22.	.0535299	.025507	2.10	0.036	.0035371	.1035228
F23.	.0643739	.0262751	2.45	0.014	.0128756	.1158722
F24.	.0716954	.0279064	2.57	0.010	.0169998	.126391
F25.	.066037	.0277087	2.38	0.017	.0117289	.1203451
F26.	.0680486	.0273263	2.49	0.013	.0144902	.1216071
F27.	.0481204	.027024	1.78	0.075	-.0048456	.1010864
F28.	.0623984	.0269494	2.32	0.021	.0095784	.1152183
F29.	.0465302	.0268878	1.73	0.084	-.0061688	.0992292
F30.	.0518982	.0265643	1.95	0.051	-.0001668	.1039632
F31.	.0454896	.0248521	1.83	0.067	-.0032196	.0941987
F32.	.0300406	.0246851	1.22	0.224	-.0183414	.0784226
F33.	.0139453	.0237568	0.59	0.557	-.0326171	.0605077
F34.	.0034439	.0226141	0.15	0.879	-.0408789	.0477667
F35.	-.0152319	.0217978	-0.70	0.485	-.0579549	.027491
F36.	-.0312678	.0215412	-1.45	0.147	-.0734877	.0109521
F37.	-.0473031	.0208319	-2.27	0.023	-.0881328	-.0064734
F38.	-.052007	.0200182	-2.60	0.009	-.091242	-.012772
F39.	-.0499729	.0190719	-2.62	0.009	-.0873531	-.0125926
F40.	-.0595644	.0197442	-3.02	0.003	-.0982623	-.0208665
F41.	-.0512516	.0188916	-2.71	0.007	-.0882784	-.0142248
F42.	-.0464976	.0185218	-2.51	0.012	-.0827996	-.0101955
F43.	-.0426282	.0176357	-2.42	0.016	-.0771935	-.0080628
F44.	-.0344794	.0174984	-1.97	0.049	-.0687755	-.0001832
F45.	-.0199213	.0173862	-1.15	0.252	-.0539977	.014155
F46.	-.0172028	.0162545	-1.06	0.290	-.049061	.0146553
F47.	-.0034282	.0163909	-0.21	0.834	-.0355538	.0286973
F48.	-.0064113	.0160682	-0.40	0.690	-.0379043	.0250818
lrpo						
F1.	1.19312	.0777059	15.35	0.000	1.040819	1.345421
F2.	1.317329	.1244779	10.58	0.000	1.073356	1.561301
F3.	1.127359	.1583148	7.12	0.000	.8170676	1.43765
F4.	1.008175	.179093	5.63	0.000	.6571588	1.35919
F5.	.8812843	.1894935	4.65	0.000	.5098839	1.252685
F6.	.5853649	.1862204	3.14	0.002	.2203796	.9503502
F7.	.5044248	.1822082	2.77	0.006	.1473032	.8615463
F8.	.4956237	.1812766	2.73	0.006	.1403282	.8509192
F9.	.4096491	.1752823	2.34	0.019	.066102	.7531961
F10.	.3479601	.1612621	2.16	0.031	.0318921	.664028
F11.	.3396816	.1557056	2.18	0.029	.0345041	.644859
F12.	.5161203	.179377	2.88	0.004	.1645478	.8676929
F13.	.4504903	.2185308	2.06	0.039	.0221778	.8788028
F14.	.3440796	.2426065	1.42	0.156	-.1314205	.8195796
F15.	.1548365	.2712285	0.57	0.568	-.3767616	.6864346
F16.	.1460826	.2623	0.56	0.578	-.3680159	.6601811
F17.	.1198075	.2663839	0.45	0.653	-.4022953	.6419103
F18.	.2330533	.2465494	0.95	0.345	-.2501748	.7162813
F19.	.3908747	.2324778	1.68	0.093	-.0647735	.8465229
F20.	.5157365	.2304365	2.24	0.025	.0640893	.9673837
F21.	.8269299	.2208634	3.74	0.000	.3940457	1.259814
F22.	.9695149	.2320409	4.18	0.000	.5147231	1.424307
F23.	.9807949	.2626151	3.73	0.000	.4660788	1.495511
F24.	.7187573	.2797182	2.57	0.010	.1705197	1.266995
F25.	.7501919	.3052282	2.46	0.014	.1519556	1.348428
F26.	.4260231	.3114455	1.37	0.171	-.1843989	1.036445
F27.	.3907294	.3049394	1.28	0.200	-.2069409	.9883996
F28.	.2681762	.3059735	0.88	0.381	-.3315207	.8678732
F29.	.3143758	.3122043	1.01	0.314	-.2975334	.9262851
F30.	.419161	.3219842	1.30	0.193	-.2119163	1.050238

F31.	.3174228	.3335019	0.95	0.341	-.3362289	.9710744
F32.	.2915537	.33253	0.88	0.381	-.3601931	.9433006
F33.	.3308172	.3342383	0.99	0.322	-.3242779	.9859123
F34.	.418731	.3290324	1.27	0.203	-.2261607	1.063623
F35.	.1890836	.3242983	0.58	0.560	-.4465293	.8246965
F36.	-.0888121	.314043	-0.28	0.777	-.704325	.5267009
F37.	-.2593667	.2942022	-0.88	0.378	-.8359924	.317259
F38.	-.4163635	.2850924	-1.46	0.144	-.9751344	.1424074
F39.	-.6555835	.2818467	-2.33	0.020	-1.207993	-.1031741
F40.	-.5455146	.2714896	-2.01	0.045	-1.077624	-.0134047
F41.	-.3809725	.2750155	-1.39	0.166	-.919993	.1580479
F42.	-.2552248	.275776	-0.93	0.355	-.7957357	.2852861
F43.	-.0225553	.2655572	-0.08	0.932	-.5430379	.4979273
F44.	.1089227	.2657687	0.41	0.682	-.4119743	.6298197
F45.	-.0125055	.2611542	-0.05	0.962	-.5243583	.4993474
F46.	.119751	.277105	0.43	0.666	-.4233648	.6628669
F47.	.198677	.2763498	0.72	0.472	-.3429587	.7403127
F48.	.2940614	.2813938	1.05	0.296	-.2574602	.8455831
e1						
lpro						
--.	.0009814	.0004433	2.21	0.027	.0001126	.0018502
F1.	.000921	.0006442	1.43	0.153	-.0003416	.0021836
F2.	.0000361	.0007066	0.05	0.959	-.0013489	.0014211
F3.	-.0002022	.0007374	-0.27	0.784	-.0016475	.001243
F4.	-.0012388	.0008145	-1.52	0.128	-.0028351	.0003575
F5.	-.0009066	.0008097	-1.12	0.263	-.0024935	.0006803
F6.	-.0003546	.0009655	-0.37	0.713	-.0022471	.0015378
F7.	-5.25e-06	.0008787	-0.01	0.995	-.0017274	.0017169
F8.	-.0007282	.0010086	-0.72	0.470	-.0027049	.0012486
F9.	-.0001338	.000998	-0.13	0.893	-.0020898	.0018222
F10.	-.0003013	.000924	-0.33	0.744	-.0021123	.0015098
F11.	-.0001856	.0009772	-0.19	0.849	-.0021009	.0017296
F12.	.0005152	.0009526	0.54	0.589	-.0013518	.0023821
F13.	.0008212	.0009949	0.83	0.409	-.0011288	.0027713
F14.	.0006319	.0009739	0.65	0.516	-.001277	.0025408
F15.	.0009731	.0008853	1.10	0.272	-.0007621	.0027083
F16.	.0009316	.0009641	0.97	0.334	-.000958	.0028213
F17.	.0007686	.0009957	0.77	0.440	-.001183	.0027202
F18.	.0002739	.0009081	0.30	0.763	-.001506	.0020538
F19.	.0004821	.0009125	0.53	0.597	-.0013063	.0022704
F20.	.0014487	.0010236	1.42	0.157	-.0005575	.0034549
F21.	.0009527	.00094	1.01	0.311	-.0008897	.0027951
F22.	.0007052	.000864	0.82	0.414	-.0009882	.0023987
F23.	.0011727	.0009326	1.26	0.209	-.0006552	.0030007
F24.	.0014681	.0010011	1.47	0.143	-.0004941	.0034303
F25.	.0011328	.0009843	1.15	0.250	-.0007964	.003062
F26.	.0002073	.0009251	0.22	0.823	-.0016058	.0020205
F27.	.0004102	.0008165	0.50	0.615	-.0011901	.0020105
F28.	-.0000377	.0007914	-0.05	0.962	-.0015888	.0015133
F29.	.0001896	.0008275	0.23	0.819	-.0014322	.0018114
F30.	.0005338	.0009283	0.58	0.565	-.0012856	.0023532
F31.	-.0000477	.0009847	-0.05	0.961	-.0019777	.0018824
F32.	-.0003557	.0010033	-0.35	0.723	-.0023221	.0016107
F33.	-.0004321	.0009355	-0.46	0.644	-.0022657	.0014015
F34.	-.0014322	.0009821	-1.46	0.145	-.003357	.0004926
F35.	-.0003165	.00117	-0.27	0.787	-.0026097	.0019767
F36.	.0004551	.001282	0.35	0.723	-.0020577	.0029678
F37.	.0003783	.001285	0.29	0.768	-.0021404	.0028969
F38.	-.0001218	.0012436	-0.10	0.922	-.0025593	.0023157
F39.	.0002326	.0012947	0.18	0.857	-.002305	.0027701
F40.	2.47e-07	.0012849	0.00	1.000	-.0025182	.0025186
F41.	-.0005172	.0013099	-0.39	0.693	-.0030847	.0020502
F42.	.000825	.0012792	0.64	0.519	-.0016821	.0033321
F43.	.0012161	.0012053	1.01	0.313	-.0011462	.0035785
F44.	.0013684	.001325	1.03	0.302	-.0012285	.0039654
F45.	.00038	.0012593	0.30	0.763	-.0020882	.0028481
F46.	.0001707	.0012201	0.14	0.889	-.0022206	.002562
F47.	.0008782	.0012055	0.73	0.466	-.0014845	.0032409
ldem						
--.	.0003924	.0002947	1.33	0.183	-.0001852	.00097
F1.	.0011359	.0004537	2.50	0.012	.0002466	.0020252

F2.	.0015577	.0006806	2.29	0.022	.0002238	.0028916
F3.	.002141	.0008913	2.40	0.016	.0003941	.003888
F4.	.0027495	.0010047	2.74	0.006	.0007804	.0047186
F5.	.0022024	.0010389	2.12	0.034	.0001663	.0042385
F6.	.0025577	.0010769	2.38	0.018	.0004471	.0046683
F7.	.0027714	.0011895	2.33	0.020	.0004401	.0051027
F8.	.0027236	.0013407	2.03	0.042	.0000959	.0053513
F9.	.0030076	.0014126	2.13	0.033	.0002389	.0057763
F10.	.0033778	.00147	2.30	0.022	.0004966	.006259
F11.	.0032638	.0014663	2.23	0.026	.00039	.0061377
F12.	.003788	.0015173	2.50	0.013	.0008142	.0067619
F13.	.0044849	.0015582	2.88	0.004	.0014308	.007539
F14.	.0055155	.0016124	3.42	0.001	.0023553	.0086756
F15.	.0056243	.001637	3.44	0.001	.0024159	.0088327
F16.	.0057079	.0016294	3.50	0.000	.0025144	.0089015
F17.	.0055207	.0016065	3.44	0.001	.0023721	.0086693
F18.	.0054383	.0015771	3.45	0.001	.0023472	.0085294
F19.	.0053726	.0015273	3.52	0.000	.0023791	.008366
F20.	.0050532	.0015238	3.32	0.001	.0020666	.0080399
F21.	.0040175	.0015984	2.51	0.012	.0008847	.0071504
F22.	.0031658	.0015897	1.99	0.046	.0000499	.0062816
F23.	.0027032	.0016073	1.68	0.093	-.0004471	.0058536
F24.	.0027629	.0016011	1.73	0.084	-.0003752	.005901
F25.	.0013797	.0016298	0.85	0.397	-.0018146	.004574
F26.	.0006105	.0016342	0.37	0.709	-.0025925	.0038136
F27.	-.0002725	.0016853	-0.16	0.872	-.0035755	.0030306
F28.	-.0015594	.0016446	-0.95	0.343	-.0047827	.001664
F29.	-.0019186	.0017258	-1.11	0.266	-.0053011	.0014639
F30.	-.0026405	.001739	-1.52	0.129	-.0060489	.0007678
F31.	-.0016197	.0016612	-0.98	0.330	-.0048755	.0016362
F32.	-.0018509	.001605	-1.15	0.249	-.0049966	.0012949
F33.	-.0018874	.0015203	-1.24	0.214	-.0048672	.0010923
F34.	-.0016248	.0014787	-1.10	0.272	-.0045229	.0012734
F35.	-.0018515	.0014633	-1.27	0.206	-.0047194	.0010165
F36.	-.0004858	.0015419	-0.32	0.753	-.0035078	.0025363
F37.	.0002588	.0015522	0.17	0.868	-.0027836	.0033011
F38.	.0006703	.0015253	0.44	0.660	-.0023192	.0036598
F39.	.0003197	.0014924	0.21	0.830	-.0026054	.0032448
F40.	-.0006103	.0014755	-0.41	0.679	-.0035023	.0022817
F41.	-.0002424	.0014524	-0.17	0.867	-.003089	.0026042
F42.	.0000533	.0013779	0.04	0.969	-.0026473	.002754
F43.	.0001006	.0013972	0.07	0.943	-.0026378	.002839
F44.	.0005239	.0013587	0.39	0.700	-.0021392	.0031869
F45.	.0016039	.0012479	1.29	0.199	-.0008419	.0040497
F46.	.0024559	.0011426	2.15	0.032	.0002163	.0046954
F47.	.0032363	.0010892	2.97	0.003	.0011015	.0053711
lrpo						
--.	.0013511	.0051458	0.26	0.793	-.0087346	.0114367
F1.	-.0112431	.008878	-1.27	0.205	-.0286436	.0061575
F2.	-.0217877	.0124406	-1.75	0.080	-.0461709	.0025955
F3.	-.01469	.0132082	-1.11	0.266	-.0405775	.0111975
F4.	-.0105322	.0128015	-0.82	0.411	-.0356226	.0145583
F5.	-.0084807	.0124823	-0.68	0.497	-.0329455	.0159841
F6.	-.0186063	.012226	-1.52	0.128	-.0425688	.0053562
F7.	-.0262283	.0125337	-2.09	0.036	-.0507939	-.0016626
F8.	-.0138771	.0142621	-0.97	0.331	-.0418303	.0140761
F9.	.0083945	.0159153	0.53	0.598	-.022799	.039588
F10.	.0212248	.0153846	1.38	0.168	-.0089285	.0513781
F11.	.0276662	.0162095	1.71	0.088	-.0041038	.0594361
F12.	.0233992	.0160486	1.46	0.145	-.0080555	.054854
F13.	.0340186	.0162344	2.10	0.036	.0021999	.0658374
F14.	.0300292	.0177802	1.69	0.091	-.0048194	.0648778
F15.	.0494807	.0189734	2.61	0.009	.0122935	.0866679
F16.	.0561542	.0176141	3.19	0.001	.0216312	.0906772
F17.	.0407946	.015323	2.66	0.008	.0107621	.070827
F18.	.0502409	.0137604	3.65	0.000	.0232711	.0772108
F19.	.0481719	.0148623	3.24	0.001	.0190422	.0773016
F20.	.0569722	.0155028	3.67	0.000	.0265873	.0873571
F21.	.0451112	.0196076	2.30	0.021	.0066811	.0835413
F22.	.0493651	.0197609	2.50	0.012	.0106343	.0880958
F23.	.0422496	.0186795	2.26	0.024	.0056384	.0788607
F24.	.0321232	.0193694	1.66	0.097	-.0058402	.0700866

F25.	.0285798	.019828	1.44	0.149	-.0102824	.0674419
F26.	.0157408	.0210253	0.75	0.454	-.025468	.0569496
F27.	.0149291	.0226822	0.66	0.510	-.0295272	.0593854
F28.	-.0013663	.0243995	-0.06	0.955	-.0491884	.0464559
F29.	-.005092	.0242687	-0.21	0.834	-.0526579	.0424738
F30.	-.0035645	.0239365	-0.15	0.882	-.0504791	.0433501
F31.	-.0033362	.0238544	-0.14	0.889	-.0500898	.0434175
F32.	-.0010198	.0227685	-0.04	0.964	-.0456451	.0436056
F33.	-.0062167	.0218648	-0.28	0.776	-.0490709	.0366375
F34.	.014186	.0205577	0.69	0.490	-.0261064	.0544784
F35.	.0327719	.0186578	1.76	0.079	-.0037968	.0693405
F36.	.0301761	.0173633	1.74	0.082	-.0038555	.0642076
F37.	.0213292	.0170137	1.25	0.210	-.012017	.0546754
F38.	.020173	.0173628	1.16	0.245	-.0138575	.0542034
F39.	.0071807	.0171701	0.42	0.676	-.0264721	.0408334
F40.	-.0063622	.0168762	-0.38	0.706	-.0394388	.0267145
F41.	-.0172578	.015843	-1.09	0.276	-.0483096	.0137939
F42.	-.0182428	.0158452	-1.15	0.250	-.0492987	.0128132
F43.	-.0213688	.0160851	-1.33	0.184	-.0528949	.0101573
F44.	-.0135937	.0164044	-0.83	0.407	-.0457458	.0185584
F45.	-.0091659	.0184707	-0.50	0.620	-.0453677	.027036
F46.	-.00537	.0219332	-0.24	0.807	-.0483583	.0376184
F47.	-.0050954	.0229942	-0.22	0.825	-.0501631	.0399724

Note: IRF coefficients for exogenous variables are dynamic multipliers.
Impulses: **lpro ldem lrpo e1**
Responses: **lpro ldem lrpo**
Controls: **L.e1 L10.e1 L10.ldem L10.lpro L10.lrpo L11.e1 L11.ldem L11.lpro L11.lrpo L12.e1 L12.ldem L12.lpro L12.lrp**
L15.lpro L15.lrpo L16.e1 L16.ldem L16.lpro L16.lrpo L17.e1 L17.ldem L17.lpro L17.lrpo L18.e1 L18.ldem L18
L20.ldem L20.lpro L20.lrpo L21.e1 L21.ldem L21.lpro L21.lrpo L22.e1 L22.ldem L22.lpro L22.lrpo L23.e1 L23
L4.e1 L4.ldem L4.lpro L4.lrpo L5.e1 L5.ldem L5.lpro L5.lrpo L6.e1 L6.ldem L6.lpro L6.lrpo L7.e1 L7.ldem L

```
. irf create lpmodel
(file comparemodels.irf updated)

.
. var lpro ldem lrpo, lags(1/24)            ///
>   exog(L(0/24).e1)

Vector autoregression

Sample: 2002m2 thru 2019m12                     Number of obs     =        215
Log likelihood =   2035.871                     AIC               =  -16.20345
FPE            =   2.29e-11                     HQIC              =  -14.34114
Det(Sigma_ml)  =   1.20e-12                     SBIC              =   -11.5943

Equation           Parms      RMSE     R-sq      chi2     P>chi2
------------------------------------------------------------------
lpro                  98     .007113   0.9914   24801.23   0.0000
ldem                  98     .005032   0.9991   233660.2   0.0000
lrpo                  98     .079568   0.9744   8198.041   0.0000
------------------------------------------------------------------
```

	Coefficient	Std. err.	z	P>|z|	[95% conf. interval]	
lpro						
lpro						
L1.	.7879949	.0692835	11.37	0.000	.6522017	.923788
L2.	-.0631854	.0869277	-0.73	0.467	-.2335606	.1071898
L3.	.2023932	.0858433	2.36	0.018	.0341434	.3706429
L4.	.0730708	.0888056	0.82	0.411	-.1009851	.2471267
L5.	-.1151858	.0918968	-1.25	0.210	-.2953002	.0649286
L6.	-.0201493	.0984429	-0.20	0.838	-.2130938	.1727952
L7.	.2311445	.0957485	2.41	0.016	.0434808	.4188082
L8.	-.0627162	.090523	-0.69	0.488	-.240138	.1147056
L9.	.0255698	.0918134	0.28	0.781	-.1543811	.2055207
L10.	-.0577637	.0918826	-0.63	0.530	-.2378504	.122323
L11.	-.2631134	.09324	-2.82	0.005	-.4458604	-.0803665
L12.	.1351736	.0969136	1.39	0.163	-.0547735	.3251208
L13.	-.1130812	.100048	-1.13	0.258	-.3091717	.0830093
L14.	.1280824	.0981712	1.30	0.192	-.0643297	.3204945
L15.	.1379407	.0968572	1.42	0.154	-.0518959	.3277773

L16.	-.0188705	.09921	-0.19	0.849	-.2133186	.1755776
L17.	.0085058	.0998564	0.09	0.932	-.1872092	.2042208
L18.	-.1043324	.0978343	-1.07	0.286	-.2960841	.0874194
L19.	.0425337	.0968214	0.44	0.660	-.1472327	.2323001
L20.	-.0703884	.1009632	-0.70	0.486	-.2682726	.1274958
L21.	.0540267	.103463	0.52	0.602	-.148757	.2568104
L22.	-.2854944	.1014338	-2.81	0.005	-.4843009	-.0866879
L23.	.2627192	.1007724	2.61	0.009	.065209	.4602294
L24.	-.0489188	.0746624	-0.66	0.512	-.1952545	.0974169
ldem						
L1.	.2622377	.0946512	2.77	0.006	.0767248	.4477506
L2.	-.0912289	.1383191	-0.66	0.510	-.3623293	.1798715
L3.	-.1931505	.1349713	-1.43	0.152	-.4576894	.0713884
L4.	-.01315	.1365722	-0.10	0.923	-.2808266	.2545266
L5.	.0647977	.136803	0.47	0.636	-.2033313	.3329266
L6.	-.046445	.1353454	-0.34	0.731	-.311717	.2188271
L7.	-.0417372	.1335668	-0.31	0.755	-.3035233	.2200488
L8.	.04403	.1339006	0.33	0.742	-.2184103	.3064704
L9.	.0351739	.132076	0.27	0.790	-.2236903	.2940381
L10.	.0545007	.1322648	0.41	0.680	-.2047336	.313735
L11.	.0535951	.1347606	0.40	0.691	-.2105308	.317721
L12.	.0036769	.1373713	0.03	0.979	-.2655659	.2729198
L13.	.0443255	.1343356	0.33	0.741	-.2189674	.3076185
L14.	-.1954876	.1329771	-1.47	0.142	-.4561179	.0651428
L15.	-.0496376	.1320897	-0.38	0.707	-.3085286	.2092535
L16.	-.0204085	.1278888	-0.16	0.873	-.2710659	.230249
L17.	.1657999	.1279593	1.30	0.195	-.0849957	.4165955
L18.	-.0682028	.1293281	-0.53	0.598	-.3216812	.1852756
L19.	-.0315477	.129028	-0.24	0.807	-.2844378	.2213425
L20.	-.0557287	.1279884	-0.44	0.663	-.3065814	.195124
L21.	.1457968	.1285363	1.13	0.257	-.1061297	.3977233
L22.	-.0252504	.1268128	-0.20	0.842	-.2737988	.2232981
L23.	.2313788	.1263453	1.83	0.067	-.0162534	.4790111
L24.	-.2098489	.0832666	-2.52	0.012	-.3730484	-.0466494
lrpo						
L1.	.0065669	.0062409	1.05	0.293	-.005665	.0187988
L2.	-.0074992	.0094948	-0.79	0.430	-.0261087	.0111103
L3.	-.0007644	.0094618	-0.08	0.936	-.0193092	.0177805
L4.	.0026542	.0095919	0.28	0.782	-.0161457	.0214541
L5.	-.0143788	.0094653	-1.52	0.129	-.0329304	.0041728
L6.	.0116302	.0093298	1.25	0.213	-.006656	.0299163
L7.	.0152226	.0093303	1.63	0.103	-.0030645	.0335098
L8.	-.0143775	.0092974	-1.55	0.122	-.0326001	.0038451
L9.	.0075826	.0092904	0.82	0.414	-.0106263	.0257915
L10.	-.0032035	.0092824	-0.35	0.730	-.0213967	.0149897
L11.	-.0245342	.0092149	-2.66	0.008	-.042595	-.0064733
L12.	.0112781	.0092358	1.22	0.222	-.0068236	.0293799
L13.	.0242722	.0092156	2.63	0.008	.0062099	.0423345
L14.	-.0269271	.0092236	-2.92	0.004	-.0450051	-.0088491
L15.	.0122909	.0092586	1.33	0.184	-.0058555	.0304374
L16.	-.0021652	.0093146	-0.23	0.816	-.0204216	.0160911
L17.	.0039643	.0097108	0.41	0.683	-.0150685	.022997
L18.	.0020422	.0096601	0.21	0.833	-.0168912	.0209756
L19.	-.0011984	.0093908	-0.13	0.898	-.019604	.0172071
L20.	-.0005273	.0092891	-0.06	0.955	-.0187337	.017679
L21.	.0028018	.0091468	0.31	0.759	-.0151255	.0207291
L22.	-.0111098	.0089514	-1.24	0.215	-.0286543	.0064348
L23.	-.0038319	.0087735	-0.44	0.662	-.0210277	.013364
L24.	.005139	.0061444	0.84	0.403	-.0069039	.0171818
e1						
--.	.0006115	.0003859	1.58	0.113	-.0001448	.0013678
L1.	.0002464	.0003891	0.63	0.527	-.0005163	.001009
L2.	-.0003582	.0003899	-0.92	0.358	-.0011223	.0004059
L3.	-.0005025	.0003946	-1.27	0.203	-.0012759	.0002708
L4.	-.0010801	.0004042	-2.67	0.008	-.0018723	-.0002879
L5.	-.0004	.0004144	-0.97	0.334	-.0012122	.0004123
L6.	-.0002556	.0004111	-0.62	0.534	-.0010613	.0005502
L7.	-.0000213	.0004097	-0.05	0.959	-.0008242	.0007816
L8.	.0000134	.0004113	0.03	0.974	-.0007927	.0008196
L9.	.0014178	.0004134	3.43	0.001	.0006075	.002228

L10.	.000199	.0003986	0.50	0.618	-.0005823	.0009802
L11.	.0009847	.0003717	2.65	0.008	.0002562	.0017131
L12.	.0002157	.0003727	0.58	0.563	-.0005148	.0009462
L13.	.0008115	.0003519	2.31	0.021	.0001217	.0015013
L14.	.0003189	.0003545	0.90	0.368	-.0003759	.0010136
L15.	.0002629	.0003559	0.74	0.460	-.0004347	.0009605
L16.	-.0005603	.0003484	-1.61	0.108	-.0012431	.0001225
L17.	-.000353	.0003453	-1.02	0.307	-.0010297	.0003237
L18.	-.0006709	.0003453	-1.94	0.052	-.0013476	5.82e-06
L19.	-.0002881	.0003465	-0.83	0.406	-.0009671	.000391
L20.	.0008483	.0003474	2.44	0.015	.0001675	.0015291
L21.	-.0003638	.0003503	-1.04	0.299	-.0010503	.0003227
L22.	-.000181	.0003464	-0.52	0.601	-.00086	.000498
L23.	.0007854	.000348	2.26	0.024	.0001034	.0014675
L24.	.0005035	.0003395	1.48	0.138	-.0001618	.0011688
_cons	.2976103	.1248611	2.38	0.017	.0528871	.5423335
ldem						
lpro						
L1.	.0324021	.0490114	0.66	0.509	-.0636586	.1284627
L2.	-.0357855	.061493	-0.58	0.561	-.1563097	.0847386
L3.	.0675191	.0607259	1.11	0.266	-.0515015	.1865397
L4.	.0410793	.0628215	0.65	0.513	-.0820485	.1642072
L5.	-.195062	.0650082	-3.00	0.003	-.3224757	-.0676483
L6.	.1083672	.0696389	1.56	0.120	-.0281226	.244857
L7.	.0221673	.0677329	0.33	0.743	-.1105868	.1549215
L8.	-.145644	.0640364	-2.27	0.023	-.2711529	-.020135
L9.	.1964	.0649492	3.02	0.002	.0691019	.323698
L10.	-.1563078	.0649982	-2.40	0.016	-.2837019	-.0289137
L11.	.0766612	.0659584	1.16	0.245	-.0526148	.2059372
L12.	.0087775	.0685571	0.13	0.898	-.1255919	.143147
L13.	-.0057564	.0707744	-0.08	0.935	-.1444717	.1329589
L14.	-.0118272	.0694468	-0.17	0.865	-.1479403	.124286
L15.	-.0245554	.0685172	-0.36	0.720	-.1588467	.1097358
L16.	.0632548	.0701816	0.90	0.367	-.0742986	.2008083
L17.	.0143549	.0706389	0.20	0.839	-.1240948	.1528045
L18.	.0835481	.0692084	1.21	0.227	-.0520979	.2191942
L19.	-.1832926	.0684919	-2.68	0.007	-.3175342	-.049051
L20.	.1917345	.0714218	2.68	0.007	.0517503	.3317187
L21.	-.1243021	.0731902	-1.70	0.089	-.2677522	.019148
L22.	.1095888	.0717547	1.53	0.127	-.0310478	.2502253
L23.	.0064844	.0712868	0.09	0.928	-.1332352	.146204
L24.	-.0260427	.0528165	-0.49	0.622	-.1295612	.0774758
ldem						
L1.	1.101956	.0669567	16.46	0.000	.9707237	1.233189
L2.	.0781916	.0978475	0.80	0.424	-.1135861	.2699692
L3.	-.1970391	.0954793	-2.06	0.039	-.3841751	-.0099031
L4.	.03612	.0966118	0.37	0.709	-.1532356	.2254757
L5.	.053229	.096775	0.55	0.582	-.1364466	.2429046
L6.	-.2005829	.0957439	-2.09	0.036	-.3882375	-.0129283
L7.	.1046851	.0944857	1.11	0.268	-.0805035	.2898738
L8.	.0717688	.0947219	0.76	0.449	-.1138826	.2574203
L9.	-.1513841	.0934311	-1.62	0.105	-.3345058	.0317375
L10.	.054617	.0935647	0.58	0.559	-.1287665	.2380005
L11.	.0074416	.0953302	0.08	0.938	-.1794022	.1942854
L12.	-.0520141	.0971771	-0.54	0.592	-.2424777	.1384495
L13.	.1394519	.0950296	1.47	0.142	-.0468027	.3257065
L14.	-.0485873	.0940686	-0.52	0.605	-.2329583	.1357838
L15.	-.1695351	.0934408	-1.81	0.070	-.3526758	.0136055
L16.	.1173461	.0904691	1.30	0.195	-.0599701	.2946623
L17.	-.008659	.090519	-0.10	0.924	-.1860729	.1687549
L18.	.0284162	.0914873	0.31	0.756	-.1508955	.207728
L19.	-.069861	.0912749	-0.77	0.444	-.2487566	.1090346
L20.	.0298873	.0905396	0.33	0.741	-.147567	.2073416
L21.	.0037632	.0909271	0.04	0.967	-.1744507	.1819771
L22.	-.1964998	.0897079	-2.19	0.028	-.3723241	-.0206755
L23.	.2638027	.0893772	2.95	0.003	.0886265	.4389788
L24.	-.0489091	.0589032	-0.83	0.406	-.1643572	.0665389
lrpo						
L1.	.0185437	.0044148	4.20	0.000	.0098908	.0271966

L2.	-.016056	.0067167	-2.39	0.017	-.0292204	-.0028916
L3.	.0080875	.0066933	1.21	0.227	-.0050312	.0212062
L4.	-.0055848	.0067854	-0.82	0.410	-.0188839	.0077143
L5.	-.0168343	.0066958	-2.51	0.012	-.0299578	-.0037109
L6.	.0077253	.0066	1.17	0.242	-.0052104	.020661
L7.	.0105967	.0066003	1.61	0.108	-.0023397	.0235331
L8.	-.0116012	.006577	-1.76	0.078	-.0244919	.0012896
L9.	.010081	.0065721	1.53	0.125	-.0028001	.022962
L10.	.002106	.0065664	0.32	0.748	-.010764	.0149759
L11.	.0004307	.0065186	0.07	0.947	-.0123456	.013207
L12.	-.008318	.0065334	-1.27	0.203	-.0211232	.0044873
L13.	.0003339	.0065192	0.05	0.959	-.0124434	.0131113
L14.	.006108	.0065248	0.94	0.349	-.0066804	.0188965
L15.	-.0123329	.0065496	-1.88	0.060	-.0251698	.000504
L16.	.022564	.0065892	3.42	0.001	.0096494	.0354786
L17.	-.0119726	.0068694	-1.74	0.081	-.0254365	.0014912
L18.	.0054591	.0068336	0.80	0.424	-.0079345	.0188527
L19.	-.0048767	.0066431	-0.73	0.463	-.0178969	.0081434
L20.	.0033648	.0065712	0.51	0.609	-.0095145	.016244
L21.	-.0076327	.0064705	-1.18	0.238	-.0203145	.0050492
L22.	.010468	.0063323	1.65	0.098	-.0019431	.0228791
L23.	-.0011839	.0062064	-0.19	0.849	-.0133483	.0109805
L24.	-.0070535	.0043466	-1.62	0.105	-.0155726	.0014657
e1						
--.	.000193	.000273	0.71	0.479	-.000342	.0007281
L1.	.0004681	.0002753	1.70	0.089	-.0000714	.0010077
L2.	.0006763	.0002758	2.45	0.014	.0001358	.0012168
L3.	.0001242	.0002791	0.45	0.656	-.0004228	.0006713
L4.	.0003534	.0002859	1.24	0.216	-.000207	.0009138
L5.	.0000671	.0002932	0.23	0.819	-.0005074	.0006417
L6.	.0002561	.0002908	0.88	0.379	-.0003139	.0008261
L7.	.000497	.0002898	1.72	0.086	-.000071	.001065
L8.	.0006612	.000291	2.27	0.023	.0000909	.0012315
L9.	.0004277	.0002924	1.46	0.144	-.0001454	.0010009
L10.	.0002775	.000282	0.98	0.325	-.0002752	.0008302
L11.	-.0003992	.0002629	-1.52	0.129	-.0009145	.0001161
L12.	.0002523	.0002637	0.96	0.339	-.0002644	.0007691
L13.	.0004781	.000249	1.92	0.055	-9.88e-06	.000966
L14.	.0005407	.0002508	2.16	0.031	.0000492	.0010322
L15.	.0002526	.0002518	1.00	0.316	-.0002409	.0007461
L16.	.0002762	.0002464	1.12	0.262	-.0002068	.0007592
L17.	.0004027	.0002442	1.65	0.099	-.000076	.0008814
L18.	.0004009	.0002442	1.64	0.101	-.0000778	.0008796
L19.	-.0002959	.0002451	-1.21	0.227	-.0007762	.0001845
L20.	.0003082	.0002457	1.25	0.210	-.0001734	.0007898
L21.	.000157	.0002478	0.63	0.526	-.0003286	.0006426
L22.	.0002535	.0002451	1.03	0.301	-.0002268	.0007338
L23.	.0005231	.0002462	2.12	0.034	.0000406	.0010056
L24.	.0009938	.0002401	4.14	0.000	.0005232	.0014645
_cons	-.2502073	.0883273	-2.83	0.005	-.4233256	-.0770891

lrpo

lpro						
L1.	-.9249983	.7750174	-1.19	0.233	-2.444005	.594008
L2.	.7432964	.9723888	0.76	0.445	-1.162551	2.649143
L3.	.110583	.9602581	0.12	0.908	-1.771488	1.992654
L4.	1.26185	.9933957	1.27	0.204	-.6851695	3.20887
L5.	-2.943788	1.027973	-2.86	0.004	-4.958579	-.928997
L6.	-.0014789	1.101199	-0.00	0.999	-2.15979	2.156832
L7.	.1151396	1.07106	0.11	0.914	-1.9841	2.214379
L8.	.41424	1.012606	0.41	0.682	-1.570432	2.398911
L9.	-.2133938	1.027041	-0.21	0.835	-2.226356	1.799569
L10.	-.9920378	1.027815	-0.97	0.334	-3.006519	1.022443
L11.	-.1293712	1.042999	-0.12	0.901	-2.173611	1.914869
L12.	2.84894	1.084093	2.63	0.009	.7241575	4.973722
L13.	-1.093007	1.119155	-0.98	0.329	-3.28651	1.100496
L14.	-.7681974	1.098161	-0.70	0.484	-2.920553	1.384158
L15.	2.776545	1.083462	2.56	0.010	.6529992	4.900091
L16.	-2.229014	1.109781	-2.01	0.045	-4.404145	-.0538837
L17.	1.090162	1.117012	0.98	0.329	-1.09914	3.279465
L18.	1.199452	1.094392	1.10	0.273	-.945517	3.344421

L19.	-4.35649	1.083061	-4.02	0.000	-6.47925	-2.233729
L20.	3.554926	1.129392	3.15	0.002	1.341358	5.768494
L21.	-1.563164	1.157355	-1.35	0.177	-3.831539	.7052099
L22.	1.947172	1.134656	1.72	0.086	-.2767127	4.171057
L23.	-1.058091	1.127258	-0.94	0.348	-3.267475	1.151293
L24.	-1.069517	.8351873	-1.28	0.200	-2.706454	.5674199
ldem						
L1.	1.716577	1.058785	1.62	0.105	-.3586031	3.791757
L2.	.4148455	1.547262	0.27	0.789	-2.617732	3.447423
L3.	-.518808	1.509813	-0.34	0.731	-3.477987	2.440371
L4.	-2.804421	1.527721	-1.84	0.066	-5.798699	.1898572
L5.	2.721674	1.530302	1.78	0.075	-.2776638	5.721012
L6.	-.4559891	1.513997	-0.30	0.763	-3.423369	2.511391
L7.	1.219858	1.494102	0.82	0.414	-1.708528	4.148243
L8.	-1.751412	1.497836	-1.17	0.242	-4.687116	1.184292
L9.	-1.278825	1.477425	-0.87	0.387	-4.174526	1.616875
L10.	.0588023	1.479538	0.04	0.968	-2.841038	2.958643
L11.	.7100588	1.507456	0.47	0.638	-2.2445	3.664618
L12.	.7468895	1.53666	0.49	0.627	-2.264909	3.758688
L13.	-1.660323	1.502702	-1.10	0.269	-4.605565	1.284919
L14.	1.451499	1.487506	0.98	0.329	-1.463958	4.366956
L15.	1.474946	1.477579	1.00	0.318	-1.421055	4.370947
L16.	-.1329659	1.430587	-0.09	0.926	-2.936865	2.670933
L17.	-3.25918	1.431375	-2.28	0.023	-6.064624	-.4537353
L18.	1.71968	1.446687	1.19	0.235	-1.115774	4.555135
L19.	1.340075	1.44333	0.93	0.353	-1.488799	4.168949
L20.	-1.022236	1.431701	-0.71	0.475	-3.828318	1.783846
L21.	-2.44318	1.437829	-1.70	0.089	-5.261274	.3749143
L22.	2.24513	1.41855	1.58	0.113	-.5351777	5.025437
L23.	-1.186083	1.413321	-0.84	0.401	-3.956141	1.583975
L24.	1.221674	.9314348	1.31	0.190	-.6039045	3.047253
lrpo						
L1.	1.124765	.0698116	16.11	0.000	.9879369	1.261593
L2.	-.1108302	.1062106	-1.04	0.297	-.3189991	.0973387
L3.	-.2607467	.1058418	-2.46	0.014	-.4681927	-.0533006
L4.	.0824458	.1072971	0.77	0.442	-.1278527	.2927443
L5.	.0751608	.1058802	0.71	0.478	-.1323606	.2826822
L6.	-.0914134	.1043651	-0.88	0.381	-.2959652	.1131385
L7.	.1837921	.1043709	1.76	0.078	-.020771	.3883552
L8.	-.1715744	.1040026	-1.65	0.099	-.3754157	.0322669
L9.	.0148827	.1039244	0.14	0.886	-.1888054	.2185708
L10.	.0941151	.1038348	0.91	0.365	-.1093975	.2976276
L11.	.0898423	.1030792	0.87	0.383	-.1121893	.2918739
L12.	-.0014507	.1033127	-0.01	0.989	-.2039399	.2010386
L13.	-.1540792	.1030878	-1.49	0.135	-.3561275	.0479692
L14.	.0434555	.1031773	0.42	0.674	-.1587683	.2456794
L15.	.1204982	.1035681	1.16	0.245	-.0824917	.323488
L16.	-.1338556	.1041952	-1.28	0.199	-.3380744	.0703632
L17.	-.0034794	.1086265	-0.03	0.974	-.2163834	.2094246
L18.	.1365749	.1080593	1.26	0.206	-.0752175	.3483673
L19.	-.1302539	.1050466	-1.24	0.215	-.3361415	.0756337
L20.	.1908868	.1039098	1.84	0.066	-.0127726	.3945463
L21.	-.1359731	.1023172	-1.33	0.184	-.3365112	.064565
L22.	.094196	.1001325	0.94	0.347	-.10206	.2904521
L23.	-.15816	.0981424	-1.61	0.107	-.3505156	.0341957
L24.	.0376945	.0687324	0.55	0.583	-.0970186	.1724076
e1						
--.	-.0062406	.0043166	-1.45	0.148	-.0147009	.0022197
L1.	-.0107449	.0043529	-2.47	0.014	-.0192764	-.0022134
L2.	-.0085897	.004361	-1.97	0.049	-.0171371	-.0000423
L3.	-.0064057	.0044138	-1.45	0.147	-.0150566	.0022451
L4.	-.0043064	.0045214	-0.95	0.341	-.0131682	.0045554
L5.	-.0100156	.0046356	-2.16	0.031	-.0191012	-.00093
L6.	-.0035331	.0045987	-0.77	0.442	-.0125464	.0054802
L7.	-.0052877	.0045825	-1.15	0.249	-.0142692	.0036939
L8.	.013763	.0046011	2.99	0.003	.004745	.022781
L9.	-.002087	.0046243	-0.45	0.652	-.0111504	.0069764
L10.	-.003802	.0044589	-0.85	0.394	-.0125414	.0049373
L11.	-.0015628	.0041575	-0.38	0.707	-.0097114	.0065858
L12.	.0067725	.0041693	1.62	0.104	-.0013991	.0149441

L13.	-.0051736	.0039369	-1.31	0.189	-.0128898	.0025425
L14.	-.0008206	.0039653	-0.21	0.836	-.0085924	.0069513
L15.	.0022372	.0039816	0.56	0.574	-.0055666	.0100411
L16.	.0014943	.0038969	0.38	0.701	-.0061435	.0091322
L17.	-.0004089	.0038622	-0.11	0.916	-.0079787	.0071609
L18.	.0049704	.0038622	1.29	0.198	-.0025993	.0125402
L19.	.0019738	.0038755	0.51	0.611	-.0056222	.0095697
L20.	.0007615	.0038856	0.20	0.845	-.0068541	.0083771
L21.	-.0048318	.0039181	-1.23	0.218	-.0125112	.0028476
L22.	.0017003	.0038753	0.44	0.661	-.0058951	.0092957
L23.	.0006624	.0038929	0.17	0.865	-.0069676	.0082924
L24.	-.0022101	.0037973	-0.58	0.561	-.0096527	.0052325
_cons	3.247087	1.396718	2.32	0.020	.5095696	5.984604

```
. irf create varmodel, step(48)
(file comparemodels.irf updated)

.
. irf graph dm, impulse(e1) response(lrpo)   ///
>   irf(lpmodel varmodel) level(95) name(G2, replace) ///
>     xline(0 10 20 30 40 50, lcolor(blue)) yline(-.05 0 .05 .1, lcolor(blue))

.
. graph export "G2.svg", replace
file G2.svg saved as SVG format

. graph export "G2.png", as(png) width(4000) replace
file G2.png saved as PNG format

. graph export "G2.pdf", as(pdf) replace
file G2.pdf saved as PDF format

.
. /* GPR */
.
. matrix A = (1,0,0,0\.,1,0,0\.,.,1,0\.,.,.,1)

. matlist A
```

	c1	c2	c3	c4
r1	1	0	0	0
r2	.	1	0	0
r3	.	.	1	0
r4	.	.	.	1

```
.
. matrix B = (.,0,0,0\0,.,0,0\0,0,.,0\0,0,0,.)

. matlist B
```

	c1	c2	c3	c4
r1	.			
r2	0	.		
r3	0	0	.	
r4	0	0	0	.

```
.
```

```
. svar gprcn lpro ldem lrpo if Period>tm(2000m1), aeq(A) beq(B) ///
> lags(1/24)
Estimating short-run parameters

Iteration 0:  Log likelihood = -1093.1299
Iteration 1:  Log likelihood =  366.84133
Iteration 2:  Log likelihood =  925.91491
Iteration 3:  Log likelihood =  1190.8535
Iteration 4:  Log likelihood =  1559.6293
Iteration 5:  Log likelihood =  1872.7545
Iteration 6:  Log likelihood =  2176.4317
Iteration 7:  Log likelihood =   2281.754
Iteration 8:  Log likelihood =  2324.3724
Iteration 9:  Log likelihood =  2325.2756
Iteration 10: Log likelihood =  2325.2767
Iteration 11: Log likelihood =  2325.2767

Structural vector autoregression

 ( 1)  [/A]1_1 = 1
 ( 2)  [/A]1_2 = 0
 ( 3)  [/A]1_3 = 0
 ( 4)  [/A]1_4 = 0
 ( 5)  [/A]2_2 = 1
 ( 6)  [/A]2_3 = 0
 ( 7)  [/A]2_4 = 0
 ( 8)  [/A]3_3 = 1
 ( 9)  [/A]3_4 = 0
 (10)  [/A]4_4 = 1
 (11)  [/B]1_2 = 0
 (12)  [/B]1_3 = 0
 (13)  [/B]1_4 = 0
 (14)  [/B]2_1 = 0
 (15)  [/B]2_3 = 0
 (16)  [/B]2_4 = 0
 (17)  [/B]3_1 = 0
 (18)  [/B]3_2 = 0
 (19)  [/B]3_4 = 0
 (20)  [/B]4_1 = 0
 (21)  [/B]4_2 = 0
 (22)  [/B]4_3 = 0

Sample: 2000m2 thru 2019m12                     Number of obs     =        239
Exactly identified model                        Log likelihood    =   2325.277

------------------------------------------------------------------------------
             |      Coefficient  Std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
/A           |
         1_1 |              1  (constrained)
         2_1 |     -.0049828   .0029376    -1.70   0.090    -.0107404    .0007749
         3_1 |      .0020722   .0019717     1.05   0.293    -.0017923    .0059367
         4_1 |      -.012775   .0303738    -0.42   0.674    -.0723066    .0467566
         1_2 |              0  (constrained)
         2_2 |              1  (constrained)
         3_2 |      -.101516   .0431567    -2.35   0.019    -.1861016   -.0169304
         4_2 |      1.783492   .6709258     2.66   0.008     .4685019    3.098483
         1_3 |              0  (constrained)
         2_3 |              0  (constrained)
         3_3 |              1  (constrained)
         4_3 |     -2.378802   .9941626    -2.39   0.017    -4.327325   -.4302789
         1_4 |              0  (constrained)
         2_4 |              0  (constrained)
         3_4 |              0  (constrained)
         4_4 |              1  (constrained)
-------------+----------------------------------------------------------------
/B           |
         1_1 |      .1335812   .0061099    21.86   0.000     .1216061    .1455563
         2_1 |              0  (constrained)
         3_1 |              0  (constrained)
         4_1 |              0  (constrained)
         1_2 |              0  (constrained)
         2_2 |      .0060665   .0002775    21.86   0.000     .0055227    .0066104
```

3_2	0	(constrained)				
4_2	0	(constrained)				
1_3	0	(constrained)				
2_3	0	(constrained)				
3_3	.0040475	.0001851	21.86	0.000	.0036847	.0044104
4_3	0	(constrained)				
1_4	0	(constrained)				
2_4	0	(constrained)				
3_4	0	(constrained)				
4_4	.0622077	.0028453	21.86	0.000	.056631	.0677844

```
.
. /* compute the inv(B)*A matrix */
. matrix A=e(A)

. matrix B=e(B)

. matrix BA = inv(B)*A

. /* compute reduced form epsilon_t residuals */
. var gprcn lpro ldem lrpo if Period>tm(2000m1)

Vector autoregression

Sample: 2000m2 thru 2019m12                     Number of obs     =       239
Log likelihood =   2090.976                     AIC               =  -17.19645
FPE            =   4.00e-13                     HQIC              =  -16.98544
Det(Sigma_ml)  =   2.96e-13                     SBIC              =   -16.6728

Equation           Parms      RMSE     R-sq      chi2     P>chi2
------------------------------------------------------------------
gprcn                  9     .16742   0.5224   261.3788   0.0000
lpro                   9    .007868   0.9847   15341.54   0.0000
ldem                   9    .005694   0.9984   149979.7   0.0000
lrpo                   9    .080839   0.9591   5600.213   0.0000
------------------------------------------------------------------
```

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
gprcn						
gprcn						
L1.	.4500914	.0620854	7.25	0.000	.3284062	.5717767
L2.	.1775588	.0620725	2.86	0.004	.0558989	.2992186
lpro						
L1.	-3.200558	1.372682	-2.33	0.020	-5.890966	-.5101505
L2.	3.960201	1.376321	2.88	0.004	1.262662	6.65774
ldem						
L1.	1.927062	1.823162	1.06	0.291	-1.646271	5.500395
L2.	-1.9184	1.801013	-1.07	0.287	-5.448321	1.611521
lrpo						
L1.	.1292757	.1330733	0.97	0.331	-.1315432	.3900947
L2.	-.1787356	.1316673	-1.36	0.175	-.4367988	.0793277
_cons	-2.978551	1.618397	-1.84	0.066	-6.15055	.1934488
lpro						
gprcn						
L1.	-.001069	.0029176	-0.37	0.714	-.0067874	.0046494
L2.	.0015092	.002917	0.52	0.605	-.004208	.0072264
lpro						
L1.	.9096059	.0645068	14.10	0.000	.7831748	1.036037
L2.	-.0128948	.0646778	-0.20	0.842	-.139661	.1138714
ldem						
L1.	.1828189	.0856764	2.13	0.033	.0148963	.3507415
L2.	-.1369852	.0846355	-1.62	0.106	-.3028678	.0288973

lrpo						
L1.	.007536	.0062536	1.21	0.228	-.0047207	.0197927
L2.	-.0099852	.0061875	-1.61	0.107	-.0221124	.002142
_cons	.2389479	.0760538	3.14	0.002	.0898853	.3880106
ldem						
gprcn						
L1.	.0017658	.0021117	0.84	0.403	-.002373	.0059045
L2.	-.000872	.0021112	-0.41	0.680	-.0050099	.0032659
lpro						
L1.	.0935613	.0466877	2.00	0.045	.002055	.1850676
L2.	-.0741439	.0468115	-1.58	0.113	-.1658927	.017605
ldem						
L1.	1.16219	.0620095	18.74	0.000	1.040653	1.283726
L2.	-.1734031	.0612562	-2.83	0.005	-.293463	-.0533433
lrpo						
L1.	.0231581	.0045261	5.12	0.000	.0142871	.0320291
L2.	-.0232409	.0044783	-5.19	0.000	-.0320182	-.0144637
_cons	-.0298126	.055045	-0.54	0.588	-.1376988	.0780736
lrpo						
gprcn						
L1.	.0054426	.0299781	0.18	0.856	-.0533135	.0641986
L2.	-.0190787	.0299719	-0.64	0.524	-.0778225	.0396651
lpro						
L1.	-.6051497	.6628032	-0.91	0.361	-1.90422	.6939207
L2.	.0453315	.6645601	0.07	0.946	-1.257182	1.347845
ldem						
L1.	2.463921	.8803188	2.80	0.005	.7385276	4.189314
L2.	-2.17557	.869624	-2.50	0.012	-3.880002	-.4711387
lrpo						
L1.	1.177965	.0642548	18.33	0.000	1.052028	1.303902
L2.	-.2313584	.0635759	-3.64	0.000	-.3559649	-.1067519
_cons	1.239634	.7814471	1.59	0.113	-.291974	2.771243

```
. capture drop epsilon_*

. predict double epsilon_1 if Period>tm(2000m1),residual eq(#1)
(481 missing values generated)

. predict double epsilon_2 if Period>tm(2000m1),residual eq(#2)
(481 missing values generated)

. predict double epsilon_3 if Period>tm(2000m1),residual eq(#3)
(481 missing values generated)

. predict double epsilon_4 if Period>tm(2000m1),residual eq(#4)
(481 missing values generated)

. /* store the epsilon* variables in the epsilon matrix */
. mkmat epsilon_*, matrix(epsilon_)
```

```
. /* compute e_t matrix of structural shocks */
. matrix e_ = (BA*epsilon_')'

. /* store columns of e as variables e1, e2, and e3 */
. svmat double e_

.
. label variable epsilon_1 "Reduced-form shocks - GPR"

. label variable e_1 "Structural shocks - GPR"

.
. twoway (tsline e_1 if Period>tm(2000m1)) (tsline epsilon_1 ///
> if Period>tm(2000m1), yaxis(1)), ///
>  name(G3, replace) legend(position(6)) graphregion(margin(r+5))

.
. graph export "G3.svg", as(svg) replace
file G3.svg saved as SVG format

. graph export "G3.png", as(png) width(4000) replace
file G3.png saved as PNG format

. graph export "G3.pdf", as(pdf) replace
file G3.pdf saved as PDF format

.
. irf set comparemodels1.irf, replace
(file comparemodels1.irf created)
(file comparemodels1.irf now active)

. quietly lpirf lpro ldem lrpo, step(48) lags(1/24) ///
>   exog(L(0/24).e_1) vce(robust)

. irf create lpmodel1
(file comparemodels1.irf updated)

.
. quietly var lpro ldem lrpo, lags(1/24)            ///
>   exog(L(0/24).e_1)

. irf create varmodel1, step(48)
(file comparemodels1.irf updated)

.
. irf graph dm, impulse(e_1) response(lrpo)   ///
>   irf(lpmodel1 varmodel1) level(95) name(G4, replace) ///
>     xline(0 10 20 30 40 50, lcolor(blue)) yline(-.05 0 .05 .1, lcolor(blue))

.
. graph export "G4.svg", replace
file G4.svg saved as SVG format

. graph export "G4.png", as(png) width(4000) replace
file G4.png saved as PNG format

. graph export "G4.pdf", as(pdf) replace
file G4.pdf saved as PDF format

.
. twoway (tsline e1 if Period>tm(2000m1)) (tsline e_1 ///
> if Period>tm(2000m1), yaxis(1)), ///
>  name(G5, replace) legend(position(6)) graphregion(margin(r+5))
```

```
.
. graph export "G5.svg", replace
file G5.svg saved as SVG format

. graph export "G5.png", as(png) width(4000) replace
file G5.png saved as PNG format

. graph export "G5.pdf", as(pdf) replace
file G5.pdf saved as PDF format

.
. pwcorr lrpo e1 e_1, obs sig listwise star(5) sidak

             |     lrpo       e1      e_1
-------------+---------------------------
        lrpo |   1.0000
             |
             |      239
             |
          e1 |  -0.0304   1.0000
             |   0.9536
             |      239      239
             |
         e_1 |  -0.0073   0.0693   1.0000
             |   0.9993   0.6364
             |      239      239      239

.
. twoway (scatter lrpo e1) (lfit lrpo e1), name(G6, replace)

. graph export "G6.svg", replace
file G6.svg saved as SVG format

. graph export "G6.png", as(png) width(4000) replace
file G6.png saved as PNG format

. graph export "G6.pdf", as(pdf) replace
file G6.pdf saved as PDF format

.
. twoway (scatter lrpo e_1) (lfit lrpo e_1), name(G7, replace)

. graph export "G7.svg", replace
file G7.svg saved as SVG format

. graph export "G7.png", as(png) width(4000) replace
file G7.png saved as PNG format

. graph export "G7.pdf", as(pdf) replace
file G7.pdf saved as PDF format

.
. save lpirf_PRI_GPR, replace
file lpirf_PRI_GPR.dta saved

.
. ****************************************************************
. **# Robustness with IGREA ***************************************
. ****************************************************************
.
```

```
. matrix A = (1,0,0,0\.,1,0,0\.,.,1,0\.,.,.,1)

. matlist A
```

	c1	c2	c3	c4
r1	**1**	**0**	**0**	**0**
r2	**.**	**1**	**0**	**0**
r3	**.**	**.**	**1**	**0**
r4	**.**	**.**	**.**	**1**

```
.
. matrix B = (.,0,0,0\0,.,0,0\0,0,.,0\0,0,0,.)

. matlist B
```

	c1	c2	c3	c4
r1	**.**			
r2	**0**	**.**		
r3	**0**	**0**	**.**	
r4	**0**	**0**	**0**	**.**

```
.
. svar lpri lpro ligrea lrpo if Period>tm(2000m1), aeq(A) beq(B) ///
> lags(1/24)
Estimating short-run parameters

Iteration 0:  Log likelihood = -1291.7798
Iteration 1:  Log likelihood = -161.03225
Iteration 2:  Log likelihood =  92.968259
Iteration 3:  Log likelihood =  659.74678
Iteration 4:  Log likelihood =  724.00374
Iteration 5:  Log likelihood =  903.35393
Iteration 6:  Log likelihood =    1123.45
Iteration 7:  Log likelihood =  1140.2874
Iteration 8:  Log likelihood =  1141.2526
Iteration 9:  Log likelihood =  1141.2566
Iteration 10: Log likelihood =  1141.2566

Structural vector autoregression

 ( 1)  [/A]1_1 = 1
 ( 2)  [/A]1_2 = 0
 ( 3)  [/A]1_3 = 0
 ( 4)  [/A]1_4 = 0
 ( 5)  [/A]2_2 = 1
 ( 6)  [/A]2_3 = 0
 ( 7)  [/A]2_4 = 0
 ( 8)  [/A]3_3 = 1
 ( 9)  [/A]3_4 = 0
 (10)  [/A]4_4 = 1
 (11)  [/B]1_2 = 0
 (12)  [/B]1_3 = 0
 (13)  [/B]1_4 = 0
 (14)  [/B]2_1 = 0
 (15)  [/B]2_3 = 0
 (16)  [/B]2_4 = 0
 (17)  [/B]3_1 = 0
 (18)  [/B]3_2 = 0
 (19)  [/B]3_4 = 0
 (20)  [/B]4_1 = 0
 (21)  [/B]4_2 = 0
 (22)  [/B]4_3 = 0

Sample: 2000m2 thru 2019m12                     Number of obs     =        239
Exactly identified model                        Log likelihood    =   1141.257
```

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
/A						
1_1	**1**	(constrained)				
2_1	**-.0118214**	**.0040088**	**-2.95**	**0.003**	**-.0196785**	**-.0039643**
3_1	**-.3751618**	**.8868091**	**-0.42**	**0.672**	**-2.113276**	**1.362952**
4_1	**.097546**	**.0481201**	**2.03**	**0.043**	**.0032322**	**.1918597**
1_2	**0**	(constrained)				
2_2	**1**	(constrained)				
3_2	**14.41956**	**14.05586**	**1.03**	**0.305**	**-13.12942**	**41.96853**
4_2	**1.104209**	**.7640921**	**1.45**	**0.148**	**-.3933836**	**2.601802**
1_3	**0**	(constrained)				
2_3	**0**	(constrained)				
3_3	**1**	(constrained)				
4_3	**-.0052758**	**.0035086**	**-1.50**	**0.133**	**-.0121525**	**.001601**
1_4	**0**	(constrained)				
2_4	**0**	(constrained)				
3_4	**0**	(constrained)				
4_4	**1**	(constrained)				
/B						
1_1	**.0829924**	**.003796**	**21.86**	**0.000**	**.0755524**	**.0904324**
2_1	**0**	(constrained)				
3_1	**0**	(constrained)				
4_1	**0**	(constrained)				
1_2	**0**	(constrained)				
2_2	**.0051434**	**.0002353**	**21.86**	**0.000**	**.0046823**	**.0056045**
3_2	**0**	(constrained)				
4_2	**0**	(constrained)				
1_3	**0**	(constrained)				
2_3	**0**	(constrained)				
3_3	**1.117653**	**.0511203**	**21.86**	**0.000**	**1.017459**	**1.217847**
4_3	**0**	(constrained)				
1_4	**0**	(constrained)				
2_4	**0**	(constrained)				
3_4	**0**	(constrained)				
4_4	**.0606235**	**.0027729**	**21.86**	**0.000**	**.0551888**	**.0660582**

```
.
. /* compute the inv(B)*A matrix */
. matrix A=e(A)

. matrix B=e(B)

. matrix BA = inv(B)*A

. /* compute reduced form epsilon_t residuals */
. var lpri lpro ligrea lrpo if Period>tm(2000m1)

Vector autoregression

Sample: 2000m2 thru 2019m12                     Number of obs     =       239
Log likelihood =   848.3584                     AIC               =  -6.797979
FPE            =   1.31e-08                     HQIC              =  -6.586961
Det(Sigma_ml)  =   9.70e-09                     SBIC              =  -6.274327

Equation           Parms      RMSE     R-sq      chi2     P>chi2
------------------------------------------------------------------
lpri                   9     .114594   0.9830   13804.51   0.0000
lpro                   9     .008001   0.9841   14825.52   0.0000
ligrea                 9     1.47542   0.8577   1440.013   0.0000
lrpo                   9     .081359   0.9585   5525.825   0.0000
------------------------------------------------------------------
```

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
lpri						
lpri						
L1.	1.031543	.065542	15.74	0.000	.9030827	1.160003
L2.	-.0488196	.0655629	-0.74	0.456	-.1773204	.0796813
lpro						
L1.	-.543099	.9221104	-0.59	0.556	-2.350402	1.264204
L2.	.0585194	.9262575	0.06	0.950	-1.756912	1.873951
ligrea						
L1.	-.001409	.0050594	-0.28	0.781	-.0113253	.0085073
L2.	.001189	.0050561	0.24	0.814	-.0087207	.0110988
lrpo						
L1.	.0609772	.0891623	0.68	0.494	-.1137777	.2357321
L2.	-.0005068	.0894578	-0.01	0.995	-.1758408	.1748272
_cons	1.890857	.6390209	2.96	0.003	.6383992	3.143315
lpro						
lpri						
L1.	.004347	.0045763	0.95	0.342	-.0046224	.0133163
L2.	-.0048775	.0045777	-1.07	0.287	-.0138496	.0040947
lpro						
L1.	.9592392	.0643836	14.90	0.000	.8330497	1.085429
L2.	.0331146	.0646732	0.51	0.609	-.0936425	.1598716
ligrea						
L1.	.0005136	.0003533	1.45	0.146	-.0001788	.0012059
L2.	-.0003914	.000353	-1.11	0.268	-.0010834	.0003005
lrpo						
L1.	.0126148	.0062255	2.03	0.043	.000413	.0248165
L2.	-.0116823	.0062461	-1.87	0.061	-.0239245	.0005599
_cons	.0311188	.0446177	0.70	0.486	-.0563304	.1185679
ligrea						
lpri						
L1.	1.191882	.8438633	1.41	0.158	-.4620597	2.845824
L2.	-1.205254	.8441316	-1.43	0.153	-2.859722	.4492131
lpro						
L1.	-9.122932	11.87231	-0.77	0.442	-32.39223	14.14637
L2.	6.247787	11.9257	0.52	0.600	-17.12616	29.62174
ligrea						
L1.	.8977231	.0651407	13.78	0.000	.7700496	1.025396
L2.	.0026164	.065098	0.04	0.968	-.1249734	.1302061
lrpo						
L1.	1.486564	1.147978	1.29	0.195	-.7634315	3.73656
L2.	-1.511413	1.151782	-1.31	0.189	-3.768865	.7460383
_cons	12.52106	8.227491	1.52	0.128	-3.604523	28.64665
lrpo						
lpri						
L1.	-.035083	.0465331	-0.75	0.451	-.1262861	.0561202
L2.	.0464267	.0465479	1.00	0.319	-.0448055	.1376588
lpro						
L1.	-.0006364	.6546737	-0.00	0.999	-1.283773	1.2825
L2.	.1314577	.657618	0.20	0.842	-1.15745	1.420365
ligrea						
L1.	.0049832	.003592	1.39	0.165	-.0020571	.0120235
L2.	-.001918	.0035897	-0.53	0.593	-.0089536	.0051177

lrpo						
L1.	**1.204628**	**.0633029**	**19.03**	**0.000**	**1.080557**	**1.328699**
L2.	**-.2588484**	**.0635126**	**-4.08**	**0.000**	**-.3833308**	**-.1343659**
_cons	**-.3904982**	**.4536877**	**-0.86**	**0.389**	**-1.27971**	**.4987134**

```
. capture drop upsilon*

. predict double upsilon1 if Period>tm(2000m1),residual eq(#1)
(481 missing values generated)

. predict double upsilon2 if Period>tm(2000m1),residual eq(#2)
(481 missing values generated)

. predict double upsilon3 if Period>tm(2000m1),residual eq(#3)
(481 missing values generated)

. predict double upsilon4 if Period>tm(2000m1),residual eq(#4)
(481 missing values generated)

. /* store the epsilon* variables in the epsilon matrix */
. mkmat upsilon*, matrix(upsilon)

. /* compute e_t matrix of structural shocks */
. matrix u = (BA*upsilon')'

. /* store columns of e as variables e1, e2, and e3 */
. svmat double u

.
. label variable upsilon1 "Reduced-form shocks - PRI (Robustness)"

. label variable u1 "Structural shocks - PRI (Robustness)"

.
. twoway (tsline u1 if Period>tm(2000m1)) (tsline upsilon1 ///
> if Period>tm(2000m1), yaxis(1)), ///
>  name(G1R, replace) legend(position(6)) graphregion(margin(r+5))

.
. graph export "G1R.svg", replace
file G1R.svg saved as SVG format

. graph export "G1R.png", as(png) width(4000) replace
file G1R.png saved as PNG format

. graph export "G1R.pdf", as(pdf) replace
file G1R.pdf saved as PDF format

.
. irf set comparemodels.irf, replace
(file comparemodels.irf created)
(file comparemodels.irf now active)

. quietly lpirf lpro ligrea lrpo, step(48) lags(1/24) ///
>   exog(L(0/24).u1) vce(robust)

. irf create lpmodel
(file comparemodels.irf updated)
```

```
.
. quietly var lpro ligrea lrpo, lags(1/24)            ///
>   exog(L(0/24).u1)

. irf create varmodel, step(48)
(file comparemodels.irf updated)

.
. irf graph dm, impulse(u1) response(lrpo)   ///
>   irf(lpmodel varmodel) level(95) name(G2R, replace) ///
>     xline(0 10 20 30 40 50, lcolor(blue)) yline(-.05 0 .05 .1, lcolor(blue))

.
. graph export "G2R.svg", replace
file G2R.svg saved as SVG format

. graph export "G2R.png", as(png) width(4000) replace
file G2R.png saved as PNG format

. graph export "G2R.pdf", as(pdf) replace
file G2R.pdf saved as PDF format

.
. /* GPR */
.
. matrix A = (1,0,0,0\.,1,0,0\.,.,1,0\.,.,.,1)

. matlist A

             |         c1         c2         c3         c4
-------------+--------------------------------------------
          r1 |          1          0          0          0
          r2 |          .          1          0          0
          r3 |          .          .          1          0
          r4 |          .          .          .          1

.
. matrix B = (.,0,0,0\0,.,0,0\0,0,.,0\0,0,0,.)

. matlist B

             |         c1         c2         c3         c4
-------------+--------------------------------------------
          r1 |          .
          r2 |          0          .
          r3 |          0          0          .
          r4 |          0          0          0          .

.
. svar gprcn lpro ligrea lrpo if Period>tm(2000m1), aeq(A) beq(B) ///
> lags(1/24)
Estimating short-run parameters

Iteration 0:  Log likelihood = -1294.2116
Iteration 1:  Log likelihood = -484.18673
Iteration 2:  Log likelihood = -404.56558
Iteration 3:  Log likelihood = -194.34599
Iteration 4:  Log likelihood =  187.25055
Iteration 5:  Log likelihood =   588.0996
Iteration 6:  Log likelihood =  855.64494
Iteration 7:  Log likelihood =  987.12974
Iteration 8:  Log likelihood =  1005.7811
Iteration 9:  Log likelihood =  1006.5395
Iteration 10: Log likelihood =  1006.5401
Iteration 11: Log likelihood =  1006.5401

Structural vector autoregression
```

```
( 1)  [/A]1_1 = 1
( 2)  [/A]1_2 = 0
( 3)  [/A]1_3 = 0
( 4)  [/A]1_4 = 0
( 5)  [/A]2_2 = 1
( 6)  [/A]2_3 = 0
( 7)  [/A]2_4 = 0
( 8)  [/A]3_3 = 1
( 9)  [/A]3_4 = 0
(10)  [/A]4_4 = 1
(11)  [/B]1_2 = 0
(12)  [/B]1_3 = 0
(13)  [/B]1_4 = 0
(14)  [/B]2_1 = 0
(15)  [/B]2_3 = 0
(16)  [/B]2_4 = 0
(17)  [/B]3_1 = 0
(18)  [/B]3_2 = 0
(19)  [/B]3_4 = 0
(20)  [/B]4_1 = 0
(21)  [/B]4_2 = 0
(22)  [/B]4_3 = 0
```

Sample: **2000m2** thru **2019m12** Number of obs = **239**
Exactly identified model Log likelihood = **1006.54**

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
/A						
1_1	**1**	(constrained)				
2_1	**-.0079562**	**.0026317**	**-3.02**	**0.003**	**-.0131142**	**-.0027981**
3_1	**-.3761626**	**.5528259**	**-0.68**	**0.496**	**-1.459681**	**.7073563**
4_1	**.0054321**	**.0317605**	**0.17**	**0.864**	**-.0568173**	**.0676815**
1_2	**0**	(constrained)				
2_2	**1**	(constrained)				
3_2	**9.810127**	**13.33532**	**0.74**	**0.462**	**-16.32662**	**35.94688**
4_2	**1.196497**	**.7662548**	**1.56**	**0.118**	**-.3053345**	**2.698329**
1_3	**0**	(constrained)				
2_3	**0**	(constrained)				
3_3	**1**	(constrained)				
4_3	**-.0038824**	**.0037126**	**-1.05**	**0.296**	**-.011159**	**.0033942**
1_4	**0**	(constrained)				
2_4	**0**	(constrained)				
3_4	**0**	(constrained)				
4_4	**1**	(constrained)				
/B						
1_1	**.1326207**	**.0060659**	**21.86**	**0.000**	**.1207317**	**.1445097**
2_1	**0**	(constrained)				
3_1	**0**	(constrained)				
4_1	**0**	(constrained)				
1_2	**0**	(constrained)				
2_2	**.0053957**	**.0002468**	**21.86**	**0.000**	**.004912**	**.0058794**
3_2	**0**	(constrained)				
4_2	**0**	(constrained)				
1_3	**0**	(constrained)				
2_3	**0**	(constrained)				
3_3	**1.11237**	**.0508786**	**21.86**	**0.000**	**1.01265**	**1.21209**
4_3	**0**	(constrained)				
1_4	**0**	(constrained)				
2_4	**0**	(constrained)				
3_4	**0**	(constrained)				
4_4	**.0638452**	**.0029202**	**21.86**	**0.000**	**.0581216**	**.0695687**

```
.
. /* compute the inv(B)*A matrix */
. matrix A=e(A)

. matrix B=e(B)

. matrix BA = inv(B)*A

. /* compute reduced form epsilon_t residuals */
. var gprcn lpro ligrea lrpo if Period>tm(2000m1)

Vector autoregression

Sample: 2000m2 thru 2019m12                     Number of obs     =        239
Log likelihood =   752.5675                     AIC               =  -5.996381
FPE            =   2.92e-08                     HQIC              =  -5.785364
Det(Sigma_ml)  =   2.16e-08                     SBIC              =   -5.47273

Equation           Parms      RMSE     R-sq      chi2     P>chi2
------------------------------------------------------------------
gprcn                  9     .167708   0.5207   259.6591   0.0000
lpro                   9     .008019   0.9841   14758.78   0.0000
ligrea                 9     1.47327   0.8581   1444.922   0.0000
lrpo                   9      .08174   0.9582    5472.14   0.0000
------------------------------------------------------------------

------------------------------------------------------------------------------
             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
gprcn        |
       gprcn |
         L1. |   .4443778   .0622216     7.14   0.000     .3224256      .56633
         L2. |   .1782056   .0623994     2.86   0.004     .0559051    .3005062
             |
        lpro |
         L1. |  -3.018679   1.338652    -2.26   0.024    -5.642388   -.3949694
         L2. |   3.850703   1.339876     2.87   0.004     1.224594    6.476811
             |
      ligrea |
         L1. |   .0023119   .0074545     0.31   0.756    -.0122986    .0169225
         L2. |  -.0005368   .0073999    -0.07   0.942    -.0150402    .0139667
             |
        lrpo |
         L1. |   .1532182   .1293141     1.18   0.236    -.1002328    .4066692
         L2. |  -.2082281   .1283588    -1.62   0.105    -.4598068    .0433506
             |
       _cons |  -3.226462   .9841889    -3.28   0.001    -5.155436   -1.297487
-------------+----------------------------------------------------------------
lpro         |
       gprcn |
         L1. |  -.0013264   .0029751    -0.45   0.656    -.0071576    .0045047
         L2. |   .0018845   .0029836     0.63   0.528    -.0039633    .0077323
             |
        lpro |
         L1. |   .9722475   .0640079    15.19   0.000     .8467943    1.097701
         L2. |   .0205195   .0640664     0.32   0.749    -.1050484    .1460874
             |
      ligrea |
         L1. |   .0005198   .0003564     1.46   0.145    -.0001788    .0012184
         L2. |  -.0003937   .0003538    -1.11   0.266    -.0010872    .0002998
             |
        lrpo |
         L1. |   .0116968   .0061832     1.89   0.059     -.000422    .0238156
         L2. |  -.0112313   .0061375    -1.83   0.067    -.0232606     .000798
             |
       _cons |   .0303798   .0470592     0.65   0.519    -.0618545    .1226141
-------------+----------------------------------------------------------------
ligrea       |
       gprcn |
         L1. |    .639055   .5465994     1.17   0.242    -.4322601     1.71037
         L2. |   .1964158   .5481607     0.36   0.720    -.8779594    1.270791
             |
        lpro |
```

L1.	-7.986964	11.75967	-0.68	0.497	-31.0355	15.06157
L2.	2.842411	11.77043	0.24	0.809	-20.2272	25.91203
ligrea						
L1.	.8883138	.0654857	13.56	0.000	.7599641	1.016664
L2.	.0047228	.0650056	0.07	0.942	-.1226859	.1321315
lrpo						
L1.	1.304938	1.135987	1.15	0.251	-.9215566	3.531432
L2.	-1.189063	1.127596	-1.05	0.292	-3.39911	1.020984
_cons	21.442	8.645818	2.48	0.013	4.49651	38.38749
lrpo						
gprcn						
L1.	-.0010515	.0303266	-0.03	0.972	-.0604906	.0583877
L2.	-.0183931	.0304133	-0.60	0.545	-.078002	.0412158
lpro						
L1.	-.1172443	.6524548	-0.18	0.857	-1.396032	1.161544
L2.	.2327742	.6530515	0.36	0.722	-1.047183	1.512732
ligrea						
L1.	.005088	.0036333	1.40	0.161	-.0020331	.0122092
L2.	-.0020696	.0036067	-0.57	0.566	-.0091385	.0049993
lrpo						
L1.	1.214098	.0630273	19.26	0.000	1.090566	1.337629
L2.	-.2573826	.0625617	-4.11	0.000	-.3800013	-.134764
_cons	-.3469605	.4796906	-0.72	0.469	-1.287137	.5932159

```
. capture drop epsilon_*

. predict double upsilon_1 if Period>tm(2000m1),residual eq(#1)
(481 missing values generated)

. predict double upsilon_2 if Period>tm(2000m1),residual eq(#2)
(481 missing values generated)

. predict double upsilon_3 if Period>tm(2000m1),residual eq(#3)
(481 missing values generated)

. predict double upsilon_4 if Period>tm(2000m1),residual eq(#4)
(481 missing values generated)

. /* store the epsilon* variables in the epsilon matrix */
. mkmat upsilon_*, matrix(upsilon_)

. /* compute e_t matrix of structural shocks */
. matrix u_ = (BA*upsilon_')'

. /* store columns of e as variables e1, e2, and e3 */
. svmat double u_

.
. label variable upsilon_1 "Reduced-form shocks - GPR (Robustness)"

. label variable u_1 "Structural shocks - GPR (Robustness)"
```

```
.
. twoway (tsline u_1 if Period>tm(2000m1)) (tsline upsilon_1 ///
> if Period>tm(2000m1), yaxis(1)), ///
>  name(G3R, replace) legend(position(6)) graphregion(margin(r+5))

.
. graph export "G3R.svg", as(svg) replace
file G3R.svg saved as SVG format

. graph export "G3R.png", as(png) width(4000) replace
file G3R.png saved as PNG format

. graph export "G3R.pdf", as(pdf) replace
file G3R.pdf saved as PDF format

.
. irf set comparemodels1.irf, replace
(file comparemodels1.irf created)
(file comparemodels1.irf now active)

. quietly lpirf lpro ligrea lrpo, step(48) lags(1/24) ///
>   exog(L(0/24).u_1) vce(robust)

. irf create lpmodel1
(file comparemodels1.irf updated)

.
. quietly var lpro ligrea lrpo, lags(1/24)            ///
>   exog(L(0/24).u_1)

. irf create varmodel1, step(48)
(file comparemodels1.irf updated)

.
. irf graph dm, impulse(u_1) response(lrpo)   ///
>   irf(lpmodel1 varmodel1) level(95) name(G4R, replace) ///
>     xline(0 10 20 30 40 50, lcolor(blue)) yline(-.05 0 .05 .1, lcolor(blue))

.
. graph export "G4R.svg", replace
file G4R.svg saved as SVG format

. graph export "G4R.png", as(png) width(4000) replace
file G4R.png saved as PNG format

. graph export "G4R.pdf", as(pdf) replace
file G4R.pdf saved as PDF format

.
. twoway (tsline u1 if Period>tm(2000m1)) (tsline u_1 ///
> if Period>tm(2000m1), yaxis(1)), ///
>  name(G5R, replace) legend(position(6)) graphregion(margin(r+5))

.
. graph export "G5R.svg", replace
file G5R.svg saved as SVG format

. graph export "G5R.png", as(png) width(4000) replace
file G5R.png saved as PNG format

. graph export "G5R.pdf", as(pdf) replace
file G5R.pdf saved as PDF format
```

```
.
. pwcorr lrpo u1 u_1, obs sig listwise star(5) sidak
```

	lrpo	u1	u_1
lrpo	**1.0000**		
	239		
u1	**-0.0268**	**1.0000**	
	0.9674		
	239	**239**	
u_1	**-0.0059**	**0.0809**	**1.0000**
	0.9996	**0.5123**	
	239	**239**	**239**

```
.
. twoway (scatter lrpo u1) (lfit lrpo u1), name(G6R, replace)

. graph export "G6R.svg", replace
file G6R.svg saved as SVG format

. graph export "G6R.png", as(png) width(4000) replace
file G6R.png saved as PNG format

. graph export "G6R.pdf", as(pdf) replace
file G6R.pdf saved as PDF format

.
. twoway (scatter lrpo u_1) (lfit lrpo u_1), name(G7R, replace)

. graph export "G7R.svg", replace
file G7R.svg saved as SVG format

. graph export "G7R.png", as(png) width(4000) replace
file G7R.png saved as PNG format

. graph export "G7R.pdf", as(pdf) replace
file G7R.pdf saved as PDF format

.
. **#************ Expectations *********************************
.
. use database_pri_gpr.dta, clear

.
. merge 1:1 Period using expectations

    Result                      Number of obs
    ------------------------------------------
    Not matched                            55
        from master                        12  (_merge==1)
        from using                         43  (_merge==2)

    Matched                               708  (_merge==3)
    ------------------------------------------

.
. drop _merge
```

```
.
. // PRI ----> Expectations
.
. graph drop _all

.
. sum BCI CLI CCI lpri
```

Variable	Obs	Mean	Std. dev.	Min	Max
BCI	**571**	**99.93125**	**1.065472**	**95.06452**	**101.863**
CLI	**751**	**100.2146**	**1.345907**	**89.72672**	**104.628**
CCI	**607**	**99.98832**	**1.177633**	**95.47003**	**101.9302**
lpri	**720**	**-.305086**	**1.281585**	**-2.174752**	**1.458615**

```
.
. tvgc CCI lpri, trend window(80) sizecontrol(60) p(2)     ///
>  d(1) seed(123) boot(499) robust prefix(CCI) graph pdf   ///
>  notitle
```

Time-varying LA-VAR Granger causality test including trend, 1973m1 - 2019m12

TVGC robust test statistics for H0: CCI is GC

	Max_Wald_forward	Max_Wald_rolling	Max_Wald_recursive
lpri	**26.479**	**54.477**	**55.587**

90th percentile of test statistics [499 replications]

	Max_Wald_forward	Max_Wald_rolling	Max_Wald_recursive
lpri	**5.993**	**5.957**	**6.646**

95th percentile of test statistics [499 replications]

	Max_Wald_forward	Max_Wald_rolling	Max_Wald_recursive
lpri	**7.781**	**7.628**	**8.686**

99th percentile of test statistics [499 replications]

	Max_Wald_forward	Max_Wald_rolling	Max_Wald_recursive
lpri	**13.040**	**12.582**	**13.507**

```
.
. tvgc BCI lpri, trend window(80) sizecontrol(60) p(2)      ///
>  d(1) seed(123) boot(499) robust prefix(BCI) graph pdf    ///
>  notitle
```

Time-varying LA-VAR Granger causality test including trend, 1975m12 - 2019m12

TVGC robust test statistics for H0: BCI is GC

	Max_Wald_forward	Max_Wald_rolling	Max_Wald_recursive
lpri	**10.515**	**11.731**	**13.227**

90th percentile of test statistics [499 replications]

	Max_Wald_forward	Max_Wald_rolling	Max_Wald_recursive
lpri	**4.837**	**5.477**	**6.138**

95th percentile of test statistics [499 replications]

	Max_Wald_forward	Max_Wald_rolling	Max_Wald_recursive
lpri	**6.428**	**7.335**	**7.605**

99th percentile of test statistics [499 replications]

	Max_Wald_forward	Max_Wald_rolling	Max_Wald_recursive
lpri	**11.711**	**12.380**	**12.440**

```
.
. tvgc CLI lpri, trend window(80) sizecontrol(60) p(2)      ///
>  d(1) seed(123) boot(499) robust prefix(CLI) graph pdf    ///
>  notitle
```

Time-varying LA-VAR Granger causality test including trend, 1961m1 - 2019m12

TVGC robust test statistics for H0: CLI is GC

	Max_Wald_forward	Max_Wald_rolling	Max_Wald_recursive
lpri	**12.812**	**33.829**	**39.248**

90th percentile of test statistics [499 replications]

	Max_Wald_forward	Max_Wald_rolling	Max_Wald_recursive
lpri	**6.016**	**6.285**	**6.863**

95th percentile of test statistics [499 replications]

	Max_Wald_forward	Max_Wald_rolling	Max_Wald_recursive
lpri	**7.582**	**8.352**	**8.953**

99th percentile of test statistics [499 replications]

	Max_Wald_forward	Max_Wald_rolling	Max_Wald_recursive
lpri	**10.712**	**11.926**	**12.600**

```
.
. // GPRCN ----> Expectations
.
. sum BCI CLI CCI gprcn
```

Variable	Obs	Mean	Std. dev.	Min	Max
BCI	**571**	**99.93125**	**1.065472**	**95.06452**	**101.863**
CLI	**751**	**100.2146**	**1.345907**	**89.72672**	**104.628**
CCI	**607**	**99.98832**	**1.177633**	**95.47003**	**101.9302**
gprcn	**420**	**.3757173**	**.2305926**	**.07034**	**1.521136**

```
.
. tvgc CCI gprcn, trend window(80) sizecontrol(40) p(2)     ///
>  d(1) seed(123) boot(499) robust prefix(CCI) graph pdf    ///
>  notitle
```

Time-varying LA-VAR Granger causality test including trend, 1985m1 - 2019m12

TVGC robust test statistics for H0: CCI is GC

	Max_Wald_forward	Max_Wald_rolling	Max_Wald_recursive
gprcn	**7.674**	**10.965**	**14.298**

90th percentile of test statistics [499 replications]

	Max_Wald_forward	Max_Wald_rolling	Max_Wald_recursive
gprcn	**6.100**	**6.586**	**7.129**

95th percentile of test statistics [499 replications]

	Max_Wald_forward	Max_Wald_rolling	Max_Wald_recursive
gprcn	**7.759**	**8.104**	**8.696**

99th percentile of test statistics [499 replications]

	Max_Wald_forward	Max_Wald_rolling	Max_Wald_recursive
gprcn	**11.653**	**11.794**	**12.486**

```
.
. tvgc BCI gprcn, trend window(80) sizecontrol(40) p(2)     ///
>  d(1) seed(123) boot(499) robust prefix(BCI) graph pdf    ///
>  notitle
```

Time-varying LA-VAR Granger causality test including trend, 1985m1 - 2019m12

TVGC robust test statistics for H0: BCI is GC

	Max_Wald_forward	Max_Wald_rolling	Max_Wald_recursive
gprcn	**10.214**	**9.963**	**13.562**

90th percentile of test statistics [499 replications]

	Max_Wald_forward	Max_Wald_rolling	Max_Wald_recursive
gprcn	**5.907**	**6.330**	**6.566**

95th percentile of test statistics [499 replications]

	Max_Wald_forward	Max_Wald_rolling	Max_Wald_recursive
gprcn	**7.163**	**7.735**	**8.200**

99th percentile of test statistics [499 replications]

	Max_Wald_forward	Max_Wald_rolling	Max_Wald_recursive
gprcn	**9.336**	**9.875**	**10.775**

```
.
. tvgc CLI gprcn, trend window(80) sizecontrol(40) p(2)     ///
>  d(1) seed(123) boot(499) robust prefix(CLI) graph pdf    ///
>  notitle
```

Time-varying LA-VAR Granger causality test including trend, 1985m1 - 2019m12

TVGC robust test statistics for H0: CLI is GC

	Max_Wald_forward	Max_Wald_rolling	Max_Wald_recursive
gprcn	**19.021**	**18.997**	**30.649**

90th percentile of test statistics [499 replications]

	Max_Wald_forward	Max_Wald_rolling	Max_Wald_recursive
gprcn	**6.155**	**6.423**	**6.630**

95th percentile of test statistics [499 replications]

	Max_Wald_forward	Max_Wald_rolling	Max_Wald_recursive
gprcn	**7.574**	**7.972**	**8.116**

99th percentile of test statistics [499 replications]

	Max_Wald_forward	Max_Wald_rolling	Max_Wald_recursive
gprcn	**11.559**	**11.553**	**11.856**

```
.
. save database_pri_gpr_final.dta, replace
file database_pri_gpr_final.dta saved

.
. log close _all
      name:  <unnamed>
       log:  C:\Users\jamel\Dropbox\latex\PROJECTS\23-05-geopolitical-risk-pol-tension-oil-price\Data and command\Co
  log type:  smcl
 closed on:  13 Jul 2025, 15:30:37
```