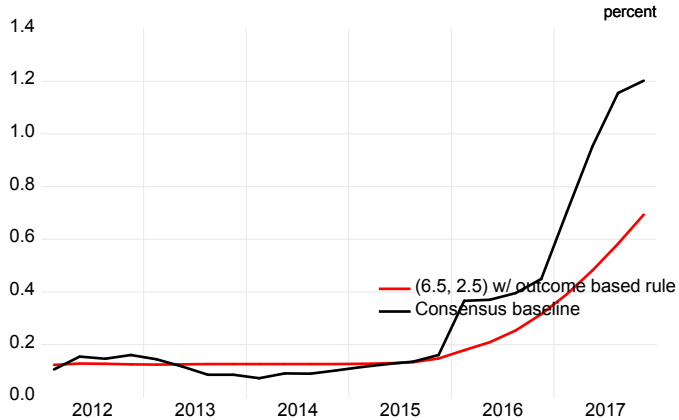
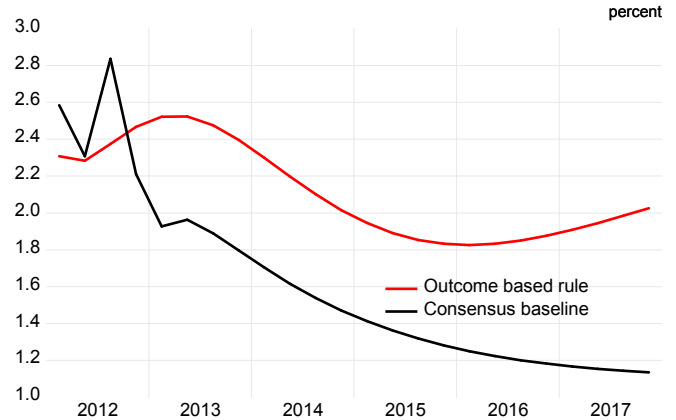


ZLB Imposed

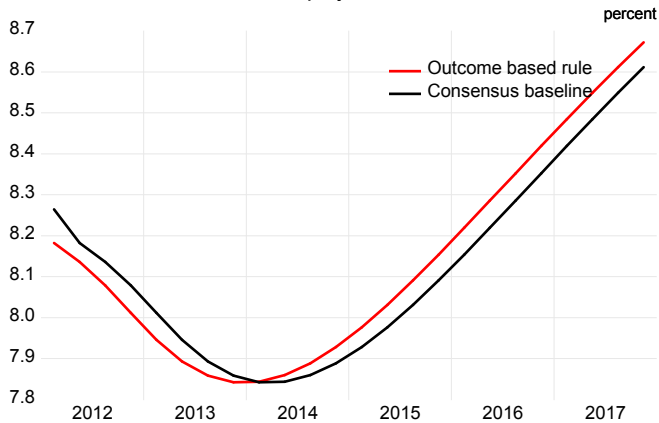
Federal Funds Rate



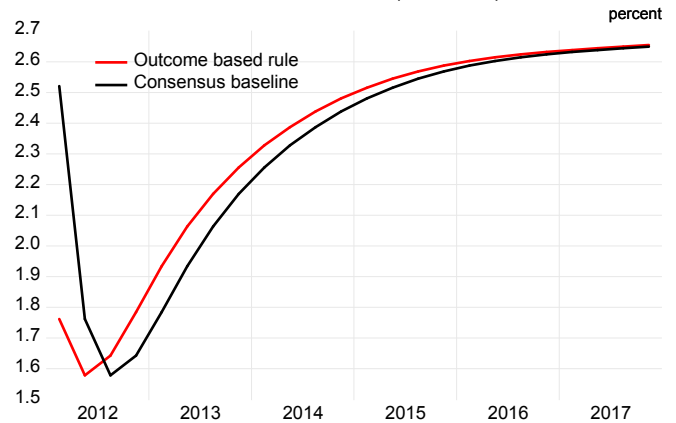
Year to Year % Change in Real GDP



Unemployment Rate



PCE Inflation Rate (4-Quarter)



iter	f(x)	step size	convergence statistic	linearity statistic
0	60.56087			
1	60.45977	0.250000	0.001669	-1.030333
2	60.45461	1.000000	8.53E-05	1.191617
3	60.45429	0.500000	5.24E-06	-2.216615

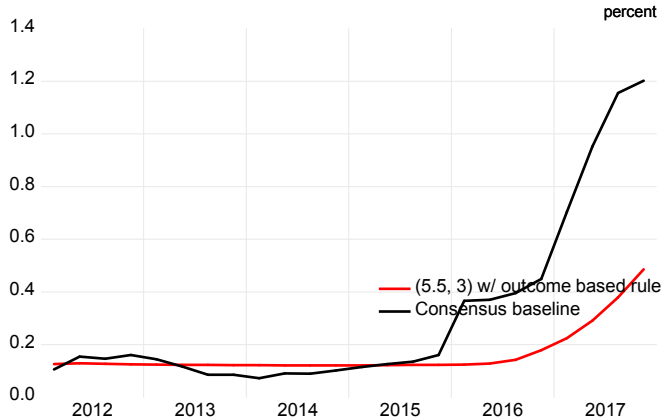
unconstrained optimization (EViews)
 optimization type = committment
 simulation period: 2012Q3 - 2028Q2
 loss evalation period: 2012Q3 - 2032q2
 instrument setting period: 2012Q3 - 2027q2
 max number of optimization iterations = 15
 max number of line search steps per iteration = 20
 convergence criteria = 1e-05
 output control parameter = 3
 compute instrument derivs? = yes
 instrument perturbation factor = 0.01
 At iteration 4, convergence
 unconstrained optimization (EViews)
 optimization type = committment
 simulation period: 2012Q3 - 2028Q2
 loss evalation period: 2012Q3 - 2032q2
 instrument setting period: 2012Q3 - 2027q2
 max number of optimization iterations = 15
 max number of line search steps per iteration = 20
 convergence criteria = 1e-05
 output control parameter = 3
 compute instrument derivs? = yes
 instrument perturbation factor = 0.01
 At iteration 3, convergence

iter	f(x)	step size	convergence statistic	linearity statistic
0	69.76543			
1	60.82530	1.000000	0.128146	0.038080
2	60.67617	1.000000	0.002452	0.706729
3	60.67268	0.500000	5.76E-05	-27.52223
4	60.67268	0.001953	2.33E-08	-1.626453

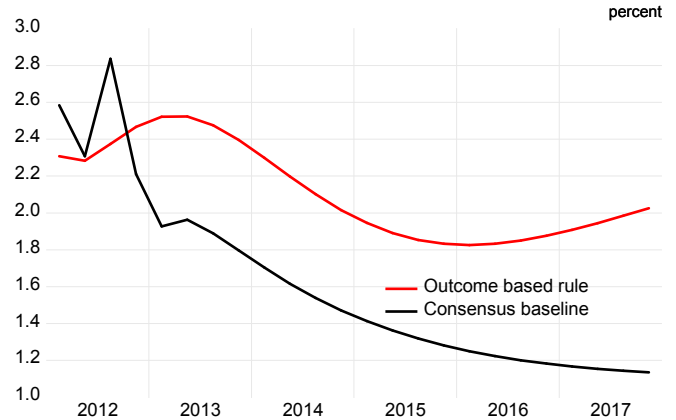
unconstrained optimization (EViews)
 optimization type = committment
 simulation period: 2012Q3 - 2028Q2
 loss evalation period: 2012Q3 - 2032q2
 instrument setting period: 2012Q3 - 2027q2
 max number of optimization iterations = 15
 max number of line search steps per iteration = 20
 convergence criteria = 1e-05
 output control parameter = 3
 compute instrument derivs? = yes
 instrument perturbation factor = 0.01
 At iteration 4, convergence

ZLB Imposed

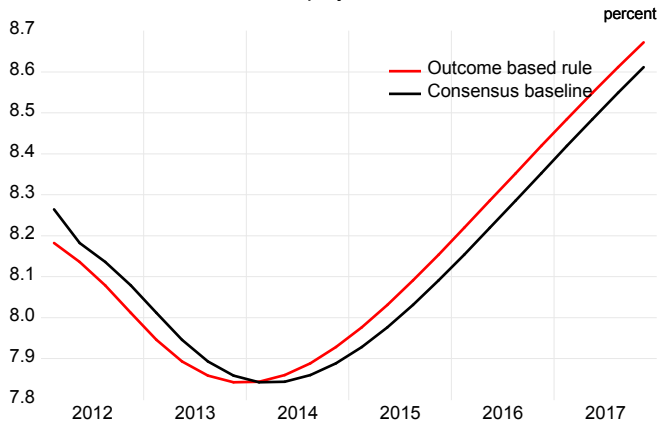
Federal Funds Rate



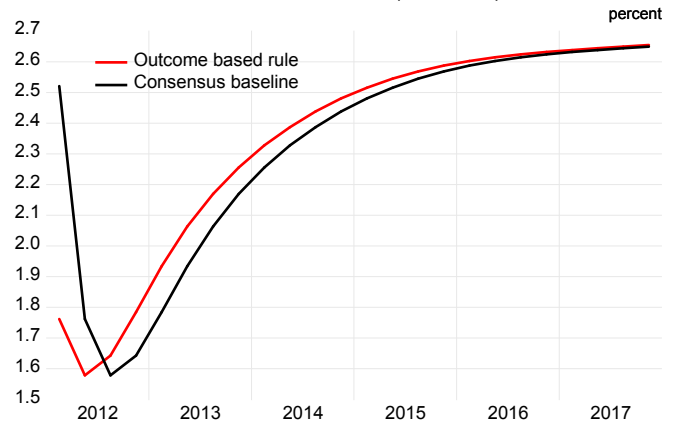
Year to Year % Change in Real GDP



Unemployment Rate



PCE Inflation Rate (4-Quarter)



iter	f(x)	step size	convergence statistic	linearity statistic
0	131.5969			
1	125.0799	1.000000	0.049523	0.681988
2	121.2225	1.000000	0.030839	0.043325
3	121.1749	1.000000	0.000392	1.317159
4	121.1706	0.500000	3.60E-05	-1.846215
5	121.1679	1.000000	2.17E-05	0.639983
6	121.1679	0.001953	1.73E-07	-1.156172

unconstrained optimization (EViews)
 optimization type = commitment
 simulation period: 2012Q1 - 2027Q4
 loss evalation period: 2012Q1 - 2031q4
 instrument setting period: 2012Q1 - 2026q4
 max number of optimization iterations = 15
 max number of line search steps per iteration = 20
 convergence criteria = 1e-05
 output control parameter = 3
 compute instrument derivs? = yes
 instrument perturbation factor = 0.01
 At iteration 6, convergence

iter	f(x)	step size	convergence statistic	linearity statistic
0	120.8633			
1	120.6672	0.250000	0.001622	-1.062370
2	120.6485	1.000000	0.000155	0.614020
3	120.6462	0.500000	1.89E-05	-1.744704
4	120.6382	1.000000	6.61E-05	-0.864682
5	120.6293	1.000000	7.39E-05	-0.683508
6	120.6291	0.000977	2.31E-06	-1.193168

unconstrained optimization (EViews)
 optimization type = commitment
 simulation period: 2012Q1 - 2027Q4
 loss evaluation period: 2012Q1 - 2031q4
 instrument setting period: 2012Q1 - 2026q4
 max number of optimization iterations = 15
 max number of line search steps per iteration = 20
 convergence criteria = 1e-05
 output control parameter = 3
 compute instrument derivs? = yes
 instrument perturbation factor = 0.01
 At iteration 6, convergence
 unconstrained optimization (EViews)
 optimization type = commitment
 simulation period: 2012Q1 - 2027Q4
 loss evaluation period: 2012Q1 - 2031q4
 instrument setting period: 2012Q1 - 2026q4
 max number of optimization iterations = 15
 max number of line search steps per iteration = 20
 convergence criteria = 1e-05
 output control parameter = 3
 compute instrument derivs? = yes
 instrument perturbation factor = 0.01
 At iteration 6, convergence

Vector Autoregression Estimates

Vector Autoregression Estimates

Date: 06/26/20 Time: 15:34

Sample (adjusted): 1977Q4 2012Q1

Included observations: 138 after adjustments

Standard errors in () & t-statistics in []

	LUR	PIECI	PIC4	RFF	EPOP	RGDPCH
LUR(-1)	1.294200 (0.13156) [9.83725]	-0.823522 (0.61596) [-1.33697]	-0.714499 (0.29037) [-2.46063]	-0.734297 (0.52296) [-1.40411]	-0.002826 (0.00120) [-2.35627]	-1.395937 (0.48394) [-2.88451]
LUR(-2)	-0.386857 (0.12582) [-3.07463]	0.630514 (0.58909) [1.07032]	0.540309 (0.27771) [1.94562]	0.810052 (0.50015) [1.61962]	0.002989 (0.00115) [2.60574]	1.608977 (0.46283) [3.47637]
PIECI(-1)	-0.006570 (0.01888) [-0.34793]	0.348732 (0.08841) [3.94432]	0.082684 (0.04168) [1.98381]	0.154852 (0.07507) [2.06290]	0.000236 (0.00017) [1.36947]	0.213120 (0.06946) [3.06806]
PIECI(-2)	-0.037765 (0.01961) [-1.92553]	0.189609 (0.09183) [2.06487]	0.077046 (0.04329) [1.77985]	0.055392 (0.07796) [0.71050]	-0.000156 (0.00018) [-0.87080]	0.145393 (0.07214) [2.01529]
PIC4(-1)	-0.013365 (0.03953) [-0.33810]	0.374868 (0.18507) [2.02557]	1.149839 (0.08724) [13.1797]	0.018779 (0.15713) [0.11952]	0.000159 (0.00036) [0.44065]	-0.314934 (0.14540) [-2.16595]
PIC4(-2)	0.039456 (0.04114) [0.95902]	-0.094402 (0.19263) [-0.49008]	-0.376336 (0.09081) [-4.14434]	0.068231 (0.16354) [0.41720]	-0.000265 (0.00038) [-0.70682]	-0.033447 (0.15134) [-0.22100]
RFF(-1)	0.037479 (0.02489) [1.50596]	0.363607 (0.11652) [3.12052]	0.030496 (0.05493) [0.55519]	0.867444 (0.09893) [8.76838]	-9.30E-06 (0.00023) [-0.04100]	0.058608 (0.09155) [0.64020]
RFF(-2)	-0.016582 (0.02410) [-0.68820]	-0.308698 (0.11281) [-2.73636]	-0.015740 (0.05318) [-0.29597]	-0.029065 (0.09578) [-0.30345]	9.76E-06 (0.00022) [0.04444]	-0.068251 (0.08863) [-0.77004]

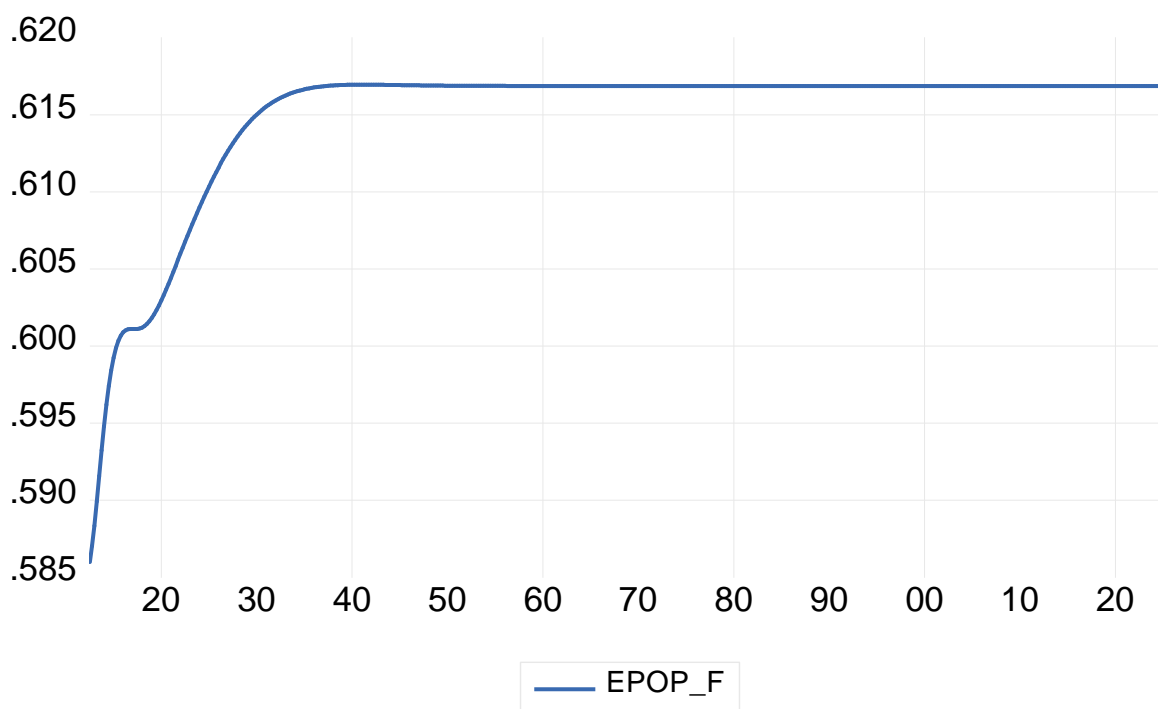
Vector Autoregression Estimates

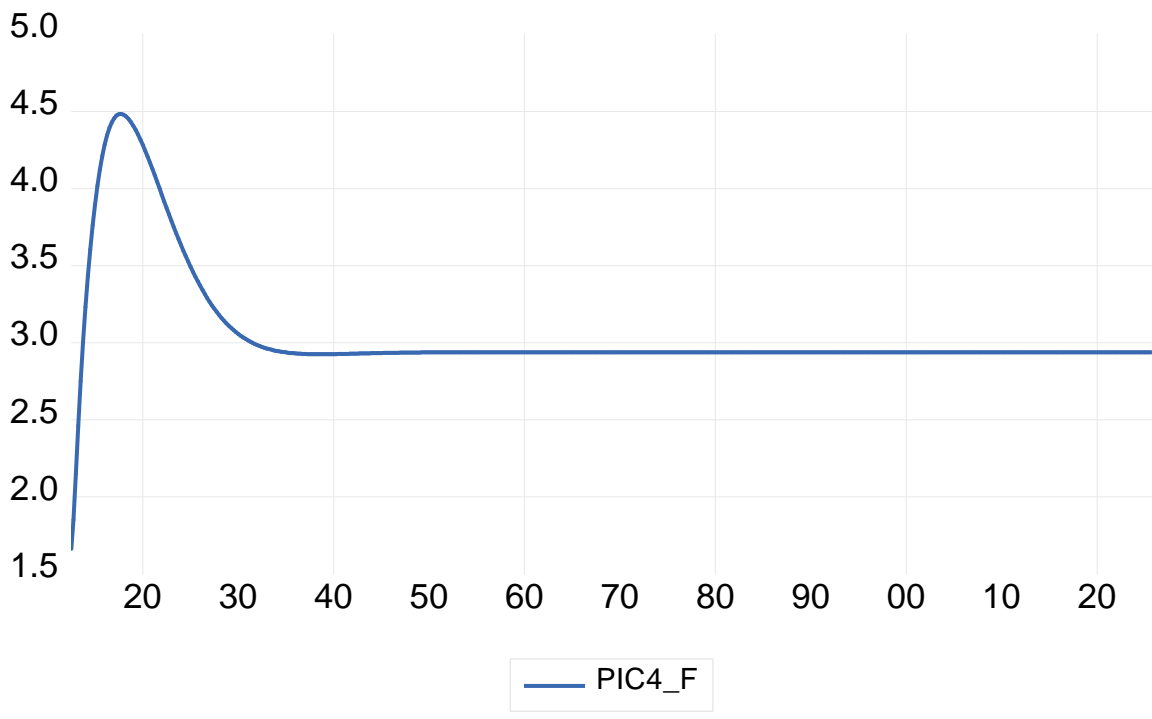
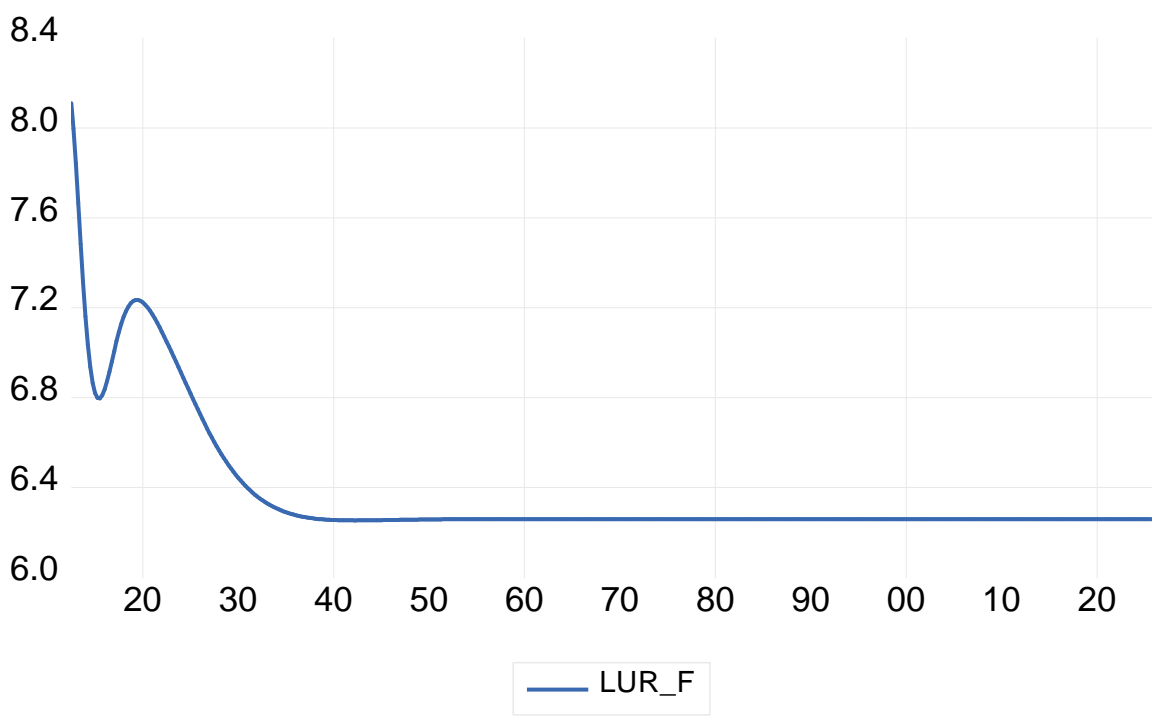
EPOP(-1)	-30.31577 (13.8633) [-2.18676]	-115.0199 (64.9073) [-1.77207]	-22.33454 (30.5981) [-0.72993]	116.3693 (55.1076) [2.11168]	1.138767 (0.12640) [9.00888]	65.71108 (50.9958) [1.28856]
EPOP(-2)	25.89335 (13.7092) [1.88876]	101.3975 (64.1855) [1.57976]	5.197218 (30.2579) [0.17176]	-105.4061 (54.4948) [-1.93424]	-0.154519 (0.12500) [-1.23616]	-54.65254 (50.4287) [-1.08376]
RGDPCH(-1)	-0.049126 (0.02649) [-1.85443]	0.087703 (0.12403) [0.70711]	-0.064762 (0.05847) [-1.10763]	-0.194337 (0.10530) [-1.84550]	0.000393 (0.00024) [1.62648]	0.775941 (0.09745) [7.96277]
RGDPCH(-2)	0.019366 (0.02203) [0.87907]	-0.086549 (0.10314) [-0.83912]	-0.006706 (0.04862) [-0.13791]	0.095680 (0.08757) [1.09260]	-6.24E-05 (0.00020) [-0.31072]	-0.175304 (0.08104) [-2.16326]
C	3.383660 (2.39363) [1.41361]	10.32109 (11.2068) [0.92097]	11.82503 (5.28304) [2.23830]	-7.260960 (9.51480) [-0.76312]	0.007799 (0.02182) [0.35735]	-7.403471 (8.80486) [-0.84084]
R-squared	0.984026	0.823807	0.962504	0.955436	0.989757	0.866175
Adj. R-squared	0.982492	0.806893	0.958904	0.951158	0.988774	0.853328
Sum sq. resids	5.986799	131.2339	29.16414	94.59797	0.000498	81.00793
S.E. equation	0.218848	1.024632	0.483025	0.869933	0.001995	0.805024
F-statistic	641.6748	48.70420	267.3905	223.3310	1006.539	67.42118
Log likelihood	20.68756	-192.3447	-88.56588	-169.7579	668.9443	-159.0568
Akaike AIC	-0.111414	2.976011	1.471969	2.648665	-9.506439	2.493576
Schwarz SC	0.164342	3.251767	1.747725	2.924421	-9.230683	2.769332
Mean dependent	6.455818	4.330702	3.396180	5.859617	0.614652	2.702255
S.D. dependent	1.653967	2.331679	2.382713	3.936315	0.018833	2.102009
Determinant resid covariance (dof adj.)	5.30E-09					
Determinant resid covariance	2.93E-09					
Log likelihood	180.8672					
Akaike information criterion	-1.490828					
Schwarz criterion	0.163706					
Number of coefficients	78					

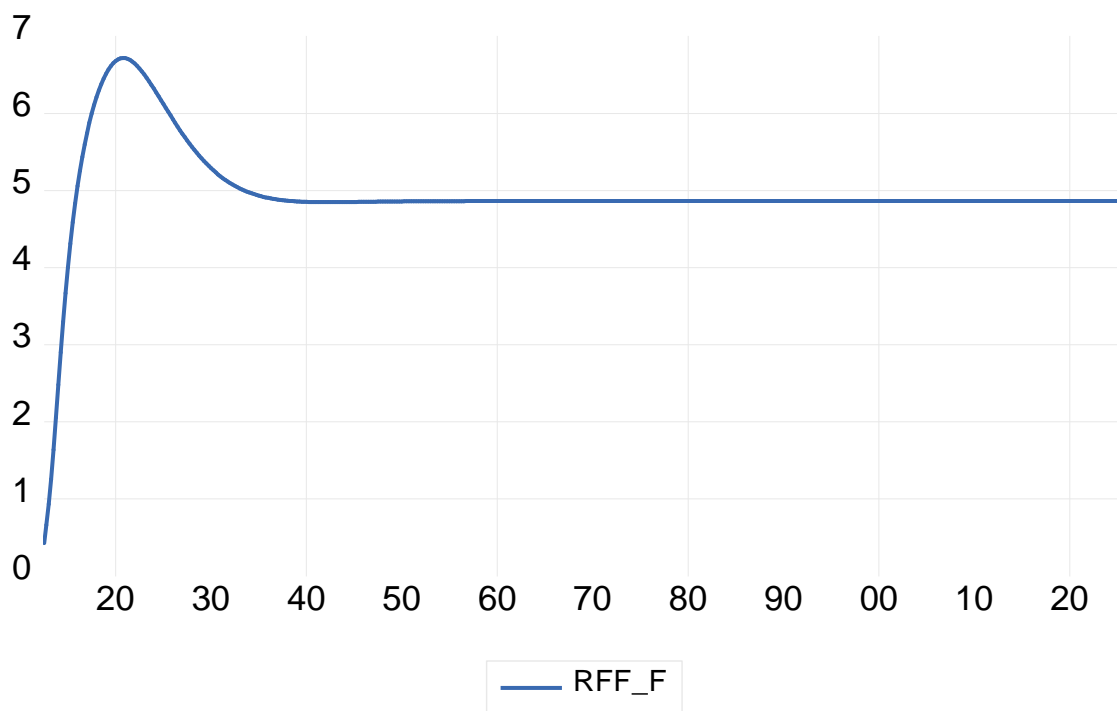
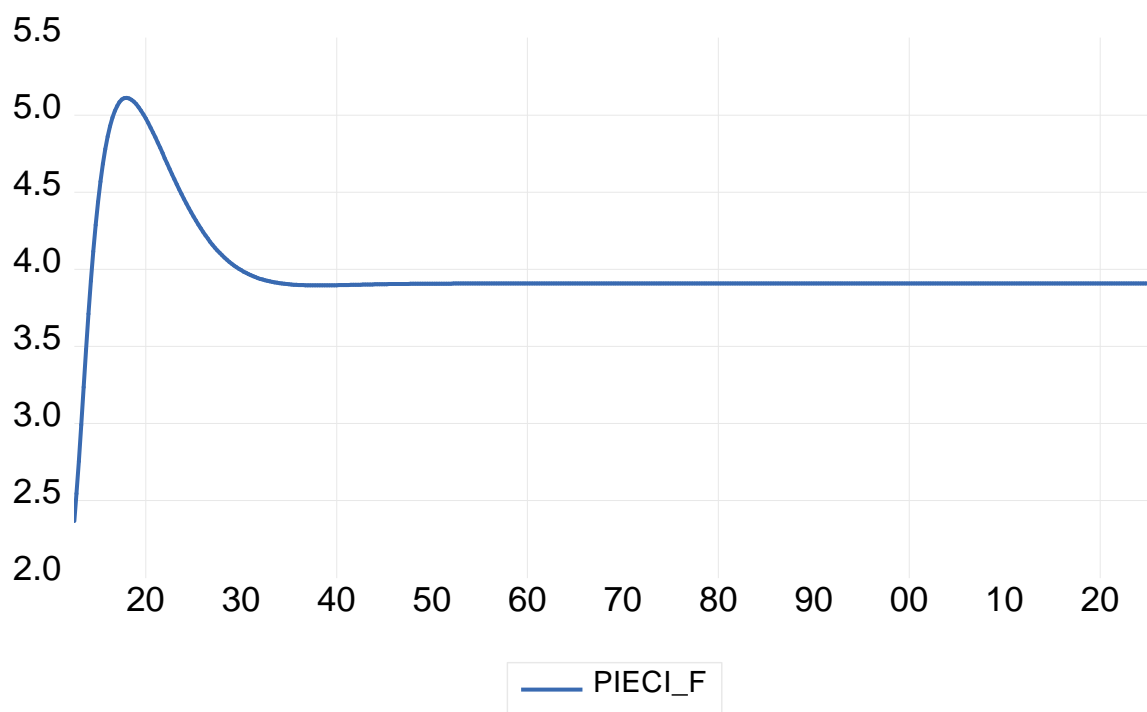
Forecast Evaluation
Date: 06/26/20 Time: 15:37
Sample: 2012Q3 2125Q4
Included observations: 454

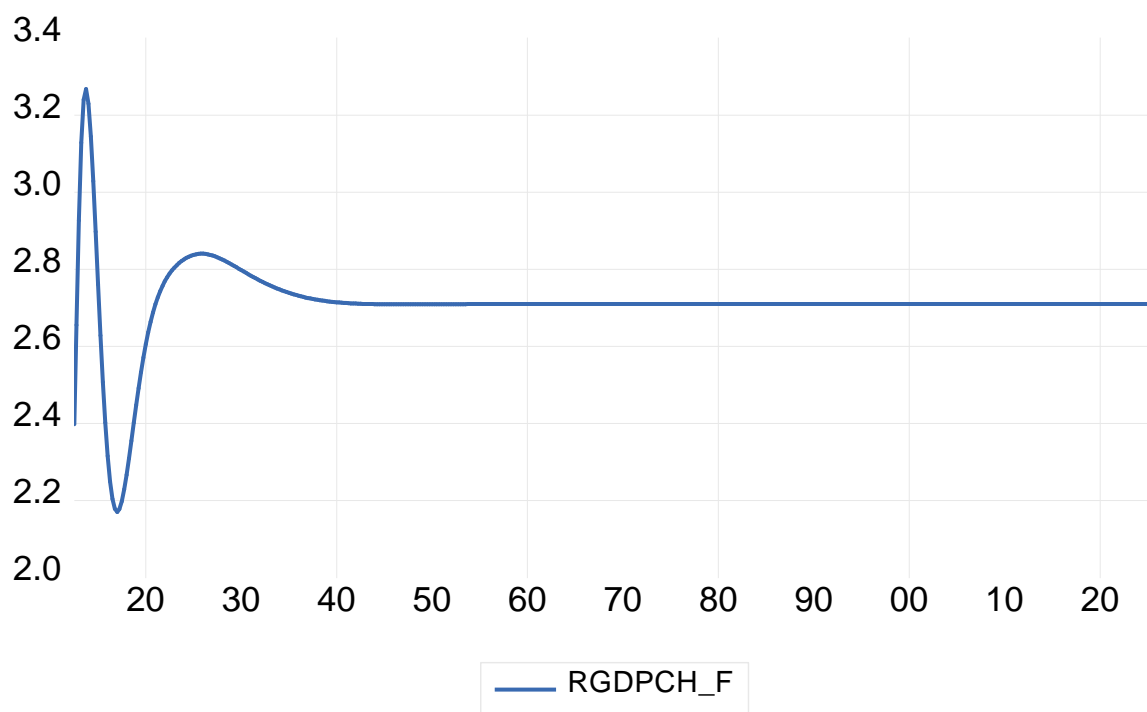
Variable	Inc. obs.	RMSE	MAE	MAPE	Theil
EPOP	454	0.004191	0.003683	0.609321	0.003467
LUR	454	2.259297	2.219402	34.82790	0.213862
PIC4	454	1.207287	1.097640	34.93385	0.239403
PIECI	454	0.835141	0.679659	16.57626	0.114123
RFF	71	2.683382	2.594165	52.34249	0.362176
RGDPCH	454	0.852552	0.838776	30.83099	0.184688

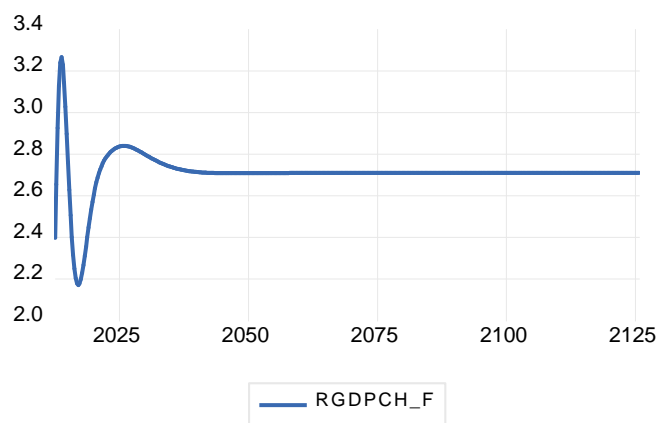
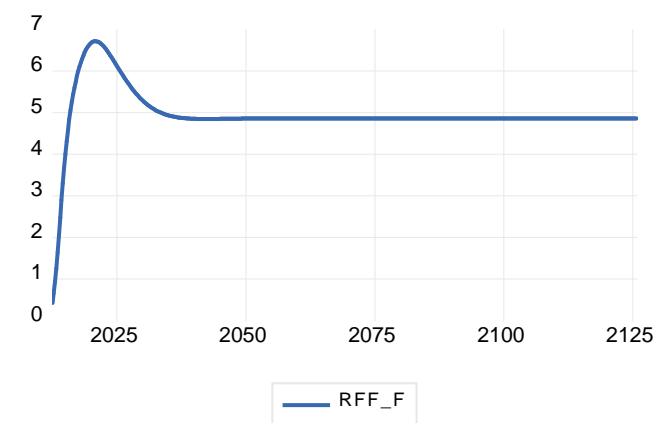
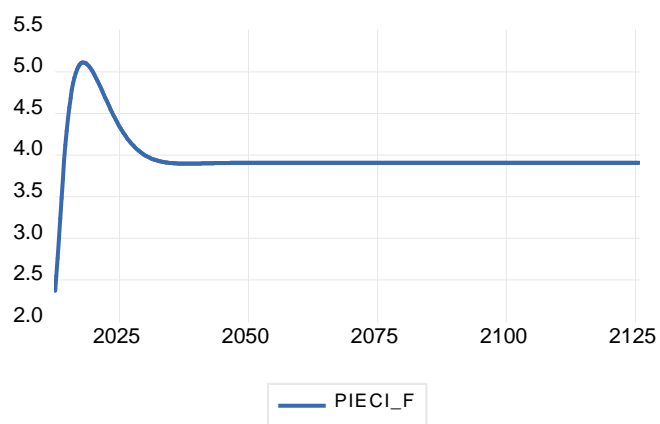
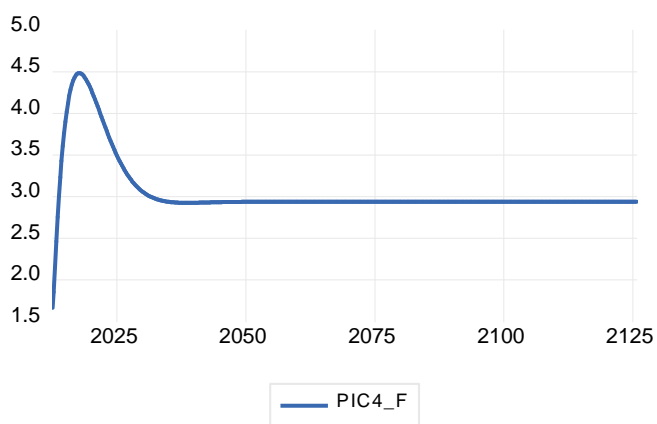
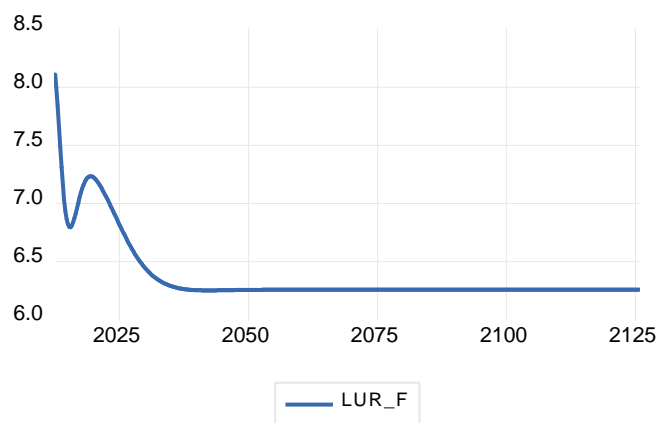
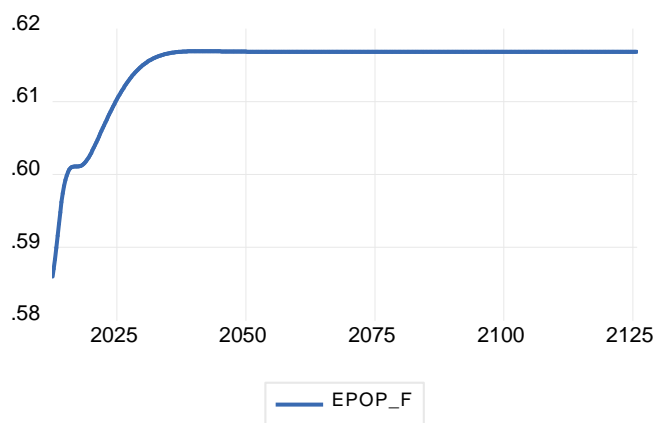
RMSE: Root Mean Square Error
MAE: Mean Absolute Error
MAPE: Mean Absolute Percentage Error
Theil: Theil inequality coefficient





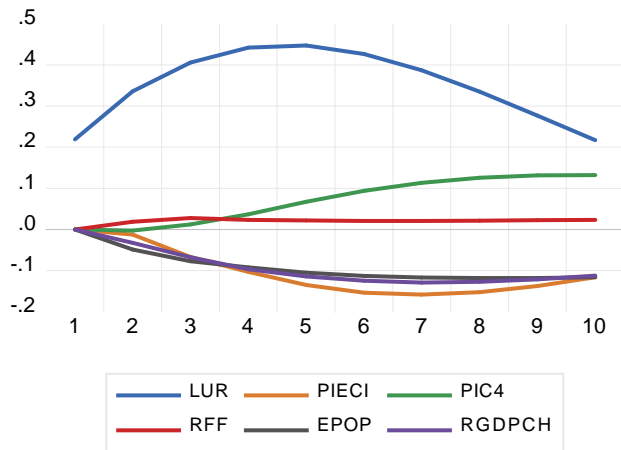




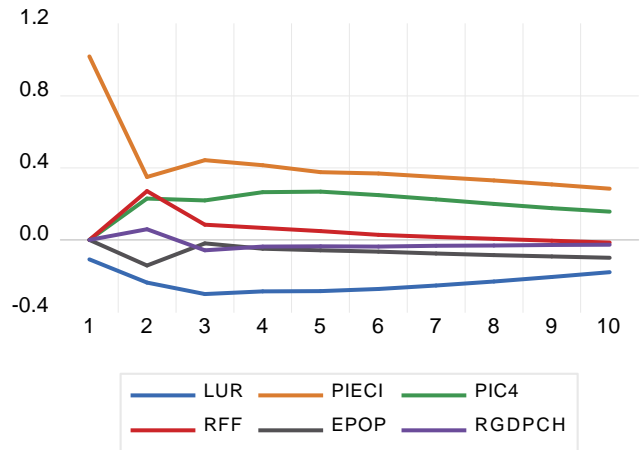


Response to Cholesky One S.D. (d.f. adjusted) Innovations

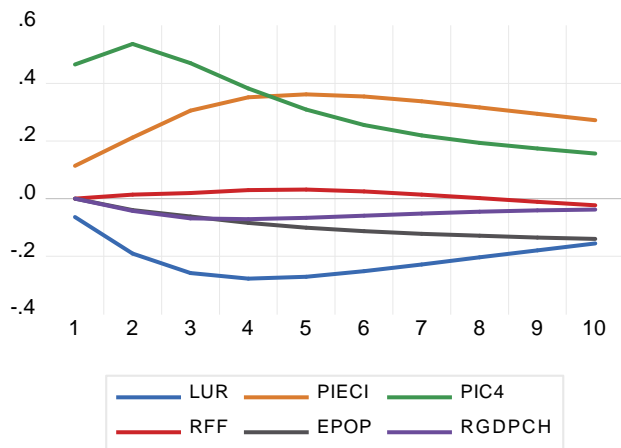
Response of LUR to Innovations



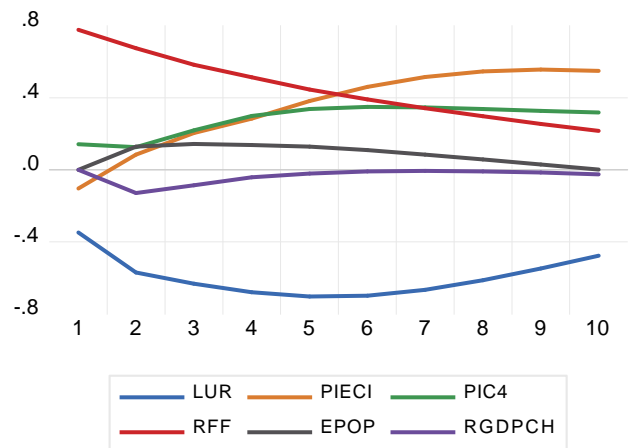
Response of PIECI to Innovations



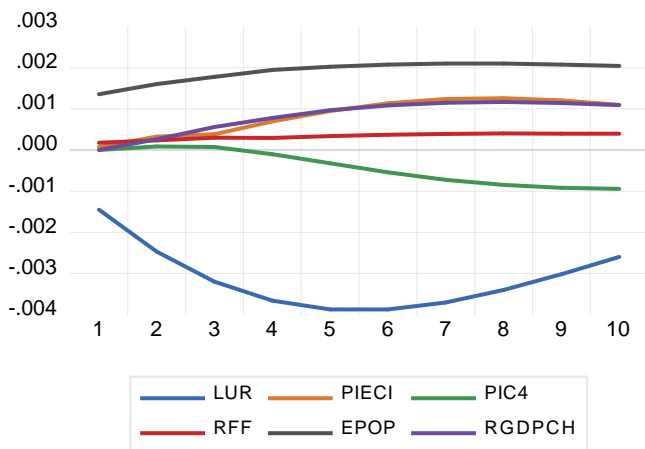
Response of PIC4 to Innovations



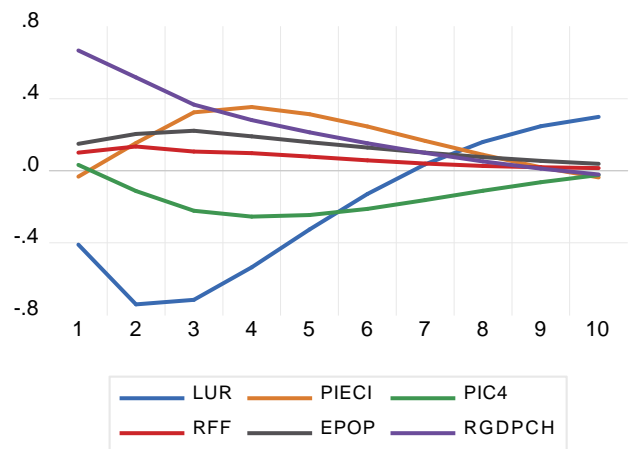
Response of RFF to Innovations



Response of EPOP to Innovations

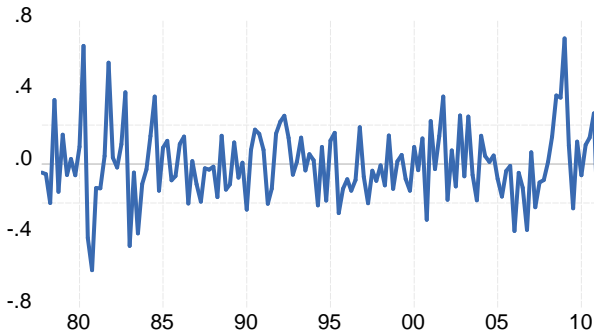


Response of RGDPCH to Innovations

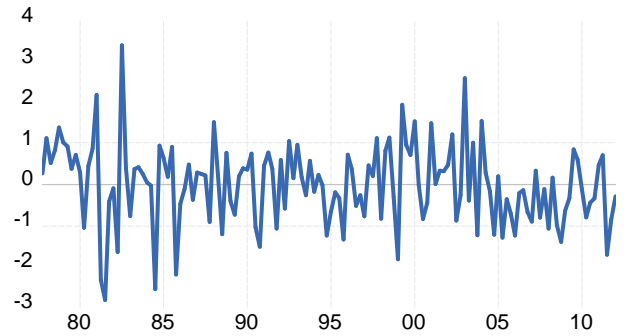


VAR Residuals

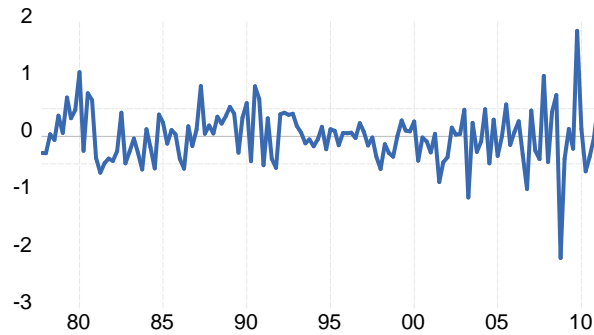
LUR Residuals



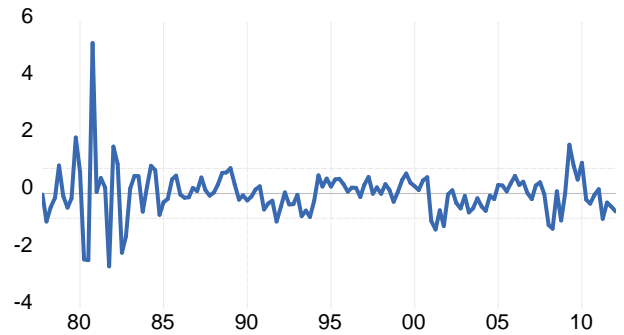
PIECI Residuals



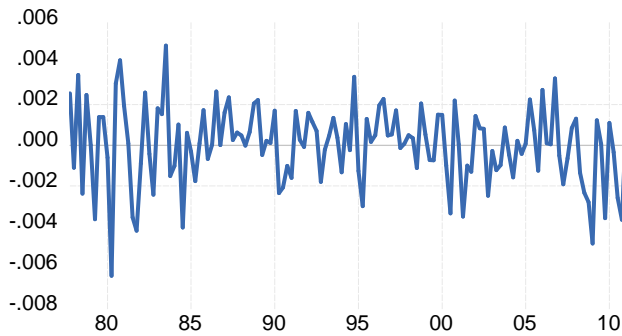
PIC4 Residuals



RFF Residuals



EPOP Residuals



RGDPCH Residuals

