

Training sample regressions

Training sample begins in 1970-03-31 and ends in 2010-01-01. We run regressions of state and local tax revenues (by revenue source) using annual data over the training sample, then predict annual data for the out of sample forecasts. Next we smooth those out of sample forecasts into quarterly levels (at an annual rate).

The tables below report the regression results for the given specification and then display the figures of the forecast alongside the realized values of the tax revenue components. The tax components are named as follows:

- gsrpt = Personal income taxes
- gsrpri = Production & Import taxes
- gsrcp = corporate taxes
- gsrs = Payroll taxes

All values are in nominal billions of dollars, at seasonally-adjusted annual rates.

Nominal level regressions (with linear time trend)

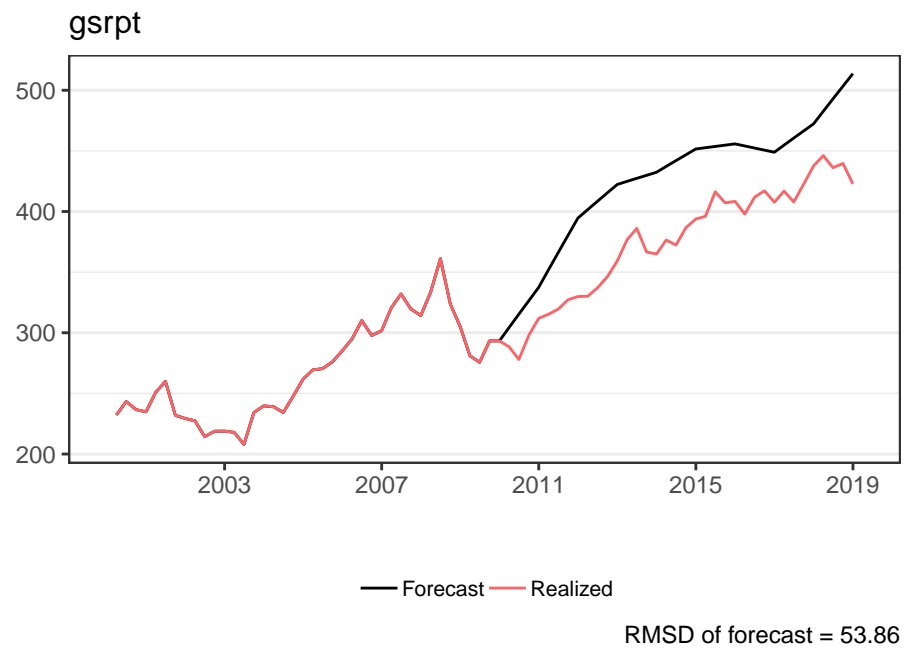
Table 1: Nominal levels

	<i>Dependent variable:</i>			
	gsrpt	gsrpri	gsrqp	gsrs
	(1)	(2)	(3)	(4)
t	−14.140 (7.163)	−30.663** (11.755)	−23.299** (6.933)	5.961 (5.786)
gdp	0.048*** (0.008)	0.058*** (0.013)	0.035*** (0.007)	−0.008 (0.006)
gdp_l1	0.035*** (0.007)	0.015 (0.011)	−0.011 (0.007)	−0.0004 (0.006)
gdp_l2	−0.023* (0.009)	0.022 (0.015)	0.020* (0.009)	−0.007 (0.007)
hpx	−0.269 (0.321)	2.499*** (0.527)	1.122** (0.311)	0.414 (0.259)
hpx_l1	−0.569 (0.617)	−2.460* (1.012)	−1.661** (0.597)	−0.296 (0.498)
hpx_l3	−0.561 (0.927)	4.221** (1.522)	1.918* (0.898)	0.787 (0.749)
hpx_l5	0.769 (1.069)	−2.840 (1.754)	−1.549 (1.034)	−0.714 (0.863)
Constant	139.904 (107.575)	417.415* (176.538)	322.948** (104.120)	−58.236 (86.893)
Observations	14	14	14	14
R ²	0.999	1.000	0.986	0.966
Adjusted R ²	0.998	1.000	0.964	0.911

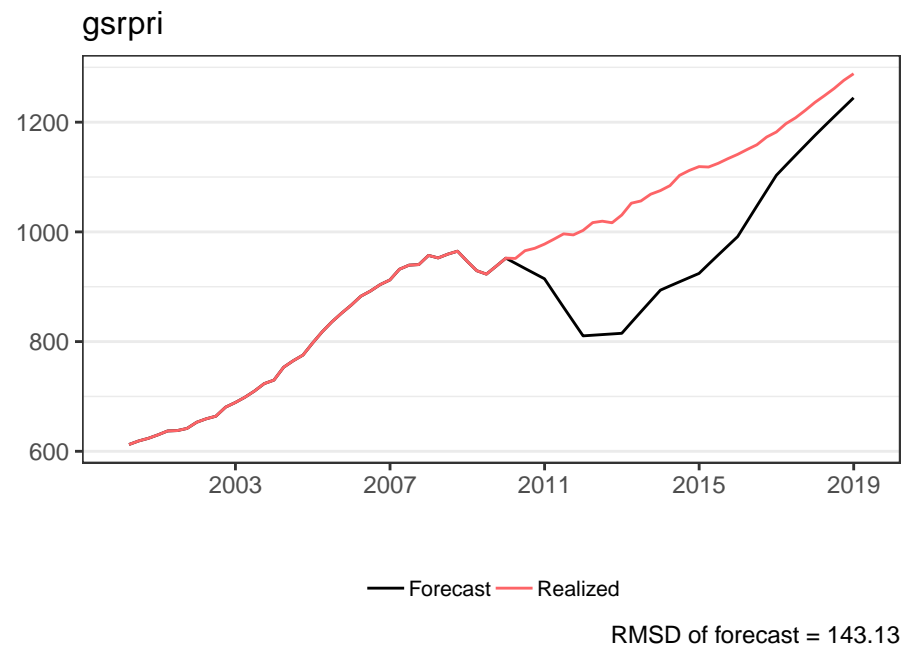
Note:

*p<0.1; **p<0.05; ***p<0.01

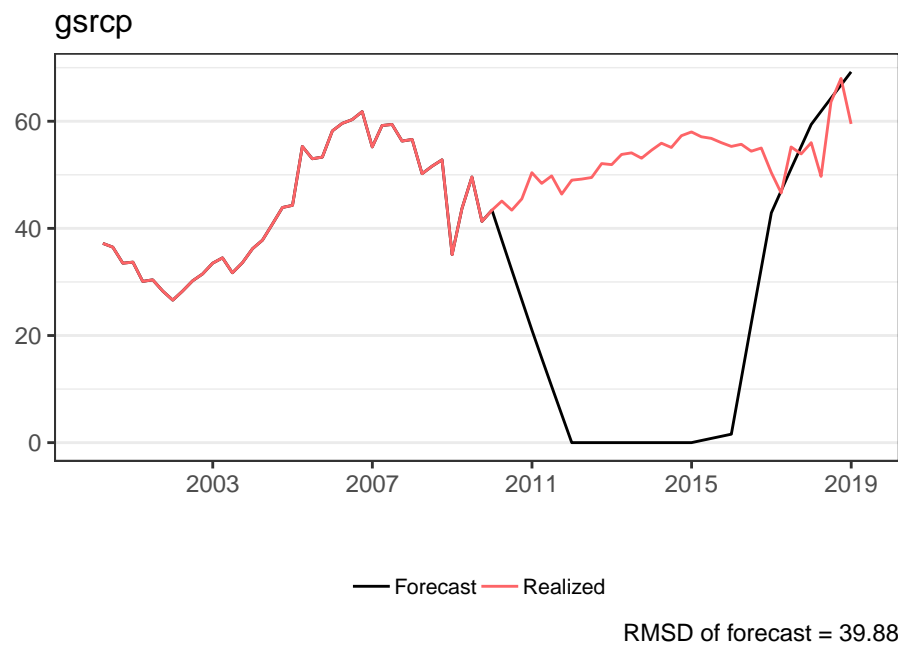
[[1]]



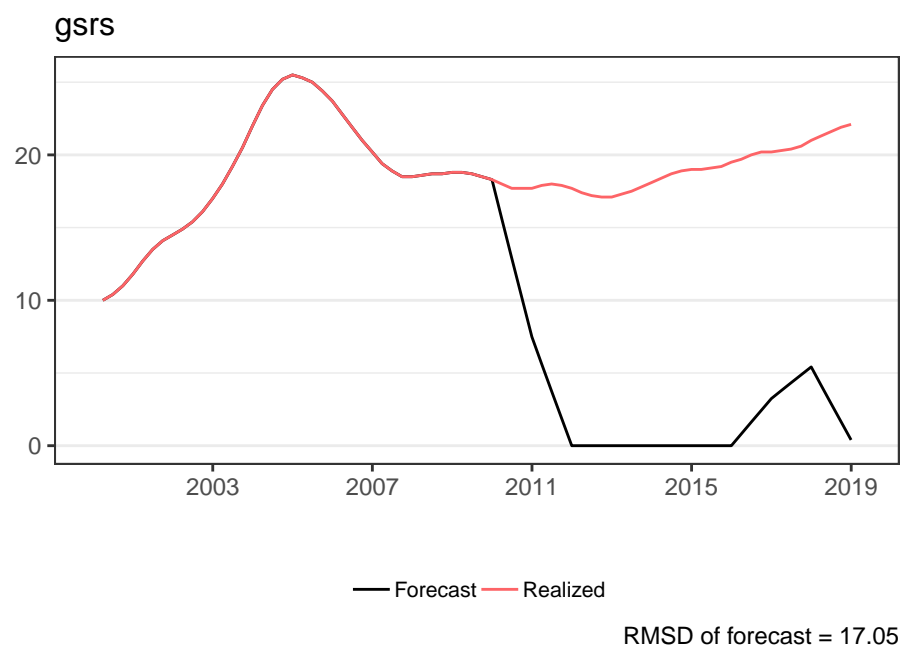
[[2]]



[[3]]



[[4]]

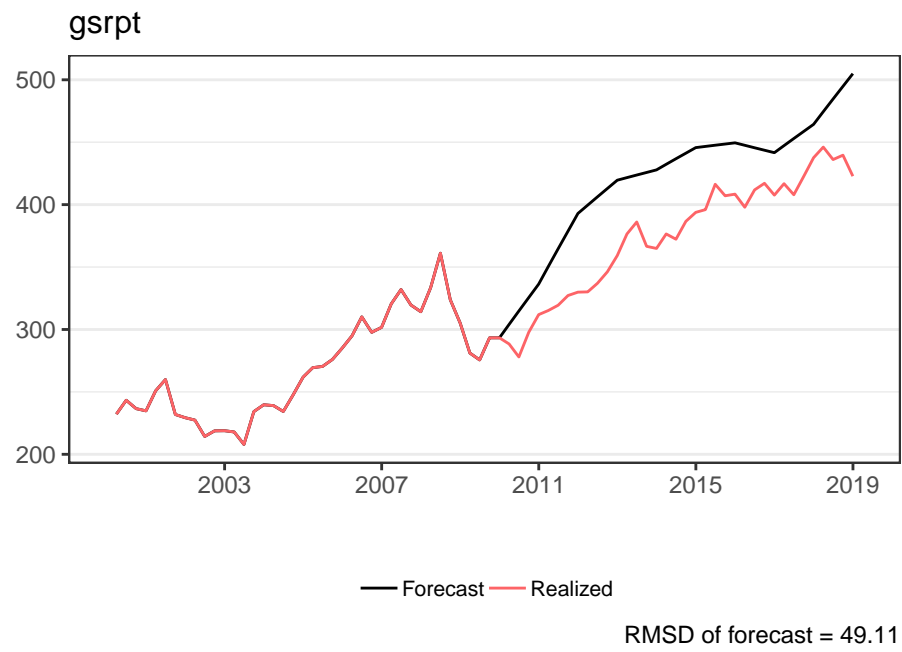


Differenced levels regressions

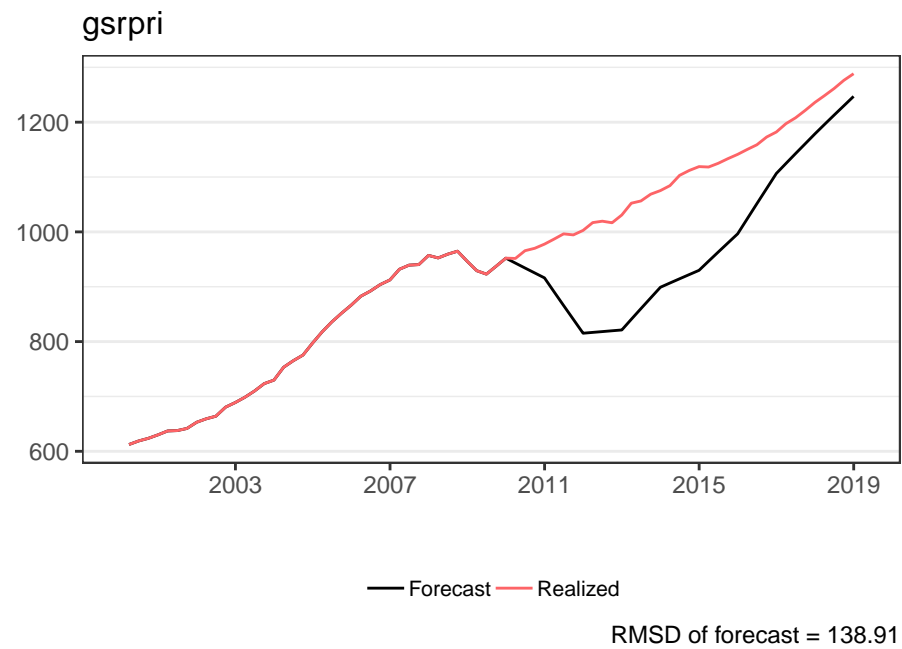
Table 2: Differenced levels

	<i>Dependent variable:</i>			
	gsrpt_d	gsrpri_d	gsrclp_d	gsrs_d
	(1)	(2)	(3)	(4)
gdp_d	0.044*** (0.008)	0.057** (0.015)	0.033*** (0.007)	−0.005 (0.005)
gdp_d_l1	0.035*** (0.008)	0.014 (0.014)	−0.012 (0.007)	0.0002 (0.005)
gdp_d_l2	−0.024** (0.009)	0.022 (0.016)	0.021** (0.008)	−0.008 (0.006)
hpx_d	−0.205 (0.366)	2.489** (0.645)	1.153** (0.305)	0.363 (0.224)
hpx_d_l1	−0.527 (0.626)	−2.392* (1.106)	−1.668** (0.522)	−0.320 (0.383)
hpx_d_l3	−0.579 (0.938)	4.086* (1.655)	1.957* (0.781)	0.784 (0.574)
hpx_d_l5	0.830 (1.042)	−2.744 (1.839)	−1.659 (0.868)	−0.674 (0.638)
Constant	−13.026 (7.353)	−29.242* (12.982)	−22.352** (6.129)	4.665 (4.501)
Observations	13	13	13	13
R ²	0.975	0.972	0.959	0.727
Adjusted R ²	0.940	0.932	0.903	0.345
<i>Note:</i> *p<0.1; **p<0.05; ***p<0.01				

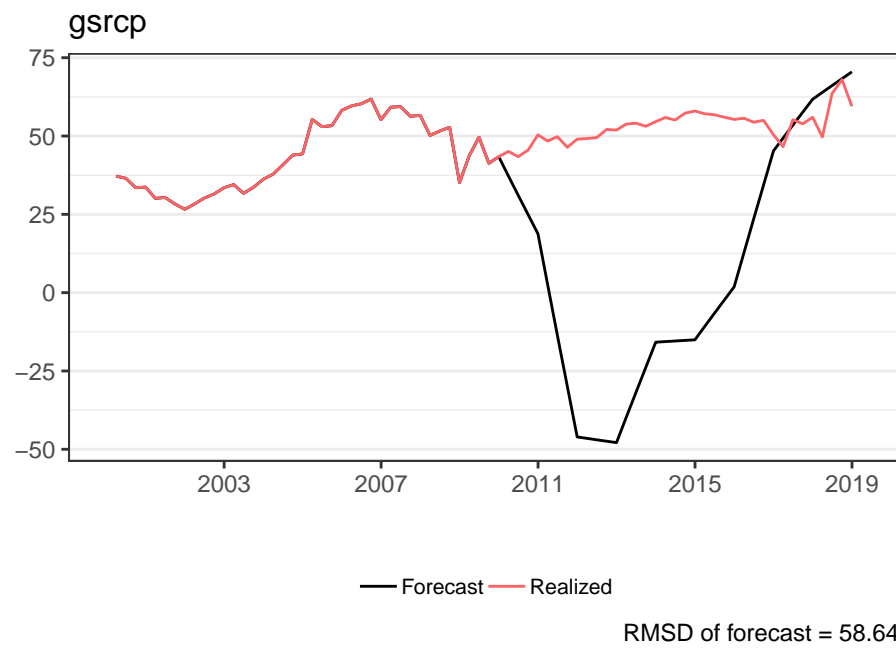
[[1]]



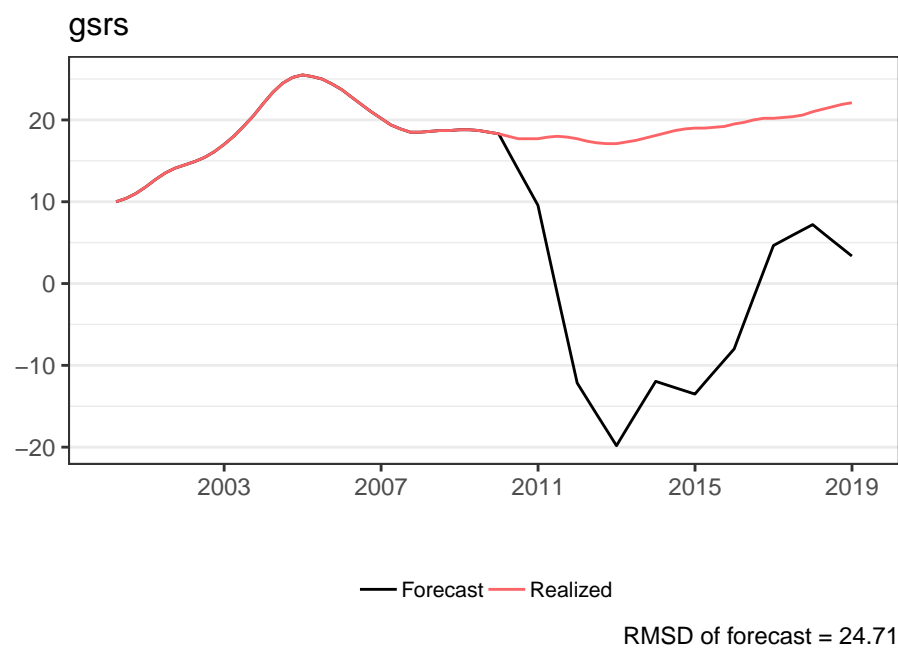
[[2]]



[[3]]



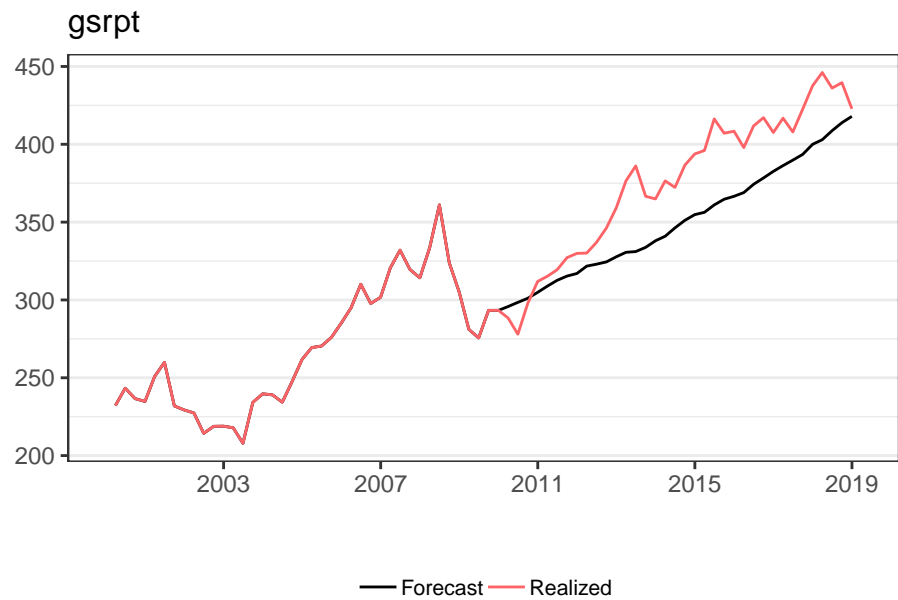
[[4]]



Assuming constant tax rate

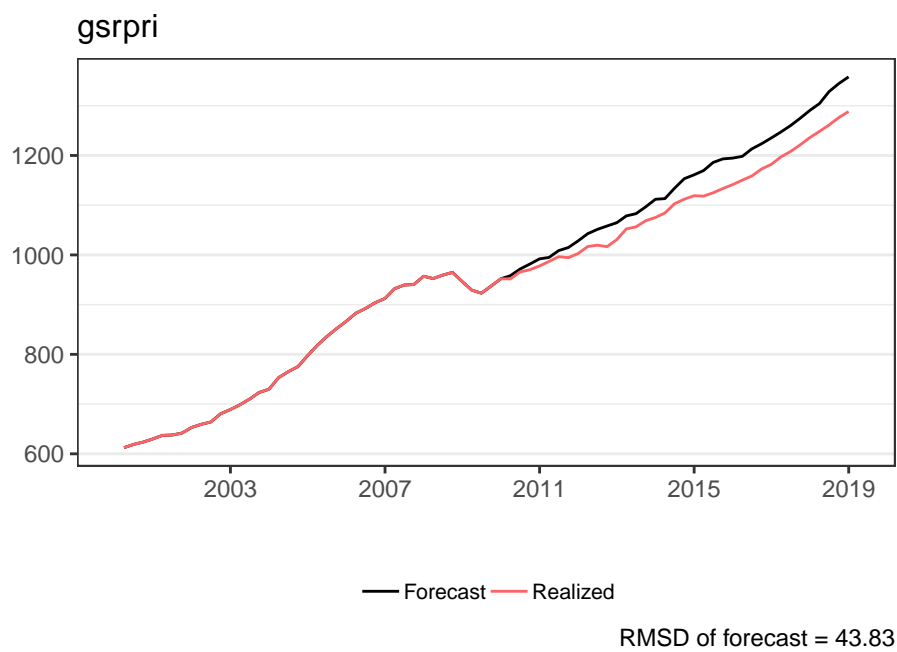
Personal income taxes grow with nominal private consumption. All other taxes grow with nominal GDP.

[[1]]

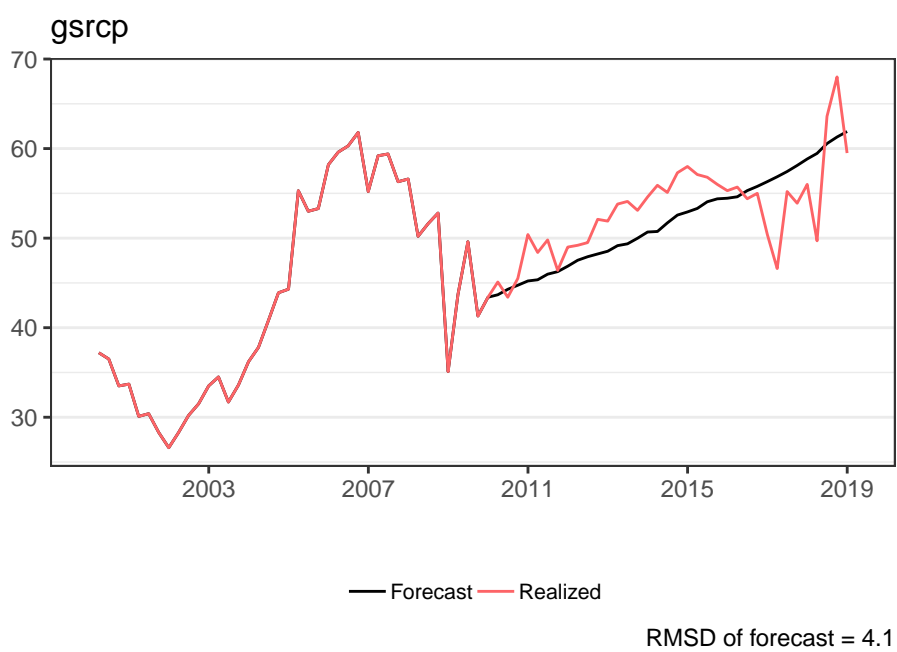


RMSD of forecast = 30.39

[[2]]



[[3]]



[[4]]

