

Homework 4

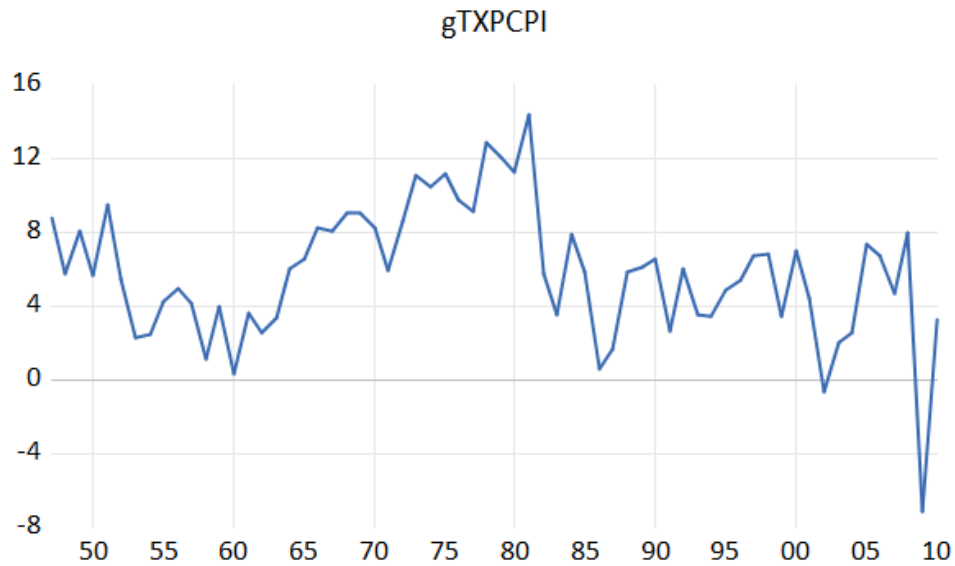
Eco 4306 Economic and Business Forecasting

Spring 2019























Due: Wednesday, March 6, before the class

Problem 1

- (a) The times series plot and the correlogram for real per capita personal income in Texas during the period 1947-2010 are shown below.



Date: 03/06/19 Time: 17:01
Sample: 1947 2010
Included observations: 64

Autocorrelation	Partial Correlation	AC	PAC	Q-Stat	Prob	
		1	0.504	0.504	17.020	0.000
		2	0.392	0.185	27.498	0.000
		3	0.335	0.112	35.263	0.000
		4	0.252	0.015	39.751	0.000
		5	0.265	0.101	44.782	0.000
		6	0.191	-0.022	47.445	0.000
		7	0.195	0.056	50.273	0.000
		8	0.151	-0.017	51.993	0.000
		9	0.003	-0.170	51.994	0.000
		10	-0.006	-0.036	51.997	0.000
		11	-0.069	-0.078	52.379	0.000

- (b) The time series for real per capita personal income in Texas shows similar behavior as the real per capita personal income in California. The correlograms are also very similar - AC decays toward zero gradually and PAC only has one significant component at lag 1.

- (c) For both California and Texas AR(1) model is appropriate since AC decays toward zero gradually and PAC only has one significant component at lag 1.

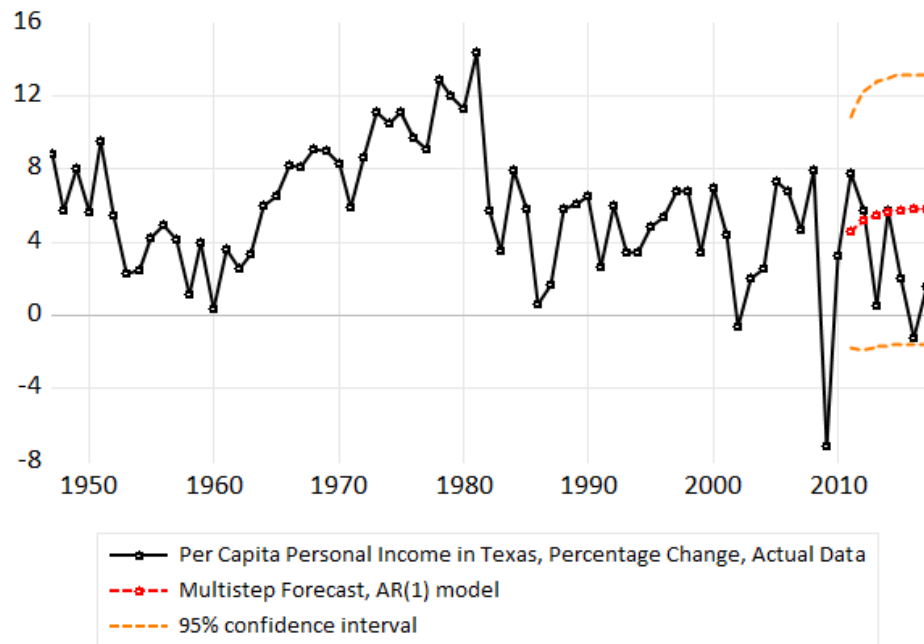
Dependent Variable: GTXPCPI
Method: ARMA Maximum Likelihood (OPG - BHHH)
Date: 03/06/19 Time: 17:01
Sample: 1947 2010
Included observations: 64
Convergence achieved after 5 iterations
Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.813347	0.932997	6.230831	0.0000
AR(1)	0.505389	0.109620	4.610367	0.0000
SIGMASQ	9.434065	1.078519	8.747243	0.0000

R-squared	0.258606	Mean dependent var	5.806776
Adjusted R-squared	0.234298	S.D. dependent var	3.595378
S.E. of regression	3.146114	Akaike info criterion	5.180562
Sum squared resid	603.7802	Schwarz criterion	5.281760
Log likelihood	-162.7780	Hannan-Quinn criter.	5.220429
F-statistic	10.63870	Durbin-Watson stat	2.168952
Prob(F-statistic)	0.000109		

Inverted AR Roots	.51
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- (d) Figure below shows the forecast for the period 2011-2015 together with its 95% confidence interval and the actual values of the real per capita personal income growth in Texas.



- (e) The actual values of the real per capita personal income growth in Texas are in the 95% confidence interval for the forecast, but this interval is very wide, roughly from -2% to 12%. The forecast errors are -5% between 3%. The model forecast is thus not particularly precise.