\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ (R)

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Statistics/Data Analysis StataCorp

4905 Lakeway Drive

Special Edition College Station, Texas 77845 USA

800-STATA-PC http://www.stata.com

979-696-4600 stata@stata.com

979-696-4601 (fax)

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Sufe

Notes:

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

2. Maximum number of variables is set to 5000; see help set\_maxvar.

. use "C:\Users\johnz\Desktop\第三次.dta"

. do "C:\Users\johnz\Desktop\计量第三次作业.do"

.

. set more off

.

. gen Y=log(RealGDP)

.

. gen t = \_n

.

. tsset t

time variable: t, 1 to 252

delta: 1 unit

. gen d\_Y = d.Y

(1 missing value generated)

. gen Y\_d\_Y = 400 \* d\_Y

(1 missing value generated)

.

. drop if Year < 1955

(32 observations deleted)

. drop if Year > 2009

(0 observations deleted)

.

. sum d\_Y

Variable | Obs Mean Std. Dev. Min Max

-------------+---------------------------------------------------------

d\_Y | 220 .0077219 .0092819 -.0274444 .0385857

. sum Y\_d\_Y

Variable | Obs Mean Std. Dev. Min Max

-------------+---------------------------------------------------------

Y\_d\_Y | 220 3.088771 3.712768 -10.97775 15.43427

The mean growth rate is 3.09%

The standard deviation of △Yt is 3.71%

. corrgram Y\_d\_Y, lags(4)

Unit free

-1 0 1 -1 0 1

LAG AC PAC Q Prob>Q [Autocorrelation] [Partial Autocor]

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

1 0.3324 0.3327 24.64 0.0000 |-- |--

2 0.2076 0.1101 34.296 0.0000 |- |

3 0.0516 -0.0530 34.894 0.0000 | |

4 0.0017 -0.0295 34.895 0.0000 | |

.

. arima Y\_d\_Y , ar(1)

The coefficient is 0.339, which is statistically significantly different from zero. The 95% significance interval is (0.229,0.448)

(setting optimization to BHHH)

Iteration 0: log likelihood = -587.12944

Iteration 1: log likelihood = -587.10593

Iteration 2: log likelihood = -587.10403

Iteration 3: log likelihood = -587.1039

Iteration 4: log likelihood = -587.10389

ARIMA regression

Sample: 33 - 252 Number of obs = 220

Wald chi2(1) = 36.83

Log likelihood = -587.1039 Prob > chi2 = 0.0000

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

| OPG

Y\_d\_Y | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

Y\_d\_Y |

\_cons | 3.111904 .3578132 8.70 0.000 2.410603 3.813205

-------------+----------------------------------------------------------------

ARMA |

ar |

L1. | .3389078 .0558427 6.07 0.000 .2294582 .4483574

-------------+----------------------------------------------------------------

/sigma | 3.48824 .131526 26.52 0.000 3.230454 3.746026

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

Note: The test of the variance against zero is one sided, and the two-sided

confidence interval is truncated at zero.

. estat ic

Akaike's information criterion and Bayesian information criterion

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

Model | Obs ll(null) ll(model) df AIC BIC

-------------+---------------------------------------------------------------

. | 220 . -587.1039 3 1180.208 1190.389

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

Note: N=Obs used in calculating BIC; see [R] BIC note.

. arima Y\_d\_Y , ar(2)

The coefficient is 0.112, which is statistically significantly different from zero at a 5% confidence level, but not significant at a %1 level. Yes, this model is preferred to the AR(1) model

(setting optimization to BHHH)

Iteration 0: log likelihood = -595.33066

Iteration 1: log likelihood = -595.31296

Iteration 2: log likelihood = -595.31061

Iteration 3: log likelihood = -595.31026

Iteration 4: log likelihood = -595.31022

(switching optimization to BFGS)

Iteration 5: log likelihood = -595.31022

ARIMA regression

Sample: 33 - 252 Number of obs = 220

Wald chi2(1) = 14.03

Log likelihood = -595.3102 Prob > chi2 = 0.0002

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

| OPG

Y\_d\_Y | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

Y\_d\_Y |

\_cons | 3.103701 .3205067 9.68 0.000 2.47552 3.731883

-------------+----------------------------------------------------------------

ARMA |

ar |

L2. | .2118108 .0565555 3.75 0.000 .100964 .3226577

-------------+----------------------------------------------------------------

/sigma | 3.621119 .1319396 27.45 0.000 3.362522 3.879716

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

Note: The test of the variance against zero is one sided, and the two-sided

confidence interval is truncated at zero.

. estat ic

Akaike's information criterion and Bayesian information criterion

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

Model | Obs ll(null) ll(model) df AIC BIC

-------------+---------------------------------------------------------------

. | 220 . -595.3102 3 1196.62 1206.801

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

Note: N=Obs used in calculating BIC; see [R] BIC note.

. arima Y\_d\_Y , ar(3)

(setting optimization to BHHH)

Iteration 0: log likelihood = -599.96976

Iteration 1: log likelihood = -599.95846

Iteration 2: log likelihood = -599.9574

Iteration 3: log likelihood = -599.95727

Iteration 4: log likelihood = -599.95726

ARIMA regression

Sample: 33 - 252 Number of obs = 220

Wald chi2(1) = 0.77

Log likelihood = -599.9573 Prob > chi2 = 0.3811

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

| OPG

Y\_d\_Y | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

Y\_d\_Y |

\_cons | 3.091361 .2687297 11.50 0.000 2.56466 3.618061

-------------+----------------------------------------------------------------

ARMA |

ar |

L3. | .0526163 .0600759 0.88 0.381 -.0651303 .1703629

-------------+----------------------------------------------------------------

/sigma | 3.698926 .1455392 25.42 0.000 3.413674 3.984178

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

Note: The test of the variance against zero is one sided, and the two-sided

confidence interval is truncated at zero.

. estat ic

Akaike's information criterion and Bayesian information criterion

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

Model | Obs ll(null) ll(model) df AIC BIC

-------------+---------------------------------------------------------------

. | 220 . -599.9573 3 1205.915 1216.095

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

Note: N=Obs used in calculating BIC; see [R] BIC note.

. arima Y\_d\_Y , ar(4)

(setting optimization to BHHH)

Iteration 0: log likelihood = -600.26231

Iteration 1: log likelihood = -600.25662

Iteration 2: log likelihood = -600.25616

Iteration 3: log likelihood = -600.25611

ARIMA regression

Sample: 33 - 252 Number of obs = 220

Wald chi2(1) = 0.00

Log likelihood = -600.2561 Prob > chi2 = 0.9772

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

| OPG

Y\_d\_Y | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

Y\_d\_Y |

\_cons | 3.089513 .2554137 12.10 0.000 2.588911 3.590115

-------------+----------------------------------------------------------------

ARMA |

ar |

L4. | .0017235 .0603721 0.03 0.977 -.1166036 .1200506

-------------+----------------------------------------------------------------

/sigma | 3.704077 .1424072 26.01 0.000 3.424964 3.98319

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

Note: The test of the variance against zero is one sided, and the two-sided

confidence interval is truncated at zero.

. estat ic

Akaike's information criterion and Bayesian information criterion

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

Model | Obs ll(null) ll(model) df AIC BIC

-------------+---------------------------------------------------------------

. | 220 . -600.2561 3 1206.512 1216.693

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

Note: N=Obs used in calculating BIC; see [R] BIC note.

.

. varsoc Y\_d\_Y

AIC : 2 BIC : 1

Selection-order criteria

Sample: 37 - 252 Number of obs = 216

+---------------------------------------------------------------------------+

|lag | LL LR df p FPE AIC HQIC SBIC |

|----+----------------------------------------------------------------------|

| 0 | -588.168 13.6999 5.45526 5.46158 5.47089 |

| 1 | -575.691 24.954\* 1 0.000 12.3187 5.34899 5.36162\* 5.38025\* |

| 2 | -574.347 2.6877 1 0.101 12.2795\* 5.34581\* 5.36475 5.39269 |

| 3 | -574.089 .5178 1 0.472 12.3641 5.35267 5.37792 5.41518 |

| 4 | -573.995 .18792 1 0.665 12.4683 5.36106 5.39263 5.43919 |

+---------------------------------------------------------------------------+

Endogenous: Y\_d\_Y

Exogenous: \_cons

.

. dfuller Y\_d\_Y , trend

Dickey-Fuller test for unit root Number of obs = 219

---------- Interpolated Dickey-Fuller ---------

Test 1% Critical 5% Critical 10% Critical

Statistic Value Value Value

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

Z(t) -10.643 -4.000 -3.434 -3.134

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

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

The t-statistic is -10.643, which is smaller than 1% critical value. Therefore the null hypothesis that Yt has a unit root is rejected, namely, Yt is stationary around a deterministic trend.

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