

ECO 5350

Introduction to Econometrics

Spring 2011

QQ # 2
KEY

Name Mr. ANOVA

Consider the following **ANOVA** table.

1. Fill in the blanks (1 ¼ points)

Source	SS	DF	MS	F	P-Value
Regression	12	2	<u>6</u>	<u>3</u>	0.03
Error	<u>40</u>	<u>20</u>	<u>2</u>		
Total	52	22			

2. The number of observations used to generate the above ANOVA table is 23.
The number of explanatory variables (apart from the intercept) in the above regression model is 2. The explanatory variables in the regression (**are / are not**) jointly significant. Circle the correct alternative. (3/4 point)
3. Consider the following regression produced by EVIEWS. The data set fair4 was used.

Dependent Variable: VOTE
Method: Least Squares
Date: 03/08/11 Time: 12:45
Sample: 1 33
Included observations: 33

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	52.15653	1.458703	35.75541	0.0000
GROWTH	0.643420	0.165629	3.884711	0.0005
INFLATION	-0.172076	0.428955	-0.401152	0.6912

R-squared	0.350990	Mean dependent var	52.09939
Adjusted R-squared	0.307723	S.D. dependent var	6.056635
S.E. of regression	5.039314	Akaike info criterion	6.158925
Sum squared resid	761.8406	Schwarz criterion	6.294971
Log likelihood	-98.62226	Hannan-Quinn criter.	6.204700
F-statistic	8.112131	Durbin-Watson stat	2.243907
Prob(F-statistic)	0.001527		

Covariance Matrix of LS Coefficient Estimates

	C	GROWTH	INFLATION
C	2.127815	-0.048748	-0.498011
GROWTH	-0.048748	0.027433	0.011860
INFLATION	-0.498011	0.011860	0.184003

Suppose that you want to test that the growth and inflation effects are equal in magnitude but opposite in effect. The null hypothesis would be (1/2 point)

$$H_0: \beta_2 + \beta_3 = 0$$

While the alternative hypothesis would be (1/2 point)

$$H_1: \beta_2 + \beta_3 \neq 0$$

(Use the Greek letters for the coefficients that you are testing.)

The numerator for the t-statistic for this test would be $b_2 + b_3 - 0$ (or $0.64 - 0.172$) (1/2 point). (Use Roman letters for the least squares coefficients.) The standard error (denominator) for the t- statistic is

$$\sqrt{0.027433 + 0.184003 + 2(0.011860)}$$

Just give me the numbers you would eventually use to get the standard error. You don't have to do any detailed calculations here, just what would be calculated.

4. Suppose that the t-statistic you calculated had a two-sided p-value of 0.45. What would your conclusion be? **Accept the Null Hypothesis that the growth and inflation effects are equal in magnitude but opposite in effect.** (1 point)