Debre Markos university

Department of economics

Financial econometrics: assignment for MSc in accounting and finance

Please you have to submit your answer using the email address: demilie604@gmail.com

Your answer should be SMART

1. If the model $y\_{i}=β\_{0}+β\_{1}x\_{1i}+β\_{2}x\_{2i}+∪\_{i}$ is to be estimated from a sample of 20 obesrvations using a data given by the following matrix form in which variables are in deviation form

$$\left(x^{I}x\right)^{-1}=\left[\begin{matrix}0.5&-0.08\\-0.08&0.6\end{matrix}\right], x^{I}y=\left[\begin{matrix}100\\250\end{matrix}\right]$$

$$\overbar{X\_{1}}=\frac{\sum\_{}^{}X\_{1i}}{20}=10, \overbar{X\_{2}}=\frac{\sum\_{}^{}X\_{2i}}{20}=25, \overbar{Y}=\frac{\sum\_{}^{}Y\_{i}}{20}=30 $$

Then: Obtain OLS estimators of the model

1. Evaluate the statement “In the model: $y=a+bx+cz+e, if z=\sqrt{x}$, where a, b and c are parameters to be estimated and e disturbance term satisfying classical assumptions then muliticolinearity couldn’t be a serious problem” (hint: argue whether it is correct statement or not)
2. Suppose the error correction model is given below:

|  |
| --- |
| Dependent variable, real GDP(DY)  |
| Regressor Coefficient Standard Error T-Ratio[Prob] |
| DX1 1.51028 0.1975 7.65 [0.0000]  |
| DX2 -0.0625784 0.6310 -0.0992 [0.9218]  |
| ECM-1 -0.329226 0.1836 -1.79 [0.0855] |
| Constant 124.738 40.57 3.07 [0.0052 ] |
|  R2 = 0.742 $\overbar{R}$2 = 0.71 F(8,27) = 22.94[.000]  |

*Note, X1, X2 and ECM-1 are: Gross private investment, government spending and lagged residual, respectively.* Then,

1. Identify which variable is/are significant and which is/are insignificant?
2. Do you agree that Government expenditure (X2) has a negative and significant impact on real GDP in the short run? Why?
3. Do you think that the model adjusts to long run equilibrium? Why?
4. Interpret the coefficient of ECM-1
5. Interpret R squared of 0.742
6. Suppose a regression result is given in the following table where dependent variable is natural logarism of hourly wages while age and education are age of respondent and years of schooling appear asindependent variables. Moreover, dummy for gender variable is included as explanatory variable which assumes 1 for male respondent and 0 for female (9pts).

|  |  |  |  |
| --- | --- | --- | --- |
| Variable  | coefficient | Standard error | t-ratio |
| Contant | -1.09 | 0.38 | 2.88 |
| male | 0.13 | 0.03 | 4.47 |
| Age  | 0.09 | 0.02 | 4.38 |
| educ | 0.18 | 0.05 | 3.66 |

$R^{2}=0.691, adj.R^{2}=0.692 $, N= 545, F-critical value =2.60 at 3 dffor nominator and 341 df for denominator

1. How do you interpret the coefficient 0.13 for the male dummy and 0.09 for age?
2. Do you think that women are systematically underpaid compared to men?
3. Test the joint hypothesis that gender, age and education do not affect a Peron’s wage