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Assignment [paper based]

1.) i) As in the MLR assumption, heteroskedasticity is the one that used for ols estimator and without heteroskedasticity, the parameter $[\beta_0, \beta_1, \beta_2, \ldots \beta_k]$ will not be efficient.

ii) A sample correlation coefficient of 0.93 b/w two independent variable is not violate any assumption

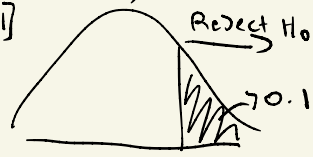
iii) In order to avoid error term, explanatory variable is essential to make OLS unbiased.

2.) i) $H_0: \beta_3 = 0$ $H_a: \beta_3 > 0$

ii) If ROS increased by 50 points, salary increased by $0.00024(50) = .012$

Therefore, ROS does not have large effect on salary $= 1.2\%$

iii)



$H_0: \beta_3 = 0$ $H_a: \beta_3 > 0$ $n = 209$

d.f. $209 - 3 - 1 = 205$

with z table $\Rightarrow z = \frac{0.00024 - 0}{0.00054}$

$= 0.4444$

$\therefore$ It does not fall into rejection region at 0.1 level of significant.

So, ROS has no effect on salary

iv.) No, according (iii), we already test that ROS has no impact on salary. Thus, adding ROS will have negative impact the variance, even though R^2 will be risen.

Assignment [computer-based]

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C6.

(i) $H_0: \beta_2 = \beta_3$

H_a: otherwise

ii) Let $\theta_2 = \beta_2 - \beta_3$. so we get $\log(wage) = \beta_0 + \beta_1 educ + \theta_2 exper + \beta_3 (exper + tenure) + u$

Since, we get $[-0.0072, 0.112]$. Since 0 is in CI means that it is not different from 0 at 5% level. We not reject H_0

C8. i) 2017

ii) $\widehat{nettfa} = -43.04 + 0.799\, inc + 0.843\, age$

(4.08) (0.6) (0.892)

$n = 2017, R^2 = 0.119$

There is no surprise at all since, from the equation interpret that holding other constant if get 1 more dollar income $\widehat{nettfa}$ will increased by 0.799 cent. For age, 1 year older will increase $\widehat{nettfa}$ by $0.843 \times 1000 = 843$ dollars.

iii) NO, since if given income = 0 & age = 0. $\widehat{nettfa}$ is negative.

iv) $t = \frac{0.843 - 1}{0.92} = -1.71$

since, $H_0: \beta_2 = 1$, $H_a: \beta_2 < 1$, p value = 0.044

∴ we reject H_0 at 5% significant level

v.) Not much different, b/c the slope coefficient on inc in simple regression is 0.821.

C1.) i) the campaign expenditure by candidates increased by 1%. candidate A will receive 1% more vote.

ii) H_0: Expend A = - Expend B

iii) vote A = 45.08 + 6.083 log expend(A) - 6.615 log(expend B) + 0.152 prtystrA

t test A = 6.083 / 0.382 = 15.924

t cri A = C(169, 0.05) = 1.654

t test B = -6.615 / 0.379 = -17.45

t cri B = (169, 005) = 1.654

so, reject A and B

∴ cannot use to test hypothesis in part ii)

iv) vote A = 42.7 + 6.342 log(expend A / expend B) + 0.146 prtystrA + u

t test = 6.342 / 0.271 = 23.4

t cri = (170, 0.05) = 1.654

∴ Reject H_0