No.:

DATE.: / /

1. Heteroskedasticity is necessary in order to do OLS estimation as it is an assumption for MLR, otherwise our βs will not be efficient without $var(U|x...x_k)=\sigma^2$. We also need all the necessary important explanatory variables, because otherwise our OLS will be biased because the variables that we don't account for will be in the error term. If our OLS has sample correlation coefficient of 0.95 between two independent variables, then that is still OK because it doesn't violate any MLR assumption.

2i. $H_0: \beta_3 = 0$

$H_a: \beta_3 > 0$

2ii. effect on salary = 0.00024 (50) = 0.012 ×100% = 1.2% increase in expected salary from ros increase of 50, which is relatively small

2iii. critical value at df. = ∞, one tailed 10% significance level is 1.282

$\frac{\hat{\beta}_3 - \beta_3}{s.e.\beta_3} = \frac{0.00024}{0.00054} = 0.\overline{44}$ which is less than the critical value, so we don't reject H_a at 10% significance level

2iv. While ros seems to have a very small impact, including it would help the regression by lowering the error term. As long as it isn't correlated with the other independent variables too much, which can skew our regression

DATE.: / /

C6i. $H_0: \beta_2 = \beta_3$ or $H_0: \beta_2 - \beta_3 = 0$

C6ii. let $\theta_2 = \beta_2 - \beta_3$

$\log(wage) = \beta_0 + \beta_1 educ + \theta_2 exper + \beta_3 (exper + tenure) + u$

θ_2 confidence interval at 95% from stata is -0.0073554 to 0.0112627

we fail to reject $H_0: \beta_2 = \beta_3$ at 5% level because it isn't statistically different from 0 at 5% level compared to 0 in this CI

C8i. there are 2,017 single person households

C8ii. nettfa = -43.04 + 0.799 inc + 0.843 age

s.d β_0 = 4.08 n = 2017

s.d β_1 = 0.060 R^2 = 0.119

s.d β_2 = 0.092

No surprises as an increase in income should lead to more net financial wealth, as you are older (age) then wealth should increase as well as it accumulates.

C8iii. no, it is just the expected nettfa when both our variables are equal to zero

C8iv. $t = \frac{0.843 - 1}{0.92} = -1.71$ $H_0: \beta_2 = 1$ $H_a: \beta_2 < 1$

p-value = 0.044, so we can reject $H_0: \beta_2 = 1$ at 5% significance level but not at 1%.

C8v. the β of inc ≈ 0.821 which is similar to 0.799 slope of the first regression, it doesn't change much because the correlation between age and income is 0.039, thus not much change

C1i. β_1 is how a 1% change in campaign expenditure by candidate A changes the votes received by candidate A by $\frac{\beta_1}{100}$ % points

C1ii. $H_0: \beta_1 = -\beta_2$ or $H_0: \beta_1 + \beta_2 = 0$

$H_a: \beta_2 \neq -\beta_1$

C1iii. $\widehat{voteA} = 45.08 + 6.083 \log(expendA) - 6.615 \log(expendB) + 0.152 prtystrA$

s.d. β_1: 0.382

s.d. β_2: 0.379

s.d. β_3: 0.152

$t_A = \frac{6.083}{0.382} = 15.924$ but critical value at 1.654 so reject that expenditure has significant impact on outcome

$t_B = \frac{-6.615}{0.379} = -17.454$ but critical value at 1.654, so reject that expenditure B has no significant impact on outcome

Source	SS	df	MS	Number of obs	=	935
				F(3, 931)	=	56.97
Model	25.6953242	3	8.56510806	Prob > F	=	0.0000
Residual	139.960959	931	.150334005	R-squared	=	0.1551
				Adj R-squared	=	0.1524
Total	165.656283	934	.177362188	Root MSE	=	.38773

lwage	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
educ	.0748638	.0065124	11.50	0.000	.062083	.0876446
exper	.0019537	.0047434	0.41	0.681	-.0073554	.0112627
expten	.0133748	.0025872	5.17	0.000	.0082974	.0184522
_cons	5.496696	.1105282	49.73	0.000	5.279782	5.713609

Source	SS	df	MS	Number of obs	=	173
				F(3, 169)	=	215.23
Model	38405.1096	3	12801.7032	Prob > F	=	0.0000
Residual	10052.1389	169	59.480112	R-squared	=	0.7926
				Adj R-squared	=	0.7889
Total	48457.2486	172	281.728189	Root MSE	=	7.7123

voteA	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lexpendA	6.083316	.38215	15.92	0.000	5.328914	6.837719
lexpendB	-6.615417	.3788203	-17.46	0.000	-7.363246	-5.867588
prtystrA	.1519574	.0620181	2.45	0.015	.0295274	.2743873
_cons	45.07893	3.926305	11.48	0.000	37.32801	52.82985