EE325: Introductory Econometrics, Semester 1/2012

Take Home Quiz 3

Topic: Multicollinearity

Klein and Goldberger attempted to fit the following regression model to the U.S. economy:

$$Y_t = \beta_1 + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + u_t \,. \qquad (1)$$

where Y = Consumption ($)

X_2 = Wage income ($)

X_3 = Nonwage or Nonfarm income ($)

X_4 = Farm income ($)

Source	SS	df	MS
Model	4154.80016	3	1384.93339
Residual	363.563447	10	36.3563447
Total	4518.36361	13	347.566431

Number of obs	14
F(3, 10)	38.09
Prob > F	0.0000
R-squared	0.9195
Adj R-squared	0.8954
Root MSE	6.0296

y	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
x2	.3527601	.3195847	1.10	0.296	-.359319	1.064839
x3	1.460224	.7284367	2.00	0.073	-.1628344	3.083282
x4	.6248796	1.399528	0.45	0.665	-2.493462	3.743222
_cons	18.7521	6.791897	2.76	0.020	3.618814	33.88539

	x2	x3	x4
x2	1.0000		
x3	0.9452	1.0000	
x4	0.8107	0.7335	1.0000

If you decide to include all the regressors given in the table as explanatory variables for the regression equation above,

1) Do you expect to face the multicollinearity problem? Why? Provide an explanation.
2) Briefly explain the practical consequences of multicollinearity.
3) If you do expect to face the multicollinearity problem, how will you go about resolving the problem? Provide full explanation on the remedial measures that you recommend.