

SUNY-Stony Brook. Economics Department
Economics 323: Fall 2011
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Additional Practice Questions for the Final Exam. The real thing will be Tuesday December 20, 2:15pm to 4:45pm, in our regular classroom.

I *will not* distribute answers for these sample problems. The reason is that some questions from these ones, and the previously posted ones, will appear in the real final. Feel free to ask clarification questions, including questions by e-mail or directly to the T.A.

1. It is not me, it is you

Discrimination has been, and still is, a hot topic in our society in general, and in economics in particular. For decades now since the seminal work of researchers like Gary Becker economists have been concerned with understanding and measuring discrimination. Regression analysis has been the most commonly used framework to analyze empirically this phenomenon. This exercise tries to get you to think about this issue.

Let us analyze issue of discrimination across genders and across races.

Imagine you have data on wage earnings for a large number of men and women between the ages of 18 and 61. You also have a large number of variables measuring most of their characteristics, including gender, race, wealth, health, marital status, number of children, employment history, state of residence, etc.

a) First think about trying to assess whether women are discriminated against in the labor market. Write down an econometric model which could allow you to do that in a convincing way. Interpret the coefficients of interests of your regression model. (Hint: You probably should think about setting up some sort of econometric model similar to what we have done in class, be very specific about your dependent and independent variables, and the interpretation of the latter.)

b) How does your interpretation of your main coefficient of interest changes if I were to tell you that we forgot to measure a variable which is highly correlated with our measure of gender and also correlated with wage income.

c) Now we want to understand the issue of race discrimination, say against Hispanics. How would you modify your econometric model to test the conjecture that Hispanics are discriminated against in the labor market.

d) Imagine I tell you I run a regression with the logarithm of earnings as the dependent variable and with only three independent variables: race (measured as 1 if Black, and zero otherwise), gender (measured as 1 if female, and zero otherwise), and an indicator of the individual's marital status (measured as 1 if married, and zero otherwise). I obtain the following result with the coefficients of interest in the same ordering as the explanation of the variables above: $\text{Beta}_1 = -0.398$; $\text{Beta}_2 = -0.255$; $\text{Beta}_3 = 0.48$
Interpret these coefficients.

e) Now imagine I add another variable to the regression, years of education. The coefficients of interest are now: $\text{Beta}_1 = -0.274$; $\text{Beta}_2 = -0.254$; $\text{Beta}_3 = 0.456$; $\text{Beta}_4 = 0.137$
Reinterpret the results paying particular attention to the changes in the coefficients.

f) Finally, I add two more variables, an indicator of owning a house, and then an indicator of the number of hours they worked during the year. These two variables are positively correlated with earnings. The two coefficients of interest are now: $\text{Beta}_1 = -0.152$;
 $\text{Beta}_2 = -0.128$
Interpret these results very carefully, and explain what you think is to be learned from this exercise.

2. Consider the following Derivative pricing exercise.

You are offered a European Call option. This means you will have the option, but not the obligation, to buy the stock at the strike price K of \$100. The price of the stock today is \$90. Your time discount rate is $\text{Beta} = 0.98$, the risk-less rate of interest is 3%.

The price of the stock follows the following process over two periods: with probability 75% the price will not change from period 0 to period 1, but with probability 25% will go up to \$130. Then from period 1 to period 2, with probability 25% the price will stay the same, and with probability 75% the price will go down by 20%.

How much would you be willing to pay as of period 0 for this option?