Economics 696i
Labor Economics

Take-home Assignment #1
Spring 2015

Due February 6 in class

Annual data on a simulated manufacturing industry are provided for the years 1987-2010. These data are available from the web page for this class in two formats: labor_demand_dataS13.dta (STATA), and labor_demand_dataS13.xlsx (Excel). Data on the variables below are provided.

Variable	Definition
q	exogenous real output/value added
Lq	employment when output is exogenous
Kq	capital/non-labor inputs employed when output is exogenous
Lp	employment when price is exogenous
Kp	capital/nonl-abor inputs employed when price is exogenous
w	worker average hourly compensation
r	the rental rate/user cost of capital
p	exogenous price of manufacturing output
$time$	the time period

Estimate the input demand functions in manufacturing with cross-equation restrictions and correlated errors under two different scenarios: 1) *exogenous* output, and 2) *exogenous* output prices. Apply the modeling techniques presented in class to estimate the input demand functions and the parameters of the underlying CD technology.

1. Directly estimate the input demand function parameters and their standard errors.

   (a) Recover the parameters of the underlying CD technology from your directly estimated input demand function parameters.

   (b) Use the delta method to obtain the estimated standard errors for the derived CD parameters.

2. Directly estimate the parameters of the underlying CD technology and their standard errors.

   (a) Recover the parameters of the input demand functions from your directly estimated production function parameters.

   (b) Use the delta method to obtain the estimated standard errors for the derived input demand function parameters.

(Question 3 continues on the next page)

3. Using the data described below, test the restriction that if the production technology is CES, it is a CD. Conduct your test at the 5% level of significance for a two-tailed test.

   (a) Use the data corresponding to exogenous output.

   (b) Use the data corresponding to exogenous prices.