

# Applied Econometrics

This exercise will use Stata.

You have a cross section of UK companies with information on their size in 1980 and in 1985 and you will test whether Gibrat's law, that growth is randomly distributed across companies holds or not. In addition to using OLS and LDV estimation procedures, you will consider the issue of sample selection bias and how to deal with it.

The exercise is based on: Dunne, P. and A. Hughes (1994) "Age, Size, Growth and Survival: UK Companies in the 1980s", *Journal of Industrial Economics*, Vol XLII, No 2, June, 1994, pp 115-40. As discussed in the lecture.

## Stata Exercise: Growth and Firm Size

- Open Stata
- Download relevant data file for exercise, read the data file into Excel, then block and copy
- Open the data editor window in Stata and paste data in
- Type:

```
summarize size ind dy ls85 ls80 lage  
corr ls85 ls80 lage dy  
reg ls85 ls80
```

- NB don't need to specify constant to run regression
- Note N=1101 because missing values automatically dropped
- Should get

$$\begin{array}{rcccl} \text{ls85} & = & 1.3 & + & 0.95 \text{ ls80} \\ & & (5.8) & & (69.1) \\ & & \text{Rsquared} = 0.8 & & N=1011 \end{array}$$

- Open the log file and give it a name
- Open the do file editor add age to the regression and run
- Check out the regression post estimation menu and look at plots
- Get robust standard errors –add , robust to end of equation
- Estimate survival probability equations by typing

```
probit dy ls80  
logit dy ls80
```

- Also try adding lage
- Allow for more complex relation:

```
generate ls80sq=ls80*ls80  
generate lagesq=lage*lage
```

```
generate lsage=ls80*lage
```

- Run the survival equations with the extra variables.
- An issue you need to consider is the possible bias introduced by only regressing on the companies that survive
- Can run a Heckman 2 step by typing:  
    `heckman ls85 ls80 lage, select(dy ls80) twostep`
- Try this with different specifications
- Trying using the ML method –see Stata Help
- You can now:
  - Save the session
  - Save the do file
  - Save and print the log file