

# Advanced Programming in Quantitative Economics

Introduction, structure, and advanced programming techniques

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## Tutorial Day 4 - Morning

10.30P Estimating a duration model

- ▶ Setting up a class
- ▶ Moving the likelihood

12.00 Lunch

14.15 [Seminar Prof. David Hendry, University of Oxford]

16.00L Added capabilities

- ▶ Graphics packages
- ▶ SsfPack/Arfima and others

17.00 End

## Duration: Working in a class

Target: Estimate your duration model using a class

Possible starting point: `lists/class/ols.ox`,  
`lists/class/olsclass.ox`

Possible steps:

1. Adapt your data generating program, such that it saves a `.in7` file. Check manual, one option is

```
savemat("data/durgen.in7", vY~mX, {"Y", "X1", "X2"});
```

2. Prepare `include/durclass.ox`, with an almost empty class deriving from `Modelbase`
3. Prepare `durmain.ox`, including `#include <include/durclass.ox>`, and declare a new package. Do you get the correct package name on the output?
4. Read the data into the class, select  $X$  and  $Y$  variables (see `lists/class/ols.ox`)

## Duration: Class II

5. Check if you can print the data from the class, in an almost empty `DoEstimation(vP)`
6. Maybe add the `InitPar` member, for finding initial parameters. Place them using `SetPar(vP)` (which sets the parameter count as well)
7. Prepare a `GetParNames()`, which should return an array of strings with the parameter names
8. Add a member `AvgLnLiklDur(...)`, see if you can call it once
9. Use `MaxBFGS` from `DoEstimation`, put the results in place
10. Add the `Covar` member, computing the covariance matrix of the parameters
11. Remember setting the loglikelihood value `m_dLogLik` in place