Effective Programming Practices for Economists

Debugging

Using the Pdb+ debugger

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Setting a breakpoint

Simple

```
def cobb_douglas(x1, x2, gamma1, gamma2, a):
import pdbp; breakpoint()
return (a * x1**gamma1 * x2**gamma2,)
```

Conditional

```
def cobb_douglas(x1, x2, gamma1, gamma2, a):
if gamma1 <= 0.5:
    import pdbp; breakpoint()
return (a * x1**gamma1 * x2**gamma2,)</pre>
```

- Set a breakpoint with import pdbp; breakpoint()
- You can do that anywhere!
 - Inside function definitions
 - In loops
 - In if conditions!
- Execution will stop at the breakpoint and show you the interactive debug prompt

Important commands

Command	Action
n	Execute the next line
S	Execute the next step
С	c ontinue until the next breakpoint
u	Go one frame u p (go backwards through code)
d	Go down one frame (go forward through code)
exit	Stop the debugging (also ctrl + d)

- More commands here
- Do not use any of those as variable names!

Graphical alternatives

- VScode and other IDEs have graphical debuggers
 - Set breakpoints via clicking
 - Variable explorers
- We prefer the terminal for several reasons
 - Integrates perfectly with pytask and pytest
 - Extremely fast once you get a bit of practice
 - More robust (in our experience)