Teaching economics students programming?

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Econ HalfDay

Why should economists be able to program?

- the more skills the better...
- but we only have limited time to teach (BSc) students
- trade off: teaching less math

math vs programming

- both teach abstract thinking
- more “realistic” models
- generating your own data
- useful skills after graduation

abstract thinking

- one of the advantages of math is that it teaches students to think in a formal and abstract way
- but this is also true for programming:
  - program consumers with different utility functions
  - derive their demand for a product with different income and price levels
  - changing the price, moves along the demand curve
  - changing income shifts the demand curve

although I am a theorist...

- after teaching BSc and MSc students economic theory courses for 20 years
- I am not sure they "get it"
- many view a model as a complicated way to state a simple intuition
- why not do the intuition rightaway?

more realistic models

- Rethinking Economics NL: Neoclassical models are "too simplistic"
- models are meant to be simple
- but in our BSc programs, models are also simple because otherwise students cannot solve them
  - if students' math skills only allow for solving symmetric models, you cannot model inequality
- complicated models can be solved using programming
- to understand robustness/sensitivity w.r.t. assumptions: solve the model 1000 times

generating your own data

- students tend to see a dichotomy:
  - you either do theory
  - or estimate a model
- to teach them that this is a "continuum":
  - program a (theory) model
  - generate data from this model
  - estimate the equation you are interested in, on this data

also works for econometrics

- specify a data generating process
- generate a sample
- estimate a slope parameter
- repeat this 1000 times:
  - a slope has a distribution...
- see how instrumental variables work; causality etc.

useful skills after graduation

- many students, years after graduation, have confided that they had not maximized a function in the past 10 years
- math skills seem useful during the years of BSc and MSc economics, but not afterwards
- this could be different for programming:
  - scraping websites for data
  - interactive graphs for presentations
  - neural networks and datascience
  - general computer skills: e.g. folders