VFI Toolkit Workshop, pt3D: Close of First Day

vfitoolkit.com/2025-workshop-lse

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VFI Toolkit

- We have covered Life-Cycle Models.
- Brief summary...

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- Part 1: Setup and solve a basic life-cycle model:
- Steps involved
- Decision variables (d), Endogenous states (a), and Markov exogenous states (z).
- Divide-and-Conquer to reduce runtimes and reduce memory use (requires conditional monotonicity).

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- Part 2: Setup and solve a life-cycle model:
- i.i.d exogenous states (e).
- Semi-exogenous states ($semiz$).
- Permanent types (N_i and $Names\_i$)

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- Part 3A: Other preferences:
- Epstein-Zin preferences.
- Quasi-Hyperbolic discounting: Impatience.
- Gul-Pesendorfer preferences: Temptation and Self-Control.
- Loss Aversion.
- Ambiguity Aversion.

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- Part 3B: Other Endogenous States:
- Two endogenous states.
- experienceasset: $aprime(d, a)$
- experienceassetu: $aprime(d, a, u)$
- riskyasset: $aprime(d, u)$

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- Part 3C: Calibration and GMM Estimation:
- Calibrate Life-Cycle Model.
- GMM Estimate Life-Cycle Model.

VFI Toolkit

- VFI Toolkit contains copies of getFREDData() and getIMFData().
  These can be used/downloaded without toolkit, but are also included in it.
- Commands to import data from FRED and IMF into Matlab.
- Makes it very easy to, e.g., import US GDP data and analyse it, and then update every year just changing end date and rerunning script.

Life-Cycle Model

- Everything we have seen so far in this workshop is covered in the examples of the Intro to Life-Cycle Models.

- Intro to Life-Cycle Models: pdf of 50 example Life-Cycle models, adding features one at a time. Covers everything we did here, plus much more.

Life-Cycle Model

- Other useful resources:

- Life-Cycle OLG Reading List
  Codes implementing models from various papers (not formally part of VFI Toolkit).
- Replications
  Codes implementing replications of various papers (these are not updated/maintained, so if they error, ask me on forum and I will update). Replications do everything in the paper.

Life-Cycle Model

- Any questions, feature requests, etc.
- Forum: discourse.vfitoolkit.com

Life-Cycle Model

- To use VFI Toolkit you need Matlab + Nvidia GPU.
- There are no other requirements of use.
  VFI Toolkit has GPL3 license. There are requirements if you modify the toolkit itself.
- I will be grateful if you cite VFI Toolkit when using it:
  Robert Kirkby. VFI Toolkit, v2. Zenodo, 2022. doi: https://doi.org/10.5281/zenodo.8136790

References I

Robert Kirkby. VFI toolkit, v2. *Zenodo*, 2022. doi: https://doi.org/10.5281/zenodo.8136790.