Introducing the Econ-ARK: Economics "Algorithmic Repository and toolKit"

Short Version

July 29, 2018

Goals: Like DYNARE's, but for Models With Heterogeneity

State-of-the-art tools for:

1. Solving microeconomic dynamic stochastic optimization problems
   - 'Hard' Bellman problems with uncertainty, 'kinks,' nonconvexities
2. Simulating populations of agents
   - Whether or not they are solving DSOP
   - Allows disciplined exploration of deviations from RE
3. Finding equilibria for markets/economies populated by such agents

Who Has Produced It?

Name	TLA	Affiliation
Christopher D Carroll	CDC	JHU, CFPB
David C Low	DCL	CFPB
Nathan M Palmer	NMP	OFR
Matthew N White	MNW	UDel, CFPB
Alex Kaufman	ABK	CFPB $\rightarrow$ Princeton

Nothing herein may be interpreted as reflecing opinions of

CFPB	-	United States Consumer Financial Protection Bureau
JHU	-	Johns Hopkins University
IMF	-	International Monetary Fund
OFR	-	Office of Financial Research, U.S. Treasury
UDel	-	University of Delaware

Big Grant from Alfred P. Sloan Foundation!

Three Years

- Hire Programmers, RA's, Open Source Project Managers, etc etc

What Is It Good For?

- Heterogeneous Agent Macro Models
  - Original name: **H**eterogeneous **A**gent **R**esources and tool**K**it
  - HARK!
- Structural Micro Models (e.g., labor, health)
- IO models with equilibrim between consumer agents and firm agents

Why: Goals

Make it *much* easier:

- To get started doing structural Heterogeneous Agent modeling
- To teach newcomers how to use such models
- To *compare* models to each other
- To add new capabilities
- To mix-and-match components/modules/agent types

Remove the excuse 'Structural model was not worth the effort'

Where Is It?

Browse without installing:

- Browse on our webpage at econ-ark.org
- Browse our code at http://github.com/econ-ark
- Browse our talks at http://github.com/econ-ark/PARK
- Overview paper at http://github.com/econ-ark/PARK/SciPy2018.pdf
- Browse our live notebooks
- Browse our documentation

Installing It On Your Local Computer

- Default language is Python 3
  - Date after which python 2.7 not supported? Not specified yet
- If you don't have Python 3 on your computer, install either:
  1. Anaconda3 - adds many packages useful for scientific computing
  2. Python 3
     - On Mac or Linux to download and install it
     - On Windows
     - Install Jupyter
     - Make sure you have `pip` installed
  3. Install the 'econ-ark' package:
     - `pip install econ-ark`
- Get our our demonstration notebooks from DemARK

References I

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