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

Presentation by Chris Carroll at
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Goals: Like DYNARE's, but for Models With Heterogeneity

Operationally (for now): More like STATA than DYNARE or HetSol

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
   - Definition of eqbm is user-specified
     - e.g.: Stock Price Equilibrates Shares bought = Shares sold
     - Expectations can be – but need not be – rational

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

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Three Years

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

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

- You Need Python 2.7 (Python 3 target is July)
- If you don't have Python 2.7 on your computer, install either:
  1. Anaconda2 - adds many packages useful for scientific computing
  2. Python 2.7
     - 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