

Instructions.txt

These instructions explain how to use the replication programs to reproduce results in Aubhik Khan and Julia K. Thomas (2007) 'Inventories and the business cycle: An equilibrium analysis of (S,s) policies'.

Included with these instructions are simplified versions of the programs used to solve the models in the paper that will allow a user to replicate our results. All programs are written in Fortran 90 and have been tested with the most recent versions of the software described at the time of writing these instructions. There are 5 sets of programs each with a make file. These make files have been compiled using both 64-bit (EMT64) and 32-bit versions of the Intel Fortran Compiler Professional Edition Version 10.0 Build 20070426 Package ID: W_FC_P_10.0.025. Each make file is designed for easy adaptation to other compilers and operating systems. The programs require the free LAPACK libraries, in particular the DGESV subroutine. This is included in the Intel Math Kernel Library (IMKL) and version 9.1.025, Package ID: w_mkl_enh_p_9.1.025.exe, was used by the make files.

THE PROJECTS

The make files indicate the programs families associated with each application.

- 1) benchmarkplanner.mak solves the benchmark planning problem
- 2) steadystate.mak solves the steady state of the inventory model
- 3) dynamicinventory64.mak solves the dynamic stochastic general equilibrium of the inventory model
- 4) output.mak compiles moments from simulation data generated by the inventory model

The programs in (1) - (3) require a module for multivariate piecewise cubic polynomial spline interpolation.

- 5) ppsplinefit3edit.mak compiles the pp-spline module.

All programs are the intellectual property of the authors and are provided solely for replication of results in Khan and Thomas (2007). Additional information, including appendices on the numerical method and the algorithm used for spline interpolation, will be posted at <http://www.juliathomas.net/inventoryappendices/>

BUILDING A PROJECT

Running one of these sets of programs requires the creation of an executable file using the make command and a Fortran 90 compiler. In Windows, open a command prompt and then initialize the parameters for your compiler. When using the Intel Fortran compiler, this involves running IFortVars.bat located at C:\Program Files\Intel\Compiler\Fortran\10.0.025\IA32\Bin. Next, type nmake projectname.mak, where projectname.mak = benchmarkplanner.mak, steadystate.mak, dynamicinventory64.mak or output.mak.

RUNNING A BUILT PROJECT

(A) After building the programs in (1) above, use the executable benchmarkplanner.exe with the input file Benchmark.txt. Answer the five option questions as: 2.0, 0.0, y, 10000, 2.015.

(B) After building the programs in (2), use the executable steadystate.exe with the input file BaselineInvSS.txt. Answer the two option questions as: 3.2, 3.3.

(C) After building the programs in (1) - (4) and completing steps (A) - (B), use the executable inventoriesedit.exe with the input file BaselineInv.txt and the output files Benchmark0 and BaselineInvSS. Answer the option questions as: 2, 2.

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(D) To see a table of moments describing the simulation from the n-th iteration of the inventory model being solved in (C), build the programs in (4). Next, use the two files Outbaselineinv[n] and somedata (where [n] indicates the iteration number). Answer the option question as: y.

Eventually the moments will stop changing across iterations. The inventory results reported in the paper are taken after such convergence.