Readme

March 31, 2022

Contents

1 Code

All code for the computational model are contained in the "code" folder. The following programs are required:

- Matlab
- A GPU (over the duration of this project, we made use of Nvidia Tesla K80 and Nvidia Geforce RTX 2080 Ti GPUs).
- C++ and CUDA
- The necessary compilers to compile C++, CUDA, and Matlab mex code.

1.1 Baseline Model

Code for the baseline model are contained in the "code\BASELINE" folder. This folder is organized as follows:

- Folder "src_cpp" contains CUDA/C++ code.
- Folder "src_mex" contains code to build Matlab mex files. The gateway mex file can be compiled by running "compile_mexSolveModelGivenParms.m"
- Folder "matlab" contains matlab programs
- After compiling the code, the program can be run in the following order:
  1. Go to the folder "fit_parms.10302020.turnover_98_04" and run "fit_parms_10302020_turnover_1998_2004_run2.m". This program calibrates the baseline model by running a root search to determine parameter values.
  2. Go to the folder "results.11042020" to generate all results related to the baseline model.
     (a) "run1_baseline.m" simulates the baseline model
     (b) The following files are needed to generate results for our sovereign spread decomposition:
        i. "run2_baseline_no_liq.m" simulates a version of the model without liquidity
        ii. "run3_decomposition.m" computes bond prices given debt/default policies.
        iii. "sim_decomposition.m" simulates the model to report ergodic values for the decomposition
     (c) Go to the folder "sensitivity analysis" to generate results for the sensitivity analysis
     (d) Go to the folder "welfare" to generate the welfare results

(e) Go to the folder “discrete time jump to default” to generate plots for the jump to default model

(f) Run “PaperPlots_arg_case_study.m” to generate results for the Argentine case study. Other “.m” files starting with “Paperplots_” generate the figures from our paper.

1.2 Extended model with risk-averse international investors

Code for the extended model with risk-averse internatinal investors are contained in the “RISK_AVERSION” subfolder. This subfolders is organized as follows:

- Folder “matlab” contains matlab code.
- Folder “src_mex” contains code to generate the gateway matlab mex file. Run “compile_mexSolveExtendedModelGivenParms.m” to compile this mex file.
- After compiling the code, the program can be run in the following order “code\BASELINE\results.11042020\run4_extended_model.m”

2 Data

2.1 Bid Ask Spreads

- We query in Bloomberg all the Global Bonds issued between Jan 1st 1993 to December 31st 2004 by Argentinean Government. We obtain a total of 33 bonds with their characteristics (currency, issue date, volume issued, maturity date). We drop one observation with ISIN equal to "#N/A Field Not Applicable".
- Using the ISIN we obtained, we download the time time series of bid, ask, mid, open, high, low prices for these bonds Jan 1st 1993 to December 31st 2004.
- We convert the time series data on prices to stata readable format and save it as “Bond Prices Values.dta”.
- Using “data\panel_bonds_19932004.do” we first import the time series of prices, and then we merge time series data to the bond characteristics to obtain a panel on bond prices. We compute the bid ask spread for each observation (bond, time). We drop observations if the bid ask spread is negative.
- Using “data\Desc.Stats.do” we compute the BA spreads weighted by amount outstanding. The output file is ba_spread_1.tex and ba_spread_2.tex.

2.2 Turnover

- We obtain data on the total public and publicly guaranteed debt from the World bank for Argentina from 1998 to 2004 at a yearly frequency.
- We obtain the time series of total trading for sovereign Eurobonds for 1998 to 2004 at a yearly frequency from the Emerging Market trading association (https://www.emta.org/activities-and-services/volume-surveys/). This dataset can be ordered by filling out the following order form: https://www.emta.org/media/2smduuto/adv4q21.pdf
- The turnover for each year is the ratio of total trading of sovereign Eurobonds to the total stock of public and publicly guaranteed debt.