Financial Frictions and Export Dynamics in Large Devaluations

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In this folder, we provide the Matlab and Stata codes necessary to replicate the results presented in our paper.

The Mexican micro-level data that we use to calibrate the model and conduct validation is proprietary, but can be accessed by any independent researcher at no cost. To do so, a researcher needs to submit an application to the National Institute of Statistics and Geography of Mexico (INEGI). For information on how to obtain access to the firm-level data from INEGI's Encuesta Industrial Anual (EIA) 1994-2003, please visit `https://www.inegi.org.mx/programas/eia/94_03/default.html`. The data are freely available to researchers subject to approval by INEGI.

Sincerely,

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Fernando Leibovici (Federal Reserve Bank of St. Louis)

Michal Szkup (University of British Columbia)

1 Model

Below you can find the list of Matlab files to replicate the model-based results presented in the paper and online appendix.

- Figures-KLS2-August2019.m

Loads data files data-yearly.mat and KLS2-Workspaces-August2019.mat and replicates figures 1 to 5 in the paper and 1 to 17 in the online appendix.

- KLS2-main: Main file, execute to obtain results in the paper and online appendix. Workspaces loaded by code Figures-KLS2-August2019.m are saved in matrix m.Results

    1. Baseline model:

       In Control panel, choose s.model=1, s.irf-pm = 0, s.lambda-flag = 0, s.UIPdeviations = 0, and s.high-z-ForDebt = 0, s.financial-crisis = 0, s.irp=0, s.FFshocks=0

    2. Frictionless model:

       In Control panel, choose s.model=2, s.irf-pm = 0, s.lambda-flag = 0, s.UIPdeviations = 0, and s.high-z-ForDebt = 0, s.financial-crisis = 0, s.irp=0, s.FFshocks=0

    3. No reallocation model:

       In Control panel, choose s.model=3, s.irf-pm = 0, s.lambda-flag = 0, s.UIPdeviations = 0, and s.high-z-ForDebt = 0, s.financial-crisis = 0, s.irp=0, s.FFshocks=0

    4. One type model:

       In Control panel, choose s.model=4, s.irf-pm = 0, s.lambda-flag = 0, s.UIPdeviations = 0, and s.high-z-ForDebt = 0, s.financial-crisis = 0, s.irp=0, s.FFshocks=0

    5. Baseline model, only Pm shock:

       In Control panel, choose s.model=1, s.irf-pm = 1, s.lambda-flag = 0, s.UIPdeviations = 0, and s.high-z-ForDebt = 0, s.financial-crisis = 0, s.irp=0, s.FFshocks=0

    6. Baseline model, only Pm shock, lambda=0:

In Control panel, choose s.model=1, s.irf-pm = 1, s.lambda-flag = 1, s.UIPdeviations = 0, and s.high-z-ForDebt = 0, s.financial-crisis = 0, s.irp=0, s.FFshocks=0

7. Baseline model, only Pm shock, lambda=1:

   In Control panel, choose s.model=1, s.irf-pm = 1, s.lambda-flag = 2, s.UIPdeviations = 0, and s.high-z-ForDebt = 0, s.financial-crisis = 0, s.irp=0, s.FFshocks=0

8. Baseline model, only Pm shock, lambda=0.5, lambdaX=0:

   In Control panel, choose s.model=1, s.irf-pm = 1, s.lambda-flag = 3, s.UIPdeviations = 0, and s.high-z-ForDebt = 0, s.financial-crisis = 0, s.irp=0, s.FFshocks=0

9. Baseline model, UIPdeviations:

   In Control panel, choose s.model=1, s.irf-pm = 0, s.lambda-flag = 0, s.UIPdeviations = 1, and s.high-z-ForDebt = 0, s.financial-crisis = 0, s.irp=0, s.FFshocks=0

10. Baseline model, foreign debt in high productivity firms:

    In Control panel, choose s.model=1, s.irf-pm = 0, s.lambda-flag = 0, s.UIP-deviations = 0, and s.high-z-ForDebt = 1, s.financial-crisis = 0, s.irp=0, s.FFshocks=0

11. Baseline model, financial crisis shock:

    In Control panel, choose s.model=1, s.irf-pm = 0, s.lambda-flag = 0, s.UIP-deviations = 0, and s.high-z-ForDebt = 0, s.financial-crisis = 1, s.irp=0, s.FFshocks=0

12. Baseline model, interest rate parity

    In Control panel, choose s.model=1, s.irf-pm = 0, s.lambda-flag = 0, s.UIP-deviations = 0, and s.high-z-ForDebt = 0, s.financial-crisis = 0, s.irp=1, s.FFshocks=0

13. Baseline model, frictionless with shocks estimated from financial frictions model

In Control panel, choose s.model=2, s.irf-pm = 0, s.lambda-flag = 0, s.UIP-deviations = 0, and s.high-z-ForDebt = 0, s.financial-crisis = 0, s.irp=0, s.FFshocks=1

- Additional files:
  - KLS2-GE: Solves steady state problem for given prices
  - KLS2-staticproblem: Solves static problem
  - KLS2-staticproblem-typeX: Solves static problem for low export cost firms
  - KLS2-dynamicproblem: Solves dynamic problem in steady state
  - KLS2-dynamicproblem-typeX: Solves dynamic problem in steady state for low export cost firm
  - KLS2-simulate: Simulates model in steady state iterating over measures
  - KLS2-simulate-shocks: Simulates model in steady state drawing random shocks and simulating individual firms
  - KLS2-measure: Computes measure in steady state
  - KLS2-transition: Solves transition for given prices and shocks
  - KLS2-staticproblem-period2: Solves static problem for period 2 in transition, given shocks timing assumption
  - KLS2-staticproblem-typeX-period2: Solves static problem for period 2 in transition, given shocks timing assumption, for low export cost firms
  - KLS2-dynamicproblem-trans: Solves dynamic problem in transition
  - KLS2-dynamicproblem-typeX-trans: Solves dynamic problem in transition for low export costs firms

  - KLS2-simulate-trans: Simulates model in transition iterating over measures
  - KLS2-simulate-shocks-trans: Simulates model in transition drawing random shocks and simulating individual firms
  - KLS2-measure-trans: Computes measure in transition
  - KLS2-output: Computes statistics based on simulations
  - KLS2-rowenhorst: Discretizes AR(1) process for productivity
  - KLS2-rowenhorst-fn: Discretizes AR(1) process for productivity
  - KLS2-setup-grids: Setups grids for net worth and productivity
  - KLS2-transition-setup: Setups transition length and shocks

- We also provide initial prices (loaded in KLS2-main) for faster convergence, KLS-prices-*.mat

2 Data

Below you can find the list of Stata and Excel files to replicate the empirical results presented in the paper and online appendix.

2.1 Paper

- Figure 1
  - Raw data used to compute this figure is available in KLS2_CrossCountryData.xls
- Firm-level target moments

  - Stata code used to compute firm-level moments: KLS2_main.do
  - Log file from Stata after running KLS2_main.do: KLS2_results.log
  - Spreadsheet with target moments and results: KLS2_MexicoFirmLevelData_EIA.xlsx
  - Other files used: KLS2_MexicoCPIdata_fromIMF.xlsx, which contains the CPI series for Mexico.

- Aggregate target moments
  - Moments and raw data are available in KLS2_MexicoAggregateData.xlsx

2.2 Appendix

- Raw data and results presented in the appendix are available in:
  - KLS2_MexicoFirmLevelData_EIA_Appendix.xlsx
  - KLS2_MexicoAggregateData.xlsx
  - KLS2_WBESdata.xlsx $\Rightarrow$ Note that the results based on the World Bank Enterprise Survey are computed by running KLS2_WBESdata.do in Stata.