Code Documentation for "The Effect of the Credit Crunch on Output Price Dynamics: The Corporate Inventory and Liquidity Management Channel"

July 6, 2020

S1 DATA

Replicating this paper requires the following data, which can be downloaded online or obtained from the authors of the cited articles. Some of the data need to be purchased.

- ACNielsen Homescan Panel (or Consumer Panel) and Promodata. I accessed the data though the Kilts Marketing Data Center at the University of Chicago Booth School of Business in 2014.
  To access the data, check https://www.chicagobooth.edu/research/kilts/datasets/nielsen.

- GS1 US Data Hub (company). I accessed the data through their online platform in August 2014.
  To access the data, check https://www.gs1us.org/tools/gs1-us-data-hub.

- Orbis data, which is compiled by Bureau van Dijk (BvD). I accessed the data multiple times through Columbia University library in years 2014-2016 (2014 as a baseline). Note that the Cortera has been providing Orbis with new information on companies in the US and Canada, replacing Dun & Bradstreet since the February 2015. Please use the Orbis historical data for the replication. I also used ACNielsen + Orbis, Orbis + Dealscan (and FISD) matching files and hand-checked the matched files. Please contact the Orbis representative to match other data with the Orbis data.
  To access the data, check https://orbis.bvdinfo.com.

- Dealscan data from Thomson Reuters. I accessed the data through WRDS (Wharton Research Data Service) platform in October 2014.
  To access the data, check https://wrds-www.wharton.upenn.edu.

- Compustat data from Standard and Poor's. I accessed the data through WRDS platform multiple times in years 2014-2020. I also accessed the exchange rate information.
  To access the data, check https://wrds-www.wharton.upenn.edu.

- Fixed Income Security Data (FISD). I accessed the data through WRDS platform multiple times in years 2014-2016.
  To access the data, check https://wrds-www.wharton.upenn.edu.
- Zillow housing price data (zip-code level).
  To access the data, check https://www.zillow.com/research/data.
- American Community Survey (ACS).
  To access the data, check https://www2.census.gov.
- NBER-CES manufacturing database.
  To access the data, check http://data.nber.org/nberces.
- TED spread, CPI, PPI, and inventory from Federal Reserve Economic Data (FRED).
  To access the data, check https://fred.stlouisfed.org.
- BLS industry-level (naics 4-digit) manufacturing price index.
  To access the data, check http://data.bls.gov/pdq/SurveyOutputServlet.
- World bank GDP deflator.
  To access the data, check https://data.worldbank.org.
- Bank-level instrumental variables from Chodorow-Reich (2014).
- Demand elasticities from Hottman, Redding, and Weinstein (2016).
- Dealscan-Compustat link data from Chava and Roberts (2008).
- Monetary policy shock from Romer and Romer (2004).
- Industry-level control variables from Bils, Klenow, and Malin (2013).
- Inflation and crisis dates from Schularick and Taylor (2012).

S2 CODE: EMPIRIC

Stata and R are required to run the codes. The Stata do-file "do_all.do" runs all the Stata codes. In running the codes, please make sure to set the global path "program" to your designated folder (in "do_all.do" for Stata and in ".../code/Figure/cash_seasonaladj.R" for R) and run the codes below sequentially. Running all the codes requires a certain directory structure; some data creation requires a manual matching.

- .../code/Build/ACNielsenToStataFile.do: Convert ACNielsen data to stata file.
- .../code/Build/ACNielsenMerge.do: Merge across ACNielsen data.
- .../code/Build/UpcControl.do: UPC-level information.

- .../code/Build/FirmFilter.do: Make upc-gs1-bvd-tic match file.
- .../code/Build/HousingPrice.do: Zipcode Housing price database + ACS homeownership rate.
    * .../code/Build/stateabbr.do: Get the official state name (used in 5_HousingPrice.do).
- .../code/Build/HHchar.do: Make county-level household characteristics.
- .../code/Build/ACNielsenAggregate.do: Make the data to compare the total sales with the final sample.
- .../code/Build/ACNielsenAggregate_ugft1_hh.do: Clean up & aggregate Nielsen data, upc-firm-quarter-level.
- .../code/Build/ACNielsenAggregate_ugfst1.do: Clean up & aggregate Nielsen data, upc-firm-quarter-state-level.
- .../code/Build/ACNielsenAggregate_ugfrt1.do: Clean up & aggregate Nielsen data, upc-firm-quarter-retail-level.
- .../code/Build/FinancialShock.do: Construct Chodorow-Reich (2014) financial shock and IVs.
    * .../code/Build/Match_ChodorowRiechLenderHealth.do: Check & match Chodorow-Reich (2014) lender health variables (used in 12_FinancialShock.do).
- .../code/Build/FinancialShock_amount.do: In measuring the credit supply shock, use amount of loans instead of number of loans.
- .../code/Build/FinancialShock_avgshare.do: In measuring the credit supply shock, use pre-crisis average instead of the last pre-crisis loan.
- .../code/Build/FinancialShock_diffcrisis1.do: In measuring the credit supply shock, use different crisis definition. Noncrisis: 2005q4-2006q2, 2006q4-2007q2. Crisis: 2007q4-2008q2.
- .../code/Build/FinancialShock_diffcrisis2.do: In measuring the credit supply shock, use different crisis definition. Noncrisis: 2006q4-2007q2, 2007q4-2008q2. Crisis: 2008q4-2009q2.
- .../code/Build/FinancialShock_diffcrisis3.do: In measuring the credit supply shock, use different crisis definition. Noncrisis: 2005q4-2006q2, 2006q4-2007q2, 2007q4-2008q2. Crisis: 2008q4-2009q2.
- .../code/Build/DealscanControl.do: Measure control variables from Dealscan data.
- .../code/Build/BondControl.do: Measure bond market access.
- .../code/Build/bvd_dealscan_nielsen_r35.do: Import and clean Orbis data.
- .../code/Build/FirmControl.do: Make firm-level control variables.
- .../code/Build/HRW_price1_hh.do: Construct the main price index.

- .../code/Build/price_qfgr.do: Construct group-firm-quarter-retail-level price index.
- .../code/Build/price_qfgs.do: Construct group-firm-quarter-state-level price index.
- .../code/Build/Laspeyres_price.do: Construct the Laspeyres price index.
- .../code/Build/Paasche_price.do: Construct the Paasche price index.
- .../code/Build/Tornqvist_price.do: Construct the Tornqvist price index.
- .../code/Build/Merge1_hh.do: Combine all the data.
- .../code/Build/bvd_dealscan_inventory_r35.do: Orbis inventory data.
- .../code/Build/bvd_dealscan_r35.do: Bring in Orbis-Dealscan matched data.
- .../code/Build/gvkey_bcoid.do: Generate the link file between Compustat and Dealscan
- .../code/Build/reg_inven_fs1st_gvkey.do: Tables S.8 and S.9, inventory regression by parts.
- .../code/Build/rz_measure.do: Rajan and Zingales external financial dependence measure.
- .../code/Build/compustat_clean.do: Bring in Compustat to replicate Bates et al. (2009).
- .../code/Build/industry_inventory.do: Bring in NBER-CES manufacturing database.
- .../code/Build/clean.do: Bring in Promodata.
- .../code/Figure/tedspread.do: Figure 1 (a), Ted Spread.
- .../code/Figure/loan_spread.do: Figure 1 (b) and (c), aggregate number and amount of loans and credit spread.
- .../code/Figure/aggprice_byfs1.do: Figure 2, price Index: p80 vs. p20.
- .../code/Table/Summstat.do: Tables 1 and S.5, summary statistics.
- .../code/Table/price_fg_main.do: Tables 3, 4, A.1, and S.2, Main regression and first-stage regression results.
- .../code/Table/Inven,cash,emp.do: Tables 5 (except market share) and S.7, Inventory, cash holdings, and employment regression.
- .../code/Table/mktshare.do: Tables 5 (only market share) and S.3, Market share regression and decomposition.
- .../code/Figure/price_dynamic.do: Figure 3, price regression, dynamics.
- .../code/Figure/cash.do: Bring in cash variable from Compustat.

- .../code/Figure/cash_seasonaladj.R: Seasonal adjust the aggregate cash holdings
- .../code/Figure/inventory_cash.do: Figure 4, plot aggregate inventory and cash.
- .../code/Figure/aggprice2.do: Figures S.5 and S.6, aggregate price indexes.
- .../code/Table/price_fg_hetero.treat.do: Table 6, heterogeneous treatment effect regression.
- .../code/Table/cash_f.do: Table 8, S.6, and S.26, correlation of cash and other variables.
- .../code/Table/price_cash.do: Tables 7 and S.24, price and liquidity.
- .../code/Table/price_fg_w.cash.do: Table S.25, price and liquidity, additional analyses.
- .../code/Table/price_fg_hetero.treat_cash.do: Table 9, heterogeneous treatment regression with initial cash holdings.
- .../code/Table/SummStat_additional.do: Table S.4, list large companies.
- .../code/Table/price_fg_diffcrisis.do: Table S.10, using different pre- and post-treatment periods.
- .../code/Table/price_fg_diffweight.do: Table S.17, using different regression weights.
- .../code/Table/price_fgr.do: Table S.11, allow retailer fixed effects.
- .../code/Table/57_price_fgs.do: Table S.15, allow state fixed effects.
- .../code/Table/price_fg_ronly.do: Table S.12, using retailers only.
- .../code/Table/price_fg_promodata.do: Table S.13, using manufacturing price.
- .../code/Table/price_fg_w.HHchar.do: Table S.14, regression with purchaser characteristics.
- .../code/Table/CompareChar.do: Table 2, compare observed characteristics.
- .../code/Table/price_fg_foreign.do: Table S.16, regression with foreign exposures.
- .../code/Table/price_fg_amt.avgweight.do: Table S.18, variants of the credit supply shock.
- .../code/Table/price_fg_otherindex.do: Table S.19, different price indexes.
- .../code/Table/price_fg_bylisted.do: Table S.20, regression by listed and unlisted firms.
- .../code/Table/khwaja_mian.do: Table S.21, testing selection on unobserved characteristics.
- .../code/Table/price_fg_pretrend.do: Table S.22, pre-trend regression.
- .../code/Table/price_fg_dummy.do: Table S.27, regression with a dummy variable.
- .../code/Table/BLSprice.do: Table S.23, regression with a BLS price index.
- .../code/Figure/inflation_externalvalidity.do: Figure S.7, external validity graph.

S3 CODE: THEORY

Matlab and Dynare are required to run the codes. The matlab file "do_aggregate.m" and "do_relative.m" run all the codes related to aggregate and relative variables dynamics, respectively. In running the codes, please make sure to change the path in "do_aggregate.m" and "do_relative.m" to your designed path. The aggregate business inventory and the producer price index (from FRED) are required, and they must be named as "inv_bus.xlsx" and "PPIACO.xlsx". Table S.1 (calibration) was made manually.

- .../model/aggregate/baseline.mod: baseline aggregate model.
- .../model/aggregate/baseline_small_psik.mod: baseline aggregate model with small ψ_k (counterfactual).
- .../model/aggregate/baseline_ZLB.mod: baseline aggregate model, fixing interest rates.
- .../model/aggregate/baseline_ss_helper.m: solves the steady state for labor.
- .../model/aggregate/baseline_ss_helper.m, .../model/aggregate/baseline_ZLB_ss_helper.m, and .../model/relative/baseline_relative_ss_helper.m : solves the steady state for labor or consumption.
- .../model/aggregate/vline.m and .../model/relative/vline.m: to draw the graph (Kuczenski 2020). See https://www.mathworks.com/matlabcentral/fileexchange/1039-hline-and-vline.

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