

CREDIT SUPPLY AND THE PRICE OF HOUSING

Giovanni Favara and Jean Imbs

Instructions for replication

The file *20121416_data.zip* has three folders: *data*, *dofiles* and *output*. The *data*, and *dofiles* folders contain all the data and programs necessary to replicate the results:

1. Using STATA 13.0 or later, open the file `master.do` in the subfolder *dofiles*.
2. Edit line 14 to change the global variable (`main`) so the location of the `$dirpath` matches the location on your computer.
3. The `master.do` file calls other STATA do files (described below) in the *dofiles* folder.
4. By running `master.do`, the output generated (all tables and graphs) will be placed in the folder *output*, except for Table 1, and Table A2, which will be displayed on the computer screen.
5. The do file `master.do` (and the other do files) contains a precise verbal description of every step of the procedure, and should be easy to understand.
6. The following do files are called within `master.do`
 - (a) `tab_1.do`, computes mean values of some variables of interest, as reported in Table 1
 - (b) `irf_fig_1&3.do`, computes impulse response functions of mortgage credit and house prices to a deregulation shock, as reported in Figure 1 and 3
 - (c) `aggregation_fig_2&4`, generates the aggregate effects of branching deregulation, as reported in Figure 2 and 4
 - (d) `3yr_avg_tabOA3&OA6`, estimates the benchmark regressions with data averaged over three-year intervals, as reported in the Online Appendix Table OA3 and Table OA6
 - (e) `placebo_tab_OA5&OA7`, estimates the effects of the placebo branching deregulation index between 1996 and 2000 on house prices and mortgage credit between 1990 and 1994, as reported in the Online Appendix Table OA5 and Table OA7.

Data files included

The folder *data* contains several datasets (called within the `master.do` file):

data/hmda.dta

Contains HMDA mortgage data for different types of lenders: (a) commercial banks (identified with a suffix `_b`); (b) placebo lenders (i.e. independent mortgage companies, thrifts and credit unions – identified with a suffix `_pl`); (c) out-of-state commercial banks (i.e. commercial banks headquartered outside of the deregulating state – identified with a suffix `_b_oos`); (d) out-of-state commercial banks with local branches (i.e. commercial banks headquartered outside of the deregulating state with branches in counties of the deregulating state – identified with the suffix `_b_oos_lb`); (e) in-state commercial banks (i.e. commercial banks headquartered in the deregulating state – identified with a suffix `_b_is`). For each lender, and for each county (*county*) and year (*year*), key variables in the dataset are:

1. *nloans*: number of mortgages originated (for purchase of single family owner occupied houses)
2. *vloans*: volume (total dollar amount) of mortgages originated
3. *nden*: number of mortgage applications denied
4. *nsold*: number of mortgage originated and securitized.
5. *lir*: loan to income ratio, using the county-level total mortgage amount and the county-level total income from Internal Revenue Service data.
6. *nbra*: number of branches (source Summary of Deposits FDIC)
7. *her_v*: Herfindahl index of mortgage concentration, using as market shares the volume of loans originated by a lender relative to the total volume of loans originated in a county.

For each variable, the prefix *DL_* refers to the annual log change, and the prefix *LDL_* to the one-year lag of *DL_*.

data/hp_dereg_controls.dta

Contains other county-year data used in the main regression analysis, namely, the log annual change (prefix *Dl_*) and the one-year lagged log change (prefix *LDl_*) of:

1. *hpi*: house price index (source: Moody's economy.com)
2. *pop*: population (source: BEA)
3. *inc*: per-capita income (source: BEA)
4. *hsosf*: stock of owner occupied single family properties (source: Moody's economy.com).

The dataset includes also the following variables:

7. *inter_bra*: deregulation index, computed as 4 - Rice and Strahan (2010)'s regulation index
8. *Linter_bra*: one year lagged deregulation index
9. *year*: variable recording the year in which *Linter_bra* changes
10. *elasticity*: Saiz (2010)'s measure of housing supply elasticity
11. *inelasticity*: inverse of Saiz's elasticity
12. *Linter_ela*: interaction of *Linter_bra* and *elasticity*
13. *Linter_inela*: interaction of *Linter_bra* and *inelasticity*
14. *border*: dummy variable if a county is in a MSA bordering two or more states
15. *border_name*: state postal code indicator of a border
16. *w1*: inverse number of counties in each state

data/call.dta

Contains Call Reports county-year commercial banks' balance sheet data weighted by the volume of mortgages originated by each commercial bank in a given county-year:

1. *totltoa*: total loans to assets
2. *liatota*: liquid assets to total assets

3. *etoa*: bank equity capital to assets
4. *nplrel*: non-performing mortgage loans to total mortgage loans
5. *roa*: net income over assets
6. *ifireltomtg*: mortgage rate – interest and fee income on mortgage loans to total mortgage loans
7. *iodtototd*: cost of deposits – interest expenses on deposits to total deposits
8. *Dl_totd*: annual log change total deposits

data/data_aggregation.dta

Contains data used to perform aggregation exercises in Figure 2 and 4.

1. *amtoriginated_b*: county-year dollar amount of mortgages originated by commercial banks
2. *hpi*: county house price index
3. *cpi2000*: national CPI index normalized to 100 in year=2000
4. *Linter_bra*: state branching deregulation index (one year lag)
5. *year1*: dummy equal to one the first time a state deregulates
6. *year2*: dummy equal to one the second time a state deregulates
7. *yeard*: year in which a deregulation occurs
8. *DLinter_bra*: change in the deregulation index the first time a state deregulates
9. *DLinter_bra1*: change in the deregulation index in any year after the first deregulation

data/data_distance.dta

Contains data resulting from the merge of *hmda.dta* and *hp_dereg_controls.dta*, and keeping only counties that are in MSAs bordering two or more states. This file contains the same variables as in *hmda.dta* and *hp_dereg_controls.dta* and includes also:

1. *distance*: minimum distance (in miles) between a county and the contiguous state border

data/data_tab1.dta

Contains data used to reproduce Table 1, i.e. HMDA data in 1995, 2000, and 2005 for commercial banks (suffix *_b*), independent mortgage companies (suffix *_imc*) thrifts and credit unions (suffix *_tfcu*):

1. *nrequested*: number of mortgage applications received
2. *noriginated*: number of mortgages originated
3. *amtoriginated*: mortgage amount originated
4. *incomeoriginated*: applicant's income of originated mortgages

data/data_placebo_1990_1994.dta

Contains data used to reproduce Table OA5 & OA7 in the Online Appendix, i.e. mortgage and house prices data measured between 1990 and 1994 and the Rice and Strahan deregulation index measured between 1996 and 2000. Variables' names and definitions are the same as in *hmda.dta* and *hp_dereg_controls.dta*.