Household Credit Constraint, Mortgage Credit Supply, Labor Geographical Location and Wealth Inequality

Motivation

Because of various frictions such as the existence of asymmetric information, the ability of a household to borrow not only depends on his productivity but also on the value of collateral he owns, as he cannot credibly commit to pledge the stream of his future earnings (e.g. Stiglitz and Weiss, 1981). In such a case, household demand may be partly determined by borrowing constraints, in particular for poor households with no collateral they can use to secure a mortgage, thereby limiting households' location choice set.

Given the potential role of credit constraint for various type of households, changes in lending standards may affect where credit-constrained workers locate and can get a job potentially and shape the structure of cities, as credit availability differs across locations, households, and years.

However in general equilibrium an increase in mortgage credit implies an increase in the demand for housing, which can lead to an increase in house prices depending on how elastic the supply of housing is.[1] Both these elements (mortgage credit availability and the effect on house prices) would condition if the mobility of certain groups of households is facilitated or hindered in a given area.

Research Question

The broad question this project plans to address is: **how the supply of mortgage affects household location decision, housing preferences (size of the house, number of houses per household), house prices and in the end spatial (mis)allocation of labor across US cities and worker productivity?**

Indeed, as Hsieh and Moretti (2015) recently show, an increase in inequality across cities can lead to lower aggregate output, as it implies that workers may not be able to come to work in productive cities because house prices in productive cities are too expensive and workers from “poor” cities are too poor to move.

The effect of mortgage supply is *a priori* ambiguous on the (mis)allocation of workers / productivity across cities.

1. It can improve it, if it allows the productive but credit-constrained workers to move-in
2. It can deteriorate it, if housing price effect dominates or, if households who are less productive but not credit-constrained can obtain bigger loans, push house prices up and make it even harder for the productive but credit-constrained workers to move-*in*.

The effect is also likely going to depend on whether the mortgage supply shock is local (in which case the disparity in prices across cities will likely go up and the dispersion across workers will be bigger) or whether it is national (in which case the chance of workers' ``reoptimization" across cities is probably higher).

Identification

To generate plausible exogenous shocks to mortgage approval rate and mortgage volume, one option is to follow Loutskina and Strahan (2009) to create a ``shift-share" instrument akin in spirit to the strategy first suggested by Bartik (1991). The instrument will come from using bank' balance sheet liquidity at the national level as a supply shock and interacts it with the network structure of bank branches across

[1] See Ouazad and Ranciere, 2015 for an example about racial segregation

neighborhoods to predict local mortgage supply. As bank liquidity is derived from *national* balance sheets, it is unlikely to be confounded by local unobservable demand factors. We can then relate exogenous mortgage credit shock to inequalities across cities and population flows moving-in and out.

Data

To answer these questions, we need household-level geocoded mortgage applications and outcome, as well as the detailed bank branch network of each bank in the US and various geographic level characteristics.

Assembling such a collection of datasets at the geographic-year level raises important concerns about the compatibility within/between datasets. Oftentimes, the same dataset may have been compiled differently across years, and we also frequently need to merge different datasets to conduct research. In such cases, we carry out a thorough data analysis to maximize data compatibility. In particular, given the geographic dimension of the research, one important issue is the development of clean cross-walks to correct for administrative boundary redesigning.

The different datasets that need to be assembled are:

- **Mortgage loans**: From the Home Mortgage Disclosure Act (HMDA) database. HMDA reports information on all the mortgage *applications* since 1990 and contains mortgage application and application status (denied or accepted), as well as loan characteristics (response, amount and loan purpose) and some of the applicant characteristics that include income, gender, race and the census tract of the house. Because HMDA data are extracted from lending institutions reports, some important information such as the localization of the mortgage may need to be cleaned and assigned in a census tract using geocoded methods.
- **Bank Branch Offices**: The Federal Deposit Insurance Fund (FDIC) provides annual branch-level data from June 1994 to June 2017. It contains information on branch characteristics: branch ownership, exact address of the branch office, which can be matched to a census tract or a county, and the total amount of deposits in the branch.
- **Bank Balance Sheet**: both HMDA and the FDIC data contain identifiers that allows to match lending institutions in HMDA and branch offices in FDIC to banks' balance sheet data from the Federal Reserve's Reports of Condition and Income, also known as Call Reports. In particular, it is possible to match individual mortgage originations (as reported in HMDA data) to the originating bank. In addition, because the Call Reports have information at the ``bank subsidiary'' level, it is crucial to link properly bank subsidiaries to their parent bank holding companies (BHCs).
- **House price data**: from the Federal Housing Finance Agency (FHFA) and Moodys' Economic.

In addition to these ``mortgage / banking dataset'', the projects need to collect income and demographics datasets from the Census and the County Business Pattern, that here again, need some harmonization over time (e.g. Elsby, Hobijn and Sahin, 2013).

Data diffusion

All these data at the exception of Moody's Economic are publicly available but require an important effort of cleaning and harmonization. As such, a priori nothing will prevent the assembled and clean data to be made publicly available once the research is completed. House prices from Moody's Economic could be to some degree be approximate using publicly FHFA data that are publicly available and the project plan to make sure to guarantee the quality of the matching between FHFA geographic entities and mortgage supply.

BUDGET

600 hours of Research assistant (25$ per hour)	15,000$
Traveling and conferences	1,000$
Moody's Economic House Price	2,000$
TOTAL	**18,000$**

ADRIEN MATRAY

Bendheim Center for Finance
20 Washington Road
Princeton, NJ 08540

Tel : +1(609)216 1591
amatray@princeton.edu
https://sites.google.com/site/adrienmatray/

Academic Appointment

2016 - Present	**Assistant Professor** **Princeton University, Department of Economics, Bendheim Center for Finance**

Affiliation

2016 - Present	**Julis-Rabinowitz Center for Public Policy and Finance, Princeton University**

Education

2010 - 2015	**PhD HEC-Paris, Finance Department** *Title* : "Essays in empirical finance" *Supervisor*: David Thesmar. C*ommittee Members*: Daniel Paravisini, Ulrich Hege, Amit Seru
2013-2014	**Visiting PhD Student, London School of Economics**
2009-2010	**M Phil Economics: Paris School of Economics**
2008-2009	**MA Quantitative Economics and Finance, HEC-Polytechnique**
2005-2009	**Msc Business, HEC-Paris**

Research

Research Interest

Primary: Household Finance, Innovation- Entrepreneurship, Banking, Financial Inclusion
Secondary: Behavioral Finance, Corporate Finance

Published Papers

"The Real Effect of Hurting Lending Relationships: Evidence from Innovative Firms and Inventor Mobility", with Johan Hombert 2016 *Review of Financial Studies, forthcoming*

"Do firm managers overreact to salient risks? Evidence from US Firms Proximity to Hurricane Strikes", with Olivier Dessaint, 2016, *Journal of Financial Economics, forthcoming*

Working Papers

"Can US Innovative Firms Escape Import Competition from China?", 2016 with Johan Hombert, R&R at *Journal of Finance*

"Ripple Effects of Noise on Corporate Investment", 2017 joint with Olivier Dessaint, Thierry Foucault and Laurent Frésard, R&R at the *Review of Financial Studies*

"Bank Branch Supply and the Unbanked Phenomenon", with Claire Célerier, 2016

"Public Health Insurance and Access to Credit", joint with Claire Celerier, 2016

"The Local Innovation Spillovers of Listed Firms", 2015

"The Transmission of Corporate Culture: Evidence from Bank Acquisitions", joint with Charles Boissels and Thomas Bourveau, 2016

"Experimental Evidence on the Foundation of Public Good Contribution", with Elizabeth Beasley, 2014

Work in Progress

"Religion and Innovation", joint with Roland Benabou

"Inequality, Social Mobility and the Development of the "Religious Right"", joint with Roland Benabou

"The political economy behind municipality bond market", joint with Atif Mian

Teaching Experience

2015-2016	**Risk Management (Master of Finance), Princeton University**
	Applied Corporate Finance (PhD), Princeton University
2009-2014	**Lecturer in economics and financial economics IPESUP Paris** Microeconomics Macroeconomics Financial Economics
2010-2012	**Lecturer in economics and behavioral economics, Sciences Po Paris** Introduction to Economics (Microeconomics and Econometrics), undergraduate Behavioral Economics and Public Policies, undergraduate

Awards, Grants and Honor

2009-2014	HEC Paris Foundation Fellowship
2014	HEC Paris, Visiting Scholarship for LSE
2013	AFA travel grant
2011	Duisenberg Summer School in Dysfunctional Finance NBER Summer School "Entrepreneurship and Financial Entrepreneurship"

Professional Experiences

2009	**Intern, French Ministry of Economics and Finance** Econometric analysis on the consequences on the reform of the French R&D tax credit
2008-2009	**Consultant at faberNovel**, Consulting firm specialized in the management of innovation, Paris
2006	**Intern, World Bank**, Washington DC

Other Activities

2009-2012	Co-founder and General Secretary of a French Think Tank dedicated to the issues of higher education, research and innovation
2009-Present	Co-founder and Administrator of a non-profit start-up, Le Muz
2008-2009	General Secretary of a French think tank dedicated to the issues of European integration
2005-2010	Co-founder and member of the editorial committee of the review *Regards Croisés sur l'Economie*, edited by La Découverte

Language, skills

Computer skills: Stata, Matlab, Latex, Bloomberg, Datastream, SDC
Languages: French (native), English (fluent), German (intermediate)