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Undergraduate/Graduate Studies:
B.S. in Finance, Tsinghua University, *Magna cum laude*, 2009
M.S. in Finance, Tsinghua University, 2011

Graduate Studies:
Harvard University, 2011 to present
Ph.D. Candidate in Business Economics
Thesis Title: *"Consumer credit, bank lending and the housing market"*
Expected Completion Date: June 2017

References:

Professor David Scharfstein
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Teaching and Research Fields:
Primary fields: Corporate Finance; Consumer Finance; Financial Intermediation

Secondary fields: Behavioral Finance; Entrepreneurship; Law and Finance

Teaching Experience:
Spring, 2014 Psychology and Economics, Harvard University, head teaching fellow for Professors David Laibson and Tomasz Strzalecki

Other Employment:
2013-2015 Federal Reserve Bank of Boston, Research Associate

Honors, Scholarships, and Fellowships:

2015	Hirtle Callaghan Grant
2012	Cheung Yan Family Fund Grant
2011-2017	Graduate School of Arts and Sciences Fellowship, Harvard University

Research Papers:

"*House Prices and the Allocation of Consumer Credit*" (Job Market Paper)
It is well documented that the housing boom of the early 2000s fueled credit expansion among homeowners. Less attention has been paid to the effects of the housing boom on renters, who make up over 30% of US households. In this paper, I use detailed credit information from a sample of almost 500,000 US consumers to show that house price growth reduced renter credit access during the last housing boom. In particular, banks reduced non-mortgage credit supply when they expanded mortgage lending to homeowners. As a consequence, renters living in locations where banks had more (national) geographic exposure to the housing boom ended up borrowing less but defaulting more. The results are especially pronounced in locations with stronger credit market frictions, as measured by local banks' mortgage retention probability and balance sheet liquidity, or bank competition in the local market. The effects of the housing boom on the borrowing and default behavior of renters persisted during the subsequent recession. This research suggests that policies affecting house prices and mortgage financing have broader implications for less well-off households that do not own a home.

"*Bankruptcy Protection, Home Equity Financing and Consumption Smoothing*"
Based on the credit reports from a large sample of individual consumers, this paper shows that a reduction in personal bankruptcy protection increases home equity borrowing by US consumers. Using a difference-in-difference method, I find stronger home equity debt growth by consumers who were more impacted by the 2005 Bankruptcy Abuse Prevention and Consumer Protection Act (BAPCPA). As the increase in home equity borrowing led to greater reliance on housing collateral, the house price sensitivity of consumption and entrepreneurship activities were also increased by the bankruptcy reform. Specifically, marginal propensities to borrow and consume out of housing wealth, as well as the house price sensitivity of small business creation were increased by BAPCPA, especially among consumers who were more credit constrained. The increased house price sensitivity suggests a stronger amplification effect of housing collateral over the business cycle.

Research Papers in Progress

"*Mortgage Securitization and Small Business Lending*"

"*How Do Risk Based Disclosures Affect Future Consumer Credit Activities*", with Patrick Luo and Rajesh Vijayaraghavan

Research Proposal for NBER Post-doctoral Fellowship

Mingzhu Tai

Harvard University

November, 2016

I plan to work on three research projects on household finance for the fellowship year. The projects are based on detailed consumer credit data and aim at investigating how consumer credit activities are affected by the housing market fluctuation and related regulations. I will also keep exploring new research questions during the year.

Project 1. The effect of housing boom on consumer credit allocation

Motivation

Although it has been found that the last housing boom fueled credit expansion among homeowners, much less is known about how credit was allocated to the more than 30% of US households that have no housing assets. Unlike homeowners, who can fund consumption by home-colleteralized credit, renters have to rely on non-mortgage credit. People have raised their concerns that mortgage credit expansion could have crowded out other credit (e.g. Chakraborty et al. 2014 and Loutskina and Strahan 2015). If this is the case to non-mortgage consumer credit, then the housing boom would have a *negative* effect on renters' credit access. To test this hypothesis, I would like to examine *the effect of house price growth on the credit behaviors of renters and homeowners* during the last boom and bust cycle in the housing market.

Data

I use detailed consumer credit records to track each individual consumer's credit activities between 2002 and 2010. I merge this dataset with other demographic and economic information at ZIP code level.

Empirical Design

To identify the causal effect of house price growth on bank credit supply to renters, I measure banks' exposure to the housing boom across all geographic locations in which each bank operates, and estimate how lenders', instead of individual consumers', exposure to the housing boom affect credit access of renters and homeowners:

$$\Delta y_{iz,\ 02-06} = \delta \Delta lender_hp_{z,\ 02-06} + \beta \Delta local_hp_{z,\ 02-06} + X_{iz,\ 02} + X_{z,\ 02} + \epsilon_{iz},$$

where $\Delta y_{iz,\ 02-06}$ is consumer debt growth or default; $\Delta lender_hp_{z,\ 02-06}$ measures lenders' exposure to the housing boom; and $\Delta local_hp_{z,\ 02-06}$ is local house price growth.

Results and future work

The main results are illustrated in Figure 1, suggesting that house price growth has *negative* effects on credit supply to renters. Next I need to formalize the theoratical framework and test related empirical implications. Also I would like to explore more economic consequences from this credit contraction to renters, such as renters' entrepreneurship activities, education decisions, etc.

Project 2. Bankruptcy Protection and Home Equity Financing

Motivation

While most studies focus on the effect of bankruptcy protection on unsecured debt (e.g. White 2007 and Livshits et al. 2007), we should notice that consumers also have other financing options. In particular, the last decade has seen a tremendous growth of collateralized home equity financing among US households. As home equity financing has been considered as an important alternative credit instrument for consumers, we need to understand *how bankruptcy protection affect consumers' home equity borrowing, and what are the economic consequences.*

Data

I use the same consumer credit data and merge it with the state-level bankruptcy rule to estimate each individual consumers' exposure to bankruptcy protection.

Empirical Design

The identification is based on a natural experiment from the last bankruptcy reform in 2005, which reduced the level of debtor protection. I adopt a difference-in-difference method to estimate the causal effect of bankruptcy protection on consumer home equity borrowing:

$$y_{it} = \beta_0 Ex_{it} + \beta_1 Reform_t \times Ex_{it} + \Gamma X_{it} + \alpha_t + \alpha_i + \epsilon_{it},$$

where y_{it} is the log value of home equity debt; $Reform_t$ indicates years after the reform; Ex_{it} measures the level of pre-reform bankruptcy protection.

Results and future work

The main empirical finding is illustrated by Figure 3. I will further explore additional measures of bankruptcy protection and investigate how it affects consumption smoothing and economic volatility.

Project 3. How credit disclosure affect consumer credit activities (with Patrick Luo and Rajesh Vijayaraghavan)

Motivation

The recent credit crisis has highlighted the importance of consumer debt and defaults on the entire financial system. In practice, lenders use credit scores to assess the credit risk of borrowers. Does information on credit scores also matter to borrowers? First, by understanding their credit qualities, consumers could have better knowledge on their creidt options and avoid expensive fiancial products (e.g. Bertrand et al. 2010 and Gabaix et al. 2006). Second, awareness of credit conitions may improve self control and prevent over borrowing (e.g. Bertrand and Morse 2011 and Heidhues and Koszegi 2010). This research proposal poses the question *whether credit score disclosure affects subsequent consumer credit behaviors.*

Data

We have access to the monthly consumer credit data through the Wharton/Equifax Research Program.

Empirical Design

The identification is based on a change in credit disclosure rule under the Dodd Frank Act. We would like to estimate whether consumers with different probability to receive credit score for free have different credit behaviors:

$$y_{it} = \beta_0 Free_Score_{it} + \beta_1 Free_Score_{it} \times Post_t + \Gamma X_{it} + \alpha_t + \alpha_i + \epsilon_{it},$$

where $Free_Score_{it}$ measures the probability of free credit disclosure; $Post_t$indicates periods after the Act.

Prediction

1. Consumers who face better credit disclosures reduce default.
2. Consumers who face better credit disclosures have lower borrowing costs.

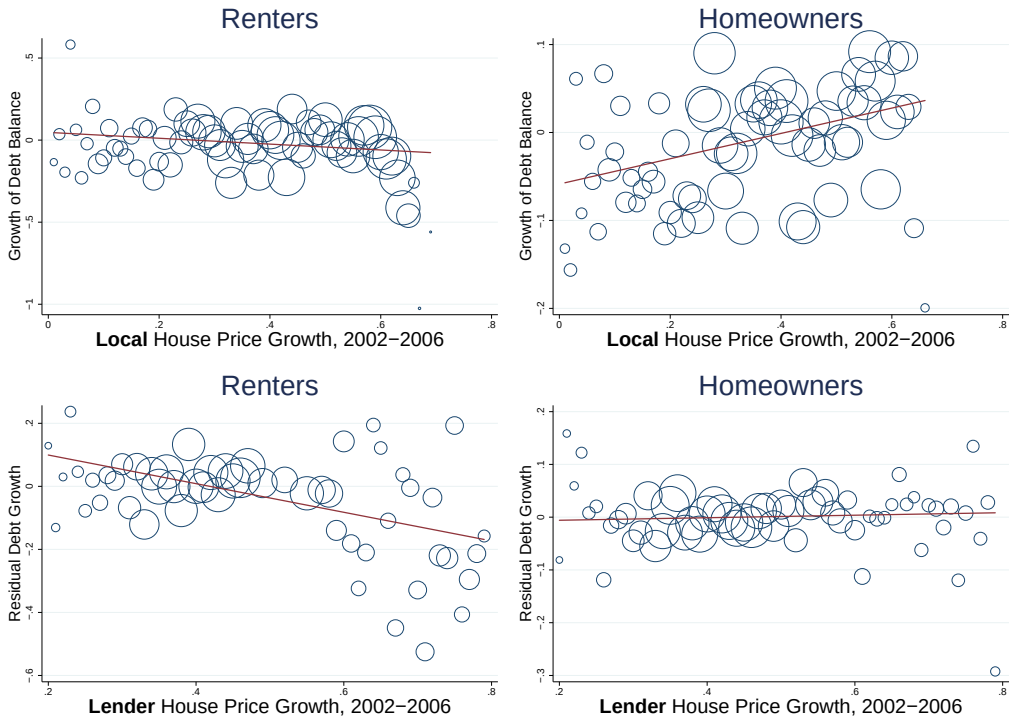
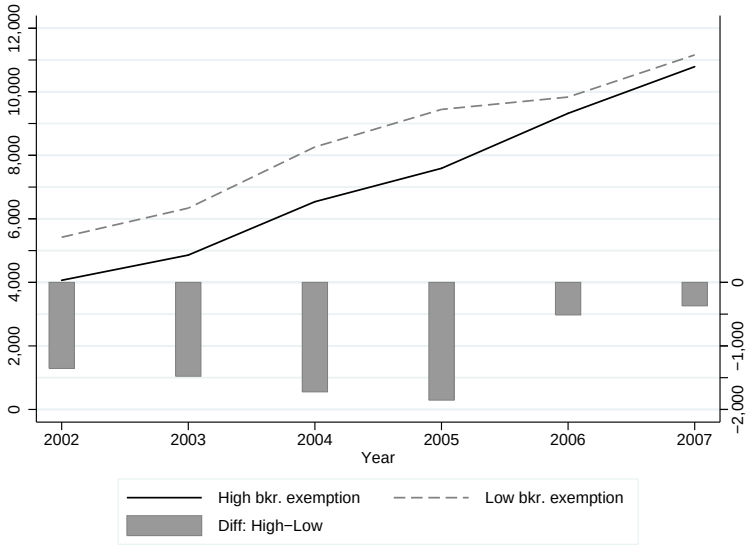


Figure 1: House price and consumer debt growth

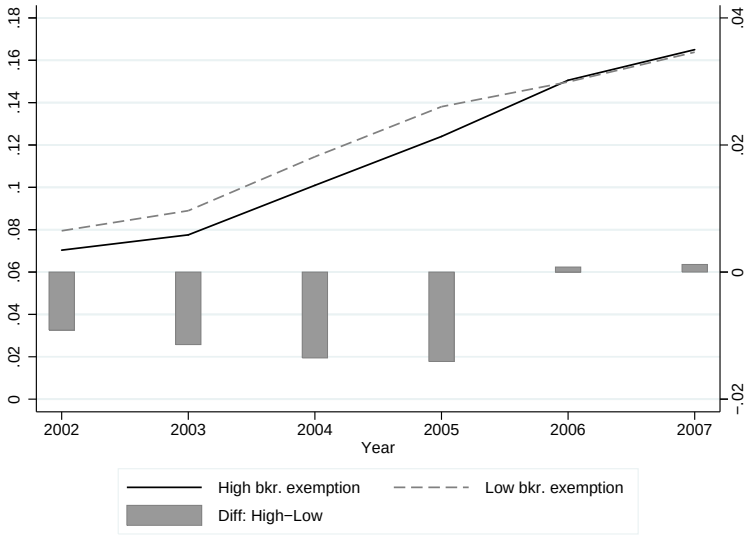
Notes: This figure plots the relationship between individual consumer debt growth and instrumented house price growth from 2002 to 2006. Each bubble represents the average debt growth across individuals who live in ZIP codes where lender house price growth (the upper panels) or local house price growth (the lower panels) is within the specific 1% range. The size of the bubble represents the number of individual consumers in this 1% range. The top panels show the relationships between debt growth and local house price growth for consumers who were renters (left) and homeowners (right) in 2002. The bottom panels show the relationship between residual debt growth (after controlling for local house price effects) and lender house price growth for the 2002 renters and homeowners.

Figure 2: Home equity borrowing by year and bankruptcy exemption

(a) Dollar value of HELOC balance



(b) Percentage share of HELOC out of non-mortgage debts



This figure plots the annual average home equity financing in states with high (above $15,000) and low (less or equal to $15,000) homestead exemptions respectively, as well as the year-by-year cross-state differences. In (a) it plots the average dollar value of home equity line of credit after controlling for house prices; in (b) home equity financing is measured by percentage share of home equity line of credit out of total non-mortgage debts.

References

Bertrand, M., D. Karlan, S. Mullainathan, E. Shafir, and J. Zinman (2010). What's advertising content worth? evidence from a consumer credit marketing field experiment. *The Quarterly Journal of Economics 125*(1), 263–306.

Bertrand, M. and A. Morse (2011). Information disclosure, cognitive biases, and payday borrowing. *The Journal of Finance 66*(6), 1865–1893.

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Gabaix, X., D. Laibson, et al. (2006). Shrouded attributes, consumer myopia, and information suppression in competitive markets. *The Quarterly Journal of Economics 121*(2), 505–540.

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Loutskina, E. and P. E. Strahan (2015). Financial integration, housing, and economic volatility. *Journal of Financial Economics 115*(1), 25–41.

White, M. J. (2007). Bankruptcy reform and credit cards. *The Journal of Economic Perspectives 21*(4), 175–199.

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ADI SUNDERAM |
MARVIN BOWER ASSOCIATE PROFESSOR OF BUSINESS ADMINISTRATION

November 20, 2016

Dear Recruiting Committee,

I am very pleased to write in support of **Mingzhu Tai's** application for the position of assistant professor. I am writing letters for three students this year, all of whom are quite different. Mingzhu does empirical work in corporate and household finance, Thummim Cho is an empirical asset pricer, and William Diamond is a theorist. Mingzhu is a strong candidate, and I think all schools should give her careful consideration.

I have known Mingzhu for the last two years. She is a highly independent, tremendously self-motivated researcher. Mingzhu's job market paper is a very nice empirical paper, studying an unintended consequence of the housing boom. Specifically, Mingzhu looks at the effects of the 2003-2006 housing boom on the supply of credit available to renters. In the presence of bank balance sheet constraints, the theoretical effect of a housing boom on (nonmortgage) credit supply to renters is ambiguous. On the one hand, the housing boom may strengthen bank balance sheets, allowing them to expand credit supply to renters. On the other hand, mortgage lending may crowd out nonmortgage lending to renters.

Mingzhu attacks this question empirically, using a panel of individual credit reports. The basic empirical design is to start by constructing the exposure of individual lenders to the housing boom. For each bank *b*, Mingzhu constructs the average housing price appreciation across all the zip codes *b* operates in. She then uses this bank-level exposure to the housing boom to construct a zip code-level measure of how exposed lenders in an area are to the housing boom. Specifically, for each zip code *z*, Mingzhu constructs the average house price appreciation faced by all lenders operating in *z*. She calls this zip code-level variable *lender house price growth*.

The main empirical specifications separate renters and homeowners and run individual-level debt growth on local house price growth and lender house price growth for each group. In other words, holding fixed local house price growth, does the housing boom exposure of local lenders affect borrowing by renters? Of course, OLS estimates of this regression are likely to be contaminated by the endogeneity of house prices. It could be the case that areas where the same bank operates are subject to similar economic shocks. In this case, Mingzhu's lender house price growth variable may just be a proxy for local economic conditions. If the banks that are lending in zip code *z* experience high house price growth in zip codes outside *z* due to a positive economic shock, *z* may have received a similar positive shock. Mingzhu deals with this potential endogeneity problem using instruments that are standard in the literature. Specifically, she uses the Saiz (2010) supply elasticity instrument, as well as changes in the fraction of homes eligible for conforming mortgages, following Adelino et. al. (2012) and Loutskina and Strahan (2015). Note that for Mingzhu's purposes, it does not matter whether the house price growth lenders face outside zip code *z* comes from a change in supply or demand outside zip code *z*. All that matters is that the change in supply or demand in areas other than *z* is uncorrelated with conditions in *z*.

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Using these instruments, Mingzhu finds that lenders' housing boom exposure has a large effect on the supply of credit available to renters. If lenders are exposed to 1 percentage point more house price appreciation outside of zip code *z*, debt balances for renters in *z* grow 0.6 percentage points less. In contrast, lenders' exposure to the housing boom has no impact on the debt growth of homeowners. Mingzhu then explores cross-sectional splits to get at the mechanism. Specifically, she identifies zip codes where lenders tend to retain mortgages on balance sheet instead of securitizing them and shows that her effects are particularly strong in such zip codes. Similarly, the effects are stronger in zip codes where lenders have low balance sheet liquidity. Finally, Mingzhu shows that employment among payday lenders grows faster in areas where lending banks are more exposed to the housing boom. These cross-sectional splits are quite helpful in verifying that some banks are behaving in a balance-sheet constrained manner.

Overall, Mingzhu's job market paper is a very nice piece of work. In particular, I find the evidence she provides on the mechanism quite compelling. This is work that has moved my prior. Before Mingzhu started on this project, I would have guessed that securitization and other technologies for mitigating bank balance sheet constraints would prevent the housing boom from impacting credit supply to renters. Given the recent interest throughout economics in the distributional consequences of economic phenomena, Mingzhu's paper is timely, informative, and policy-relevant. Renters tend to be at the lower end of the income distribution. Mingzhu convincingly shows that housing booms impact them, not just by driving up rents, but also by decreasing their access to credit.

Mingzhu has another paper seeking to understand the impact of the 2005 Bankruptcy Abuse Prevention and Consumer Protection Act (BAPCPA) on home equity borrowing. She shows that BAPCPA's reduction in personal bankruptcy protections led borrowers to substitute to relying more on home equity borrowing. Essentially, by reducing the attractiveness of other credit, BAPCPA increased marginal propensities to borrow and consume out of home equity. Like her job market paper, this paper showcases Mingzhu's ability to do careful empirical work on policy-relevant questions in household and corporate finance.

I do not have personal experience to assess Mingzhu's teaching, but I believe she will be an effective instructor. She has served as a teaching fellow for David Laibson, and I expect that she will approach teaching with the same commitment and enthusiasm with which she approaches research.

Overall, I think Mingzhu is a strong candidate. She is warm, friendly, and engaging, and I believe she will make a great colleague. I recommend her with enthusiasm. Please do not hesitate to contact me if you have any questions.

Best,



Adi Sunderam



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DAVID S. SCHARFSTEIN |
EDMUND COGSWELL CONVERSE PROFESSOR OF FINANCE AND BANKING
CHAIR, DOCTORAL PROGRAMS

November 28, 2016

Dear Recruiting Committee:

I am delighted to write this letter on behalf of Mingzhu Tai, who is applying for an entry level position in your organization. Mingzhu is currently a student in the Harvard Business Economics Ph.D. program, a joint program of HBS and the Harvard Economics Department. She is a creative and careful empirical researcher whose work focuses on household finance and corporate finance. She independently comes up with ideas and skillfully executes the empirical work. She has an excellent job market paper, another paper that could possibly have been her job market paper, and a number of other projects in the works. I expect these papers to be published in top finance journals. Indeed, her job market paper is on par with those of Harvard graduates who have landed great jobs. I think Mingzhu deserves your serious consideration.

In her job market paper, "House Prices and the Allocation of Consumer Credit," Mingzhu examines the effect of a housing boom on households that do not own a home. This is an important question, in part, because a variety of government policies are targeted at subsidizing homeownership, with one of the likely effects of such subsidies being an increase in house prices. What Mingzhu shows is that a housing boom has negative effects on renters. The idea is that credit-constrained banks increase their lending to home purchasers and cut back other forms of consumer credit such as personal loans and auto loans. In order to show this, she has to be careful not to mix up shocks to house prices with shocks to credit demand. For example, it's possible that when house prices rise, renters save more for a downpayment and thus cut their consumption and borrowing. Mingzhu avoids this problem by taking advantage of the geographic diversity of banks' lending activities. In particular, using individual consumer credit data, she examines how consumer borrowing in a particular location is affected by an exogenous increase in house prices in banks' *other* markets. She shows that when banks operating in a particular location also have operations in other markets that experience an increase in house prices, renters are less likely to be able to get non-housing, consumer credit. This decline in consumer credit also comes with an increase in delinquency and default, presumably because renters are less likely to be able to roll over existing credit.

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The paper hinges on the idea that banks are credit constrained; otherwise, banks could increase their mortgage lending and their non-mortgage consumer credit. To corroborate the role of credit constraints in her interpretation, Mingzhu is able to show that the effects are more pronounced in markets where banks are more credit constrained using a variety of measures. In addition, Minzhu is able to show that there is greater entry of alternative lenders in locations where banks seem to be scaling back their lending to renters, which is consistent with the idea that credit demand is not falling but bank credit supply is. Finally, Mingzhu looks at the implications for entrepreneurship. She is able to show that self-employment declines presumably because renters do not have the credit histories that would allow them to borrow to set up a business. All told, I think this is an excellent paper, with potentially important implications for how we think about the implication of homeownership subsidies not just for homeowners and potential homeowners, but also for those that are unlikely to ever own a home.

In addition to this paper, Mingzhu has another paper examining the effect of the consumer bankruptcy reform of 2005 on consumer borrowing behavior. In general, these reforms made it more costly and less desirable for households to declare bankruptcy. There are some subtle implications of the law change that affect some consumers differently than others. The net effect was to shift consumer borrowing towards more mortgage credit and made household consumption and self-employment decisions more sensitive to housing wealth. I expect that she will be able to develop this research into a publication in a top finance journal. In addition, to these papers, Mingzhu has a couple of other projects in the works. I've seen preliminary results for one of them and a description of the other. They both seem very promising.

Mingzhu has all the attributes you would like to have in a colleague. She is incredibly hard working – she was able to produce two papers and begin two other projects in the space of 18 months. She has a very positive attitude and is constantly looking for ways to improve her papers. Although she is not a native English speaker, her spoken English is very good and she is a capable communicator.

I strongly recommend Mingzhu to you and I hope you decide to learn more about her at the meetings in Chicago. Please don't hesitate to contact me if you have any questions.

Sincerely,



David Scharfstein

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November 16, 2016

To the junior recruiting committee:

I am writing to recommend **Mingzhu Tai** for a position in your department. Mingzhu is an able empirical researcher with interests in financial intermediation and household finance. She is particularly ingenious in exploiting geographical variation in the structure of consumer finance to shed light on the behavior of banks and households. She has already written two interesting sole-authored papers in this vein, and she is only just hitting her stride so I think there is much more good work to come over the next few years. I strongly recommend Mingzhu and believe that she belongs in a top-ten business school, or a top-ten economics department with an interest in this field.

Mingzhu's job market paper provides evidence for a neglected negative side-effect of rising house prices on households that rent rather than own their homes. Her argument is that mortgage lending requires bank capital (because many mortgages remain on the books of banks), and that when house prices rise, increasing the volume of attractive mortgage applications, frictions in bank capital-raising lead banks to cut non-mortgage lending in order to shift their asset composition towards mortgages. To show that this occurs, Mingzhu exploits the fact that many banks operate in multiple housing markets. If the banks that are active in a particular local market have rising house prices in their other markets, this should lead those banks to cut non-mortgage lending in the local market – even controlling for local house prices. By cleverly combining household-level data from credit bureaus, bank-level data from Call Reports, and local house price data from Zillow, Mingzhu finds exactly this effect.

It is possible of course that banks are responding to general economic conditions in their other markets, rather than house prices per se. However Mingzhu shows that her results survive when she instruments for house price growth across markets using recently popular instruments for housing supply and demand based on local topology and discontinuities in GSE housing subsidies. Since these instruments are plausibly exogenous to local economic conditions, this finding strengthens the case that Mingzhu's main finding is indeed attributable to a credit-shifting effect of house price movements.

Mingzhu extends her basic findings in several ways that enhance the value of her paper. She shows that rising house prices in lender markets increase default rates for renters during the housing boom, consistent with renter difficulties in rolling over their obligations; furthermore, during the subsequent bust these renters continue to have lower access to credit and higher default rates, consistent with weakness of those banks most exposed to the housing cycle. The effects of house prices on renter access to credit appear to be stronger in markets where fewer mortgages are securitized, where local banks have lower shares of liquid assets in their portfolios, and where local banking is more concentrated. All of these interactions are sensible and consistent with the view that capital market frictions in imperfectly competitive local banking markets are driving the observed effects. Finally, Mingzhu shows that markets with reduced bank lending to renters display increased growth of employment by alternative lenders, and a higher gap between the self-employment propensities of homeowners and renters. Thus her basic finding has visible effects far beyond the banking relationships of households, strengthening the evidence for its economic importance.

Mingzhu has a second sole-authored paper that looks at household choice of secured vs. unsecured borrowing. Mingzhu shows that the 2005 federal bankruptcy reform interacted with state-level variation in bankruptcy provisions, notably the size of the housing exemption in bankruptcy, to generate cross-sectional variation that can be used to identify household responses to the reform. Using credit bureau data she finds that the reform, by reducing bankruptcy protection, stimulated the use of collateralized mortgage borrowing which in turn increased the sensitivity of household credit to house prices. This is an underappreciated aspect of the complex story of the housing boom of the 2000s.

It is impressive that Mingzhu has been able to write two such substantial sole-authored papers. She is a self-starter who is creative both in her basic ideas and in her ability to design empirical strategies to implement them. She is a remarkably hard-working and productive researcher who has overcome significant early difficulties in writing and communication to reach a high professional standard for her written and oral presentations. I give Mingzhu my strong recommendation to top-ten departments and business schools as well as to others.

Sincerely,



John Y. Campbell