NBER Household Finance Research Grants Application (2020)

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March 1, 2020

1 Research Proposal

1.1 Motivation

I am applying for the NBER Household Finance Research Grants to cover expenses for my research project, "Credit Access and Collateral in Consumer Lending: A Large-Scale Field Experiment in the U.S."

Since the 2008 Global Financial Crisis, the role of non-bank financial institutions as credit providers for subprime borrowers has increased, likely owing in part to the credit tightening among traditional banks and technological advancement in consumer credit markets. In particular, personal loans, or short-term installment loans ranging from $1,500 to $30,000, have become the fastest growing consumer debt in the U.S. As of 2019 Q2, personal loans constitute 40% of credit card debt outstanding in levels, and the year over year growth rate of personal loans (12%) is double the growth of credit card debt (Tatham, 2019). The growing demand for personal loans among financially vulnerable segments of the population makes assessing the impact of credit access on borrowers' financial outcomes of paramount importance to academics, industry stakeholders, and policy-makers.

This research project proposes to study the effect of both increased access to credit and the relaxation of collateral constraints on the subsequent financial outcomes of high credit-risk consumers in the market for personal loans. I plan to examine the following questions:

1. What is the impact of credit access on borrowers' subsequent credit score, access to credit, and borrowing terms?
2. Which behavioral frictions are most prevalent in this credit market and matter for borrowers' repayment and delinquency rates?
3. Is collateral an effective disciplining device that mitigates behavioral biases and reduces delinquency?

Existing studies on payday lending show that, while expanding credit access to high credit-risk borrowers can improve their welfare by allowing them to withstand short-term economic hardships[1], behavioral biases - such as self-control, biased beliefs, inattention, or lack of financial sophistication– can lead to greater financial distress.[2] To inform this debate, I collaborate with one

[1]For example, Karlan and Zinman (2009a) find that expanding access to high-interest (i.e., 200% APR) loans had a positive impact on consumers' food consumption and economic self-sufficiency; Morse (2011) finds that the existence of payday lending allowed borrowers to avoid foreclosures in the aftermath of a natural disaster; and Zinman (2010); Morgan et al. (2012) find that payday loans allowed consumers to avoid costlier alternatives such as bank overdrafts.

[2]For example, Melzer (2011) finds that low-income households are less likely to make bill payments after borrowing due to increased debt service burden; Skiba and Tobacman (2011) find evidence that indebtedness from high-interest, short-term loans leads to higher likelihood of bankruptcy; and Carrell and Zinman (2014) document adverse effects of payday borrowing on job performance through increased cognitive stress from higher debt burden.

of the largest personal installment loan providers in the U.S, henceforth referred to as *my lender*, and conduct a randomized controlled trial (RCT), where I randomly offer credit access to a group of borrowers that are on the margin of being accepted but would otherwise be denied a loan in the absence of this experiment. I describe the research design in detail below.

1.2 Research Design

Each month, individuals seeking personal loans will submit an online application to my lender. Upon receiving the application, the lender compiles the applicants' credit history and classifies them into four credit risk groups– i.e., low, medium, high risk, or reject. This study focuses on the applicants who are on the margin of being classified as a "high risk" or a "reject" group, or whom my lender is ambivalent about extending loan offers. Once potential subjects are identified, they will receive a *secured* loan offer via email. My lender normally only offers secured loans collateralized by borrowers' vehicle with equity to the "high risk" group, so subjects are effectively being treated as if they're in the "high risk" group. Once subjects agree to take-up the loan and participate in this study, they will be required to bring relevant documents to the nearest loan branch to formally sign the loan and receive funds.[3]

While the offer letters are being sent out, potential subjects will be entered into a randomization where half of the subjects will receive a collateral waiver (i.e., unsecured loan). This treatment assignment is revealed as a surprise when participants come to a branch to sign the loan. To be clear, those who decide to take-up the loan will come to the loan branch with the expectation that they will sign a secured loan that they have been offered via email. When they come to the loan branch, however, a random subset of participants will be notified that they were selected to receive a promotional loan offer that waives their collateral obligation. Unsecured loans traditionally carry significantly higher price, because the lender bears the full cost in the event of charge-off. For the purpose of this experiment, however, unsecured loan offers will have the identical loan terms as the initial secured loan offers they received via email.

The rationale behind this surprise treatment is to ensure apples-to-apples comparison between secured vs. unsecured loan treatment arms. If, for example, the final treatment assignment was revealed at the initial loan offer stage via email, subjects who are more likely to default ex-ante (conditioning on observables) may also be more likely to take-up unsecured loan offers in the presence of selection. This can lead to over-estimation of the effect of collateral because a subject's decision to select-in to a loan contract can be correlated with her repayment probability, confounding the disciplining effects of collateral with selection.[4] I address this concern by comparing outcomes among those who are willing to accept a secured loan offer.

Once subjects sign the loan contract, they will receive an email requesting that they participate in a ten-minute survey. Subjects will be notified that this survey is voluntary and refusal to participate will not involve any penalty. They will also be notified that participation into this survey will automatically enter them into a gift card lottery, where a winner can receive a $100 gift card of their choice. If they agree, they will be directed to a survey website where they will be asked 15 questions designed to elicit their contract preference and screen behavioral biases.

[3]My lender requires borrowers to bring a valid government issued ID and proof of employment and collateral to verify their ability to pay before issuing a loan in adherence to state lending laws.

[4]Both adverse selection or selection on anticipated effort (Finkelstein and McGarry, 2006) would predict that borrowers who are more likely to default ex-ante would select-in to an unsecured loan contract.

This setup allows me to examine the three questions above. First, the impact of credit access on borrowers' subsequent financial outcome is identified by comparing the outcomes of study participants to those who have been recently denied a loan from my lender. Given that this study's participants would have been rejected a loan in the absence of the experiment, comparing their outcomes to otherwise similar applicants who have been rejected captures the causal effect of credit access. I plan to examine their subsequent credit score, access to other financing, and contract terms to assess whether receiving funds from my lender improved their financial prospects.[5]

Next, I document which behavioral frictions are prevalent in this market by analyzing the survey responses. The survey entails 15 questions that are designed to screen behavioral biases such as self-control, biased belief, inattention, and financial sophistication. Documenting which behavioral frictions are present and how they correlate with borrowers' subsequent outcomes is crucial for understanding whether behavioral frictions enhance or mitigate the impact of credit access. For example, suppose that credit access worsens subsequent credit score due to high delinquency rates, and that this effect is only present among present-biased borrowers. Such analysis can shed light on the extent to which a behavioral bias undermines the benefit of borrowing.

Lastly, I evaluates the role of a common contracting feature – collateral – in disciplining behavioral biases. Both economic theory and industry practice motivate the use of collateral as an optimal contracting tool in situations where borrowers cannot *ex-ante* commit to paying back the loan.[6] However, there is no causal evidence to date[7] on the role of collateral as an enforcement device that reduces default by disciplining behavioral biases. By comparing repayment rates of those who receive secured vs. unsecured loans, I can examine the effect of collateral in reducing default. I will also test whether this effect is driven by borrowers that exhibit behavioral biases.

1.3 Summary

The goal of this study is to make further progress on the debate on the impact of credit access. Relative to existing studies that focus on high-interest/short-term payday lending markets, this paper focuses on a market for personal loans that is growing in size and serves a broader group of subprime population. This study goes beyond estimating the directional effect of credit access by (1) documenting which behavioral biases are prevalent and how they correlate with eventual repayment, delinquency, and default rates; and by (2) assessing whether collateral can serve as a disciplining device for borrowers who exhibit behavioral biases.

To my knowledge, this study will be the first large-scale experiment in the personal lending market. The lender has agreed to *sign* loans with up to 5,000 to 7,000 marginal borrowers, and to finance this study by setting aside a loss reserve. The results from this study can help lenders and policy-makers craft credit market policies that mitigate delinquency while still enabling consumers who need credit access the most to retain this access. While the experiment is conducted in personal lending market, the results are applicable to broader credit markets that also serve subprime population and have similar contracting features (i.e., auto loans, mortgages, or HELOCs).

[5] My lender has information on previous applicants' subsequent financial outcomes, which allows me to track their financial health even if they did not ultimately receive a loan from my lender.

[6] See, for example, Bester (1987); Aghion and Bolton (1992); Hart and Moore (1994); Hart (1995) on the discussion of transfer of control rights as optimal contracts in the presence of limited commitment and incomplete contracting.

[7] Jack et al. (2016) examine the effect of collateral on loan take-up and default rates in Kenya in the context of allowing individuals to collateralize their loans with hard assets as a means to lower up-front borrowing requirement.

2 Itemized Budget

A substantial portion of the research funding will be used to cover the expenses related to conducting surveys. Specifically, this study requests research subjects to participate in a short survey designed to elicit subjects' contract preference and behavioral biases. To encourage survey participation, I plan to provide monetary incentives where subjects are entered into a gift card lottery upon completion of the survey. Participants will be selected at random to receive gift cards of their choosing. Given that the number of participants for this study will be between 5,000$\sim$7,000 (the exact number to be determined by the lender), I expect to spend most of the funding to finance these monetary incentives to improve survey participation. In addition to the survey, the funding will be used to cover any travel expenses to the field office during randomization and data collection phases of this study. Below is a draft of the itemized budget.

- **Gift card incentives**: $\$10,000$ to purchase $\$100$ gift cards for 100 people. This would be advertised to increase survey participation.
- **Travel**: $\$5,000$ covers up to 8 trips to the field office in Wilmington, Delaware. Here's the breakdown of *each* trip assuming two nights of lodging. Each trip roughly costs $\$600$:
  - Boston to Philadelphia or Baltimore (closest airports) round trip $\approx \$250$
  - Philadelphia to Wilmington train round trip $\approx \$50$
  - Lodging per night $\approx \$150$; Two nights $\rightarrow \$300$.

Given that a substantial portion of the grant will be used to finance monetary incentives to improve survey participation, I will strive to making resulting survey responses publicly available to the extent possible, within the limits of confidentiality and informed consent agreements.

References

Aghion, Philippe and Patrick Bolton, "An Incomplete Contracts Approach to Financial Contracting," *Review of Economic Studies*, 1992, *59* (473-494).

Bester, Helmut, "The Role of Collateral in Credit Markets with Imperfect Information," *European Economic Review*, 1987, *31*, 887–799.

Carrell, Scott and Jonathan Zinman, "In Harm's Way? Payday Loan Access and Military Personnel Performance," *The Review of FInancial Studies*, 2014, *9* (1), 2805–2840.

Finkelstein, Amy and Kathleen McGarry, "Multiple Dimensions of Private Information: Evidence from the Long-Term Care Insurance Market," *American Economic Review*, 2006, *96* (4), 938–958.

Hart, Oliver, *Firms, Contracts, and Financial Structure*, Oxford University Press, 1995.

__ **and John Moore**, "A Theory of Debt Based on the Inalienability of Human Capital," *Quarterly Journal of Economics*, 1994, *109* (4), 841–879.

Jack, William, Laat Joost de Kremer Michael, and Tavneet Suri, "Borrowing Requirements, Credit Access, and Adverse Selection: Evidence from Kenya," *NBER working paper*, 2016, *22686.*

Karlan, Dean and Jonathan Zinman, "Expanding Credit Access: Using Randomized Supply Decisions to Estimate the Impacts," *The Review of FInancial Studies*, 2009, *23* (1), 433–464.

__ **and** __ , "Observing Unobservables: Identifying Information Asymmetries with a Consumer Credit Field Experiment," *Econometrica*, 2009, *77* (6), 1993–2008.

Melzer, Brian T., "The Real Costs of Credit Access: Evidence from the Payday Lending Market," *Quarterly Journal of Economics*, 2011, *126* (1), 517–555.

Morgan, Donald P., Michael R. Strain, and Ihab Seblani, "How Payday Credit Access Affects Overdrafts and Other Outcomes," *Journal of Money, Credit, and Banking*, 2012, *44* (2-3), 519–531.

Morse, Adair, "Payday Lenders: Heroes or Villans?," *Journal of Financial Economics*, 2011, *102*, 28–44.

Skiba, Paige Marta and Jeremy Tobacman, "Do Payday Loans Cause Bankruptcy?," *Working Paper*, 2011.

Tatham, Matt, "Personal Loan Debt Continues Fast-Paced Growth," Research, Experian October 2019.

Zinman, Jonathan, "Restricting consumer credit access: Household survey evidence on effects around the oregon rate cap," *Journal of Banking Finance*, 2010, *34* (3), 546–556.

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EDUCATION

MIT Sloan School of Management, Cambridge, MA — September 2016 - Present
Ph.D., Financial Economics (in progress) — Full-time

Smith College, Northampton, MA — September 2007 - May 2011
Bachelor of Arts in Economics; Minor in Spanish — Full-time
First Group Scholar 2010; Dean's List 2008-2009

PROFESSIONAL EXPERIENCE

JP Morgan Chase Institute, Washington D.C. — June 2017 - Present
Academic Fellow, Small Business Research Team — Part-Time

- Assist in data asset development and analysis for the Institute reports.

MIT Sloan School of Management, Cambridge, MA — June 2017-2019
Research Assistant to professors Antoinette Schoar and Jonathan Parker — Part-Time

- Provide data analysis for a research project examining the consumption behavior of entrepreneurial households using anonymized financial transactions data.

Massachusetts Institute of Technology, Cambridge, MA — June 2014 - July 2016
Research Assistant to professors Josh Angrist, David Autor, and Amanda Pallais — Full-Time
School Effectiveness Inequality Initiative, Department of Economics.

- Research: Provide data analysis for a randomized evaluation of the effect of need-based financial aid on post-secondary educational attainment. Assist with all stages of empirical analysis and interpret findings for both academic and policy audiences. Create presentations and edit manuscripts.
- Management: Collaborate with public colleges and universities in Nebraska to acquire and construct administrative data sets. Write memos for research partners and assist with conducting randomization.

Board of Governors of the Federal Reserve System, Washington D.C — February 2011 - June 2014
Senior Research Assistant — Full-Time
Global Capital Markets, Division of International Finance

- Research: Support section economists with research projects. Research projects include cross-country analysis of corporate cash holdings, analysis of corporate bond and loan issuance and pricing, mutual fund flows, foreign currency composition of bond and loan issuance.
- Policy: Manage and update international datasets on corporate bonds, syndicated loans, and flow of funds. Provide analysis relevant to policy questions. Policy projects include credit availability in emerging market economies, cross-country linkages in corporate profits, Eurosystem lending to banks.

UBS Financial Services, Vienna, VA — September - December 2009
Wealth Management Intern — Part-time

- Researched financial products and asset allocating options using a search engine, Morningstar.
- Analyzed and prepared client portfolio evaluations using funds diversification and performance reports.

RESEARCH

Papers

- "The Economic Impact of Education Spending: Evidence from Self-Employed Households", *Working paper*, 2020. Link to the paper
- "Loan Guarantees and Credit Supply" with Natalie Bachas and Constantine Yannelis, Forthcoming at *Journal of Financial Economics*, 2019. Link to the paper
- "Does Political Uncertainty Increase External Financing Costs? Measuring the Electoral Premium in Syndicated Lending", *Journal of Financial Quantitative Analysis*, Cambridge University Press, vol 54(5), pages 2141-2178, October 2019. Link to the paper

Presentations[1]

- 14^{th} New York Fed/NYU Stern Conference on Financial Intermediation* — November 2019
- 19^{th} Annual FDIC/JFSR Bank Research Conference — September, 2019
- ASSA Meeting 2019*, Atlanta — January, 2019
- Finance lunch, MIT Sloan School of Management, Cambridge — November, 2017
- Society for Financial Studies Cavalcade, Georgetown University, Washington D.C. — May, 2014

TEACHING EXPERIENCE

- TA, Finance Research Practicum (M. Finance and MBA, core); *G. Rao, B. Vartak* — 2020
  Massachusetts Institute of Technology, Cambridge, MA
- TA, Intermediate Macroeconomics (Economics, core); *R. O'Sullivan* — 2010
  Smith College, Northampton, MA

FELLOWSHIPS, HONORS AND AWARDS

- Mark Kritzman and Elizabeth Gorman Research Fund — 2019
- JP Morgan Chase Institute Academic Research Fellowship — 2017-present
- MIT Sloan Graduate Fellowship — 2016-present
- First Group Scholar, Smith College — 2010
- Outstanding Contribution Award in Model UN, Muenster University, Germany — 2010

COMPUTER SKILLS

- R, STATA, SAS, Python, Matlab, Apache Hive, SparkR, PySpark

EXTRACURRICULAR

- MIT Ice Hockey Intramural — Winter 2014 - Present
- Muenster University International Model United Nations, Muenster, Germany — April 2010
  Model UN in the Economic and Social Council.

LANGUAGE SKILLS AND OTHER INTERESTS

- Language Skills: English (Fluent), Korean (Native), Italian (Intermediate), Spanish (Intermediate)
- Other Interests: Painting

[1] * denotes presentation by coauthors.

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February 18, 2020

Re: Recommendation for Olivia Kim

Dear Sir or Madam:

I write to give my strongest recommendation that you award Olivia Kim an NBER Household Finance Research Grants for her research project, "Credit Access and Collateral in Consumer Lending: A Large-Scale Field Experiment." Three main reasons.

First, the research project. The project is extremely promising, is an excellent opportunity for the field to learn about household credit markets, and requires funding. Olivia has gotten a non-bank, on-line lender to agree to randomize its credit terms, giving some applicants who would have been rejected a loan offer, and giving some people offered collateralized loans an uncollateralized loan instead. This will allow Olivia to study the effects on the marginal borrower of credit access and of collateral requirements. Of course, the lessons will be specific to this market, but there is a large debate as to whether extending higher-interest credit to people with poor credit scores for example can in fact be detrimental – the research on payday loans is a nice example of this. Olivia's project will bring experimental evidence on the benefits of credit in a similar market.

Second, Olivia. She can carry this project out, and is exactly the type of person who I expect a really good contribution to household finance. I have gotten to known Olivia extremely well over the past few years, first as a student, then as a research assistant, and now as my co-author on an ongoing research project. She is an extremely promising graduate student – highly skilled, mature, and hard-working – and on par with the best finance students that I have advised. She is working with me and Antoinette Schoar on a research project at the JPMorgan Chase Institute on the effects of credit on households who own small businesses. She has several completed research papers. I have enjoyed watching her early research projects and have enjoyed advising her and seeing her now developing her own ideas. I have complete

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confidence in her to carry out this research (subject to the dangers that are always involved in field research with a private company).

Please fund Olivia's project.

Best regards,



Jonathan A. Parker

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