Research Statement

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I. Research

I study household finance, with a particular emphasis on household borrowing and financial advice. Both credit and advice play a critical role in the economy. The debts of American households total $14.5 trillion (Board of Governors of the Federal Reserve System, 2016a), on par with borrowing by financial firms ($15.5 trillion), the Federal government ($15.6 trillion), and non-financial businesses ($13.2 trillion). Credit can be vital to improving the welfare of households that borrow to smooth consumption or invest in housing or human capital. But credit also introduces risk, both for individual borrowers who experience financial distress and, in systemic crises, for lenders and the broader macroeconomy. Expanding credit access can therefore be harmful in the presence of externalities, moral hazard or other behavioral frictions among borrowers. Turning to financial advice, the latest Survey of Consumer Finances by the Federal Reserve Board showed that nearly half of American households have sought assistance from an advisor. Financial advice can be of great value to households that face complex savings and investment problems without adequate knowledge and financial sophistication, but agency conflicts threaten to compromise the quality of advice.

My work combines careful econometrics with thoughtful consideration of economic theory to address fundamental questions in both areas. I have explored three broad themes: 1) the impact of financial services on household welfare; 2) the implications of household finance for macroeconomic stability and economic policy; 3) the roles of intermediation and regulation in shaping the financial products and services available to households. I have written extensively on the impact of finance on household welfare, exploring the effects of credit access among low-income households, the causes and consequences of default by mortgage borrowers, and the investment returns earned by advised investors. The broad motivation for each of these studies is to better understand the financial market experiences of all households, including those of limited income,

wealth, and financial sophistication. I have also studied the housing crisis and Great Recession deeply in order to understand how household finance factors into macroeconomic stability and public policy. My analysis of mortgage leverage, default, and household spending during this period informs a range of policies, from fiscal stimulus and social insurance to housing support and foreclosure mitigation. Finally, regulation can play a fundamental role in creating or resolving frictions in the provision of credit and advice. My work on financial intermediation and regulation examines agency conflicts in financial advice, the impact of interest rate limits on credit supply, and the effects of social insurance on the supply of credit to risky borrowers.

My approach in each study has been to select questions motivated by economic theory and relevant to public policy, and to uncover new and noteworthy facts through careful empirical analysis. In pursuit of this goal, I have sought out novel survey and administrative data. I have also brought new perspectives to survey data widely used in labor and public economics but understudied in finance. In each study, I place great emphasis on building a credible research design that is both creative and thorough.

In the sections that follow, I discuss my work in greater detail and highlight my research contributions.

1. Household Borrowing

The majority of my research explores the determinants and consequences of household borrowing. I have studied the mortgage market as well as non-traditional credit markets used by low-income and risky borrowers. While mortgages dominate household debt by value, borrowing through other means is also widespread, especially among poor households. For example, an estimated 12 million individuals used high-cost "payday" loans in 2010 (Pew Charitable Trusts, 2012). I have written extensively on this market, using its emergence to understand whether short-term loans at market interest rates alleviate or worsen economic hardship.

1.1. Credit Access

Credit Access and Household Well-being

An important question in household finance is whether expanding access to credit improves household well-being. While economic theory is ambiguous on this point, many economists are strongly predisposed to the idea that expanding choice, in this case the choice to borrow, will benefit households. Borrowing can alleviate hardship by allowing households who face income or consumption shocks to finance important

expenditures. However, credit comes at a very high price for risky borrowers, who often remain chronically indebted and devote a large share of income to debt repayment. These debt payments can exacerbate financial distress. When individuals underestimate or discount such costs due to cognitive biases, forecasting problems (Ausubel, 1991; Brunnermeier and Parker, 2005; Bond, Musto, and Yilmaz, 2009) or self-control problems (Laibson, 1997), expanding credit access can even be harmful ex ante.

In [1] "The Real Costs of Credit Access: Evidence from the Payday Lending Market" (*Quarterly Journal of Economics*, 2011) I make use of the emergence of payday lending to study this issue empirically. To gauge economic distress, I use survey data on households' ability to afford food, housing (mortgage, rent and utilities) and health care (prescriptions, dental care and medical care). I pair these survey data with a measure of geographic access to payday loans, and investigate the relationship between economic distress and loan access.

A key innovation of my study is its research design. Identifying the causal effect of payday lending is challenging. Households seek payday loans particularly when they have fallen behind on other debt payments, so it is difficult to disentangle whether borrowing is the cause of distress or the result. Even ignoring variation in loan take-up and focusing instead on loan access, the problem remains that lenders choose where to locate in response to borrower demand and creditworthiness. To address this problem, I use an identification strategy built around cross-border access to loans, exploiting the fact that individuals residing in states that prohibit payday lending can still borrow at stores across the border if they live close to a state that permits payday lending. The resulting measure of loan access varies within a state and is unaffected by the endogenous location choice of lenders. I then complement this basic source of variation with a number of additional tests, including falsification and differences-in-differences analyses, to strengthen the identification.

I find no evidence that payday lending alleviates hardship. Rather, I find that households with proximate cross-border access to payday loans are more likely to report difficulty paying important bills (mortgage, rent and utilities) and delay needed dental care. Consistent with a causal effect, this difference emerges only when payday loans become available across the border. Furthermore, the increases in hardship are concentrated among the income group—$15,000 to $50,000 per year—for which payday borrowing is most prevalent and are largest in the border areas where a large proportion of workers commute to the payday-allowing state. These results suggest that for many low-income borrowers, and indeed for the average borrower, the debt service burden of payday loans inhibits their ability to pay important bills.

The paper's contribution is to show that expanding credit access can be harmful for many low-income borrowers. While some households may benefit from credit access, the average household experiences more distress when loans are available. This finding has been influential in economics, since it runs against the conventional wisdom among many economists. The finding has also informed public policy, as regulations on payday lending and other forms of high-cost credit have been, and continue to be, a focus of state and federal policymakers.

In the related article [5] "Spillovers from Costly Credit" (*Review of Financial Studies*, forthcoming), I examine potential externalities from payday lending. When assessing the economic efficiency of credit expansions, it is important to consider whether increases in household indebtedness entail social costs or benefits that borrowers and lenders fail to internalize. In collateralized lending markets, externalities often relate to costly liquidation of collateral (e.g., Campbell, Giglio, and Pathak, 2011 and Mian, Sufi, and Trebbi, 2015). But in the market for unsecured payday loans, such spillovers may also occur if a borrower's financial distress entails costs that spread beyond the lender and the borrowing household. To examine this question, I test whether payday lending affects child support payments to non-resident family members and participation in a transfer program funded by taxpayers. I use a similar research design as the prior study but a different data source—non-public Census survey data accessed through a Census Research Data Center.

I first confirm key findings on economic hardship from the prior study within the larger Census sample. I also find that households with proximate access to payday loans are more likely to use food stamps and less likely to make child support payments. These differences at payday borders do not exist in the early 1990s; they develop specifically when payday lending emerges and becomes prevalent in the 2000s. The elevated rate of child support delinquency at payday borders appears both in the responses of child support payers and recipients. For recipients, delinquency occurs particularly when the child support payer also has proximate access to loans. These findings suggest that as borrowers accommodate interest and principal payments on payday loan debt, they prioritize loan payments over other liabilities like child support payments and they turn to transfer programs like food stamps to supplement the household's resources.

The paper makes two contributions. First, it provides further evidence that payday lending can exacerbate financial distress, within a separate and larger sample than [1]. Second, it shows that expanding access to high-cost credit, for example by relaxing usury limits, can produce negative externalities on taxpayers and the non-resident family members of borrowers. These social costs imply that, absent other market distortions, payday credit is in excess supply.

Credit Supply and Financial Regulation

I have written a pair of co-authored papers on how financial regulations affect the supply of credit to low-income and risky borrowers. Regulations shape consumer credit markets in fundamental ways. While legislative and case law developments substantially relaxed maximum interest rates, or usury limits, for bank lenders more than thirty years ago, the strong growth in non-bank lending to risky borrowers over the past two decades has made state usury limits relevant once again. Many states have imposed or enforced usury limits to restrict lending to risky borrowers. When evaluating such restrictions, it is important to understand how intermediaries and the credit market adjust. Is credit rationed? Do borrowers substitute to products or providers that remain unconstrained? Does the price or quality of those substitutes change?

In [2] "Competition in a Consumer Loan Market: Payday Loans and Overdraft Credit" (with Donald P. Morgan, *Journal of Financial Intermediation*, 2015), we study the effect of laws restricting payday lending on the price and provision of overdraft credit, a possible substitute for payday loans. Banks earn fees when they "bounce," or refuse to pay transactions that overdraw a customer's checking account balance. Many banks, however, choose to pay these items and extend overdraft credit in exchange for a fee. In many ways, these loans are similar to payday loans: they are small, short-term loans with high implicit interest rates, which are used repeatedly by a significant proportion of checking account customers (1/3 of the customers that overdraw do so at least 12 times per year, which matches the proportion of frequent payday borrowers). Our paper explores whether banks respond to payday loan availability in determining the price and quantity of overdraft credit that they supply.

We use data on overdraft fees and credit limits from a national survey of banks and credit unions, and examine two sources of variation in payday lending, including the border-related variation used in the prior two studies. We find robust evidence that banks reduce overdraft credit prices when payday loans are unavailable. We also find some evidence that banks reduce overdraft credit supply, either ceasing overdraft loan programs or reducing overdraft credit limits. While the decline in prices is at odds with a simple model of price competition, it makes sense given the decline in credit limits and credit costs. We speculate that competition from payday lenders motivates banks and credit unions to extend credit because payday loans provide depositors an alternative to bouncing checks. Despite the risk of credit losses, expanding overdraft lending becomes more appealing when banks are at risk of losing bounced check income. Our findings suggest mixed welfare implications of payday loan prohibitions: depositors for whom overdraft credit is still available benefit from lower prices, but depositors that lose access to overdraft credit may be harmed.

In [10] "Loan Contracting in the Presence of Usury Limits: Evidence from Auto Lending" (with Aaron Schroeder), we study the effects of usury limits on the market for auto loans. With strong demand for vehicle financing among low-income and risky borrowers, usury limits matter for a significant portion of auto loans. While the conventional view is that usury limits cause rationing, we observe that automobile dealers can contract around binding usury limits by pricing credit risk through the mark-up on the product sale rather than the loan interest rate. To carry out this strategy, dealers must finance customer purchases and raise the stated loan amount rather than the interest rate to achieve the desired monthly loan payment.

Using a novel data set on financed vehicle purchases, we test whether usury limits encourage dealer financing through contracts with elevated loan amounts. In states with tighter usury limits, we find that auto dealers provide a substantially larger share of financing to risky customers for whom usury limits may bind. Consistent with our prediction on loan contracting, usury limits constrain interest rates on dealer loans but also cause substantial increases in loan amounts relative to collateral value. If anything, usury limits raise the monthly loan payments for risky borrowers, conditional on collateral value and loan duration. For non-dealer loans, usury limits reduce interest rates but do not result in increased loan amounts, perhaps because some borrowers are able to make larger down payments that improve lenders' collateral coverage.

Our findings suggest that there are welfare costs of usury limits that differ from the conventional concerns about credit rationing. Usury limits push liquidity-constrained borrowers into a smaller, and potentially less competitive, market for credit through dealers. Relative to an unconstrained setting in which lenders price credit risk through interest rates, borrowers receive contracts with higher initial loan amounts. This distortion disadvantages borrowers that terminate their loan early, through prepayment or default. Our findings also make an important point about the challenge of financial regulation: creative intermediaries can often adjust loan contracting or organizational form to avoid the constraints imposed by regulators. Careful analysis is required to understand the potentially unintended consequences of regulation.

I will continue to study the large market for dealer-financed automobile loans in future work. Data has been scarce but is becoming more readily available through the supervisory activities of the Consumer Financial Protection Bureau. I have two research projects planned. First, in the work in progress [14] "Innovations in Collateral Recovery and the Supply of Automobile Loans" (with Efraim Benmelech and Paolina Medina), we are studying the importance of technological innovations that enable collateral recovery – devices to remotely disable and track vehicles – for the supply of credit to risky

borrowers. Second, I plan to study discrimination in loan pricing, drawing on the insight that dealers' strategy to price credit risk through product mark-ups may hinder enforcement of fair credit laws. Such enforcement relies on comparisons of interest rates, which may no longer be fully informative when credit risk is priced in other dimensions.

Credit Supply and Social Insurance

In the work in progress [13] "Income Volatility, Social Insurance, and Credit Supply" (with Joanne W. Hsu and David A. Matsa), we study the response of credit supply to economic policy more broadly. We draw on the idea that job loss is an important cause of loan default, and that unemployment insurance can mitigate this risk. Using novel survey data on credit card and home equity loan offers, we test whether lenders account for unemployment risk and the generosity of unemployment insurance in determining credit supply.

We find that interest rates decline and credit limits rise when unemployment insurance is more generous, consistent with an expansion in credit supply. These results were included in an earlier version [6] "Unemployment Insurance as a Housing Market Stabilizer" but were dropped from the current manuscript during the review process. Building on these results, we now use the Current Population Survey (CPS) to measure unemployment risk and to test whether the effects of unemployment insurance on credit supply depend on the prospective borrower's unemployment risk. Within the CPS, we estimate the probability of unemployment as a function of household observable characteristics such as occupation, age, state of residence, home ownership, and family structure. We then use the model's coefficients to measure unemployment risk among the individuals for whom we observe loan offers. Our preliminary findings suggest that credit offers depend on unemployment risk, even after conditioning on a prospective borrower's income and credit score, and that unemployment insurance increases credit supply to a greater extent for borrowers at greater risk of unemployment.

Our findings show that the benefits of unemployment insurance extend beyond UI recipients to individuals who are merely at risk of job loss and who benefit from greater access to credit. In that way, credit markets amplify the benefits of social insurance. To the extent that borrowers have private information about the risk of job loss, public provision of unemployment insurance can be important in resolving credit market failures in addition to insurance market failures.

Psychological Determinants of Financial Fragility

Americans' extensive use of high-cost credit betrays an underlying financial fragility. A recent Federal Reserve Board survey found that nearly half of adults are in a financially fragile position, ill prepared for a financial disruption and unable to cover emergency expenses of $400 without borrowing (Board of Governors of the Federal Reserve System, 2016b). Why do households choose or end up in such a precarious financial position? Is it merely that they have low and volatile incomes or are there other factors that shape their decisions? In [9] "Non-Cognitive Abilities and Financial Delinquency: The Role of Self-Efficacy in Avoiding Financial Distress" (with Camelia M. Kuhnen), we examine the psychological determinants of financial fragility.

We study self-efficacy, which psychologists define as a person's belief that his actions or effort can influence his outcomes. Individuals vary substantially in their self-efficacy, even conditional on measures of cognitive ability. And, in the growing economics literature on non-cognitive skills, self-efficacy has been shown to be important in educational attainment and labor market success. We investigate whether self-efficacy also matters for financial choices, such as setting aside emergency savings and defaulting on debt. These choices depend crucially on an intertemporal trade-off for which an individual's self-efficacy can be pivotal. For example, an individual struggling to repay a loan might reduce spending today, or get a second job, in order to avoid defaulting. But these efforts are costly and of uncertain future benefit. For someone with low self-efficacy, who perceives his sacrifices to have little effect on his financial future, defaulting will appear optimal. Likewise, the future benefits of precautionary savings may appear low.

Using data from the National Longitudinal Survey of Youth, we show that individuals with lower self-efficacy save less for emergencies and are more likely to default, particularly when faced with negative income and health shocks. In turn, they are more likely to be denied traditional credit and to rely on expensive, alternative credit such as payday loans. The correlations that we uncover are robust to controlling for an extensive set of household observable characteristics, including cognitive ability, risk and time preferences, education, income, and indebtedness. The correlations also hold within families, conditional on sibling group fixed effects.

These findings shed light on household financial decision-making and highlight the importance of differences in beliefs in models of financial choice. Consideration of non-cognitive abilities may be important for the design of financial education and counseling.

1.2 Household Borrowing and Investments in Housing and Durable Goods

The aggregate importance of household credit was evident in the financial crisis of 2008-2009, as mortgage defaults threatened the health of the financial system, and financial constraints contributed to dramatic declines in household spending on durable goods. My research examines important aspects of this episode to shed light on the frictions associated with household borrowing. I study the role of debt overhang in stifling housing investments, the importance of job loss in causing mortgage default and unemployment insurance in stabilizing the mortgage market, and the importance of household financial constraints for the take-up and design of fiscal stimulus.

Mortgage Leverage, Investment Externalities, and Housing Investments

During the Great Recession, up to 15% of homeowners were in a negative equity position, owing more on their mortgage than the value of their home. Finance theory suggests that homeowners in such a position, who face heightened risk of default, may underinvest due to "debt overhang"; as Myers (1977) emphasizes, debt creates an agency conflict that worsens as default risk increases. Though the owner controls the asset and bears the full cost of investments, he reaps only a portion of the investment's payoffs, with the lender capturing the payoffs in the event of default. Accordingly, owners of leveraged assets inefficiently forego some investments.

Given the extent of negative equity and the potential for distortions to housing investment, it is important to understand whether debt overhang affects household investment decisions. I study this question in [3] "Mortgage Debt Overhang: Reduced Investment by Homeowners at Risk of Default" (*Journal of Finance*, forthcoming). Consistent with debt overhang, I find that homeowners with negative equity spend substantially less on home improvements, home maintenance, and unscheduled mortgage principal payments than their positive equity counterparts. I complement these basic results with additional tests to distinguish debt overhang from alternative interpretations. The home-related spending cutbacks do not reflect a general spending decline by deeply indebted homeowners, nor are they limited to homeowners who face borrowing or liquidity constraints, as wealthy homeowners in non-recourse states reduce their principal payments and improvement spending substantially when they have negative equity. Comparing across categories of durable spending, the cutbacks are specific to investments in the physical structure of the home, on which the mortgage lender has a claim in foreclosure. Other durable spending, even home-related spending on furniture and appliances, is similar between positive and negative equity owners. Debt overhang best explains this collection of facts.

These findings highlight an important mechanism by which household credit expansions can create ex post inefficient outcomes. Regarding economic policy, deadweight losses due to debt overhang provide an additional economic motivation for mortgage modification programs that reduce borrowers' default risk. The findings are also relevant for our understanding of household financial decision-making: households can be forward-looking and quite sophisticated in their investment decision-making when the stakes are high.

Home Purchases and Durable Goods Spending

Understanding why the housing market and household consumption co-move has been a central question in macroeconomic analysis and monetary policymaking since 2000, as the aggregate economy experienced a dramatic expansion and contraction that mirrored the boom and bust in the housing market. My work on debt overhang characterizes one mechanism by which home values (and leverage) affect housing investments. Other studies have focused on the role of housing wealth in spurring household consumption through its effects on overall wealth, credit constraints, and employment. (e.g., Hurst and Stafford, 2004; Campbell and Cocco, 2007; Mian, Rao, and Sufi, 2013; Mian and Sufi, 2014)

In [11] "Making the House a Home: The Stimulative Effect of Home Purchases on Consumption and Investment" (with Efraim Benmelech and Adam Guren), we propose and provide evidence for an additional link between the housing market and household consumption that operates through housing transactions rather than housing wealth. We argue that home purchases stimulate durable consumption by raising demand for goods complementary to the home. With irreversibility in many home investments and search frictions that prevent households from matching to the perfect home, home purchases can stimulate substantial spending as buyers tailor new homes to their taste.

Using household-level expenditure data and an "event study" methodology, we estimate the relationship between durable consumption and home purchases. We find that home purchases coincide with large increases in home-related spending over the year following the home purchase. At the aggregate level (and on a partial-equilibrium basis), our estimates imply that declines in home transactions during the housing crisis explained roughly a third of the decline of home durable spending and nearly a fifth of the decline in home improvements and maintenance.

Our paper highlights a new mechanism by which the housing market affects consumption and shows that this channel had a meaningful impact on consumption during the recent housing crisis. Since home sales tend to co-move strongly with home

prices, this channel can account for some of the correlation between home values and consumption observed in aggregate data.

Impacts of Job Loss and Unemployment Insurance on the Mortgage and Housing Markets

Throughout the Great Recession, as the number of foreclosures mounted, housing policy became a key focus of economic policy. While the prospect of avoiding substantial social costs – deadweight losses due to foreclosures – served as shared motivation for government intervention, policymakers struggled to design policies effective in preventing default. Economists debated whether foreclosures were caused by job loss, payment shocks, or underwater borrowers' incentive to "strategically default," and accordingly whether programs should focus on improving borrowers' ability or incentive to repay. In [6] "Unemployment Insurance as a Housing Market Stabilizer" (with David A. Matsa and Joanne Hsu, revise and resubmit at the *American Economic Review*), we study job loss, unemployment insurance, and mortgage default to shed light on the causes of default, the design of housing policy, and the impact of social insurance.

To identify the impact of unemployment insurance (UI) on mortgage default, we examine variation in benefit generosity from two sources: 1) state-level changes in benefits under "regular" UI programs in place through all economic environments; and 2) state-level differences in benefits available under the federal expansions of unemployment insurance during the Great Recession and its aftermath. We use data from multiple household surveys that combine measures of mortgage delinquency and foreclosure with detailed employment histories.

We show that regular UI benefits partially mitigate the increase in mortgage delinquency associated with job loss. As a falsification test, we confirm that UI generosity is unrelated to delinquency among homeowners who are not laid off and therefore do not receive benefits. For the federal extensions of UI benefits initiated during the Great Recession, we find a similar pattern: controlling for differences in unemployment rates, extended UI benefits are negatively correlated with mortgage delinquency and foreclosure among homeowners that experience job loss. Notably, unemployment insurance reduces the risk of default even for borrowers with quite substantial negative home equity. Our estimates imply that the federal expansions of unemployment insurance between 2008 and 2013 prevented 1.3 million foreclosures, which corresponds to more than 15% of total foreclosures during this period and substantially exceeds the estimated number of foreclosures prevented by targeted housing programs.

Our paper contributes important insights about the causes of mortgage default and the policies that can be used to stabilize the housing market during times of crisis. We show that job loss is an important cause of mortgage default, and that temporary and partial income replacement is effective in preventing default. Regarding housing policy, these findings illustrate that policies that improve borrowers' ability to repay can be effective, even when borrowers' negative home equity gives them substantial incentive to "strategically" default. Our results also point to income replacement as a housing policy tool, perhaps to be modeled after unemployment insurance but targeted at mortgagors. Regarding social insurance policy, it is notable that unemployment extensions prevented such a large number of foreclosures. These benefits were not previously identified in academic research. An optimal UI policy during housing downturns would weigh, among other benefits and costs, the deadweight losses avoided from preventing foreclosures.

Household Borrowing Constraints and Spending in Response to Fiscal Stimulus

In response to constraints on traditional monetary policy and steep declines in consumer spending during the Great Recession, lawmakers turned their attention to fiscal policy. One tool of fiscal stimulus – used widely in the Great Recession – is to provide temporary tax or price incentives that accelerate spending on capital investments by businesses and durable goods by households. Such programs can have large effects in theory, but empirically their impact is often found to be quite low. Financial constraints are one potential impediment to program participation: agents who lack the liquidity to make a down payment and the debt capacity sufficient to secure a loan may not participate even if a program offers a substantial price subsidy.

In [8] "Accelerator of Brake? Cash for Clunkers, Household Liquidity, and Aggregate Demand" (with Daniel Green, Jonathan A. Parker, and Arcenis Rojas) we explore the importance of household financial constraints for the impact and design of fiscal stimulus. We study the $3 billion "Cash for Clunkers" or CARS program, which provided instant rebates to consumers who traded-in and scrapped an old, fuel-inefficient vehicle for the purchase of a new, fuel-efficient vehicle. We use a differences-in-differences research design, measuring the program effects by comparing treatment and control groups of vehicles that differ in program eligibility but are otherwise quite similar. To carry out this analysis, we built a unique data set that combines non-public data from the Consumer Expenditure Survey with vehicle registrations from R.L. Polk and vehicle trade-in values from Edmunds.com. Compared to other papers that have evaluated CARS (Busse, Knittel, Silva-Risso, and Zettelmeyer, 2012; Mian and Sufi, 2012; Li, Linn, and Spiller, 2013; Hoekstra, Puller, and West, 2016), our study is unique in its use of nationally-representative, household-level data and in its analysis of household financial constraints and the program's economic subsidy.

We estimate that the program induced 500,000 vehicle purchases in the summer of 2009, with the remaining 180,000 rebates going toward purchases that would have occurred during the same period without the program. Take-up increased in the economic subsidy, which was the program rebate net of the value of the trade-in. Regarding financial constraints, we find that liquidity provision was crucial to the program's strong and rapid take-up. Households for which the program did not provide liquidity – those with outstanding vehicle loans to repay – participated at much lower rates, even after conditioning on the household's other debts and income, and the size of the economic subsidy. Household debt capacity, by contrast, did not seem to affect take-up, as households with modest incomes and high debt payment-to-income ratios participated at similar rates as households with high incomes and low debt payment-to-income ratios.

Our paper's primary contribution is to highlight the relevance of household liquidity constraints to fiscal policy. Not only are household finances relevant in forecasting the response to stimulus, they also matter for the design of future stimulus programs. Our analysis reveals that bundling liquidity with subsidies is important for maximizing take-up. To maximize take-up, a rebate should be timed to coincide with the purchase and sized to cover the typical down payment on a financed purchase. Our results for debt capacity suggest that, at least for purchases of goods useful as collateral, private markets can provide financing even for low-income households as long as the rebate provides sufficient liquidity. Our paper's other contribution is to provide further, well-identified estimates of CARS' impact on aggregate vehicle purchases.

2. Financial Advice

Households face difficult financial choices for which they often seek the help of investment advisors. Despite widespread use of advisors, relatively little is known about whether, and in what ways, they add or destroy value. In a series of co-authored papers, we use novel administrative data on financial advisory accounts to provide new and important insights about the costs and benefits of financial advice. We have studied advisors' role in facilitating risk-taking and tailoring asset allocation to clients' preferences, and the relevance of agency conflicts for the quality and cost of financial advice.

Financial Advice and Portfolio Customization

The lifecycle asset allocation problem is complex. Choosing how to allocate savings across risky assets requires an understanding of risk preferences, investment horizon, and the relationship between asset returns and labor income. Since many households lack the

knowledge and sophistication to solve this problem, it would seem a natural place for financial advisors to specialize and add value. Indeed, many advisors market their services in this way, as providing portfolios tailored to each investor's unique circumstances (Bernstein, 1992; Campbell and Viceira, 2002).

In [4] "Retail Financial Advice: Does One Size Fit All?" (with Stephen Foerster, Juhani T. Linnainmaa, and Alessandro Previtero, *Journal of Finance*, forthcoming), we study the portfolio allocations, fees, and investment performance of advised accounts and ask whether advisors are paid to tailor portfolio allocations to each investor's characteristics. Our analysis uses a large sample of advised accounts that were furnished by four large Canadian financial institutions. The data include many of the investor attributes—such as risk tolerance, age, investment horizon, income, occupation, and financial knowledge—that ought to be of first-order importance in determining the appropriate allocation to risky assets. The data also include detailed transaction information that allows us to measure portfolio allocations, fees, and investment performance.

The paper makes three contributions.

First, its descriptive analysis of portfolio allocations, fees, and investment performance uncovers new facts about advised accounts. These facts provide useful context for research and policy discussion on the value of advice. Noteworthy takeaways are: 1) advised accounts are quite expensive, with net alphas ranging from –3% per year to –4% per year, depending on the asset pricing model; 2) much, but not all, of the underperformance pertains to fees, which average 2.5% of assets per year and are divided roughly equally between advisors and mutual funds; 3) advised portfolios have flat life-cycle profiles compared to lifecycle funds, leading to a substantial average risky share for investors aged 50 and older; 4) investors display substantial home bias even when they are advised—a 50% allocation to Canadian equities that constitute only 5% of the world portfolio.

Second, our analysis shows that advisors provide limited customization and instead deliver common portfolios to many of their clients. While an investor's risk tolerance and point in the life cycle affect their allocation to equities, the most striking finding from our analysis is that clients' observable characteristics explain only 12% of the variation in risky share across investors. Advisor fixed effects – a proxy for common recommendations across all clients of the same advisor – explain almost twice as much variation in risky share. The advisor effects are also economically meaningful: moving from the 25th to the 75th percentile in the advisor distribution corresponds to a 20-percentage point change in risky share.

Third, our analysis reveals that an advisor's risk-taking in his *own* portfolio strongly predicts his risk-taking on behalf of clients. It appears, therefore, that advisors project their own beliefs and preferences when selecting investments on behalf of clients. This fact was quite noteworthy to us, especially in light of the concern that agency conflicts cause advisors to behave differently as agents than they would as principals. We picked up on this thread for our subsequent analysis of the cost and quality of advice.

Agency Conflicts and the Cost and Quality of Advice

A common criticism of the financial advisory industry is that conflicts of interest compromise the quality, and raise the cost, of advice. Many advisors require no direct payment from clients but instead draw commissions on the mutual funds they sell. Within this structure, advisors may be tempted to recommend products that maximize commissions instead of serving the interests of their clients. Both academic and policy studies have raised the possibility that sales commissions distort portfolios (e.g., Bergstresser, Chalmers, and Tufano, 2009; Mullainathan, Nöth, and Schoar, 2012; Council of Economic Advisers (U.S.), 2015). Policymakers in Australia, the United Kingdom, and the United States, in turn, have either banned commissions or mandated that advisors act as fiduciaries, placing clients' interests ahead of their own.

In [7] "The Misguided Beliefs of Financial Advisors" (with Juhani T. Linnainmaa and Alessandro Previtero), we take advantage of a unique aspect of our data on advisory accounts to study conflicts of interest. Since our data include the personal trading and account information of the vast majority of advisors, we are able to compare the trades that advisors carry out as principals to the trades that they make as agents for clients. We focus on trading behaviors for which advisors have been criticized as offering self-serving recommendations that hurt risk-adjusted performance: high turnover, preference for funds with active management or high expense ratios, return chasing, and underdiversification.

We find broad similarity in the trades of clients and advisors. Both groups trade relatively frequently, chase returns, favor actively-managed and higher-cost funds, and underdiversify. As we saw in our analysis of equity allocations, an advisor's own behavior is also a strong predictor of his clients' behavior. Moreover, the transaction-level data illustrate a very tight link between advisor and client trading: clients often purchase precisely the same funds at the same time as their advisor. Further analysis implies that advisors are not strategically investing at high cost in their personal portfolio only to convince clients to do the same. When advisors stop advising clients, they

continue to hold expensive portfolios, and when they do deviate from clients, they actually buy worse performing funds.

The paper's contribution is to provide a new explanation for costly advice that has starkly different policy implications than agency conflicts. Much of clients' poor investment performance in our sample stems from the sincere, but seemingly misguided, recommendations that advisors deliver. Policies that resolve conflicts of interest do not address this problem. Rather, advisory firms and professional licensing bodies would have to improve their screening and education of advisors to correct the problem.

Risk-Taking and Financial Advice

Our analysis of advised accounts in [4] shows that advisors have substantial influence over client risk-taking. But this analysis does not provide insight into how clients' risk-taking changes when they transition from being unadvised to advised. Recent theoretical work proposes that advisors facilitate risk-taking by reducing their clients' anxiety in buying and holding risky assets through periods of market turmoil (Gennaioli, Shleifer, and Vishny, 2015). In the work in progress [12] "Financial Advisors and Risk-Taking" (with Stephen Foerster, Juhani T. Linnainmaa and Alessandro Previtero), we study this question using survey data on Canadian households (similar to the U.S. Survey of Consumer Finances).

We find that advisors induce households to take substantially more risk than they would on their own. A key challenge to overcome in this analysis is that advised and unadvised households differ in many dimensions, and their portfolio differences may reflect selection on unobservable characteristics. That is, investors with strong demand for risky assets may be precisely the group that seeks advice. We solve this identification problem by focusing on a regulatory shock to the supply of financial advisors in certain Canadian provinces. In the first-stage, we find that the probability of advised declines in the provinces affected by the regulation. In the instrumental variables analysis, we find that households in those provinces also reduce their holdings of risky assets.

These findings are consistent with the view that advisors facilitate risk-taking and raise their clients' gross investment returns in expectation. When we place our findings in the context of the fees paid to advisors, however, we find that the average investor gives up all of these gains in fees paid to the advisor and investment manager. The results described above were included in an earlier version [4], but were dropped from the final manuscript during the review process. We are building the new manuscript around these results and supplementing them with analysis of trading in advised accounts during tumultuous periods in the stock market.

I see great promise for further research on financial advice. The increased availability of survey and administrative microdata has expanded the set of feasible studies. And innovations in financial technology, such as personal finance websites that aggregate account information and "robo-advisors" that automate portfolio management, are changing the way that households invest and monitor their wealth. Economists with knowledge of household finance can play an important role in understanding and shaping these changes.

II. Research Impact

I have presented my work widely, giving presentations at selective conferences and invited seminars at universities and policy institutions. I list those activities in full at the end of this section. Before doing so, I first highlight examples of my work's impact among economists and policymakers.

Impact among Economists

My research has been cited multiple times in the annual presidential and keynote addresses given to the largest professional associations in economics and finance:

- *2013 American Finance Association (AFA) Presidential Address.* Titman (2013) cites my research on mortgage debt overhang in his address "Financial Markets and Investment Externalities."
- *2015 AFA Presidential Address.* Zingales (2015) cites my research on payday lending in his address "Does Finance Benefit Society?"
- *2016 Richard T. Ely Lecture.* Campbell (2016) cites my work on payday lending, mortgage debt overhang, and financial advice in his keynote address "Restoring Rational Choice: The Challenge of Consumer Financial Regulation" at the American Economic Association Annual Meeting.

I have participated extensively in conferences organized by the National Bureau of Economic Research (NBER). My papers have been on six conference programs, and I have served twice as an invited discussant. My work on unemployment insurance and consumer credit was also featured in the December 2014 issue of the NBER Digest, a monthly online and print publication that highlights a select group of between four and eight NBER Working Papers.

Since its publication in 2011, the article [1] "The Real Costs of Credit Access: Evidence from the Payday Lending Market" has been routinely been among the Quarterly

Journal of Economics website's most-read articles. For example, it was the 2nd and 3rd most-read article in January 2015 and October 2016, respectively.

Impact among Policymakers

At Northwestern, I have been a Faculty Associate of the Institute for Policy Research (IPR) since 2014. I have presented in the IPR Colloquium and contributed to the Institute's working paper series. I have also worked hard to engage with policymakers and disseminate my research findings. Below, I discuss the breadth of that engagement and highlight instances in which my work has been cited in policy reports and legislative testimony.

I have given more than a dozen presentations at conferences or seminars organized by policymaking or policy research institutions. These presentations include visits to central banks in Norway and Sweden, multiple Federal Reserve Banks (FRB) in the United States, the Consumer Financial Protection Bureau (CFPB), the Federal Trade Commission, the Federal Deposit Insurance Corporation, and the UC Davis Center for Poverty Research. I have also presented and discussed papers at NBER conferences on poverty and social policy, housing policy, and the policy implications of recent findings in household finance. Finally, I have served twice as a panelist to discuss consumer financial protection, including one event for a national association of state Attorneys General.

In further outreach to policymakers, I have briefed policymakers on my research findings. In October 2013, I gave an invited briefing on unemployment insurance and consumer credit markets to the President, Director of Research, and senior economists of the FRB Chicago. In July 2011, I also gave a briefing and participated in an open discussion on payday lending with economists and lawyers at the CFPB.

My research has been cited in numerous policy reports or briefs, most notably reports issued by the White House or its Council of Economic Advisers (CEA), the Federal Reserve Bank, the U.S. Department of Labor, the Consumer Financial Protection Bureau, the Canadian Securities Administrators, and the Brookings Institution. Here, I summarize the instances in which my work has been cited, organized by research topic:

Payday Lending

- White House issue brief on financial inclusion (Council of Economic Advisers (U.S.), 2016).
- Consumer Financial Protection Bureau proposed rule to regulate payday and title lending (12 C.F.R. 1041, proposed in June 2016).

- *Journal of Economic Perspectives* article on consumer financial protection (Campbell, Jackson, Madrian, and Tufano, 2011). This journal, which is published by the American Economics Association, aims to synthesize lessons learned from active lines of academic research and to provide economic analysis of public policy issues.
- Three Federal Reserve Bank Community Development articles on payday lending (Cook, Kazantzis, Morris, and Zahradka, 2010; Galperin and Weaver, 2014; Galperin and Mauricio, 2015).
- Remarks by the Commissioner of the Federal Trade Commission at the American Financial Services Association's 2015 Installment Lending Summit. (Wright, 2015)
- National Consumer Law Center report (Saunders, Plunkett, and Carter, 2010).
- UC Davis Center for Poverty Research policy brief on payday lending (Melzer, 2013).
- Center for American Progress report on high-cost debt and financial distress (Valenti and Schultz, 2016).

Mortgage Debt Overhang

- Annual Report of the CEA (Executive Office of the President and Council of Economic Advisers (U.S.), 2012).
- Three Center for American Progress reports on mortgage principal reductions (Griffith and Eizenga, 2012), the housing crisis (Griffith, Gordon, and Sanchez, 2012), and the housing recovery (Zonta and Edelman, 2015).

Unemployment Insurance

- Brookings Institution publication on credit policies in a housing crisis (Eberly and Krishnamurthy, 2014)
- Two Center for American Progress reports on strengthening unemployment protections (West et al., 2016a and 2016b).

Financial Advice

- CEA report on the cost of financial advice (Council of Economic Advisers (U.S.), 2015).
- Department of Labor regulatory impact analysis on fiduciary investment advice (U.S. Department of Labor, Employee Benefits Security Administration, 2015).
- Brookings Institution report on the Department of Labor conflict of interest rule (Baily and Holmes, 2015).
- Canadian Securities Administrators consultation paper on proposals to strengthen financial advisors' fiduciary obligation (Canadian Securities Administrators, 2016).

Individuals testifying before legislative and regulatory bodies have also cited my work numerous times:

Payday Lending

- Cited in formal comments to the Department of Defense by the Commissioner of the Federal Trade Commission regarding the Military Lending Act (Wright, 2014).
- Cited in formal comments to the CFPB by the Institute for Policy Integrity, New York University School of Law (Institute for Policy Integrity, 2015).
- Cited in testimony to the House of Representatives by the Consumer Federation of America regarding the Payday Loan Reform Act (Payday Loan Reform Act of 2009, 2009).
- Cited in formal comments to the CFPB by the Consumer Federation of America (Consumer Federation of America, 2012).
- Cited in testimony to the Senate by the President of the Center for Responsible Lending regarding enhanced consumer financial protection (Enhanced Consumer Financial Protection After the Financial Crisis, 2011).
- Cited in testimony to the Senate by the Senior Policy Counsel of the Center for Responsible Lending (Payday Loans: Short-term Solution or Long-term Problem?, 2013).
- Cited in testimony to the Pennsylvania House (HB 2191, 2012a) and Senate (HB 2191, 2012b) by Community Legal Services, Inc.

Mortgage Debt Overhang

- Cited in testimony to the House of Representatives by the Center for American Progress Action Fund (Turning the Tide: Preventing More Foreclosures and Holding Wrong-Doers Accountable, 2012).
- Cited in testimony by the Woodstock Institute before the Chicago City Council (Assisting Underwater Homeowners, 2012).

Unemployment Insurance

- Twice cited in testimony to the House of Representatives by the Center for American Progress (Protecting the Safety Net From Waste, Fraud, and Abuse, 2015; Restoring the Trust for Young Americans, 2015).
- Cited in testimony to the House of Representatives (Unemployment Insurance: An Overview of the Challenges and Strengths of Today's System, 2016) and the Council of the District of Columbia by the National Employment Law Project (Unemployment Benefits Modernization Amendment Act of 2015, 2016).

Financial Advice

- Cited in testimony to the House of Representatives by the Chief Economist of the Investment Company Institute (Restricting Access to Financial Advice: Evaluating the Costs and Consequences for Working Families and Retirees, 2015).

- Cited in testimony to the Department of Labor by Professor Jonathan Reuter regarding the proposed conflicts of interest rule (Conflict of Interest Rule, 2015).

Seminar and Conference Presentations

2016
University of Texas at Austin
Rochester University
University of Arizona
Indiana University
NBER Behavioral Finance

2015
Yale University/Innovations for Poverty Action Researcher Gathering on Advancing Financial Inclusion
Columbia Business School
George Washington University/Federal Reserve Board of Governors Financial Literacy Seminar
Midwest Finance Association Annual Meeting
McGill University

2014
NBER Household Finance: Research Findings and Implications for Policy
University of Colorado, Boulder
University of California, San Diego
Finance UC Conference, Pontificia Universidad Catolica de Chile
University of Arizona
University of North Carolina
Northwestern University Institute for Policy Research

2013
Norges Bank Workshop on Household Finance
Sveriges Riksbank, Sweden
UCLA Anderson
UC Davis
Federal Reserve Bank of Philadelphia Credit and Payments Conference
Federal Reserve Bank of Cleveland Policy Summit
NBER Summer Institute, Economics of Real Estate and Local Public Economics
International Banking, Economics and Finance Association Summer Meeting
Boulder Summer Conference on Consumer Financial Decision Making
NBER Conference on Poverty, Social Policy and Inequality
NYU Stern
DePaul-Federal Reserve Bank of Chicago Finance Seminar

University of Illinois at Chicago, Institute of Government and Public Affairs
Consumer Financial Protection Bureau

2012

American Economic Association Annual Meeting
University of Amsterdam
Stanford GSB
University of Chicago, Center for Human Potential and Public Policy

2011

Federal Reserve Bank of Boston
Midwest Economics Association Annual Meeting
Federal Trade Commission, Bureau of Consumer Protection
CSIO/IDEI Joint Workshop on Industrial Organization
Financial Intermediation Research Society Conference
Western Finance Association Annual Meeting
NBER Summer Institute, Economics of Real Estate and Local Public Finance
Consumer Financial Protection Bureau
Consumer Expenditure Survey Microdata Users' Workshop
Duke University
University of Missouri

2010

Financial Intermediation Research Society Conference
Conference on Household Heterogeneity and Household Finance, Federal Reserve Bank of Cleveland and Deutsche Bundesbank
Graduate School of Business, Loyola University Chicago
Ivey School of Business, University of Western Ontario
Federal Reserve Bank of Chicago

2009

American Economic Association Annual Meeting
FDIC Center for Financial Research

2008

Federal Reserve Board of Governors
Ross School of Business, University of Michigan
Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign
Robert H. Smith School of Business, University of Maryland
Olin Business School, Washington University in St. Louis
Kellogg School of Management, Northwestern University
McCombs School of Business, University of Texas at Austin
Yale School of Management
Federal Reserve Bank of Chicago

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