NBER Post-Doctoral Fellowship in Household Finance: The Financial Decisions of Low Wage Workers

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Introduction

My research uses individual-level consumer financial records to analyze the way households cope with financial stress. In recent work I have analyzed the household response to job loss (Ganong and Noel 2016a) and to an overhang of mortgage debt (Ganong and Noel 2016b). Next, I propose study how income changes affect the financial decisions of low-wage workers. This research, which will be joint with my colleague Peter Ganong, will use de-identified bank account and credit bureau data from 20 million U.S. households. We will identify income changes by exploiting recent increases in local minimum wages. The project will answer two specific research questions. First, how do income increases affect the consumption, saving, and borrowing decisions of minimum-wage workers? Second, how do income increases affect the financial security of minimum-wage workers as measured by the strength of expenditure cycles, use of costly financial products such as payday lending, and evidence of financial stress such as overdraft fee charges, delinquencies on consumer credit products, and liquid asset buffers?

Background and Data

Minimum wage laws are an important determinant of financial resources for low-income workers in the U.S. About 10% of workers paid at hourly rates earn income at the local minimum wage, accounting for 5% of all wage and salary workers.[1] There has been significant recent variation in local minimum wage rates. Twenty six states increased their minimum wages between 2014 and 2016. In the November 2016 elections four more states voted to increase the minimum wage.

While there is a large literature examining the employment effect of minimum wage laws, comparatively little is known about the impacts of minimum wage income on the financial lives of low-wage workers. Existing work by Aaronson, Agarwal, and French (2012) shows that a small share of minimum-wage workers use their additional income as down-payments on new cars, causing the initial durable spending impact to be about three times larger than the income increase. However, this prior research has little precision to detect spending responses on nondurables. Furthermore, it does not study whether income increases reduce financial hardship such as the use of costly financial instruments or the exposure to unexpected financial shocks.

We propose to improve on the prior literature by exploiting a rich new consumer financial data set from the JPMorgan Chase Institute (JPMCI). This data set includes individual account-level information on checking accounts, savings accounts, debit cards, credit cards, auto loans, and

[1] See Aaronson, Agarwal, and French (2012) and Bureau of Labor Statistics (2016).

mortgages from the universe of Chase customers. For the subset of customers with Chase lending products, credit bureau records on all consumer debts are also available.[2]

These data have four strengths relative to prior data used to study the financial response to minimum wage increases. First, the data include information on income and spending inside the same dataset. Income is measured from checking account inflows and direct deposit of paychecks. We have worked with Chase to categorize checking account outflows into specific spending categories. In addition, debit and credit card spending is coded according to the merchant where the spending occurred. Second, spending data is available at a very high frequency; in most of our prior work we have examined monthly spending and in this project we can study daily spending, as will be necessary for one of our research questions. Third, the checking account data provide a particular lens that has previously been unavailable. We can observe account charges such as overdraft fees, and by exploiting text strings in transaction descriptions can observe the use of costly financial instruments such as payday lending. Fourth, we have strong statistical power, with bank account data for about 20 million customers. This will allow us to have power to analyze small changes even among the subset of customers that are minimum-wage workers.

We plan to build out two panels useful for studying minimum wage impacts: an employer panel with earnings per pay period (measured by direct deposit to workers' accounts) and a merchant panel with revenue (measured by spending out of consumers' accounts), with a link between the two using the firm name in the text description. These panels will help us identify minimum-wage workers and firms employing minimum-wage workers. We will identify minimum-wage workers using a combination of three strategies. First, we will develop a mapping from earnings per direct deposit pay period to hourly wage by looking at the relationship between earnings and wages in the Current Population Survey (CPS) Merged Outgoing Rotation Group. Second, we will use the employer panel to isolate workers at firms with a high share of low-wage workers. Finally, we will use the employer firm name to find workers at firms known in public records to hire a high share of minimum-wage workers.

Research Questions and Empirical Strategies

In this project we propose to tackle two specific questions. These questions focus on the financial impacts of minimum wage increases on workers who retain their jobs. A policy evaluation of minimum wage changes would also take into account the employment effects, which are the focus of much prior litetrature but are not the focus of our study.

1. How do income increases affect the consumption, saving, and borrowing decisions of minimum-wage workers?

Prior work has focused on the durable consumption response of minimum wage increases. In contrast, we will study the consumption response for forty different categories of both durable and nondurable spending and precisely measure the timing of this response. Furthermore, our bank account and credit bureau data will allow us to measure saving and borrowing across a range of consumer debt instruments.

We will estimate these responses relative to a control group with parallel trends prior to the minimum wage increase. Two natural candidates are disability insurance recipients in the same state (who are similarly low income but not working) or minimum-wage workers in a nearby state with no increase.

[2]For more detail on the dataset, see Ganong and Noel (2016a) and Farrell and Greig (2015)

The timing and separation between durables and nondurables is also important for testing between fundamental models of borrower consumption and savings decisions. A standard buffer stock model without durables predicts that when permanent income rises unexpectedly, an agent's target buffer stock rises as well. This means that the long-term spending response to a permanent income increase should be larger than the short-term spending response. However, in a model with borrowing and down-payment requirements for durable goods, small income changes can lead to an increase in debt used to finance a large immediate increases in durable goods expenditures. In this augmented model, durable spending would spike immediately while nondurable spending would increase with a delay. We will be able to test the prediction of this model against an alternative behavioral model where consumers save very little and even nondurable spending rises immediately.

2. How do income increases affect the financial security of minimum-wage workers?

Low wage workers have been shown to live paycheck-to-paycheck, use costly financial services such as payday lending, and make financial "mistakes" such as paying overdraft fees. Do substantial income increases make a difference? Minimum wage changes enacted in the last two years have led to wage increases up to 30% for minimum wage workers. With our data we will be able to examine the effect of such increases on three specific measures of financial security.

First, we will examine the extent that households exhibit expenditure cycles between paychecks. Prior work on food stamp (SNAP) recipients has shown that food expenditure spikes after the arrival of benefits and declines gradually before the next payment (Hastings and Washington 2010, Shapiro 2005). This decline is associated with a reduction in the quantity and quality of caloric intake, with daily calory intake declining 15% by the end of a pay period. We have found that UI recipients in the Chase data exhibit food spending cycles of similar magnitudes. We are interested in examining the prominence of spending cycles for minimum wage workers, and whether these cycles are attenuated after receiving increased income. This research will exploit the daily nature of our bank account data.

A second related outcome of interest is the use costly financial instruments such as payday lending. Do increased wages reduce the reliance on these costly measures of accessing liquidity? Cross-sectional relationships suggest that higher incomes are associated with lower use of payday lending. Examining the impact of minimum wage changes will test whether this relationship is causal, or if low-wage workers use such instruments due to underlying preferences such as extreme impatience.

Third, we will examine whether minimum wage increases reduce the cost of mismanaged finances as suggested by overdraft fees and the extent of financial stress as evidenced by low liquid asset buffers, delinquencies on consumer credit products, and total debt burdens. The benchmark buffer stock model predicts that higher incomes will enable low-wage workers to build up liquid buffers and reduce overdrafts and delinquencies. We will be able to quantify this effect.

Conclusion

With the support of the NBER Post-Doctoral Fellowship in Household Finance I hope to continue my work analyzing consumer financial records to improve our understanding of the financial decisions of U.S. households. I propose to focus my next year on studying low-income workers, a group with intense social and policy interest.

References

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Reference for Fellowship

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Spring 2015	*Healthcare Controversies,* instructor, sophomore tutorial
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Research Experience and Other Employment:

2014 to present	JPMorgan Chase Institute, Academic Research Fellow
2013-2014	Harvard University, Research Assistant for Professor Raj Chetty
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2009-2011	The White House, National Economic Council, Senior Policy Advisor on housing markets and financial regulation
2007-2009	The Brookings Institution, The Hamilton Project, Research Analyst for Douglas Elmendorf and Jason Furman

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Honors, Scholarships, and Fellowships:

2013 to present	NBER Pre-Doctoral Fellowship in Aging and Health
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2015	Research Grant, Lab for Economic Applications and Policy (LEAP)
2013, '14, '15	Harvard University Certificate of Distinction in Teaching
2014	Subir Chowdry Fellowship on Quality & Economics
2014	Research Grant, Hirtle Callaghan Fund
2014	Research Grant, Washington Center for Equitable Growth

Job Market Paper

"*The Effect of Debt on Default and Consumption: Evidence from Housing Policy in the Great Recession*" (with Peter Ganong)

Abstract: This paper empirically and theoretically analyzes the effect of debt reductions that reduce long-term but not short-term obligations. Isolating the effect of future obligations allows us to test alternative explanations for borrower default decisions and to analyze the consumption response to mortgage principal reduction for underwater borrowers. Our empirical analysis uses regression discontinuity and difference-in-differences research designs on de-identified bank account and credit bureau records from participants in the US. government's Home Affordable Modification Program. We find that mortgage principal reductions worth an average of $70,000 have no impact on default or consumption for borrowers who remain underwater. Our results are sufficiently precise to rule out economically meaningful effects. We develop a quantitative life-cycle model that clarifies that borrowers' short-term constraints govern their response to long-term debt obligations. When defaulting imposes utility costs in the short-term, default is driven by cash-flow shocks such as unemployment rather than by future debt burdens. When principal reductions do not push borrowers sufficiently above water so as to relax collateral constraints, consumption is unaffected because borrowers are unable to monetize increased housing wealth. Collateral constraints drive a wedge between an underwater borrower's marginal propensity to consume out of cash and their marginal propensity to consume out of housing wealth. Our results help explain why policies that lowered current mortgage payments were more effective than principal reductions at stemming foreclosures and increasing demand during the Great Recession.

Research Papers

"*How Does Unemployment Insurance Affect Consumer Spending?"* (with Peter Ganong)

Abstract: We study the spending of unemployed individuals using anonymized data on 210,000 checking accounts that received a direct deposit of unemployment insurance (UI) benefits. Spending falls by 6 percent at the onset of unemployment. States where UI benefits are $1 higher have a 43 cent smaller drop in spending, suggesting that the primary cause of the spending drop during unemployment is a temporary loss of income, rather than lower permanent income or a decline in work-related expenses. Spending falls sharply by 11 percent at UI benefit exhaustion. We show that a range of models with a rational forward-looking agent cannot fit this fact because they predict that spending will evolve smoothly around the largely anticipated income drop at benefit exhaustion. We find that behavioral models where agents misperceive the risk of benefit exhaustion or the income loss at benefit exhaustion can better fit the path of spending.

Research Papers in Progress

"The Incidence of Minimum Wage Increases: Evidence from Banking Records" (with Peter Ganong)

"*Housing Wealth, Consumer Credit, and Consumption Over the Business Cycle"*

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To the junior recruiting committee:

I am writing to recommend **Pascal Noel** for a position in your department. This is an easy letter to write because Pascal is an indisputable star, equal to the best empirical economists on the job market in even a vintage year. Pascal uses state-of-the-art methods from applied microeconomics to study important issues in household finance. He has the complete package of skills that are needed to succeed in this endeavor, including a good nose for policy-relevant questions, an entrepreneurial approach to collecting data, common sense in data quality control, first-rate econometric technique, and the willingness to build optimizing models that can be used to interpret empirical findings.

Pascal's job market paper is joint with Peter Ganong, a Harvard PhD student on last year's job market who will start at Chicago Harris next year. The paper asks how writedowns of mortgage principal affect household default and consumption decisions, controlling for the current mortgage payments that households are required to make, and taking into account the relative magnitudes of household mortgage debt and home values. Answering this question is vital for understanding policy during the global financial crisis – when the relative merits of interest reduction and principal forgiveness were hotly debated – but Pascal and Peter go well beyond the specific policy question to shed light on important conceptual issues in the field.

Pascal and Peter use a natural experiment in the US government's Home Affordable Modification Program (HAMP) to isolate the effects of principal forgiveness. Participants in the program received mortgage payment reductions for five years, but some also received principal writedowns that would reduce payments only in later years. The assignment to principal writedown was influenced by a US Treasury model that predicted which households were most likely to default, and on this basis whether principal forgiveness could actually benefit mortgage investors. The model generated a discontinuity in HAMP treatment that Pascal and Peter exploit (along with variation across servicers in the propensity to forgive principal) to identify the effect of principal forgiveness.

An impressive feature of Pascal and Peter's paper is the breadth of their analysis. They link administrative data on HAMP participants to credit bureau records that reveal mortgage delinquencies as well as proxies for consumption spending, and they further analyze data from the JPMorgan Chase Institute that provides detailed transactions information for JPMC borrowers who received a modification. They specify and calibrate an optimizing life-cycle model with realistic borrowing constraints to interpret their results on both mortgage default and consumption.

While there are many interesting results in the paper, my brief summary is as follows. HAMP principal reductions had only tiny effects on default rates, and these effects are statistically indistinguishable from zero. This finding contrasts with cross-sectional estimates relating default rates to LTV ratios; but those estimates may have been distorted by a relaxation of underwriting standards at the height of the housing boom, which increased the default rates of boom borrowers who also had the highest LTV ratios during the subsequent house price decline. Pascal and Peter's finding makes sense in the context of optimizing default models that allow for some utility cost of default, as those models predict that default is triggered by low cash flow, not the principal value of mortgage debt, until LTV ratios reach extremely high levels beyond those observed in the HAMP sample.

Turning to consumption, Pascal and Peter find that principal reductions again had very small effects. The problem in this case is that HAMP borrowers remained underwater, so they could not initially borrow against the increase in home equity provided by principal forgiveness. Given reasonable expectations of income and house prices, Pascal and Peter's optimizing model shows that any indirect effects on savings created by expectations of future credit access would be minimal. This part of their work clarifies the distinction between the marginal propensity to consume out of liquid wealth (which is high for HAMP borrowers), and the marginal propensity to consume out of illiquid housing wealth (which is very low). It also makes clear that simple models of household deleveraging, which treat household debt as short-term or subject to margin calls, are very misleading when the debt takes the form of long-term mortgages.

If you speak to Pascal you will find him to be broadly knowledgeable about many aspects of public finance, applied microeconomics, household finance, and financial economics more generally. While he did not initially specialize in finance at Harvard, he threw himself into learning the field during the later years of the PhD program and is now fully competent to teach standard finance courses. Pascal is also a pleasure to interact with because he is enthusiastically curious, but also deeply serious about doing research the right way rather than the most convenient way. He will be an outstanding researcher, teacher, and colleague and he belongs in a top five economics department or business school.

Sincerely,



John Y. Campbell