

Research Statement for Peter Ganong

The central role of household financial decision-making has been recognized in many fields of economics, including public economics, finance, and macroeconomics. In addition to the academic interest in household finance, this field has been brought to the forefront of policy debates by both the Great Recession and the Covid-19 pandemic. My research uses detailed microeconomic administrative data and natural experiment-based empirical strategies to uncover how households make financial decisions. I then examine the implications of the behavior I document for structural models of household decision-making, the design of public policy, and the evolution of the macroeconomy.

I am particularly interested in examining how the timing of cash flows affects household financial decisions. An influential strand of the prior empirical and theoretical literature has focused on the causal effect of “helicopter drops” of money such as stimulus checks. My work complements this approach by separating the causal effects of present and future cash flows. I study both the impact of predictable changes in future cash flows holding cash today fixed, and the converse, which is the impact of current cash flows which must be repaid in the future.

Across a variety of domains, my research has found that households exhibit strong sensitivity to changes in current cash flows but not to changes in future cash flows. For example, in my research I find that households’ responses to news about future cash flows are muted or non-existent (Ganong and Noel 2019, Ganong and Noel 2020a). Households show little or no response to both bad news (that income will go down in the future when unemployment benefits are exhausted) or good news (that some of their mortgage debt has been forgiven). In contrast, an increase or decrease in households’ current cash flows leads to notable changes in both consumption and mortgage default, even when these changes are entirely predictable and even when these changes are offset by changes to future cash flows. These findings suggest that current liquidity is central for household decisions.

The centrality of liquidity has implications for economic models of consumer behavior. The sensitivity of household mortgage repayment decisions to current cash flows and their insensitivity to future cash flows is consistent with models where the private cost of mortgage default is high and borrowers face liquidity constraints. The sensitivity of household consumption decisions to current cash flows and their insensitivity to future cash flows is consistent with a model where some households are myopic in their consumption and savings decisions.

The centrality of liquidity also has implications for the design of public policies, which my research seeks to tease out. In the context of mortgage default, my research has shown that by front-loading borrower liquidity it is possible to re-design mortgage assistance policies with substantial gains to borrowers, lenders, and taxpayers. In the context of unemployment, my research has shown that targeting low-liquidity states of the world (in particular

when regular unemployment benefits have been exhausted) can increase consumer welfare. Across both domains, my research has shown that providing liquidity to distressed households can help boost aggregate demand and assist in macroeconomic stabilization. The research agenda described above is joint with Pascal Noel, who is an assistant professor at the University of Chicago’s Booth School of Business.

In addition to my current research agenda analyzing household financial decision-making, I have also done research in two other areas: policies to promote economic opportunity and improving the credibility of empirical estimates. In Ganong and Shoag (2017), I study changes in economic opportunity from migration. I show that for most of the 20th century, low-skill workers could achieve substantial income gains by migrating to high-income places. Today, low-skill workers on net move *away* from such places. Why? I find that regulation-induced high housing prices have eroded the gains to migration. Reductions in such regulations would improve opportunity for low-skill workers.

The remainder of this document is organized as follows. I begin by describing the two parts of the liquidity and wealth research agenda: mortgages and consumption smoothing. I then describe my work on promoting economic opportunity and empirical credibility.

1 Mortgages

In two recent papers, Pascal Noel and I develop tests to understand the roles that liquidity and wealth play in determining the default and consumption behavior of mortgagors. The first paper is “**Liquidity vs. Wealth in Household Debt Obligations: Evidence from Housing Policy in the Great Recession**” (2020, *American Economic Review*).

Mortgage defaults soared during the Great Recession, precipitating the worst financial crisis since the Great Depression. Among mortgagors in 2007, one-in-ten had undergone a completed foreclosure by 2017. In normal times, and especially in recessions, borrowers who fall behind on their mortgages are commonly offered a modified contract, known as a “modification.” These modifications typically involve changes in both current payments (“liquidity”) and long-term debt obligations (“wealth”). It is thus difficult to tease apart the underlying mechanisms driving the borrower response to these modifications.

The key contribution of our paper is to disentangle the impact of these two channels by using quasi-experimental methods to study the effect of mortgage modification treatments which affect only wealth or affect only liquidity. The paper uses administrative mortgage servicing data, which we link to credit bureau data from TransUnion to measure consumption. We isolate the effect of wealth by studying a treated group that benefits from a government program that forgives mortgage principal but sees no change in mortgage payments for five years relative to a control group that participates in a different government program. We isolate the effect of liquidity by studying a treatment group that

sees a reduction in current mortgage payments through maturity extension with no change in the net present value of total mortgage payments owed. In both cases, assignment to treatment is determined in part by quantitative thresholds, enabling us to use regression discontinuity designs to estimate the causal impact of each treatment.

We find that modifications which affect only housing wealth have no effect on default or consumption for borrowers with negative home equity, while modifications which affect only liquidity yield substantial reductions in default. Thus, under plausible assumptions, we uncover the opportunity for a Pareto improvement: re-designing mortgage assistance policies to maximize liquidity provision can benefit borrowers, lenders, and taxpayers. Finally, we demonstrate that these empirical consumption and default patterns can arise from a simple model where underwater borrowers are liquidity constrained.

The finding of a zero marginal propensity to consume (MPC) out of housing wealth for borrowers with negative home equity has become a building block for subsequent macroeconomic modeling. The model in our paper shows that while highly leveraged borrowers with positive home equity do have high MPCs (consistent with the prior literature), the tight link between housing wealth and consumption breaks down when borrowers are underwater. Home equity gains do not relax borrowing constraints for underwater borrowers and therefore do not affect consumption. Thus, there is a wedge between the MPC out of cash and the MPC out of housing wealth for underwater borrowers. Since the initial circulation of our paper in fall 2015, modern models of consumption and housing wealth have incorporated this wedge. For example, three papers which are published or forthcoming in the *Review of Economic Studies* (Berger et al. 2018, Guren et al. 2021, and Boar et al. 2017) demonstrate that their models can reproduce the zero MPC fact as a test of their models' validity.

This paper has been recognized in public-facing settings. A recent review article of the literature on mortgage default by Foote and Willen (2018) reproduces the figure from our paper which shows that wealth-focused modifications fail to reduce mortgage default. Our paper also received the 2021 TIAA Paul A. Samuelson Award for outstanding scholarly research that can help increase Americans' lifelong financial well-being.

The second paper, “**Why Do Borrowers Default on Mortgages?**” (revise and resubmit, *Quarterly Journal of Economics*), turns our focus from policy effectiveness to measuring the quantitative importance of alternative theories of mortgage default. There are three leading theories of mortgage default: (I) strategic default (driven by negative equity when a home has become a bad financial investment), (II) cash-flow default (driven by negative life events such as the loss of a job, illness, or divorce), and (III) double-trigger default (where both negative triggers are necessary). Housing economists have been struggling to distinguish between these theories for over thirty years in part because of a data problem: the administrative data which capture mort-

gage payments do not capture information on negative life events.¹

This paper attempts to make progress on this longstanding question with new data and an alternative research design. The new data come from linking mortgage servicing records to a measure of income using bank account data from JPMorganChase. The new method relies on the observation that there is a large set of mortgage defaults which unambiguously lack a strategic motive: defaults by borrowers with *positive* home equity. Under plausible assumptions, the income of defaulters with positive home equity provides a benchmark for what it would look like in the data if no negative equity defaults were strategic. We find empirically that the income loss before default of borrowers with negative home equity is very close to the no-strategic-default benchmark from borrowers with positive equity. Quantitatively, our estimates imply that only about 6% of underwater defaults are strategic (theory I), about an order of magnitude less than previously thought. Thus, we find that cash flow and double-trigger defaults (theories II and III) are more important than previously thought.

This finding is surprising from the perspective of standard default models because these models assume that strategic motives dominate for deeply underwater borrowers. They predict little income drop among deeply underwater defaulters, which is inconsistent with our empirical results. However, we show that an extension of the standard model where borrowers have a high private cost of defaulting can reconcile the two. This finding is useful because endogenous borrower default decisions play a central role in a wide class of macro finance models. Our results suggest that realistic models will feature forces that necessitate large income drops before default, even for deeply indebted borrowers. Some recent models have adopted these features, matching the empirical patterns that we document (Campbell et al. 2021; Chodorow-Reich et al. 2021).

The paper received the best paper award at the American Real Estate and Urban Economics Association National Meeting in 2021. In both of these papers, Pascal Noel and I contributed equally to the empirical analysis, the modeling, and the writing.

One shared conclusion from these two mortgage papers is that homeowners do not treat their homes like a financial asset. They act as if defaulting is costly, and for the most part only do so when a negative event happens in their financial life that reduces the cash available to make their payments. This in turn implies that providing short-term cash to distressed borrowers can effectively and cheaply prevent many defaults, providing a blueprint for maximizing the amount of support that can be provided to distressed households during difficult times. The policy response to the Covid-19 crisis has been consistent with this lesson, focusing on widespread immediate liquidity

¹The Panel Study of Income Dynamics has data on income and consumption for 244 borrowers who default on their mortgage in the Great Recession. In the paper we provide an extended discussion of why such data, although useful, are not definitive for measuring the prevalence of strategic default.

provision via mortgage forbearance rather than more drawn-out liquidity provision via mortgage modification. Emerging research suggests that this policy has been effective at preventing defaults (Cherry et al. 2021).

2 Income and Consumption Smoothing

In a second line of work, Pascal Noel and I study how changes in income affect consumption. The first paper in this line of work is “**Consumer Spending During Unemployment: Positive and Normative Implications**” (2019, *American Economic Review*, lead article). While the mortgage papers discussed above seek to quantify the importance of liquidity versus wealth, this paper zooms in on liquidity to understand why liquidity matters. This paper studies the monthly evolution of spending during unemployment using the high-frequency Chase bank account data. It has not been possible to measure the monthly evolution of spending in existing public-use survey datasets.

One particularly interesting feature of unemployment from a theoretical perspective is the exhaustion of unemployment insurance benefits, which is a predictable decline in income. The decline is predictable because in most US states, unemployment benefits last exactly six months. We use this feature to formulate a new test between two broad classes of consumption models. A model with rational consumers predicts that households will gradually cut spending in advance of benefit exhaustion so as to avoid a sharp drop in consumption when benefits do expire. In contrast, leading behavioral models predict that households will not cut spending until benefits run out. The test’s focus on *predictable declines* in income differentiates it from many prior theoretical and empirical papers focused on *contemporaneous increases* in income (the so-called “helicopter drops”). Spending behavior in response to an increase does not distinguish between rational and behavioral models.

The paper’s key empirical finding is that nondurable spending is nearly constant during benefit receipt and then drops sharply by 12 percent in the month that benefits are exhausted. Thus, in the context of spending patterns during unemployment, our findings reject the rational model, but are consistent with the behavioral model. The key intuition behind the new test is that liquidity constraints in a rational model cannot explain why households would fail to *save* in anticipation of a predictable decline in income. Instead, households must not be perfectly forward looking, as in behavioral models with present-biased or myopic behavior.

Additional empirical findings reinforce the conclusion that even people who are anticipating an income decline—and therefore have the most to gain from smoothing consumption—do not smooth consumption in the way that is predicted by the rational model with liquidity constraints. In New Jersey, unemployment insurance (UI) payments begin quickly, such that many workers receive their last paycheck and their first UI check in the same week. This induces a sawtooth pattern in average income around onset and spending fol-

lows the same sawtooth pattern. This suggests that much of the extra check is spent immediately, even though households know their income is likely to fall sharply in the following month. As further evidence of spending patterns consistent with behavioral models among the unemployed, Gerard and Naritomi (2021) replicate both the sawtooth pattern at onset and the drop at exhaustion using data from Brazil with a different, non-bank-based measure of nondurable spending.

The paper has also contributed to the consumption literature in at least two ways. First, it pioneered a novel method for testing consumption models by studying high-frequency consumption behavior around a predictable decline in income. Three new papers adopt our approach of using predictable income declines to study consumption models: Baugh et al. (2021), Jorring (2020), and Andersen et al. (2019).² Second, the latest generation of macroeconomic models of consumption seek to match the real-world sensitivity of consumption to income. Examples of recent macro consumption models that target this paper’s estimates include Kekre (2021), Ilut and Valchev (2020), and Laibson et al. (2021).³

The paper also analyzes the normative implications of these spending patterns. We evaluate these implications using a generalization of the canonical Baily-Chetty formula for the optimal level of unemployment insurance benefits. We show that the welfare gains from improved consumption-smoothing due to extending the duration of UI benefits are four times as large as from raising the level of UI benefits. The intuition is that welfare can be improved by targeting assistance to a household’s lowest-liquidity state. In this paper, Pascal Noel and I contributed equally to the empirical analysis, the modeling, and the writing.

My next paper in this line of work is titled “**Wealth, Race, and Consumption Smoothing of Typical Income Shocks**” (also coauthored with Damon Jones, Fiona Greig, Chris Wheat, and Diana Farrell).⁴ This paper uses similar data to the previous paper, but with two data improvements that enable us to answer two fundamental questions in the consumption literature. First, most modern studies in the consumption literature instrument for income using *unusual* windfall income, such as stimulus checks and lottery winnings. However, such “helicopter drops” are quite rare. The use of such research designs may therefore lead to biased estimates of consumption sensitivity if people use a mental accounting heuristic when deciding how to spend

²Baugh et al. is published in the *American Economic Review*, Jorring is revise and resubmit at the *Journal of Finance*, and Andersen et al. is revise and resubmit at the *Review of Economics and Statistics*. Our approach is related to a prior literature which tested for asymmetry in the consumption response to increases in income and decreases in income; this approach was pioneered by Altonji and Siow (1987) and the results are summarized in Jappelli and Pistaferri (2010).

³Kekre is revise and resubmit at the *Review of Economic Studies*, Ilut and Valchev is revise and resubmit at the *Quarterly Journal of Economics*, and Laibson et al. is revise and resubmit at the *Quarterly Journal of Economics*.

⁴This is a working paper which I have not yet submitted to any journal.

their unusual windfalls. We develop a new instrument for *typical* labor income shocks based on variation in coworker pay. Second, we link the bank account data to publicly-available voter files which include the voter’s self-reported race. This new dataset is orders of magnitude larger than previously-available datasets used to study household finance and race, enabling our study to have excellent statistical precision regarding questions about racial inequality.

We find that consumption is sensitive to typical labor income shocks, suggesting that month-to-month income volatility has meaningful economic consequences for most families. We also find that consumption sensitivity is substantially higher for black and Hispanic households than for white households. Nearly all of this differential pass-through of income to consumption is explained, in a statistical sense, by differences in liquid wealth. Thus, we document that the racial wealth gap amplifies inequality because black and Hispanic households are less able to smooth consumption. In this paper, Pascal Noel and I contributed most to the empirical analysis and the writing, while Damon Jones contributed most to the modeling.

In ongoing work motivated by these two prior papers, I am developing a novel method to measure the willingness-to-pay (WTP) for unemployment insurance. The substantial consumption drops during unemployment (particularly after benefit exhaustion) and the high degree of sensitivity of consumption to typical income shocks suggests that there might be substantial demand among workers for additional insurance. The existing literature uses a number of *indirect* methods to measure the WTP for insurance and finds widely-varying estimates. Together with Pascal Noel and Jon Gruber, I plan to *directly* measure this WTP by selling small-dollar supplemental unemployment insurance to US workers. We have a pilot in the field now and have received a grant to fund the full experiment.

My most recent work studies the economics of consumption, saving and unemployment in the Covid-19 pandemic. Together with Pascal Noel and Joe Vavra, I have written two brief descriptive papers and one longer causal paper examining the economic policy response to Covid-19 in the US. As part of the CARES Act, the US Congress legislated a temporary \$600 supplement to weekly unemployment benefits, which was the largest increase in unemployment benefits in U.S. history. In “**US Unemployment Insurance Replacement Rates During the Pandemic**” (2020 *Journal of Public Economics*), I quantify the distribution of benefit replacement rates. The median statutory replacement rate was 145% and three-in-four workers had replacement rates above 100%. As part of the paper, we released an open-source benefit calculator which has been used by 8 subsequent papers.

Once policymakers understood just how high replacement rates were, they wanted to understand the economic consequences of expanded benefits. Some policymakers and business owners believed that the expansion would be a major disincentive to work, while others disagreed, arguing that the unique circumstances would make the disincentive smaller than usual. In “**Spending and Job Search Impacts of Expanded Unemployment Benefits: Ev-**

idence from Administrative Micro Data” (also coauthored with Fiona Greig, Daniel Sullivan, and Maxwell Liebeskind), we study the consequences of these increases in benefits for spending and job-finding.⁵

We use several identification strategies to study the effect of UI during this time period. At the start of the pandemic, many claimants experienced substantial delays between when they lost their job and when they first received UI benefits. We provide evidence that the length of delays among workers who ultimately received benefits is a plausible instrument for how liquidity from UI affects spending. To measure the effects of UI on job-finding, we study the effects of the lapse and subsequent reinstatement of UI supplements using an interrupted time-series design and a dose-response difference-in-differences design.

We find large effects on spending and very small effects of job-finding from UI during this time period. The spending effects of the supplement are large, with a one-month MPC of 43 cents. This estimate is larger than what would be predicted by existing buffer stock models or prior empirical estimates. Second, we find that the duration elasticity to expanded benefits during this time period is only 0.10. This estimate is smaller than nearly all of the duration elasticity estimates in the existing literature. A structural model which matches the empirical evidence shows that temporary UI supplements could be a useful policy tool in future recessions (even “standard” recessions not caused by a pandemic). For the pandemic paper series, I have contributed most to the empirical analysis, Joe Vavra has contributed most to the modeling, and Pascal Noel has contributed to all aspects of the papers.

The dramatic ad hoc expansion of unemployment benefits during the pandemic has also led to a re-examination of whether such expansions should be automated. In **“Should We Have Automatic Triggers for Unemployment Benefit Duration And How Costly Would They Be?”** (forthcoming *AEA Papers & Proceedings*) with Jon Gruber and Gabriel Chodorow-Reich, I model automatic trigger policies for unemployment insurance. We find that ex post policy for the 2001 and 2007-2009 recessions performed similarly in terms of cost and targeting to proposals for automatic trigger policies.

Finally, the pandemic and the economic policy response to it led to dramatic changes in spending and savings behavior, which we document in **“Initial Impacts of the Pandemic on Consumer Behavior: Evidence from Linked Income, Spending, and Savings Data”** (2020 *Brookings Papers on Economic Activity* also coauthored with Natalie Cox, Erica Deadman, Diana Farrell, Fiona Greig, and Arlene Wong). The paper has two main results. First, it shows that the spending of low-income households recovered to their pre-pandemic level within six weeks of the declaration of national emergency. Second, it shows that the level of checking accounts rose in the wake of the pandemic, with the largest relative increase for low-income households. It argues that aggressive fiscal support likely facilitated both of these patterns.

⁵This is a working paper which we have not yet submitted to any journal.

In ongoing work motivated by these three prior papers, I plan to study the effects of high liquidity on the US economy. Extending the time-series of checking account balances we first produced in the context of the paper discussed above, we find that liquid balances have remained elevated through at least December 2021. Elevated balances are important because they may affect both the product market through higher-than-usual aggregate demand and the labor market through higher-than-usual reservation wages. Together with Pascal Noel, Christina Patterson, Joe Vavra, and Fiona Greig, I am working to develop an identification strategy to capture the causal effect of liquidity on the product market and the labor market. Furthermore, we are working to understand forces other than liquidity-induced high reservation wages that may be able to explain low labor force participation in the wake of the pandemic. The first step in this early-stage work is examining the budget constraint of the “missing workers” in order to better understand how their household finances have evolved despite the loss of labor income.

3 Economic Opportunity

Before starting my research on liquidity and wealth, I completed a number of other papers on policies to promote economic opportunity. My most cited paper from this agenda is “**Why has Regional Income Convergence in the US Declined?**” (2017, *Journal of Urban Economics*, coauthored with Daniel Shoag). The paper makes two contributions to the literature on urban economics. First, we document that there has been a redirection in the migration of low-skilled workers. While high-skilled workers have always moved to productive, high-income places (such as coastal cities) within the United States, low-skilled workers instead now move *away* from such places. In particular, they move to places which offer them high real wages net of housing costs. Second, we ask why have low-skill migration patterns changed? While the prior literature has focused primarily on changes in the wage structure, we document the role of another force: high housing prices that disproportionately discourage low-skill workers. Using a new panel measure of housing supply restrictions, we show that an increase in restrictions can explain the rise in housing prices, the redirection of migration, and the decline of income convergence.

In addition to citations, the paper has also been discussed by policymakers and in the press. The paper has been cited by several documents from the Obama Administration, including their “Housing Development Toolkit”, by Secretary Ben Carson in his nomination testimony to serve as Secretary of Housing and Urban Development (HUD), and has been on the front page of the *New York Times* twice.

In “**The Incidence of Housing Voucher Generosity**” (2018, *American Economic Journal: Economic Policy*, coauthored with Rob Collinson), we study when housing vouchers accrue to landlords or low-income tenants. Housing voucher recipients in the US typically pay their landlord a fixed amount

based on their income and the government pays the rest of the rent, up to a rent ceiling. We evaluate a policy which raised the generosity of the voucher program rent ceiling everywhere across a metro area, and a pilot program in Dallas which linked rent ceilings to ZIP code-level rents. The first policy resulted in landlords' raising rents with little improvement in unit quality, while the Dallas policy enabled voucher recipients to move to better neighborhoods without any change in the cost of the program to the government. We conclude that ZIP code-specific price ceilings are an effective policy for promoting mobility to higher-quality neighborhoods. This paper was timely because we wrote it when HUD was deciding whether to expand the ZIP code-specific price ceilings policy nationally. Ultimately, HUD expanded the Dallas pilot into a national policy and cited our paper as support for this decision in the Federal Register filing that proposed the expansion.

In “**The Decline, Rebound, and Further Rise in SNAP Enrollment: Disentangling Business Cycle Fluctuations and Policy Changes**” (2018, *American Economic Journal: Economic Policy*, coauthored with Jeff Liebman), we show that changes in unemployment can explain most of the trends in food stamp enrollment over the past 20 years. In particular, we show that the severity of the Great Recession and not Obama-era policy changes were primarily responsible for the dramatic increase in SNAP enrollment.

4 Permutation Tests and Research Credibility

Administrative datasets with large numbers of observations provide both opportunities for new research designs and new pitfalls for researchers. Much of my research is connected to unemployment benefits and a number of recent studies have used a Regression Kink (RK) design to study the impact of unemployment benefits on the duration of unemployment. Reading these studies led me to realize that there is a problem with RK designs more broadly, namely that they are highly sensitive to nonlinearity in the underlying relationship between the outcome and the assignment variable. In “**A Permutation Test for the Regression Kink Design**” (2018, *Journal of the American Statistical Association* coauthored with Simon Jaeger), as an alternative to standard inference, we propose that researchers construct a distribution of placebo estimates in regions with and without a policy kink and use this distribution to gauge statistical significance. There are 24 papers with an RK design which have used this permutation test, including three published in top-5 economics journals.

References

- Altonji, J. G. and Siow, A. (1987). Testing the Response of Consumption to Income Changes with (Noisy) Panel Data. *The Quarterly Journal of Economics*, 102(2):293–328.
- Andersen, H. Y., Ludvig Bech, S., and De Stefani, A. (2019). Mortgage Choice and Expenditure over the Lifecycle: Evidence from Expiring Interest-Only Loans. SSRN Scholarly Paper ID 3496842, Social Science Research Network, Rochester, NY.
- Baugh, B., Ben-David, I., Park, H., and Parker, J. A. (2021). Asymmetric Consumption Smoothing. *American Economic Review*, 111(1):192–230.
- Berger, D., Guerrieri, V., Lorenzoni, G., and Vavra, J. (2018). House Prices and Consumer Spending. *The Review of Economic Studies*, 85(3):1502–1542.
- Boar, C., Gorea, D., and Midrigan, V. (2017). Liquidity Constraints in the U.S. Housing Market. Technical Report w23345, National Bureau of Economic Research, Cambridge, MA.
- Campbell, J. Y., Clara, N., and Cocco, J. F. (2021). Structuring Mortgages for Macroeconomic Stability. *The Journal of Finance*, 76(5):2525–2576. _eprint: <https://onlinelibrary.wiley.com/doi/pdf/10.1111/jofi.13056>.
- Cherry, S. F., Jiang, E. X., Matvos, G., Piskorski, T., and Seru, A. (2021). Government and Private Household Debt Relief during COVID-19. Working Paper 28357, National Bureau of Economic Research. Series: Working Paper Series.
- Chodorow-Reich, G., Ganong, P., and Gruber, J. (2022). Should We Have Automatic Triggers for Unemployment Benefit Duration And How Costly Would They Be? Working Paper 29703, National Bureau of Economic Research. Series: Working Paper Series.
- Chodorow-Reich, G., Guren, A. M., and McQuade, T. J. (2021). The 2000s Housing Cycle With 2020 Hindsight: A Neo-Kindlebergerian View. Working Paper 29140, National Bureau of Economic Research. Series: Working Paper Series.
- Collinson, R. and Ganong, P. (2018). How Do Changes in Housing Voucher Design Affect Rent and Neighborhood Quality? *American Economic Journal: Economic Policy*, 10(2):62–89.
- Cox, N., Ganong, P., Noel, P., Vavra, J., Wong, A., Farrell, D., Greig, F., and Deadman, E. (2020). Initial Impacts of the Pandemic on Consumer Behavior: Evidence from Linked Income, Spending, and Savings Data. *Brookings Papers on Economic Activity*, 2020(2):35–82. Publisher: Brookings Institution Press.

- Footnote, C. L. and Willen, P. S. (2018). Mortgage-Default Research and the Recent Foreclosure Crisis. *Annual Review of Financial Economics*, 10(1):59–100.
- Ganong, P., Greig, F., Liebeskind, M., Noel, P., Sullivan, D. M., and Vavra, J. (2021). Spending and Job Search Impacts of Expanded Unemployment Benefits: Evidence from Administrative Micro Data. *BFI working paper*.
- Ganong, P. and Jager, S. (2018). A Permutation Test for the Regression Kink Design. *Journal of the American Statistical Association*, 113(522):494–504. Publisher: Taylor & Francis _eprint: <https://doi.org/10.1080/01621459.2017.1328356>.
- Ganong, P., Jones, D., Noel, P. J., Greig, F. E., Farrell, D., and Wheat, C. (2020a). Wealth, Race, and Consumption Smoothing of Typical Income Shocks. Working Paper 27552, National Bureau of Economic Research. Series: Working Paper Series.
- Ganong, P. and Liebman, J. B. (2018). The Decline, Rebound, and Further Rise in SNAP Enrollment: Disentangling Business Cycle Fluctuations and Policy Changes. *American Economic Journal: Economic Policy*, 10(4):153–176.
- Ganong, P. and Noel, P. (2019). Consumer Spending during Unemployment: Positive and Normative Implications. *American Economic Review*, 109(7):2383–2424.
- Ganong, P. and Noel, P. (2020a). Liquidity vs. Wealth in Household Debt Obligations: Evidence from Housing Policy in the Great Recession. *American Economic Review*.
- Ganong, P., Noel, P., and Vavra, J. (2020b). US unemployment insurance replacement rates during the pandemic. *Journal of Public Economics*, 191:104273.
- Ganong, P. and Noel, P. J. (2020b). Why Do Borrowers Default on Mortgages? A New Method For Causal Attribution. Working Paper 27585, National Bureau of Economic Research. Series: Working Paper Series.
- Ganong, P. and Shoag, D. (2017). Why has regional income convergence in the U.S. declined? *Journal of Urban Economics*, 102(C):76–90. Publisher: Elsevier.
- Gerard, F. and Naritomi, J. (2021). Job Displacement Insurance and (the Lack of) Consumption-Smoothing. *American Economic Review*, 111(3):899–942.
- Guren, A. M., McKay, A., Nakamura, E., and Steinsson, J. (2021). Housing Wealth Effects: The Long View. *The Review of Economic Studies*, 88(2):669–707.

- Ilut, C. L. and Valchev, R. (2020). Economic Agents as Imperfect Problem Solvers. Working Paper 27820, National Bureau of Economic Research. Series: Working Paper Series.
- Jappelli, T. and Pistaferri, L. (2010). The Consumption Response to Income Changes. *Annual Review of Economics*, 2(1):479–506.
- Jorring, A. (2020). Financial Sophistication and Consumer Spending. *Working Paper*.
- Kekre, R. (2021). Unemployment Insurance in Macroeconomic Stabilization. SSRN Scholarly Paper ID 3795662, Social Science Research Network, Rochester, NY.
- Laibson, D., Maxted, P., and Moll, B. (2021). Present Bias Amplifies the Household Balance-Sheet Channels of Macroeconomic Policy. Working Paper 29094, National Bureau of Economic Research. Series: Working Paper Series.