

NBER Household Finance Working Group Small Grants Proposal by Peter Ganong on Out-of-Pocket Health Spending

A recent and growing literature has documented that people are sensitive – and perhaps “too” sensitive – to small costs when making decisions about health care utilization. Can liquidity constraints explain why medical utilization is sensitive to small costs? I propose to answer this question in a joint project with Pascal Noel, a current NBER Aging and Health Pre-doctoral Fellow, using anonymized bank account records from JPMorganChase Institute. To the best of our knowledge, this is the first dataset to bring together detailed measures of out-of-pocket medical spending with high-frequency data on a household’s financial circumstances. In this proposal, we describe two research designs which use variation from unexpected non-medical expenses and from paycheck schedules to quantify the impact of liquidity constraints on out-of-pocket health spending. Preliminary results suggest that liquidity constraints could play a substantial role in explaining cost sensitivity. As we develop this project, we hope to understand in particular whether liquidity constraints explain underutilization of high-value medical care.

These data are very messy and we are applying for funds to hire a research assistant for help with cleaning the data. In particular, constructing the out-of-pocket medical expenditure measure from bank spending data will be a labor-intensive process.

Literature

A recent meta-analysis by Gadkari and McHorney (2010) estimated that 15% of patients will not fill their first prescription. Even more patients fail to renew their prescriptions. In related work, McHorney (2009) has identified three separate reasons for low adherence: (1) cost, (2) commitment (“will the drug improve my health today?”), and (3) concern (“will the drug have negative side effects?”). Small costs may be an impediment to adherence either if financial constraints made the cost of drug unaffordable (explanation #1) or people prescribed the drug were deterred by a small cost because they saw little benefit in taking it (explanation #2). Our data are unable to speak to the role of explanation #3 (“concerns”).

Low adherence in filling prescriptions is one example of how small costs can affect medical utilization. Baicker et al. (2015) describe several cases where small increases in copays led to decreases in utilization of valuable care. In one particularly striking example, the elimination of prescription copays after heart attacks led to a 4-6 percentage point increase in medication adherence and an 0.3 percentage point decrease in mortality from cardiovascular causes (Choudhry et al. 2011). In another recent study of highly-paid workers (median salary \$137,000) with generous health coverage, the introduction of a \$3,500 deductible led to a sharp decrease in medical utilization (Brot-Goldberg et al. 2015), with equal reductions in spending on high-value and low-value care.

Data

Our contribution to this literature will be to quantify the role of household financial constraints in medical cost sensitivity using new data from the JPMorgan Chase Institute (JPMCI). In prior work, we used the JPMCI data to examine the timepath of spending during unemployment (Ganong and Noel (2015)). These data have three strengths relative

to survey data such as the Medical Expenditure Panel Survey. First, and most importantly, we have data on income and spending measured using bank account flows inside the same dataset. Second, we have spending data at a very high frequency; in prior work we examined monthly spending and in this project we can study daily spending if needed. Third, we have strong statistical power, with bank account data for about 30 million customers.

The JPMCI data can be mined to capture out-of-pocket health expenditures in three ways: (1) medical copays made by debit and credit card (42% of copays are done using cards), (2) hospital bills and medical copays paid using electronic transfers and (3) drug-store purchases using debit and credit cards. There are seventeen different medical-related categories on debit and credit cards listed in the attached Table 1. We are working to develop ways to disentangle spending on high-value and low-value medical care. One example of low-value medical care might be getting an MRI. The data also include access to credit bureau records to measure borrowing for about 40% of the sample.

Research Designs and Preliminary Evidence

For our first research design, we will estimate the impact of an unexpected expense which lowers disposable monthly income on total spending (aside from the unpredicted expense) and health spending specifically. Our current plan is to use auto repairs as the unexpected expense, although we are still exploring other sources of identification. Our basic empirical specification will be

$$\Delta c_{health} = \alpha + \beta \Delta y_{auto-repair} + \varepsilon$$

If we find that $\hat{\beta} > 0$ this suggests liquidity is important in determining health expenditures. We are particularly interested in the change in spending on prescription drugs, because most prescription drugs need to be taken regularly to be effective. If fluctuations in disposable household income depress spending on drugs, this would be particularly strong evidence that liquidity constraints had serious negative welfare consequences.

For our second research design, we will study how healthcare spending varies relative to paycheck arrival. Households have higher expenditures immediately after a paycheck arrives (Carvalho et al. (2015)). Some low-income households have monthly cycles in their calorie consumption as well (Shapiro (2005), Mastrobuoni and Weinberg (2009)). For our study, we will estimate if health spending is higher immediately after the arrival of a paycheck. Our regression specification will be

$$c_{health} = \alpha + \beta DaysSincePaycheck + \varepsilon$$

To instrument for days since paycheck, we will find people working for employers which pay biweekly. Again, pharmaceutical spending is of particular interest. Assuming that the dates at which illness occurs are uniformly distributed, then a concentration of pharmaceutical purchases after paycheck arrival suggests imperfect adherence due to liquidity concerns.

In our prior work on the timepath of spending during unemployment, we found that spending on medical copayments was very sensitive to declines in income caused by unemployment. Specifically, we found that the fraction of households making medical copayments fell by 9% (from 24.6% to 22.4%) in a two-month period at the onset of unemployment and fell by an additional 11% (from 22.2% to 19.7%) in a two-month period at the exhaustion of UI benefits. Both of these estimates are statistically significant at the 1% level. These drops were among the categories with the largest declines in spending.

Itemized Budget	
<p>Full-time research assistant for 6 months. This person will work with transaction-level bank account data to construct detailed measures of out-of-pocket health expenditures. Examples include:</p> <ul style="list-style-type: none"> • pharmaceutical purchases • diagnostic imaging and tests • outpatient doctor visits • urgent care and emergency care • hospital care 	\$20,000

References

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- Brot-Goldberg, Z. C., Chandra, A., Handel, B. R., and Kolstad, J. T. (2015). What Does a Deductible Do? The Impact of Cost-Sharing on Health Care Prices, Quantities, and Spending Dynamics. Working Paper 21632, National Bureau of Economic Research.
- Carvalho, L., Meier, S., and Wang, S. (2015). Poverty and Economic Decision-Making: Evidence from Changes in Financial Resources at Payday. *American Economic Review*, forthcoming.
- Choudhry, N. K., Avorn, J., Glynn, R. J., Antman, E. M., Schneeweiss, S., Toscano, M., Reisman, L., Fernandes, J., Spettell, C., Lee, J. L., Levin, R., Brennan, T., and Shrank, W. H. (2011). Full Coverage for Preventive Medications after Myocardial Infarction. *New England Journal of Medicine*, 365(22):2088–2097.
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- Ganong, P. and Noel, P. (2015). How Does Unemployment Affect Consumer Spending? *working paper*.
- Mastrobuoni, G. and Weinberg, M. (2009). Heterogeneity in Intra-Monthly Consumption Patterns, Self-Control, and Savings at Retirement. *American Economic Journal: Economic Policy*, 1(2):163–189.
- McHorney, C. A. (2009). The Adherence Estimator: a brief, proximal screener for patient propensity to adhere to prescription medications for chronic disease. *Current Medical Research and Opinion*, 25(1):215–238.
- Shapiro, J. M. (2005). Is there a daily discount rate? Evidence from the food stamp nutrition cycle. *Journal of Public Economics*, 89(2–3):303–325.

PETER GANONG
scholar.harvard.edu/ganong
ganong@fas.harvard.edu

HARVARD UNIVERSITY

Placement Director: David Cutler	DCUTLER@HARVARD.EDU	617-496-5216
Placement Director: Oliver Hart	OHART@HARVARD.EDU	617-496-3461
Graduate Administrator: Brenda Piquet	BPIQUET@FAS.HARVARD.EDU	617-495-8927

Office Contact Information

1805 Cambridge St., Littauer Center
Cambridge, MA 02138
617-763-9667

Undergraduate Studies:

A.B. Economics and Math, Harvard, *magna cum laude*, Phi Beta Kappa, 2009

Graduate Studies:

Harvard University, 2010 to present
Ph.D. Candidate in Economics
Thesis Title: Essays in Labor and Public Economics
Expected Completion Date: June 2016

References:

Professor Lawrence Katz, Chair
Littauer Center 224, Cambridge, MA
lkatz@harvard.edu, 617- 495-5148

Professor David Laibson
Littauer Center M-12, Cambridge, MA
dlaibson@harvard.edu 617-496-3402

Professor Jeffrey Liebman
Taubman 318, Cambridge, MA
jeffrey_liebman@harvard.edu 617-495-8518

Teaching and Research Fields:

Primary fields: Labor Economics, Public Economics

Secondary fields: Macroeconomics, Econometrics

Work Experience

2014-2015 City of Boston, Special Assistant for Data Analytics

2009-2010 White House Council of Economic Advisers, Research Assistant

Professional Activities

Presentations

“The Incidence of Housing Voucher Generosity” NBER Summer Institute, Society of Labor Economists, MDRC, HUD

“Why Has Regional Income Convergence in the U.S. Declined?”: NBER Summer Institute, NYU, Dartmouth, Urban Economics Association, American Law and Economics Association

“Criminal Rehabilitation, Incapacitation, and Aging”: Bonn Workshop on Economics of Crime

Referee Service

Quarterly Journal of Economics, Journal of Urban Economics, Economic Inquiry, American Economic Journal: Economic Policy

Honors, Scholarships, and Fellowships:

2015-2016	NBER Pre-Doctoral Fellowship on the Economics of an Aging Workforce (\$25,000)
2015	Hirtle Callaghan Prize (\$20,000 with Pascal Noel)
2015	Lab for Economic Applications and Policy (\$7,500, with Pascal Noel)
2014-2015	Taubman Fellow at City of Boston (\$30,000)
2014	Washington Center for Equitable Growth (\$15,000, with Pascal Noel)
2012-2013	NBER Pre-Doctoral Fellow in Aging and Health (\$21,600)
2013	Bradley Fellow (\$5,000)
2012	Meyer Fellow at Joint Center for Housing Studies (\$5,000)

Job Market Paper

“How Does Unemployment Affect Consumer Spending?” with Pascal Noel

We study the spending of unemployed individuals using anonymized data on 235,000 checking accounts that received a direct deposit of unemployment insurance (UI) benefits. The account holders are similar to a representative sample of U.S. UI recipients in terms of income, spending, assets, and age.

Unemployment causes a large but short-lived drop in income, generating a need for liquidity. At onset of unemployment, monthly spending drops by 6%, and work-related expenses explain one-quarter of the drop. Spending declines by less than 1% with each additional month of UI receipt. When UI benefits are exhausted, spending falls sharply by 12%.

Unemployment is a good setting to test alternative models of consumption because the change in income is large. We find that families do little self-insurance before or during unemployment, in the sense that spending is very sensitive to monthly income. We compare the spending data to three benchmark models; the drop in spending from UI onset through exhaustion fits the buffer stock model well, but spending falls much more than predicted by the permanent income model and much less than the hand-to-mouth model. We identify two failures of the buffer stock model relative to the data – it predicts higher assets at onset, and it predicts that spending will evolve smoothly around the largely predictable income drop at benefit exhaustion.

Research Papers – Published Or Revise and Resubmit:

“A Permutation Test and Estimation Alternatives for the Regression Kink Design” with Simon Jaeger
Journal of American Statistical Association, revise and resubmit, second round

The Regression Kink (RK) design is an increasingly popular empirical method for causal inference. Analogous to the Regression Discontinuity design, which evaluates discontinuous changes in the *level* of an outcome variable with respect to the running variable at a point at which the *level* of a policy changes, the RK design evaluates discontinuous changes in the *slope* of an outcome variable with respect to the running variable at a kink point at which the *slope* of a policy with respect to the running variable changes. We document empirically that RK estimates are highly sensitive to nonlinearity in the underlying relationship between the outcome and the assignment variable. 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. Under the assumption that the location of the kink point is random, this permutation test has exact size in finite samples for testing a sharp null hypothesis of no effect of the policy on the outcome. In simulation studies with policy kinks, we find that statistical significance based on conventional standard errors may be spurious. In contrast, our permutation test has exact size even in the presence of non-linearity.

“The Incidence of Housing Voucher Generosity” with Rob Collinson

American Economic Journal: Economic Policy, revise and resubmit

What is the incidence of housing vouchers? 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 consider a policy that raises the generosity of the rent ceiling everywhere, which is equivalent to

an income effect, and a policy which links generosity to local unit quality, which is equivalent to a substitution effect. Using data on the universe of housing vouchers and quasi-experimental variation from HUD policy changes, we analyze the incidence of these policies. Raising the generosity of the rent ceiling everywhere appears to primarily benefit landlords, who receive higher rents with very little evidence of medium-run quality improvements. Setting ZIP code-level rent ceilings causes rent increases in expensive neighborhoods and decreases in low-cost neighborhoods, with little change in aggregate rents. The ZIP code policy improves neighborhood quality as much as other, far more costly, voucher interventions.

“The Decline, Rebound, and Further Rise in SNAP Enrollment: Disentangling Business Cycle Fluctuations and Policy Changes” with Jeff Liebman

American Economic Journal: Economic Policy, revise and resubmit, second round

1-in-7 Americans received benefits from the Supplemental Nutrition Assistance Program in July 2011, an all-time high. We analyze changes in SNAP enrollment over the past two decades. Business cycle fluctuations correlate strongly with SNAP take-up, with a sustained one percentage point increase in the unemployment rate raising SNAP enrollment by 18 percent. Policy changes had different impacts in different periods. From 1994 to 2001, coincident with welfare reform, take-up fell from 75 percent to 54 percent of eligible people, with this decline attributable to both the strong economy and to welfare reform. The take-up rate then rebounded, and, following several policy changes to improve program access, stabilized at 69 percent in 2007. At least half of the increase in take-up during this period was policy-driven. Finally, take-up rose dramatically in the Great Recession, reaching 87 percent in 2011. We find that changes in local unemployment can explain 73 percent the increase in enrollment during the Great Recession and temporary rule changes that are triggered when unemployment is high can explain another 10 percent. Permanent state-level policy expansions can explain only 8 percent. Thus most of the recession-era increase in SNAP enrollment was the result of the program’s automatic stabilizer features.

“Criminal Rehabilitation, Incapacitation, and Aging” (undergraduate thesis)

American Law and Economics Review Fall 2012, 14(2): 391-424

In April 1993, Georgia instituted new parole guidelines that led to longer prison terms for parole-eligible offenders. This paper shows that an extra year of prison reduces the three-year recidivism rate by 6 percentage points (14%) and that the benefits of preventing this crime are likely outweighed by the costs of this additional incarceration. I develop a new econometric framework to jointly estimate the effects of rehabilitation, incapacitation, and aging in reducing crime. Estimates of incapacitation effects using existing methodologies are biased upward by at least a factor of 2 because they focus on a short time horizon.

Research Papers in Progress

“Why Has Regional Income Convergence in the U.S. Declined?” with Daniel Shoag

The past thirty years have seen a dramatic decrease in the rate of income convergence across states and in population flows to wealthy places. These changes coincide with (1) an increase in housing prices in productive areas, (2) a divergence in the skill-specific real returns to living in productive places, (3) a redirection of low-skilled migration and (4) diminished human capital convergence due to migration. We develop a model where falling housing supply elasticity and endogenous labor mobility generates these patterns. Using a new panel measure of housing supply regulations, we demonstrate the importance of this channel. Income convergence continues in less-regulated places, while it has stopped in more-regulated places.

“How Well Do Online Job Postings Reflect Labor Demand?”

“Debt Overhang and Housing Policy in the Great Recession”, with Pascal Noel