NBER Household Finance Working Group
Research Proposal 2013

January 15, 2013

Consumption Responses to Pay Frequency: Evidence from 'Extra' Paychecks

Christina Yiwei Zhang
Applied Economics, Doctoral Student
University of Pennsylvania, Wharton School
3000 Steinberg Hall-Dietrich Hall
3620 Locust Walk
Philadelphia, PA 19104
Email: czhan@wharton.upenn.edu
Phone: 410.908.6795

I. Research Question

Pay frequency is an often overlooked feature of labor contracts that may have important implications for household consumption patterns. This is a surprising oversight given that household consumption decisions often involve determining how to appropriately adjust the timing of consumption to that of pay. Most empirical research on consumption responses to anticipated income focus almost entirely on either changes to permanent income or the timing of actual income receipt while giving relatively little attention to issues of frequency.[1] However, pay frequency may become particularly relevant for consumption decisions if households face credit constraints and have time-inconsistent preferences or if the timing of recurring expenditures is difficult to adjust. In this research, I exploit a unique feature of the timing profile of bi-weekly pay schedules to provide evidence of how pay frequency may have important unexpected effects on household consumption.

II. Research Design and Preliminary Results

This research joins an extensive literature examining household consumption responses to various types of anticipated income receipt. The sources of income receipt that are typically analyzed include changes to permanent income (Wilcox, 1989; Shea, 1995; Paxson, 1993; Shaprio & Slemrod, 1995; Lusardi, 1996; Parker, 1999; Souleles 2002; Stephens Jr., 2008; Aaronson et al., 2012), predictable one-time payments (Souleles, 1999; Browning & Collado, 2001; Hsieh, 2003; Johnson et al., 2006, 2009; Agarwal et al., 2007; Parker et al., 2011), and income from wages, salaries, or social insurance programs (Stephens Jr., 2003; Shapiro, 2005; Huffman & Barenstein, 2005; Stephens Jr., 2006; Stephens Jr., & Unayama, 2011). My research differs, however, in that it focuses on how households adjust their consumption in response to income changes generated by the *frequency* at which they receive their pay, rather than looking at the path of consumption following single payments or over the course of a given pay period.

I leverage a unique feature of bi-weekly pay schedules to provide evidence of the type of unintended effect that pay frequency may have on household consumption. Because bi-weekly workers are paid on a regular two-week schedule, they receive two paychecks per month with the exception of two months out of the year, during which they receive three. As a result, the level of wage and salary income a household receives each month is higher for two months out of the year.[2] This is in contrast to the time profile of bi-monthly or monthly pay under which workers receive the same income each month.[3]

To estimate the effect of these third paychecks on consumption, I use rotating panel data from the Consumer Expenditure Survey (CEX). In addition to including extensive information on expenditures, the CEX indicates both the gross amount of each household member's last pay as well as the period of time this last gross pay covers. I use this information to identify household heads that report working bi-weekly and then leverage the variation in the size and timing of the third paychecks to determine their effect on household expenditures. In my primary specification, I regress monthly changes in expenditure on an indicator for whether the previous month had a third paycheck and include controls for the age of the head of household and changes in family composition, as well as month and year fixed effects.

In preliminary results, I find that household spending increases by approximately $155.8 on average following a three paycheck month and that this spending is driven largely by new vehicle purchases. These results

[1] An exception is Parsons & Van Wesep (2013) who develop a model of optimal pay frequency for firms in their paper.
[2] The months for which there are three paycheck changes from year to year which allows me to control for seasonality.
[3] The time profile of weekly workers is such that they receive four paychecks per month with the exception of four months out of the year during which they receive five. However, the extra paycheck is both smaller and occurs more frequently (four times a year instead of two) for weekly workers relative to bi-weekly workers, so we might expect consumption responses, if any, to be small. Additionally, here I do not consider other non-standard payment schemes such as holiday bonuses or seasonal payment structures.

are consistent with several other papers in this literature which also find large responses in durable spending, and in specific, vehicle purchases (Parker, 1999; Souleles, 1999; Parker et al., 2011; Aaronson et al., 2012). In contrast, there is no corresponding effect for workers who are paid either weekly or monthly.[4]

IV. Next Steps and Grant Funding Needs

There are several potential explanations for why I observe household consumption responses to these third paychecks. One possible explanation for these results is that households are both credit constrained and impatient in which case the timing profile of bi-weekly pay acts as an informal savings mechanism. Alternatively, households may be mentally bracketing their income streams on a monthly basis simply because large and recurrent expenditures such as mortgage payments or utility bills often repeat on a monthly frequency. Yet another possible explanation is that households do not face liquidity or credit constraints but are reluctant to draw down their assets too far and therefore wait until the third-paycheck to adjust their consumption.

Distinguishing between these various mechanisms is a critical next step for this research. However, limitations of the CEX make this a difficult task. For instance, few households report their savings and checking account balances which, in combination with the fact that most of the spending response is driven by a small number of households, means that it is not feasible to estimate the effects of liquidity constraints using traditional methods of asset-based sample splitting (Zeldes, 1989; Runkle 1991).[5]

One way to address these issues is to gather survey evidence using the American Life Panel (ALP). The ALP is an ongoing online panel survey maintained by the RAND Corporation which allows researchers to design and submit custom surveys.[6] The ALP covers individuals from the U.S. over the age of 18 and is intended to approximate the distributions of age, sex, ethnicity, education, and income in the Current Population Survey (Hurd & Rohwedder, 2012). Because the ALP allows for full customization of questions to respondents, it is well suited for gathering high frequency expenditure and income data and can also be used to ask more detailed questions regarding the reasons that underlie the observed household responses to third paychecks.[7] Moreover, the ALP survey will allow me to gauge the extent to which households are aware of the timing of these extra paychecks and how this affects household consumption responses. Funds from the NBER Household Finance grant would be used to gather data using the ALP, and I would be happy to make this data available to others.

V. Additional Research

As an extension to this research, I plan to look at the effect these extra paychecks have on payday loan borrowers. Payday loans can be thought of as providing credit constrained individuals a high-cost way to adjust the timing of their pay. The most commonly reported reason for payday loan borrowing is a need to cover large recurring expenses such as car payments, utilities, and credit card bills (Pew, 2012). To the extent that payday loan borrowers have difficulty adjusting the timing of these expenses, they may be especially sensitive to "extra" income such as tax refunds (Bertrand & Morse, 2009) or third paychecks that result from bi-weekly pay schedules.[8] If funding is provided, I plan to include questions in my ALP survey that will directly address the effect of these extra paychecks on payday loan borrowers. Results from these questions will be combined with future analysis using payday loan data.

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[4] Ideally, bi-weekly workers could be contrasted with bi-monthly workers who receive similarly sized paychecks but do not have varying wage and salary income each month. Unfortunately, the number of bi-monthly workers in my sample is too small to obtain credible estimates for comparison.

[5] Total income can be used but is an imperfect measure of liquidity constraints.

[6] Respondents who lack Internet access at the recruitment are provided a Web TV and an Internet access subscription.

[7] See Hurd & Rohwedder (2012) for more detail on using the ALP to gather high-frequency data.

[8] This sensitivity may be exacerbated if borrowers are overly optimistic or time-inconsistent (Skiba & Tobacman, 2008).

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BUDGET PROPOSAL

Project Expenses	*Total*
American Life Panel	
Programming of survey	**$5,000.00**
Survey handling costs	**$2,000.00**
Interviewee and maintenance costs	**$13,0000.00 ($3.00 per interviewee minute)**
Total Requested	**$20,000.00**

Christina Yiwei Zhang

Curriculum Vitae

Contact Information

Applied Economics
University of Pennsylvania
3000 Steinberg Hall – Dietrich Hall
3620 Locust Walk
Philadelphia, PA 19104

Cell: 410.908.6795
Email: czhan@wharton.upenn.edu

Citizenship: United States

Education

University of Pennsylvania, Wharton School — **Philadelphia, PA**
Ph.D. in Applied Economics, expected May 2014

Massachusetts Institute of Technology — **Cambridge, MA**
B.S. in Economics and B.S. in Mathematics with Minor in Writing, June 2009.

Teaching & Research Fields

Primary: Behavioral Economics, Applied Microeconomics
Secondary: Household Finance, Health Economics, Public Economics

Work Experience

University of Pennsylvania, Wharton School — **Philadelphia, PA**
Research Assistant, Devin Pope, Operations and Information Mangament Department — **2010**

National Economic Research Associates (NERA) — **New York, NY**
Research Associate Intern, David Tabak — **2008**

Harvard University — **Cambridge, MA**
Research Assistant, Julie Mortimer, Department of Economics — **2007**

Massachusetts Institute of Technology — **Cambridge, MA**
Research Assistant, Jonathan Gruber, Department of Economics — **2006-2007**

Teaching Experience

University of Pennsylvania, Wharton
Teaching Assistant, Managerial Economics (Undergraduate) — **Spring 2012 & Spring 2013**
Teaching Assistant, Business in the Global Political Environment (Undergraduate) — **Fall 2010-Fall 2011**

University of Pennsylvania
Teaching Assistant, Behavioral Economics and Psychology (Undergraduate) — **Spring 2011**

Honors and Awards

- Penn-CMU Roybal Grant (through NIA) ($9000) "Effectiveness of Targeted Health Reminders" — **2012**
- Penn Prize for Excellence in Teaching by Graduate Students — **2012**
- NBER Household Finance Doctoral Student Travel Grant — **2012**
- Price Theory, Becker-Friedman Institute, University of Chicago — **2012**

Working Papers

Consumption Responses to Pay Frequency: Evidence from 'Extra Paychecks'

Traditional models of household consumption assume that people do not significantly vary their consumption in response to the timing of anticipated income receipt. However, there is considerable empirical evidence suggesting that this prediction does not hold. This paper tests whether excess sensitivity of consumption to the timing of income can arise from a heuristic in which income is evaluated at monthly intervals regardless of actual pay frequency. To do so, I exploit a unique feature of biweekly pay schedules. Because biweekly workers are paid on a regular two-week schedule, they receive two paychecks per month with the exception of two months out of the year, during which they receive three. These third paychecks can only be viewed as "extra" if

households are evaluating their income on a monthly basis. Using household level micro data from the Consumer Expenditure Survey, I find evidence that households adjust their consumption in response to these third paychecks and that this response is largely driven by the purchase of durable goods, and in specific, vehicle purchases.

Works in Progress

Effectiveness of Targeted Health Reminders
(with Jonathan Kolstad and Katherine L. Milkman)

Online Crowdfunding and Threshold Effects in Sequential Fundraising Campaigns
(with Anthony A. DeFusco)

The Role of Prestige in the Charitable Giving of Repeat Donors
(with Judd B. Kessler and Katherine L. Milkman)

References

Professor Jeremy Tobacman
Business and Public Policy Department
University of Pennsylvania
Wharton School
Phone: 215.898.9450
Email: tobacman@wharton.upenn.edu

Professor Judd B. Kessler
Business and Public Policy Department
University of Pennsylvania
Wharton School
Phone: 215.898.7696
Email: judd.kessler@wharton.upenn.edu