Long-term Impacts of Online tax-time Savings Interventions: Effects Among Persistently Poor and Resource-constrained Households

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Objective

Having emergency savings is important for coping with financial shocks, such as periods of unemployment or major medical expenses, events which are associated with subsequent difficulty meeting basic needs such as food and housing (Heflin, 2016; Leete & Bania, 2010). Tax refunds are the largest lump sum allocation most low-income households receive. Setting aside refunds is an opportunity to build emergency savings to hedge against economic uncertainty. Our prior studies have established that behavioral interventions such as choice architecture manipulations and persuasive messaging delivered through online tax filing software have a positive impact on refund saving behavior among low-income tax filers (Grinstein-Weiss, Russell, Gale, Key, & Ariely, 2017; Grinstein-Weiss et al., 2018). We have also found that saving tax refunds (Grinstein-Weiss et al., 2016) and having liquid assets amidst financial shocks (Despard et al., 2018) is associated with lower likelihood of experiencing material hardship. The current study extends our research on the outcomes of online behavioral interventions on tax-time saving by determining whether these effects endure six months post-tax filing to enable low-income households to cope with financial uncertainty. In addition, we compare these effects for households who experience and do not experience persistent poverty to assess if households who are at continuously elevated risk for material hardship may benefit more from the savings interventions.

Significance

Retirement savings is often cited as a bellwether of financial preparedness. Households should set aside savings to meet their needs in anticipation of lower incomes during retirement (Lusardi, 1998). Yet, a critical indicator of the financial precarity confronting many U.S. households is a lack of non-retirement savings. Results from the 2015 National Financial Capability Study indicate that only 46% of US households have emergency savings - enough money saved to cover expenses for three months (FINRA Investor Education Foundation [FINRA], 2016). This lack of emergency savings leaves may households ill prepared to cope with financial shocks, such as spells of unemployment or an expensive car repair. Most (60%) US households had at least one member who endured such an event in the prior year (Pew Charitable Trusts, 2015).

Emergency savings can cushion households from the adverse effects of shocks and reduce the likelihood of experiencing material hardship (Gjertson, 2016; McKernan, Ratcliffe, & Vinopal, 2009). Low-income households are more likely than higher income households to experience income dips (Acs, Loprest, & Nichols, 2009; Hannagan & Morduch, 2015), have difficulty meeting basic needs following a financial shock (Pew Charitable Trusts, 2015), and lack emergency savings (FINRA, 2016; Lusardi, Schneider, & Tufano, 2011; McKernan et al., 2009). In particular, low-income households that experience persistent poverty (Bane & Ellwood, 1986) are vulnerable if they lack emergency savings or other means of coping with financial shocks. These households likely experience greater difficulty in setting aside money from usual income in emergency savings than households that experience only transitory spells of poverty. Though tax refunds represent an opportunity to build emergency savings, refunds are used for many other purposes including debt reduction, overdue bills, large purchases, and car and home repairs (Shaefer, Song, & Shanks, 2013; Sykes, Križ, & Halpern-Meekin, 2015). Despite these competing

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priorities, low-income tax filers respond to encouragement and incentives to save tax refunds (Authors, 2017, 2018; Key et al., 2015).

Given their economic constraints, households with persistent poverty may stand to benefit the most from using all or part of their refunds to build emergency savings. However, evidence is lacking concerning whether effects of tax-time savings interventions persist for several months after tax filing and whether these effects are different among households who experience persistent poverty.

Method

The sample for this study was drawn from low- and moderate-income (LMI) tax filers who used TurboTax Freedom Edition (TTFE), an online tax filing software program during the 2015 tax season as part of the Refund-to-Savings initiative. TTFE was available free of charge by Intuit Corporation to filers with adjusted gross incomes (AGI) below $31,000, who received the Earned Income Tax Credit (EITC), or who were active duty military personnel with AGI of less than $60,000.

Tax filers who expected to receive a refund were randomly assigned to a control group which received the standard tax filing experience, or one of three behavioral interventions embedded in TTFE. In the standard tax filing experience, control group participants proceeded to a screen prompting them to indicate how they wished to receive their refund: direct deposited to a bank account, by paper check, or split into multiple accounts. In all three intervention groups, a choice architecture manipulation was employed in which depositing one's entire refund was displayed as the first choice when filers proceeded to the screen asking them how they wished to receive their refund. In addition, the precautionary saving group received an emergency savings message: "Be prepared. Don't let life catch you by surprise. Save something today and have cash on hand when it's needed down the road." The interactive goal group were invited to click on colorful icons representing various savings goals (e.g., education) coupled with the prompt "Imagine a brighter future today. Then select which goals you'd like to save for most". Lastly, the interactive retirement group were invited to click on colorful icons representing various retirement activities such as traveling or fishing coupled with the prompt "Imagine yourself at retirement. Then select what you'd like to be doing and start saving for it today!".

The study sample for the six-month analysis of saving outcomes was restricted to include 4,443 participants who were randomly assigned to the control or an intervention group, completed both the baseline and six-month follow-up household financial survey, and who indicated that they had savings accounts. Most households (75%) had savings accounts when they filed their taxes. The study sample included 1,194 participants identified as experiencing persistent poverty, as measured by having used TTFE and/or having received the EITC in consecutive years, and not being currently enrolled in a post-secondary education program. Data used for the study included administrative tax return data and responses to a household financial survey tax filers were randomly invited to complete immediately after filing their taxes and six months after tax filing. Two variables were used to assess savings outcomes six months after tax filing: the proportion of participants who still had any of their refund saved and the proportion of the tax refund remaining in a savings account. These variables captured the likelihood that a filer retained refunds in savings and how much of the refund they retained.

Though random assignment into the treatment and control groups should balance the groups, control variables were used to adjust for any imbalances due to differential propensities among the groups to complete both the baseline and follow-up household financial survey. The following control variables measured at baseline were used: adjusted gross income, amount of federal tax refund, amount of self-reported credit card debt, and whether participants experienced any of eight types of material hardship (e.g., skipped a rent payment, food insecurity) in the six months preceding tax filing, experienced any of six instances of financial shocks (e.g., unexpected reduction in income) in the six months preceding tax filing, said they budgeted carefully, and certainly or probably could come up with $2,000 in an emergency. In addition, we used a dummy variable for whether participants saved any part of their refund at tax filing to assess the degree to which six-month savings outcomes are mediated by tax time savings deposit behavior.

Six-month impacts of the tax-time savings interventions were estimated using multiple regression with covariance control to adjust for potential sampling variation due to two sources of sample selection – choosing to complete the baseline household financial survey and to complete a similar survey six months later. Unadjusted intent-to-treat estimates were conducted to determine the average impact of each intervention relative to the control group: $ITT = \overline{Y_O} - \overline{Y_C}$ where Y_O is the average outcome for the intervention group and Y_c is the average outcome for the control group. Regression-adjusted treatment impacts were estimated based on the following equation: $y_i = \alpha_0 + T_i\pi + X_i\lambda + \varepsilon_i$, where y_{et} is an outcome variable, π is the impact of individual *i* being assigned to one of the three treatment groups relative to the control, X_i is a vector of control variables capturing financial indicators measured at the time of tax filing, and ε_i is an error term. To estimate having any refund still saved six months later, linear probability modeling was used while OLS regression was used for the proportion of refund still saved six months later. Interaction terms were added to models to assess the degree to which treatment effects were moderated by having access to $2,000 in an emergency. All models used heteroscedasticity-robust standard errors.

Results

There were few differences in demographic and financial characteristics across the four groups. The average age of participants was 32 years old, average income ranged from $15,397 to $15,523, average credit card debt ranged from $2,307 to $2,598, and average tax refunds ranged from $1,437 to $1,691 – roughly 10% of income. Majorities of participants claimed single filing status, were college graduates, experienced material hardship and financial shocks in the preceding six months, and could access $2,000 in an emergency. Unadjusted estimates indicated that 22%, 20%, and 22% of participants in the precautionary saving, interactive goal, and interactive retirement intervention groups saved all or part of their refunds at tax filing compared to 11% of the control group. In Table 1, Models 1 and 4 show unadjusted impacts, Models 2 and 5 show impacts controlling for baseline financial characteristics, and Models 3 and 6 show impacts controlling for both baseline financial characteristics and whether participants deposited refunds into savings at tax time. These results show directional but statistically non-significant increases in outcomes across the three intervention groups relative to the control group.

However, as seen in Table 2 for persistently poor participants (N = 1,194), each intervention was associated with a statistically significantly higher rate of savings six months post-filing than the control group. The “precautionary savings” condition was the most effective at driving increased savings rates six months after filing; tax filers in this condition were ten percentage points more likely to have any of the refund saved six months post filing ($p < .001$). We also found that access to $2,000 in an emergency is a significant moderator of treatment impacts among the persistently poor sub-sample (see Table 3). Controlling for baseline financial characteristics (Model 2) and whether participants saved their refunds at tax time (Model 3), the precautionary saving group were 15 and 13 percentage points more likely to have retained refunds in savings ($p < .001$), respectively.

Conclusions/Relevance

We do not find six-month savings effects of behavioral interventions aimed at promoting tax-time savings within a general sample of LMI tax filers. However, these effects are found among a sub-sample of tax filers who experience persistent poverty. These effects are greatest among persistently poor filers who received a precautionary savings message – the intervention most representative of the need for emergency savings and are even higher among filers who said they did not have access to $2,000 in emergency resources. These results suggest that responses to tax-time savings interventions, even among an LMI population of tax filers, are heterogeneous, with effects greatest for those most in need of and who receive prompts aimed directly at building emergency savings. These findings suggest the need for tax-time savings proponents, including Volunteer Income Tax Assistance (VITA) programs, to consider outreach efforts aimed at LMI households who are perennial EITC recipients and message-based interventions that highlight the importance of precautionary saving.

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Table 1. *Refund Savings Six Months' Post Filing - Full Sample*

Dependent Variable	Any Refund Saved Six Months' Post-Filing			Percent of Refund Saved Six Months' Post-Filing		
Model	1	2	3	4	5	6
Precautionary Saving	0.022	0.029	0.017	1.507	1.999	1.028
	(0.020)	(0.019)	(0.019)	(1.609)	(1.493)	(1.493)
Interactive Goal	-0.012	-0.005	-0.016	-1.084	-0.472	-1.312
	(0.020)	(0.019)	(0.019)	(1.576)	(1.470)	(1.471)
Interactive Retirement	0.013	0.012	0.001	0.456	-0.115	-0.991
	(0.020)	(0.019)	(0.019)	(1.594)	(1.492)	(1.489)
Controls						
Financial	No	Yes	Yes	No	Yes	Yes
Tax Time Depositing	No	No	Yes	No	No	Yes
Observations	4,443	4,443	4,443	4,443	4,443	4,443
R2	0.001	0.123	0.130	0.001	0.133	0.141

Table 2. *Refund Savings Six Months' Post Filing – Persistently Poor Sub-Sample*

Dependent Variable	Any Refund Saved Six Months' Post-Filing			Percent of Refund Saved Six Months' Post-Filing		
Model	1	2	3	4	5	6
Precautionary Saving	0.067*	0.100***	0.087**	1.686	5.031*	3.957
	(0.040)	(0.037)	(0.037)	(3.114)	(2.861)	(2.866)
Interactive Goal	0.037	0.063*	0.056	-1.333	0.900	0.266
	(0.039)	(0.036)	(0.036)	(2.999)	(2.747)	(2.744)
Interactive Retirement	0.049	0.071*	0.058	1.702	3.451	2.370
	(0.040)	(0.036)	(0.036)	(3.099)	(2.884)	(2.867)
Controls						
Financial	No	Yes	Yes	No	Yes	Yes
Tax Time Depositing	No	No	Yes	No	No	Yes
Observations	1,194	1,194	1,194	1,194	1,194	1,194
R2	0.002	0.147	0.154	0.001	0.155	0.164

Note: * $p < .05$, ** $p < .01$, *** $p < .001$;

Table 3. *Refund Savings Six Months' Post Filing - Target Population by Access to $2,000 in an Emergency*

Dependent Variable	Any Refund Saved Six Months' Post-Filing		
Model	1	2	3
Precautionary Saving (No Access to $2,000)	0.104**	0.145***	0.133***
	(0.051)	(0.049)	(0.048)
Interactive Goal (No Access to $2,000)	0.064	0.080*	0.075
	(0.049)	(0.047)	(0.046)
Interactive Retirement (No Access to $2,000)	0.054	0.076	0.065

	(0.048)	(0.047)	(0.047)
Precautionary Saving*Access to $2,000	-0.037	-0.075	-0.075
	(0.074)	(0.071)	(0.070)
Interactive Goal*Access to $2,000	-0.020	-0.027	-0.030
	(0.072)	(0.069)	(0.069)
Interactive Retirement*Access to $2,000	0.009	-0.006	-0.009
	(0.072)	(0.070)	(0.069)
Access to $2,000	0.309***	0.241***	0.239***
	(0.051)	(0.050)	(0.049)
Controls			
Financial	No	Yes	Yes
Tax Time Depositing	No	No	Yes
Observations	1,194	1,194	1,194
R2	0.094	0.148	0.155

Note: * $p < .05$, ** $p < .01$, *** $p < .001$;