

Evidence-Based Strategies to Build Emergency Savings

CFPB Office of Research report for the Start Small, Save Up initiative

This is a publication from the Consumer Financial Protection Bureau's Office of Research. This publication is intended to further the Bureau's objective of providing an evidence-based perspective on consumer financial markets, consumer behavior, and regulations to inform the public discourse. See 12 U.S.C. §5493(d).¹

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1. Introduction

The Consumer Financial Protection Bureau's (CFPB, the Bureau) *Start Small, Save Up* initiative, which helps promote the importance of building a basic savings cushion and saving habits among Americans, is a recent example of the Bureau's commitment to providing "opportunities for consumers to access ... savings, borrowing, and other services found at mainstream financial institutions."² As part of this objective, the Bureau seeks to enhance the evidence base of the *Start Small, Save Up* initiative by providing insight into current innovations in the savings space and identifying promising strategies to encourage saving. Ultimately, the Bureau seeks to increase Americans' financial well-being through opportunities to save and to empower consumers to realize their personal savings goals.

As a first step to using an evidence-based approach to improve Americans' saving behavior and financial well-being, the Bureau has catalogued previous research that has helped shape the field's understanding of what works—and what doesn't—to encourage people to build savings. Consistent with *Start Small, Save Up*'s focus on emergency savings, the review that follows centers on research examining liquid, short-term savings products and interventions, but also incorporates findings from studies that examine longer-term savings where there are potential applications to short-term savings. The goal of this review is to provide researchers, policymakers, and practitioners with a broad view of the savings-related research landscape and to help identify promising practices, as well as gaps where additional future research might be most useful. To this end, the review focuses on studies that employ rigorous evaluations and methods, including randomized field studies and laboratory experiments.

The research described below is organized into three broad categories, each identifying an avenue through which to increase consumers' savings: savings products (providing a ready place to save), financial incentives (providing motivation to save), and behavioral and psychological approaches (providing a choice environment that facilitates saving). The first set of studies highlights consumer uptake and use of new savings products. We examine products for general-purpose saving and those specific to tax-time saving. The next series of studies focuses on providing financial incentives to motivate saving, highlighting incentives that offer different interest rates, financial matches (e.g., \$.50 for every \$1 saved up to \$1,000), prizes (i.e., prize-linked savings), and one-time incentive payments. The final section draws from research in psychology and other behavioral sciences. It identifies approaches to building savings by

² Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, Sec. 1013(d)(2)(C). Also see "CFPB Announces Start Small, Save Up Initiative." February 25, 2019. <https://www.consumerfinance.gov/about-us/newsroom/cfpb-announces-start-small-save-initiative/>.

providing insights related to choice architecture (such as defaulting individuals into a savings feature), anchoring (such as a suggested amount to save), and externally- and internally-imposed commitment mechanisms (such as withdrawal penalties and peer pressure). This review describes promising avenues for application while noting areas where certain interventions may backfire and reduce savings or lead to lower financial well-being. A table summarizing the key studies reviewed here is presented in Appendix A.

Before turning to the literature, we provide a backdrop for this review which includes a discussion of limitations common across the studies, what is and is not included (and why), as well as strengths and weakness of the evaluation approaches. Finally, we conclude with a summary of high-level take-aways from the literature and promising areas for future research.

2. Backdrop for Review

Consistent with *Start Small, Save Up*'s aim to help Americans build a basic savings cushion, we focus this review on literature that examines strategies aimed at increasing savings available for financial emergencies or other short-term needs—i.e., liquid savings. Additionally, we incorporate insights from other literature, most notably the retirement savings literature, to inform and provide context for the liquid savings findings. We focus on interventions and strategies for increasing savings that fall into three broad categories: new product offerings, financial incentives to save, and psychological and behavioral approaches.

With some exceptions, the studies reviewed here tend to examine saving behavior over months, not years. Ideally, any intervention designed to increase savings would have long-term impacts on savings and improve financial well-being, so understanding behavior over an extended period is preferred. Further, the liquid-savings studies reviewed here tend to focus exclusively on savings-related outcomes (i.e., the share of people who save, the average amount saved) and examine savings in one particular account—the specific savings account at the center of the study. Such focuses contain limitations.

First, with a focus on only a single account, it is possible that deposits into the accounts do not represent *new saving* but, rather, result from people shifting money from one account to another (e.g., from an account without a financial incentive to an account with an incentive). Obtaining a complete picture of people's savings generally requires a survey administered to study participants both before the intervention starts (i.e., a baseline survey) and at some point (i.e., some number of weeks, months, or years) after the intervention starts (i.e., follow-up survey). Of course, surveys of this kind provide self-reported data and therefore are subject to respondent error. A comprehensive look into an individual's savings-related behavior could also be achieved through administrative data that includes all accounts belonging to a particular person, but this type of full data is rare. Further, researchers may not have the resources or ability to conduct surveys that would produce a fuller picture of a person's financial state. Nonetheless, some of the evaluations reviewed here examine a broader measure of participants' liquid assets (e.g., dollars in savings, checking, stocks, bonds) based on survey data, not just dollars saved in a particular account, so are more likely to capture new savings that result from the intervention. We note studies that capture a broader measure of liquid assets below.

Second, having an even more complete picture of people's finances (e.g., inflows, outflows, debt levels, ability to meet monthly expenses, use of small-dollar credit) and measures of people's financial well-being and stress leads to a deeper understanding of the interventions' overall impact. Implicit in considering these broader measures is recognition that these interventions

may come with trade-offs. For example, increased savings could come at the expense of higher debt. This potential savings-debt trade-off is of concern because, if people take on high-cost debt in order to save, they may be worse off financially as a result of an intervention aimed to help them. Even if it is unlikely that a particular intervention would make participants worse off, there is value in knowing the implications of the intervention for a broader set of outcomes, such as financial stress and well-being. Also, because emergency savings are meant to be used when people face a financial shock (e.g., unexpected expense or drop in income), a person may have \$0 in savings six months after the intervention, but still be better off as a result of the intervention (e.g., higher financial well-being) because they had the savings to weather the shock. Once again, both baseline and follow-up surveys that ask study members about their experiences are needed, and additional administrative data measuring debt burdens (for example, credit reports) would allow for a better accounting of an intervention's overall effects on a consumer's financial situation. Some studies reviewed below examine measures of material hardship (e.g., inability to pay housing or utility bills, inability to afford doctor or dentist visits), use of payday loans and non-bank check cashers, and confidence in meeting monthly living expenses.

The interventions studied differ in when and how they connect with study participants. A number of evaluations examine savings interventions implemented when people file a tax return. "Tax time" can be an opportune moment for families to save, since many low- and moderate-income U.S. tax filers receive a substantial tax refund. For some families, half of their annual income can be received in the form of a tax credit after they file their income taxes (Maag 2013). At the same time, lump sums acquired through tax refunds also make these interventions unique and may produce findings that do not apply more broadly to other types of funds or savings opportunities. These tax-time studies have been implemented in partnership with H&R Block, Intuit, and non-profit volunteer income tax assistance (VITA) programs. Other interventions have been implemented with non-profit community-based organizations, credit unions, and fintech companies, for example.

While our focus is primarily on literature that examines savings interventions in the United States, we include a number of studies conducted outside the U.S., with most of them being conducted in developing countries. While there are clearly institutional, cultural, and regulatory differences between the U.S. and other countries, the international literature nonetheless informs the asset building field in the U.S. by highlighting potentially promising strategies. However, given the contextual differences, results obtained from any intervention conducted internationally may not generalize to the U.S. Additional studies will be necessary to determine whether results replicate in the U.S.

This review focuses on rigorous empirical studies, primarily randomized evaluations, although we incorporate other literature where it provides additional context. In randomized evaluations,

study participants are randomly assigned to one or more treatment groups, each of which receives a unique intervention, or a control group that does not receive the intervention. Randomization ensures that, in expectation, treatment and control groups will be on average similar across relevant characteristics, so that differences in outcomes between groups can be attributed to the intervention. Comparisons of the treatment and control groups therefore provide causal estimates of the intervention's effectiveness. Beyond randomized evaluations, this review also includes rigorously conducted studies that use quasi-experimental methods (e.g., difference-in-difference).

Two types of randomized evaluations are included in this review: (1) field studies, which are randomized control trials (RCTs) conducted in real world settings and (2) controlled experiments, which can be conducted in a laboratory setting, a classroom, or online. In both cases, study participants are randomly assigned to treatment or control groups, and the randomization is used as a basis for estimating the impact of the intervention(s). The main advantage of randomized evaluations of both kinds is that the interventions are tested in a controlled way, and if successfully implemented, the researcher can obtain an unbiased, causal estimate of the interventions' effectiveness.

Well implemented RCTs test an intervention in a controlled manner in a real-world setting and are considered by some to be the gold standard for evaluation design. However, they are not without limitations. Field studies are generally conducted with only a narrow slice of the population (e.g., customers of a specific financial provider) and the results obtained from one population in a particular setting may not generalize to other populations and settings.

Experimental lab studies are conducted in a controlled setting (e.g., a computer lab or classroom) and often present participants with decontextualized environments or hypothetical scenarios. As a result, participants may behave differently in lab experiments than they would in the real world. At the same time, experimental lab studies provide researchers with the ability to fully control what interventions the participants are exposed to, providing confidence that results obtained in the lab are not affected by external factors. Lab studies are generally less expensive and time intensive to implement than RCTs and can be particularly beneficial to implement before expending time and resources on setting up and implementing a field trial.

In some studies, there is no randomized control group, but there is an element of randomness (or exogenous variation) that the researcher can exploit in the analysis (e.g., the opening of bank branches in different locations at different points in time). These quasi-experimental studies can have advantages in that they sometimes occur over longer time periods and with larger and more representative samples than possible in randomized field studies. However, the lack of random assignment may result in “treatment” and “comparison” groups that are

systematically different, creating difficulties in drawing causal inferences from differences in outcomes.

This paper turns now to the literature on savings products and financial incentives, followed by a discussion of behaviorally-based interventions to increase savings.

3. Savings Products

This section discusses efforts to diversify and expand savings product access in the United States and reviews domestic and international studies that focus on the expansion of account access and the resulting effects on household savings.

While there are more than 5,100 depository institutions in the United States that offer savings products,³ an estimated 8.4 million households (6.5 percent) do not have a checking or savings account (are unbanked) and 35 million households (27 percent) do not have a savings account (Federal Deposit Insurance Corporation [FDIC] 2018).⁴ The numbers are substantially higher for households earning less than \$15,000 a year—roughly a quarter (26 percent) are unbanked and more than half (61 percent) do not have a savings account (FDIC 2018).⁵ Barriers to account ownership cited by unbanked households include not having enough money and high and unpredictable account fees (FDIC 2018).

Despite the existing slate of savings products, these products do not meet the needs of some U.S. consumers. There have been large-scale initiatives to increase checking and savings account ownership in the United States. The BankOn initiative, for example, is a nationwide effort led by the Cities for Financial Empowerment Fund (CFE Fund) to support local and regional financial institutions' efforts to connect consumers to low-cost, low-fee, no-overdraft accounts. In January 2019, the CFE Fund announced that 28 financial institutions in 50 states and DC offer accounts that meet the initiative's 2019-20 standards.⁶ To extend BankOn efforts on a national level, the CFE Fund also engages with a number of federal regulatory agencies.⁷ Another initiative—MyPath Savings—is a youth-targeted initiative that integrates account access

³ <https://www.fdic.gov/bank/statistical/stats/2019dec/industry.pdf> (accessed June 3, 2020).

⁴ The percentages of households with a savings account are the authors' calculations based on the share of households that are banked and the share of banked households that have a savings account (<https://www.fdic.gov/householdsurvey/2017/2017appendix.pdf>; accessed May 4, 2020).

⁵ Even more households have experience being unbanked (Barr 2009; FDIC 2018). For example, Barr (2009) finds that ten percent of households with a bank account were recently unbanked.

⁶ The announcement is available at http://cfefund.org/wp-content/uploads/2019/01/CFE-Fund_Bank-On-2019-NAS-Press-Release-final.pdf, and the BankOn 2019-20 national account standards are available at http://joinbankon.org/wp-content/uploads/2018/12/BankOn_Standards_2019-2020.pdf (both accessed April 24, 2020).

⁷ <https://joinbankon.org/about/> (accessed April 24, 2020). The “Solution” subsection lists BankOn’s engagement with federal agencies.

into youth workforce programs, supporting youth in opening checking and savings accounts, setting up direct deposit, and splitting their paychecks so a portion is deposited in a saving account.⁸

The federal government has also played a direct role in providing financial services to U.S. consumers. For example, in 2008, the U.S. Department of the Treasury (Treasury) launched the Direct Express prepaid card for unbanked federal benefit recipients (e.g., Social Security recipients). While the card can be used to receive government benefits, make purchases, and pay bills, it does not have a savings feature.⁹ On the savings front, Treasury's *myRA* program provided consumers with no-fee retirement savings accounts, but the program was discontinued in 2017 and did not include an evaluation component.¹⁰ Treasury also piloted the use of a general-purpose reloadable prepaid card—the MyAccountCard—in 2011 as a way to distribute tax refunds to tax filers without bank or credit union accounts, facilitate everyday financial transactions, and help them save.¹¹

The MyAccountCard pilot included a randomized evaluation, which aimed to understand how consumers respond to product features and messaging. Under the evaluation, study members were randomly assigned to one of eight treatment groups that differed along three dimensions: (1) linked savings account versus no linked savings account, (2) no monthly fee versus \$4.95 monthly fee, and (3) convenience- versus safety-focused messaging (Ratcliffe, Congdon, and McKernan 2014, 2017). Analyses of the prepaid card data show that offering the linked savings account feature did not significantly increase card take-up or use, and there was no evidence that it led to greater savings. However, the authors note that the savings account feature tested in the pilot was less than ideal (e.g., cardholders had to take additional steps to set up the savings feature, direct deposit into the savings account was not allowed) and that different savings account features may have produced different results. A key pilot finding is that consumers are sensitive to being charged a monthly fee. Charging a \$4.95 monthly fee (versus no monthly fee) reduced card take-up and use by 40 to 60 percent (Ratcliffe et al. 2014, 2017). The different messaging had no effect on take-up or use of the prepaid card.

⁸ <https://mypathus.org/mypath-savings/> (accessed May 5, 2020).

⁹ <https://fiscal.treasury.gov/directexpress/> (accessed May 5, 2020).

¹⁰ The *myRA* had no account maintenance fees and no minimum balance requirements (<https://www.treasury.gov/press-center/press-releases/Pages/sm0135.aspx>; accessed April 24, 2020).

¹¹ <https://www.treasury.gov/press-center/press-releases/Pages/tg1021.aspx> (accessed April 24, 2020).

Other studies in the literature examine the introduction or expansion of low-cost savings products and find increases in the take-up of savings products and the amount saved. One of these studies—implemented at tax time—was conducted in partnership with H&R Block. The H&R Block pilot focused on offering customers the opportunity to save by purchasing a U.S. Series I savings bond when they filed their taxes (Tufano 2011). H&R Block already offered other savings-related products to its customers, so the pilot tested the addition of explicitly offering the savings bond option. This 2007 pilot was implemented prior to the introduction of IRS form 8888 in 2010, which allows consumers to direct a portion of their refund in up to three separate accounts including to a savings bond.¹² The savings bond tested in the pilot—the Series I bond—has the advantage that there are no fees associated with the purchase and they can be purchased in small denominations. However, these bonds have the drawback that they are not fully liquid (there is a minimum holding period of one year) and they can be difficult for people to understand.¹³ Under the 2007 pilot, H&R Block customers (i.e., tax filers) who were to receive a tax refund of at least \$500 were randomly assigned to (1) a treatment group that received the savings bond offer (as an option among other H&R Block savings products) and (2) a control group that did not receive the savings bond offer (but received the offer of other H&R Block savings products). The bond offer was found to increase bond take-up by two percentage points (Tufano 2011). Beyond this, the bond offer increased the share of people who took up any of the savings products by roughly six percentage points (the bond offer increased take-up of non-bond products), which is a multiple-fold increase relative to the roughly one percent of control group members who took up any of the savings products. The evaluation also found that the savings bond offer increased the average amount participants saved by \$15.26—treatment group members saved an average \$28.21 whereas control group members saved an average of \$12.95.

Two international studies also explore the effects of access to savings-related products on individuals' saving behavior. Specifically, these studies use data from the expansion of bank access and accounts, along with quasi-experimental methods, to estimate the effect of expanded bank account access on savings. One study examines the United Kingdom's mandate requiring public benefits be received via electronic transfer (Fitzpatrick 2015) and the other examines the expansion of bank account branches and savings products in low-income areas in Mexico

¹² IRS form 8888 is available at <https://www.irs.gov/forms-pubs/about-form-8888> (accessed April 24, 2020).

¹³ In addition, the Series I savings bond is a long-term instrument that takes 30 years to mature. With a current interest rate of 1.06 percent, holding the bond for one-year would yield little interest. Information on Series I savings bonds can be found at: https://www.treasurydirect.gov/indiv/research/indepth/ibonds/res_ibonds.htm (accessed June 8, 2020).

(Aportela 1999). Both studies find that the expansions led to increased bank account ownership and savings.

The UK's electronic transfer mandate, which was implemented between 2003 and 2005, requires all public benefit recipients (including those receiving a Child Benefit payment) to receive their benefit via electronic transfer. With strong encouragement from the UK government, the mandate coincided with an expansion of commercially provided low-cost bank accounts that did not allow overdraft—the Basic Bank Account—and post offices allowed consumers to use a “post office card account.”¹⁴ Fitzpatrick (2015) compares changes in bank account ownership between low-educated families with children (affected by the mandate via Child Benefits payments) and without children (unaffected) before and after the mandate, and finds that the mandate increased bank account ownership by nine percentage points (12 percent) among families with children relative to those without children.¹⁵ The author also finds evidence that account ownership may lead to small increases in financial assets.

The expansion of a government institute in Mexico, commonly known as Pahnal, provides another setting to examine the effect of increased bank account access on savings (Aportela 1999). In the second half of 1993, Pahnal roughly doubled the number of branches in low-income areas and created new low-cost savings accounts. In an analysis comparing households who lived in areas with the expansion to similar households who lived in areas without the expansion, Aportela (1999) finds that the expansion led to a three to five percentage point increase in the savings rate of households in an expansion area.¹⁶ Further, Aportela (1999) finds little evidence that formal savings products crowd-out informal savings.

This section has examined the link between savings product access and savings. Other research has examined the effects of promoting savings via financial incentives, which we turn to in the next section.

¹⁴ Fitzpatrick notes that the mandate should have reduced procrastination around obtaining a bank account and that the government-promoted Basic Bank Account simplified consumers' decision around which bank account to own.

¹⁵ For some outcomes, the effect sizes can be measured as percentage point and percentage changes. For example, if an intervention increased the savings rate from 10 percent to 15 percent, this would represent a five percentage point increase and a 50 percent increase in the initial savings rate (the five percentage point increase is a 50 percent increase relative to 10 percent initial rate).

¹⁶ In the pre-expansion period, Aportela (1999) compares households in the expansion and non-expansion areas and finds no significant difference in the savings rates across the two groups.

4. Financial Incentives to Save

There are four primary approaches to providing consumers with financial incentives to save that have been experimented with and tested in the literature: interest rates, matched savings, prize-linked savings, and one-time incentive payments to open a savings account or enroll in a savings feature. Of these four approaches, interest rate increases are the most mainstream and are a key lever banks and credit unions traditionally use to promote saving by current and prospective customers. Matched savings programs encourage consumers to save by providing them with a financial match (e.g., \$1 in match funds for each \$1 saved in a specified savings account). The third approach—prize-linked savings (PLS) accounts—incentivizes people to save by providing them with a chance to win prizes when they save. Finally, one-time incentives generally reward either the opening of the savings account or reaching a pre-determined savings amount.

Financial incentives to save are not new, and retirement savings is perhaps the best known arena where financial incentives have been used to encourage saving. Many employers provide financial matches when employees save for retirement, and the federal government, with the backing of the federal tax code, provides financial incentives via preferential treatment of retirement savings (e.g., workers can save pre-tax dollars in their 401(k) account). These benefits generally flow to higher-income people. In 2017, for example, of the over \$200 billion in federal tax subsidies that supported retirement saving, 62 percent went to the top 20 percent of taxpayers (as measured by income), while the bottom 20 percent received less than one percent (McKernan et al. 2017). In the emergency savings arena, many of the interventions are designed with an eye toward supporting low- and moderate-income consumers.

In these various interventions and pilots, there are differences in (1) what is offered to consumers beyond just the incentive and (2) what is being measured. First, in some field studies, consumers in the treatment group (those offered the financial incentive) are provided with a free savings product that is not made available to the control group, so the intervention is testing a combination of the product offering and the financial incentive. We are careful to identify the full intervention in our discussion below. Second, in many, but not all, of the pilot evaluations, the authors examine deposits into one particular account—the specific savings account at the center of the study. As mentioned earlier, with a focus on only a single account, it is possible that deposits into the account do not represent *new saving*, but rather, result from people shifting money from one account to another (i.e., from an account without the financial incentive to the account with the financial incentive). A few of the evaluations examine a broader measure of participants' liquid assets based on survey data (e.g., dollars in savings, checking, stocks, bonds, etc.), not just dollars saved in a particular account, so are more likely to

capture new savings that result from the intervention. We note studies that capture a broader measure of liquid assets.

We discuss the financial incentive approaches—interest rates, matched savings, prize-linked savings, and one-time incentive payments—in turn below.

4.1 Interest Rates

The literature suggests that modest market- or near-market interest rate increases (i.e., interest rates in the one to five percent range) lead few people to alter their saving behavior, although there is some evidence that more substantial interest rate increases (e.g., above-market rates in the range of 10 to 20 percent) do lead to increases in savings.¹⁷ Most of the field experiments that have examined interest rates have been conducted in less developed countries (e.g., Chile, Philippines, and Kenya), although we also review a U.S.-based lab study.

In the realm of modest interest rate increases, a recent experiment conducted in Chile (Kast, Meier, and Pomeranz 2018) compares consumers who were offered a savings account with a 0.3 percent interest rate (control group) to consumers offered the same savings account but with a 5.0 percent interest rate (treatment group).¹⁸ The authors find that the higher interest rate does not change monthly savings account balances for the vast majority of consumers. Even at the 95th percentile of the monthly savings account distribution, the savings account balances for those in the 0.3 percent and 5.0 percent groups are virtually identical.

Another study, which was carried out in partnership with a bank in the Philippines, tests how consumers respond to an even smaller interest rate increase—an interest rate of 1.5 percent (control group) and 3.0 percent (treatment group; Karlan and Zinman 2018).¹⁹ Examining both savings account take-up and account balances, the authors conclude that the higher interest rate did not lead to increased savings. By and large, people who set up these savings accounts had short-term savings goals (less than a year), so, as Karlan and Zinman (2018) point out, interest

¹⁷ Interest rates in the United States are currently at near-historic lows, with market-driven interest rates hovering near zero (<https://www.federalreserve.gov/monetarypolicy/openmarket.htm> [accessed April 16, 2020]; <https://fred.stlouisfed.org/series/SAVNRNJ> [accessed April 30, 2020]). Financial institutions do, however, offer higher interest rates as a way to attract new customers.

¹⁸ Note that this field experiment had a second treatment group that was offered a 0.3 percent interest rate that had a peer-group accountability structure. This aspect of the paper is discussed below in the section on peer effects.

¹⁹ For a subset of customers, the higher 3.0 percent interest rate was only available if they met their savings goal.

payments across the two interest rate conditions would be fairly small. Beyond the small amounts, it is possible that consumers do not fully understand how to translate interest rates, especially interest rates that are not round numbers, into dollars.²⁰

Two other studies—a field study in Kenya and an experimental lab study in the United States—examine interest rates of up to 20 percent. Both studies find statistically significant increases in savings. The Kenyan study finds that providing a temporary interest rate of 20 percent (versus zero percent) on individual accounts for six months increased savings account opening by 17 percentage points (55 percent) and increased balances in those accounts at six months by Ksh 105 (150 percent), which is equivalent to \$1.31 (Schauer 2018).²¹ This study also finds longer-term effects of this six month interest rate increase. For example, 3.5 years after the 20 percent interest rate on individual accounts expired, people who received the 20 percent (versus zero percent) interest rate were 26 percent more likely to save regularly, signaling a change in behavior (Schauer 2018). The author also finds that this 20 percent interest rate led to longer-term increases in entrepreneurship, business profits, and business capital.

The U.S.-based lab study, which provided participants with a hypothetical budget of \$100 to consume or save, finds that moving from an interest rate of five percent to 20 percent increased participants' likelihood of saving by 11 percentage points and increased the average amount saved by \$17.52 (Atalay et al. 2014). The authors also examine the introduction of a prize-linked savings account (described in more detail below) and find that contributions to the interest-bearing savings accounts (even at the high 20 percent interest rate) decline when a prize-linked savings account option was introduced.²²

The estimated increases in the likelihood of opening a savings account in these two studies—17 percentage points in the Kenyan field study (Schauer 2018) and 11 percentage points in the U.S.-based lab study (Atalay et al. 2014)—are roughly consistent, but on the high end, with the matched savings literature, which we review next.

²⁰ Findings from the literature suggest that consumers fail to correctly interpret interest rates and their dollar value (Kinsey and McAlister 1981; Lee and Hogarth 1999).

²¹ Substantially more money flowed into and out of the 20 percent (versus zero percent) interest rate accounts—deposits were higher by Ksh 625 and withdrawals were higher by Ksh 475.

²² The PLS component of Atalay et al.'s (2014) study is discussed in more detail below.

4.2 Matched Savings

Matched savings programs encourage consumers to save by providing them with a financial match—such as \$0.50 or \$1 in match funds—for each \$1 saved in a specified savings account. A one-to-one match (match rate of 100 percent) is roughly equivalent to an interest rate of 100 percent, but we separate matched savings from interest rate increases because matched saving programs: (1) are generally provided outside the banking system (e.g., by non-profits and employers), (2) offer incentives that are substantially higher than market-driven rates, and (3) have a maximum match amount (e.g., \$1,000), which is generally referred to as the “match cap” or “match threshold.” As alluded to above, matched savings programs also typically offer incentives that may be easier for consumers to understand and process than interest rate incentives. Some of the pilots discussed below provide a savings account only to people who are assigned to receive the financial match (i.e., the treatment group), so the pilot is testing the combination of providing the saving account along with the financial match. We note these studies below.

Matched savings programs and experiments have been implemented in multiple domains including: (1) at tax time to encourage people to save for financial emergencies and retirement; (2) with employers to test workers’ responses to different retirement savings program features, and (3) with non-profits that incentivize lower-income people to save outside of tax time.²³ While retirement savings is not the focus of this review, we touch on it here because many of the matched savings experiments have been conducted in the retirement arena and this literature provides context for emergency savings-related findings. In general, the literature finds that providing people with financial matches to save increases savings. While there is consensus that higher match rates increase the *share* of people who take-up the savings product, the increases are modest (on the order of five to 15 percent). The literature is less clear on how match rates affect the *amount* people save, although there is evidence that people use the match threshold as a savings target.²⁴

²³ Matched savings is most commonly used by employers to promote retirement saving. Outside of retirement, matched savings became popular in the 1990s and early 2000s with the advent of Individual Development Accounts (IDAs) and Children’s Savings Accounts (CSA), where the savings in these accounts are earmarked for specific purposes (e.g., first home, new business, or post-secondary education in the case of IDA and a child’s post-secondary education for CSA). Matched savings incentives have expanded beyond these specific uses and types of accounts, and include efforts to increase people’s emergency savings (e.g., SaverLife and SaveUSA).

²⁴ Consumers could use the match thresholds as a focal point or anchor (anchors are discussed further below), but there is an important distinction between these match thresholds and more generic numerical anchors. Specifically,

Financial matches have been used to encourage people to build emergency savings when they file their income taxes. Tax time can be an opportune moment for families to save, since many low- and moderate-income U.S. tax filers receive a substantial tax refund. While there is nothing in the federal tax code that encourages people to save for general emergencies,²⁵ as there is for retirement savings, financial matches at tax time have been piloted. One such pilot project—SaveUSA—operated from 2011 through 2013. The SaveUSA program provided a \$0.50 match for every \$1 saved up to \$1,000, for a maximum annual match of \$500 (Azurdia et al. 2013). SaveUSA operated in four U.S. cities (New York City, NY; Newark, NJ; San Antonio, TX; and Tulsa, OK).²⁶ Across the four cities, between six and 13 percent of SaveUSA eligible tax filers expressed interest in a SaveUSA account and enrolled in the SaveUSA study in 2011 (Azurdia et al. 2014).²⁷ These enrollment rates are similar to the enrollment rates of other efforts designed to encourage saving at tax time, which are discussed further below.²⁸

Two of the four SaveUSA cities—New York City and Tulsa—were rigorously evaluated with an RCT design. In both New York City and Tulsa, people were randomly assigned to the treatment or control group only after they expressed interest in a SaveUSA account and enrolled in the pilot study; thus, the study participants are a select subset of people with an interest in saving. In New York and Tulsa, low- and moderate-income tax filers assigned to the treatment group were eligible to receive a (1) SaveUSA account and (2) \$0.50 match for every dollar saved up to \$1,000 in their SaveUSA account for roughly one year.²⁹ The SaveUSA account, which was only provided to treatment group members, was free. Although deposits into the account had to remain there for roughly one year in order for individuals to receive the matched dollars, the money could be withdrawn early without penalty. Treatment group members were eligible to receive the match in each of the three years the pilot was in operation. Control group members were not eligible to receive the SaveUSA account or any matching funds (in any of the years).

the financial incentive does not exist above the match threshold, so the financial benefit of saving changes at that threshold point.

²⁵ One possible exception is Health Savings Accounts, which can be used for out-of-pocket medical expenses.

²⁶ SaveUSA grew out of a New York City pilot—\$aveNYC—which was first implemented in 2008. While the \$aveNYC pilot collected outcome data, there was no randomized evaluation. The expansion of the \$aveNYC program to SaveUSA came with a rigorous evaluation.

²⁷ The SaveUSA pilot was launched in conjunction with VITA programs in each city. Tax filers who met the income-eligibility threshold (\$25,000 for tax filers without a dependent and \$50,000 for those with a dependent) were offered entry into the pilot study. In the two random assignment cities, participant tax filers were told that they had a 50 percent chance of being assigned to the SaveUSA account (i.e., treatment) group.

²⁸ The enrollment rate of \$aveNYC, which was the precursor to SaveUSA, ranged between six and 10 percent.

²⁹ People could make deposits of between \$200 and \$1,000 into their SaveUSA account. Account holders made a pledge to save a set dollar amount (between \$200 and \$1,000) until January 31st of the next year. If savings fell below the pledge amount, the person forfeited the match.

The randomized evaluation measured the impact of offering the SaveUSA accounts 18 months and 42 months after study enrollment—a longer follow-up period than most of the other studies reviewed here. A survey administered to treatment and control group members at 18 and 42 months collected information about people’s nonretirement savings, so the evaluation captures a broad measure of people’s savings, not the amount they saved in a specific account (e.g., the SaveUSA account). It should be noted that these savings amounts were self-reported and are therefore subject to respondent error.

Eighteen months after people enrolled in the study, SaveUSA was found to increase the share of people reporting any nonretirement savings by 7.5 percentage points (from 71.9 percent to 79.4 percent) and the average amount of non-retirement savings by \$512, as compared with the control group (Azurdia et al. 2014). This \$512 increase in non-retirement savings includes the financial match that treatment group members received in their first year, which averaged \$191.

At 42 months, after treatment group members had been in the program for three tax seasons, the SaveUSA evaluation found similar increases in the savings of treatment (versus control) group members; the share of people reporting any nonretirement savings increased by 7.6 percentage points (from 72.4 percent to 80.0 percent) and the average amount of non-retirement savings increased by \$522 (Azurdia and Freedman 2016). As with the 18-month findings, this \$522 increase includes the financial match that treatment group members received in the three pilot years, which averaged \$365 across the three years.³⁰ SaveUSA also was found to increase the share of people who reported having a savings account—by 11.0 percentage points at 18 months and by 8.3 percentage points at 42 months (Azurdia et al. 2014 and Azurdia and Freedman 2016, respectively).³¹

There have been other efforts to increase savings via financial matches at tax time, including efforts to encourage tax filers to save for retirement. In an experiment carried out with H&R Block, Duflo et al. (2006) studied how financial matches influence the take-up of and contributions to an Individual Retirement Account (IRA). Specifically, H&R Block customers were randomly assigned to one of three groups: offered a 20 percent financial match on IRA contributions up to \$1,000 (treatment group 1), offered a 50 percent financial match on IRA contributions up to \$1,000 (treatment group 2), and not offered a financial match (control group). The IRA product offered to all three groups had a minimum annual contribution of \$300, a \$25 account termination fee, and a \$10 annual maintenance fee if the account balance

³⁰ The average amount of the financial match declined in each of the three years (\$191, \$96, and \$78, respectively), as did the share of people who received the match (65.5 percent, 27.5 percent, and 20.5 percent, respectively).

³¹ SaveUSA was found to increase the share of people with a checking account at 18 months (only)—by 4.0 percentage points.

did not exceed \$1,000 or did not receive automatic deposits. As compared with tax filers in the no financial match (control) group, the financial match of 20 percent increased the share of tax filers who took-up the IRA by five percentage points (from three percent to eight percent) and the match of 50 percent increased the share contributing to an IRA by 11 percentage points (from three percent to 14 percent).

The increased take-up of the IRA found by Duflo et al. (2006) is of the same general magnitude as the SaveUSA participation rate, even though Duflo et al. (2006) focuses on deposits into the H&R Block IRA savings product and SaveUSA is focused on unrestricted emergency savings. SaveUSA's offer of a 50 percent match resulted in between six and 13 percent of SaveUSA eligible tax filers opening accounts in the four cities,³² while Duflo et al. (2006) finds that a 50 percent (versus zero percent) match resulted in an 11 percentage point increase in the share of tax filers who took-up the IRA—in the upper end of SaveUSA's six to 13 percent range. Duflo et al. (2006) also finds that a 20 to 30 percentage point increase in the match rate (i.e., from zero to 20 percent and from 20 to 50 percent) resulted in a five to six percentage point increase in the IRA contribution rate.³³

Exploiting the naturally occurring variation in the rates that employers use to match their employees' retirement savings contributions, Engelhardt and Kumar (2007) estimate the response of employees to different match rates and find estimates similar to Duflo et al. (2006). They find that a 25 percentage point increase in the match rate increased employees' likelihood of participating in their employers' retirement savings plan by five percentage points. Further, in a review of the matching literature, Madrian (2013) concludes that the literature finds "strikingly similar results" across a range of studies with different contexts, data, empirical approaches, and concludes that offering a match rate of 25 percent leads to a roughly five percentage point increase in the share of people who participate in a savings plan.

In addition to the question of whether financial matches motivate people to *open* a savings account or begin saving, is the question of the *amount* people save in these accounts. The literature is less clear on how match rates affect the amount of savings, although there is evidence that people use the amount of the match threshold as a savings target (Madrian 2013;

³² Among study participants in the treatment group (i.e., those offered a SaveUSA account), nearly all—97.5 percent—opened and made a deposit into the SaveUSA account in year one, but the share dropped to 39.1 percent and 28.8 percent in years two and three, respectively (Azurdia and Freedman 2016).

³³ The offer of a 20 percent match rate in the Duflo et al. (2006) experiment provides information about a 20 percentage point increase (zero versus 20 percent) and a 30 percentage point increase (20 versus 50 percent) in the match rate.

Zielewski et al. 2009). In Duflo et al.’s (2006) experiment with H&R Block, the average IRA contribution amount among IRA contributors in the 20 percent and 50 percent match groups (i.e., treatment groups 1 and 2), which both faced a \$1,000 match cap, was roughly equal at \$1102 and \$1108, respectively.³⁴ In other words, conditional on the decision to save, the 50 percent (versus 20 percent) match rate did not result in higher average deposit amounts. Rather, the two treatment groups appear to have used the match threshold of \$1,000 to guide their decisions about how much to save.³⁵

A randomized evaluation of two Individual Development Account (IDAs) programs, which are matched savings programs that incentivize low-income people to save for specific longer-term investments (e.g., new home, small business, post-secondary education), also finds that the program increased the amount of savings 12 months after enrolling in the program (Mills et al. 2016, 2019).³⁶ While IDAs are focused on saving for longer-term investments, money saved in an IDA can be withdrawn for financial emergencies without penalty, so the dollars saved can be used to address people’s short-term needs. Both of the IDA programs studied by Mills et al. (2016, 2019): (1) required that people apply to the program and meet eligibility criteria (e.g., be low income), (2) had a maximum savings period of 24 months, and (3) had match caps of \$1,000 and match rates between 250 and 400 percent.³⁷ Treatment group members were offered the IDA savings account and the financial match, while control group members were not eligible for the savings account or the financial match. Thus, the evaluation captures the full effect of the program, not just the financial incentive.

The 12-month follow-up evaluation found that the IDA program increased liquid assets (excluding the match) at the median by \$657 and by an average of \$799. While these values are several hundred dollars below the match threshold of \$1,000, participants had another year to make contributions (Mills et al. 2016, 2019). Similar to the SaveUSA pilot evaluation, these IDA findings are based on a survey that collected information about treatment and control group members’ liquid assets (e.g., dollars in savings, checking, stocks, bonds, retirement savings). As a result, the evaluation findings likely capture new savings, not savings moved from one account

³⁴ Conditional on take-up, the average IRA contribution for control group members, who received no financial match, was \$765.

³⁵ Note that with the substantially higher contribution rate for those in the 50 percent versus 20 percent match groups (11 percent versus eight percent), the overall average contribution amounts (i.e., including people who did not contribute to the IRA) were significantly higher in the 50 percent versus 20 percent group—\$155 versus \$85. For control group members, the average contribution amount was \$22.

³⁶ For information on an earlier IDA experiment—the America Dream Demonstration—which was implemented from 1999 to 2003, see Grinstein-Weiss et al. (2008), Mills et al. (2008), and Mills et al. (2004).

³⁷ Because all study members applied to the IDA program, they are a select subset of people with an interest in saving. Note that IDA programs generally require participants to enroll in financial education.

to another; however, this information is self-reported. Looking at participant outcomes after three years, the evaluation found no statistically significant increase in liquid assets for participants in the treatment group at the 36-month follow-up compared to those in the control group (Ratcliffe et al. 2019). This is consistent with expectations, as the program goal was to increase asset ownership in the medium term. In line with this goal, 36 months after participants entered the pilot study, participation in the IDA program was found to increase homeownership among renters (by 4.7 percentage points) and business ownership among nonbusiness owners (by 5.1 percentage points)—two goals of the program (Ratcliffe et al. 2019).

Both the SaveUSA and IDA studies examine outcomes beyond savings and assets holdings. The SaveUSA authors also look at whether the savings intervention led to changes in debt levels and the use of non-bank loans (e.g., payday loans) and find little evidence of change in either of these outcomes at either the 18-month or 42-month follow-up (Azurdia et al. 2014; Azurdia and Freedman 2016). With an increase in savings and no accompanying increase in debt, one might expect improvement in well-being. However, the authors do not find improvements in financial security at either the 18- or 42-month follow-up, nor do they find declines in material hardship. The authors primarily measure financial security and material hardship with yes-no indicators of people's experiences (e.g., unable to pay housing or utility bills in the past 18 months, which is the extensive margin), not a refined measure that captures the intensity or degree of study members' experiences (e.g., number of times unable to pay housing or utility bills in the past 18 months, which is the intensive margin). While the savings intervention did not eliminate study members' hardships, it is possible that there were more subtle improvements not captured in the evaluation (e.g., reduced the number of times people experienced hardship). Speaking directly to this possibility, the IDA evaluation examines more refined measures of material hardship (i.e., the number of times participants could not pay for housing, utilities, or needed medical care) and finds that the IDA program led to a 34 percent (one hardship) reduction in the number of hardships experienced at the 12-month follow-up and a 25 percent (0.6 hardship) reduction in the number of hardships experienced at the 36-month follow-up (Mills et al. 2016 and Ratcliffe et al. 2019, respectively). Both the 12- and 36-month follow-up evaluations also find evidence of improvements in financial security.

4.3 Prize-Linked Savings Accounts

Prize-linked savings (PLS) accounts incentivize people to save by providing them with a chance to win financial prizes when they save. The appeal of PLS accounts is purported to stem in part from individuals' propensity to overweight small probabilities as well as the appeal of winning, in many cases, a substantial sum of money without risking a loss (Kearney et al. 2010; Tufano, Maynard, and De Neve 2008). PLS incentives can be set up in a number of ways, with different

savings requirements, chances of winning, and prize amounts. For example, for every additional \$5 dollars added to savings, say up to \$500, people could earn an additional entry for one of 20 monthly cash prizes (e.g., one grand prize of \$1,000 and 19 \$20 prizes).

Prize-linked savings is relatively new in the United States.³⁸ The first large-scale PLS effort—Save to Win—was launched in 2009 as a partnership between eight Michigan credit unions and Commonwealth (previously Doorways to Dreams, D2D), the organization that spearheaded U.S. PLS efforts (D2D Fund 2011). Within 10 years, credit unions had opened about 80,000 PLS accounts and account holders had saved more than \$190 million (Commonwealth 2018). While prize-linked savings programs have primarily been implemented with credit unions, banks, fintechs, and a prepaid card provider have also offered PLS products (Commonwealth 2018). A prominent PLS example is Walmart teaming up with a prepaid card provider (Green Dot) to provide a nationally available prize-linked savings account set up as a “savings vault” feature on Walmart’s MoneyCard prepaid card. In the first year the PLS account was available, MoneyCard users saved roughly \$600 million (Commonwealth 2018). With a focus on dollars saved in the PLS account, it is unclear how much of these savings are new savings versus savings that were shifted from an existing account into the PLS account. However, qualitative interviews with PLS accountholders suggest that PLS accounts generate new savings for at least some accountholders (Vasquez et al. 2015).

These U.S.-based PLS efforts have not been rigorously tested with an RCT design. However, prize-linked savings have been studied in an experimental lab setting in the United States, as well as in smaller scale field experiments conducted in developing countries. These studies provide some evidence that PLS accounts may increase savings and are most attractive to people who are not connected to the formal financial sector and those without savings. Lab studies also suggest people may save more when financial incentives are provided in a PLS scenario, as opposed to the context of standard interest rate payments.

Speaking to this last point, an experimental lab study conducted with University of Maryland students finds that when faced with incentives to save that have the same expected payout—one that is a straightforward interest payment and another from a prize-linked savings lottery—people save more under the prize-linked savings scenario (Filiz-Ozbay et al. 2015). This pattern appears under the multiple PLS scenarios (e.g., different timing and payout amounts). Given the structure of the experiment, higher savings implies new savings, suggesting that PLS strategies may encourage people to increase their total savings (not only the amount saved in the

³⁸ Regulatory barriers at both the state and federal levels played a role in limiting PLS products in the United States. While federal legislation enacted in 2014—the American Savings Promotion Act—removed the restriction that barred federally chartered banks from offering customers PLS products, some state legislatures must nonetheless first legalize PLS accounts before they can be offered (Pew Charitable Trust 2018).

PLS account). The authors also find that PLS is more attractive to men, people who report playing the lottery, and those with relatively low savings.

Another experimental lab study, which is based on two U.S. online surveys, presents participants with a \$100 budget to allocate to savings, a lottery, or consumption under a series of different scenarios (Atalay et al. 2014). These scenarios include different cash-prize lotteries for dollars saved and different interest rates on the savings account. The authors find that the introduction of a PLS scenario, where participants have the chance of winning \$1,000 with an expected return that was less than, equal to, or more than the interest rate on the savings account, increased participants' savings by an average of 25 percent (by \$12, from \$48 to \$60), and that participants were relatively insensitive to the expected return on the PLS product. For participants who reported having no savings, the average increase was larger—about \$16, or approximately 40 percent. The authors also find that offering a prize-linked saving account in addition to a traditional interest-bearing savings account led to declines in the amount saved in the interest-bearing savings account.

Two PLS field experiments, one conducted in Kenya and another in Mexico, find limited increases in savings account ownership and level of savings as a result of the PLS offers. There is, however, some evidence that prize-linked savings accounts are more attractive to people without savings or connection to the formal financial sector, which is consistent with findings from the two lab studies.

In the Kenyan-based study, 300 study participants were offered a savings account with an initial deposit of about \$10 (1,000 Kenya shillings) and were sent text messages each week encouraging them to save (Moscoe, Agot, and Thirumurthy 2019). The 300 study participants—all men working in the fishing and transportation sectors who owned a mobile phone and reported a willingness to open a bank account—were randomly assigned to a treatment group (eligible for the PLS) and a control group (received only the standard interest rate on their savings).³⁹ Treatment group members were entered into a weekly lottery if they saved that week, and had (1) a 20 percent chance of winning a prize equal to 20 percent of their weekly savings and (2) a two percent chance of winning a prize equal to 100 percent of their weekly savings.

Based on a relatively short nine-week follow-up period, the authors find that while a higher share of men in the treatment (versus control) group saved money in their bank account (37

³⁹ This study focused on men in HIV-prevalent areas and, beyond savings, focused on spending for gambling, alcohol, and transactional sex.

percent versus 27 percent, respectively), the difference is not statistically significant.⁴⁰ The authors find no statistically significant increase in savings account balances at the end of the nine weeks. However, among the *subset* of study participants with no bank savings at study entry, those in the treatment group saved roughly \$10 more than those in the control group (about \$12 versus \$2, respectively). This suggests that PLS might be most attractive to people without savings or a connection to the formal financial sector.

In a second field study based in Mexico, PLS access was randomized across bank branches, not people (Gertler et al. 2018).⁴¹ For two months (October and November 2010), cash-prize lotteries were available in the treatment bank branches.⁴² The cash-prizes were announced via posters in the treatment bank branches and were also advertised via loud speakers in the nearby streets. Existing and new savings account holders gained one entry into the lottery for every 50 pesos (about \$4) in new savings that month. At the end of each of the two months, 1,000 prizes of 400 pesos (about \$32) and two prizes of 10,000 pesos (about \$800) were raffled off. The authors find that, on average, three additional savings accounts were opened per treatment (versus control) branch in the lottery months. While three accounts per branch is quite modest, this represents roughly a 40 percent increase in account openings as compared with the control branches, which averaged 7.39 new accounts per month. The authors also examined the level of savings in the accounts (over a five-year period) for the subset of people who opened new accounts during the lottery period and find no statistically significant difference between accounts opened in the treatment versus control branches (even three months after the lottery).⁴³ With cash prizes only given for two months, people may not have known about the PLS offer in time to participate. While the implementation of the PLS program with a bank branch is the type of setup that happens at scale, the short window of program operation makes the messaging and upfront advertisement of the program of critical importance to the study's findings.

⁴⁰ The low power of this study is due to the relatively small sample size (300 people).

⁴¹ Among a group of 110 selected bank branches, 40 bank branches were assigned to the treatment group, where cash-prize lotteries were made available for two months, and 70 bank branches were assigned to the control group (cash-prize lotteries not available).

⁴² With this design, the expected payout is higher for each dollar saved in the treatment versus the control bank branches.

⁴³ This analysis is based on the subset of existing account holders at the start of the experiment.

4.4 One-Time Incentive Payments

Pilot studies have also tested whether one-time payments can induce people to open a savings account and save in it. The studies find that upfront incentives on the order of \$10 can change people's take-up and use of a savings product.

One field study, which American Express conducted in partnership with the CFPB, explored whether a one-time \$10 financial incentive would induce American Express prepaid card customers, who tend to be lower income, to set up and use the card's savings feature (Cooper et al. 2016). The randomized field experiment focused on prepaid card customers who had not previously signed up for the prepaid card's *Reserve* "set aside" (i.e., savings) feature. The field study tested four strategies to promote savings, where one of the strategies offered customers a \$10 payment if they set up the *Reserve* savings feature and saved \$150 within roughly a three-month period. The offer of the \$10 financial incentive was found to increase the share of people who set up the savings feature by 3.4 to 4.0 percentage points (or 98 to 115 percent higher than the control group), depending on the encouragement message they received. This increase is only slightly smaller than the findings from the matched savings literature (discussed above), but with a much smaller incentive payment. American Express prepaid card customers may view the company as a trusted financial provider and saw the offer of the *Reserve* saving feature as providing a service of value. Beyond savings, the authors also look at self-reported use of payday loans and other alternative financial services (collected from a follow-up survey with participants) and find that individuals who were sent the \$10 incentive offer were 19.5 percent (3.1 percentage points) less likely to report using a payday loan (in the one-year follow-up period) as compared with the control group.

A second field study conducted by H&R Block in partnership with the CFPB explored whether a one-time \$5 financial incentive offered to H&R Block's *Emerald Card* prepaid card customers would motivate customers to use the card's *ePocket* savings feature (Banker et al. 2019). While a statistically significantly higher share of people who received the offer of a \$5 incentive used the *ePocket* (as compared with the control group), the overall share of people who made use of the savings feature was low. Among those in the control group, 0.18 percent of customers deposited funds into the savings feature during the pilot period. For those in the treatment group who received the \$5 incentive offer, 0.29 percent deposited funds into the savings feature during the same period. While the incentive to save led to a 63 percent increase in customers making savings deposits, the difference is small in absolute terms. H&R Block *Emerald Card* holders may have limited interaction with a prepaid card during the year, which may have resulted in them being less receptive to the offer than the American Express prepaid card holders.

5. Behavioral and Psychological Approaches to Saving

Research from the fields of psychology and the behavioral sciences offers insights into what motivates individuals to save as well as their barriers to saving. Some of these insights stem from an understanding of how individuals interact with their environments, including how strategically designing the decision context—through careful choice architecture—can facilitate consumer decision-making. Other insights come from research exploring what kinds of strategies can encourage consumers to follow through with their intentions.

Although traditional economic theories posit that consumers have stable preferences and values that they try to maximize when making decisions, psychological and behavioral research suggests that consumers may, in fact, “construct” their preferences as they are making decisions, leading to choices that are malleable and dependent on various features of the decision environment. For example, some of the research presented below demonstrates that consumers are likely to “anchor” their savings decisions on specific values or targets they are presented with while making these decisions. As another example, automatically enrolling individuals into savings accounts increases saving.

The psychological and behavioral research on commitment mechanisms also demonstrates deviations from traditional economic theory that suggests people make choices to maximize their well-being. This behavioral research demonstrates that people will voluntarily enter into commitment schemes that limit—or even place penalties on—their ability to easily access their own money. These studies show not only that there is considerable interest in such commitment strategies, but also that these strategies can increase savings. Commitment devices—which can be categorized as either “external” or “internal”—appear to be a promising way to help consumers align their intentions to save with their actual saving behavior.

5.1 Choice Architecture and Anchoring

A key savings plan design feature used to increase people’s savings is setting the plan default such that people are automatically enrolled into the savings plan. This “opt-out” or “auto-enrollment” framework has been used extensively in the retirement savings arena, where employers automatically enroll employees into the employers’ retirement savings plan and employees have the ability to opt out of the plan if they take steps to do so. In a review of the retirement savings literature, Madrian (2013) makes the point that automatic enrollment is “by

far the most effective method to increase participation” in employer-sponsored retirement savings plans.⁴⁴ While widely recognized as particularly effective in increasing participation, findings from a recent study that projects the effect of autoenrollment on lifetime retirement savings questions the large retirement savings effects found in earlier studies (Choukhmane 2019);⁴⁵ however, this study does find that automatic enrollment improves the welfare of lower-income workers. Additional research has also explored the efficacy of “auto-escalation,” whereby gradual increases in contributions occur automatically over time (e.g., Thaler and Benartzi 2004; Madrian 2013). This kind of pre-commitment to saving has also been found to increase employees’ retirement savings (see Sass 2016 for a review).

Efforts to use automatic features to increase non-retirement savings lag far behind those for retirement savings. One tax-time pilot, conducted at VITA sites in 2010, tested whether automatically directing lower-income tax filers (i.e., providing an opt-out default) to purchase a U.S. savings bond with a portion of their tax refund would result in higher take-up of savings bonds than a more traditional scenario where tax filers must actively choose to purchase a savings bond (Bronchetti et al. 2013).⁴⁶ Unlike automatic enrollment findings in the retirement savings arena, Bronchetti et al. (2013) find no effect of the opt-out default. That is, tax filers assigned to the opt-out group purchased savings bonds at the same rate—about 9 percent—as those having to make an active choice to purchase a bond. However, the authors identify some key differences between this savings bond pilot and pilots examining automatic enrollment in retirement savings settings, including the timing of the decision (i.e., on the day taxes were filed versus a longer decision-making period for retirement savings choices) and the manner in which the decision was made (i.e., requiring an active choice or using a default).

Turning to emergency savings, automatically enrolling employees into employer-sponsored emergency savings accounts was first proposed as “AutoSave” in the mid-2000s (Cramer 2006), but the automatic enrollment of workers into emergency savings accounts has not been piloted in the United States.⁴⁷ As a sign of continued interest by scholars, implementation options for

⁴⁴ Also see Madrian and Shea (2001).

⁴⁵ Choukhmane’s (2019) analysis suggests that many people who do not participate in the retirement saving plan when the plan requires that they actively opt-in eventually do participate (i.e., enroll in the plan) and catch up in terms of their level of savings.

⁴⁶ Under the pilot, the treatment (opt-out) and control (opt-in) groups received the same information and opportunity to purchase a savings bond. The difference was in the way the tax preparer framed the savings bond offer (opt-in versus opt-out).

⁴⁷ A version of the AutoSave program that did not include the auto-enrollment feature (i.e., employees opted into the emergency savings account) was piloted with six employers. Results from the pilot test found that participation rates generally ranged from nine to 25 percent and tended to attract workers in the lower three fifths of the wage distribution (Lopez-Fernandini and Schultz 2010).

employer-sponsored “rainy-day” savings accounts, some that are linked with employers’ retirement savings plans, were recently presented in the literature (Beshears et al. 2019). Know Your Customer (KYC) regulations and uncertainty about whether such a program would violate state-level anti-garnishment laws are hurdles for such pilots (Beshears et al. 2019).

One approach aimed at increasing emergency savings is strategically embedding a savings component into a loan product. With the “Borrow and Save” model piloted by community development credit unions, a mandatory forced savings mechanism was built into the consumer loan, such that when the loan was fully repaid, the borrowers’ savings (which ranged from 15 to 50 percent of the loan value) were made available to the consumer. The structure of the required savings component differed across the credit unions, with either (1) a share of the loan amount immediately deposited into a savings account or (2) a portion of the borrowers’ monthly payment deposited into the savings account (National Federation of Community Development Credit Unions [NFCDCU] 2013).⁴⁸ Some credit unions provided financial incentives to repay the loan on time, such as reimbursement of the loan application fee or some of the interest paid. While Borrow and Save was not rigorously evaluated, an analysis of borrowers’ outcomes found that they saved an average of \$550 on loans that averaged about \$1,380 (NFCDCU 2013). An open question is whether such a product affects consumers’ financial well-being, which is of particular importance because consumers could presumably pay down their loans more quickly and incur lower interest payments if they were not simultaneously saving. However, requiring borrowers to build a savings cushion could prevent them from needing to take out a future loan, potentially a high-cost payday loan. A rigorous evaluation of a “borrow and save” loan product would help answer these questions.

Beyond wholesale program design features that funnel people toward increased savings (e.g., auto-enrollment, mandatory savings feature built into loan products), there are smaller-scale interventions that have been shown to encourage people to save more. In the retirement savings arena, for example, providing employees with higher numerical savings targets and prompts (e.g., via email or hard-copy mail in the form of suggested contribution rates, dollar thresholds, or retirement income projections) have been found to increase employees’ retirement savings contributions (Choi et al. 2017; Goda, Manchester, and Sojourner 2014). While the literature

⁴⁸ Incorporating a mandatory savings component results in a borrower having a higher monthly payment or a longer repayment period. In the case where a share of the loan amount is immediately deposited into a savings account, for example, a person who wants a \$500 loan (i.e., \$500 in liquidity) would receive a loan for, say, \$600, where they would receive \$500 and \$100 would be deposited into a savings account. Repayment of the \$600 versus \$500 requires a higher monthly payment or payment over more months. The National Federation of Community Development Credit Unions changed its name to Inclusiv in 2019.

finds that arbitrary target values presented to employees influence people's saving behavior, differences between these target values—ranging from modest to high values—do not greatly affect contributions. For example, Choi et al. (2017) tested contribution rate anchors ranging from one to 20 percent of income (one, three, 10, and 20 percent) and, while the three, 10 and 20 percent anchors were all found to increase average contribution rates relative to the control group (by up to 1.4 to 1.9 percent of income), there was no statistically significant difference between the three anchor values.⁴⁹ However, in tests of a \$7,000 and \$11,000 savings goal, Choi et al. (2017) find higher average contribution rates for the \$11,000 goal group relative to the control group, but not for the \$7,000 goal group (relative to the control group).

With a focus on building savings at tax time, a series of studies from the Refund to Savings (R2S) experiments conducted in partnership with Intuit, find that design features embedded into tax preparation software (in this case TurboTax Freedom Edition) affect tax filers' saving behavior. The R2S experiments were primarily focused on liquid savings. In these experiments, suggestions about how much of the tax refund to save, the design and presentation of the savings options, and motivational prompts about what to save for all were found to influence whether tax filers saved a portion of their tax refund and how much of their tax refund they saved (Grinstein-Weiss et al. 2015; Grinstein-Weiss et al. 2017a; Grinstein-Weiss et al. 2017b; Roll et al. 2019).⁵⁰ The tax filers in these experiments were low- to moderate-income, as the TurboTax Freedom Edition is a version of TurboTax's tax-preparation software made available to lower-income tax filers for free.

In experiments run in tax season 2012, Grinstein-Weiss et al. (2017b) examined the effect of two savings prompts (save 25 percent and 75 percent of the tax refund amount) and four motivational prompts (save for emergencies, retirement, something special, plus a no prompt group). With this two by four design, tax filers were assigned to one of eight treatment groups or a control group.⁵¹ A person is identified as saving if he or she deposited part or all of their refund in a savings account. Examining the eight treatments groups together, the authors find that 9.8 percent of treatment group members and 7.2 percent of control group members saved

⁴⁹ The three, 10 and 20 percent anchors increased employees' contribution rates up to 1.5, 1.9, and 1.4 percent of income (respectively) relative to the control group. These contribution rates are not statistically different from one another.

⁵⁰ The paper by Grinstein-Weiss et al. (2017a) also presents experiments run using people recruited from Amazon Mechanical Turk.

⁵¹ The eight treatments result from two savings anchors (25 and 50 percent) and four motivational prompt groups (no prompt, emergency, retirement, and something special), or a two by four design. The control group did not receive a saving anchor or a motivational prompt.

at least part of their tax refund—a difference of 2.6 percentage points (Grinstein-Weiss et al. 2017b). The average amounts deposited into savings were \$93 and \$73 (respectively)—a difference of \$20. These treatment-control group differences were driven by the 25 and 75 percent anchors, which resulted in similar saving behavior, not the motivational prompts.⁵² While the increases in the share and average amount saved as a result of the interventions are modest, these are low-cost interventions that can be rolled out to all users once changes to the software are made.

The R2S experiments run in tax season 2013 again tested saving prompts (e.g., 25, 50, and 75 percent anchors) and motivational prompts (Roll et al. 2019). These 2013 experiments are more involved in that different savings and motivational prompts were tested at three different time periods during the tax filing season. Consistent with the finding from Grinstein-Weiss et al. (2017b), the effects of the prompts are relatively small. In experiments run early in the tax filing season (January 31–February 13), Roll et al. (2019) compares eight treatment groups (combination of two savings prompts [25 and 50 percent anchors] and four motivational prompts [emergency, family, future, and generic]) with a control group that only received the generic motivational prompt. The authors find that about 10 percent of people in the best performing treatment groups (“25 percent anchor with generic prompt” and “25 percent anchor with emergency prompt”) saved part of their tax refund, while roughly eight percent of control group members did so—a difference of about two percentage points.

Beyond immediate deposits into savings, Roll et al. (2019) used a follow-up survey completed by a small number of study members to examine savings outcomes six months after people filed their taxes (the analysis includes about 2,900 of the 207,000 study members). The findings suggest that the higher anchor values (primarily the 75 percent anchor) may have led to an increase in the amount of the refund saved for six months after people filed their taxes (by about \$15).

Other ways of framing the savings decision can alter behavior, such as suggesting an amount to save per day, per week, or per month. A study of Acorns’ saving and investing app (marketed as “invest your spare change”) did just that (Hershfield, Shu, and Benartzi 2019).⁵³ New users to the app were presented with the opportunity to set up recurring deposits, where the suggested monthly deposit of \$150 was framed as an amount to deposit per day (\$5), per week (\$35), or

⁵² The share of tax filers who saved part of their tax refund was 9.6 percent among those who received the 25 percent anchor and 9.9 percent among those who received the 75 percent anchor.

⁵³ Details about the Acorns product can be found at <https://www.acorns.com/> (accessed April 13, 2020).

per month (\$150). New users were randomly assigned to one of these groups.⁵⁴ Take-up of the recurring deposit offer by new users was substantially higher for those who received the daily deposit framing (29.9 percent) than for those who received the weekly framing (10.3 percent) or the monthly framing (7.1 percent; Hershfield et al. 2019).⁵⁵

Looking at the subset of people who signed up for the recurring deposits, the authors find lower retention (i.e., continuing with the recurring deposits) after one month among those in the daily deposit group (75 percent) than those in the weekly and monthly groups (85-86 percent; Hershfield et al. 2019). It could be the case that some people in the \$5 daily deposit group did not initially realize how much the \$5 would add up to per week or month, so turned it off once they did. However, because of the higher initial take-up among people assigned to the daily deposit group (roughly 30 percent versus seven to 10 percent), the use of recurring deposits remained higher after one month for those in the daily group (22 percent) than the weekly and monthly groups (nine and six percent, respectively). No differences in retention between the three groups were found after two and three months and use of recurring deposits remained higher for the daily group (versus the weekly and month groups) after three months.⁵⁶ The authors also find no difference in the recurring monthly deposit amounts across the three groups. Overall, these results suggest that reframing the savings decision from a larger, cumulative amount to a series of smaller amounts—sometimes referred to as the “pennies-a-day” strategy (Gourville 1998)—can promote increased savings. This may be, as the authors note, because it feels less psychologically daunting and more feasible to save small amounts daily versus larger amounts weekly or monthly.

The choice architecture interventions described above focus primarily on prompting individuals to take up a savings product, but the question of continued saving is also important to consider. The research described below explores the use of commitment strategies as a way to help consumers continue saving once they have started, and to retain their savings. Of course, emergency savings are designed to be used when a financial shock hits, but commitment mechanisms could help consumers replenish savings after a financial shock, or ensure that those savings are not used for less pressing needs and are there when a shock hits.

⁵⁴ There was no control group.

⁵⁵ The authors also present a secondary experiment with a lower suggested recurring deposit (\$30 per month), framed as \$7 a week or \$30 a month (there is no daily amount). The results of this experiment are similar in that take-up of the recurring deposit offer was substantially higher for those who received the weekly versus monthly framing.

⁵⁶ For the daily, weekly, and monthly groups, retention from month one to month two was 89 percent, 89 percent, and 93 percent (respectively) and retention from month two to month three was 94 percent, 92 percent, and 90 percent (respectively).

5.2 Commitment Mechanisms

Savings balances depend not only on deposits, but also on whether and how much one withdraws. Individuals tend to exhibit imperfect self-control, which can result in both insufficient deposits and excessive withdrawals. Self-imposed commitment devices, under which individuals voluntarily restrict or alter their future choices, may help people overcome temptation and limited self-control and improve their saving behavior. In particular, individuals with present-biased preferences (where they place a premium on immediate rewards and discount future costs) may save less than they ultimately desire as they overvalue the present (Laibson 1997; O'Donoghue and Rabin 1999). Individuals who recognize their present bias may see value in making commitments that restrict or influence their future choices. Present biased individuals who do not recognize their time inconsistency will typically be less interested in taking up commitment devices, as they do not anticipate their self-control problems, but these same individuals may benefit from such strategies if adopted.

In the savings context, the literature has explored three key commitment approaches: (1) “contracts” that place external restrictions on behavior (e.g., impose steep penalties or prevent withdrawals altogether for a prespecified time period), (2) psychological motivation (such as earmarking savings for a particular purpose),⁵⁷ and (3) using peer comparisons as a mechanism to improve saving behavior. In theory, contracts that place explicit restrictions on future behavior may be more effective in helping individuals avoid future temptation, yet people may be more likely to adopt “soft” commitment mechanisms (that use psychological or peer pressure) as they typically allow for additional flexibility in case of emergency.

The literature finds that there is considerable demand for commitment, and generally suggests that commitment mechanisms that restrict behavior, apply psychological motivation, or induce peer pressure can all increase savings deposits and/or reduce savings withdrawals for some individuals. However, commitment strategies may backfire for various reasons, such as when failure to achieve a targeted goal results in financial penalties, psychological pressure distorts saving and borrowing decisions, and peer comparisons do not employ suitable reference groups.

Below we discuss selected papers from the literature examining each of these forms of commitment. For each section, we highlight results from specific papers and discuss potential limitations of the findings. The final section summarizes the broad findings from the literature,

⁵⁷ Earmarking can be thought of as labelling money for a specific purpose and may include physically separating it from other funds.

though we note that nearly all the field evidence discussed in this section is drawn from developing country settings and may not immediately generalize to a U.S. context.

External Commitment Devices

Commitment devices that prevent or penalize specific future behaviors—that is, external commitment devices—may help individuals overcome issues of limited self-control. In particular, individuals who recognize that they are having difficulty building savings (either because they deposit too little or withdraw too much) may be interested in, and benefit from, restricting access to their savings, penalizing their withdrawals, or committing to a stream of deposits to help boost savings balances. A series of studies has rigorously investigated this possibility using both field and lab experiments. Generally, the literature finds that there is meaningful consumer demand for external commitment and that it can improve savings balances on average.

Several studies have found that external commitment devices generally improve average savings balances. Ashraf, Karlan, and Yin (2006) collaborated with a bank in the Philippines to offer a commitment savings product that prevented withdrawals until a goal date had been reached or a goal savings amount had been achieved (the client could choose the form of commitment). Study participants were randomly assigned to either receive (treatment) or not receive (control) access to the commitment product. The authors find that 28 percent of clients offered the commitment savings product accepted and that demand was higher among individuals with present biased preferences (measured using surveys). Moreover, individuals randomly assigned to the commitment savings product offer showed an increase in their savings balances at the bank (across the commitment savings product and other accounts) when measured at both six months (47 percent increase) and twelve months (82 percent increase) relative to the control group.

Dupas and Robinson (2013) also conducted a field experiment investigating the effectiveness of external commitment, as well as the impact of an internal commitment device (i.e., psychological motivation) in improving health-related saving among participants in a Rotating Savings and Credit Association (ROSCA) in Kenya.⁵⁸ The authors test numerous treatments and find that a “Lock Box” that provided a dedicated place to keep health-related savings and prevented withdrawals until a savings goal was reached, was ineffective in improving health savings. However, an alternative treatment where savings were specifically for (and only accessible during) health emergencies reduced the likelihood that participants could not afford

⁵⁸ In a ROSCA, a group of individuals come together to make regular cyclical savings contributions to a group pool (or pot), which is then awarded to a different member each cycle.

needed medical care by 14 percentage points (45 percent) relative to control (ROSCA participants not offered a treatment savings product). The authors also find that a simple “Safe Box” treatment that provided a dedicated place to keep health-related savings (yet did not place external restrictions on behavior) increased health savings by 66 percent relative to the control group. The authors suggest these findings may be attributable to a mental accounting effect,⁵⁹ whereby labelling the account as one specifically intended for health-related expenses motivated study participants to save for this purpose.

Both Ashraf et al. (2006) and Dupas and Robinson (2013) find considerable demand for commitment and evidence that external commitment devices can improve saving behavior, though the nature of the restrictions on access may be important—external commitment may be more effective when it is well aligned with the purpose of saving and access is allowed for a prespecified purpose or emergency. Dupas and Robinson (2013) also find that “soft” commitment may be effective, a topic we return to in the section below.

An internet-based lab study conducted in the United States examined the relative efficacy of different sized withdrawal penalties—an external commitment device—on saving behavior. Beshears et al. (2020) conducted an experiment in the RAND American Life Panel where participants had access to a liquid account that does not penalize withdrawals and a commitment account that does. The terms of the commitment account were randomized across participants, imposing a 10 percent penalty, 20 percent penalty, or preventing early withdrawals altogether. Interest rates also varied, such that the interest rate was either equal to, or one percentage point higher or lower than the interest rate for the liquid account. Across interest rate conditions, the authors find that higher early withdrawal penalties sometimes increase, yet never reduce, average deposits to the commitment account. This also suggests that there is meaningful demand for commitment, consistent with the results discussed above.

While the research discussed above focused primarily on external commitment (and externally determined penalties) to reduce savings withdrawals, John (2019) explores a commitment contract in which individuals are able to select their own financial penalties and examines the efficacy of placing external commitment on deposits. In partnership with a bank in the Philippines, the study randomized participants into either (1) an “installment savings” group, which was offered an account that committed clients to making (bi)weekly deposits or pay a penalty chosen by the client, (2) a “withdrawal restriction” group, which had restrictions on withdrawals until clients reached either a goal date or goal amount in their personal savings plan (as studied in Ashraf et al., 2006), or (3) a control group that did not have access to either

⁵⁹ Creating a mental account labelled for a specific purpose can create a narrow frame under which using the money for a different purpose can feel like a loss (Thaler 1990; Thaler 1999).

of the above treatments. Take-up rates were 27 percent for the installment savings account and 42 percent for the withdrawal restriction account, also lending support to demand for commitment consistent with the literature discussed above. The author finds that both types of commitment increased average savings balances, by about \$10 and \$3.50 respectively. However, the average effects masks important heterogeneity—55 percent of installment savings clients defaulted on their commitment and paid a penalty, and more than half of these defaults occurred without the client making any deposits after the initial one opening the account. Relatedly, 79 percent of withdrawal restriction clients who chose a goal-based amount (as opposed to the goal-date amount) made no deposits after the initial one, tying up funds indefinitely (or until the balance was depleted by fees). These results highlight that external commitments may, at least in some cases, make individuals worse off.

Collectively, the work discussed above demonstrates that though not everyone is interested in placing restrictions on their future behavior, there is considerable consumer interest in external commitment devices. The literature also suggests that these mechanisms can be effective in improving saving behavior on average in some settings, though notably there is little evidence from the field in the United States. However, external commitment may also backfire for some individuals by imposing a cost with little or no improvement to saving behavior, as evidenced in John (2019), which could potentially result in reduced financial well-being. While external commitment can be effective, the next section examines whether saving behavior can be improved by using psychological techniques (such as earmarking) that do not place any restrictions or penalties on future behavior but rather operate through internal—or “soft”—commitment mechanisms.

Soft Commitment Mechanisms

The previous section documented that external commitment mechanisms can improve savings balances for some consumers, though not everyone is willing to place restrictions on deposits into or withdrawals from their future savings. For these individuals, “soft” commitment techniques that leverage internal psychological motivation may be more effective. Simple techniques such as earmarking may improve savings outcomes through mental accounting (Thaler 1990; Thaler 1999). Other techniques, such as making a promise to one’s self, may also be effective in some cases, as psychologists have suggested that people derive psychological utility from being consistent between their intentions and their actions (Cialdini 2007). Similarly, the number of savings goals and the number of accounts an individual uses to save may also influence savings and withdrawal decisions.

The literature has examined each of these possibilities, and generally finds evidence that applying psychological motivation can be effective in improving savings balances in the absence of external restrictions. However, this psychological motivation may also distort borrowing and

savings decisions, particularly if the savings are earmarked for a self-perceived important purpose.

Avdeenko, Bohne, and Frölich (2019) conducted a field study among microfinance clients in rural Ethiopia to examine the effectiveness of soft commitment, namely earmarking, which was similar to Dupas and Robinson's (2013) "safe box" condition described above. Participants were randomized into a treatment group, which received both a lockbox earmarked for a specific savings goal (but from which participants could make withdrawals whenever they like) and an individualized savings plan, or a control group, which got neither. The authors find that the lockbox coupled with an individualized saving plan led to a 22 percent increase in the amount of savings relative to the control group after two months. It is important to note, however, that it is not possible to separate the effects of the soft commitment from the effects of the individualized savings plan.

Soman and Zhao (2011) also conducted a field experiment that tested the effectiveness of earmarking as well as the number of savings goals on savings outcomes in rural India. Study participants were randomly assigned to one of four treatment groups that varied along two dimensions: (1) a single suggested savings goal (children's education) or multiple savings goals (children's education, health, and retirement) and (2) envelopes for the savings or no envelopes, or a control group who did not receive an envelope or nudge to set a savings goal (five groups in total). Over the six-month experiment, the authors find that focusing on a single goal and earmarking (i.e., keeping the savings separate from other funds using envelopes) improved saving rates. The average saving rate in the single goal condition was 9.24 percent relative to 5.79 percent in the multiple goal condition; while the average saving rate in the envelope condition was 8.46 percent relative to 6.90 percent without envelopes.

Both of the studies above, as well as Dupas and Robinson (2013), suggest that simple earmarking of savings using a separate savings location labelled for a specific purpose can improve savings outcomes. In a related study, Soman and Cheema (2011) conducted a field experiment to examine whether using visual reminders or "partitioning" (dividing savings across multiple accounts) can enhance the effectiveness of earmarking even further. Study participants, who were from rural India, were randomized (through three independent randomizations) to a high or low savings target (40 or 80 rupees), to receive plain white envelopes or envelopes that had pictures of their children printed on them (visual reminder), and to receive one envelope or two envelopes across which deposits would be split equally (partitioning). The authors find that both the visual reminders (pictures) and partitioning (multiple envelopes) improved savings balances, and that there was an interaction between the picture and partition conditions—the effect of partitioning was greater when the envelopes had pictures. The authors suggest that these effects may be driven in part by guilt associated with physically opening each envelope (e.g., when spending is necessary individuals may break into

one partitioned savings bucket, but leave the other intact), which is stronger when there is a salient reminder of the goal (children’s picture). The high savings target did not lead to a statistically significant improvement in savings on average, though there was a significant interaction between target level and partitioning. When the savings were partitioned, the high target increased savings; yet, when savings were pooled in one envelope, the high target reduced savings. When coupled with Soman and Zhao (2011), these results suggest that it may be advantageous to focus on a single goal and save using multiple accounts, though it is unclear if these findings would replicate in a U.S. context.

One study in the United States used an internet panel to investigate the relative efficacy of an external commitment device to that of a soft commitment device. Burke, Luoto, and Perez-Arce (2018) ran an experiment in the RAND American Life Panel among panelists who expressed difficulty in meeting their savings goals. Participants were randomly assigned to one of three savings devices: (1) a liquid account that did not restrict withdrawals (similar to that of Beshears et al. 2019), (2) a withdrawal restriction account that prevented withdrawals during the six month experiment, and (3) a soft-commitment treatment that was identical to the liquid account, but asked participants to think about their savings goals, visualize achieving them, and type out a pledge to work towards these goals (though it did not place any external restrictions on behavior). The authors find that both the soft-commitment and withdrawal restrictions treatments improved savings balances relative to control, though the external commitment account yielded the highest savings balances at the end of the six-month experiment.

While the literature discussed in this section suggests that relatively simple psychological techniques can help improve savings balances, in part by placing mental barriers on the use of the saved funds for purposes other than the savings goal, Sussman and O’Brien (2016) find that mental accounting can backfire. The authors conduct a series of experiments using hypothetical scenarios in which participants report how they would pay for an emergency expense (by using savings or a credit card). The stated purpose of the savings was randomized across participants. When assigned to a savings account for a perceived responsible purpose (e.g., saving for children) respondents are more likely to report that they would borrow (i.e., use a credit card) to cover the emergency expense rather than use savings compared to those assigned to an account for an unspecified purpose. This behavior is costly as the interest rate on the credit card option exceeds the interest rate on the savings account. The authors provide evidence that this effect is driven by guilt and perceptions that maintaining the savings is the personally responsible course of action. However, an additional experiment suggests that the proclivity to use costly credit to preserve perceived responsible savings may be mitigated by providing individuals with an option for automatic payroll reductions to replace the used savings balance.

Peer Effects

Peer effects can have a large influence on behavior, and previous research has documented impacts across numerous domains including school performance, energy consumption, and retirement savings (Allcott 2011; Duflo and Saez 2003; Sacerdote 2001). Recently, a series of papers discussed below has documented that peer effects can help improve short-term saving behavior as well, possibly through mechanisms such as reputational effects or norm setting. However, providing information on peer behavior may also be demotivating, particularly when peers' behavior appears difficult to achieve.

Kast, Meier, and Pomeranz (2018) examine the influence of interest rates and peer effects on short-term saving behavior among microcredit clients in Chile.⁶⁰ In addition to the interest rate treatment (discussed in Section 4.1 of this review), study participants were randomized into a control condition in which clients were offered a savings account with a 0.3 percent interest rate, or a “Peer Group” treatment that, in addition to offering the same savings account, also provided clients with the option to set and publicly announce a savings goal. This stated savings goal was publicly monitored in weekly meetings and progress toward the goal was rewarded through public, non-financial recognition. The authors find that, compared to those in the control group, participants in the Peer Group treatment deposited 3.7 times more often into their savings account and their average balance was almost twice as high after a year. In a follow-up experiment, participants were randomized into either a “Peer Pressure” treatment in which participants and a “savings buddy” received a weekly text message about whether the participant made their weekly savings deposit, a “Peer Information” treatment in which participants received the weekly text message about whether they made their deposit as well as information on the share of other participants like them who made a deposit that week, and a control group that did not receive weekly text messages. The authors find that the text message interventions improved saving behavior relative to the control group, though there were no differences between the Peer Pressure and Peer Information treatments. The text messages may have served as a reminder, making it difficult to disentangle what is driving improved saving behavior, but the results suggest that it may be possible to achieve similar effects without in-person meetings or peer pressure through regular feedback and follow-up messages that highlight norms amongst peers.

Breza and Chandrasekhar (2019) also examine peer effects as a form of commitment in an experiment in rural India. The study helped individuals across 60 villages review their finances, set a six-month savings goal, and open a formal savings account. Randomly selected individuals

⁶⁰ It is important to note that participants in the study were also borrowing at 90 percent annual percentage rate (APR), raising questions about the welfare impacts of encouraging saving in this context.

who agreed to save in each village were also given a peer to monitor their saving behavior. In half the villages, monitors were randomly assigned (from a pre-specified group), and in the other half of villages individuals were able to select their own monitor (from a pre-specified group). The authors find that, relative to those not assigned a monitor in the random assignment villages, having either a randomly assigned or a self-selected peer monitor increases total savings (across formal and informal accounts) by 36 percent and 30 percent on average, respectively. The results also suggest that reputational effects are important, as individuals assigned monitors who were more likely to have an impact on one's reputation (through network centrality or proximity) saw larger increases in savings. Perhaps more importantly, the authors provide evidence that the increased savings among individuals assigned a monitor persist 15 months after the intervention and came from increased labor and reduced unnecessary expenditure, leading to an increased ability to weather shocks.

While peers can help people to save more in some situations, peer comparisons may also be demotivating when the referenced behavior feels unattainable. Beshears et al. (2015) provide an example of detrimental peer effects in the retirement savings context. In partnership with a U.S. manufacturing firm, the authors randomized employees who were not participating in the employer's 401(k) plan, or who were contributing below the firm's match cap, to either receive or not receive information about saving behavior for similarly aged peers. The authors find that providing peer information reduced some employees' likelihood of plan participation by 3.6 percentage points (36 percent)—6.3 percent of these employees who were given peer information enrolled in the plan while 9.9 percent of employees not given peer information enrolled.⁶¹ Further, the decrease in plan participation was larger when the reported fraction of peers participating in the plan was higher. This oppositional effect was concentrated among low-income employees, suggesting that the peer comparisons may have been discouraging by acting as a reminder of their low relative economic status, or by referencing a behavior they find difficult to achieve.

Cumulatively, prior work demonstrates that peers can improve saving behavior either by acting as a monitor (and creating pressure to maintain one's reputation by achieving a savings goal) or by serving as a possible reference point as a target to achieve or exceed. However, careful selection of the reference peer group may be important, as peer behavior that appears difficult to attain may actually demotivate potential savers.

⁶¹ The reduction was observed among non-participants not eligible for automatic enrollment, though no effect was observed among the population that was eligible for automatic enrollment but actively chose not to participate.

Summary

The literature described in this section provides evidence that external commitment devices (such as withdrawal restrictions or penalties), internal commitment mechanisms (such as earmarking savings for a specific purpose), and peer monitors and reference groups can all help improve short-term savings outcomes. While on balance prior research suggests these techniques can be helpful, external commitment devices may impose penalties on individuals without commensurate increases in savings balances, earmarking savings for a specific purpose may encourage costly borrowing rather than dissaving when spending is required, and peer comparisons may be demotivating when peer behavior feels difficult to achieve.

While numerous contributions have been made to the (very broadly defined) commitment literature, there are still many unanswered questions. It would be useful to have more studies examining whether and how the various forms of commitment affect individuals differently across the socioeconomic spectrum (e.g., high income vs. low income). Further, with some notable exceptions, there is little research that directly compares the relative effectiveness of external commitment, psychological motivation, and peer effects. Of note for this review, almost all the rigorous evidence discussed in this section is drawn from developing country settings. It is largely unclear if similar results would be obtained in U.S. contexts.

6 Conclusion

Savings as a path to financial well-being is at the core of the CFPB’s *Start Small, Save Up* initiative. In a complex financial environment where consumers face competing demands for their limited funds, as well as trade-offs between various savings goals (e.g., retirement, children, emergencies), the CFPB has focused on the importance of an emergency savings cushion as a key pillar of Americans’ financial security. To this end, this report synthesizes rigorous research of programs and strategies aiming to help consumers achieve greater liquid savings. This review will support researchers, policymakers, and practitioners as they seek to understand and build upon the current state of the research on liquid savings. There is still much to learn about consumers’ barriers to saving and the most effective ways to encourage consumers to save for short- to medium-term unexpected expenses. There is also much to learn about how consumers’ short-term emergency savings could affect their ability to save for longer-terms goals such as a child’s education or retirement.

We organize the literature into three broad categories—savings products, financial incentives, and behavioral and psychological approaches to increase savings. These three areas have been the most widely studied and together provide a thorough overview of the research landscape to date. The three categories identified in this review address ways to facilitate consumers’ saving behaviors: providing a ready place to save (savings products), providing motivation to save (financial incentives), and providing a choice environment that encourages saving (behavioral and psychological approaches).

The literature on **savings products** suggests that efforts to introduce or expand access to low-cost savings products generally increase the take-up of savings products and the amount saved. The research also finds that consumers are sensitive to fees related to these products. For example, an analysis of prepaid cards that included a savings feature found that charging a \$4.95 monthly fee versus no monthly fee reduced card take-up and use by 40 to 60 percent (Ratcliffe et al. 2014, 2017).

The review of the **financial incentives** literature focuses on four approaches to providing consumers with financial incentives to save: interest rates, matched savings, prize-linked savings, and one-time incentive payments. The literature finds that modest interest-rate increases (interest rates in the one to five percent range) lead few people to alter their saving behavior, although there is some evidence that more substantial interest rate increases (above-market rates in the range of 10 to 20 percent) do lead to increases the amount of savings. At the same time, providing people with financial matches to save has been found to increase savings. While there is consensus that higher match rates increase the share of people who save, the

increases are modest (on the order of five to 15 percent). The literature is less clear on how match rates affect the amount of savings, although there is evidence that people use the amount of the match cap as a savings target. Small, one-time financial incentives to save (e.g., \$10) on prepaid cards have also been found to increase the amount saved. The literature also provides some evidence that matched savings programs reduce economic hardship (e.g., difficulty paying bills) and improve financial security (e.g., greater confidence in meeting monthly living expenses).

Millions of dollars have been saved in prize-liked savings accounts in the United States, but we are unaware of any rigorously evaluated U.S. field study of PLS. While the rigorously tested PLS field experiments conducted in developing countries find limited increases in savings as a result of the PLS offers, lab experiments conducted in the United States suggest that people respond to PLS offers and save more under a PLS versus interest rate scenario. Given the somewhat recent expansion of PLS in the U.S., it may be an area ripe for future research. For example, there is more to learn about whether there is an optimal way to structure prizes—e.g., split between small and large cash prizes, provide more or larger upfront prizes (to get people excited to sign up), or spread out prizes over a longer period of time (to encourage sustained engagement). Another strategy is to test if requiring people to set up, or reward people for setting up, automatic savings in order to be entered into the prize drawing increases savings over the long term. Leveraging both PLS and automation, this strategy could promote continued saving even after the prizes are no longer offered by requiring people to take an affirmative action to discontinue saving. Finally, from a provider’s standpoint, one benefit to offering a PLS program rather than a matched-savings program, for example, is that implementation costs are known at the outset; program administrators know the total cost of the PLS program (i.e., the total prize amount), while with matched savings programs the cost hinges on the amount people ultimately save.

A large literature has also explored ***behavioral and psychological approaches*** to increase savings. Savings interventions that draw on psychological concepts have mainly focused on factors related to the decision environment, such as default options, and factors related to the decision maker, such as the tendency for people to compare themselves to others. This literature finds that embedding features directly into programs and products—such as autoenrollment and auto-escalation—can lead to increased uptake of and deposits into savings-related products. However, unlike in the retirement savings arena, there has not been a randomized evaluation of automatic enrollment into an emergency savings program. Such an evaluation would take an important stride to moving the emergency savings field forward.

Beyond major structural changes to products and implementation design, modest changes to the decision environment (e.g., changing numerical savings targets and prompts and reframing the size of the savings amount) can also lead people to save more, although the estimated impacts

can be quite modest. These interventions tend to be low-cost and can be rolled out on a large scale, so can nonetheless impact a large number of consumers.

The behavioral and psychological literature also examines voluntary commitment devices as a means to increase savings. This literature generally finds that although not everyone is interested in placing restrictions on their future behavior, there is considerable consumer interest in mechanisms that help consumers follow through on their intentions to save. This review distinguishes between “external” and “internal” commitment devices, with the former imposing restrictions or penalties, primarily on savings withdrawals, and the latter using “softer” approaches to constrain future savings-related decisions. The literature suggests that, in some settings, external commitment mechanisms can be effective in improving saving behavior, on average; however, external commitment may also backfire in some cases (e.g., John 2019) and reduce financial well-being. The literature on internal commitment devices suggests that relatively simple psychological techniques, such as placing mental barriers on the use of savings for purposes other than the savings goal and using peer comparisons as a way to motivate saving, can help increase savings balances. However, like external commitment devices, commitments driven by internal psychological mechanisms can have deleterious effects on savings as well (e.g., Sussman and O’Brien, 2016). For example, peer comparisons that result in savings targets that feel difficult to achieve may demotivate potential savers (e.g., Beshears et al. 2015).

Many of the studies described in this review make use of randomized controlled trials (RCTs), which rigorously test interventions in a real-world setting and are often considered to be the gold-standard for evaluations. Often this kind of data collection is achieved through partnerships between financial institutions (or similar entities) with direct access to consumers’ financial transactions and researchers with experience developing and analyzing rigorous evaluations. Additional opportunities for controlled experimentation on relevant populations would increase the field’s understanding of promising strategies and is a critical avenue for future research. For example, a rigorous research study exploring the efficacy of “roundup” programs, where small amounts of money are deposited into a customer’s savings account each time a purchase is made, would provide evidence on whether these types of programs—which are commonly offered today—actually increase customers’ savings and financial well-being. Financial institutions and fintech companies offering saving-related products may not have the capacity to rigorously evaluate these offerings, but they could partner with researchers to conduct program evaluations to identify whether these untested strategies are effective at

increasing savings. BlackRock’s “Emergency Savings Initiative” is one recent project making use of these types of partnerships to advance the field’s knowledge of promising savings strategies.⁶²

In addition to capturing consumers’ saving behavior in realistic environments, the field would be well served by obtaining a more holistic picture of consumers’ financial lives. Consistent with *Start Small, Save Up*’s focus on savings as a path to consumer financial well-being, there is a clear need to include measures of economic well-being, such as the CFPB’s Financial Well-Being Scale,⁶³ in savings-related research studies. Further, more research exploring both sides of consumers’ “balance sheets,” that is, both assets (including savings) *and* debt, can give researchers, policymakers, and practitioners more insight into how consumers make trade-offs between competing financial goals, such as saving for emergencies and paying down credit card debt. A more complete view of the balance sheet can also help identify whether a particular savings intervention engenders “new” savings or whether research participants are simply moving money from one account to another in response to a particular incentive offer or choice architecture design. Partnerships between financial entities and researchers can be useful when trying to gather richer data on a consumer’s financial state. For example, surveys that ask consumers to report on their savings, spending, debt and related financial activities can be an important complement to a research evaluation. Administrative data, when collected under strict adherence to consumer protection and privacy rules, can also be a valuable means to gathering a more comprehensive picture of consumers’ financial behaviors as they relate to simultaneous decisions around saving, spending, and debt. Administrative data in particular can help identify “flows” of funds; that is, whether and how individuals are using and replenishing their savings. Both surveys and administrative data come with benefits and challenges, such as respondent error (in the case of surveys) and difficulty gaining access to all financial accounts a consumer may have (in the case of administrative data).

A more comprehensive view of the consumer as it relates to savings would not only attempt to capture both sides of the balance sheet—through surveys and administrative data—but would also take a long-term approach to financial well-being. Much of the research described in this review focuses on take-up of a savings product, or savings balances or retention in a savings feature a few months after the intervention takes place, although there are exceptions (e.g., Azurdia et al. 2014; Azurdia and Freedman 2016; Cooper et al., 2016; Mills et al. 2016, Ratcliffe et al. 2019). However, as captured in the goals of *Start Small, Save Up*, consumers are likely to experience the most benefit from saving when they develop sustainable savings habits and can

⁶² For a description of BlackRock’s recent initiative see <https://savingsproject.org/about/>.

⁶³ A guide to using the CFPB’s Financial Well-Being Scale, as well as the questionnaires and scoring guides, can be found at <https://www.consumerfinance.gov/data-research/research-reports/financial-well-being-scale/>.

build (or use and replenish) a basic savings cushion over time, and these outcomes can best be measured using a long-term approach to savings research. Many outcomes of interest related to a savings intervention, such as improvements in financial well-being and the use of liquid savings to weather financial shocks, likely emerge months, if not years, after a savings intervention takes place. Long-term outcomes can be difficult and expensive to capture, but research that focuses on the downstream consequences of saving will be most useful to understand the effects of saving on a consumer’s overall financial state.

As the field continues to build an evidence base to support an understanding of promising saving strategies, it is equally important to understand strategies that have *not* been successful as well as the boundary conditions (i.e., under what circumstances they work and do not work) on the strategies that show promise. This includes the release of researchers’ null results. The Office of Evaluations Sciences (OES),⁶⁴ based at the U.S. Government’s General Services Administration, is at the forefront of this practice, having completed over 70 rigorous evaluations with government agency partners. OES is committed to presenting their findings on successful and unsuccessful trials, advancing the various fields from which they draw and to which they apply their interventions.

The current review of the literature identifies promising strategies that have been tested in the savings context, but there are opportunities to dig deeper into areas that have shown potential. One example is “just-in-time” interventions, which provide the appropriate support or information to an individual at the time when an individual is most likely to be receptive to the information. This concept has been applied in the savings context, such as at tax time, when consumers are more likely to have “extra” money, or upon taking out a new loan, when there may be an opportunity to enroll in a “borrow-and-save” program.⁶⁵ Identifying other opportune moments when consumers might be more receptive to a saving message, such as a new employment opportunity—when consumers are setting up direct deposit and may have an option to set up automatic transfers to savings accounts—is a promising avenue for further research. Relatedly, while prior research has explored the effects of automation on retirement savings (e.g., auto-enrollment and auto-escalation in retirement savings), more research related to automatic transfers into liquid savings accounts, including institutional and psychological barriers to automation, is an area for additional study. Finally, as described throughout this review, consumers’ savings goals, whether provided as numeric benchmarks or information about peers’ behavior, can be an important motivation or impediment to saving. Learning more about how consumers identify, pursue, fall short of, or abandon altogether their savings goals

⁶⁴ To learn more about the Office of Evaluation Science’s research and practices, see <https://oes.gsa.gov/>.

⁶⁵ Other areas where “just-in-time” interventions have shown promise include financial education (Fernandes, Lynch and Netemeyer 2014) and mobile health support systems (Nahum-Shani et al. 2018).

can provide insight into how consumer think about saving and what interventions and innovations are most likely to lead consumers to achieve the financial outcomes they desire.

Appendix A:

Table 1: SUMMARY OF ARTICLES HIGHLIGHTED IN THE REVIEW

Source	Type of Savings	Primary Intervention Type*	Method**	Primary outcome measures
Aportela (1999)	Liquid savings	Savings Products	Quasi-experimental	Savings rate
Ashraf, Karlan, and Yin (2006)	Liquid savings	Commitment Mechanisms: External	RCT	Take-up of the commitment saving product, savings balance
Atalay, Bakhtiar, Cheung, and Slonim (2014)	Liquid savings	Interest Rates, Prize-Linked Savings	Experimental lab study	Any savings, amount saved
Avdeenko, Bohne, and Frölich (2019)	Non-retirement savings	Commitment Mechanisms: Soft	RCT	Savings balance
Azurdia, Freedman, Hamilton, and Schultz (2014)	Non-retirement savings	Matched Savings	RCT	Have a savings account, amount of nonretirement savings, debt levels, non-bank loans
Azurdia and Freedman (2016)	Non-retirement savings	Matched Savings	RCT	Have a savings account, amount of non-retirement savings, debt levels, non-bank loans, financial security, material hardship
Banker, Cooper, Johnson, Knoll, and Sieminski (2019)	Liquid savings	One-Time Incentive Payments	RCT	Deposit money into prepaid card savings feature
Beshears, Choi, Laibson, Madrian, and Milkman (2015)	Retirement savings	Commitment Mechanisms: Peer Effects	RCT	Retirement plan enrollment, contribution rate

Table 1: SUMMARY OF ARTICLES HIGHLIGHTED IN THE REVIEW (CONTINUED)

Source	Type of Savings	Primary Intervention Type*	Method**	Primary outcome measures
Beshears, Choi, Harris, Laibson, Madrian, and Sakong (2020)	Liquid savings	Commitment Mechanisms: External	Experimental lab study	Savings balance
Breza and Chandrasekhar (2019)	Liquid savings	Commitment Mechanisms: Peer Effects	RCT	Savings balance
Bronchetti, Dee, Huffman, and Magenheim (2013)	Savings bond	Choice Architecture	RCT	Purchase savings bond
Burke, Luoto, and Perez-Arce (2018)	Liquid savings	Commitment Mechanisms: Soft	Experimental lab study	Savings balance
Choi, Haisley, Kurkoski, and Massey (2017)	Retirement savings	Choice Architecture and Anchoring	RCT	Retirement plan contribution rates
Cooper, Knoll, Sieminski, and Zimmerman (2016)	Liquid savings	One-Time Incentive Payments	RCT	Set up prepaid card savings feature, use of alternative financial services
Duflo, Gale, Liebman, Orszag, and Saez (2006)	Retirement savings	Matched Savings	RCT	Opened IRA, amount deposited into IRA
Dupas and Robinson (2013)	Liquid savings	Commitment Mechanisms: External	RCT	Take-up of the commitment saving products, health investment
Engelhardt and Kumar (2007)	Retirement savings	Matched Savings	Quasi-experimental	Retirement plan participation
Filiz-Ozbay, Guryan, Hyndman, Kearney, and Ozbay (2015)	Liquid savings	Prize-Linked Savings	Experimental lab study	Amount saved
Fitzpatrick (2015)	Liquid savings	Savings Products	Quasi-experimental	Bank account ownership, financial assets
Gertler, Higgins, Scott, and Seira (2018)	Liquid savings	Prize-Linked Savings	Randomized evaluation	Number of bank accounts opened, savings balance

Table 1: SUMMARY OF ARTICLES HIGHLIGHTED IN THE REVIEW (CONTINUED)

Source	Type of Savings	Primary Intervention Type*	Method**	Primary outcome measures
Grinstein-Weiss, Cryder, Despard, Perantie, Oliphant, and Ariely (2017)	Liquid savings	Choice Architecture and Anchoring	RCT	Save portion of tax refund, amount of tax refund saved
Hershfield, Shu, and Benartzi (2019)	Invest spare change	Choice Architecture	Randomized evaluation	Recurring deposit set up, retention, amount saved
John (2019)	Liquid savings	Commitment Mechanisms: External	RCT	Take-up of the commitment savings product, savings balance
Karlan and Zinman (2018)	Liquid savings	Interest Rates	RCT	Set up savings account, savings balance
Kast, Meir, and Pomeranz (2018)	Liquid savings	Interest Rates, Commitment Mechanisms: Peer Effects	RCT	Savings balance
Mills, McKernan, Ratcliffe, Edelstein, Pergamit, Braga, Hahn, and Elkin (2016)	Liquid savings	Matched Savings	RCT	Liquid assets, use of alternative financial services, material hardship, financial security
Mills, McKernan, Ratcliffe, Edelstein, Pergamit, and Braga (2019)	Liquid savings	Matched Savings	RCT	Liquid assets, use of alternative financial services, material hardship
Moscoe, Agot, and Thirumurthy (2019)	Liquid savings	Prize-Linked Savings	RCT	Any savings, savings balance
National Federation of Community Development Credit Unions (2013)	Liquid savings	Choice Architecture	Outcomes analysis	Savings balance

Table 1: SUMMARY OF ARTICLES HIGHLIGHTED IN THE REVIEW (CONTINUED)

Source	Type of Savings	Primary Intervention Type*	Method**	Primary outcome measures
Ratcliffe, McKernan, Mills, Pergamit, and Braga (2019)	Liquid savings	Matched Savings	RCT	Liquid assets, asset ownership, use of alternative financial services, material hardship, financial security
Roll, Russell, Perantie, and Grinstein-Weiss (2019)	Liquid savings	Choice Architecture and Anchoring	RCT	Save portion of tax refund, amount of tax refund saved, tax refund saved for six months
Schaner (2018)	Liquid savings	Financial Incentives to Save: Interest Rates	RCT	Opened savings account, savings balance, save regularly, entrepreneurship, business profits
Soman and Cheema (2011)	Liquid savings	Commitment Mechanisms: Soft	RCT	Savings balance
Soman and Zhao (2011)	Liquid savings	Commitment Mechanisms: Soft	RCT	Fraction of income saved
Sussman and O'Brien (2016)	Liquid savings	Commitment Mechanisms: Soft	Experimental lab study	Using savings or credit to cover emergency expenses
Tufano (2011)	Savings bond	Savings Products	RCT	Take-up of any savings bond or any savings product, amount saved

* Research study may have investigated other intervention types.

** RCT refers to randomized control trial.

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