

**“Save at Home”:
Building Emergency Savings
One Mortgage Payment at a Time**

*Working Draft
Prepared for the
University of Wisconsin Center for Financial Security and Mott Foundation
Emergency Savings Project Salon*

Stephanie Moulton, OSU
Anya Samak, University of Wisconsin
Cäzilia Loibl, OSU

Abstract

This chapter proposes “mortgage reserve accounts” (MRAs) as an innovative mechanism for building accessible emergency savings, thereby buffering financial shocks for low-to-moderate income homebuyers within the first few years after home purchase. By incorporating automation, incentives, and monitoring, MRAs are behaviorally-targeted to overcome biases commonly experienced by consumers and for which first time homebuyers are most vulnerable. First-time homebuyer programs administered by State Housing Finance Agencies provide a scalable delivery channel because of their structured, repeated interactions with homebuyers before and after purchase. This chapter includes a discussion of different implementation models that integrate MRAs within the state housing finance agency delivery system. Costs and benefits are discussed, in addition to the potential effectiveness of each model. Evaluation through field experiments will be necessary to more precisely identify causal mechanisms. Expected outcomes include increased emergency savings, reduced mortgage-loan delinquency and lower amounts of non-mortgage debt.

Key Words

Emergency savings, homebuyer, mortgage, escrow account

I. Introduction

This chapter explores the potential of behaviorally-motivated “mortgage reserve accounts” as an automated tool to build emergency savings for otherwise vulnerable low and moderate-income (LMI) households purchasing their first homes. Financial shocks (e.g. involuntary unemployment or reduction in wages) and unexpected expenses (e.g. furnace replacement or roof repairs) within the first few years of homeownership can derail the fragile financial foundation of LMI households and put them at risk of losing their homes through foreclosure. Most LMI households enter homeownership with little equity or residual savings-- on average only \$2,000 of liquid assets-- including cash on hand, savings and checking amounts (Moulton et al. 2011; VanZandt and Rohe 2011). While homeowners are building equity through their monthly mortgage payments, the equity accumulated in the first few years is not accessible for consumption until the loan balance falls below a leverage-able threshold (typically, below 80% of the value of the home), placing them at higher risk of default. To the extent that extending homeownership to LMI households remains a policy goal, scalable strategies to offset the potentially higher default risk of such mortgages becomes a critical, yet challenging, objective.

Mortgage reserve accounts (MRAs) combine mortgage financing for LMI first- time homebuyers with a mechanism to build accessible emergency savings, thereby buffering income and expense shocks within the first few years after home purchase. The key feature of the MRA models proposed here is the post-purchase emergency savings mechanism, integrated with the monthly mortgage payment. From a behavioral perspective, the MRAs proposed here also target specific consumer vulnerabilities through automation, incentives and monitoring. Rather than requiring a new structure for implementation, MRAs can be readily incorporated into existing

first time homebuyer programs, such as those administered through state Housing Finance Agencies (HFAs). State HFAs have an established, sustainable infrastructure in place to provide affordable mortgages to LMI households, serving an average of 100,000 first time homebuyers nationwide each year. A successful pilot study recently conducted by the researchers with the Ohio Housing Finance Agency demonstrates the potential to combine the HFA financing structure with interventions for LMI homebuyers (Moulton et al. 2011).

This chapter proceeds as follows. First, the financial and behavioral challenges facing LMI homebuyers are described, indicating the need for emergency reserves. Second, possible MRA models are described in detail, highlighting the target population, key implementation components, and costs and benefits of different implementation strategies. Finally, a proposed evaluation design is presented and key implications of possible results are discussed.

II. Financial Vulnerabilities & Behavioral Challenges

Financial Vulnerabilities of LMI Homebuyers

The recent financial crisis provides an extreme example of the tenuous link between economic stability and housing stability for individuals, communities and the macro-economy. Even prior to the crisis, however, it has been understood that financial shocks (often referred to in the literature as “triggering events”) are a primary cause of mortgage delinquency for homeowners, and that financial shocks combined with high leverage increase the risk of default (Avery et al. 1996; Campbell and Dietrich 1983; Quercia and Stegman 1992). These shocks include events such as loss of income, unexpected medical expenses, divorce, or loss of wage earners in the household (Getter 2003). For new homeowners, these shocks could also include unexpected expenses related to home repair.

While no household is immune to financial shocks, homeowners with a sufficient cushion have more options to draw on than defaulting on their mortgage payment. This cushion could be in the form of equity; sufficient equity can increase the ability of a homeowner to sell and move (downsize), or to borrow against the home (such as through a home equity loan). Ownership in a home may over time allow for access to equity to help cushion income or expense shocks, however, most homeowners have very little equity from which they can draw in the first few years after purchase (Belsky 2010). The cushion could also be in the form of savings – homeowners could draw from existing savings to cover emergency expenses or to cover unexpected loss of income. Recent survey data from FINRA’s National Financial Capability Study revealed that homeowners facing an income shock who did not have emergency savings were significantly more likely to make a late mortgage payment or experience foreclosure than were similar homeowners with emergency savings (Mottola 2013).

LMI first-time homebuyers are particularly vulnerable to financial shocks. Previous research documents that the majority of LMI families enter homeownership with very little emergency reserves (VanZandt and Rohe 2011; Moulton et al. 2012; Mottola 2013). For example, from a survey of new LMI homebuyers, VanZandt and Rohe (2011) found that the average amount in savings at the time of purchase was \$3,500, an amount that decreased within the first two years after purchase. They also report that nearly half of new LMI homeowners experience major unexpected home repairs, and more than one-third report major unexpected increases in utility costs, property taxes, or homeowner’s insurance within the first two years after purchase. Rather than building emergency reserves, new homeowners often increase their level of debt. For example, VanZandt and Rohe (2011) found that non-mortgage consumer debt

payments increased by an average 48 percent (nearly \$200 per month) within the first two years after home purchase.

Current strategies to address the financial vulnerabilities of LMI consumers focus primarily on education and counseling provided prior to home purchase, often referred to as “homebuyer education and counseling”, or counseling when a homeowner enters into default (Collins 2007; Moulton 2012). The information provided during pre-purchase counseling is intended to help new homebuyers make better decisions about the initial purchase transaction, and to equip new homeowners with the skills needed to manage their money and the associated expenses with homeownership. LMI first-time homebuyers may lack information and/or feel overwhelmed by the amount of information as a new homebuyer, before and after purchase (Lax et al 2004; Bucks and Pence 2008). To the extent that this misinformation leads to sub-optimal decisions (e.g., taking out a high cost mortgage, buying more “house” than one can reasonably afford given monthly expenses), information can help improve decision-making and thus reduce the risk of default.

There is some evidence that borrowers who receive education and counseling prior to purchase have lower risk of mortgage default (Hirad and Zorn 2002; Quercia and Spader 2008; Agarwal 2009; 2010). However, most of these studies rely on non-experimental data and cannot appropriately account for client self-selection into education and counseling (Collins and O’Rourke 2010). It is likely that unobserved factors, which drive both client selection into counseling, also make clients more likely to make timely mortgage payments, thus biasing results. Further, it is difficult to separate the mechanisms that may lead to reduced default risk. Is it the information provided through education, or the relationship with the counselor that is associated with timely mortgage payments? Finally, current approaches to homebuyer education

and counseling often overlook the behavioral challenges facing new LMI homeowners. In contrast, the concept of mortgage reserve accounts begins with an identification of such challenges, as discussed in the following section.

Behavioral Challenges Facing First-Time Homebuyers

LMI first-time homebuyers may experience common behavioral biases that impede their decision-making ability, both during and after home purchase. The purchase of a first home represents a high-stakes decision for most households, which means that sub-optimal choices during this process are relatively costly. Moreover, since these households are making the home purchase for the first time, behavioral biases are particularly common. As Kunreuther et al. (2002) put it, “life offers few opportunities to train for decisions where the consequences of a poor choice are large and, once made, difficult to reverse.” Possible behavioral biases faced by the new homebuyer include excessive focus on short-term horizons and reliance on emotion under stress. The purchase situation is certainly an emotional, as well as stressful, event that may overwhelm decision-making capabilities (Payne, Bettman and Schkade, 1999). The financial picture gets even more complicated if first-time homeownership is connected with events in the family life course, often marriage and childbirth (Aarland and Nordvik 2009). The overwhelming focus on the actual purchase while blocking out post-purchase emergencies is also in line with research on affect and emotion. The above-mentioned biases associated with first-time home purchase may cause the homebuyer to overlook the associated future expenses associated with homeownership (excessive focus on short-term horizons).

The same behavioral challenges experienced during home purchase are also present post-purchase, and impede the ability of LMI first-time homebuyers to prepare for and build sufficient financial reserves to buffer financial shocks. We focus on three relevant behavioral challenges

that homeowners will encounter on a daily basis: 1) present bias, 2) excessive focus on short-term horizons and 3) mental accounting.

Present bias in this context refers to the tendency to prefer consumption over saving today, but to believe that one will prefer saving over consumption tomorrow. Present bias would predict that homeowners would not choose to save for a financial cushion in the present, but may demand a commitment device (or a savings vehicle) in the future. Of course, when the future arrives, present-biased homeowners will again procrastinate savings. In fact, economists have suggested that the elimination of commitment opportunities during the 1990s caused decreases in savings rates partially due to present bias or hyperbolic discounting (Laibson, 1997). Present biased individuals may also face additional financial situations such as having higher credit card debt than individuals who are more future oriented (Meier and Sprenger, 2010). Thus, present bias provides an explanation for the lack of savings habits or saving accumulation among households in general, and LMI households specifically.

A second common tendency is the excessive focus on short-term horizons. Individuals who excessively focus on the short-term have difficulty considering future consequences of today's actions over longer time horizons. Excessive focus on short-term horizons may explain why LMI homeowners fail to adequately prepare for financial emergencies post-purchase. Individuals who inaccurately predict the actions of their future self are also more likely to procrastinate saving for today, which would explain why saving post-purchase is so difficult (O'Donoghue and Rabin, 1999). Excessive focus on the short term also makes it difficult for individuals to anticipate the probability of negative shocks. In particular, individuals may underestimate the likelihood of future negative shocks, in this case, post-purchase emergency expenses for home renovation and maintenance. While these shocks are relatively common, new

homebuyers may think these events are not likely to happen. At the same time, home maintenance and meeting payment obligations may create a stream of stressful situations, where decisions are made complicated by an overflow of choices, an overload of information, or limited time to consider various options (Lax, Manti, Race and Zorn 2004; Bucks and Pence 2008). Stress and budget constraints during these stressful situations again reduce the likelihood of being able to save. Incentives or external monitoring systems associated savings, if they are implemented in the present, may provide a reason for present-biased individuals to begin saving.

The third and final behavioral challenge is mental accounting (Thaler, 1980). Mental accounting refers to the principle that individuals will treat money differently dependent on the account this money is in. One great example of this is that windfall funds (such as a larger-than-expected tax return, or large one time bonus) may be used by households to finance extravagant consumption (such as an expensive restaurant meal) more than expected and steady increases in pay. That is, individuals “ earmark ” different streams of money for different types of activities, and due to present bias and excessive focus on the short term, may not earmark any incoming funds for savings. This may also explain low savings rates of already-stressed LMI households, who may benefit from an opportunity to commit some portion of their income into a savings account set aside for emergencies.

III. Proposed Intervention: Mortgage Reserve Accounts

The next section of this chapter describes mortgage reserve accounts (MRAs) as an innovative mechanism to address the vulnerabilities and challenges noted above. By incorporating a reserve savings feature into the monthly mortgage payment, MRAs are designed to increase financial stability and reduce mortgage default risk after purchase. While there are a

variety of models and implementation strategies that can be used in conjunction with MRAs, the basic concept is based on three primary objectives:

- (1) To integrate an *automatic* savings component into the monthly mortgage payment for low and moderate-income first time homebuyers, providing an emergency savings cushion for unexpected expenses or unplanned financial shocks.
- (2) To *incentivize* targeted homebuyers to participate in the automated savings program, through underwriting flexibility (overlays), financial incentives (e.g. matched deposits), and/or program requirements.
- (3) To provide evidence-based, low-touch *monitoring* (external reminders and accountability mechanisms) for homebuyers during the first few years after home purchase, encouraging timely mortgage payments and other positive financial behaviors.

The objectives for MRAs described above incorporate automation, incentives, and monitoring into one intervention. These behaviorally targeted mechanisms are grounded in research from behavioral economics, psychology and consumer financial decision-making. Below we briefly describe each mechanism highlighting applicable theory and evidence. We then identify MRA design considerations specific three key stages in the MRA design process, including account enrollment, monthly deposits, and withdrawal restrictions.

Automated Savings

The foundation of the MRA design is an automated savings component built into the monthly mortgage payment. Similar to an escrow account for property taxes and homeowner's insurance, a reserve account linked to the monthly mortgage payment is established at the time of closing. The total monthly mortgage payment includes a specified amount to be deposited into

the reserve account, in addition to the portion of the payment paid to principal, taxes, insurance, and private mortgage insurance (if applicable). Escrow accounts for mortgages began after the Great Depression, when many homeowners faced foreclosure for failure to pay property taxes. While taxes and insurance are typically paid two times per year, borrowers with escrow accounts pay the lender a prorated portion of the taxes and insurance each month, and the lender pays the tax and insurance bill on behalf of the borrower. This escrow system reduces the probability that a borrower will default on their property taxes and homeowners insurance (Anderson and Dokko 2009; 2010).

In light of the behavioral challenges of present-bias and mental accounting, researchers have called for more opportunities for automated savings (Bertrand et al., 2004). Integrated reserve savings accounts can act as a commitment device; that is, an arrangement that helps the individual meet the difficult goal of increased savings, which carries with it a financial penalty if the goal is not met (Bryan et al., 2010). Commitment devices have been shown to be effective both in laboratory and field data, with the level of commitment directly related to the size of the penalty (see Bryan et al., 2010, for an overview). Plans such as Save More Tomorrow (Benartzi and Thaler, 2004), in which employees commit to having a portion of their future salary increases go toward retirement savings, have been effective at increasing savings rates. The reserve account can also take advantage of mental accounting – according to this theory, money that is not restricted in any way (such as money retained as cash or in a checking account) may be more quickly spent without intent than money that is earmarked in an MRA. Field experiments in developing countries have found that providing individuals with technologies that intentionally set-aside savings significantly increased the amount of money accumulated, primarily through affecting mental accounting (e.g., Dupas and Robinson, 2011).

Incentives

Incentives are important at different stages of the MRA, as they provide an external motivation for households that are excessively focused on the short-term. First, an up-front incentive is needed to encourage homebuyers to participate. This could be by requiring the establishment of an MRA in conjunction with an affordable loan product that offers additional subsidies (e.g., reduced interest rate or down-payment assistance), or requiring an MRA to qualify under relaxed underwriting criteria for homebuyers who would otherwise not be eligible for conventional mortgage financing. To the extent that regulatory changes to the mortgage market restrict certain loan characteristics (e.g., high loan to value mortgages), higher risk borrowers may not be able to access mortgages through conventional channels. MRAs could be incorporated with certain exempt mortgage channels (including mortgages originated by state housing finance agencies) as a compensating factor to offset the potentially higher risk. The ability to qualify for additional subsidies or financing may be sufficient incentive to elicit participation. Aside from initial participation, some sort of incentive or restriction (“carrot or stick”) is likely needed to encourage compliance with the mortgage reserve account payments and accumulation of funds for emergency use.

Incentives (“carrots”) are often incorporated to elicit compliance with program objectives. For example, research on retirement savings demonstrates the effectiveness of employer provided matching in increasing employee contributions (Choi et al., 2004). Incentives are also effective across many domains outside of financial planning. For example, incentives are effective ways to encourage exercise habits (Charness and Gneezy, 2009), smoking cessation (Volpp et al., 2009) and healthy food choice (List and Samak, 2013). A lot of the literature comparing incentives and penalties stems from laboratory experiments on small-group decision-

making, particularly in modeling labor contracts. Penalties (“sticks”) are actually more effective than incentives at inducing cooperation in various environments. However, when given the choice, individuals are more likely to choose rewards over penalties (e.g., Sutter et al., 2010). Thus, one may suspect that penalties will work better for compliance but that incentives will work better for take-up, and the MRA designer must weigh the costs of benefits of each of these options.

One additional consideration with incentives is framing. Prospect theory would suggest that individuals value an equivalent unit *loss* more than an equivalent unit *gain* – economists often refer to this as loss aversion (Tversky and Kahneman, 1991). If an amount is proposed for an incentive (e.g., \$100), it can be more effective if the amount is first deposited in the account and then taken away if the payments are not met, rather than if the amount is incrementally added to the account as payments are met. In fact, several papers have harnessed loss aversion to increase compliance in different contexts, including in education and teacher pay (Fryer et al., 2012).

External Monitoring

In addition to automating and incentivizing behaviors, external monitoring can also be used to encourage desired financial behaviors. New homebuyers are establishing the habit of making monthly mortgage payments, in addition to managing the financial opportunities and costs of homeownership. As noted previously, consumer debt tends to increase after home purchase while savings decreases, thereby increasing the vulnerability of the homeowner to financial shocks. To help reduce this risk, homebuyers can be encouraged to set specific financial goals related to their debt or savings prior to purchase (for example, during an initial intake session over the phone or online eligibility screening). Once goals are set, external monitoring

towards goals can be integrated into the MRA model through regular communications on monthly reserve account statements or regularly scheduled follow-up calls or emails. Missed mortgage payments and/or associated deposits into the reserve account can trigger early intervention from a financial coach or counselor by phone, email or mail.

Research finds that external monitoring can prove more effective than self-monitoring in terms of participant adherence to their goals (Ariely and Wertenbroch, 2002). Monitoring increases the salience of accountability on four dimensions: expectation of being observed; identifiability; expectation that performance will be assessed, and expectation that one will have to give reasons for actions (Lerner and Tetlock 1999). Further, external monitoring can lead to increased self-control, or the degree to which people can restrain impulses. The application of external monitoring to financial behaviors is relatively new; however, preliminary evidence suggests that a model of external modeling, such as financial coaching, may lead to sustained behavioral change and goal-attainment (Baumeister, 2002; Baumeister et al., 2008; Collins, Baker and Gorey, 2007). With regard to emergency savings decisions, academic studies have shown the positive effects of short reminder calls for engaging LMI consumer with their financial goals (Loibl, Haisley, and Loewenstein 2008-2013; Kast, Meier, and Pomeranz 2011).

Putting it all Together: Design Considerations

The mechanisms described above—automation, incentives and monitoring—can be integrated in a variety of ways. There is likely no “one best way” to structure MRAs; rather, implementers will need to select the strategy that best fits the opportunities and constraints within a given context. Several critical questions will need to be addressed. Is enrollment in the MRA program voluntary or required? If voluntary, what step will be taken to increase take-up? What is the appropriate savings target for each month, and is that target tied to the mortgage

payment amount or to the household's overall income and budget? Does the account require an initial deposit? How long will the account remain active, and what happens when the individual wishes to close the account? What is the process for authorized withdrawals, and what are the penalties for un-authorized withdrawals? To help address these questions, Table 1 summarizes behavioral considerations at three key stages in the MRA design process, including account enrollment, monthly deposits, and withdrawal restrictions.

[Insert Table 1 Here]

Account Enrollment

Ideally, MRAs would be automatically linked to affordable loan products and thus be required in order to receive the product. However, there may be situations where the account is offered but not required, thus necessitating strategies to increase take-up. Individuals are more likely to participate in accounts that have low set-up time costs – thus, framing the account as an “opt out” rather than “opt in” can increase take-up rates. However, as Choi et al. (2004) note, “opt out” policies are not neutral – they are prescriptive in that they ‘nudge’ individuals to take-up programs they may have otherwise not taken up.

While the core of the MRA design consists of automated monthly deposits, there are strong rationales for an initial up-front deposit at closing to “seed” the MRA account. This initial deposit can serve as an immediate cushion for hardships within the first year after purchase, and it can also provide an incentive for homeowners to enroll in or maintain their accounts. Households may be in a position at the time of home purchase to deposit a larger amount in the MRA initially than they will in later years, particularly if the initial deposit can be lumped in with the other fees and closing costs to finance the mortgage. Third party providers could also contribute towards or incentive the initial deposit, similar to down-payment assistance

programs. A portion of the financial assistance typically structured as down-payment assistance could be set aside in the MRA up-front as an incentive to create (and maintain) the account.

At the time of enrollment, participants should be provided the opportunity to set financial goals that will serve as the basis for the post-purchase monitoring. There are a variety of different strategies for helping participants identify their goals; ideally, this will be self-directed with aid from a third-party to help ensure that goals are specific with clear implementation intentions. Several studies have shown that establishing specific implementation intentions can improve the likelihood of goal attainment. Implementation plans establish links between specific situations and the desired behavioral responses. Implementation intentions are considered “strategies,” “modes,” “steps,” or “mechanisms” used to reach a goal (Gollwitzer 1999; Gollwitzer and Brandstätter 1997; Brandstätter, Lengfelder, and Gollwitzer 2001). A variety of modes could be employed for guiding participants to set goals and implementation steps, such as online modules or telephone sessions with a financial coach.

Monthly Deposits

The amount of money to be deposited into the reserve account each month should be determined prior to loan closing. This amount could be a set dollar amount that is the same for all households (determined programmatically), or could be determined in conjunction with the participant. Rather than displaying the monthly required deposit as a stand-alone number, displaying it together with the larger mortgage payment will make the MRA less intimidating and more do-able. Strategies such as “top up” (in which the household will round up his/her mortgage payment to the nearest \$100 or \$200) can be particularly effective.

Decisions will have to be made about the consequences (if any) of failing to make the monthly reserve account payment. The reserve payment could be missed due to failure to make

the mortgage payment (of which the reserve payment is a part), or because the participant makes only the mortgage portion of the payment but not the reserve deposit portion. In the first case, the missed mortgage payment will trigger consequences from the servicer (e.g. late payment fees), and no additional financial penalties may be necessary. In the second case (failure to make the reserve portion of the payment), the consequences will vary based on the structure of the payment. At one extreme, failure to make the reserve portion could trigger the same delinquency consequences as failing to make a full mortgage payment. At the other extreme, there could be no financial consequence for failure to make the reserve payment, but instead the missed reserve payment could trigger monitoring contact. Alternatively, participants could receive an incentive for making the reserve payments with their mortgage each month (such as a reduced interest rate on their mortgage over time, or matched deposits into their reserve account after a set number of reserve payments).

Withdrawal Restrictions

Structuring the MRA withdrawal process and account duration has significant behavioral implications. If the account is too illiquid, the household may be wary of the account (leading reduced take-up rates), and the account may not provide the intended cushion (reduced usage in times of need). However, if the account is too liquid, it will also reduce the effectiveness of the MRA. Moreover, there may be costs associated with monitoring account activity. One solution is to determine a specified waiting period (e.g., up to three years) during which account withdrawals can be made for any reason, but withdrawals incur a set penalty (perhaps forfeiting interest or some portion of the initial deposit). After the waiting period, the account remains in use but withdrawals can be made at any time for any reason. The benefit of this approach is that borrowers could have direct control over their accounts, reducing administrative burden;

however, the downside is that participants may not accumulate sufficient funds without some restrictions on withdrawals.

Another option is to make account withdrawals contingent on hardship as observed based on timely mortgage payments. Suppose if a timely mortgage payment is not made, the individual could specify using the reserve account to make the payment with no penalty. The latter is more customized to the individual situation than the former, which is a positive, but could become over-used as individuals start relying on the “cushion” in lieu of making payments on their own. Alternatively, households could submit receipts for a list of “acceptable” expenses in order to use the reserve account (e.g., household expense, meeting mortgage payment, unexpected income loss). The tradeoff here is the higher cost associated with reviewing the documentation and approving withdrawals, likely involving a third party in addition to the loan servicer.

Regardless of restrictions selected, a final consideration is the duration of the account. Ideally, the individual should have the ability to continue with the mortgage reserve account during the lifetime of the mortgage. Alternatively, the borrower may receive the emergency savings in a “lump sum” at the end of some period (e.g., a predetermined number of years or when the equity in the home reaches 20 percent); however, this may actually cause the household to use this money all at once for non-essential large purchases rather than retain it for emergency purposes (due to mental accounting).

IV. Implementation

The next section of this chapter explores implementation opportunities and challenges associated with Mortgage Reserve Accounts. State Housing Finance Agencies (HFAs) provide a scalable delivery channel for the implementation of the proposed model. While there are other affordable mortgage programs and products, the effectiveness of the MRA relies on structured,

repeated interactions with homebuyers both before and after purchase. Most HFA first time homebuyer programs meet these criteria. In order to ensure compliance with federal eligibility requirements and/or agency underwriting criteria, HFAs review and approve borrowers for financing prior to home-purchase. Thus, even if the HFA relies on a network of private lenders to originate mortgages, the HFA makes the final determination of approval prior to purchase. According to a recent study, 82 percent of state HFAs report requiring homebuyer education and counseling for at least some of their funded borrowers prior to home purchase (Dylla & Caldwell-Taugtes 2013).

In addition to contact prior to purchase, HFAs collect and/or monitor the loan payments of funded borrowers after purchase. According to a recent survey of state HFAs (Moulton and Quercia 2013), about one-third directly service their own mortgages, collecting payments from funded borrowers each month and intervening in the case of delinquency or default. An additional one-third contract with a single lender (Master Servicer) to collect payments from borrowers each month. Other HFAs rely on a network of servicers to collect payments in line with agency specified guidelines. Beyond monitoring the performance of monthly borrower payments, about half of HFAs (49 percent) report strategies to intervene with delinquent borrowers post-purchase, above and beyond what would be provided through conventional servicing.

Target Population

Most low and moderate income (LMI) borrowers purchasing homes through affordable mortgage programs, such as those administered by state HFAs, have high loan to value (LTV) ratios at the time of purchase with little up-front equity. Any equity accumulated through timely mortgage payments during the first several years is highly “illiquid”, unable to be accessed to the

borrower until the LTV is reduced to 80 percent or lower. The MRA allows the high LTV borrower to build assets in a more liquid form during the first few years as a new homeowner. The MRA can be used in the case of a missed mortgage payment by the borrower, thereby mitigating a portion of the default risk to the lender (and HFA) of originating mortgages to borrowers with higher LTVs. This reduced default risk in turn can serve as an incentive for HFAs and their servicers to administer MRAs.

One of the benefits of working through state HFAs to offer an innovative savings model is the accessibility of the mortgage products they offer to diverse populations across the country. Each state can tailor its first time homeownership program to meet the needs of underserved populations in the state, which helps ensure that diverse population groups have access to the product (most HFAs offer multi-lingual services depending on the needs of the population).

Comparisons of MRA Models with State HFAS

As noted earlier in the chapter, there are multiple strategies for structuring MRAs. The same is true for implementation by state HFAs. Each state HFA has its own structure for origination, servicing and funding mortgages through their first time homebuyer programs. For example, while most HFAs originate their mortgages through a network of private lenders, some service their own mortgages while others work with an external master servicer. One-third report working with multiple servicers, complicating the administration of MRAs, while one-third report servicing their own mortgages, making integration relatively simple (Moulton and Quercia 2013). Thus, rather than proposing one model for state HFAs, Table 2 provides an overview of four different models of implementation, based on different entities that: (1) collect the MRA monthly reserve payment; (2) hold the MRA account; and (3) control the disbursement of funds

from the MRA account. Each of the four models is compared based on the integration of the behavioral mechanisms, as well as the costs, benefits and effectiveness.

[Insert Table 2 Here]

Model 1 is referred to as the “**Servicer Model**”, as the servicer collects the reserve payment, holds the account and controls the disbursement of funds (at least for a restricted period of time). This model is most beneficial for HFAs that seek to use the MFA to reduce mortgage default risk, potentially pricing the reserve account as an “insurance” against risk, thereby allowing them to lend to otherwise riskier borrowers. From a behavioral perspective, the account can be easily automated with the mortgage payment to the servicer, and the servicer may even trigger default if the borrower fails to make the full payment, including the mortgage reserve, thus incentivizing compliance (through severe penalties). Ongoing monitoring outside of the servicing channel is less likely under this model, as the servicer retains control of the account. It is likely that the account would be restricted for the first two-three years strictly to cover mortgage payments, and then released to the borrowers thereafter. Simple reminders on mortgage statements could be used to provide some contact with borrowers about their accounts; however, this would likely need to be highly programmed.

From a cost-benefit perspective, the benefits include very low costs for participants (in terms of transaction costs to participate), and low administrative costs once the reserve account is established with the servicer, thus allowing for significant scalability. However, there could be significant regulatory challenges for the servicer if the account falls under the same regulations that govern escrow accounts (Mills 1994; Bone 2008). It would need to be ensured that the accounts were not simply cushioning the servicers without providing tangible benefits to the borrowers. In terms of effectiveness, this structure would be most beneficial for protecting

against mortgage payment default risk, but would be less effective at covering the borrower against other emergency expenses or shocks that may occur, as the funds would be relatively illiquid.

Model 2, or the **Hybrid Model**, incorporates some of the benefits of the Servicer Model while addressing some of the deficiencies. The primary difference of this model is that while the Servicer collects the mortgage reserve payment as part of the monthly mortgage payment, the reserve account is held and controlled by a third party. This third party could be the state HFA (if the HFA has the capacity to serve as a bank), a nonprofit organization, a community development financial institution (CDFI), a separate bank partner or credit union, or some combination of the entities. The addition of the third-party partner increases the ability for monitoring and for screening borrowers for eligible uses outside of missed mortgage payments. From a cost-benefit perspective, the automated nature of the deposits reduces transaction costs for participants, and the third-party administration of the MRA potentially reduces regulatory constraints faced by mortgage servicers. However, the third-party administration of the account increases the level of administrative cost, potentially reducing scalability. In terms of effectiveness, this model is likely beneficial for both reducing default risk (as the account can be restricted) and for buffering against other emergency shocks.

Model 3 places the control of the account with the borrower, and is thus termed the **Borrower Model**. This model has potentially the lowest cost of all of the models, as it there is little administrative burden beyond the initial set-up of the account with the mortgage payment. This model relies heavily on the behavioral mechanisms to build reserve savings, as borrowers have unlimited access to funds accumulated in the account, without third-party control or approval of disbursements. The account could be held by the servicer or a third party; however,

the borrower retains ownership of the account and the ability to access funds at any time for any reason. There could be incentives for retaining funds in the account or for continuing to make the reserve payments as part of the monthly mortgage payments, or penalties (such as loss of the initial deposit) for not lack of compliance. Because of the low costs associated with the account, scalability is high. The effectiveness of protecting against mortgage default risk or emergency expenses is largely dependent on the strength of the behavioral mechanisms; to the extent that the automation, incentives and monitoring work together to encourage deposits and access to funds for emergencies, then the effectiveness could be high. However, if the behavioral mechanisms are not well designed or implemented, this account functions as little more than a regular savings account.

Finally, **Model 4**, the **Nonprofit Model**, is included more as a contrast than as a proposed option. This model does not include the automated component of the MRA that is central to its effectiveness, but rather relies on participant deposits of money into an account after purchase that can be used for emergency expenses associated with home purchase. Similar to Individual Development Accounts (IDAs), the accounts are managed by a nonprofit provider who provides some incentive and/or monitoring to encourage deposits and restrict withdrawals. In fact, some IDA programs offer post-purchase IDAs on a limited scale. The drawbacks of this model are that it places high costs on the participant to make regular deposits into the account, and places high administrative costs on the third party organization to collect and track the payments made. From a behavioral perspective, the lack of automation may reduce the propensity for borrowers to accumulate savings without a significant incentive. Thus, incentives have to be significant to ensure compliance, further increasing the cost of this model. Because of the costs associated with the account, scalability is relatively low. While there are likely fewer regulatory constraints and

barriers to entry, the effectiveness is questionable without strong behavioral mechanisms that may be costly to enforce.

The four models presented here are prototypes of the different structural options available. It is likely that certain aspects of different models may be combined to tailor to the individual HFAs circumstances. Further, evaluation of different model components is necessary to identify which mechanisms are most likely to lead to positive outcomes for borrowers. A carefully designed evaluation plan is thus a critical component of any MRA program design.

Evaluation

MRA models and their components can be most appropriately evaluated using a random controlled trial (RCT) field experiment approach. Recent years have seen an enormous increase and interest in research using experimental methods in the field to address questions across a broad range of policy topics. The major benefit of RCTs/field experiments is the ability to directly measure the causal, rather than the correlational, effects of interventions (Harrison and List, 2004). To conduct an RCT/field experiment of MRAs, evaluators should work hand-in-hand with the implementing agency (e.g., the state HFA) to recruit, enroll, treat and measure participants. Randomization of participants into treatment or control groups is an essential component of the program design to allow for the assessment of causality. Baseline information on all households is then collected, but only the treatment group participants receive the intervention.

The evaluation could consider either the combined effect of all programs – in this case, the treatment group would receive the MRA account, external monitoring (via coaching or automated via computer), and incentives. Alternatively, each of the components could be evaluated separately by creating several treatment groups and assigning each to one of the

interventions. One advantage of including all of the components in the treatment is that it allows us to investigate the combined effects of these programs, and all of these may be needed for the program to be successful. One disadvantage of the above is that the evaluator would not know the relative effectiveness of any of the proposed interventions. Another consideration is sample size – power calculations should be completed to assure that the size of each group is sufficient to detect the desired effects.

Information on baseline characteristics, including income, savings and credit report data, is available through origination data collected by the state HFA. Ongoing administrative data on outcomes can be obtained through the HFA and/or loan servicer, including changes in savings amounts through the Save at Home account, changes in credit report indicators of financial well-being, as well as changes in loan performance. Self-reported information can be obtained by administering questionnaires, and can be helpful in learning both whether the individual has biases in his/her beliefs about his/her current debt and monthly expenditures, and whether the individual actually under-estimates the likelihood of future events.

The primary expected outcomes from the program include an increase in emergency savings reserves, lower amounts of non-mortgage debt acquired, and reduced mortgage loan delinquency. These outcomes can be translated into measures of cost-effectiveness, primarily as the cost savings for the borrower, lender and community from reduced incidence of mortgage delinquency and default. At the end of the evaluation, the evaluator could conduct ‘intent to treat’ and ‘treatment on treated’ analyses. In ‘intent to treat,’ the outcomes of all participants in treatment will be compared to that of the control group, regardless of whether the households took up any parts of the intervention. In ‘treatment on treated,’ randomization to group is used as an instrument and the effect on those who actually took up the program is measured.

V. Conclusion

Low and moderate income homebuyers are particularly vulnerable to financial shocks. Not only do they often lack savings, but equity for new homebuyers is highly illiquid, as most enter homeownership with little money down and high loan to value ratios. In addition to these financial vulnerabilities, LMI homebuyers face common behavioral biases that influence their financial decisions and decrease their likelihood of accumulating emergency savings. Unexpected shocks to income or unplanned expenses can have serious consequences for vulnerable homebuyers who lack a reserve cushion.

Mortgage reserve accounts (MRAs) offer an innovative mechanism for building accessible emergency savings for homebuyers. MRAs incorporate automation, incentives, and monitoring as behaviorally-targeted commitment devices. Rather than a one-size-fits all strategy, there are several variations that implementers should consider to design a program that best fits the constraints and opportunities within a given context. The outcomes of MRAs can be evaluated through field experiments with program participants, isolating components of the model that lead to reduced mortgage delinquency and financial stability.

In order for MRAs to be successful, implementation must be efficient and scalable. State Housing Finance Agencies provide a potential scalable delivery channel because of their structured, repeated interactions with homebuyers before and after purchase. Regulatory constraints, such as those governing escrow accounts, should be explored in more detail. Policy changes may be necessary to reduce servicer risk in administering or servicing mortgages with MRAs. To the extent that the MRA model can demonstrate decreased default risk, MRAs may offer a viable strategy to originate mortgages to borrowers who fall outside of tighter underwriting criteria.

References

- Aarland, Kristin, and Viggo Nordvik. "On the path to homeownership: money, family composition and low-income households." *Housing studies* 24, no. 1 (2009): 81-101.
- Agarwal, Sumit, Gene Amromin, Itzhak Ben-David, Souphala Chomsisengphet, and Douglas D. Evanoff. 2009. *Learning to Cope: Voluntary Financial Education Programs and Loan Performance During a Housing Crisis*, Charles A. Dice Center Working Paper No. 2009-23. SSRN.
- . 2010. *Financial Counseling, Financial Literacy, and Household Decision Making*, WP 2010-34: Pension Research Council.
- Anderson, N.B. and Dokko, J.K. (2009). Mortgage Delinquency and Property Taxes. *State Tax Notes* 52(1), 49-57.
- Anderson, Nathan, and Jane Dokko. "Liquidity problems and early payment default among subprime mortgages." (2010). Finance and Economics Discussion Series. Federal Reserve Board, Washington, D.C.
- Ariely, Dan, and Klaus Wertenbroch. "Procrastination, deadlines, and performance: Self-control by precommitment." *Psychological Science* 13, no. 3 (2002): 219-224.
- Avery, Robert B., Raphael W. Bostic, Paul S. Calem, and Glenn B. Canner. "Credit risk, credit scoring, and the performance of home mortgages." *Fed. Res. Bull.* 82 (1996): 621.
- Baumeister, Roy F. "Yielding to temptation: Self-control failure, impulsive purchasing, and consumer behavior." *Journal of Consumer Research* 28, no. 4 (2002): 670-676.
- Brandstätter, V., Lengfelder, A., & Gollwitzer, P. M. (2001). Implementation intentions and efficient action initiation. *Journal of Personality and Social Psychology*, 81, 946-960.
- Belsky, E. S. (2010) Housing Wealth Effects and Course of the US Economy: Theory, Evidence, and Policy Implications, in *The Blackwell Companion to the Economics of Housing: The Housing Wealth of Nations* (eds S. J. Smith and B. A. Searle), Wiley-Blackwell, Oxford, UK. doi: 10.1002/9781444317978.ch4
- Bénabou, Roland, and Jean Tirole. 2004. Willpower and personal rules. *Journal of Political Economy*, 112 (4):848-886.
- Bertrand, Marianne, Sendhil Mullainathan, and Eldar Shafir, *The American Economic Review*, Vol 94, No 2, Papers and Proceedings of the One Hundred Sixteenth Annual Meeting of the American Economic Association, January 3-5, 2004
- Bloch, Peter H., Daniel L. Sherrell, and Nancy M. Ridgway. 1986. Consumer search: An extended framework. *Journal of Consumer Research*, 13 (June):119-126.
- Bone, Paula Fitzgerald. "Toward a general model of consumer empowerment and welfare in financial markets with an application to mortgage servicers." *Journal of Consumer Affairs* 42, no. 2 (2008): 165-188.
- Brocas, Isabelle, Juan D. Carrillo, and Mathias Dewatripont. 2004. "Commitment devices under self-control problems: an overview." In *The Psychology of Economic Decisions. Vol.2: Reasons and Choices*, edited by Isabelle Brocas and Juan D. Carrillo. Oxford: Oxford University Press.
- Bryan, Gharad, Dean Karlan, and Scott Nelson. "Commitment devices." *Annual Review of Economics* 2, no. 1 (2010): 671-698.
- Bucks, Brian, and Karen Pence. 2008. Do borrowers know their mortgage terms? *Journal of Urban Economics*, 64 (2):218-233.
- Campbell, Tim S., and J. Kimball Dietrich. "The determinants of default on insured conventional residential mortgage loans." *The Journal of Finance* 38, no. 5 (1983): 1569-1581.
- Charness, Gary, and Uri Gneezy. "Incentives to exercise." *Econometrica* 77, no. 3 (2009): 909-931.
- Cheema, Amar, and Dilip Soman. 2006. Malleable mental accounting: The effect of flexibility on the justification of attractive spending and consumption decisions. *Journal of Consumer Psychology*, 16 (1):33-44.
- Choi, Laibson, and Madrian. Plan Design and 401(k) savings outcomes. 2004 NBER Working Paper
- Cochran, Winona, and Abraham Tesser. 1996. "The "What the Hell" effect: Some effects of goal proximity and goal framing on performance." In *Striving and feeling: Interactions among goals, affect, and self-regulation*, edited by Leonard Martin and Abraham Tesser. Hillsdale: Erlbaum Associates.
- Collins, J. Michael. "Exploring the design of financial counseling for mortgage borrowers in default." *Journal of Family and Economic Issues* 28, no. 2 (2007): 207-226.
- Collins, J. Michael, and Collin M. O'Rourke. "Financial education and counseling—Still holding promise." *Journal of Consumer Affairs* 44, no. 3 (2010): 483-498.
- Dupas, Pascaline and Jonathan Robinson. Why don't the poor save more? Evidence from health savings experiments. NBER Working Paper 17255, July 2011

- Fryer Jr, Roland G., Steven D. Levitt, John List, and Sally Sadoff. *Enhancing the Efficacy of Teacher Incentives through Loss Aversion: A Field Experiment*. No. w18237. National Bureau of Economic Research, 2012.
- Getter, Darryl E. "Contributing to the Delinquency of Borrowers." *Journal of Consumer Affairs* 37, no. 1 (2003): 86-100.
- Gollwitzer, P. M. (1999). Implementation intentions: Strong effects of simple plans. *American Psychologist*, 54, 493-503.
- Gollwitzer, P. M., & Brandstätter, V. (1997). Implementation intentions and effective goal pursuit. *Journal of Personality and Social Psychology*, 73, 186-199.
- Green, Richard K., and Michelle J. White. 1997. Measuring the benefits of homeownership: Effects on children. *Journal of Urban Economics*, 41 (May):441-461.
- Harrison, Glenn, and John List. Field Experiments. *Journal of Economic Literature*, 2004, Vol 42, No 4, pp. 1009-1055
- Heath, Chip, and Jack B. Soll. 1996. Mental budgeting and consumer decisions. *Journal of Consumer Research*, 23 (June):40-52.
- Hirad, Abdighani, and Peter Zorn. 2002. A Little Knowledge is a Good Thing: Empirical Evidence of the Effectiveness of Pre-Purchase Homeownership Counseling. In *Low-income Homeownership: Examining the Unexamined Goal*, eds. Nicolas Retsinas, Eric Belsky, 146-174. Cambridge, Mass.; Washington, D.C.: Joint Center for Housing Studies; Brookings Institution Press.
- Hornburg, Steven P. 2004. *Strengthening the case for homeownership counseling: Moving beyond "a little bit of knowledge" Working Paper*. Retrieved on April 6, 2007, from <http://www.jchs.harvard.edu/publications/homeownership/w04-12.pdf>: Joint Center for Housing Studies of Harvard University.
- Johnson, Eric J., Stephen A. Atlas, and John W. Payne. 2011. *Time preferences, mortgage choice, and strategic default, Working paper*. New York: Columbia Business School.
- Kahneman, Daniel, and Amos Tversky. 1979. Prospect theory: An analysis of decision under risk. *Econometrica*, 47 (2):263-291.
- Kast, Felipe, Stephan Meier, and Dina Pomeranz. 2011. *Under-Savers Anonymous: Evidence on Self-Help Groups and Peer Pressure as a Savings Commitment Device, Working Paper*: Columbia Business School.
- Kunreuther, Howard, Robert Meyer, Richard Zeckhauser, Paul Slovic, Barry Schwartz, Christian Schade, Mary Frances Luce, Steven Lippman, David Krantz, Barbara E. Kahn, and Robin Hogarth. 2002. High stakes decision making: Normative, descriptive and prescriptive considerations. *Marketing Letters*, 13 (3):259-268.
- Lax, Howard, Michael Manti, Paul Raca, and Peter Zorn. 2004. Subprime lending: An investigation of economic efficiency. *Housing Policy Debate*, 15:533-572.
- Lerner, Jennifer S., and Philip E. Tetlock. 1999. Accounting for the effects of accountability. *Psychological Bulletin*, 125 (2):255-275.
- Laibson, David. "Golden eggs and hyperbolic discounting." *The Quarterly Journal of Economics* 112, no. 2 (1997): 443-478.
- Loibl, Cäzilia, Emily Haisley, and George Loewenstein. 2008-2013. *Testing strategies to increase saving and retention in IDA programs*: Research funded by National Poverty Center, FINRA Investor Education Foundation, William and Flora Hewlett Foundation, Annie E. Casey Foundation, U.S. Department of Agriculture.
- Louie, Josephine, Eric S. Belsky, and Nancy McArdle. 1998. *The Housing Needs of Low-Income Homeowners, Joint Center for Housing Studies W98-8*. Cambridge: Harvard University.
- Lusardi, Annamaria, and Peter Tufano. 2009. *Debt literacy, financial experiences and overindebtedness, Working Paper 14808*. Cambridge: National Bureau of Economic Research.
- Lynch Jr., John G., and Gal Zauberman. 2006. When do you want it? Time, decisions, and public policy. *Journal of Public Policy & Marketing*, 25 (1):67-78.
- Meier, Stephan, and Charles Sprenger. "Present-biased preferences and credit card borrowing." *American Economic Journal: Applied Economics* (2010): 193-210.
- Mills, Edwin S. "The functioning and regulation of escrow accounts." *Housing Policy Debate* 5, no. 2 (1994): 203-218.
- Mottola, Gary. 2013. Softening the Blow: Income Shocks, Mortgage Payment and Emergency Savings. FINRA Investor Education Foundation. March 2013. Available online at: <http://www.finra.org/web/groups/foundation/@foundation/documents/foundation/p221812.pdf>

- Moulton, Stephanie. "Pre-purchase Homebuyer Education and Counseling: Diverse Strategies for Diverse Homebuyers." In *Consumer Knowledge and Financial Decisions*, pp. 145-164. Springer New York, 2012.
- Moulton, Stephanie, Caecilia Loibl, J. Michael Collins and Anya Savakhin. 2011. Field Experiments on the Impact of Financial Planning Interventions for Recent Homebuyers. Center for Financial Security Working Paper 2011-CFS.5. Available online at: http://www.cfs.wisc.edu/papers/Moulton2011_FieldExperimentPaper.pdf
- O'Donoghue, T., and M. Rabin, Doing it Now or Later, *The American Economic Review*, Vol 89, No 1, March 1999
- . 2001. Choice and procrastination. *Quarterly Journal of Economics*, 116 (1):121-160.
- Payne, John W., James R. Bettman, David A. Schkade, Norbert Schwarz, and Robin Gregory. "Measuring constructed preferences: Towards a building code." In *Elicitation of Preferences*, pp. 243-275. Springer Netherlands, 1999.
- Quercia, Roberto, and Jonathan Spader. 2008. Does Homeownership Counseling Affect the Prepayment and Default Behavior of Affordable Mortgage Borrowers? *Journal of Policy Analysis and Management*, 27 (2): 304-25.
- Quercia, Roberto G., and Michael A. Stegman. "Residential mortgage default: a review of the literature." *Journal of Housing Research* 3, no. 2 (1992): 341-379.
- Reid, Caroline K. 2006. "Locating the American Dream: Where Do Low-Income Home owners Live?" In *Chasing the American Dream: Multidisciplinary Perspectives on Affordable Homeownership*, edited by William M. Rohe and Harry Watson. Ithaca: Cornell University Press.
- Soll, Jack, Ralph Keeney, and Richard Larrick. 2012. Consumer misunderstanding of credit card use, payments. *Journal of Public Policy and Marketing*, in press.
- Sutter, Matthias, Stefan Haigner, and Martin G. Kocher. "Choosing the carrot or the stick? Endogenous institutional choice in social dilemma situations." *The Review of Economic Studies* 77, no. 4 (2010): 1540-1566.
- Thaler, R. 1985. Mental accounting and consumer choice. *Marketing Science*. mktsci.journal.informs.org
- Thaler, RH, Benartzi, S. *Journal of Political Economy*, 2004. Save more tomorrow: using behavioral economics to increase employee saving
- Tversky, Amos, and Daniel Kahneman. Loss Aversion in Riskless Choice: A Reference-Dependent Model. *Quarterly Journal of Economics*, Volume 106, Issue 4, pp. 1039-1061
- Ülkümen, Gülden, Manoj Thomas, and Vicki G. Morwitz. 2008. Will I spend more in 12 months or a year? The effect of ease of estimation and confidence on budget estimates. *Journal of Consumer Research*, 35 (August):245-256.
- Van Zandt, Shannon, and William M. Rohe. 2006. Do First-Time Home Buyers Improve their Neighborhood Quality? *Journal of Urban Affairs*, 28 (5):491-510.
- . 2011. The sustainability of low-income homeownership: The incidence of unexpected costs and needed repairs among low-income home buyers. *Housing Policy Debate*, 21 (2):317-341.
- Volpp, Kevin G., Andrea B. Troxel, Mark V. Pauly, Henry A. Glick, Andrea Puig, David A. Asch, Robert Galvin et al. "A randomized, controlled trial of financial incentives for smoking cessation." *New England Journal of Medicine* 360, no. 7 (2009): 699-709.
- Wiranowski, Mark. 2003. *Sustaining home ownership through education and counseling*, Working Papers. Cambridge: Joint Center for Housing Studies, Harvard University.

Table 1: MRA Design Considerations by Stage & Mechanism

Stage	Automation	Incentives	Monitoring
Account Enrollment	Voluntary (opt-in; opt out) vs. required	Required or optional up-front deposit; third-party funds deposited as up front incentive	Mode of initial participant goal setting and implementation planning (online, telephone, letter); self-directed vs. third-party feedback; Frequency, mode and content of regular account updates and monitoring
Monthly Deposits	Administratively determined vs. participant determined; fixed vs. variable amount	Penalties for missed deposits vs. incentives for regular deposits	Mode, content and frequency of monitoring triggered by missed reserve payments
Withdrawal Restrictions	Unrestricted vs. restricted (and restriction period); restricted to mortgage payments or other demonstrated hardships; Set duration (e.g. 3 years) versus ongoing	Penalties for withdrawals or incentives for no withdrawals	Processes (if any) for reviewing and approving hardship and expense documentation for withdrawals

Table 2: Comparison of Models for Mortgage Reserve Savings Accounts with HFAs

	Model 1 (Servicer Model)	Model 2 (Hybrid Model)	Model 3 (Borrower Model)	Model 4 (Nonprofit Model)
Collects	Servicer	Servicer/HFA	Servicer/HFA	NP/CDFI
Holds	Servicer	HFA/NP/CDFI	Servicer/HFA/NP/CDFI	NP/CDFI
Controls	Servicer	HFA/NP/CDFI	Borrower	NP/CDFI
Behavioral Mechanisms	Automated (+) Incentives (+-) Monitoring (-)	Automated (+) Incentives (+) Monitoring (+)	Automated (+) Incentives (+) Monitoring (+-)	Automated (-) Incentives (+) Monitoring (+)
Cost Considerations	Participant Costs (-) Admin Costs (-) Regulative Costs (+) Scale (+)	Participant Costs (-) Admin Costs (+) Regulative Costs (+-) Scale (+-)	Participant Costs (-) Admin Costs (-) Regulative Costs (-) Scale (+)	Participant Costs (+) Admin Costs (+) Regulative Costs (-) Scale (-)
Effectiveness	Mortgage Payment (+) Financial Shocks (-)	Mortgage Payment (+) Financial Shocks (+)	Mortgage Payment (+-) Financial Shocks (+-)	Mortgage Payment (+-) Financial Shocks (+-)
Primary Advantage	Automated deposits; Insures against default risk; servicer can price reduced risk; similar to mortgage insurance; reserve account can be required for underwriting	Automated deposits; Insures against default risk and can restrict approved withdrawals; more opportunity for monitoring	Automated deposits; Low administrative and regulatory burden; gives borrower full access to funds; can incentivize (but not control) positive behavior	Can restrict approved withdrawals; opportunity for monitoring; can incentivize (but not control) positive behavior
Primary Disadvantage	Less accessible to borrower; could encourage strategic default; potential regulatory challenges	More administrative burden to screen and approve eligible withdrawals; more difficult to price into underwriting without servicer control	Little insurance against default risk, as funds are controlled by borrower; not likely to be priced into underwriting; incentives for deposits/not withdrawing may need to be significant	Not automated, relies on participant deposits which may be less effective; high administrative burden to collect and manage deposits; incentives for deposits would have to be significant

Notes: HFA= Housing Finance Agency; NP = Nonprofit Organization; CDFI= Community Development Financial Institution or Third Party Bank