

Earmarking and Partitioning: Increasing Saving by Low-income Households

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Earmarking and Partitioning:
Increasing Saving by Low-income Households

We examine the effects of earmarking money on savings by low-income consumers, focusing on the effect of dividing the earmarked money into two parts. Consistent with prior research which suggests that partitioning increases self-control, individuals save more when earmarked money is partitioned into two accounts versus pooled in one account. We conclude with implications for consumers' welfare.

Keywords: Saving, goals, self-control, consumer welfare

Earmarking: to reserve or set aside for a particular purpose

- American Heritage Dictionary, 4th Edition, 2006

There has been significant recent concern about declining savings rates across a wide range of economies and geographies, ranging from sophisticated western economies with a high prevalence of consumer credit and electronic transactions, to the more traditional economies in rural areas of the developing world where poverty rates are high and banking infrastructure is almost nonexistent. A record number of personal bankruptcies and delinquencies have been recently reported in North America (American Bankruptcy Institute 2008, Stern 2008), while several observers have commented that the rural markets of India and China will be an emerging force only if consumers are educated about personal finances and can manage their money well (Smith and Thurman 2007). Clearly, the need to help consumers effectively manage their personal finances is very topical all over the world.

In recent years, several methods have been suggested and implemented to increase savings rates. These include programs where consumers save a proportion of future payroll increases in retirement accounts (Save More Tomorrow; Thaler and Benartzi 2004), where banks automatically round up a transaction to the next dollar and deposit the change from into a savings account (Save the Change; Milk Your Money 2008), or where low-income households are encouraged to save in Individual Development Accounts (IDAs) via matching deposits from federal and social development organizations (American Dream Demonstration; Sherraden 2008). Increasing savings for low-income households is especially challenging, with some estimates suggesting that over \$2 is spent in implementing such programs for each \$1 saved (Schreiner, Ng, and Sherraden 2004). Furthermore, among low-income households, those

without access to bank accounts perform worse at IDAs than do households that do have bank accounts (Grinstein-Weiss et al. 2008). We focus on increasing savings by such low-income households who subsist in a cash economy and get paid weekly cash wages. In particular, these households have no bank accounts, nor do they have a formal payroll structure. By examining interventions that allow these households to save money, we contribute to the broad stream of work that focuses on decreasing financial uncertainty and on increasing asset-building for low-income households.

The present research was conducted at an infrastructure construction project in rural India. This project had been in place for eight months and was expected to last for another year. Laborers at this project received cash wages with a frequency ranging from once a day to once a week. Infrastructure projects (such as the one for our study) usually spawn off several small townships in the general vicinity of the project. It is important to note that while these townships are full fledged townships in other regards, they often lack services like banks and post offices; a survey revealed that only about 7% of Indian villages are served by banks. Of particular interest to our study, none of the townships included in this study were served by any banks. Most people in these townships were habituated to a cash economy.

In this context, we focus on one particular set of saving strategies: the ideas of earmarking and partitioning money. The term earmarking is typically used to describe the labeling of money for a particular purpose. In this sense, earmarking is no different from budgeting as described by Heath and Soll (1996) and others (Thaler 1985, Shefrin and Thaler 1988). For example, in interviews we conducted in North America to understand household money management practices, several respondents used the term “earmarking” for the practice of allocating money towards various purchase categories using a desktop computer application.

However, earmarking often takes on a more specific form, one in which the earmarked money is kept distinct from other monies either through physical segregation or other forms of categorization (e.g., a separate bank account). As an example of the latter, many households create separate bank accounts for college tuition or home repair expenses. When money is deposited into these accounts, it tends to become sticky, or less fungible, and stays in the account rather than being spent on other expenses (Shefrin and Thaler 1988). In the realm of physical segregation, one of our interview respondents, a photographer, was saving money towards the purchase of a new camera by setting aside cash in a side pocket of her purse. Similarly, Zelizer (1994, 139) provides an example of physical segregation:

Within their homes, families worked hard at earmarking their monies. ... Take for instance Mrs. M's system as she told it to *Women's Home Companion* in the early 1920's: "I collected eight little cans, all the same size, and pasted on them the following words, in big letters: groceries, carfare, gas, laundry, rent, tithe, savings, miscellaneous... . [W]e speak of those cans now, as the grocery can, carfare can, etc." (Alice Bradley 1923, 7)

While earmarking works by acting as a budgeting mechanism, which has previously been shown to increase self-control (see Thaler 1999 for a review), it also has its pitfalls. Mental accounts are often malleable and consumers can trick themselves into spending when they are motivated to do so (Cheema and Soman 2006). For instance, the photographer in our interviews reported that while she was on vacation and in a shopping center, it was very easy to dip into the side pocket of her purse and use the earmarked cash to buy souvenirs and treats. What, then, are effective ways of making earmarking work?

The present research focuses on the effect of partitioning the earmarked amount (having the money in two accounts versus pooled in one account). We propose that earmarking the money sets up a rule for the consumer. Spending the money for an unrelated expense requires the consumer to violate this rule, leading to guilt. We expect that consumers who use money from two accounts for unrelated expenses (i.e., when the earmarked money is partitioned) will experience more guilt than consumers who use the same amount of money from one account. Consequently, the desire to avoid this guilt will lead to greater self-control when the earmarked money is partitioned into two accounts than when it is pooled in one account.

Theoretical Background

Earmarking: Imposing Spending Rules

Rules require the exertion of willpower to control impulsive short-term behavior in favor of longer-term benefits (Ainslie 1985, Hoch and Loewenstein 1991, Thaler and Shefrin 1981). As one instance of a rule, earmarking sets aside an amount of money for a particular purpose. Specifically, earmarking allows people to separate planning from doing by budgeting in advance of consumption and this pre-commitment helps control expenditure (Heath and Soll 1996).

Rules that govern behavior may be externally imposed by “agents who have our interests in mind,” or internally “‘constructed’ by ourselves as we see the need for them” (Prelec and Herrnstein 1991, 321). Externally-imposed earmarks may be treated as “pre-commitment enforcement mechanisms ... [applied] by an outside agency” (Shefrin and Thaler 1988, 614). Exerting self-control, while beneficial for the individual, is psychologically costly. Models of

self-control assume a psychic cost (Shefrin and Thaler 1988) or a craving cost (Benabou and Tirole 2004) of willpower to follow these rules. Prelec and Herrnstein (1991) suggest that such a reaction to breaking a rule may be a result of (Pavlovian) conditioning. Thus, while doing something improper may only cause embarrassment in the absence of a rule, breaking a rule may cause guilt, remorse, and regret (Thaler and Shefrin 1981). Violation of rules may also lead to a feeling of failure or to losing faith in oneself (Benabou and Tirole 2004). Consequently, albeit effortful, consumers follow rules because failure to do so leads to negative emotions.

In the present research, we focus on the effect of earmarking money for saving. We expect that consumers will be less likely to spend the earmarked money when the guilt associated with doing so is high versus when it is low. We highlight the guilt associated with spending the earmarked money by labeling the earmarked money with pictures of the household's children for approximately half of the study participants (all participating households had children). We chose this manipulation on the basis of interviews with similar households who reported that the primary purpose for saving was to ensure resources for their children. The pictures (seen by approximately half the participants) remind participants that the savings are for their children. The remaining participants do not see the pictures. Consequently, we expect that participants whose earmarked money is labeled with pictures of their children will be less likely to spend the money compared to those whose earmarked money is not labeled with pictures. Formally:

H1: Participants whose earmarked money is labeled with their children's pictures will save more (i.e. will be less likely to spend earmarked money) than those participants whose earmarked money is not labeled with pictures.

Effect of Partitions on Saving

We build on prior partitioning research to study the effect of partitioning the earmarked amount (having the money in one versus two accounts) on savings. Recent research shows that physically partitioning a particular quantity of a resource (such as food or money) into smaller quantities changes the consumption pattern by drawing greater attention to the consumption decision (Cheema and Soman 2008). In the present context, greater attention to the decision will lead to the saving rule being highlighted, decreasing the likelihood of spending when the earmarked amount is partitioned versus when it is pooled into one account.

A similar prediction also arises from an alternate process. As spending earmarked money signals the violation of a rule, spending money from two partitioned accounts may lead to two signals of failure, leading to greater guilt than spending the same amount of money from one account. Specifically, we expect that it is the act of spending the earmarked money on an unrelated expense, rather than the magnitude of the expense, that induces guilt. This expectation is consistent with the concept of diminishing sensitivity to psychophysical stimuli that is a well-established principle underlying concepts such as Weber's Law (Baird and Noma 1978) and the hedonic editing practice of aggregating monetary losses (because one \$20 loss hurts less than two separate losses of \$10 each; Kahneman and Tversky 1979, Thaler 1985).

In the present research, we partition the earmarked money by physically placing in two separate envelopes. In contrast, households who have the earmarked money pooled receive it all in one envelope. Consistent with prior research on partitions, we expect that consumers will be less likely to spend when the earmarked money is partitioned into two accounts than when it is pooled into one account. Thus:

H2: Participants who receive the earmarked money partitioned into two envelopes will save more (i.e. will be less likely to spend the earmarked money) than participants who receive the earmarked money pooled in one envelope.

We study the effect of partitions on actual savings rates for low-income consumers. We earmark a proportion of daily wages handed to laborers as savings. The amount earmarked as savings is manipulated to be high or low, between subjects. Some laborers get this earmarked money in one envelope, while others get the money partitioned into two envelopes. The guilt associated with spending this money (breaking the rule) is also manipulated; some laborers get the earmarked money with pictures of their children affixed on the envelope(s), while for others, the envelopes do not have pictures on them.

The results suggest that partitions significantly increase saving rates, and the benefit from partitioning is greater when the guilt associated with spending the earmarked amount for everyday expenses is high (i.e., when the envelopes have pictures of the laborers' children affixed on them). The detailed procedures and results are described next.

Field Study: Helping Low-Income Households Save

Participants, Method, and Design

This field study was conducted at an infrastructure construction project in rural India. Participants were 146 laborers earning weekly wages who received financial advice in return for their participation. None of the participants in our study had any banking experience; they earned

and spent cash. Only 20 participants had previously pawned possessions for cash, and another eight participants were aware of the existence of moneylenders and pawn shops. While all participants could converse fluently in the local language and could understand simple written instructions, many could not read beyond a few lines of prose. That said, all participants could count, add, and subtract with ease and could bargain when buying at their local markets.

Interviews suggested that the weekly pay periods resulted in the participants living their life “one week at a time.” Consequently, participants budgeted in very narrow temporal frames and ended up making poor economic decisions (see Camerer et al. 1997, Thaler 1999).

Interviews also suggested that the participants were – in the words of O’Donoghue and Rabin (1999) – sophisticated. All participants reported that they would have liked to save more money, particularly for the purposes of being able to feed, clothe, and educate their children, but they had barely enough to make ends meet.

For the purpose of our study, we recruited households where the sole wage earner, the laborer, a) belonged to a specific profession, b) had two children that were 2-7 years old, and c) lived with their spouse and children in a township within walking distance of the project. As all participants shared the same profession, they earned identical amounts (670 Rupees [~\$15.50] per week paid in cash each Saturday). We eliminated those potential participants who had unusual additional financial burdens (e.g., taking care of a sick relative, paying off pawnbroker loans, or covering household expenses for extended family elsewhere).

Participants were recruited in collaboration with local social workers – the social workers informed laborers and their spouses that a financial planner would spend time with each household to discuss their incomes and expenses and to help them save money. The financial planner’s services were offered to 201 laborers meeting the aforementioned criteria; 146 agreed

to use these services. The financial planner, accompanied by a social worker, visited each of these 146 families. The planner helped participants identify better money management strategies and also helped them identify expenses that could be controlled. In addition, the planner told each household that one simple way of saving more money was to set a savings target or a goal. The current savings rate of this group was very low; in the six months prior to this experiment, we tracked savings of all the participants and found that the mean savings rate was .75% (with 90% of the participants saving less than or equal to 2%). In the context of our study, the planner determined that saving Rs. 40 per week (a rate of 6%) was achievable.

The planner gave each participant a target savings amount, and told the participant that the social worker would help put aside the target savings amount each week in sealed envelopes. While participants were free to open those envelopes if needed, they were encouraged to try and keep the envelopes sealed. Furthermore, it was emphasized that if the participants had to open the savings envelopes for everyday expenses, they should try and draw only as much as they needed and put away the rest. Both the financial planner and the social worker went over these details several times to ensure that the laborer and their spouse understood the advice and the specific method of earmarking the savings in envelopes.

At the end of this meeting, the social worker informed the participating households that the social worker would visit the household each Saturday (when cash wages were disbursed) in order to earmark the savings amount and to record the household's saving over the previous week. For each of the next fifteen Saturdays, social workers visited the 146 households, put the prescribed (earmarked) amount in savings envelopes and sealed and dated the envelopes. The social workers also recorded whether the savings envelopes from the previous weeks were sealed or opened along with the exact amount saved in the previous week.

Within this basic procedure, we employed a 2 (savings target: Rs. 40 [low], Rs. 80 [high]) x 2 (children's picture: absent, present) x 2 (number of earmarked savings envelopes: one [no partition], two [partitioned]) between-participants design. Some households were advised that their target savings should be Rs. 40, while other households were advised that their target savings should be Rs. 80. These targets, approximately equal to 6% and 12% of the participants' weekly income, were much higher than the previous savings of this group (average savings rate of .75%). For about half the households, the earmarked savings were sealed in plain white envelopes. For the remaining households, the savings envelopes had photographs of the participants' children pasted on. Pasting the children's pictures on the envelopes was expected to increase the guilt associated with using the savings money for other expenses and thereby increase savings (hypothesis 1).

We also manipulated the number of envelopes, between participants. For approximately half the participants, the savings amount was pooled in one envelope. For the remaining people, the amount was partitioned equally into two envelopes. Partitioning was expected to increase self-control and savings (hypothesis 2). Participants were assigned to one of the eight conditions based on geographic and social clusters to minimize the possibility of households from different treatment conditions meeting and discussing their participation. Debriefs at the end of the study suggested that participants were unaware of the different treatments.

Results

Total savings: effect of pictures and partitioning. We sum up each household's savings (in Rupees) over the 14 weeks and use this as the dependent measure in an ANOVA with the saving target (low, high), children's picture (absent, present), and partitioning of the earmarked

savings amount (yes, no) as the independent variables. Supporting hypothesis 1, the main effect of the children's picture is significant with participants saving more when pictures are present ($M_{\text{picture present}} = 350$ vs. $M_{\text{picture absent}} = 304$, $F(1, 138) = 21.78$, $p < .0001$). Consistent with hypothesis 2, a main effect of partitioning reveals that savings are higher when the earmarked amount is partitioned, ($M_{\text{no partition}} = 241$ vs. $M_{\text{partitioned}} = 414$), $F(1, 138) = 303.78$, $p < .0001$.

A significant picture x partition interaction indicates that the effect of partitions is greater when the envelopes have pictures, $F(1, 138) = 7.23$, $p < .01$, figure 1 (panel A). Specifically, when the pictures are present, the effect of partitions is highly significant ($M_{\text{no partition}} = 251$ vs. $M_{\text{partitioned}} = 450$), $F(1, 138) = 205.06$, $p < .0001$. This effect of partitions is relatively weaker in the absence of pictures, although still quite significant ($M_{\text{no partition}} = 230$ vs. $M_{\text{partition present}} = 377$), $F(1, 138) = 107.12$, $p < .0001$. Pre-planned contrasts reveal that the effect of pictures on savings is significant when the earmarked amount is partitioned, $F(1, 138) = 27.04$, $p < .0001$, but not when the earmarked amount is pooled into one envelope, $F(1, 138) = 1.96$, NS.

< Insert Figure 1 about here >

Total savings: effect of target level. Interestingly, the main effect of target level (low, high) is not significant in the ANOVA ($M_{\text{low target}} = 321$ vs. $M_{\text{high target}} = 334$; $F(1, 138) = 1.90$, NS). This result is best explained by the pattern of data for a significant target level x partition interaction ($F(1, 138) = 50.69$, $p < .0001$) shown in figure 1, panel B. When the earmarked savings are partitioned, the target level has a significant positive effect ($M_{\text{low target}} = 373$ vs. $M_{\text{high target}} = 456$), $F(1, 138) = 36.12$, $p < .0001$. In contrast, when the earmarked savings are pooled, the target level has a significant *negative* effect ($M_{\text{low target}} = 269$ vs. $M_{\text{high target}} = 211$; $F(1, 138) = 16.48$, $p < .0001$) and participants with high targets save less than participants with low targets.

Although we did not have an a priori expectation for the effect of target level on savings it appears that opening an envelope, which indicates a failure to follow a rule, leads to easier subsequent spending from the envelope. This is consistent with the what-the-hell effect (Cochran and Tesser 1996, Soman and Cheema 2004). When partitions are absent, this tendency to spend from the opened envelope leads to greater spending (and correspondingly lesser saving) when the envelope has a large amount (high target level) than when the envelope has a smaller amount (low target level). Partitioning the earmarked amounts protects a portion of the savings, which is greater for high versus low targets, and leads to a positive effect of target level on saving.

The picture x target level interaction is also significant ($F(1, 138) = 11.46, p < .001$, figure 1, panel C) indicating that the presence of the children's picture increases savings when the target is low ($M_{\text{picture present}} = 360$ vs. $M_{\text{picture absent}} = 280$; $F(1, 138) = 32.83, p < .0001$), but not when the target is high ($M_{\text{picture present}} = 340$ vs. $M_{\text{picture absent}} = 327$), $F(1, 138) = 0.81, \text{NS}$.

Likelihood of using earmarked savings. Because the participants' success in saving is greatest when they do not use the earmarked money, we explore factors that affect the likelihood of participants opening an envelope (i.e., violating the savings rule) in any week. For this analysis we treat the 14 observations from each of the 146 household as repeated measures, leading to 2044 observations. We calculate the likelihood that participants open at least one envelope in a given week (i.e., violate the rule) as a function of target level (high, low), children's picture (absent, present), and partitioning (no partition, partitioned) in a logit model.

The logit model reveals a significant target level x picture interaction, Wald $\chi^2(1) = 3.95, p < .05$ (see figure 1, panel D). Specifically, among households with low savings targets, those who have their children's pictures on envelopes are less likely to open an envelope than those

who are given plain envelopes ($X_{\text{picture present}} = 54\%$ vs. $X_{\text{picture absent}} = 64\%$; Wald $\chi^2(1) = 12.21$, $p < .001$). In contrast, children's pictures have no effect on the likelihood of an envelope being opened among households with high savings targets ($X_{\text{picture present}} = 84\%$ vs. $X_{\text{picture absent}} = 85\%$; NS). This non-significance may be caused by the fact that a high target (Rs. 80) is too hard, and households have to tap that amount for everyday expenses. A significant main effect of target supports this conjecture ($X_{\text{low target}} = 59\%$ vs. $X_{\text{high target}} = 85\%$; Wald $\chi^2(1) = 153.82$, $p < .0001$).

The main effect of children's pictures is also significant ($X_{\text{picture present}} = 69\%$ vs. $X_{\text{picture absent}} = 75\%$; Wald $\chi^2(1) = 4.51$, $p < .05$), moderated by the target level. Because the present analysis focuses on the likelihood of opening of *at least one* envelope, the effect of partitions is not significant, Wald $\chi^2(1) = 0.56$, NS. Table 1 presents households' saving success (likelihood of not using any of the earmarked money or, in the partitioned condition, using money from only one of two envelopes) in a given week across the eight study conditions.

< Insert Table 1 about here >

Discussion

The data reveal that households with partitioned savings amounts save more than households whose earmarked savings are not partitioned. Partitioning is more effective when the guilt associated with using the earmarked money for mundane expenses is emphasized by placing pictures of the household's children on the earmarked envelope. This intervention (the presence versus absence of a picture) also decreases the likelihood of a household opening a savings envelope in a given week, especially among those households with low savings targets.

Households who are provided high savings targets are quite likely to open a savings envelope (85%), possibly because the amount is too large to spare from everyday expenses. In this condition, placing pictures on the envelopes does not decrease the likelihood of an envelope being opened in a given week. Furthermore, households who have this large earmarked amount pooled in one envelope save less than those who have this amount partitioned into two envelopes. Thus, households with high (versus low) targets who have the earmarked amount in one envelope (versus partitioned across two envelopes) save the least over the study period.

We note that the intervention of the financial planner, who set aside the earmarked amount in sealed envelope(s), changed the default option. While households typically have to make a conscious effort to set aside money and save, in our study they had to make a conscious effort to use the earmarked money (i.e., not save). This may have increased baseline savings and is consistent with the benefit of changing defaults (Johnson and Goldstein 2003).

General Discussion

Theoretical and Practical Implications

Researchers in the area of mental accounting have repeatedly stressed the general idea that labeling money changes the manner in which the money is spent. However, there is very little research on how the various phenomena documented in the mental accounting literature can be harnessed to help people better manage their household finances (for exceptions, see Thaler and Sunstein 2008). The present research studies one such phenomenon: earmarking. In particular, we demonstrate that inducing guilt associated with violating a savings rule and partitioning the earmarked money significantly increases savings.

Prior research reveals that partitions can increase the amount of attention paid to consumption decision, thereby increasing consumers' ability to exert self-control (Cheema and Soman 2008). The present research looks at earmarking for a specific application of partitioning and finds that, in addition to attention, it is the guilt associated with using the earmarked money for an unrelated expense (signaling the breaking of a rule) which decreases consumers' propensity to spend the earmarked amount. Thus, partitioning and associating savings with the well-being of households' children increase guilt and significantly enhance a household's financial discipline.

Multiple partitions of earmarked amounts serve another useful purpose: if a consumer does decide to "dip in" to the earmarked money for an unrelated expense, spending the money in that partition may be relatively easy. Thus, if the money were in one consolidated amount, the consumer may spend more of it than if it were partitioned into several accounts. In the latter case, money in remaining partitions is protected from spending because the consumer has to break additional partitions (e.g., open another envelope, or access another bank account) to gain access to more funds.

From a financial education standpoint, the success of earmarking and partitioning in our study suggests that consumers can use this mechanism as one way to increase savings. Even within the short duration of our field experiment, households get better at protecting the earmarked amount as the study progresses. Indeed, the likelihood that a household will access the earmarked amount decreases from 79% to 64% over the three-month period, exhibiting a significant linearly declining trend over 14 successive weeks (Wald $\chi^2(1) = 18.40, p < .0001$). It is likely that, over time, participants experience guilt from violating the pre-set rules and change their spending patterns so as to conserve the earmarked amount.

Conclusion

There is a significant need to increase consumer prudence and savings rates in the current economic context, both in developed as well as developing nations. The present research offers consumer researchers two specific interventions—earmarking and partitioning—that can achieve this outcome. Investigations reveal that these interventions can be effective in decreasing enhancing saving by low-income consumers. Further research, over longer time periods and with households of different socio-economic levels, would be useful in studying the generalizability of these interventions to improve consumers' financial well-being.

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Table 1
Saving Success as a Function of Partition, Picture, and Target

A. Percentage of weeks when no envelope was opened

		Low target (Rs. 40)		High target (Rs. 80)	
		%	n	%	n
Picture absent	No partition	36	91/252	16	40/252
	Partition present	35	89/252	15	37/252
Picture present	No partition	47	126/266	16	41/252
	Partition present	45	121/266	15	37/252

B. Within partitioned conditions: Percentage of weeks when at least one envelope remained unopened

	Low target (Rs. 40)		High target (Rs. 80)	
	%	n	%	n
Picture absent	70	176/252	57	144/252
Picture present	97	259/266	63	158/252

Figure 1

Effect of Partitioning, Children's Pictures, and Target Level on Savings

