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### Mental Accounts: Making Saving Money Easier Using Behavioral Data

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## Abstract

Moved by our conviction that asset building is a challenging but critical step towards increasing the well-being of the world's poorest people, this study provides a theoretical overview on certain behavioral bottlenecks that hinder beneficial savings attitudes and the different types of commitment mechanisms individuals use to constrain themselves. We will focus specifically on whether and how mental accounting can improve the ability of poor households to save, and the peculiarities of labeling a savings account in the formal financial system. This literature overview will be useful for the subsequent case study analysis of "Mujeres Ahorradoras", in which we evaluate labeling process of the participants of this Fundación Capital's financial education program in El Salvador. A forthcoming field research will be proposed to assess the causality between financial education and more solid mental accounts.

**Keywords:** Mental accounts, savings behavior, self-control

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## 1. Introduction

Recent evidence asserting the fact that poor people *can* and *do* save (Collins, et al., 2009) should never go without stressing the intrinsic difficulties of setting money aside for the majority of us, and particularly for those who forgo a lot of necessary expenditures on a daily basis. Market frictions, such as transaction costs, lack of trust, and inadequate regulation, are often mentioned as the main barriers to saving for the world's poor (Karlan, et al., 2014). This study shifts the focus from the more commonly cited supply-side barriers, to certain demand-side constraints that also depress saving, even among those individuals with access. More specifically, we examine the behavioral biases that may hinder the adoption and effective usage of savings products and services, paying special attention to self-control problems.

In order to overcome the aforementioned difficulties to save, individuals internally develop different mechanism that can help them commit to their future decisions. Given the risk and uncertainties that poor households face on a daily basis, commitments that are controlled by external forces (such as limited number of withdrawals in a savings account), strictly tying the saver's hands to a pre-fixed target goal, tend to be less widely used or demanded. Soft commitment mechanisms, which may simply entail labeling a savings account with a particular goal, but with no explicit penalty if the target is not reached, have proved to be more effective in many vulnerable settings. Mental accounting is one of these soft mechanisms; it was originally defined (Thaler, 1985) as the process of categorizing money in separate mental spaces depending on how that money was intended to be used for (to pay the rent, to bear unexpected expenses or the money devoted to having fun during the weekends) and which source of income was it coming from (e.g. from the income generated from my regular job or the money I gained with a lottery).

Building up on the existing theoretical knowledge of the concept of mental accounts, the last section of the study provides empirical evidence from the field on the power of this informal discipline-building mechanism. A Financial Literacy project of Fundación Capital in El Salvador, "Mujeres Ahorradoras", has been evaluated in order to understand the way in which the participants of the program categorize their savings. To examine this issue, we tested the following hypothesis: Individuals categorize their savings in a formal financial institution (FFI) inside a separate mental account, in which money is meant to be used for longer-term and less liquid goals, compared with other types of informal savings.

The importance of testing this hypothesis lies on the fact that, only if the value proposition of saving in a formal financial institution is well understood, it will be possible for the beneficiary to constrain its consumption. That is, only if participants are aware of the benefits that depositing their savings in a savings account, drawn out from Mas' (2013) analysis on the value proposition of formal savings, they will be able to create an adequate mental categorization for those savings.

The results show how the majority of the women (92%) declared having labeled their savings account with a clear long-term goal. Among the women who only saved in an informal way, this percentage was substantially reduced (82%). Moreover, most women have a positive attitude towards saving in the formal

financial system, and they generally understand the benefits that these services can offer over informal mechanisms to save. Formal women also presented a higher level of understanding of the value proposition of savings in a FFI. We were able to measure how formal women also have a higher savings rate, both in formal and informal mechanisms, but we could not infer a causal relationship between mental accounting capabilities and higher savings, due to a lack of control for external variables. The evidence presented in this analysis is consistent with a variety of theoretical and empirical field studies that also reflect how fostering soft commitment mechanisms, such as mental accounting, can help poor people commit to their goals and save more (Kast, et al., 2012; Dupas & Robinson, 2013; Ashraf, et al., 2006; Salas, 2014).

The findings of this study highlight the potential of soft commitment mechanism to improve the design of microfinance savings products. Bankers of the poor should not exclusively focus on optimizing the technical features of savings accounts (Karlan, 2010), but they should also endeavor to incorporate marketing techniques that can help the most vulnerable people bypass the cognitive biases. Behavior is influenced by one's mental apparatus, but also by the "contextual influences" (Bertrand, et al., 2006) that lead it to react in a certain manner; therefore, microfinance institutions have the opportunity to behave as "choice architects" (Thaler & Sunstein, 2008), using their capability to alter people's behavior in a predictable way that will be beneficial for them.

Collecting deposits have posed some institutional challenges to MFIs (Armendáriz & Morduch, 2005), especially regarding the cost associated with serving small-scale depositors (Christen, et al., 2003). Nevertheless, the purpose of spawning innovation within savings products relies on the harmful consequences that under-saving entails to the well-being of microfinance clients, potentially affected by highly variable consumption, low resilience to shocks, and the pain of foregone profitable investments (Karlan, et al., 2014). Moreover, though savings accounts in FFI seemed to have attracted little interest from the bottom of the pyramid, as indicated by microfinance client's high sensitivity to deposit fees (Mas, 2012), other research studies have indicated the poor's widespread desire to increase savings (Rutherford, 2000), as well as the existence of monetary surplus that poor households spend in non-essential expenditures (Banerjee & Duflo, 2007).

The aforementioned dichotomy suggests that there is a latent demand for mechanisms to save, not being satisfied by the current products microfinance institutions are offering. In developing countries, it is common to resort to informal saving devices, such as hiding money under the mattress, deposit collectors, rotating savings and credit associations (ROSCAs), informal transactions with friends and relatives, etc. However, informal saving devices, although robustly present in the financial diaries of the poor (Collins, et al., 2009), do not represent a perfect alternative due to the associated risks of storing money at home, or the difficulties in helping building large sums (Collins, et al., 2009).

Within the goal of rethinking savings products that are tailored to the needs of customers (Glisovic, et al., 2010), a modest but growing body of theory and empirical evidence is evaluating the potential implications of behavioral economics principles in microfinance product design (Salas, 2014). Leading development

organizations committed to increase financial inclusion around the globe have already acknowledged the impact of behavioral economics in improving the quality of their services for the bottom of the pyramid. Randomized Control Trials (RCT), and other innovative research methods, is using the changes in behavior to evaluate and measure the impact of microfinance to create better business decisions. Innovative psychometric credit scoring methodologies, such as the one developed by EFL's, are gauging ethics, honesty, intelligence, attitudes and beliefs, to develop a deeper and more quantitative understanding of risk without the need to have a credit history or collateral. Specifically regarding savings, several institutions such as Grameen Foundation, are currently introducing behavioral diagnosis to create successful savings products that align with their pre-existing savings habits of the poor (Fiorillo, et al., 2014).

All these initiatives show a new trend towards incorporating behavioral principles into product design in order to trigger desired behaviors, closing the intention-action gap by helping clients take specific actions towards savings goals. The microfinance industry will be thus shifting from educating customers who might take too much risk or exert too little effort to fostering self-discipline in financial behavior (Bauer, et al., 2012). As stated by Mas' (2012, p. 1), "we need to construct a much more nuanced savings service that incorporates all the mental discipline features that people already use, but is not so complex to operate that people give up on it [...] It's about helping them manage payments over time, so that today's expenditures don't obliterate tomorrow's goals".

## 2. Theoretical framework of Mental Accounts

The theoretical framework will attempt to provide the reader with a cohesive conceptual structure that casts light upon the notion of mental accounts. The disruption created by behavioral theories of savings in a debate that was dominated by the neoclassical economic perspective marks the beginning of our theoretical overview. These behavioral theories introduce three major psychological concepts that were affecting the logics of saving, but that were not taken into account by the previous rational perspectives: self-control, mental accounts and framing.

Section 2.2 studies the impact of self-control problems as one of the main behavioral bias affecting household mobilization of savings. Lack of self-control is also approached as one of the key explanations to why individuals develop mental accounts. In section 2.3 we move away from the behavioral barriers to analyze the techniques developed by individuals to mitigate these problems. Individuals impose constraints to their future behavior in many ways, but for the sake of this study, we concentrate on mental accounting as an efficient soft commitment mechanism to save. Empirical evidence from the field is also included to support our case on the power of mental accounting as an informal discipline-building mechanism.

## 2.1. The departure from a Neo-classical perspective

"The phrase behavioral economics appears to be a pleonasm. What non-behavioral economics can we contrast it with? The answer to this question is found in the specific assumptions about human behavior that are made in neoclassical economic theory". This quote by Herb Simon (1982, p. 277) fittingly justifies the existence of behavioral economics on the inability of neoclassical theories to reflect reality. The neoclassical economic theory can be simplified into three main assumptions: individuals are rational beings, who seek to maximize pleasure and minimize pain, and individual utility is assumed to be a function of consumption; there is little difference between income and assets; choices are based on stable, autonomous individual "preferences" and the individual's opportunity set.

Regarding neoclassical theories of savings, the *Life Cycle Hypothesis* (LCH), developed by (Ando & Modigliani, 1963) and the *Permanent Income Hypothesis* by Friedman (1957) represent the two more notorious ones. The former postulates that people make intelligent choices about their spending at each age limited by the resources available over their lives. The latter theory explains how people will spend money at a level consistent with their expected long term average income, and will save only if his or her current income is higher than the anticipated level of permanent income.

Despite all its elegance and rationality, the life-cycle model has not tested out very well (Courant, et al., 1986), and many have questioned some of the model's core assumptions, such as the negative relationship between wealth/income and household savings, which was found to be indeed positive in more comprehensive studies (Hefferan, 1982). On the other hand, Avery & Kennickell (1991) have subsequently disputed the LCH's idea of saving during the working years to then dissave in retirement, since the dissaving process is usually not entirely under the control of the individuals; uncertainty with respect to life expectancy or bequest motives play a major role, not considered in the neoclassical approach.

Psychological concepts affecting savings mobilization, such as the inner desire to refrain from consumption (Wärneryd, 1989), were almost completely overlooked by neoclassical theories as well. As a consequence, Shefrin & Thaler (1988) formulated the *Behavioral Life Cycle* (BLC) *Hypothesis*, an enriched version of the previous model that incorporated three behavioral features missing from the previous purely economic analysis: self-control, mental accounting and framing. This paper meant a decisive turning point for the theoretical understanding of saving, since it allowed the incorporation of behavior into the equation that defines savings mobilization.

Behavioral theorists highlight that individuals are usually tempted to spend all their resources on current consumption instead of saving for the future. Among those individuals who do save, self-control problems are being overcome by investing in a variety of assets that have smaller levels of temptation associated with them. Real world practices, such as the popular "Christmas Clubs" in the US, an institution that restricted all unplanned withdrawals until December, and other irrational human practices were logical under these new

theories. In words of Schreiner and Sherraden, financial decisions could now be understood as specially difficult “because they involve future, uncertainty, and math” (2007, p. 40)

## 2.2. Behavioral bottlenecks for small savers: a tedious self-control

Contrary to the rationality exhibited by the standard theories of saving, behavioral economics validated the existence of several cognitive tendencies that can lead to under-saving. A recent paper written by Karlan et al. (2014) structured the ascertained behavioral biases into four categories: preference biases (self-control efforts, loss aversion or anticipatory utility); different perception of prospects (e.g., over-optimism); relative price perceptions (e.g., exponential growth bias); and, lastly, to whether and how to make a decision conditional on all other variables (e.g., limited attention, planning fallacies). Acknowledging all these different biases may be key to designing financial products and services to help the poor save; however, only preference biases compose the focus of this study due to the substantial impact of self-control issues on saving outcomes.

The microfinance industry has evidenced how poor clients are indeed willing to borrow repeatedly at extremely high interest rates (Banerjee & Mullainathan, 2010), but it has fallen short in grasping why clients decide to behave in such a “myopic” way. One could argue that poor people cannot constrain their present consumption substantially since they need to spend at least a minimum amount in money in purchasing survival goods; however, there is direct evidence showing how the very poor spend comparably large amounts of their income in non-survival necessities (Banerjee & Duflo, 2007). Basu (2009) offers an alternative explanation to this dilemma. He analyzes why individuals are inclined to simultaneously save and borrow, instead of simply dissave. When an individual dis-saves, he resolved, it is normally the individual’s responsibility to rebuild the accumulated capital without external support. On the other hand, the repayment of loans are structured and monitored externally; though burdensome to some, a lot of individuals believe that an external constrain can offer a valuable mechanism for achieving financial discipline.

To explain the aforementioned “present-bias” dilemma, behavioral economists have developed different frameworks that give strong preference to consume today rather than tomorrow. Most theories fall under the broader concept of “time inconsistent preferences”, defined as decisions that involve trade-offs among cost and benefits occurring at different times, affecting one’s health, wealth and happiness (Frederick, et al., 2002). Self-control problems, thus, emerge as inter-temporal games that individuals engage with themselves (Strotz, 1955). Since self-control requires trade-offs between immediate gratification and long-run benefits, different authors (Schelling, 1984; Winston, 1980) have interpreted this phenomenon through a “multiple-selves” framework, in which an impulsive “present-self” is confronted with a more patient self in the long-term, and they take control of behavior alternatively (Laibson, 1994).

Thaler and Shefrin (1981) noticed that these models failed to explain in which circumstances individuals act with a long-term or short-term perspective, so they designed the more sophisticated “planner-doer” model, in which the

planner creates strategies to control the behavior of the doers. The model highlights the observation, later discussed at length by Loewenstein (1996), that the farsighted perspective is often much more constant than the myopic perspective. Translated into a savings example, there seems to be a consistent acknowledgment on the need to save, but punctual procrastinating behaviors hinder that long-term plan.

People struggle with self-control in many domains, but money is a notorious area for displaying a lack of self-control. Since poorer communities need to spend a bigger share of a marginal dollar on "temptation goods" (Banerjee & Mullainathan, 2010), lack of self-control can lead to worse outcomes when compared with their richer counterparts (Bertrand, et al., 2006). Bernheim, Ray, and Yeltekin (1999, 2013) even suggest that self-control problems can immerse them into "low-asset trap", since a deviation from the rules developed to save more may have more harmful consequences to their wellbeing. The poor's commonly negative predictions about their future income also influence their savings. Firstly, because savings tend to be lower in times when cash will be needed in the most near future. Likewise, when faced with falling future incomes, uncertainty normally instigates poor people to boost their consumption (Banerjee & Mullainathan, 2010). Finally, increasing present consumption usually raises one's future consumption behavior, a model that might also help explain why actual savings end up being smaller than planned savings (Loewenstein, et al., 2000).

Individuals do not exhibit behavioral biases categorically. There are indeed instances when the long-run self trains the short-run self to create "habits" that lessen the cost of self-control (Fudenberg & Levine, 2006). "Rules of thumbs" are a great example; defined as simple heuristics or routines for financial decision-making without aiming to provide comprehensive accounting knowledge (Drexler, et al., 2014), they are able to reduce the vividness of the temptation thus improving self-control. Individuals who are self-aware of their self-control problems, and who are able to anticipate them, will be more likely to value commitment. O'Donoghue and Rabin (1999) call these individuals "sophisticated agents", as opposed to "naïve agents" who are convinced of their capacity to behave in the future according to the plan established. Naiveté can lead individuals to repeatedly procrastinate an unpleasant activity under the incorrect belief that you will *do it tomorrow*.

### 2.3. Committed to save: soft mechanisms of constraint

As it has been previously outlined, certain behavioral weaknesses and biases may undermine saving outcomes because, even if individuals feel that it would in their best interest to start saving next month, that choice gets reversed once the decision point arrives. The demand for commitment mechanisms is absent in neoclassical theories, where preferences do not exhibit time-inconsistency (Karlan, et al., 2014). Individuals are believed to stick to their plans unless there is a possibility to re-optimize them. This section also departs from the neoclassical approach, analyzing the different ways in which individuals try to prevent deviations from their initial goal through commitment devices.

Behavioral biases have previously been said to bring worse outcomes for vulnerable populations. As a consequence, commitment nudges initially present a more compelling case as a mechanism to help constraining the behavior of those communities. However, it is better-off people who actually enjoy, either by default or through minimal effort, a system of attractive and cheap options, such as automatic deposits or reminders, “that is built to shelter them from grave or repeated error” (Bertrand, et al., 2006). This is true especially in the area of savings. Default deductions from future raises are set in order to help many US citizens to increase their savings, as documented by Benartzi and Thaler (2004). The world’s poorest, often working as self-employed entrepreneurs and do not have these types of mechanisms available.

Microfinance institutions that engage in the design of commitment mechanisms for their savings products face the challenge of balancing an existing tension between liquidity and flexibility. Clients demand illiquid products and services that can lessen the struggle for control between their present and future selves (Brindisi, 2014). In some countries, customers are demanding the services of money-lenders to collect their deposits (Rutherford, 2000), or even “money guards” to whom they can entrust their savings in order not to touch them (Rutherford, et al., 1999). Some commitment devices even include economic penalties for failure, or rewards for success, when the individual meets the target goal -which might savings accounts that limit withdrawals until an specific date, amount, or the purchase of a particular item is reached (Bryan, et al., 2010).

Surprisingly, recent evidence suggests that the aforementioned hard commitment devices often seem to be less effective for vulnerable segments of the populations, whose variable incomes and daily risks prevent them from actually committing. Dupas and Robinson (2013) and Brune et al. (2011) provide evidence on potential success of these mechanisms regarding health and agricultural investments respectively, while also pointing out the take-up of these instruments is significantly lower. Karlan and Linden (2014) find similar results in the context of educational savings program. Their study shows that educational savings are increased more under weaker strategies that enable families to incur in expenditure unrelated to education.

Soft commitment devices, on the other hand, are those that entail primarily psychological consequences. ROSCAs have proved to be an efficient commitment mechanism by voluntarily adding social peer pressure (Gugerty, 2007) or by allowing individuals to hide money from their spouse, “spouse control” benefits as defined by Anderson & Baland (2002). Shipton (1992) runs a study in Gambia where he documents the demand for “lock boxes” specifically designed with no opening, except a small slit to push money through. In other studies, customers have even intentionally got rid of the key to the box (Rutherford, et al., 1999). Save More Tomorrow (SMarT), a savings plan developed by Benartzi and Thaler (2004) present a perfect example of a formal soft mechanism, in which employers who committed to the plan were able to increase their savings by 1.5%, while the savings of the rest of the peers in the firm remained constant. The study also suggest how the time when that commitment is due also plays a fundamental role in the framing and decision-making process, because people find it easier to make delayed commitments than immediate commitments.

## 2.4. Mental accounts

Soft commitment mechanisms do not always require of an external force exerting control. For example, Laibson (1997) studied what he defined as “imperfect commitment technology”, meaning the overinvestment in illiquid assets that are rather hard to rapidly exchange for money due to “transactions costs, informational problems, or incomplete markets”- such as cow ownership as a way of preventing myopic spending (Anagol, et al., 2013). The rationale is to create savings pots that are less likely to be divided, and therefore, less likely to be spent. But there are other soft commitments that are even more subtle, such as the “pain of paying” studied by Prelec and Loewenstein (1998); despite its subtlety, it is an effective mechanism of self-control, counterbalancing the pleasure of consumption that might lead to overspending. Along similar lines, mentally labeling savings into different categories is also considered as a soft-device that is able to constrain the lack of self-control (Thaler, 1985).

An easy way to be introduced into the concept of mental accounts is by drawing an analogy with the financial accounting practiced by companies, defined as the “systematic process of identifying, recording, measuring, classifying, verifying, summarizing, interpreting financial information”<sup>1</sup>; in both cases, this instrument satisfies one of our most basic and daily needs: to keep spending under control. Thaler (1985) developed this concept based on previous data on “psychological accounts” (Tversky & Kahneman, 1981); its definition was narrower, solely referring to the frame people used to evaluate financial decisions, based on a non-changing status quo.

Thaler (1985) subsequently provided a wider definition that involved the entire process of coding, categorizing and evaluating events. After going through the process of coding, categorizing and evaluating money, the individual has set a bracket that will limit the choices regarding the use of certain funds. Mental accounts are closed when the transaction has been completed and the individual has obtained the consumption benefits (Thaler, 1985). While open, individuals evaluate their mental accounts with variable frequency, depending on the person (Soman, 2004). Benartzi and Thaler (1995) argue that due to “loss aversion”, poor people review their mental accounts very often in order to better adjust their budgets.. Individuals are able to categorize and keep track of the designated savings purely through a mental exercise, even though using different physical storage places could facilitate the categorization (Thaler & Sunstein, 2008).

Mental accounting is still an understudied effect within the context of developing countries (Andriamahefazafy, et al., 2013) despite positive evidence of its potential to influence a more efficient policy-making towards savings mobilization (Salas, 2014). Nevertheless, due to the promising results of certain recent case studies on the power of this internal money management mechanism to smooth consumption, a growing number of academics are starting to think of innovative ways to measure its impact and to evaluate its potential uses.

The key issue regarding mental accounts concerns how labeling a savings account could actually reduce the self-control bias. The psychological

<sup>1</sup> According to the Business Dictionary, it is the definition of accounting. Available on: <http://www.businessdictionary.com/definition/accounting.html>

mechanism is rather simple indeed: the utility loss of depleting one's labeled mental account "overrides the utility gain from consuming the unplanned expenditure at a present time" (Dupas & Robinson, 2013, p. 1145). In other words, the psychological cost derived from failing to accomplish one's pre-set goal might be stronger than the temptation to waste money from the wrong mental account. This turns out to be especially true when individuals have already devoted resources to its attainment (Gourville & Soman, 1998), such savings accounts in which individuals have already deposited some of their monetary resources. Mental accounting is also relevant as it emphasizes that individuals do not make consumption decisions in isolation (Soman, 2001) and their decision-making will be influenced, among other things, by the availability of other budgets (Heath & Soll, 1996). On the negative side, since mental accounting is a subjective process (Kivetz & Zheng, 2006), it has also allowed individuals to justify pleasurable consumption by creating "guilt-free" mental accounts (Thaler, 1985).

One of the key implications of stating that "Mental Accounting Matters", as the title of Thaler's (1999) most influential study on the issue seems to suggest, is the violation of the economic principle of fungibility. This principle suggests that money, any unit of money, is substitutable for another. However, when individuals attach a label to their budget (money for food, gas, leisure...) their consumption pattern seems changed due to the suggestion of the label (Antonides, et al., 2011). More empirical evidence outside the laboratory will be needed in order to understand how to incorporate violations of fungibility into models of consumer choice; further research could also benefit the problems that fungibility poses on microcredit impact analysis (Hulme, 2000).

The labeling process of mental accounts distinguishes three different levels (Thaler, 1999): expenditures, which are grouped into different budgets; wealth, categorized in different accounts; and income, divided regarding its source. Regarding the first, individuals create different consumption categories in order to keep spending under control. This categorization process is generally more explicit, tighter and better defined over short periods of time for poor households (Thaler & Shefrin, 1981). A second kind of violations relates to the source of income. In one of his studies, Kooreman (2000) finds that the marginal propensity to spend money on child clothing is higher when the source of income is some kind of subsidy, as opposed to regular income.

The theory on wealth accounts is the one that provides a more consistent theoretical foundation to our empirical analysis. The theory departs from the assumption developed by Shefrin and Thaler (1988) that spending money could be more or less tempting depending on its location. Particularly, the authors presented the difference between the marginal propensity to spend a dollar from a "current assets" account - cash in your hands- and a "current wealth" account such as a savings account (Thaler, 1985). Individuals therefore code small amounts of money as "spending money", while larger amounts are coded as savings in order to constrain unplanned expenditures. Of course, this study was conducted in a developed country, so it does not take into account the possibility of lacking access to restrictive savings mechanisms, neither the higher vulnerability nor risk exposure that might deter poorer communities from choosing and using these commitment tools. Nevertheless, a deep and

meaningful insight can be easily extrapolated: “if funds can be transferred to less tempting mental accounts they are more likely to be saved” (Thaler, 1999, p. 91).

#### **2.4.1. Mental Accounts: Empirical Evidence from the Field**

Mental accounting is a theoretical concept that has nevertheless been empirically tested over the past few years. One of the most influential case study was conducted by Kast et al. (2012), where two randomized field experiments were designed in order to test the effectiveness of self-help peer groups as a commitment device for precautionary savings among members of the microfinance organization “Fondo Esperanza”, in Chile. The treatment group was randomly assigned three different types of savings accounts: a normal savings account, a savings account with peer pressure and a savings account with a higher interest rate. Those clients whose savings were larger were given the option of reallocating some of their money into the significantly higher-yield savings account (5% real interest rate, instead of the 0.3% in the basic account). Surprisingly, only 1% of these big savers did so. The researchers point out that the “tangible and mental costs” associated to the transaction of money from one savings account to another was the main reason explaining this phenomenon, together with a lack of understanding of the interest rate. In a follow-up survey, when 70% of the clients said that they did not transfer money because “the alternative account is destined towards a specific goal that I do not want to mix with the other savings account” as their main reason. Mental accounting is named by far as the most important reason explaining the client’s behavior.

Dupas and Robinson (2013) conducted another field study that provides us with outstanding evidence on the power of mental accounts. In this case, the data was extracted from a field experiment in Kenya, where individuals were provided access to four innovative saving devices that differed in their degree of commitment. The development goal of this experiment was to find the savings mechanism through which individuals in the sample could increase investments in preventive health. A first savings device did not require any commitment to make deposits or limit withdrawals, it was just a safe box labeled for a specific purpose (a form of mental accounting). Two other devices, a lock box and a savings account, included a stronger commitment, since the money saved could only be used for a pre-specified goal. This process was defined as “earmarking”. Finally, a fourth product offered earmarking, but the contributions to the health deposits were being made in a group setting (inside their own ROSCA).

The results obtained are ground-breaking: the individuals who increased their savings the most (66% increase on average) were those who had mentally allocated their savings to a specific use. Labeling, a form of mental accounting, increased health savings for the majority of the treatment, but it also increased the probability of reaching the participants’ savings goal by 14%. Subsequent surveys show respondents believed this labeling mechanism helped them avoid “unplanned expenditures” by making the money saved under the “health” label non-fungible for other expenses.

The other stronger commitment mechanisms used in the experiment, earmarking, proved to be ineffective for the average individual. Severely limiting liquidity was understood as an unnecessary condition for the design of a savings

product, especially for people living in an environment in which income shocks are common, such as rural Kenya. Results are very well aligned to the literature review previously outlined, since the authors suggest that individuals with time-inconsistent preferences, were the only ones who did not benefit from mental accounting, nor from earmarking. Only peer pressure forced them to make regular deposits.

Dupas and Robinson (2013) conducted the aforementioned experiment based on previous similar case studies, such as the RCT developed by Ashraf et al. (2006) in the Philippines. This case study was previously mentioned in the commitment section. In this case, we want to analyze the two optional design features that were offered to microfinance clients: a lock box and an automatic transfer. The feature that was chosen the most (167 out of 202) was the locked box, which was offered to each client in exchange for a small fee. The commitment mechanism in use was rather strong, since only the bank had the key to access to the money deposited in the lock box. This feature was thought as a “mental account with a small physical barrier” (Ashraf, et al., 2006, p. 641). The box was easy to break, so the barrier was rather psychological. Participants in the sample were able to increase their savings by 81%, a percentage even greater than the one observed in Dupas and Robinson (2013). Nevertheless, that percentage got reduced to 33% after two and a half years (Ashraf, et al., 2006). Moreover, the study was not able to control external and internal variables in order to create a casuistic relationship between mental accounts and the outcomes observed.

A recent experiment conducted by Luz Salas (2014) evaluates whether behavioral responses vary when individuals label their savings in a private or a public way. The experiment encourages the members of a Village Savings and Loan Association (VSLA) in Colombia to label their mental savings account stating a savings goal, but one treatment group does so individually (private mental account) and in the other, the goal is shared with the group (public mental account). The RCT conducted was extremely accurate, making sure that individuals chosen for the sample were statistically equivalent at the baseline level. Casualty could, therefore, be established between the control and treatment individuals. The results show that, while public-labeling savings accounts increased savings by an average of 35%, the results for the private-labeling treatment are more heterogeneous. Generally, individuals who were previously more economically constrained exhibited greater difficulties to increase their savings. Salas explains how these difficulties did not translate into smaller savings in the public group through social punishment when they fail to meet their promises.

Even though many studies confirm the use of mental accounting as an informal discipline-building mechanism, there is not extensive empirical evidence on its capability to improve money management. In this section, recent case studies from Asia, Africa and Latin America were analyzed, drawing the conclusion that mental accounting is a phenomenon that practitioners and academics are paying increasing attention to, and that this mental categorization of one's income is not region-specific.

### **3. Case Study Analysis: The Mental Accounts of “Mujeres Ahorradoras” in El Salvador**

In this section, data from a 2014 Financial Literacy training conducted by Fundación Capital in El Salvador was analyzed in order to evaluate the way in which participants label savings in a formal financial institution.

The importance of this analysis lies in the fact that, only if the value proposition of saving in a formal financial institution is well understood, it will be possible for the beneficiary to constrain its consumption. That is, only if participants are aware of the benefits of depositing their savings in a savings account, will they be able to create an adequate mental categorization for those savings. We have defined such “adequate” mental categorization of savings in an FFI based on the psychological variables developed Sondra Beverly (1997) in her study *“How can the poor save? Theory and Evidence on saving in low-income households?”*. In that study, she points out to two major psychological variables, concrete motives for saving and financial understanding that we have also used to evaluate the mental structure of our participants.

#### **3.1. Background: Women and Financial Inclusion in El Salvador**

El Salvador, along with Nicaragua, is the only Latin American country where adults holding a bank account represent less than 15% of the population, according to the World Bank’s Global Financial Inclusion (Global Findex) Database. In 2011, only around 4% of the population had a loan from a financial institution, the lowest rate in Central America. Informal loans originated with family or friends were only a little bit higher, 6%, than formal loans (Demirguc-Kunt, 2012). The main explanation for these low rates, according to the Global microscope on the microfinance business environment developed by (The Economist Intelligence Unit, 2014) is that the salvadorian financial sector is concentrated in a few foreign-owned banks, to which the vast majority of the population do not have real access.

In 2013, women represented only 53% of the final beneficiaries from 13 microfinance institutions affiliated to the Association of Microfinance Institutions in El Salvador (ASOMI, are the acronyms in Spanish), a percentage below the Central American average, situated in 60%. Since the microfinance sector in El Salvador does not have any specific regulatory framework that encourages formalisation of microfinance institutions, and there are no formal capital, risk or operational requirements, ASOMI has played an important role in setting up the “best practices” for the industry. According to the 2013 Usury Law<sup>2</sup>, regulated and non-regulated institutions need to declare to the Central Bank of El Salvador (BCRE) their interest rates on credit products, and set maximum effective interest rates depending on the type of credit provided; for example, loans to microenterprises, the most common ones, are those which have more drastically reduced the maximum annual effective interest rate, according to 2014 january data from the BCRE, from 230.19% to 189.66%.

<sup>2</sup> Available at: <http://www.asamblea.gob.sv/e parlamento/indice-legislativo/busrador-de-documentos-legislativos/ley-contra-la-usura>

Regarding savings, 26% of adults declared having saved over the last year, but only 13% did so in an FFI (Demirguc-Kunt, 2012). Looking at the breakdown of those who saved in an FFI, we can see important differences regarding income: the top 60% incomes in the country saved 6 times more than the bottom 40% of the incomes; there are also fundamental variations between the savings level of adults with secondary education, who save almost three times more than adults with only primary education, while 17,3% of males declared having saved in 2011, only 8% of females did so, presenting a huge difference between genders.

Most recently, government initiatives towards financial inclusion in the Latin American region have innovated around the potential of financial services as a complement to increase the effectiveness of existing public poverty-reduction programs, such as Conditional Cash Transfers (CCT) programs (Rosen, 2010). Particularly in El Salvador, receiving government payments have been pointed out as the second main reason for opening an account in an FFI, according to the Global Findex 2012. CCTs have proved to have a short-and long-range impacts on human capital development (Barrera-Osorio, et al., 2008); these initiatives, coupled with medium-term strategies such as savings mobilization can offer CCT beneficiaries an alternative path once the subsidy program is finished (the average duration of a CCT program is 4 years). Moreover, having a savings account in a formal financial institution can benefit the recipients by helping them managing the money received (Rosen, 2010).

The first Conditional Cash Transfers (CCT) Program in El Salvador started in 2005, combining the short-term objective of alleviating poverty with incentives for families to increase their investments in human capital so as to break intergenerational poverty traps (Britto, 2007). "Comunidades Solidarias Rurales" (CSR) is one of the three CCT's currently available in El Salvador, assisting the 100 municipalities with highest extreme poverty rates in the country. Two types of conditional transfers are covered by CSR: educational and health transfer (de Brauw, 2012). The transfer amount is 15 dollars per month per household for the education or health transfer, and 20 if households are eligible for both types. Several interested financial institutions are selected through a competitive tender process to hand cash vouchers to the final beneficiaries (Proyecto Capital, 2014). Since 2013, Federación de Cajas de Crédito y Bancos de los Trabajadores (FEDECRÉDITO) has been selected as the second-tier financial institution delivering the cash transfers for CSR's beneficiaries.

CCT's focus on women has been understood as a great tool for reducing income inequalities among sexes, even though other contestant views consider that CCT's did little to change the "patriarchal maternalism", or the viewing of women primarily as mothers instead of workers or citizens, which shapes Latin American social policy (Franzoni & Vooren, 2012). Gender inequality is present in many areas of Salvadorian life: 45.9% of women participated in the labor force, which was below the world average of 64.4% (United Nations Development Programme, 2014) and below their Human Development group average of 51.1% (World Bank Web, 2014), while the participation for men in the same year was 76.7%; domestic violence rates cannot go unnoticed, with 26.3% of women reporting having experienced some sort of physical or sexual violence from their partners (Pan-American Health Organization, 2012).

### **3.2. “Mujeres Ahorradoras”: a brief description of the project**

“Mujeres Ahorradoras” is a financial education project developed by the Salvadorian Government with technical assistance of Proyecto Capital (PK)<sup>3</sup>. The project targets CSR beneficiaries and it is structured around two specific goals: the design and implementation of financial literacy trainings and the subsequent opening of individual savings accounts, defined as Personal Capitalization Accounts (PCA). The PCA is a subsidized savings system that intended to facilitate and automate CCT through a bank transfer. This mechanism could greatly improve financial inclusion in a country such as El Salvador, where there are no simplified savings accounts and the travel costs needed to purchase the required tax ID number have found to be rather high for the poorest segments of the population.

The pilot project has been implemented in two Salvadorian municipalities: Concepción Batres, in the Usulután department, and Tacuba, in Ahuachapán department. Those municipalities were chosen from all the 100 municipalities classified as the poorest municipalities in the country, due to the significant concentration of CCT recipients (approximately between 1,500 and 2,000, respectively). Concepción Batres has 12,197 inhabitants, which 74% are rural and 26% urban with only 38% of the population having access to clean water (*Censo de Población y Vivienda 2007, DIGESTYC*)<sup>4</sup>; it is considered as the municipality with the highest domestic violence rate in the whole country, an indicator that shows the high vulnerability of women in this region. Tacuba has an even greater percentage of their population living in rural areas, reaching 83% of the total population, and only 45% of their citizens have access to electricity. On average, the nearest branches of FEDECRÉDITO are located between one hour and one hour and a half from both municipalities. The two municipalities presented different results that may be explained due to: 1) a higher social density in Tacuba, while Concepción Batres is considered more as a well-connected passage area; 2) Maras, the criminal gang that killed in 2012 an average of 14 persons a day in El Salvador (Valencia, 2014), operate more strongly in Concepción Batres; 3) Indigenous presence is higher in Tacuba.

Financial literacy trainings lasted 5 months, from February to June 2014, and 700 out of the 1,000 women that initially registered attended the whole set of sessions. Women were encouraged to voluntarily attend the trainings by Fundación Capital’s 85 local field workers, called “Lideresas” (*Female leaders*). “Lideresas” were women specifically trained to lead the financial literacy trainings, also in charge of forming and organizing the groups based on proximity. Even though the curriculum of the trainings was miscellaneous, there was an intense focus on the mental structure that could facilitate saving, such as contemplating future goals and linking them to their savings methodologies. Other practical lessons on financial literacy, such as the specific features of a savings account in a formal financial institution, where also part of the

<sup>3</sup> Proyecto Capital is a joint initiative between Fundación Capital and the Instituto de Estudios Peruanos. Fundación Capital is an international development organization that aims to alleviate poverty through financial inclusion, capacity building and by stimulating productive investment. Fundación Capital has ongoing projects in 14 Latin American countries, and an expansion through other African and Asian countries is planned for the following years.

<sup>4</sup> Available at: <http://www.digestyc.gob.sv/servers/redatam/htdocs/CPV2007P/>

educational process.

Alongside with the literacy trainings, during the months of June and July of the same year, the participants of the program were encouraged to open a commitment savings account. The women were in charge of developing and setting its savings goal, making the decision on the amount of time that the specific amount of money (minimum 6 dollars) could not be withdrawn (unless a reported emergency occurred). As of August 2014, only 95 women finally opened the savings account. This low number could be due to existing problems with the financial institution offering the savings product, since the second-tier institution selected by the Government, Federación de Asociaciones Cooperativas de Ahorro y Crédito de El Salvador (FEDECACES), decided not to continue assisting the municipalities where the program was being implemented, due to the low number of accounts opened in the first month of operations. A partnership was then signed with FEDECREDITO, another second-tier financial institution in the country. Even though the service offered to the participants remained unchanged, the substitution might have affected the perception of the women participants, probably decreasing their already low level of trust in the formal financial system.

### **3.3. Study Methodology and Design**

This study will analyze the raw data collected by Fundación Capital on the impact evaluation of “Mujeres Ahorradoras”. The analysis relies on an existing questionnaire conducted from the 24 to the 28 of November, 2014, which comprises an extensive data set about the socio-economic situation of “Mujeres Ahorradoras” participants (“The Survey Instrument”, from now on), as well as an insight to their attitudes towards and beliefs about savings. This questionnaire was taken to 366 women, from a universe of 1000 total women who attended the financial literacy trainings of Fundación Capital, of which 113 belong to Concepción Batres in Usulután department and 252 to Tacuba in Ahuachapán department.

The Survey Instrument had 90 questions divided in 7 sections, and provided a holistic dataset around the following focal topics:

- I. Geographical area
- II. Demographic characteristics
- III. Project Results (increase in informal savings, attitudes towards savings and financial literacy improvement)
- IV. Linkages with the financial system
- V. Household planning
- VI. The trainings
- VII. Interest in business

Qualitative information was analyzed from several Focus Groups (FC) interventions with the participants of the program under the same focal topics covered by the quantitative survey, with the goal of getting a better understatement of the aforementioned data. Interviews with government officials and “Lideresas” were also conducted to widen the scope of the qualitative

research. In order to determine the necessary number of FC's that needed to be developed, quotas were calculated to ensure the achievement "information point saturation" (Kvale, 2011).

### **3.3.1. Hypothesis and Indicators**

The following empirical analysis proceeds under the assumption that "mental accounting", defined as an internal mechanism to categorize and keep track of the designated savings purely through a mental exercise, is used by our target recipients to constrain their own consumption behavior. Having a separate mental account in which to code, categorize and evaluate the money being used to pursue your long-term projects can help individuals save more. This assumption, which is also underpinned by the theoretical framework outlined in the first part of our study previously analyzed, has been used as a starting point to develop our main hypothesis:

- **H1:** Individuals categorize their savings in a formal financial institution (FFI) inside a separate mental account, in which money is meant to be used for longer-term and less liquid goals, compared with other types of informal savings.

The hypothesis relies on two concepts that should be mentally linked to savings accounts in FFI: 1) Women earn-mark their savings in an FFI for a particular long-term purpose; 2) Women understand the benefits of savings in an FFI, particularly the reduced liquidity of the money they have committed to save in the account. These concepts have been chosen as the main variables to test our hypothesis, based on the definition provided by Mas (2013) of the value proposition of saving in a formal financial institution. Mas (2013) explains how the choice of a savings vehicle will depend on the nature of the individual's goal. In the case of formal savings, the savings vehicle analyzed in this study, less liquidity in favor of some type of discipline might prevent people from altering previous savings. Certainty and privacy, as opposed to public display, are also mentioned as two other key value propositions. The goal of our hypothesis is to analyze if the participants of "Mujeres Ahoradoras" understood those key value proposition concepts, enabling them to better choose what type of savings vehicle to use, depending on the goal they are trying to achieve.

Evaluating concepts such as whether or not an individual's labeling a savings vehicle in a particular manner, that is, evaluating the characteristics of an individual's mental accounts, is an extremely arduous task. It would require in-depth interviews and specific questions that could not be used in this study. Nevertheless, we decided to overcome these issues by breaking down the concept of mental accounts into easier target variables, based on Mas' (2013) ideas on an adequate label for formal savings. Then, we chose three indicators from Fundación Capital's survey that could provide us with an approximate idea about the labeling process by the women in our sample. We validated the use of those three indicators by using as a reference the previous categorization made by Beverly (1997) and Beverly et al. (2008) on the psychological indicators that influence savings behavior.

The indicator selected to measure the first variable corresponds with the survey question 3.16.1 from the Survey Instrument. This indicator has the form of a “Likert scale” survey question, a psychometric scale commonly used in questionnaires that relies on scaled responses. For this specific question, scaled responses ranged from “I definitely agree”, to “I somehow agree”, “I somehow disagree” and finally, “I definitely disagree”. These responses were used interchangeably with rating scale from 1 to 4. The methodology was simple, since the participant only had to place an orange card in the spot that best suited her answer within that Likert scale.

**Question 3.16.1** *“I am going to read you some statements about saving in a formal financial institution, and I want you to please tell me whether you definitely agree, somehow agree, somehow disagree, or definitely disagree. Saving in a formal financial institution...”*

1. It's a problem because its far away
2. I like it because I can decided about my account and how I use my money
3. It is good because its private, no one knows how much money I own
4. It's safer
5. It's good because you can withdraw money bit by bit, just the amount you need
6. I like it because it helps me not to waste my money
7. Doesn't benefit me at all

Source: Own elaboration from the survey.

The aforementioned indicator is suitable for our analysis of mental accounts because it shows the level of understanding of the beneficial features that are commonly associated to the savings in an FFI. As stated by Beverly (1997), those who understand the mechanics and likely outcomes of a saving strategy are more likely to take advantage of a favorable saving opportunity. She sets as an example the 401(k), the retirement savings plan in the US, explaining how individuals with a limited understanding of the plan may not realize the financial benefits of participation and may simply shy away from something unfamiliar. Financial attitudes are found to be variable depending on education (Solomon, 1975); nevertheless, that variable should not be affecting the results of our indicator, since all women present in the sample have received the same financial education training. Our indicator is intended to show whether or not women understand that keeping money in an FFI decreases the ability and temptation of spending money immediately (Mullainathan & Shafir, 2009), since an active effort is required to withdraw it in order to spend it (Mullainathan, 2006).

The second variable chosen to test the first hypothesis measures to what extent women match their savings with a long-term goal. This variable is measured through the survey questions 3.4 (Motivations to save) and 3.14 (Usage of the money) in which women with a savings account in a formal financial institution were asked about their motives to save and the way in which they were planning to spend the money saved in that savings account.

**Question 3.4 Which are the main two motivations you have in order to save? (DO NOT READ THE OPTIONS TO THE WOMEN)**

- (0) NA
- (1) Children education
- (2) House improvements/purchasing
- (3) Relatives diseases
- (4) Business (land acquisition, debts payment)
- (5) Provision for emergencies
- (6) Basic needs (food, clothes, water)
- (7) Other

Source: Own elaboration from the survey.

**Question 3.13 In what are you planning to spend the money saved in your savings accounts? (DO NOT READ THE OPTIONS TO THE WOMEN)**

- (0) NA
- (1) I am not saving → go to next question
- (2) My children's education
- (3) Open or expand my business
- (4) Overcome an emergency
- (5) House improvements/purchasing
- (6) Other

Source: Own elaboration from the survey.

Saving motives are not necessarily mutually exclusive (Dynan, et al., 2004), and it is assumed that women would have many other goals that they would like to fulfill with their savings. The goal of analyzing this indicator is to understand to what extent women with a formal savings account have a long-term horizon goal associated to their savings account. Moreover, by comparing two similar questions regarding those goals (motives and future usage), we can deduce to what extent the goal is explicitly and sharply defined in their minds.

Saving motives have also proved to be different depending on financial resources (Xiao & Noring, 1994). Nevertheless, we are not interested in that distinction, since all women were equally encouraged to set a savings goal.

Previous research has found that tactics such as earmarking, which is similar to budgeting but takes more specific forms such as envelopes to separate different accounts, increases savings behavior (Shefrin & Thaler, 1988; Thaler, 1985).

### 3.3.2. Data quality

Acknowledging the limitations of this analysis implies understanding the limitation of the data collection processes that this study relies on, mainly the Survey Instrument. For example, one of the main problems we encountered when having to analyze the data collected was that it could not be contrasted with any previous baseline study. Knowledge about previous attitudes towards saving is necessary in order to understand whether the exposition to financial

education trainings has caused any effect on the sample. In order to mitigate this problem, retrospective questions were asked to the interviewed women about their past attitudes and behaviors. The accuracy of these retrospective answers is more debatable. The surveys were also conducted right when the financial trainings ended, so a follow-up survey would be useful in order to understand the trend of the results.

Moreover, all the information collected through these series of interviews could not be contrasted with any type of external validation, such as, for example, the attendance record from the financial literacy trainings or the savings passbook where the women are required to keep track of their savings. The low attendance to the interviews, due to the overlap with the time in which children should be enrolled into the schools, was also pointed out by the interviewers as one of the main limitations of the study. As a consequence, the margin error had to be increased from 3% to 4.08%.

The information collected from both the survey instrument and the focal groups is restricted to a treatment group formed by women that were part of the program, without any different control group that could help us compare results. Finally, the data used is unweighted, so that no generalization to the national population can be made.

### **3.4. Analysis and Results**

#### **3.4.1. Interviewees' socio-economic characteristics: who are the women participating in "Mujeres Ahorradoras"?<sup>5</sup>**

The analysis of data that has been collected through a random selection, forced us to consider the potential differences among the women in our sample. Therefore, a previous review of the main social attributes of the sample (community leader, age, marital status, years of education, number of children, occupation and head of household) was understood as a necessary condition in order to reduce the sampling bias.

With an average age of 38, women's ages ranged from 20 to 77. A high percentage of women are living with their partner (80%), even though only half of them are formally married and the other half in common-law. The average number of children is 4, being the most frequent value 3. Regarding their principal occupation, the 92% of the participants are self-proclaimed housewives and in second level appears agricultural works (2%).

Related to the educational level, even there is a high percentage (75%) that confirmed went to class and can read and write (72%), the average education time is ranked in 3.48 years, when the variable goes from 0 to 12 years, being 0 the most repetitive value (27% of the cases). This is a negative figure that is far below from the national average that is marked in 6.5 years (United Nations Development Programme, 2014).

At last, in reference to the management of the house, 41% of the participants asserts they are head of households, 45% affirms that both with their

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<sup>5</sup> To see all these figures, see Annex 1.

husband/partner and only 14% gives a negative response, showing the great percentage (86%) that is in charge of their decisions at home. Nonetheless, it does not follow the leadership indicator is transported outside the house, since only 12% believe they are community leaders.

### **3.4.2. Understanding “Mujeres Ahorradoras” savings profile**

This section examines certain variables extracted from the survey that provide valuable information about the women from the sample analyzed. These variables do not help us in answering our hypothesis, but they are crucial to understand other factors that might influence our results. For example, it is worth noting to understand more generally the women's savings profile. After the completion of the project, 79.8% declared to be saving, but only three out of ten (29.2%) did so in a formal financial institution, while half of them reported to use some kind of informal mechanism to save.

Information regarding the difficulty in access to financial services could give us a useful insight to the problems encountered by the beneficiaries in their approximation to formal savings. For example, 11.5% of the interviewees reported having been assaulted at least once in their lives either in their neighborhood or in the different places where their monetary transactions occur. Moreover, 9.6% declared having had “major problems”, described as “fights or quarrels” with their partners because of saving. It was also interesting how a small, but representative percentage of the women also declared having had problems with other relatives regarding savings.

Costs, both monetary and time-consuming costs, are also an important barrier towards saving in a formal financial institution, since 84.7% of the interviewed women depended on some kind of means of transportation in order to reach the nearest branch. The average cost of these different types of transport is 1.24 dollars.

### **3.4.3. Evaluation of the hypothesis**

Firstly, we evaluated the data gathered from the first survey question (3.16.1) on the women's perceptions about saving in a formal financial institution. The results show that, in general, women present very positive attitudes towards saving in the formal system; these attitudes are remarkably stronger when we isolated the answers of those women who declared having savings account in a financial institution. Thus, we decided to not only analyze whether or not the attitudes of women who have a savings account in an FFI (formal women, from now on), but also to introduce the comparison with the attitudes of informal women (that, for the sake of this study, will define those women who do not have a savings account in an FFI).

Except for one anomalous result, the rest of the answers analyzed prove to be consistent with the literature reviewed in the previous section<sup>6</sup>. The anomaly corresponds with a significant percentage of women (72%) who don't see any advantage in saving in a financial institution, with a lower figure among those women that do not have a bank account (71%). In order to mitigate the

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<sup>6</sup> See Annexes from 2 to 18

anomalous result, we consulted a senior manager from Fundación Capital, who told us that this anomaly will most likely be caused by an error in the codification of the women's answers, based on the inconsistency with similar questions. Therefore, we decided to disregard that answer for our own evaluation.

Almost half of the formal women (45%) declared that the main problem they have encountered when trying to save in a financial institution is the distance to the nearest point of service. Distance seemed to be troubling a lesser percentage of informal women (35%). This discrepancy could be easily understood if we take into consideration the fact that the percentage of women who declared traveling to the bank usually is higher for formal women than for informal. Informal women may only visit a financial institution to collect their CCT, while half of formal women declared visiting their financial institution at least once a month to make deposits or withdraw money.

The two subgroups of women analyzed show one of the biggest discrepancies when asked about their opinion on the safety of FFI over other types of informal savings: only 2% of formal women think that saving in an FFI is less safe than saving at home, while 10% of informal women do. This inconsistency could imply that informal women might be influenced by the general impression of fear towards the financial system, while those women who are clients of an FFI have had a positive experience. This is a valuable indicator, since labeling savings accounts as potentially dangerous could clearly affect the take-up of savings accounts.

The women's perception of the ability of savings accounts to restrain consumption was evaluated through the survey question "I like savings accounts because I can withdraw my money bit by bit, just when I need it". This indicator is providing us with a clear picture of the mental structure created for the money deposited in the savings account. Women would be linking their savings in an FFI with a commitment to save, since they understand that the money deposited in the savings account is less liquid than other forms of informal savings. Regarding the greater difficulty to spend money that is stored in a savings account on unnecessary expenditures, only 2% of formal women disagreed to that statement, while the percentage increases to 10% for informal women. Our results are consistent with the information gathered in the focal groups (Instituto de Estudios Peruanos, 2014), where most of the groups expressed that, due to the lack of proximity of branches, is more difficult to understand this illiquidity as a benefit instead of a problem.

Similar percentages are evident on the indicator that measured the ability of savings accounts to facilitate the internal ability of women to manage their money, withdrawing the amount needed for expenditure. The previous indicators thus show how the participants of the program in general, but especially the women with a savings account, label savings in a FFI as less liquid, also understanding the greater control they can have over their consumption.

Moreover, most women (94%) are aware of their ability to control the features of their commitment savings account, which may boost the empowerment of the participants in the future regarding control over the household budget. In similar terms, women have now more capacity to decide

when and to whom they can lend their money to, including not only friends but also family members that might have previously abused of the lack of control of women's money. Indeed, 97% of "Mujeres Ahorradoras" in our sample realize this issue.

Results from our next indicator, whether or not women had labeled their accounts with a long-term goal, are also very positive. The percentage of women, both formal and informal, that has not attached a label to their savings is 18%. Nevertheless, when isolating formal women, we can see that the percentage gets reduced to 8%. Women stated many different goals to their savings accounts, although children education was stated as the primary motive to save in a formal financial institution (33% of the women), followed by savings to cope with the diseases of their relatives (32%). It was also interesting to discover that every formal woman that falls under the category of women who save the most (in a range from 0 to 1.000 USD, we have considered the top-line from 300 USD to 1.000 USD), were saving to provide education to their children

We compared two similar questions from the survey (savings goals and the predicted future use of the savings), in order to understand to what extent their savings goal was explicitly and sharply defined in the women's minds. We ran a correlation analysis between the two variables, and found a positive 0.15 correlation. Women thus tend not to hesitate when stating their main savings goal, even when the question is formulated in different ways. We inferred that the high number of not applicable answers might be causing the low correlation figure.

With the information gathered until now, our main hypothesis would be positive. In general, women do label their savings account with a long-term goal. Outside the evaluation of our main hypothesis, we wanted to understand whether the women that did not label their money in savings accounts with a specific goal were able to save more than the women who did. We contrasted the variable "maximum amount of money saved in the bank" with the dummy variable "savings goals" that distinguishes formal women with and without a savings goal. We developed the following null hypothesis:

$$H_0 = \mu_1 = \mu_2$$

$$H_1 = \mu_1 \neq \mu_2$$

The null hypothesis indicated that there are no differences between the average savings balance of women with and without a savings goal, while the alternative hypothesis indicates the opposite. Results obtained show that, with a 100% confidence level, women that label their savings account with a long-term goal are able to reach higher average savings than women who don't.

In order to better understand the savings outcomes of the formal women, depending on whether or not they have labeled their account, we developed a histogram and examine the distribution of the frequencies. Formal women with motivation to save show a right skewed distribution, collecting more values in the left bottom end, where the majority (84%) of the results are concentrated in less than 100 USD and a few scattered results (5%) that save 500 USD or more. Data from the women who saved without a pre-conceived goal attached to their

account performs in a very similar manner, gathering more values in the left bottom end. One of the main differences observed between the two histograms is the percentage to women who report having no money at all in the bank: almost half of the women without a goal answered positively to this question (43%), while none of the women with a goal did.

The results gathered are extremely compelling, and they could provide fundamental evidence on the relevance of mental accounts to increase savings outcomes. Nevertheless, due to the characteristics data, the causality between setting a goal and higher average savings balance could not be established due to the lack of resources to control external variables that might be influencing the result. Information gathered from the focal groups emphasizes that many psychological and behavioral characteristics of the participants are indeed affecting their savings behavior, such as loss aversion or anxiety. Overlooking this internal characteristic could lead us to inaccurate results. As a consequence, we decided to include a section with our ideas for future research studies, in which a more comprehensive study on the behavioral biases of the clients could be included.

### **3.5. Potential future research**

The results from the quantitative and qualitative analysis in this study are open to further questions that could be the subject of future research. Some ideas that arise from this study are:

- Is there is a causal relationship between financial literacy programs and a more adequate mental categorization of a savings' device features? Various studies have shown that lack of financial literacy may lead to a range of sub-optimal financial outcomes, including under-saving (Lusardi & Mitchell, 2007; Lusardi & Tufano, 2009; Van Rooij, et al., 2011). A study assessing to what extent financial education may help clients to form a mental label that contemplates the value proposition of saving in an FFI can assist in the optimization of the financial literacy learning materials. This study will require a randomly chosen control group (probably CCT recipients that are not exposed to any financial education program) and corrected for potential externalities.
- Do commitment devices for savings accounts only help sophisticated or partially naïve individuals, who are at least partially aware of their self-control problems? Is mentally labeling a savings account a strong enough mechanism capable of increasing the savings of individuals who are self-aware of their savings? Many of the field experiments analyzed in this study point out at the need to understand whether individuals who are sophisticated about their self-control problems and those who aren't require different commitment devices to increase their savings (Giné, et al., 2010). This type of research could help microfinance practitioners to better offer products that specifically target their clients' psychological profile.
- Can reminders about the specific goals set by the clients help clients save more? Evidence suggests that a new potential foundation for mental accounting is the use of mental labels to associate today's savings with

specific future events, increasing the probability of the latter (Karlan, et al., 2010). It would be interesting to see whether sending a message reminding the women of “Mujeres Ahorradoras” about their savings goal would be effective in increasing savings outcomes.

- Would mental savings account translate into different outcomes for the participants if they had to publicly reveal and announce their chosen goals to other members of the program? The project “Mujeres Ahorradoras” encourages women to individually write their own savings goal in their workbook. There is no control or support mechanism, nor any kind of peer pressure influencing the women. Based on the very strong and significant results for treated individuals in the public-labeling intervention of Luz (2014), it could be interesting to study to what extent women in the program could have similar results.
- Can mentally labeling a savings account create long-term behavioral change? Or is the soft commitment device continuously required to maintain behavior? The data used in this study was collected right after the termination of the project, so a follow-up survey would be helpful in order to understand whether the financial education project has created long-term behavioral changes. The study conducted by Charness and Gneezy (2009), they provide an example of how an incentive to exercise succeed in creating long-term behavioral change within the people in the sample but, can these results extrapolate to other areas such as savings behavior?

#### 4. Conclusions

This study looked at the relevance of mental accounting as a money management tool that can help, as suggested in the title, increasing the accumulation of savings for the world’s poorest. In order to assess the power of such informal discipline-building mechanism, we evaluated the impact of mental accounting in reducing the detrimental outcomes of self-control biases. We found that the psychological cost of breaking a labeled mental account overrides the satisfaction from consuming an unplanned expenditure now; thus, individuals are able to reduce their own time-inconsistent preference to consume today rather than tomorrow.

Most of our study focuses on evidence from developing countries because, even though mental accounting is a mechanism used by the majority of us, regardless of our economic status, behavioral theories demonstrate that the tighter the budget, the more explicit budget rules are. Vulnerable households usually keep stricter and shorter-term budgets because of the irregular and unstable nature of their incomes. Commitment devices are therefore demanded as a way to constrain their behavior and fall through their initial savings plans.

Neoclassical theories of saving did not account for the influence that behavioral bottlenecks may have on savings outcomes. We then turned to behavioral economics, where widespread human irrationality had been taken into the equation, giving us room to investigate the different cognitive tendencies that can lead to under-saving. Though not really prolific, we were also able to find

several field experiments that were recently conducted in order to test to what extent mental accounting procedures, such as labeling a savings account with a clear long-term goal, could have beneficial outcomes for the clients.

A question still remained: How can mental accounting rules be modified to achieve certain goals? To answer this question, we decided to develop our own analysis of Fundación Capital's Financial Education project in El Salvador. Building on the theoretical assumptions on mental accounts, we tried to evaluate the way in which the participants of the program categorize their formal savings. Our intention was to infer that an adequate labeling of a savings account would lead to a higher savings rate; and indeed, it does. Nevertheless, the quality of our data prevented us from drawing a causal relationship between those two variables. As a consequence, we developed a hypothesis that could help us understand to what extent that adequate labeling was present among the women in our sample.

Our results found that, in general, women present very positive attitudes towards saving in the formal system; these attitudes are remarkably stronger when we isolated the answers of those women who declared having savings accounts in a financial institution. They generally understand (98% of them) that saving accounts are illiquid savings vehicles, a feature that can make them prevent unnecessary expenditures. Moreover, only 8% of the women with formal savings have not attached a label to their savings, as opposed to 18% of the women who solely save with informal mechanisms.

Given the limitations intrinsic to analytical research, it is important to acknowledge that the overall goal of this paper is not limited to the presentation of the results that have been drawn from testing the hypothesis; the study also aims to bring some light on the difficulties and obstacles encountered when analyzing real data from the field. The definition of these challenges, along with the results presented, might provide a useful knowledge base to continue this project and future research.

Demand-side analysis, such as the one presented this study, can create a better understanding of the underlying perceptions and behavioral attitudes of the clients, thus enabling a more informed design of products and services that have helped them to save successfully. Microfinance institutions should take into account recent experimental evidence on which commitment devices work, to whom and in which circumstances. Our study pretends to influence the way in which MFI's design of commitment-saving devices, channeling the small-scale savers' natural mental accounting tendencies and nudging them towards behavior that is in their best interest.

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## 6. Annexes

### Annex 1

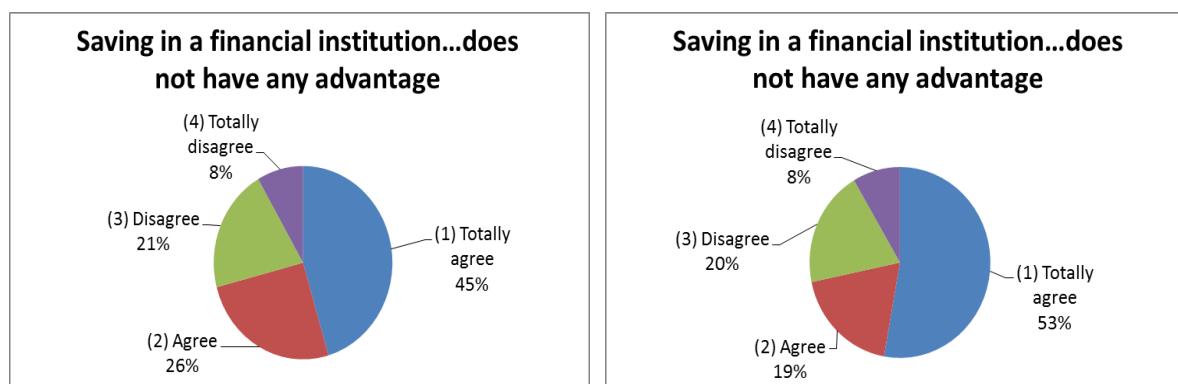
#### Description of the main socio-economical attributes from our sample

<b>1.6FemLeader</b>	<b>2.2Age</b>	<b>2.6YearsOfStudy</b>	<b>2.7Children</b>
Mean	1,88	Mean	37,89
Std Error	0,02	Std Error	0,55
Median	2	Median	36
Mode	2	Mode	33
Std Deviation	0,33	Std Deviation	10,49
Range	1	Range	57
Minimum	1	Minimum	20
Maximum	2	Maximum	77
Variation Coeff	0,18	Variation Coeff	0,28
Count	366	Count	366
% Lideresa	12%	0 years	27%
<b>2.3CivilStatus</b>			
Mean	2,51	Mean	1,31
Std Error	0,05	Std Error	0,07
Median	2	Median	1
Mode	2	Mode	1
Std Deviation	1,03	Std Deviation	1,25
Range	5	Range	7
Minimum	1	Minimum	1
Maximum	6	Maximum	8
Variation Coeff	0,41	Variation Coeff	0,95
Count	366	Count	366
Married	49%	Housewife	92% Yes
Cohabit	31%	Agricultural	2% No
Single	9%		Both 45%

Source: Own elaboration from the survey.

### Annexes 2 & 3

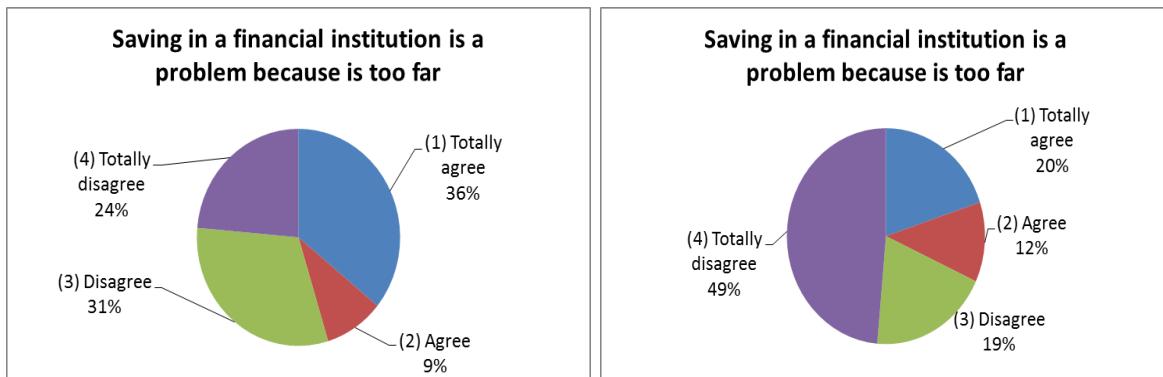
#### Pie charts: Formal women vs informal women



Source: Own elaboration from the survey.

## Annexes 4 & 5

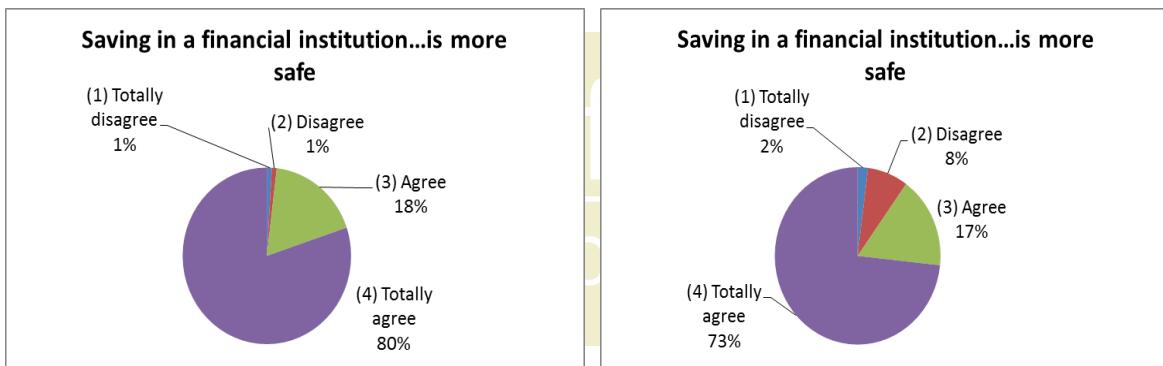
Pie charts: Formal women vs informal women



Source: Own elaboration from the survey.

## Annexes 6 & 7

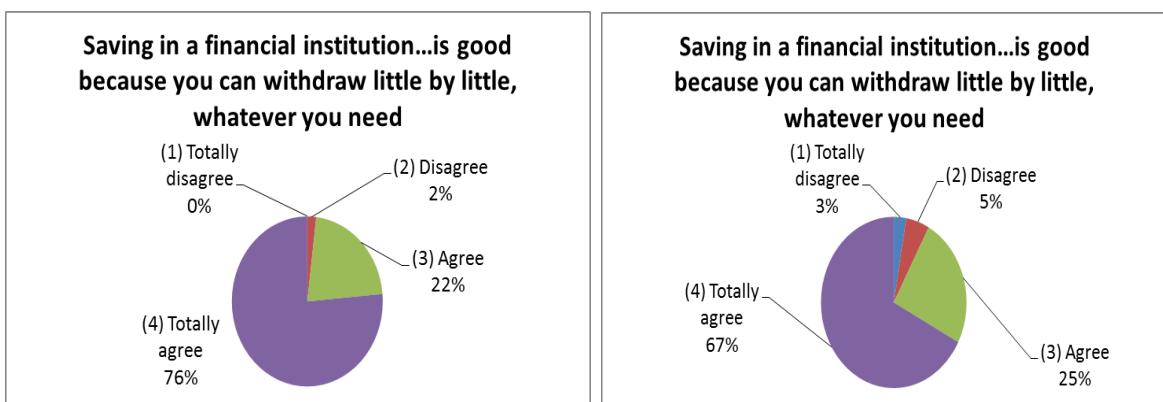
Pie charts: Formal women vs informal women



Source: Own elaboration from the survey.

## Annexes 8 & 9

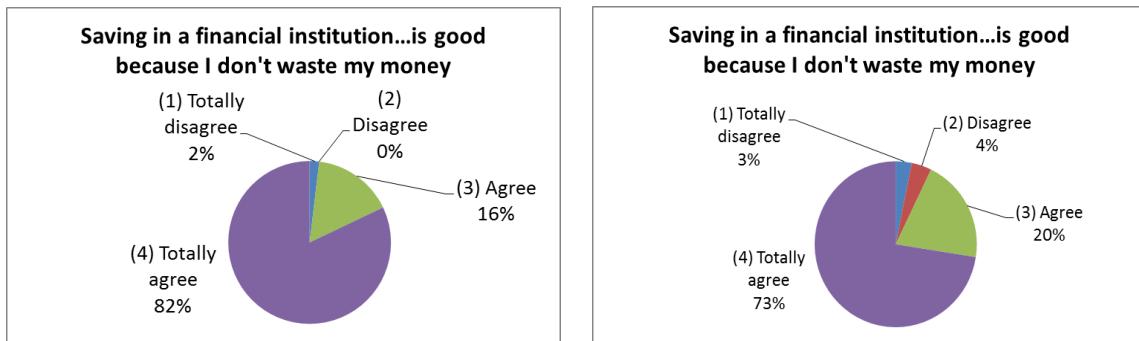
Pie charts: Formal women vs informal women



Source: Own elaboration from the survey.

## Annexes 10 & 11

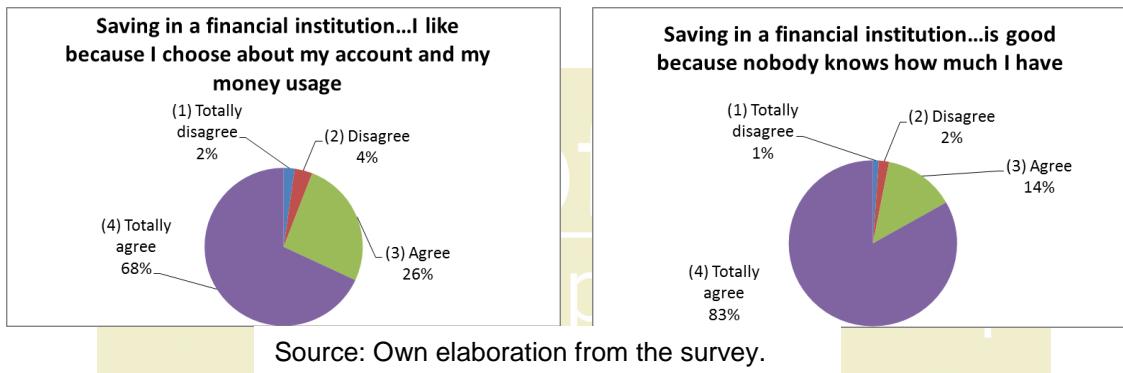
### Pie charts: Formal women vs informal women



Source: Own elaboration from the survey.

## Annexes 12 & 13

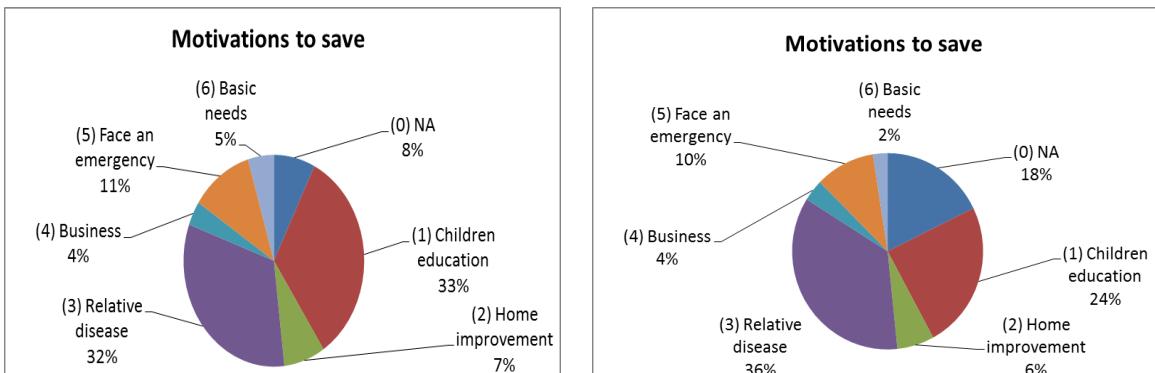
### Pie charts: Total women



Source: Own elaboration from the survey.

## Annex 14 & 15

### Pie charts: Formal women vs informal women



Source: Own elaboration from the survey.

## Annex 16

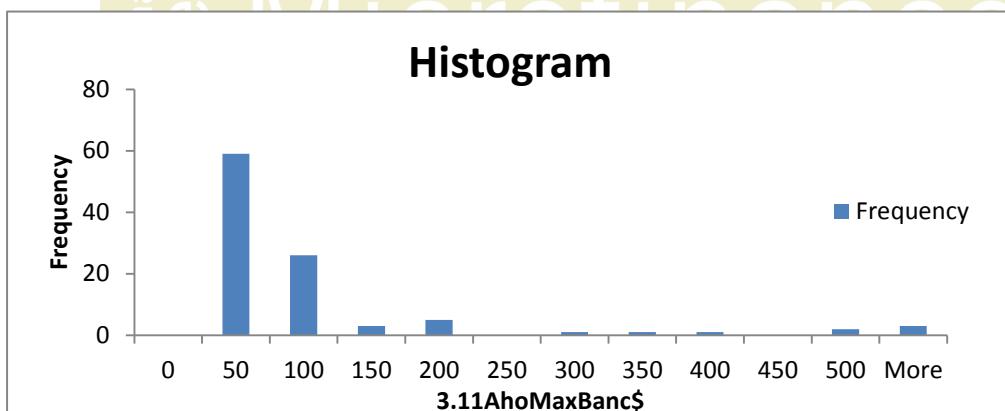
Contrast hypothesis of the mean difference test for the variable “Maximum Amount of Money Saved” classified by “Motivations” (having/not having a motivation associated with the savings)

t-Test: Two-Sample Assuming Unequal Variances		
	3.5AhoMax\$	3.5AhoMax\$
Mean	0,4375	94,79787234
Variance	7,170634921	31208,89419
Observations	64	94
Hypothesized Mean Difference	0	
df	93	
t Stat	-5,177750453	
P(T<=t) one-tail	6,4661E-07	
t Critical one-tail	1,661403674	
P(T<=t) two-tail	1,29322E-06	99,999998707
t Critical two-tail	1,985801814	

Source: Own elaboration from the survey.

## Annex 17

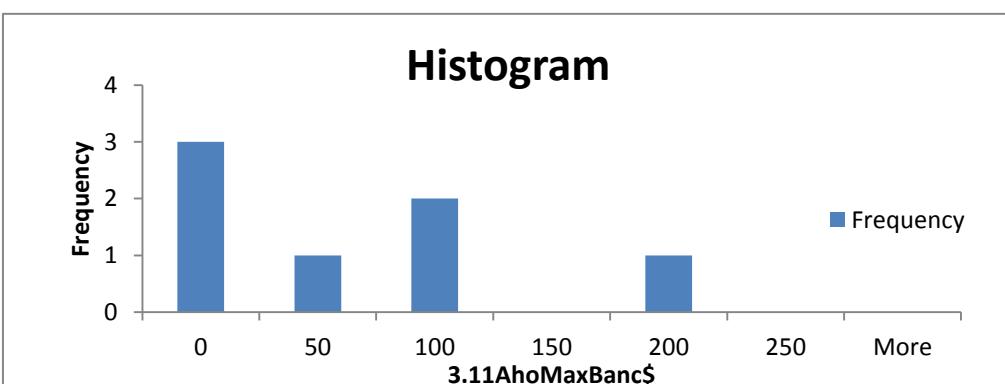
Maximum amount of money saved by women with motivation



Source: Own elaboration from the survey.

## Annex 18

Maximum amount of money saved by women without motivation



Source: Own elaboration from the survey.