

STOCKHOLM SCHOOL OF ECONOMICS

Department of Economics

5350 Master's thesis in Economics

Academic year 2015-2016

# The Power of Framing

## A Randomized Control Trial on Microinsurance Take-up Rates in Paraguay

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### Abstract

Building on the economic literature on behavioral biases in individual decision-making, this study investigates whether framing influence the perceived value of microinsurance and, in turn, take-up rates. To derive the effects of framing on microinsurance take-up rates, a randomized control trial was conducted in Paraguay in cooperation with N.B Paraguay, a local microinsurance provider, in which 21,496 potential customers were contacted with a sales offer to sign up for LIFE, a life microinsurance product. The potential customers were randomly divided into three experimental groups and consequently exposed to either a no framed message (control group), positive framed message (positive treatment), or negative framed message (negative treatment). This study finds robust evidence that framing had a significantly positive effect on LIFE take-up rates and the negative framing increased take-up rates significantly more than the positive framing. The implications of these results are clear for microinsurance providers; using negative framing when marketing their product will increase take-up rates more than using positive framing. In extension, given the inherent positive welfare effects steaming from increased microinsurance take-up rates in low-income countries, this paper provides valuable insights to the poverty alleviation literature.

**Keywords:** Microinsurance, Framing, Prospect Theory, Randomized Control Trial, Paraguay

**JEL:** D12, O16, O54

**Supervisor:** Martina Björkman Nyqvist

**Date submitted:** May 15, 2016

**Date examined:** May 23, 2016

**Discussant:** Björn Wisaeus

**Examiner:** Maria Perrotta Berlin

## **Acknowledgment**

I would like to extend my sincere gratitude to my partner corporation, N.B Paraguay, who enabled this study through their generous economic support and provision of resources. Furthermore, I would like to thank them and the staff for their cooperation, insightful guidance, and open-mindedness throughout the planning and implementation phase of the study. Without them, this study would not have been possible.

I would like to thank my supervisor Martina Björkman Nyqvist for her invaluable advice and encouragement throughout the entire process of planning and writing the thesis. Also, I would like to thank Roman Bobilev and Kristina Boo for providing their insights regarding the econometric specification of the study.

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# 1. Introduction

Various development interventions have, at different points in time, been praised as *the* solution to deep-rooted problems in low-income countries. Most recently, expanding access to financial services has attracted the attention of policy-makers and development thinkers. In particular, expanding access to small credits for small-scale businesses —microcredits— has been proposed to increase the productivity potential and lead to positive welfare effects, including poverty alleviation (Murdoch & Armendariz, 2010). The empirical evidence of microcredits transformative power has, however, been mixed (cf. Tarozzi et al., 2013; Van Rooyen et al., 2012). Consequently, efforts to expand access to financial services currently focuses on incorporating a broader range of services, including insurance products. Provision of formal insurance products in low-income countries has, however, been hampered by high premium costs, complexity, and risk for the insurance provider. Instead, low-income individuals have often reverted to using imperfect informal insurance arrangements (Mobarak & Rosenzweig, 2013; Rosenzweig, & Stark, 1989). The emergence of *microinsurance* — insurance targeted and adapted for low-income individuals— is thus a response to the underdeveloped formal insurance markets in low-income countries. As a way for low-income individuals to increase protection and reduce vulnerabilities to shocks, microinsurance is increasingly recognized as an important poverty alleviation tool (cf. Chandhok, 2009; Cole et al., 2013; Giné et al., 2008; Hamid et al., 2011). Despite the proposed benefits for low-income individuals to have microinsurance, take-up rates are generally lower than what the rational expected utility theory would predict (Bonan et al., 2012; Dalal & Murdoch, 2010; De Bock & Gelade, 2012). Therefore, academics have recently turned their attention to behavioral economic theories, which accommodate the possibility of non-rational behavioral biases in decision-making, to study microinsurance take-up rates (cf. Dalal & Murdoch, 2010; Mullainathan & Krishnan, 2008; Patt et al., 2009).

One of the most widely explored behavioral biases is *framing*, a concept that has different definitions and applications. Most often, framing can either be categorized as frames in communication or frames in thought. Framing in communication refers to how an individual use words, phrases and images to highlight a matter (e.g. a speaker who emphasize poverty issues during a speech use a “poverty frame”). Framing in thought, on the other hand, emphasize the receiver’s cognitive process to absorb information. An important question in the latter category is whether framing an objectively equal course of action in positive versus negative terms affects the decision-maker (Chong & Druckman, 2007; Druckman, 2001). This kind of framing, often referred to as *valence framing*, has been documented to influence several decision-making processes. As the definition of valence framing is rather broad, Levin et al. (1998) divided the literature on valence framing into three types; risky choice-, attribute- and goal-framing. The focus of the present investigation is on *goal framing*, which centers on whether the power of persuasive communication is affected by if the positive or negative consequences of performing an action are stressed. Goal framing is

distinctively different from the other forms of valence framing as both the positive and negative framing promotes the same end action. The overall empirical evidence from goal framing suggests, even though not clear and dependent on domain, that negatively framed messages are more persuasive in comparison to positively framed messages. The majority of goal framing has so far been focused within the health domain, while the financial domain has yet to be thoroughly explored (cf. Gambarara & Piñon, 2005). A growing body of research has, however, provided evidence that individual's perception with regards to insurance schemes are subject to framing (cf. Brown et al., 2013; Cole et al., 2012; Hwang, 2015), but these studies do not explore the notion of goal framing in understanding insurance take-up rates. Furthermore, the majority of goal framing studies has been conducted in a high-income country context while the evidence from low-income countries is limited. This is a deficiency within the goal framing literature as research suggests that individuals, depending on domain (e.g. financial vs. health decisions or high- vs. income-country context), are diversely affected by framing (cf. Kahneman & Miller, 1986). As follows from the above discussion, the purpose of this study is to examine the impact of goal framing on decision-making in light of a novel domain, namely microinsurance —a financial product in a low-income country context. To guide this investigation, two primary research questions has been formulated:

- I. Are individuals exposed to a goal framed message (positive or negative) more likely to take-up microinsurance as compared to those exposed to no framed message?
- II. Are individuals exposed to a negatively framed message more likely to take-up microinsurance as compared to those exposed to a positively framed message?

The theoretical context for this exploration is derived from prospect theory (Kahneman & Tversky, 1979), which postulate some guiding hypotheses. First, prospect theory suggests that individuals are risk-averse when a decision is formulated in terms of potential gains (i.e. positive framing) but risk seeking when the decision is formulated in terms of potential losses (i.e. negative framing). Second, prospect theory proposes that individuals exhibit loss aversion, i.e. individuals prefer to avoid a loss to acquire a gain of equivalent size (Tversky & Kahneman, 1992). Grounded in the empirical literature on goal framing and the stipulations of prospect theory, the hypotheses related to the primary research questions are that (HI) individuals exposed to a framed message (positive or negative) are more likely to take-up microinsurance as compared to those exposed to no framed message and (HII) individuals exposed to a negatively framed message are more likely to take-up LIFE as compared to those exposed to a positively framed message.

To test these hypotheses, a randomized control trial was conducted in Paraguay together with N.B Paraguay, a local microinsurance provider. Over a two-week period, telemarketing agents contacted 21,496 randomly chosen potential customers with an

offer to register for a life microinsurance product, **LIFE**. To assess the impact of goal framing on **LIFE** take-up rates, potential customers were randomly divided into three experimental groups; one control group and two treatment groups (positive or negative framing). The control group was exposed to the current sales manuscript, while the treatment groups, in addition, received a positively framed or negatively framed message. As the inclusion to the experimental groups were randomized, the impact of goal framing on microinsurance take-up rates at large, as well as the relative effectiveness between a positively and a negatively framed message may be explored.

Furthermore, as the empirical literature on microinsurance suggests that there is some individual heterogeneity in the microinsurance take-up decision-making process (cf. De Bock & Gelade, 2012), two supplementary research questions are added to this study:

- III. What personal characteristics drive take-up rates for microinsurance?
- IV. Are individuals, dependent on their personal characteristics, diversely affected by goal framing?

To investigate potential heterogeneous effects, a questionnaire was conducted with 354 randomly chosen participants from the randomized control trial population (N=21,496). Research questions (III) and (IV) is of explorative character and no testable hypotheses were therefore formulated.

The results of this study are clear with regards to research questions (I) and (II). Goal framing (both positive and negative) had a significant impact on the take-up rates for **LIFE**. Furthermore, the negatively framed message was significantly more persuasive compared to the positively framed message. With regards to research questions (III) and (IV), inferences from the findings should be drawn with caution as the inclusion to the questionnaire was conducted sub-optimally (see section 7.2.2). However, the findings of the questionnaire suggest that higher age, higher income, and having experienced a shock in the past year are all positively related to **LIFE** take-up, while having an additional provider is negatively related. Furthermore, the findings suggest that the combination of having experienced a shock in the past year and being exposed to a negatively framed message significantly increased take-up rates.

This study adds to the current economic literature in several ways. First, by utilizing the unique opportunity to cooperate with a microinsurance provider at a large scale, this study is the first, to the best of the authors knowledge, randomized control trials that provides empirical evidence on how goal framing affect microinsurance take-up rates. Prior studies on microinsurance take-up rates have mostly focused on price, quality, risk aversion, and education, while, only recently, academics have begun to evaluate the role of behavioral biases in explaining microinsurance take-up rates. However, to the best of the author's knowledge, behavioral biases in general, and goal

framing in particular, has not been explored on the same magnitude as in this study (N=21,496). Second, randomized control trials on the effects of goal framing have been predominantly examined in high-income countries, particularly in the United States, and in the health domain. As there are significant differences in how individuals, depending on domain, are affected by framing (Kahneman & Miller, 1986; Levin et al., 1998), this study provides new and important empirical evidence from two relatively unexplored domains in the goal framing literature; low-income country and financial decision-making. Finally, as microinsurance is seen as a potential poverty alleviation tool, understanding how goal framing can be used to increase take-up rates provides valuable new insights for financial stakeholders in the development field. In particular, the insights from this study can be used by microinsurance providers in order to increase take-up rates and, in turn, contribute to the poverty alleviation process.

Section 2 presents an introduction to microinsurance and the context of this study. In section 3, previous empirical literature related to framing, in particular goal framing, is examined. Section 4 puts the empirical findings into a theoretical context and provides a framework that enables a formulation of the hypotheses, which are presented in section 5. In section 6, the experimental methodology undertaken to answer the research questions are described. The findings are presented in section 7 and the related discussion in section 8. Finally, section 9 concludes the paper and provides avenues for future research.

## **2. Background**

### **2.1 Microinsurance**

Microinsurance, defined by Churchill (2007) as “the protection of low-income people against specific perils in exchange for regular premium payments proportionate to the likelihood and cost of the risk involved”, is increasingly seen as the next revolution in addressing the risks and vulnerabilities of low-income individuals and, as follows, an effective poverty alleviation tool (Carter & Barrett, 2006; Chandhok, 2009; Hamid et al., 2011; Kovacevic & Pflug, 2011). When a low-income individual is exposed to a negative shock, she is usually affected both in the short- and long-term. In the short-term, the use of formal (e.g. credit solutions) or informal (e.g. family or risk-sharing agreements) coping mechanisms to handle the immediate impacts of a shock are, in many cases, unreliable, costly, and may also lead to an unhealthy accumulation of debt. Second, long-term adverse effects are usually persistent as higher asset accumulations are necessary to recover from the shock, e.g. death of household member that might involve funeral costs and loss of future income streams (Jowett, 2003; Morduch, 1999; Van Rooyen et al., 2012). By replacing the uncertainty of a future outcome with a level of assurance in exchange of premium payments, microinsurance can reduce low-income individuals vulnerability to shocks and risks (cf. Cole et al., 2013; Chandhok, 2009; Hamid et al., 2011). In general, microinsurance products are diverse in nature, including health and life insurance, index insurances,



and property insurances, and they are usually distributed via NGO's or commercial financial institutions (De Bock & Gelade, 2012).

## **2.2 Demand for Microinsurance**

The expected utility theory suggests that a rational and risk-neutral individual will purchase microinsurance at a fair price (i.e. the price that is equal to the expected loss) in order to maximize expected utility. This price, also referred to as reservation price, increases with an individual's aversion towards risks (Patt et al., 2009). The emergence of the microinsurance market, therefore, is an artifact of risk averse individuals who are willing to pay more than the actual fair price of the scheme. For the microinsurance provider, setting the premium between the individual's maximum willingness to pay and the fair price should therefore be sufficient to induce the individual to purchase the scheme (De Bock & Gelade, 2012; Patt et al., 2009).

In practice, however, the overall microinsurance demand is lower than what the expected utility model would predict (Bonan et al., 2012; Dalal & Murdoch, 2010; De Bock & Gelade, 2012; Thornton, 2010). A number of explanations for this propensity have been laid forward in the literature. First, as mentioned earlier, it exists a broad array of alternative methods, including formal (e.g. credit solutions) and informal (e.g. family and risk-sharing agreements), for low-income individuals to handle shocks. As shown by Mobarak & Rosenzweig (2012), informal risk-sharing agreements are an attractive substitute for microinsurance, when covering similar risks. Furthermore, studies have provided evidence that a lack of trust in the provider (Cai et al. 2009; Cole et al. 2011), high frequency of premium payments (De Allegri et al. 2006), and low perceived quality (Basaza et al. 2008; Criel & Waelkens 2003) reduces take-up rates for microinsurance. Finally, as microinsurance is a relatively new concept in many low-income countries, its related benefits and value may be difficult to internalize for individuals (De Bock & Gelade, 2012). Related, there is evidence that individuals are influenced by non-rational behavioral biases when making their insurance decisions (Johnson et al., 1993; Hwang, 2015). For example, individuals have a tendency to underestimate their future needs and usually have a biased perception of the size and probability of the risks they face. Additionally, recent empirical work suggests that individuals tend to have a biased perception regarding the benefits and costs of the microinsurance scheme (Cai et al. 2011; Hwang, 2015). Consequently, being able to communicate the value of microinsurance in an understandable, relatable, and persuasive manner is an important challenge for microinsurance providers (Cai et al. 2011; De Bock & Gelade, 2012).

## **2.3 The Paraguayan Context**

Paraguay is a small and landlocked lower-middle country in South America with an estimated population of 6.6 million. The GNI per capita for Paraguay in 2014, a reflection of the average income of a Paraguayan citizen, was USD 4,400. To put in context, corresponding values for neighboring Argentina and Brazil was USD 13,480

and USD 11,790 respectively (World Bank, 2016a).<sup>1</sup> Although poverty rates have declined over the last couple of years, 22.6 percent of the total population is still considered to be poor while 10 percent of the total population is considered to be very poor (World Bank, 2016b).<sup>2</sup> With regards to the financial sector, it is estimated that 42 percent of the population is totally excluded from the formal financial system (Grace, 2014). The trend is, however, positive due to the increased presence of providers of mobile delivered financial products. Looking more specifically on the insurance market in Paraguay, only 26 percent of the adult population has some form of insurance. For low-income individuals and/or individuals living in rural areas, insurance coverage is even lower (Grace, 2014). With regards to microinsurance, Paraguay has drastically increased its microinsurance coverage from around 50,000 in 2011 to over 300,000 in 2014 (Microinsurance network, 2016).

## 2.4 N.B Paraguay and the Evaluated Microinsurance Product

The specific microinsurance product examined in this study is LIFE, a life microinsurance product provided by N.B Paraguay, the Paraguayan branch of one the most widespread and established mobile microinsurance companies with 20 million subscribers in 15 countries.<sup>3</sup> Adding 300,000 customers per month worldwide, they have been able to leverage the increasing mobile penetration in emerging markets to provide microinsurance to individuals who never have had any form of insurance before (95 percent of customers). LIFE has a basic setup; against a monthly paid premium of PYG 10,000 (USD 1.8), the insured's nominated beneficiaries, up to 3 individuals, receive up to PYG 10,000,000 (USD 1,800) if the insured passes away within the insurance scheme period. To put the monthly premium in perspective, it represents, on average, 0.5 percent of the monthly income as represented by GNI. The premium is fixed regardless of health status and age, however one needs to be between 18 and 60 to be eligible for LIFE.<sup>4</sup>

## 3. Previous Literature

To be able to answer the research questions of the present investigation, a more thorough exploration of the framing literature is justified. Framing, in its widest sense, can be classified as either frames in communication or in thought. Frames in communication denote the contextual presentation, i.e. words, phrases, and metaphors, used by an individual (e.g. a speaker who highlight poverty issues during a speech use a "poverty frame"). On the other hand, frames in thought accentuate the cognitive process for an individual who receives a message. An imperative question in the frames

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<sup>1</sup> The gross national income, converted to U.S. dollars, using the World Bank Atlas method.

<sup>2</sup> Poverty headcount ratio at national poverty lines (% of population).

<sup>3</sup> At the request of N.B Paraguay, the full name of the company and references to their data are not disclosed in this study. For the curious reader, please refer to the author.

<sup>4</sup> At the request of N.B Paraguay, more information regarding LIFE is not disclosed in this study. For more information, please refer to the author.

in thought literature is whether framing an objectively identical course of action in either positive or negative terms affects the exposed individual's decision (Chong & Druckman, 2007; Druckman, 2001). This type of framing is often labeled valence framing and its effect on several different decision-making processes has been widely documented (see Kühberger (1999) & Levin et al. (1998) for reviews of the valence framing literature). As the concept of valence framing is rather broad and inclusive, Levin et al. (1998) separated the literature on valence framing into three types; risky choice-, attribute-, and goal-framing. Risky choice framing describes a scenario where the outcomes of a choice have different levels of risk (e.g. a certain outcome versus a risk outcome, which in turn are framed positively or negatively). Ever since Tversky and Kahneman (1981) formulated the Asian disease problem, risky choice framing has been proven to affect individual's risk preferences and related decisions.<sup>5</sup> Often referred to as the most simplistic form of valence framing, attribute framing represents a situation where a single attribute is framed either positively or negatively. For example, a classic study by Levin and Gaeth (1988) demonstrated that describing a beef as "75 percent lean" rather than "25 percent fat" significantly increased the perception of quality of the beef. Goal framing, the focus of this study, seeks to assess whether the impact of persuasive communication is affected by framing the positive (e.g. If you do advocated action X, desirable outcome Y will be accomplished) or negative consequences (e.g. If you do not do advocated action X, desirable outcome Y will not be accomplished) of performing an action. In comparison to the other forms of valence framing, both the positive and negative frames promote the same desired end behavior in goal framing. As follows, the question goal framing seeks to evaluate is whether positive or negative framing is the most persuasive (Levin et al. 1998).

Goal framing has received notably less attention in terms of the quantity of published articles in comparison to the other two types of valence framing (Ganbará & Piñón, 2005; Kühberger et al., 1999; Levin et al. 1998). Levin et al. (1998) examined 28 studies where goal framing, in a diverse sets of domains, was applied by itself or in combination with other forms of valence framing. Overall, both positive and negative frames enhanced the impact of the presented information, as compared with neutral, no framed, information. Looking at relative impact, half of the 28 articles provided evidence that negatively framed messages was more persuasive compared to positively

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<sup>5</sup> From page 453 in Tversky & Kahneman (1981):

"Imagine that the US is preparing for the outbreak of an unusual Asian disease, which is expected to kill 600 people. Two alternative programs to combat the disease have been proposed. Assume that the exact scientific estimates of the consequences are as follows:

Positive frame: If Program A is adopted, 200 people will be saved. If Program B is adopted, there is 1/3 probability that 600 people will be saved, and 2/3 probability that no people will be saved.

Negative frame: If Program C is adopted, 400 people will die. If Program D is adopted, there is 1/3 probability that nobody will die and 2/3 probability that 600 people will die."

Surprisingly, even though the expected value of programs A through D are the equal (i.e. 400 saved lives and 200 lost lives), the subjects who received the positive frame preferred the certain option, while the contrary was true for the ones who received the negative frame.

framed messages, eight articles provided evidence for some sort of interactions when frames were altered, while six articles showed no framing effect.

The majority of earlier empirical studies within goal framing have been dedicated to persuading individuals to engage/not engage in different health associated behaviors (cf. Gambarara & Piñon, 2005; Levin et al. 1998). For example a brochure to promote condom use may either describe the health benefits of using condoms or the health cost that may arise if not using condoms. Existing empirical literature on goal framing within the health domain provide no conclusive evidence whether positively or negatively framed messages are more persuasive (Rothman & Salovey, 1997; Wilson et al., 1988). However, some insights can be drawn when studying the type of health behavior that was intended to be affected. First, when promoting illness-detection activities, a negatively framed message seems to be more persuasive compared to a positively framed message. This tendency has been empirically shown when promoting skin cancer screenings (Block & Keller, 1995; Rothman et al., 1993; Van't Riet et al., 2010), mammography screenings (Abood et al., 2005; Abood et al., 2002; Banks et al., 1995; Cox & Cox, 2001; Finney & Iannotti, 2002; Schneider et al., 2001), breast-self examination (Meyerowitz & Chaiken, 1987; Williams et al., 2001), and HIV screenings (Apanovitch et al., 2003; Kalichman & Coley, 1995). Yet, a few studies (cf. Lauver & Rubin, 1990; O'Keefe & Jensen, 2008) are unable to provide evidence for the propensity that a negatively framed message is more persuasive compared to a positively framed message when promoting illness-detection activities. Second, when promoting health prevention activities, a positively framed message seem to be more persuasive compared to a negatively framed message. This inclination has been shown in skin cancer prevention (Detweiler et al., 1999; Rothman et al., 1993), safe driving (Millar & Millar, 2000), quitting smoking (Schneider et al., 2001; Toll et al., 2008, Toll et al., 2007), reduced alcohol consumption (Gerend & Cullen, 2008), and exercising (Jones et al., 2003; Latimer et al., 2008; McCall & Ginis, 2004). Still, the empirical evidence is unable to support this notion when encouraging flu vaccination (McCaul et al., 2002) or preventive dietary behaviors (Kroeze et al., 2006).

Looking at the goal framing literature with regards to the financial domain, empirical evidence is less comprehensive. Even though no clear conclusions can be drawn, the majority of the empirical evidence finds support for that negatively framed messages are more persuasive in comparison to positively framed messages. For example, in a randomized control trial on credit card usage, Ganzach and Karshai (1995) examined credit card customers who had not used their card during the last three months. The customers received information regarding the benefits of the credit card, which was either positively framed (i.e. the gains that the customer could get from using the card) or negatively framed (i.e. the losses they could suffer from not using the card). The subjects behavior were then studied during a two month period and the findings implied that the percentage of subjects who started to use the card was more than twofold when they were exposed to the negatively framed message compared to

the positively framed message. Related, Hallsworth et al. (2014) study the effect of goal framing in increasing tax collection. Using data from United Kingdom, 200,000 prospective taxpayers received information regarding the benefits of paying taxes. This information was either positively- (“Paying tax means we all gain from vital public services like the NHS, roads, and schools”) or negatively-framed (“Not paying tax means we all lose out on vital public services like the NHS, roads, and schools”). The result suggests that both the positively- and negatively framed messages increased tax compliance, however no significant results could be derived regarding the relative impact. In another study, Chang and Lee (2010) examined the effect of goal framing for promoting charitable donations. They find that when the advertising information was framed negatively, it was more effective compared to when framed positively. Finally, Cole et al. (2012) used a series of randomized control trials to test how a number of factors, including framing, affected take-up of an index insurance product. In one of the experiments, the benefits of the insurance were framed as either being something that will protect the household (i.e. positive framing) or as a warning about the inability to protect the household if not having insurance (i.e. negative framing). They find that the negatively framed message increased take-up rates for the index insurance more than the positively framed message, however the result was not statistically significant.

To summarize this section, goal framing in general, whether positive or negative, seem to be more persuasive in comparison to a no framed message. Also, empirical evidence suggests, even though not clear and depending on domain, that negatively framed messages are more persuasive in comparison to positively framed messages. In the next section, the theoretical foundation for framing is presented.

## 4. Theoretical Framework

To understand why negatively framed messages tend to be more persuasive in comparison to positively framed messages, some theoretical groundwork will provide some guidance. The discussion embarks in the expected utility theory and how its assumptions of the rational individual must be violated in order to explain the existence of framing. Next prospect theory—which accommodates framing—is presented.

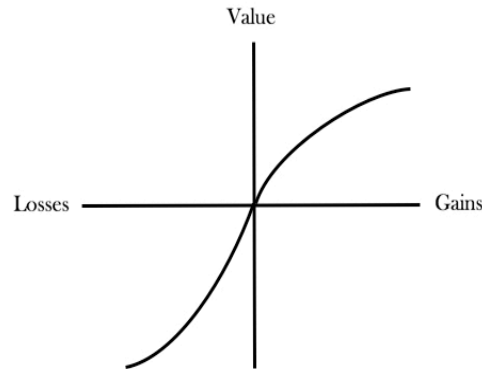
The expected utility theory, which suggests that the decision-maker is perfectly rational and able to compute their expected utility, was long the dominant framework to study decision-making (Schoemaker, 1982; Simon, 1955). In the expected utility theory, the decision-maker is presumed to have a stable and known scale of preferences as well as capability to compute the highest achievable point on that scale when faced with different alternatives. An implication stemming from the expected utility theory is the presence of extensionality, which states that a choice depends only on the “true value” of the choice and not how it is presented, i.e. framed (Arrow, 1982). For example, whether the formulation “20 percent survival rate” or “80 percent death rate” is used when describing a surgery outcome, the true value of the surgery outcome is the same. As follows, equivalent decision should be made irrespective of the formulation. In

practice, however, the assumptions of the expected utility theory, including extensionality, are violated in a number of instances (Kahneman & Tversky, 1979). Empirical evidence have demonstrated that framing can induce individuals to favor a over b when a certain formulation is used and, at the same time, induce individuals to favor b over a when another formulation is used (cf. Gambarara & Piñon, 2005; Levin et al., 1998).

In the late 1970's, Kahneman and Tversky developed prospect theory, a theoretical structure that accommodates framing by violating some of the principles of the expected utility theory. In prospect theory, individuals are presumed to have a propensity to use heuristics and behavioral biases to reduce the complexity of a task. This cognitive process is reflected in two stages for an individual; the editing and evaluation phase. The editing phase organizes, reformulates, and simplifies the different choices an individual is exposed to. After the editing phase, the decision-maker selects the choices of highest value. However, as the choices have been “edited” and thus may differ from the original one, irregularities might arise (Kahneman & Tversky, 1979). Imbedded in this twofold process, prospect theory introduces two, for framing relevant, concepts. First, the *weighting function* suggests that an individual ascribes a decision-weight to every possible outcome from a choice. In addition, the decision-weight evaluates the desirability of the choices and is therefore not pure probabilities. However, decision-weights tend to be positively correlated with the probability of an outcome and individuals are thus more prone to attach higher decision-weights to more likely outcomes. Second, the *value function* denotes that individuals assess different choices based on two assumptions; a reference point and the magnitude of change (Kahneman & Tversky, 1979). Regarding the former, individuals make their decisions by evaluating the perceived gains and losses in relation to the reference point rather than a final stage. In turn, the individual process these gains using the value function, which is concave for gains and convex for losses (see Figure 1 below). Regarding the magnitude, the S-shaped value function suggest that the difference between a USD 10 gain and a USD 20 gain seems larger for an individual than the difference between a USD 110 and USD 120 gain. As follows from the value function, when an outcome is perceived as a gain, the less risky outcome is preferred, i.e. risk aversion. On the contrary, when an outcome is perceived as a loss, the more risky outcome is preferred, i.e. risk seeking (Kahneman & Tversky, 1986).

**Figure 1. The Value Function of Prospect Theory<sup>6</sup>**

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In other words, when a decision involves some degree of uncertainty, individuals have a tendency to be more influenced when the information is framed in terms of losses (i.e. negative framing). On the contrary, when a decision involves a smaller degree of uncertainty, individuals tend to be more influenced when the information is framed in terms of gains (i.e. positive framing). In addition, empirical studies have provided evidence that the convex part of the value function is steeper than the concave part, suggesting that “losses loom larger than gains” (Kahneman & Tversky, 1979, p. 279). This phenomenon, that individuals tend to experience more disutility from a loss than utility from a corresponding gain, is called *loss aversion*. Following the existence of loss aversion, individuals tend to make different decisions when information is framed in terms of gains or losses (Gottlieb, 2012; Kahneman and Tversky, 1979). Relating prospect theory to framing, loss aversion would suggest that a negatively framed message (appealing to losses) is more persuasive compared to a positively framed message (appealing to gains).

## 5. Hypotheses Formulation

Combining the empirical findings in section 3 with the theoretical framework in section 4, this section provides the guiding hypotheses related to research questions (I) and (II). Related to research question (I), the empirical literature suggests that a framed message (either positively or negatively) tend to be more persuasive in comparison to a no framed message. Related to research question (II), as seen in the empirical section, negatively framed messages were more persuasive with regards to promoting illness detection behavior, while a positively framed messages were more persuasive when promoting health preventive behavior. Relating this empirical finding to the prospect theory, the impact of a goal framed message on an individual’s behavior appears to depend on whether it is perceived as the risk averting or risk seeking course of action. When the decision is associated with a certain outcome, i.e. preventive behavior (e.g.

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<sup>6</sup> From page 279 in Kahneman & Tversky (1979).

using sunblock reliably reduces the risk of skin cancer), a positively framed message is more persuasive. On the contrary, when the decision involves a risky and uncertain outcome, i.e. detection behavior (e.g. screening for breast cancer could lead to a upsetting finding), a negatively framed message is more persuasive. The outcome of a life microinsurance scheme, as the one studied in this study, can be considered to be uncertain, as the payout is dependent on the, most likely, indeterminate time of death of the insured. It is, however, possible that there are some asymmetric information, more specifically adverse selection.<sup>7</sup> In the presence of adverse selection, the outcome of the decision would instead be considered more certain. Nevertheless, the assumption is that the presence of adverse selection is relatively small given the above discussion and, as follows, the outcome should be considered uncertain. This in combination with the findings from goal framing meta analyses (cf. Levin et al., 1998) suggests that the negatively framed message will be more persuasive in comparison to the positively framed message. Also, the theoretical framework states that individuals tend to exhibit loss aversion and in turn, a negatively framed should be more persuasive in comparison to a positively framed message. The going hypotheses for the randomized control trial are therefore as follows:

*HI: Individuals exposed to a framed message (positive or negative) are more likely to take-up LIFE as compared to those exposed to no framed message*

*III: Individuals exposed to a negatively framed message are more likely to take-up LIFE as compared to those exposed to a positively framed message*

## 6. Methodology and Experimental Design

This section describes the experimental design employed in order to answer the research questions. As follows, the methodology related to the randomized control trial is first presented and then the questionnaire design is explored.

### 6.1 Randomized Control Trial

#### 6.1.1 Subjects

To test the potential impact goal framing has on take-up for LIFE, a randomized control trial, with three experimental groups —one control group and two treatment groups— was employed. Subjects were contacted via phone with an offer to sign up for LIFE (the life microinsurance product described in section 2.4) over a two-week period by the N.B Paraguay's telemarketing agents, hereafter simply referred to as agents. In total, 21,496 individual's who live in Paraguay, both in rural and urban areas, were randomly selected to participate in the study from N.B Paraguay's phone list of potential customers. The only inclusion criteria were that the subject met the age requirement, i.e. that they were between 18 and 60 years old. As follows, even though

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<sup>7</sup> Adverse selection refers to a situation where an individual's demand for insurance is positively related to the individual's risk of loss.



the LIFE product characteristics and marketing efforts was directed to appeal to low-income individuals without life insurance, individuals with relatively higher income levels were also contacted. The subjects were indirectly randomized into either a control group or one of the two treatment groups (positively or negatively framed) and each experimental group was approximately 1/3 of the total sample of 21,496 individuals.<sup>8</sup> As a randomization approach was conducted, there should be no reason to believe that the characteristics of the subjects should differ.

### 6.1.2 Design of Framing Message

The control group was exposed to the current sales manuscript (i.e. the one normally used by the agents of N.B Paraguay) that included three phases; an introduction, a product description, and an inquiry.<sup>9</sup> During the introduction phase, the agent introduced herself and N.B Paraguay, highlighting its widespread presence, innovative mobile technology and growth in Paraguay. In the product description phase, the characteristics of LIFE were described. This included the premium payment setup and the future possible payouts to beneficiaries, which was put in relation to each other to highlight LIFE's affordability (i.e. 0.5 percent of yearly average income in premiums versus an payout of 40 percent of yearly average income). Furthermore, the ease of paying the monthly premiums via the mobile phone as well as the customer care provided was emphasized. In the final inquiry phase, the agent asked if the subject was interested in the product. If the subject responded yes, a binding verbal agreement was reached and the contract confirmation was sent out to the subject. On the other hand, if the subject responded no, the agent offered her appreciation to the subject for taking time to answer the questions. If the respondent neither responded yes or no, the agent made a note to contact that subject again at a later stage.

In addition to the current sales manuscript described above, the two treatment groups received a framed message (either positively or negatively framed) in between the product characteristics and the inquiry phase. No other additions or modifications were made to the sales manuscripts. The framed message —three equivalent sentences which were either framed in positive or negative terms— were developed with inspiration from literature on goal framing (cf. Ganzach & Karsahi, 1995) and in cooperation with N.B Paraguay. In particular, prior sales data was examined to determine which beneficiaries were most commonly used (e.g. child or spouse) in order to construct powerful messages. The negatively framed message focused on the potential negative consequences of not having LIFE, while the positively framed message focused on the positive consequence of having LIFE. Note that the actual information presented was objectively equivalent and thus meets Levin et al., (1998) criteria for goal framing. In Figure 2 below, the two versions of the framing are

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<sup>8</sup> The N.B Paraguay agents rotated between the three sales manuscripts (control, positive framing, and negative framing) every day for the two-week period of the randomized control trial. Thus, the subjects were indirectly randomized into the different experimental groups via assigned manuscript of the calling agent (see section 6.1.3 for a richer description of the process).

<sup>9</sup> At the request of N.B Paraguay, the sales manuscript is not enclosed in its full version.

displayed in English. As the main-spoken language in Paraguay is Spanish, the subjects were exposed to the translated version of the messages. As follows, it is possible that some of the intended meaning of the used phrasing when the translation was made. More specifically, some of the components of the message may have been over exaggerated and other components under exaggerated. Consequently, inferences made from the findings may partially be due to translation error and lost of intended meaning. To ensure a correct as possible translation, it was performed in two stages with two different English-Spanish speakers at the N.B Paraguay. More specifically, the two translators performed the translations independent of each other and then a discussion regarding differences in formulations and interpretation was conducted. The original framing messages can be seen in Appendix D1. Related, it is also possible that the agents did not understand or follow the instructions as intended since constant supervision were problematic. To combat this, the agents were continuously reminded of the importance of following the script and the manager listened in on a random sample of the calls on a daily basis.

**Figure 2. Framing Messages**

The Positively Framed Message	The Negatively Framed Message
Life today is full of uncertainties; if you have LIFE you will be able to ensure that your loved ones continue to enjoy a good quality of life regardless of any unforeseen event.	Life today is full of uncertainties; if you do not have LIFE you will not be able to ensure that your loved ones continue to enjoy a good quality of life regardless of any unforeseen event.
Having LIFE is a long-term investment, if you have it you will be able to secure your children's education, safety and future marriage should something unforeseen happen to you.	Having LIFE is a long-term investment, if you do not have it you will not be able to secure your children's education, safety and future marriage should something unforeseen happen to you.
If you have LIFE you do not have to rely on the government to take care of your family if you pass away	If you do not have LIFE you have to rely on the government to take care of your family if you pass away

### 6.1.3 Procedure

Prior to initiating the study the historical sales data was examined, from which it was evident that the 26 agents of N.B Paraguay were unequally successful with converting calls into sales (i.e. they were not equally skilled and/or experienced). To account for this fact, the agents rotated between the three sales manuscripts every day for the two-week period of the randomized control trial. Thus, agent 1 was assigned the control script on day one, negative script on day two, and positive script on day three, while agent 2 was assigned the negative script on day one, positive script on day two, and control script on day three, and so on. This rotational approach assured, to a reasonable degree, that not the “most effective” agents were assigned the “most

effective” script more often than the average agent, and vice versa. If this rotational approach were not to be incorporated, the possibility of inflated framing effect findings would have been more likely. At one stage, prior to initiating the randomized control trial, the plan was to randomize the script assigned to each agent for every call made. However, this would have been a tedious process as automation of assigning scripts was not possible. Also, rotating no more than once a day ensured that the agents were comfortable with the framing addition to their sales manuscript. Furthermore, rotating on a daily basis simplified the process of keeping track on which agent was assigned to which sales manuscript.

## **6.2 Questionnaire**

### **6.2.1 Participants**

In the random sampling process, the first division was made between the three experimental groups (i.e. control, positive, and negative). Then, within each experimental groups, a second random sampling was made between the individuals who signed up for LIFE during the randomized control trial and individuals who did not sign up for LIFE during the randomized control trial. A total of 600 individuals was contacted, 200 individuals for each experimental group, of which half had accepted and half had declined the LIFE offer. It was possible that the participants who had accepted the offer would be more likely to answer the questionnaire. If this were the case and the resulting distribution very unequal, the sample of those who declined would be enlarged in the last day of the study. A total of 360 individuals were interviewed, in which 354 answered all questions and are thus our sample. Of the 354 individuals, 186 (53 percent) had previously accepted the LIFE offer while 168 (47 percent) had previously declined the LIFE offer. After reviewing the distribution, the decision was made not to contact additional individuals.

### **6.2.2 Design of Questionnaire**

The questionnaire was designed to understand the individual’s socioeconomic characteristics, including their age, income, education, occupation, and number of children. Furthermore, with support of literature, questions regarding prior occurrence of shocks, and an individual’s attitudes towards risk, losses, and time was elicited. See Appendix C1 for the full questionnaire in English, Appendix C2 for the original Spanish version, and Appendix C3 for an examination of the questionnaire variables and their related definitions.

## **6.3 Econometric Methods**

### **6.3.1 Choice of Statistical Model — Randomized Control Trial**

To answer the research questions of the present investigation, it is desirable to model the probability of take-up, i.e. the probability that the subject makes a certain choice when faced with the decision to take-up LIFE or not. Therefore, the dependent variable in this model is *Take-up*, a binary variable that equals 1 if the subject accepted the LIFE offer and 0 if the subject declined the LIFE offer. When the dependent

variable is binary, as in this study, the ordinary least squares (OLS) method will not be able to yield the best linear unbiased estimator (BLUE). In particular, the homoscedasticity and normally distributed error term assumptions will almost with certainty be violated (Cameron & Trivedi, 2009). Even though the binary version of the OLS, the Linear Probability Model (LPM), allows for natural interpretation of coefficients, the predicated values for the dependent variable may lie outside the 0 to 1 range, something that a non-linear model restricts. Therefore a non-linear model, as the probit or logit model, is typically used in the case of a binary dependent variable. Since the substantive results generated by the probit and logit generally are very similar (Long & Freese, 2006), the probit model was chosen for the randomized control trial out of convenience and convention. In the probit model, the binary dependent variable,  $Y_i$ , can take on two values:

$$\begin{aligned} Y_i &= 1 \\ &= 0 \end{aligned}$$

The independent variables, on the other hand, can take different forms, including binary, continuous, or discrete. As follows:

$P_i$  = the probability that the  $i^{\text{th}}$  person makes a certain choice,  $0 < P_i < 1$ .

$P_i$  is affected by the independent variables, denominated  $X_i$ . The probability of accept is expressed as a function of the independent variables:

$$P_i = E(Y_i | X_i) = F(\beta_0 + \beta_i X_i) + \mu$$

where

$$F(\beta_0 + \beta_i X_i) = \int_{-\infty}^{\beta_0 + \beta_i X_i} f(z) dz$$

is the cumulative distribution function, which is the link that maps all observations into the interval  $I = [0,1]$  and

$$f(z) = \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}z^2}$$

is the probability density function of a standard normal distribution (Wooldridge, 2013).

The probit model uses a Maximum-Likelihood Estimator (MLE) to derive its coefficients, which aim to reflect a sample of the underlying distribution in the data. In turn, the distribution changes as the unknown coefficient changes, so the MLE merely regulate the coefficients by maximizing the likelihood that the sample was drawn from the underlying distribution. As with the OLS model, the main purpose of the probit model is to derive marginal effect of the regressor,  $X_i$ , on the dependent variable. However, the interpretation of the probit regression model is more complicated in comparison to the OLS model. In the OLS model, the coefficients can be understood directly as marginal effects while, in the probit model, the beta coefficient represent a

change in z-value for a unit change of the corresponding covariate, rather than marginal effects (Wooldridge, 2013). Thus, the only inferences that can be drawn merely looking at the probit model coefficients are that if  $\beta_i$  is positive (negative) that would indicate that an increase in  $X_i$  increases (decreases) the probability of  $Y_i$ . The size of  $\beta_i$  is difficult to interpret since the change in probability for a change in  $X_i$  is non-linear (Gujarati, 2003). Instead, the marginal effects in the probit model is derived by computing the derivate of the dependent variable with respect to the regressor,  $X_i$ :

$$\frac{dP_i}{dX_i} = F(\beta_0 + \beta_i X_i) \beta_i$$

When the independent variable is continuous, the interpretation of marginal effects in the probit model is the effect of one percentage change in  $X_i$  on the probability that  $Y_i = 1$ . When the independent variable, on the other hand, is binary, the marginal effect is the change in predicted probability of  $Y_i = 1$  when the independent variable change from 0 to 1 (Cornelißen & Sonderhof, 2009).

### 6.3.2 Choice of Statistical Model — Questionnaire

To study potential heterogeneous effects derived from the questionnaire data, the LPM was chosen. As in the randomized control trial described above, the dependent variable is the binary *Take-up*, referring to whether the respondent accepted or declined the LIFE offer. The LPM was chosen instead of a non-linear model foremost since interaction variables were to be included in the applied model specification. The interaction effect in non-linear models does not equal the marginal effect of the interaction term and, in some cases, can be of opposite sign (Ai & Norton, 2003). The LPM, on the other hand, allows for a more natural and easy computed interpretation of the interaction variables. The disadvantage of employing the LPM model in this case is that the predicated values for the dependent variable may lie outside the 0 to 1 range, something that the probit model restricts. Also, as mentioned above, two assumptions of BLUE —homoscedasticity and normally distributed error terms— will likely be violated with this approach (Cameron & Trivedi, 2009). To partially control and solve for the first issue, LPM regressions are run with Huber-White sandwich estimators for robust standard errors and, as follows, can be used to test for significance.

### 6.3.3 Model Application — Randomized Control Trial

To test the first hypothesis —individuals exposed to a framed message (positive or negative) is more likely to take up LIFE as compared to those exposed to no framed message— the marginal effects output from probit equation (1) were analyzed. The dependent variable is the binary *Take-up*, which takes on a value of 1 if the subject did take-up LIFE and 0 if the subject did not take-up LIFE. The independent variable in equation (1) is *Framing*, a binary variable taking the value of 1 if the subject was exposed to a framed message (either positive or negative) and 0 if not exposed to a framed message. As follows, equation (1) test hypothesis (H1):

$$Take - up = F(\beta_0 + \beta_1 Framing) + \mu \quad (1)$$

To test the second hypothesis —individuals exposed to a negatively framed message is more likely to take up LIFE as compared to those exposed to a positively framed message— equation (2) was employed. As in equation (I), the dependent variable is the binary *Take-up*, which take on the value 1 if the subject did take-up LIFE and 0 if the subject did not take-up LIFE. The independent variables in equation (2) is *Negative*, a binary variable taking the value of 1 if the subject was exposed to a negatively framed message and 0 if not exposed to a negatively framed message. The second independent variable in the equation is *Positive*, a binary variable taking the value of 1 if the subject was exposed to a positively framed message and 0 if not exposed to a positively framed message. As follows, equation (2) test hypothesis (HII):

$$Take - up = F(\beta_0 + \beta_1 Negative + \beta_2 Positive) + \mu \quad (2)$$

#### 6.3.4 Model Application — Questionnaire

The questionnaire was conducted in connection to the randomized control trial to explore potential heterogeneous effects. Equations (3) and (4) denotes the primary LPM regressions:

$$\begin{aligned} Take - up = & \beta_0 + \beta_1 Framing + \beta_2 Age + \beta_3 Female + \beta_4 Income + \beta_5 Children + \\ & \beta_6 Number\ of\ Children + \beta_7 Married + \beta_8 Educational\ level > \\ & Primary + \beta_9 Financially\ literate + \beta_{10} Additional\ provider + \beta_{11} Additional\ income > \\ & income + \beta_{12} Shock + \beta_{13} Loss\ averse + \beta_{14} Hyperbolic\ discounters + \varepsilon \end{aligned} \quad (3)$$

$$\begin{aligned} Take - up = & \beta_0 + \beta_1 Loss + \beta_2 Gain + \beta_3 Age + \beta_4 Female + \beta_5 Income + \beta_6 Children + \\ & \beta_7 Number\ of\ Children + \beta_8 Married + \beta_9 Educational\ level > \\ & Primary + \beta_{10} Financially\ literate + \beta_{11} Additional\ provider + \\ & \beta_{12} Additional\ income > \\ & income + \beta_{13} Shock + \beta_{14} Loss\ averse + \beta_{15} Hyperbolic\ discounters + \varepsilon \end{aligned} \quad (4)$$

In addition, two more regressions were performed. Related to regression (3), regression (5) was performed, which, in addition to the independent variables in equation (3), included interaction variables for the framing variable and the other independent variables as below:

$$Take - up = \beta_0 + \beta_1 Framing + \dots + \beta_{29} Framing * Hyperbolic\ Discounters + \varepsilon \quad (5)$$

A similar approach was done related to equation (4) in equation (6), but it included interaction variables for both positive and negative framing together with the other independent variables as follows:

$$\begin{aligned}
\text{Take-up} = & \beta_0 + \beta_1 \text{Negative} + \beta_2 \text{Positive} \dots + \beta_{40} \text{Negative} * \text{Hyperbolic Discounter} + \\
& \beta_{41} \text{Positive} * \text{Hyperbolic Discounter} + \varepsilon
\end{aligned} \tag{6}$$

The rationale behind including interaction variables with regards to the framing component were that it would be interesting to see whether framing had different effects depending on personal characteristics (e.g. whether the respondent had children or not).

#### 6.4 Validity Considerations and Limitations

The randomization process conducted during the randomized control trial means that there should be no reason to believe that the characteristics of the subjects in the different experimental groups should differ. Also, the subjects were not offered a choice in whether or not to participate in the randomized control trial. These two measures in combination with each other ought to eliminate the potential sample biases that could have arisen with self-selection to the randomized control trial. Even though the randomized approach avoids the problems related with sample biases and offers high internal validity, it is associated with the problem of environmental reliance. More specifically, it is difficult to guarantee that the findings reached in this study can be applied in a different domain. Thus, the experimental design employed in this study poses a threat to the external validity. As follows, the findings of this study should be interpreted more as what could occur rather than what will occur when applied in another domain. A possible measure to increase the external validity of this study would have been to conduct the randomized control trial and related questionnaire in another country than Paraguay. However, this was not possible due to time and monetary constraints. More specifically related to the questionnaire study, there is a potential motivational problem. For example, it might be the case that the group who accepted LIFE is more likely to be open and honest when answering the questionnaire compared to those who declined the LIFE offer. Thus, skewed findings from the questionnaire are possible. Furthermore, as argued by Aronson et al., (1998), a laboratory setting, in contrast to a randomized control trial in the field, allows for a more precise manipulation and control of independent variables as well as the ability to curtail intrusive noise. Conducting an experiment outside of the laboratory diminishes “the chances of obtaining a pure indication of the effect of one variable upon another” (Aronson et al., 1998, p. 106). Finally, even though a rotational approach was taken to ensure that the “most effective” agents was not assigned the “most effective” script more often than the average agent, and vice versa, this scenario is still possible, which would lead to inflated framing effect findings.

## 7. Results

In this section, the results derived from the randomized control trial are first presented, followed by the questionnaire results.

### 7.1 Framing Effects

As a randomized control trial approach was taken, treatment exposure is randomized across individuals and any difference in take-up rates can be ascribed to framing. It is argued that the rotational setup<sup>10</sup> assures that the “most effective” agents were not assigned the “most effective” manuscript more often than the average agent, while, on the other hand, the “least effective” agents were not assigned the “least effective” manuscript more often than the average agent. However, to check the robustness of the rotational method employed, a LPM was employed to the agent data. This confirmed that there are no sizable outliers driving the framing results (see Appendix A4).

Table 1 presents the percentage of individuals who was contacted within each experimental group. In total 21,496 calls and 2,395 sales of LIFE were registered, leading to an overall take-up rate of 11.14 percent. As seen, the take-up rates for both framed messages were higher in comparison to the control group. In comparison to the control group, the positively framed message generated a 27.32 percent higher take-up rate while the negatively framed message generated a 47.14 percent higher take-up rate. To evaluate the separate hypotheses, respective probit models, i.e. regressions (1) and (2), are performed next.

**Table 1. Summary Results per Experimental Group**

Experimental group	Calls	Take-ups	Take-up rate
Control	7199	643	8.93 percent
Positive	7144	812	11.37 percent
Negative	7153	940	13.14 percent
Summary	21496	2395	11.14 percent

#### 7.1.1 Hypothesis I: Framing vs. No Framing

In the probit regression (1), framing is significantly positive at the 1 percent level, indicating that when a subject is exposed to framing (both positive and negative), the probability of LIFE take-up increases (see Appendix A1 for regression output). However, as the regression model employed is probit, the size of the coefficient is

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<sup>10</sup> Agents alternated between the three sales manuscripts (control, negative, and positive) —see section 6.1.3 for a more in depth description



difficult to interpret directly and, as follows, the marginal effects generated from the probit regression is evaluated below.

**Table 2. Framing Treatment Effect on Take-up Rates**

Variables	(1) Take-up
Framing <sup>†</sup>	0.033*** (0.0043)
Observations	21,496

Dependent variable in regressions (1) is take-up, which equals 1 if respondent accepted LIFE offer and 0 if respondent declined LIFE offer. The coefficients are the marginal effect corresponding to the Probit model.

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

(†) dy/dx is for discrete change of dummy variable from 0 to 1

As seen in Table 2, framing (both positive and negative) had a significantly positive effect on take-up rates for LIFE (at the 1 percent level). More specifically, if the subject received a framed message (either positive or negative) rather than no framed message, the probability the subject would take-up LIFE increased by 3.3 percentage points. As follows, hypothesis (H1) is confirmed; individuals exposed to a framed (positive or negative) message were significantly more likely to take up LIFE compared to those exposed to no framed message.

### 7.1.2 Hypothesis II: Positive vs. Negative Framing

In probit regression (2), both positive and negative framing is significantly positive at the 1 percent level, indicating that when a subject is exposed to either negative or positive framing, the probability of LIFE take-up increases (see Appendix A2 for regression). However, as the regression model employed is probit, the size of the framing coefficients is difficult to interpret directly and, as follows, the marginal effects generated from the probit regression is evaluated next.

As seen in Table 3, both positive and negative framing had a significant positive effect on take-up rates for LIFE (at the 1 percent level). If the subject received a negatively framed message the probability the subject would take-up LIFE increased by 4.4 percentage points. Furthermore, if the subject received a positively framed message the probability the subject would take-up LIFE increased by 2.7 percentage points. From these results, it appears like the negatively framed message was more persuasive compared to the positively framed message.

**Table 3. Positive vs. Negative Framing Treatment Effect on Take-up Rates**

Variables	(2) Take-up
Negative <sup>†</sup>	0.044*** (0.0058)
Positive <sup>†</sup>	0.027*** (0.0057)
Observations	21,496

Dependent variable in regressions (2) is take-up, which equals 1 if respondent accepted LIFE offer and 0 if respondent declined LIFE offer. The coefficients are the marginal effect corresponding to the Probit model.

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

(†) dy/dx is for discrete change of dummy variable from 0 to 1

To make sure that the independent variables, i.e. *Positive* and *Negative*, are not equal to each other a Wald test was performed. The null hypothesis —that all coefficients except that of the intercept are zero— can be rejected at the 1 percent significance level (Prob > chi2 = 0.0012), see Appendix A3 for output. As follows, hypothesis (HII) is confirmed; individuals exposed to a negatively framed message were significantly more likely to take up LIFE compared to those exposed to a positively framed message.

## 7.2 Heterogeneous Effects

### 7.2.1 Questionnaire Sample Characteristics

Table 4 presents the key descriptive statistics<sup>11</sup> of the questionnaire sample. Worth to highlight from the data is that those who accepted the LIFE offer tend, on average, to be older, more educated, have fewer children, higher income, and be more financially literate compared to those who declined. Also, an individual who accepted the LIFE offer tend, on average to be more likely to have experienced a shock (either herself or her household) within the past year. Furthermore, the data suggests that a shock affecting a household member, rather one self, seem to be related to higher likeliness of accepting the LIFE offer. Finally, individuals who accepted the LIFE offer tend to, on average, be more likely to exhibit an aversion towards losses and be hyperbolic discounters. It is important to note that the findings in Table 4 only provide descriptive insights, no causal relationships can be drawn.

<sup>11</sup> The definitions of the questionnaire variables can be found in Appendix C3 and the entire questionnaire in Appendix C1.

**Table 4. Questionnaire Sample Characteristics**

Variable	All		Accept		Decline	
	Mean	s.d	Mean	s.d	Mean	s.d
Age	35.257	11.117	36.398	11.203	33.994	10.916
Children	2.062	1.164	2.129	1.088	1.988	1.243
Married	0.638	0.487	0.618	0.498	0.661	0.475
Size household	3.452	1.306	3.649	1.345	3.274	1.241
Female	0.449	0.498	0.462	0.500	0.435	0.497
Income	1769068	672217	1833333	679400	1697916	658889
Additional provider	0.545	0.499	0.500	0.501	0.595	0.492
Additional income	1193162	1117680	1074731	1080068	1326666	1147273
Occupation						
Agriculture	0.141		0.140		0.143	
Service	0.271		0.263		0.280	
Industry	0.153		0.167		0.137	
Self-employed	0.232		0.199		0.268	
Unemployed	0.121		0.129		0.113	
Retired	0.054		0.070		0.036	
Other	0.028		0.032		0.024	
Education						
No education	0.136		0.113		0.161	
Primary level	0.384		0.387		0.381	
Secondary level	0.387		0.398		0.375	
Post-secondary level	0.093		0.102		0.083	
Financially literate	0.384	0.487	0.425	0.496	0.339	0.475
Shock	0.362	0.481	0.415	0.436	0.293	0.457
Type of shock						
Respondent sick	0.242		0.228		0.265	
Household member sick	0.188		0.190		0.184	
Respondent lost work	0.180		0.203		0.143	
Household member lost work	0.133		0.139		0.122	
Respondent in accident	0.102		0.076		0.143	
Household member in accident	0.063		0.076		0.041	
Household member death	0.070		0.063		0.082	
Other	0.016		0.013		0.020	
Don't want to state	0.008		0.013		0.000	
Loss averse	0.667	0.472	0.694	0.462	0.637	0.482
Hyperbolic discounter	0.288	0.454	0.317	0.467	0.256	0.438
Observations	354		186		168	
Observations in relation to randomized control trial sample	0.016		0.078		0.009	

### 7.2.2 Heterogeneous Effects

To derive potential heterogeneous effects, the LPM described in section 6.3.2 was applied to the questionnaire data. However, to derive casual inferences on the

independent variables effect on the dependent variable, *Take-up*, the inclusion of questionnaire respondents was not ideally performed. The reason for this will first be discussed and subsequently a potential solution to the problem will be presented.

The questionnaire sample (N=354) was drawn from the randomized control trial population (N=21,496). As described in section 6.2.1, the randomization inclusion of the questionnaire sample was made on the basis of including a close to equal distribution of those who accepted and those who declined the LIFE offer. As a consequence, of the 354 individuals, 186 (53 percent) had accepted the LIFE offer while 168 (47 percent) had declined the LIFE offer. However, of the total randomized control trial population (N=21,496), 2,395 (11.14 percent) accepted the LIFE offer and 19,101 (88.86 percent) declined the LIFE offer. As follows, the questionnaire sample is not proportional with regards to the acceptance ratio; the decline subsample is underrepresented, while the accept subsample is overrepresented. Therefore, the accept subsample has an un-proportionally high impact on the outcome in equation (3), (4), (5), and (6), most likely resulting in skewed findings. Ideally, the questionnaire should have been performed with randomly chosen individuals prior to the randomized control trial. The respondent would then, in turn, have been contacted again with for the randomized control trial along with the other subjects. This would have lead to a more proportional, with respect to the acceptance ratio, questionnaire sample, and, in turn, more precise casual estimates would have been possible. However not ideal, to account for the unequal acceptance ratio and possibly skewed inferences, probability weights was applied to equations (3), (4), (5), and (6). More specifically, each observation in the survey was weighted by the inverse of its probability of being sampled from the total randomized control trial population (N=21,496). As follows, each questionnaire participant who accepted the LIFE offer received weight 1 while each questionnaire participant who declined the LIFE offer received weight 8.8<sup>12</sup>.

The output derived from the LPM regressions (3) and (4) are presented below in Table 5. If the regression is denoted “a” it refers to the un-weighted model and if denoted “b” it refers to the weighted model. As the inclusion method applied was not ideal, the findings derived from regressions (3) and (4) will be handled briefly and with caution. Instead, these findings will be interpreted as indicative results that may be interesting to go in to depth in future research while applying a more proper questionnaire inclusion approach.

Regression (3a), the un-weighted model without interaction variables, provides some significant results on what drives take-up rates. Before diving into the significant independent variables, the *Framing* variable must briefly be accounted for. The reason for *Framing* being insignificant with regards *Take-up* in regression (3a) and also in

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<sup>12</sup>  $\frac{\text{Accept}}{\text{Decline}} = \frac{\frac{186}{2395}}{\frac{168}{19101}} = 8.8.$

regressions (4), (5), and (6), is due to the random questionnaire sampling process in which an equal division between the three experimental groups were made. Thus, the distribution between the control group, positive framing group, and negative framing group is close to equal. Despite this fact, it will still be possible to examine interaction variables between framing and the independent variables as the divisions between the three experimental groups were close to similar in the randomized control trial and in the questionnaire sample.

Now, looking at the independent variables in regression (3a), *Age* is positively significant at the 5 percent level, suggesting that take-up rates for LIFE increase with age. Furthermore and not surprising, *Income* is positive and significant at the 10 percent level, indicating that the likelihood of accepting the LIFE offer increases with monthly income. Interestingly, *Additional provider* is negative and significant at the 10 percent level, assigning a 14.2 percent percentage points lower likelihood to take-up LIFE when having an additional provider in the household. Finally, *Shock* is positive and significant at the 1 percent level, assigning a 14.6 percentage points greater chance to take-up LIFE when having been exposed to a shock during the past year. When the interaction variables are added in regression (4a), the number of significant variables decreases and the only remaining is *Age*, which is still positive and significant at the 5 percent level. Looking at interaction variables, *Framing\*Shock* is positive and significant at the 5 percent level, assigning a 26.6 percentage point greater chance to take-up LIFE when having experienced a shock in combination with being exposed to framing. This can be interpreted as the additional affect of *Shock* = 1 on take-up rates when *Framing* = 1.

In the weighted regression (3b), the significance level and size of coefficient decreases across the independent variables in comparison to regression (3a). Related, the proportion of variance in *Take-up* that can be predicted from the independent variables decreases as measured by the R-squared value. This should not come as a surprise as the results now are “more reasonable” with regards to the proportion of respondents that accepted and declined the LIFE offer. However, *Income* is still positive and significant at the 10 percent level, so is *Shock* at the 5 percent level. When the interaction variables are added in regression (4b), *Age* becomes positive and significant at the 10 percent level. Two interaction variables are significant, *Framing\*Additional income > income* and *Framing\*Shock*. The former is negative and significant at the 10 percent level, assigning a 13.5 percentage points lower chance to take-up LIFE when the respondent have access to an additional income that is larger than her own in combination with being exposed to framing. The interaction variable *Framing\*Shock* is on the other hand positive and significant at the 10 percent level, assigning a 12.5 percentage point greater chance to take-up LIFE when having experienced a shock in combination with being exposed to framing.

As the results derived from regression (5a) and (5b) are very similar with regards to the significance level and coefficient size to regression results presented and interpreted in (3a) and (3b), these will not be explored further in this section (see Appendix B1). The similarity is due to the fact that the only difference between regression (3a)/(3b) and regression (4a)/(4b) is that *Framing* has been deconstructed to its components; *Positive* and *Negative*. The same reasoning goes for regressions (6a) and (6b) and thus the related results will not be discussed at length here but can rather be found in Appendix B1. The interpretation of one variable that was significant and positive in regressions (4a) and (4b), namely *Framing\*Shock*, will however be advanced further below in its deconstructed parts from regression (6a) and (6b). When separating *Framing* into its components *Positive* and *Negative* in regressions (6a) and (6b) it appears like the latter is driving the effect on *Shock* and, in turn, *Take-up*. This since the *Positive\*Shock* is positive however insignificant. *Negative Shock*, on the other hand, is positive and significant at the 1 percent level in the un-weighted regression (6a) and at the 5 percent level in the weighted regression (6b). In regression (6a)/(6b), the coefficient indicates a 38.4/21.6 percentage point greater likelihood to take-up LIFE when having experienced a shock in combination with being exposed to negative framing. Finally, the regressions (3)-(6) were run as a robustness check of the findings. As seen in Appendix B2 and B3, the significance level coefficient sizes are similar to the ones presented in Table 5.

**Table 5. Heterogeneous Effects**

Variables	(3a) Take-up	(3b) Take-up	(4a) Take-up	(4b) Take-up
Age	0.00496** (0.00242)	0.00181 (0.00116)	0.00943** (0.00412)	0.00431* (0.00252)
Female	0.0418 (0.0531)	0.0188 (0.0242)	0.0600 (0.0983)	0.00272 (0.0469)
Income	8.31e-08* (4.49e-08)	3.98e-08* (2.03e-08)	1.01e-07 (7.09e-08)	7.15e-08 (4.79e-08)
Children	0.168 (0.110)	0.0644 (0.0411)	0.0759 (0.185)	0.0642 (0.0840)
Number of Children	0.00263 (0.0301)	0.00285 (0.0136)	-0.00334 (0.0536)	-0.00903 (0.0259)
Married	0.0420 (0.0754)	0.00989 (0.0325)	-0.0906 (0.161)	-0.0770 (0.0785)
Educational level > primary	0.0152 (0.0571)	0.0136 (0.0241)	-0.0887 (0.110)	-0.0479 (0.0502)
Financially literate	0.0807 (0.0597)	0.0325 (0.0277)	0.113 (0.115)	0.0542 (0.0534)
Additional provider	-0.142* (0.0859)	-0.0481 (0.0362)	-0.202 (0.161)	-0.0843 (0.0654)
Additional income > income	0.0105 (0.0802)	0.000348 (0.0325)	0.141 (0.144)	0.0911 (0.0632)
Shock	0.146*** (0.0547)	0.0698** (0.0285)	-0.0325 (0.103)	-0.0154 (0.0592)
Loss averse	0.0417 (0.0573)	0.0132 (0.0233)	0.0478 (0.105)	-0.0184 (0.0480)
Hyperbolic discounter	0.0736 (0.0583)	0.0409 (0.0300)	0.0212 (0.0987)	0.0377 (0.0517)
Framing	-0.0326 (0.0568)	-0.00554 (0.0246)	-0.224 (0.304)	-0.0726 (0.145)
Framing * Age			-0.00646 (0.00508)	-0.00317 (0.00289)
Framing * Female			-0.0264 (0.118)	0.0166 (0.0564)
Framing * Income			-1.20e-08 (9.20e-08)	-2.58e-08 (5.47e-08)
Framing * Children			0.183 (0.232)	0.0133 (0.0984)
Framing * Number of Children			0.00768 (0.0652)	0.0149 (0.0312)
Framing * Married			0.157 (0.183)	0.104 (0.0878)
Framing * Educational level > primary			0.168 (0.129)	0.0931 (0.0586)
Framing * Financially literate			-0.0223 (0.136)	-0.0230 (0.0649)
Framing * Additional provider			0.131 (0.191)	0.0761 (0.0808)
Framing * Additional income > income			-0.198 (0.174)	-0.135* (0.0773)
Framing * Shock			0.266** (0.122)	0.125* (0.0697)
Framing * Loss averse			-0.0215 (0.126)	0.0328 (0.0567)
Framing * Hyperbolic discounter			0.0869 (0.123)	0.0249 (0.0665)
Constant	-0.0367 (0.151)	-0.119* (0.0669)	0.0301 (0.235)	-0.106 (0.113)
Observations	354	354	354	354
R-squared	0.084	0.037	0.120	0.055

Dependent variable in regressions (3)-(4) is *Take-up* which equals 1 if respondent accepted LIFE offer, 0 if respondent declined LIFE offer. The coefficients are from a Linear Probability Model. Robust standard errors using Huber-White sandwich estimators reported in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## 8. Discussion of Results

In this section, the previously presented findings are discussed and analyzed. The structure is linked to the research questions that have guided this study. Thus, the discussion embarks with the two questions related to the framing effects and subsequently the two questions associated with heterogenous effects are handled.

### 8.1 Framing Effects

First, the findings related to the first research question of this study —whether individuals exposed to a framed message (positive or negative) is more likely to take up microinsurance as compared to those exposed to no framed message— is examined. By conducting a randomized control trial with 21,496 subjects during a two-week period, the findings provide strong evidence that framing affects take-up rates for the microinsurance product LIFE. This result is in line with the empirical literature discussed in section 3 and related meta-reviews (cf. Levin et al., 1998). However, a valid objection to this finding is that the control group was exposed to less information at large in comparison to the treatment groups. As follows, it is not necessarily the case that goal framing drives the take-up rates, but rather the additional persuasive information. To further explore the effects of goal framing, it is therefore relevant to examine the relative effectiveness of positive versus negative framing, which is done next.

The second research question of this study —whether individuals exposed to a negatively framed message is more likely to take up LIFE as compared to those exposed to a positively framed message— was answered with a similar approach as research question (I). However, it utilized the fact that the subjects (N=21,496) were divided into three experimental groups (control, positive framing, and negative framing). As follows, the relative effectiveness of positive and negative framing could be derived. The results from the randomized control trial suggest that there is robust evidence that the negatively framed message positively affected take-up rates for LIFE more than the positively framed message. The potential reasons for this finding are many, however it is possible that it relates to the discussion in section 3 regarding the findings from the health domain. As suggested, when a decision involved a certain outcome (i.e. preventive behavior) a positively framed message was more persuasive than a negatively framed message, while the opposite was true for an uncertain outcome decision (i.e. detection behavior). The outcome of LIFE can be considered uncertain, and as follows a negatively framed message should be more persuasive. This study's finding of the relative more persuasiveness of negative over positive framing adds power to previous similar findings in the financial domain (e.g. Ganzach & Karshai, 1995; Chang & Lee, 2010) while, at the same time, adding new important evidence from a low-income setting.



A valid and imperative theoretical question is why individuals exposed to the negatively framed message was more likely to take up LIFE as compared to those exposed to the positively framed message. This study was grounded in the theoretical framework of prospect theory, which stipulates that “losses loom larger than gains” and, as follows, negative framing should be more persuasive. Nevertheless, other explanations for the finding are conceivable. For example, it may be because individuals tend to experience negative information as more salient (Carstensen & Mikels, 2005; Vaish et al., 2008), display a negative bias when handling information (Ito et al., 1998), be more surprised and provoked by negative information, leading to a higher degree of awareness and commitment (Meyerowitz & Chaiken, 1987; Zhang & Buda, 1999).

Moreover, the findings of this study relates only to the take-up decision of LIFE and not to long-term financial behavior. In other words, an important part of a study on financial decision-making and behavior should be whether the initial decision to take-up LIFE was followed by a renewal. As a negative framing message may provoke other types of emotions than a positive framing message, it is possible, for example, that the former may be interpreted as an “intimidation tool” used by the agent, which might backlash during the renewal sales call. Thus, promoting long-term financial behavior with goal framing might entail a different story than the one on take-up rates. To derive how framing effects long-term financial-decision making, a follow-up questionnaire could have been performed a couple of months after the initial randomized control trial.

Despite the described benefits for individuals to be part of a microinsurance scheme (e.g. reduced vulnerability towards shocks) it is most likely the case that not everyone needs and desires microinsurance. A potential risk is therefore that the insights from this study can be used to persuade individuals to make a suboptimal decision for themselves, i.e. taking up microinsurance even though she has no need or desire for having it. For example, it may be the case that an individual has other forms of well-functioning risk coping mechanisms (e.g. formal or informal) or that she simply does not need microinsurance. Thus, it is argued that the insights from this paper should be used with caution, both with regards to not luring unwanted individuals and, possibly, to not lose future commitments through renewals.

Finally, as briefly discussed in section 6.4., an additional valid question is to what degree the findings of this study are applicable to other domains. As domain factors such as competitive landscape, product characteristics, and socioeconomic contexts vary greatly, it is argued that applications of these findings should be made with caution and strong general conclusions avoided. For example, this study was conducted on a life microinsurance product, LIFE, and it is likely that the framing effect may differ depending what type of microinsurance product is examined. However, one might argue that the findings of this study relates to the findings of other goal framing studies,

which together can provide some insights on the relative persuasiveness of negative framing over positive framing.

## 8.2 Heterogeneous Effects

The third research question of this study was whether certain personal characteristics drives take-up rates for LIFE. To examine this, a questionnaire was conducted with a subsample (N=354) from the randomized control trial population (N=21,496). The results derived from regression (3a) suggest that *Age* and *Income* were significantly positively related to *Take-up*. With regards to *Age*, the finding of this paper is in line with the majority of the empirical literature, suggesting that age is positively related to take-up rates for microinsurance (cf. Chen et al., 2013; Gaurav et al. 2011; Giesbert et al., 2011). Even though Dercon et al. (2011) find no significant effect on age and Cole et al. (2013) find that older individuals are less likely to demand microinsurance, it seems reasonable that demand for life microinsurance will increase with age due to the increased risk of dying and, often, greater responsibility to provide for the family. Relating the empirical literature to *Income*, even though Fitzpatrick et al. (2011) and Thornton et al. (2010) find no significant relationship between income and demand for microinsurance, a majority of the empirical evidence does (cf. Cole et al., 2013; Giné et al., 2008; Jütting, 2004). Furthermore, findings from regression (3a) suggest that *Additional provider* and *Shock* is negatively related to demand for microinsurance. Even though not studied in the microinsurance domain, it seems reasonable to believe that having an additional income provider in the household reduces the need for a life microinsurance product, as, in case of unlikely death, there is still one in the household to provide for the family. As follows, the need for a life microinsurance payout is not as urgent as if the one passing away was the sole provider of income to the household. The fact that the probability which individuals evaluate the value of microinsurance is dependent on the perceptions of risks, which in turn is influenced by past shocks, explain why *Shock* is negative. Related, Arun and Bendig (2010) show that having experienced threats in the past—in particular death of a household member—increased the probability of taking up financial services. In the weighted regression (3b), *Income* is still significantly positively related to demand for microinsurance, while *Shock* still is significantly negatively related. However, both *Age* and *Additional provider* loses its significance. This study argues that the latter findings from regression (3b) ought to be more representative of reality has the proportion of respondents that accepted and declined the LIFE offer is more realistic and fair. However, as described before, the findings of the questionnaire study should overall be interpreted with caution as the inclusion to the questionnaire was sub-optimally constructed.

The fourth and final research question was whether individuals, dependent on their personal characteristics, diversely affected by goal framing. To answer this question, interaction variables were added to the LPM regressions. This study, except a few exceptions, failed to find significant interactions between framing and the other independent variables (e.g. gender, education, income, and children), possibly because

of the sub-optimally inclusion method described earlier. The exception was the positively significant effect of the interaction between negative framing and shock, suggesting that there were a significantly greater possibility to take-up LIFE when the respondent had experienced a shock in combination with being exposed to negative framing. Even though few significant interaction effects were derived in this study, it entails an interesting path for future work as the findings still suggest that, to some degree individuals, process goal framing differently depending on their personal characteristics.

## 9. Conclusion

Building on the economic literature on behavioral biases in individual decision-making, this study investigated whether goal framing influence the perceived value of microinsurance and, in turn, take-up rates. To derive the effects of goal framing on microinsurance take-up rates, a randomized control trial was conducted in Paraguay in cooperation with N.B Paraguay, a local microinsurance provider, in which 21,496 potential customers were contacted with a sales offer to sign up for LIFE, a life microinsurance product. The potential customers were randomly divided into three experimental groups and consequently exposed to either a no framed message (control group), positive framed message (positive treatment), or negative framed message (negative treatment). This study finds robust evidence that framing had a significantly positive effect on LIFE take-up rates and the negative framing increased take-up rates significantly more than the positive framing. The implications of these results are clear for microinsurance providers; using negative framing will increase take-up rates more than using positive framing. This is an important insight, especially since microinsurance is seen as a potential poverty alleviation tool. However, this study did not examine the effect goal framing has on renewal rates of microinsurance. As follows, a question for future research is how goal framing affects long-term financial behavior. Also, only the persuasiveness of a one-time vocal message, and no other communication forms, was examined in this study. It is possible that the findings would have been different if the subjects were exposed to the message in a different form and more than once. As follows, it would be interesting for future research to explore whether the effects of goal framing differs between use of communication.

In addition, a questionnaire was performed with 354 participants randomly drawn from the randomized control trial population (N=21,496) to derive potential heterogeneous effects with regards to microinsurance take-up. Even though the inclusion to the questionnaire was sub-optimally constructed, the findings from this study is in line with similar studies suggesting that age and income is positively related to take-up of microinsurance. Also, having experienced a shock within the past year is positively related to microinsurance take-up rates, while having access to an additional income provider is negatively related. Moreover, a positively significant effect of the interaction between negative framing and being exposed to a shock on take-up rates for LIFE was found. With a more rigorous questionnaire sampling method, potentially

more interaction variables could have been found significant. However, this finding entails an exciting path for future work in the area of goal framing, as it suggest that individuals, to some degree, process goal framing exposure differently depending on their personal characteristics. As follows, it may be possible to more precisely tailor messages in order to further increase take-up rates for financial products that are suggested to be beneficial for low-income individuals. Thus, one additional question for future research, of which this study has provided some groundwork, is whether the differences in the effectiveness of positive and negative framing in the financial domain in general, and in the microinsurance in particular, can be more closely linked to the personal characteristics of an individual.

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## Appendix A — Main Framing Experiment, Further Regressions

### A1. Probit Regression — Take-up and Framing

	(1)
Variables	Take-up
Framing	0.183*** (0.0248)
Constant	-1.345*** (0.0208)
Observations	21,496

Dependent variable in regressions (1) is take-up, which equals 1 if respondent accepted LIFE offer and 0 if respondent declined LIFE offer. The coefficients are the marginal effect corresponding to the Probit model.

Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

### A2. Probit Regression — Take-up and Positive/Negative Framing

	(2)
Variables	Take-up
Negative	0.225*** (0.0280)
Positive	0.138*** (0.0285)
Constant	-1.345*** (0.0208)
Observations	21,496

Dependent variable in regressions (1) is take-up, which equals 1 if respondent accepted LIFE offer and 0 if respondent declined LIFE offer. The coefficients are the marginal effect corresponding to the Probit model.

Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

### A3. Wald Test — Positive and Negative Framing

[Take-up]Negative - [Take-up]Positive = 0	
chi2(1)	10.47
Prob > chi2	0.0012

### A4. Agent Performance and Manuscript Likelihood

The setup of the LPM models enables a calculation of probability contributions on the dependent variable for each of the agents, but one (Agent\_1 in this case), who is the comparison base. As seen, there is only two instances —Agent 13, Agent 21— were the (more effective) agents was assigned one of the framing manuscript more often than the average agent, while, on the other hand, some (less effective) agents were assigned the control manuscript more often than the average agent.

Variables	Take-up	Framing	Negative	Positive
Agent_2	-0.0212 (0.0139)	0.00663 (0.0215)	-0.0320 (0.0229)	0.0387* (0.0229)
Agent_3	-0.0139 (0.0144)	-0.121*** (0.0230)	-0.0713*** (0.0229)	-0.0502** (0.0225)
Agent_4	0.00174 (0.0147)	-0.0294 (0.0219)	-0.135*** (0.0218)	0.106*** (0.0232)
Agent_5	-0.00601 (0.0146)	-0.111*** (0.0227)	-0.0943*** (0.0225)	-0.0163 (0.0227)
Agent_6	-0.0121 (0.0141)	0.000207 (0.0213)	-0.0382* (0.0226)	0.0384* (0.0226)
Agent_7	0.0571*** (0.0160)	-0.128*** (0.0223)	-0.0179 (0.0228)	-0.110*** (0.0212)
Agent_8	-0.0135 (0.0158)	-0.208*** (0.0257)	-0.301*** (0.0197)	0.0924*** (0.0259)
Agent_9	0.112*** (0.0180)	-0.0710*** (0.0230)	-0.0952*** (0.0230)	0.0243 (0.0235)
Agent_10	0.0105 (0.0148)	-0.110*** (0.0223)	-0.000144 (0.0229)	-0.110*** (0.0212)
Agent_11	-0.00286 (0.0144)	-0.0267 (0.0217)	-0.0947*** (0.0222)	0.0680*** (0.0229)
Agent_12	-0.000458 (0.0146)	-0.167*** (0.0227)	-0.171*** (0.0213)	0.00361 (0.0226)
Agent_13	0.0288* (0.0155)	0.0411* (0.0211)	-0.0403* (0.0229)	0.0814*** (0.0231)

Agent_14	-0.0104 (0.0144)	-0.00115 (0.0217)	-0.00460 (0.0232)	0.00345 (0.0227)
Agent_15	-0.00869 (0.0143)	-0.124*** (0.0224)	-0.00428 (0.0230)	-0.120*** (0.0211)
Agent_16	0.108*** (0.0167)	0.00417 (0.0210)	-0.0581*** (0.0222)	0.0623*** (0.0224)
Agent_17	-0.00924 (0.0147)	0.0780*** (0.0211)	-0.0334 (0.0235)	0.111*** (0.0239)
Agent_18	-0.00458 (0.0152)	-0.133*** (0.0238)	-0.0842*** (0.0234)	-0.0487** (0.0232)
Agent_19	0.0184 (0.0152)	0.0824*** (0.0205)	0.177*** (0.0235)	-0.0943*** (0.0216)
Agent_20	0.00316 (0.0146)	-0.149*** (0.0224)	-0.00190 (0.0229)	-0.147*** (0.0206)
Agent_21	-0.0266* (0.0138)	-0.128*** (0.0226)	0.0258 (0.0233)	-0.154*** (0.0207)
Agent_22	-0.0115 (0.0142)	0.0668*** (0.0206)	-0.109*** (0.0221)	0.176*** (0.0231)
Agent_23	-0.00915 (0.0144)	-0.0673*** (0.0223)	0.0299 (0.0233)	-0.0971*** (0.0216)
Agent_24	-0.00933 (0.0142)	-0.00928 (0.0214)	-0.0247 (0.0227)	0.0154 (0.0224)
Agent_25	-0.0140 (0.0176)	0.113*** (0.0243)	0.0930*** (0.0297)	0.0195 (0.0287)
Agent_26	-0.0680*** (0.0159)	-0.0114 (0.0330)	-0.0404 (0.0344)	0.0290 (0.0348)
Constant	0.105*** (0.0104)	0.713*** (0.0153)	0.375*** (0.0164)	0.338*** (0.0161)
Observations	21,496	21,496	21,496	21,496
R-squared	0.013	0.030	0.030	0.035

The coefficients are from a Linear Probability Model. Robust standard errors.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Appendix B — Heterogeneous Effects, Further Regressions

### B1. Linear Probability Model - Heterogeneous Effects II

	(5a)	(5b)	(6a)	(6b)
Variables	Take-up	Take-up	Take-up	Take-up
Age	0.00496** (0.00242)	0.00180 (0.00116)	0.00943** (0.00421)	0.00431* (0.00258)
Female	0.0416	0.0190	0.0600	0.00272

	(0.0532)	(0.0242)	(0.100)	(0.0479)
Income	8.30e-08*	3.98e-08*	1.01e-07	7.15e-08
	(4.51e-08)	(2.03e-08)	(7.25e-08)	(4.90e-08)
Children	0.168	0.0648	0.0759	0.0642
	(0.110)	(0.0415)	(0.189)	(0.0859)
Number of Children	0.00295	0.00263	-0.00334	-0.00903
	(0.0301)	(0.0138)	(0.0548)	(0.0264)
Married	0.0426	0.00970	-0.0906	-0.0770
	(0.0756)	(0.0325)	(0.165)	(0.0802)
Educational level > primary	0.0152	0.0137	-0.0887	-0.0479
	(0.0572)	(0.0241)	(0.112)	(0.0513)
Financially literate	0.0807	0.0325	0.113	0.0542
	(0.0597)	(0.0277)	(0.117)	(0.0546)
Additional provider	-0.141	-0.0485	-0.202	-0.0843
	(0.0860)	(0.0362)	(0.164)	(0.0668)
Additional income > income	0.0105	0.000337	0.141	0.0911
	(0.0803)	(0.0326)	(0.147)	(0.0646)
Shock	0.146***	0.0703**	-0.0325	-0.0154
	(0.0548)	(0.0287)	(0.105)	(0.0606)
Loss averse	0.0410	0.0133	0.0478	-0.0184
	(0.0574)	(0.0233)	(0.107)	(0.0491)
Hyperbolic discounter	0.0738	0.0408	0.0212	0.0377
	(0.0584)	(0.0301)	(0.101)	(0.0528)
Loss	-0.0408	-0.00309	-0.284	-0.0565
	(0.0637)	(0.0273)	(0.357)	(0.196)
Gain	-0.0240	-0.00840	-0.0958	-0.0102
	(0.0666)	(0.0298)	(0.372)	(0.171)
Negative * Age			-0.0102*	-0.00445
			(0.00596)	(0.00333)
Positive * Age			-0.00480	-0.00284
			(0.00611)	(0.00347)
Negative * Female			0.0242	0.0423
			(0.138)	(0.0704)
Positive * Female			-0.0735	0.00742
			(0.144)	(0.0691)
Negative * Income			2.63e-08	1.41e-09
			(1.12e-07)	(6.81e-08)
Positive * Income			-4.06e-08	-4.75e-08
			(1.10e-07)	(5.99e-08)
Negative * Children			0.365	0.00453
			(0.266)	(0.126)
Positive * Children			-0.00136	-0.0599
			(0.281)	(0.134)
Negative * Number of Children			-0.0348	0.0117
			(0.0760)	(0.0375)
Positive * Number of Children			0.0608	0.0378



			(0.0781)	(0.0430)
Negative * Married			0.153	0.112
			(0.208)	(0.102)
Positive * Married			0.178	0.119
			(0.210)	(0.0996)
Negative * Educational level > primary			0.137	0.0676
			(0.148)	(0.0696)
Positive * Educational level > primary			0.147	0.0918
			(0.153)	(0.0723)
Negative * Financially literate			0.0439	0.00941
			(0.154)	(0.0767)
Positive * Financially literate			-0.0478	-0.0298
			(0.163)	(0.0768)
Negative * Additional provider			0.0652	0.000238
			(0.217)	(0.101)
Positive * Additional provider			0.164	0.101
			(0.231)	(0.100)
Negative * Additional income > income			-0.161	-0.113
			(0.200)	(0.0941)
Positive * Additional income > income			-0.215	-0.161
			(0.213)	(0.102)
Negative * Shock			0.384***	0.216**
			(0.138)	(0.0901)
Positive * Shock			0.150	0.0589
			(0.147)	(0.0781)
Negative * Loss averse			-0.0304	0.0254
			(0.141)	(0.0666)
Positive * Loss averse			-0.0137	0.0405
			(0.158)	(0.0729)
Negative * Hyperbolic discounter			0.0445	0.0386
			(0.142)	(0.0817)
Positive * Hyperbolic discounter			0.0824	0.0180
			(0.155)	(0.0817)
Constant	-0.0382	-0.118*	0.0301	-0.106
	(0.151)	(0.0670)	(0.240)	(0.116)
Observations	353	353	353	353
R-squared	0.085	0.037	0.142	0.069

Dependent variable in regressions (5)-(6) is take-up which equals 1 if respondent accepted LIFE offer, 0 if respondent declined LIFE offer. The coefficients are from a Linear Probability Model. Robust standard errors using Huber-White sandwich estimators reported in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## B2. Marginal Effects after Probit Regression: Take-up and Framing

Variables	Take-up	Take-up	Take-up	Take-up
Framing†	-0.0369 (0.0594)	-0.00943 (0.0234)	-0.278 (0.323)	-0.133 (0.173)
Age	0.0054** (0.00253)	0.00185* (0.00990)	0.0101** (0.00484)	0.00368** (0.00183)
Female†	0.0434 (0.0555)	0.0154 (0.0221)	0.0596 (0.0985)	0.00925 (0.0382)
Income	8.88e-08* (0.000)	3.56e-08* (0.0000)	1,10E-07 (0.0000)	5,36E-08 (0.0000)
Children†	0.174 (0.110)	0.0592** (0.0302)	0.0727 (0.193)	0.0343 (0.0586)
Number of Children	0.00417 (0.0321)	0.00204 (0.0124)	-0.00110 (0.0572)	-0.00328 (0.0216)
Married	0.0461 (0.0826)	0.0124 (0.0299)	-0.0934 (0.172)	-0.0457 (0.0618)
Educational level > primary†	0.0192 (0.0591)	0.0123 (0.0222)	-0.0888 (0.101)	-0.0373 (0.0399)
Financially literate†	0.0845 (0.0611)	0.0312 (0.0255)	0.119 (0.113)	0.0485 (0.0477)
Additional provider†	-0.154* (0.0925)	-0.0511 (0.0361)	-0.211 (0.170)	-0.0878 (0.0672)
Additional income > income†	0.0136 (0.0868)	0.00160 (0.0321)	0.150 (0.151)	0.0779 (0.0680)
Shock†	0.155*** (0.0569)	0.0669** (0.0276)	-0.0358 (0.109)	-0.0143 (0.0421)
Loss averse†	0.0429 (0.0602)	0.0121 (0.0224)	0.0519 (0.112)	-0.00478 (0.0415)
Hyperbolic discounter†	0.0808 (0.0616)	0.0368 (0.0282)	0.0250 (0.105)	0.0254 (0.0439)
Framing_Age			-0.00661 (0.00573)	-0.00251 (0.00216)
Framing_Female†			-0.0256 (0.122)	0.00324 (0.0465)
Framing_Income			-8,38E-09 (0.0000)	-1,25E-08 (0.0000)
Framing_Children†			0.225 (0.239)	0.0710 (0.0877)
Framing_Number of Children			0.00617 (0.0699)	0.00694 (0.0267)
Framing_Married†			0.172 (0.198)	0.0712 (0.0707)
Framing_Educational level > primary†			0.179 (0.127)	0.0910 (0.0615)
Framing_Financially literate†			-0.0188	-0.0110

			(0.139)	(0.0493)
Framing_Additional provider†			0.133	0.0761
			(0.207)	(0.0822)
Framing_Additional income > income†			-0.2136	-0.0895
			(0.182)	(0.0455)
Framing_Shock†			0.283**	0.144**
			(0.114)	(0.0803)
Framing_Loss averse†			-0.0277	0.0055
			(0.135)	(0.0502)
Framing_Hyperbolic discounter†			0.101	0.0317
			(0.129)	(0.0596)
Observations	354	354	354	354

Dependent variable in regressions is take-up which equals 1 if respondent accepted LIFE offer, 0 if respondent declined LIFE offer. The coefficients are the marginal effect corresponding to the Probit model.

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

(†) dy/dx is for discrete change

of dummy variable from 0 to 1

### B3. Marginal Effects after Probit Regression: Take-up and Positive/Negative Framing

Variables	Take-up	Take-up	Take-up	Take-up
Negative†	-0.0450	-0.00889	-0.518	-0.155
	(0.0687)	(0.0251)	(0.357)	(0.122)
Positive†	-0.0289	-0.00959	-0.0940	-0.0258
	(0.0689)	(0.0265)	(0.407)	(0.131)
Age	0.00538**	0.001844**	0.0101**	0.00353**
	(0.00253)	(0.000990)	(0.00484)	(0.00175)
Female†	0.0433	0.0154	0.0596	0.00888
	(0.0555)	(0.0221)	(0.0985)	(0.0366)
Income	8.9e-08*	3.57e-08*	1.10e-07	5.15e-08
	(0.000)	(0.000)	(0.000)	(0.000)
Children†	0.175	0.0592**	0.0728	0.0328
	(0.110)	(0.0302)	(0.193)	(0.0559)
Number of Children	0.00442	0.00202	-0.00111	-0.00315
	(0.0321)	(0.0124)	(0.0573)	(0.0208)
Married†	0.0467	0.0124	-0.0934	-0.0439
	(0.0827)	(0.0300)	(0.172)	(0.0593)
Educational level > primary†	0.0193	0.0123	-0.0888	-0.0358
	(0.0591)	(0.0222)	(0.110)	(0.0383)
Financially literate†	0.0843	0.0312	0.118	0.0467
	(0.0611)	(0.0255)	(0.113)	(0.0459)
Additional provider†	-0.153*	-0.0512	-0.211	-0.0844
	(0.0926)	(0.0360)	(0.170)	(0.0648)
Additional income > income†	0.0134	0.00161	0.150	0.0750
	(0.0868)	(0.0321)	(0.151)	(0.0656)

Shock†	0.155***	0.0700**	-0.0358	-0.0137
	(0.0569)	(0.0277)	(0.109)	(0.0403)
Loss averse†	0.0423	0.0121	0.0519	-0.000458
	(0.0603)	(0.0224)	(0.112)	(0.0398)
Hyperbolic discounter†	0.0808	0.0368	0.0250	0.0244
	(0.0616)	(0.0282)	(0.105)	(0.0423)
Negative _Age†			-0.0103	-0.00355
			(0.00689)	(0.00244)
Positive _Age†			-0.00535	-0.00218
			(0.00645)	(0.00239)
Negative _Female†			0.0503	0.0327
			(0.151)	(0.0673)
Positive _Female†			-0.0803	-0.0110
			(0.145)	(0.0489)
Negative _Income			5.19e-08	1.37e-08
			(0.000)	(0.000)
Positive _Income			-4.23e-08	-2.72e-08
			(0.000)	(0.000)
Negative _Number of Children			-0.0378	-0.00491
			(0.0835)	(0.0309)
Positive _Number of Children			0.0612	0.0246
			(0.0828)	(0.0310)
Negative _Children†			0.497**	0.197
			(0.247)	(0.191)
Positive _Children†			0.0104	-0.0120
			(0.286)	(0.103)
Negative _Married†			0.170	0.0942
			(0.223)	(0.107)
Positive _Married†			0.186	0.0749
			(0.215)	(0.0741)
Negative _Educational level > primary†			0.149	0.0665
			(0.152)	(0.0788)
Positive _Educational level > primary†			0.147	0.0800
			(0.150)	(0.0779)
Negative _Financially literate†			0.0781	0.0294
			(0.161)	(0.0713)
Positive _Financially literate†			-0.0526	-0.0207
			(0.160)	(0.0486)
Negative _Additional provider†			0.0310	0.00700
			(0.250)	(0.0852)
Positive _Additional provider†			0.175	0.108
			(0.223)	(0.121)
Negative _Additional income > income†			-0.175	-0.0703
			(0.212)	(0.0477)
Positive _Additional income > income†			-0.225	-0.0765**
			(0.210)	(0.0344)
Negative _Shock†			0.396***	0.289**

			(0.0971)	(0.130)
Positive _Shock†			0.155	0.0666
			(0.140)	(0.0777)
Negative _Loss averse†			-0.0352	-0.00239
			(0.158)	(0.0541)
Positive _Loss averse†			-0.0170	0.0162
			(0.162)	(0.0630)
Negative _Hyperbolic discounter†			0.0760	0.0337
			(0.159)	(0.0754)
Positive _Hyperbolic discounter†			0.0902	0.0237
			(0.152)	(0.0661)
Observations	354	354	354	354

Dependent variable in regressions is take-up which equals 1 if respondent accepted LIFE offer, 0 if respondent declined LIFE offer. The coefficients are the marginal effect corresponding to the Probit model.

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

(†) dy/dx is for discrete change

of dummy variable from 0 to 1

## Appendix C — Questionnaire

### C1. Questionnaire — Spanish Original

No	Pregunta	Código
1	¿Quién es el entrevistador?	1= Agente 3136 2= Agente 3189 3= Agente 3197 4= Agente 3219
2	¿A qué grupo experimental pertenece el entrevistado?	1 = Controlar 2 = Pérdida 3 = Ganancia
3	El entrevistado aceptó o rechazó la oferta de VIDA?	1 = Aceptar 2 = Disminución
Presentación		
¡Hola! Mi nombre es X y estoy llamando desde N.B Paraguay. Recientemente le hemos contactado con una oferta para suscribirse a nuestro producto de seguro de vida, VIDA, y ahora nos ponemos de nuevo en contacto para encontrar la mejor forma de atender sus necesidades en el futuro. Las preguntas son muy básicas y la entrevista tomará entre 5 y 10 minutos. Obviamente, esta entrevista es estrictamente confidencial, no aparecerá su nombre y usted no debe responder a aquellas preguntas que le incomoden.		
No	Pregunta	Código
4	¿Puedo pedirle algunas informaciones en este sentido?	1 = Si 2 = No → Encuesta final, les damos las gracias por su tiempo
5	¿Cuántos años tiene?	El valor en número
6	¿Dónde vive?	Nombre de la ciudad / pueblo más cercana
7	¿Es usted hombre o mujer?	1 = Hombre 2 = Mujer

8	¿Cuál es su actividad principal?	99 = No quiere declarar 1 = Agricultura 2 = Servicio 3 = Industria 4 = Trabajadores por cuenta propia 5 = Desempleados 6 = Otra( especificar) 99 = No quiere declarar
9	¿Cuál es el nivel más alto de educación que ha alcanzado?	1 = Nivel primario 2 = Nivel secundario 3 = Post secundaria de nivel (es decir, título universitario) 4 = Otra( especificar) 99 = No quiere declarar
10	¿Está casado/a?	1= Yes 2= No 99 = No quiere declarar
11	¿Cuántos hijos tiene?	El valor en número 99 = No quiere declarar
12	¿Cuántas personas viven en su hogar?	El valor en número 99 = No quiere declarar
13	¿Cuál es su ingreso mensual?	El valor en número (PYG) 99 = No quiere declarar
14	¿Hay otras personas que provean ingresos adicionales para el hogar?	1 = Si 2 = No à Q16 99 = No quiere declarar
15	¿Cuánto estima que es ese ingreso mensual adicional?	El valor en número (PYG) 99 = No quiere declarar
16	Ha experimentado algún shock negativo en el último año? (Por ejemplo: un miembro de la familia enfermo, accidentes, pérdida de trabajo)	1 = Si 2 = No à Q18 99 = No quiere declarar
17	¿Qué tipo de shock experimentó?	1 = Enfermo encuestado 2 = Miembro de la familia enfermo 3 = Encuestado perdido de trabajo 4 = Miembro de la familia perdió de trabajo 5 = Demandado en accidente 6 = Miembro de la familia en un accidente 7 = La muerte miembro del hogar 8 = Otra (especificar) 99 = No quiere declarar
18	¿Tiene algún producto financiero formal (por ejemplo, caja de ahorros, tarjeta de crédito o un préstamo)?	1 = Si 2 = No à Q20 99 = No quiere declarar
19	¿Qué tipo de productos financieros formales tiene usted?	1 = Cuenta de ahorros 2 = De crédito / débito en cuenta 3 = Préstamo 4 = Seguro 5 = Cuenta de inversión

		6 = Otra (especificar) 99 = No quiere declarar
20	Me gustaría que se imagine que está jugando a la lotería. Para cada una de las diferentes alternativas que voy a darle, le pido que conteste si desea la primera opción de la lotería donde tiene un 50 percent de probabilidad de ganar y un 50 percent de probabilidad de perder una suma, o si desea la segunda opción de rechazar la lotería	
20a	Ganar 50.000 PYG con una probabilidad de $\frac{1}{2}$ o perder 30.000 PYG. Si no acepta, recibe PYG 0. ¿Acepta o rechaza la lotería?	1 = Aceptar 2 = Rechazar
20b	Ganar 50.000 PYG con una probabilidad de $\frac{1}{2}$ o perder 40.000. Si no acepta, recibe PYG 0. ¿Acepta o rechaza la lotería?	1 = Aceptar 2 = Rechazar
20c	Ganar 50.000 PYG con una probabilidad de $\frac{1}{2}$ o perder 50.000 PYG. Si no acepta, recibe PYG 0. ¿Acepta o rechaza la lotería?	1 = Aceptar 2 = Rechazar
21a	Si pudiera elegir entre recibir 100.000 PYG mañana o 200.000 en un mes, ¿qué elegiría?	1 = 100,000 mañana 2 = 200,000 en un mes
21b	Si pudiera elegir entre recibir 100.000 PYG en un año o 200.000 en un año y un mes, ¿qué elegiría?	1 = 100,000 en un año 2 = 200,000 en un año y un mes
22a	onga que tiene un poco de dinero. ¿Qué es más seguro? ¿Poner su dinero en un negocio o inversión, o ponerlo en múltiples negocios o inversiones?	1 = Un negocio o inversión 2 = Múltiples negocios o inversiones 3 = No sabe
22b	Supongamos que en los próximos 10 años los precios de las cosas que usted compra se dupliquen. Si sus ingresos también se duplican, usted será capaz de comprar menos de lo que puede comprar hoy en día, lo mismo que puede comprar hoy en día, o más de lo que puede comprar hoy en día?	1 = Más 2 = Menos 3 = Mismo 4 = No sabe
22c	Supongamos que usted tiene 100 dólares en una cuenta de ahorros y el banco añade 10 por ciento al año a la cuenta. ¿Cuánto dinero tiene en la cuenta después de cinco años si no ha quitado ningún dinero de allí?	1 = Más 2 = Menos 3 = Mismo 4 = No sabe

## C2. Questionnaire — English Translation

No	Question	Code
1	Who is the interviewer?	1= Agent 3136 2= Agent 3189

		3= Agent 3197 4= Agent 3219
2	What experimental group did the respondent belong to?	1 = Control 2 = Loss 3 = Gain
3	Did the respondent accept or decline to LIFE offer?	1 = Accept 2 = Decline

### Presentation

Hi! My name is X and I call from N.B Paraguay. Recently we contacted you with an offer to sign up for our life insurance product, LIFE, and now we are contacting you again to understand how we can better take care of you needs in the future. The questions are very basic and they interview will take between 5 to 10 minutes. Of course, this interview is strictly confidential, your name will not appear and you don't have to answer any questions you feel is uncomfortable.

No	Question	Code
4	Can I ask you some information in this regard?	1 = Yes  2 = No àEnd survey, thank them for their time
5	How old are you?	Value in number
6	Where do you live?	Name of city/village
7	Are you male or female?	1 = Male 2 = Women 99 = Don't want to state
8	What is your primary activity?	1 = Agriculture 2 = Service 3 = Industry 4 = Self-employed 5 = Unemployed 6 = Other (specify) 99 = Don't want to state
9	What is the highest level of education you have attained?	1 = Primary level 2 = Secondary level 3 = Post-secondary level (i.e. university degree) 4 = Other (specify) 99 = Don't want to state
10	Are you married?	1= Yes 2= No 99 = Don't want to state
11	How many children do you have?	Value in number 99 = Don't want to state
12	How many live in your household?	Value in number 99 = Don't want to state
13	What is your monthly income?	Value in PYG 99 = Don't want to state
14	Is there additional income providers to the household?	1 = Yes 2 = No à Q16



		99 = Don't want to state
15	How much, would you estimate, that the additional monthly income is?	Value in PYG 99 = Don't want to state
16	Have you experienced a negative shock in the last year? (For example household member sick, accident, loss of work)	1 = Yes 2 = No à Q18 99 = Don't want to state
17	What kind of shock did you experience?	1 = Respondent sick 2 = Household member sick 3 = Respondent lost of work 4 = Household member lost of work 5 = Respondent in accident 6 = Household member in accident 7 = Household member death 8 = Other (specify) 99 = Don't want to state
18	Do you have any formal financial product (for example savings account, credit card, or a loan)	1 = Yes 2 = No à Q20 99 = Don't want to state
19	What kind of formal financial products do you have?	1 = Savings account 2 = Credit/debit account 3 = Loan 4 = Insurance 5 = Investment account 6 = Other (specify) 99 = Don't want to state
20	I would like you to imagine that you are playing a lottery. For each of the different alternatives I want you to answer whether you would like the option of the lottery where you have a 50 percent chance of winning a 50 percent chance of losing a sum or reject the lottery	
20a	Win 50,000 PYG with probability $\frac{1}{2}$ or loose 30,000 PYG. If you reject, you receive PYG 0. Do you accept or reject the lottery?	1 = Accept 2 = Reject
20b	Win 50,000 PYG with probability $\frac{1}{2}$ or loose 40,000. If you reject, you receive PYG 0. Do you accept or reject the lottery?	1 = Accept 2 = Reject
20c	Win 50,000 PYG with probability $\frac{1}{2}$ or loose 50,000 PYG. If you reject, you receive PYG 0. Do you accept or reject the lottery?	1 = Accept 2 = Reject
21a	If you could choose to recieve either 100,000 PYG tomorrow or 200,000 in a month, what would you choose?	1 = 100,000 tomorrow 2 = 200,000 in a month

21b	If you could choose to receive either 100,000 PYG in a year or 200,000 in a year and a month, what would you choose?	1 = 100,000 in a year 2 = 200,000 in a year and a month
22a	Suppose you have some money. Is it safer to put your money into one business or investment, or to put your money into multiple businesses or investments?	1 = One business or investment 2 = Multiple businesses or investments 3 = Don't know
22b	Suppose over the next 10 years the prices of the things you buy double. If your income also doubles, will you be able to buy less than you can buy today, the same as you can buy today, or more than you can buy today?	1 = More 2 = Less 3 = Same 4 = Don't know
22c	Suppose you had 100 US dollars in a savings account and the bank adds 10 percent per year to the account. How much money would you have in the account after five years if you did not remove any money from the account?	1 = More  2 = Less 3 = Same 4 = Don't know

### C3. Questionnaire Variables and Descriptions

Variables	Description
Framing	Dummy variable equal to 1 if respondent was exposed to a framed message
Negative	Dummy variable equal to 1 if respondent was exposed to a negatively-framed message
Positive	Dummy variable equal to 1 if respondent was exposed to a positively-framed message
Age	Number years
Children	Dummy variable equal to 1 if respondent has one or more children
Number of Children	Number of children
Size of household	Number of individuals living in the respondent's household
Married	Dummy variable equal to 1 if respondent is married
Female	Dummy variable equal to 1 if respondent female
Income	Monthly income in PYG
Additional provider	Dummy variable equal to 1 if respondent's household has an additional income provider

Additional income	Monthly income in PYG of additional income provider
Additional income > income	Dummy variable equal to 1 if additional providers income is larger than respondents income
Occupation	Type of occupation held by respondent
Education	Educational level attained by the respondent
Educational level > primary	Dummy variable equal to 1 if respondent finished at least primary level education
Financially literate	Dummy variable equal to 1 if respondent is considered financially literate given questionnaire questions(see section 6.2.4 for further rational)
Shock	Dummy variable equal to 1 if respondent experienced a shock to herself or household member within the last 12 months
Type of shock	Type of shock to herself or household member respondent was exposed to within the last 12 months
Loss averse	Dummy variable equal to 1 if respondent is considered loss averse given questionnaire questions(see section 6.2.4 for further rational)
Hyperbolic discounter	Dummy variable equal to 1 if respondent is considered hyperbolic discounter given questionnaire questions (see section 6.2.4 for further rational)

#### **C4. Rational for Processed Questionnaire Variables**

In this section the definitions and measurements for the processed variables derived from answers to questions in the questionnaire are described.

##### *Financial literacy*

To understand the level of financial literacy, three basic multiple-choice questions regarding interest, savings, and loans were asked to the participants in the survey. These were developed in line with similar studies and with partner company. A participant that is able to answer two out of three correct, was considered financially literate.

##### *Loss aversion*

To measure an individual's aversion towards losses, a shortened version of the experiment conducted by Goette et al. (2002) was employed. In the loss aversion scenario, the question is designed as three number of sub questions in which the individuals have to decide for each lottery whether to accept a gamble ( $\frac{1}{2}$  probability of loss and win) or reject it (receive nothing). In each lottery, the winning amount is fixed

while the losing amount is varied. The subjects were presented with the below hypothetical lotteries:

*Lottery A: Win 50,000 PYG (USD 8) with probability  $\frac{1}{2}$  or loose PYG 30,000 (USD 4) with probability  $\frac{1}{2}$ . If subjects reject, they receive PYG 0.*

*Lottery B: Win PYG 50,000 (USD 8) with probability  $\frac{1}{2}$  or loose PYG 40,000 (USD 6) with probability  $\frac{1}{2}$ . If subjects reject, they receive PYG 0.*

*Lottery C: Win PYG 50,000 (USD 8) with probability  $\frac{1}{2}$  or loose PYG 50,000 (USD 8) with probability  $\frac{1}{2}$ . If subjects reject, they receive PYG 0.*

The above lotteries elicit whether an individual exhibit loss aversion or not. More specifically, if an individual rejects one of lottery A or B it can be classified as loss averse. One might argue that an individual that rejects A or B (or C) is analogous to arguing it is risk-averse. However, according to the Rabin's calibration theorem, individuals must be risk neutral for low stake gambles, like the above lotteries. This since a risk-averse individual for a low stake gamble like above would imply extremely high levels of risk aversion for slightly higher stake levels. As follows, such unreasonably high levels of risk aversion can be safely ruled out according to Rabin (2000). A limitation of this test of loss aversion is that it was hypothetical and thus the results are expected to be slightly biased towards less loss aversion than what one would expect from a real gamble.

#### *Hyperbolic discounting*

Two questions were included in the questionnaire that aimed at capturing the subject's time preferences:

*If you could choose one of the following, which one would you chose?*

- 1. PYG 100,000 (USD 16) tomorrow*
- 2. PYG 200,000 (USD 32) in a month*

*If you could choose one of the following, which one would you chose?*

- 1. PYG 100,000 (USD 16) in a year*
- 2. PYG 200,000 (USD 32) in a year and one month*

The aim with these questions was to elicit how impatient the subject is at different points in time (i.e. it's time preferences). If the subject answered of 1 and 1, would indicate impatience regardless of time, while on the contrary if the subject answered 2 and 2 this would indicate patience regardless of time. If the subject answered 1 and 2, that would suggest impatience in present time but patience for a decision about the future (i.e. hyperbolic preferences). As follows, answer 1,1 or 2,2 indicates no hyperbolic discounting.

## Appendix D — Framing Message

### D1. Framing Message — Spanish Original

El Mensaje Positivamente	El Mensaje Negativamente
<p>Hoy en día, la vida está llena de incertidumbres; tener un VIDA es garantizar que sus seres queridos sigan disfrutando de una buena calidad de vida, más allá de cualquier imprevisto.</p> <p>Tener VIDA es una inversión a largo plazo, si tiene seguro de vida usted puede garantizar la educación, la seguridad y el futuro matrimonio de sus hijos, en caso de que a usted le suceda algún imprevisto.</p> <p>Si usted tiene VIDA, no tiene que depender del gobierno para cuidar de su familia cuando usted ya no esté.</p>	<p>Hoy en día, la vida está llena de incertidumbres; si usted no tiene VIDA, no será capaz de garantizar que sus seres queridos sigan disfrutando de una buena calidad de vida, más allá de cualquier imprevisto.</p> <p>Tener VIDA es una inversión a largo plazo, si no lo tiene usted no será capaz de garantizar la educación, la seguridad y el futuro matrimonio de sus hijos, en caso de que a usted le suceda algún imprevisto.</p> <p>Si usted no tiene VIDA, depende del gobierno para cuidar de su familia cuando usted ya no esté</p>