CHAPTER 10

Nigeria's Nollywood nudge

An entertaining approach to saving

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ABSTRACT

Can edutainment be an effective tool to strengthen financial inclusion? In collaboration with a local nongovernmental organization (Credit Awareness) and a microfinance bank (Accion), we explore the short- and medium-term savings decisions of a group of microentrepreneurs in Lagos, Nigeria, by inviting business owners to one of four randomly allocated events: a movie screening of The Story of Gold—*a Nollywood (the Nigerian version of Hollywood) film encouraging entrepreneurs to save responsibly; an event where business owners are shown a "placebo" screening of a movie with no financial education content and offered on-the-spot microsavings accounts through Accion; a combined event, screening* The Story of Gold *and offering on-the-spot accounts; and a screening of the placebo film only as our control group. We find that entrepreneurs watching* The Story of Gold *were 5 percentage points more likely to open a savings account on the spot than those in placebo screenings, and this effect was mostly driven by male business owners. In contrast, less than 1 percent of entrepreneurs who were not offered an on-the-spot opportunity signed up for a savings account after the screening. In the longer run, only moderate changes in attitudes and perceptions were found, while savings and borrowing behavior was unchanged four*

months after the screening. This suggests that, while influencing short-term deci-sions is possible, longer-run behavior is far less malleable through one-off events. This chapter contributes to the literature by directly testing the importance of linking emotional stimulus to financial messages in order to influence short-term savings decisions and identifying the important interaction between emotional stimulus and the opportunity to act on this stimulus.

10.1   BACKGROUND

Traditional rational agent economic models rely on the assumption that people make decisions based on a rational and deliberate consideration of all costs and benefits associated with the action, conditional on available knowledge. However, low-income individuals regularly make seemingly suboptimal financial decisions, and there are strong correlations between financial knowledge, sound financial decisions, and the use of financial products (e.g., Hilgert, Hogarth, and Beverly 2003). This has led to a growing body of literature exploring the importance of providing financial education and training to individuals and entrepreneurs to effectively improve knowledge, leading to improved financial capabilities and decisions. Despite strong correlations (e.g., Lusardi 2007), rigorous causal impact evaluations of financial literacy training programs have shown mixed results, often with little to no effect on actual behavior (e.g., Cole, Sampson, and Zia 2011) or with positive impacts only through resource-intensive interventions (see, e.g., Bruhn, Ibarra, and McKenzie in chapter 7 of this volume). These limited effects could be explained by (1) only small increases in actual knowledge, or (2) the fact that people do not fully apply this knowledge when making financial decisions such as when and how much to save. Evidence from psychology and behavioral economics highlights the fact that people act within "bounded rationality," often relying on heuristics to simplify their choices. Kahneman (2003) presents a frame-work that differentiates between two states that drive human decision making: intuition and reasoning. Decisions based on intuition are "fast, automatic, effort-less, and often emotionally charged," whereas reasoning is "slower, effortful, and deliberately controlled" (Kahneman 2003, 1451). He argues that most decisions are based on intuition, where reasoning acts as a safeguard, rather than moti-vator, of many behaviors. This insight has important potential implications on how best to influence financial behavior. Even when people are fully aware of the most appropriate action to take, cognitive biases and heuristics may prevent this knowledge from translating into action. Thus, the traditional causal framework linking improved financial knowledge to changes in awareness, perceptions, atti-tudes, and behavior may underestimate important psychological barriers to finan-cial inclusion that weaken the suggested causal chain. Acknowledgment that we base many decisions on heuristics rather than full information helps to explain why, for instance, "rule-of-thumb" approaches to financial education can be more

effective at changing behavior than teaching more detailed accounting principles (Drexler, Fischer, and Schoar 2012).

This evaluation explores the effectiveness of mass and social media in delivering financial messages in order to induce behavior change beneficial to recipients. Specifically, building on the evidence that emotions and heuristics are likely to influence decisions, this study explores the effectiveness of using a Nollywood movie, *The Story of Gold*, to relay a simple message of safe saving and responsible borrowing through an emotionally charged storyline to a group of 2,938 micro-entrepreneurs in Lagos, Nigeria. By intertwining the main message of responsible financial behavior into an accessible, entertaining, and relatable story about twin sisters trying to succeed in business, the movie appeals to emotion, without providing specific information related to common measures of financial literacy such as understanding interest rates and inflation. The underlying assumption is that a movie loses its entertainment value when people start explaining how to calculate risk-adjusted returns to investments.

The Story of Gold is a one-off event aiming to influence transient emotions and lower transaction costs. However, responsible saving is a long-term commitment requiring continued and deliberate effort. The objective of the study was to identify whether this one-off event could spur action (in our case, opening a microsavings account) and serve as a catalyst to build financial capabilities through direct and continued exposure to financial institutions and products. The theory of behavioral consistency—where actions based on transient emotions have been identified to influence later decisions derived from people's desire to be consistent with previous actions—justifies the possible effectiveness of this "foot-in-the-door" hypothesis, but there is limited evidence on how this might influence savings behavior in particular.[1] Hence, shedding some light on whether and how interventions that work through affecting perception and emotions in the short term can produce change in behavior and commitment in the longer term is an important empirical topic.

The study uses a 2x2 randomized factorial design to exogenously vary (1) exposure to *The Story of Gold* and (2) access to financial products by offering free on-the-spot microsavings accounts through a microfinance bank (MFB) at selected screening events. Through this framework, we are able to test the relative effectiveness of (1) using "edutainment" (i.e., education through entertainment) to motivate action, (2) reducing access constraints to financial products, and (3) the interaction of these two.

We find that entrepreneurs in all three treatment arms increase self-reported trust in MFBs, but the treatment arms including *The Story of Gold* had a larger

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[1] More generally, this can be related to the path-dependence principle in economics and sociology (Pierson 2000).

effect on male self-reported trust. The combination of the movie with the presence of an MFB to help facilitate the opening of a savings account (at the time of the screening) was substantially more effective in motivating business owners to open an account than the presence of an MFB combined with a placebo screening—and this was most effective for influencing male decisions, increasing savings account sign-up rates from 1 percent to 11 percent. Four months after the event, we find limited or no sustained impacts on perceptions of MFBs and intention to borrow and save, and no effect on the likelihood of having a savings account (we find that many of the business owners who opened an account at the screening already had a savings account, resulting in this null effect).

This suggests that, even with relatively low-budget productions, it is possible to use entertainment to motivate action in the short term, but long-term behavior is less malleable.[2] Furthermore, having a direct opportunity to act in the moment may significantly increase the impact of edutainment activities that influence transient emotions. Care needs to be taken when developing the choice architecture designed to nudge people toward more "optimal" financial decisions, as this may induce unexpected behavior leading to further suboptimal outcomes.

The rest of the chapter is structured as follows: in section 10.2, we explain our rationale to test edutainment—in contrast to more standard financial education programs—as a means to change savings behavior. In section 10.3, we describe the interventions; sections 10.4 and 10.5 provide an overview of the identification strategy, sampling, baseline balance, and attrition. Section 10.6 presents the econometric framework for analysis. Section 10.7 presents results, with robustness checks included in section 10.8. We provide a discussion and conclude in section 10.9.

10.2   A NUDGE FOR BETTER SAVINGS OUTCOMES?

This section explains the reasoning behind this chapter's approach to test entertainment media to nudge savings behavior. It first presents the state of poor financial literacy and access to finance in Nigeria. We then show that traditional financial education programs have mostly failed to deliver results to ameliorate this condition. We next argue that psychological biases might partly cause this inefficient savings behavior, and that they cannot be overcome by learning about the right way to do things alone. We show how to make existing biases work in favor of sound financial decision making, "work[ing] around human nature to help people save as they aspire to" (Karlan, Ratan, and Zinman 2013).[3] We then present

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[2] This could indicate that commitment savings accounts might be necessary to solidify longer-term behavior.

[3] See, e.g., Sunstein and Thaler (2003) for a discussion of libertarian paternalism.

how edutainment has previously been used to aim at these biases to transform behavior. Lastly, we briefly describe Nollywood and its potential to serve as a vehicle to spread messages broadly.

10.2.1 Financial literacy and access to finance in Nigeria

Although improvements have been registered in the last three years, 46 percent of the Nigerian population remains financially excluded, with no access to formal or informal financial services.[4] This compares unfavorably to countries such as Kenya and Botswana (33 percent); in South Africa, only one-quarter of the population is financially excluded. Only 25 percent of Nigerian's population has a formal savings account, excluding 66 million adults. The use of MFB accounts is even less widespread, with only 4.6 percent of the adult population having a savings account with an MFB. This lack of access is not derived from a lack of interest or demand. According to recent survey results, almost 75 percent of the unbanked population in Nigeria report that they would like to have a bank account, and over 80 percent of the population receives financial advice from family and friends. In theory, saving helps individuals and businesses by enabling consumption smoothing for volatile incomes, serving as insurance for the poor, growing investments, and allowing better access to microfinance (e.g., Deaton 1989; Karlan, Ratan, and Zinman 2013). However, "…very few people possess the extensive financial knowledge conducive to making and executing complex plans" (Lusardi and Mitchell 2013). But knowledge and acting on knowledge are two different concepts, and individuals often make poor financial decisions—even when better options are readily available (Pathak, Holmes, and Zimmerman 2011; Willis 2011), and even when they express the desire to act differently (Thaler and Benartzi 2004). Building financial capacity in Nigeria represents a big step in helping consumers acquire the skills and knowledge to be capable, confident, and self-reliant when making financial decisions. Evidence on the best way to build this capacity is, however, lacking. It is within this context that the World Bank has worked closely with the Central Bank of Nigeria to develop and implement the World Bank–funded Micro, Small, and Medium Enterprises project to test innovative consumer education programs such as the one evaluated here.[5]

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[4] Results presented here are based on a recent nationally representative survey of 20,000 consumers conducted by EFiNA in 2010, http://www.efina.org.ng/our-work/research/access-to-financial-services-in-nigeria-survey/ (accessed April 23, 2014).

[5] The project financed the production of the film, but Credit Awareness was responsible for both overseeing this production and the subsequent roll-out.

10.2.2   Financial education and business training programs

In order to improve financial decision making, a common strategy is to offer financial or business training. Evidence on the impact of these programs is mixed. While financial literacy is correlated with household well-being (Mulaj and Jack 2012) and less financial decision-making errors (Lusardi and Tufano 2009; Stango and Zinman 2009) research results do not fully support a causal chain leading from financial education to higher financial literacy and subsequently improved behavior (Duflo and Saez 2003; Willis 2011).[6] Financial literacy may therefore be a secondary or even tertiary determinant of individual financial behavior (Cole and Fernando 2008). Intensity, exposure, quality, and training content also vary widely (Drexler, Fischer, and Schoar 2012). Willis (2011) argues that effective financial education would need to be "extensive, intensive, frequent, mandatory, and provided at the point of decision making, in a one-on-one setting, with the content personalized for each consumer." Also, participation levels for voluntary financial education programs are "extremely low," even for very short courses (see chapter 7). This presents a concern regarding the power of the analysis; but more broadly, not attending the courses might be an expression of economically optimal behavior by the potential recipient, reflecting the poor perceived efficacy of these programs.[7] The poor results of traditional education programs made us think about alternative interventions such as making use of existing behavioral biases to change detrimental behavior.

10.2.3   Bounded rationality

A large body of literature from the fields of psychology and behavioral economics attempts to shed light on the fact that individuals often make irrational decisions or "mistakes" (being limited by "bounded rationality"), even when they know better. To present a framework of this bounded rationality, Kahneman (2003) introduces the "architecture of cognition," distinguishing two models of thinking and deciding, broadly (and metaphorically) summarized as intuition—System 1—and reasoning—System 2:

> The operations of System 1 are fast, automatic, effortless, associative, and often emotionally charged; they are also governed by habit, and therefore difficult to

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[6] An increase in knowledge does not necessarily change attitudes and habits, also among more educated populations (Thaler and Benartzi 2004).

[7] In their literature review, McKenzie and Woodruff (2012) come to the conclusion that many impact evaluations of training programs are inconclusive due to technical shortcomings such as heterogeneity in length, content, and types of firms participating. Many studies are underpowered, with hurried follow-up surveys (within one year of the training) covering small sample sizes, making it difficult (or impossible) to detect long-term effects. They also suffer from attrition and measurement problems of relevant business indicators.

control or modify. The operations of System 2 are slower, serial, effortful, and deliberately controlled; they are also relatively flexible and potentially rule-governed… (Kahneman 2003, 1451–52).

The two systems can provide crucial insights on how to influence financial decision making. If System 1 mainly drives financial behavior (intuition), models aiming to affect behavior through System 2 (reasoning) such as information campaigns or business training, assuming a "rational agent of economic theory" (Kahneman 2003), might prove to be ineffective (which is supported by some evidence; see, e.g., Cole, Sampson, and Zia 2009).[8]

10.2.4 Accessing System 1

References (such as expectations, emotional and motivational arousal, and other phenomena) can increase the accessibility of thoughts that are important for decision making (Andrade and Ariely 2009). Loewenstein and Lerner (2003) argue that even small "primers" can influence behavior, even when this "priming" is unnoticeable by the stimulated individual.[9] In the field of marketing, Bertrand et al. (2010), for example, find that "persuasive" advertising can play a significant role in decision making, even if the content of the advertising is not directly related to the product being sold. There are different kinds of references applicable to our setting, as discussed below.

THE "AFFECT HEURISTIC"

People tend to base decisions that are being taken *now* on past decisions (unconsciously), shortcutting the thought-intensive System 2 process of deliberately evaluating the pros and cons of the respective decision at hand. They also base decisions on whether they *like* something, rather than carefully evaluating benefits and disadvantages (Slovic et al. 2007), answering a difficult question (what are the pros and cons?) by answering the easier question instead (how do I feel about it?)—a cognitive shortcut, where intuition (which resembles perception) acts as a substitute for reasoning (Kahneman 2003). Advertising professionals often make use of these phenomena by focusing on conveying a good feeling about their product to their audience rather than stressing the beneficial effects of a purchase.

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[8] Kahneman, e.g., argues that the assumption that deciders evaluate outcomes by the utility of final asset positions is "easily" proven to be wrong.

[9] Willis (2011): "Decisions can be strongly affected by even transitory emotions related to nothing more than the weather."

BEHAVIORAL CONSISTENCY

Another important heuristic is the tendency to behave consistently with previous decision making (Cialdini, Trost, and Newsom 1995). Although the incidental effect of emotions might be short lived, the influence of mild incidental emotions can last longer than the emotional experience itself (Andrade and Ariely 2009). Goldberg, Lerner, and Tetlock (1999), for example, illustrate the effects of an anger-inducing film on subsequent—unrelated—actions. Decisions based on a short-lived incidental emotion can develop the foundation for future choices and hence outlive the original cause (the emotion) for the behavior (Andrade and Ariely 2009). Retrospectively, people tend to identify their past choice as an expression of their past preference (Schwarz and Clore 1983); in reality, thoughts and actions are rather intuitive most of the time (as argued in Kahneman 2003). In this manner, initial emotions serve as an "anchor" for later decisions (Tversky and Kahneman 1974), reinforcing behavioral consistency.[10] Similarly, hypothetical commitment carries over to real decisions if they are presented later (Ariely, Loewenstein, and Prelec 2003).[11]

KNOWLEDGE AND TRUST

An initial reference or action can have longer-lasting effects by fostering cooperative behavior based on knowledge and trust in the institution generated through repeated interaction (Mailath and Samuelson 2006). Once the initial burden of interacting in a new environment is overcome, subsequent interactions might become easier, as benefits become more salient. Following this rationale, exposure to media that induce emotions can trigger an initial action, providing a "foot-in-the-door," which may influence later actions (Freedman and Fraser 1966).

EMOTIONS AND DECISIONS: GENDER DIFFERENTIALS

A sizable body of research looks into the question of whether emotions show differential gender effects on risk preferences, social preferences, and competitive preferences. Harshman and Paivio (1987) review evidence on studies showing that women experience emotions more strongly than men. Women are often more risk averse (Croson and Gneezy 2009; Sunden and Surette 1998) and tend to save more conservatively than men (Hinz, McCarthy, and Turner 1997).[12] However, Finucane et al. (2000) find gender differences only for whites ("white

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[10] The so-called "sunk cost fallacy" or the "endowment effect" are related concepts. People have a hard time to correct previous actions by realizing financial losses, consequentially making things worse (Arkes and Blumer 1985; Thaler 1981).

[11] Other relevant studies on past decisions affecting the present include Ottati and Isbell (1996) and Pocheptsova and Novemsky (2010).

[12] Inability to determine who makes the financial decisions in a household is a potential problem for the validity of these results.

male effect"), which hints at cultural biases causing gender differences. Brought together, the literature suggests that gender differentials tend to be context (and culture) specific with few clear and unambiguous traits across population groups and activities.

10.2.5 Edutainment and behavior change

Drawing from the above-mentioned studies and findings, the question arises as to whether (1) commercial entertainment media could be used to combine information (education) delivery with (2) behavioral treatment arms, such as nudges, varying choice architecture, and/or emotional stimulation. Could combining the two perhaps help improve literacy levels and, at the same time, overcome some of the psychological barriers that stimulate bad behavior? While commercial media have for a long time been associated with effective changes in social behavior (both positive and negative), they have rarely been used in the field of finance. In other sectors, such as health and education, these tools have been used with success for a long time. For instance, as Brazil's Rede Globo network grew through the 1970s and 1980s, women also began having fewer children, experiencing the same decrease in fertility as with two extra years of education (La Ferrara, Chong, and Duryea 2012).

While using mass media to transmit educational messages is not a novel approach, using edutainment to improve financial capabilities is less explored. The *telenovela Nuestro Barrio* is a prominent example from the United States aimed at Hispanic immigrants, where research found that it successfully conveyed the importance of formal bank accounts to the largely underbanked community (Spader et al. 2009). Most recently, a World Bank–supported study evaluated the impact of a South African soap opera with financial messages (*Scandal!*). The study made use of an encouragement design to compare outcomes between a randomly selected group that watched *Scandal!* and another group that watched a "placebo" show without financial education content. Watching *Scandal!* resulted in higher financial knowledge scores, increased borrowing from formal sources, and decreased the likelihood of entering into hire purchase agreements (see chapter 11).

Edutainment, as an alternative to more formal classroom learning, has the potential to be distributed more widely at lower marginal costs and may appeal to a broader base, reaching out to people who may not otherwise be interested in the topic. By creating emotional connections to the characters and the storyline, the process is believed to help internalize and operationalize the learning. Since this is a relatively new approach in the field of finance, there is a need for rigorous evaluation of these programs to assess the extent to which entertainment media are indeed effective in changing individuals' financial behavior. In particular, one question is about the role of edutainment through a one-off event (as is the case for *The Story of Gold*) as opposed to continued exposure to the message (as in

the case of the soap operas mentioned above) that could make the emotional connections much stronger.

10.2.6 Nollywood

Movies from the Nigerian film industry penetrate almost all households in Nigeria—and across much of Africa—making them the ideal platform to deliver edutainment content. Although producing relatively low-budget films, Nollywood is now the second largest movie industry in the world in terms of production, only trailing India's Bollywood, with an output of about 200 films every month. The industry is also the second largest employer in Nigeria, after the government. Films are largely made for home consumption rather than for the bigger cinema screenings. The stories told put fundamental human emotions and strong narratives front and center: love, hate, envy, upward mobility, urban culture, and witchcraft. Due to their ubiquity, movies have the potential to reach large audiences with ease, surpassing traditional ways of conveying messages. Even politicians have understood the potential of these movies, posing with their stars at rallies and events. President Goodluck Jonathan recently announced support for a ₦3 billion facility to support the Nigerian movie industry (*Vanguard* 2013). With financial and political backing, together with large demand, Nollywood provides a unique opportunity to disseminate knowledge and build a culture of responsible financial decision making, reaching out to otherwise marginalized communities.

10.2.7 Application

Under the assumption that System 1 is a driver of many financial decisions and accessibility and "narrow framing" (Kahneman and Lovallo 1993) and references are indeed important, *The Story of Gold* was developed to place more weight on intuition than reasoning to influence decision making.[13]

The movie seeks to address System 1 in order to encourage behavior change by promoting the take-up and use of savings accounts in the short term and encourage sustained use by building experience (offering a foot in the door) and promoting longer-term behavioral consistency with the original action. Thus, while the Nollywood movie could possibly also augment knowledge and awareness that in turn leads to better reasoning, the main intention of using the movie is to target business owners' intuitive behavior by influencing emotions, making relevant thoughts more accessible—especially when coupled with the immediate availability of signing up for savings accounts after the screening (reduction of transaction costs).

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[13] Kahneman (2003) stresses the point that preferences of System 1 are shaped by emotions of the moment and need not be internally coherent or reasonable. The preferences of Systems 1 and 2 therefore do not have to be consistent.

10.3   DESCRIPTION OF INTERVENTION

The Story of Gold is a feature-length Nollywood movie produced and distributed by Credit Awareness, a local nongovernmental organization promoting "safe savings and responsible borrowing."[14] It tells the story of identical twin sisters in Nigeria. Although identical in appearance, the decisions they make when faced with different financial choices affect their lives as well as those around them and ultimately lead them down different paths, one making sound financial decisions and succeeding in business and the other falling into a debt trap. The movie aims to impress upon low-income individuals with limited formal education the importance of saving with a formal financial institution and borrowing responsibly. Focusing on this simple message and highlighting the repercussions of poor financial decisions, *The Story of Gold* focuses on the heuristic and emotional elements of human decisions to promote a stronger savings culture, facilitated by Credit Awareness. A partner MFB, Accion, participated in selected screening events and briefly presented its main savings and borrowing products after the show.[15] It then provided all the necessary paperwork for participants to open a "Brighta Purse" business savings account on the spot if they were interested in doing so. The microsavings account is geared toward microentrepreneurs as an entry savings and transaction account, requiring no initiation fees (although a minimum balance of ₦500 is needed—one-third of average daily profits from our sample of entrepreneurs). Interest in this savings account is then a function of the amount of savings held. If entrepreneurs expressed an interest in opening an account but did not have the opening balance on hand, they could sign up their names and contact details and follow up with Accion at a later date to confirm the account opening. In this case, the combined intervention aimed at simultaneously encouraging people to save through the movie's message while reducing access barriers almost to zero with the presence of the MFB at the screening events. The hypothesis was that the movie would serve to inform, and also motivate business owners to act and open a new savings account. The motivational effect of the movie was expected to wear off soon after the screening; giving business owners the opportunity to act in the moment may increase the potential for this short-term motivation to translate into action. By overcoming these barriers to formal financial participation, the study could then explore whether this engagement resulted in longer-term interactions, leading to improved use of financial products over time.

While Credit Awareness plans to roll out the screening events across the country, the evaluation focused on a series of early pilot screenings to test the

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[14] http://www.creditawarenessnigeria.com/home.php (accessed April 23, 2014).

[15] http://www.Accion.org/our-impact/nigeria (accessed April 23, 2014).

modality and learn before scale-up. The pilot screenings were conducted at local community halls in the Ikotun region of Lagos—home to a sprawling street market. The typical screening event would be held in a hall, with local traders invited to attend. The event lasted approximately three hours, starting with a brief introduction, the screening of the movie, and an open discussion after the event to reflect on the story's core messages. This would be followed by engagement with the MFB. For the purpose of the evaluation, two extra elements were included to the standard Credit Awareness model: (1) to ensure compliance with the assignment strategy, each participant received a personalized invitation with a photograph to confirm his or her identity; and (2) to improve participation rates, a lottery was held at the end of the event in which participants could win spot prizes.

10.4   SAMPLING AND IDENTIFICATION STRATEGY

Two community halls large enough to hold 200 people were identified in the Ikotun area of Lagos. A radius of 2 kilometers was used to set the boundaries to ensure that all participants could easily access the halls without needing to use public transport. A census of the area was then taken in July 2012, together with a short baseline listing questionnaire used to stratify the sample as to whether they had a savings account, whether they kept financial records, and if their store was in the main (official) market area or in the surrounding Lagos streets. In total, 2,938 microentrepreneurs were recorded with geopositioning and photographs to confirm their identity in follow-up interactions and verify intervention compliance (see figure 10.1 for an example of the invitation created from this information to verify identity at the event). The criterion used for selection into the sample was being the owner/operator of a business operating within the study area. These businesses were then randomized into one of five groups: (1) pure control, (2) placebo screening, (3) *The Story of Gold* screening (Movie), (4) placebo screening plus presence of MFB (MFB), and (5) *The Story of Gold* screening plus presence of MFB (Movie/MFB).

The **pure control** group was not invited to attend any screening. The other four groups were invited to attend one of eight screenings (two per group). Invitations were delivered one week before the screening, and two screenings took place every Thursday during September 2012 for four weeks. Invitations to each screening were identical, and events were held at the same time each week (8 –11 a.m.), chosen because the cleaning of the market took place at this time, ensuring low opportunity costs to participation since businesses were not allowed to trade during this time. This uniformity of invitations and event dates was used to minimize the possibility of differential take-up across screening events.

In **placebo screenings**, people were shown a Nollywood movie that had no financial messages associated with it, but were given a brief talk after the event about the importance of hygiene in markets to provide quality products

FIGURE 10.1 Sample invitation

and services. This was done explicitly to control for the event effect of having received a personalized invitation and participation in a big screening event possibly confounding results, and also to create a comparable group of compliers in both treatment and control groups to simplify the analysis. The standard Credit Awareness program (screening *The Story of Gold* and interacting with an MFB) was split in order to differentiate the impact of the movie from the increased access of financial products coming from the MFB's presence. As such, a 2x2 factorial design was implemented for the treatment arms in order to detect the differential impact of each component and the interaction effect relative to the placebo screening.

In total, 1,261 people (60 percent of those invited) attended the movie screenings; a short questionnaire was administered at the end of the event to measure perceptions and attitudes about savings, borrowing, and MFBs. Administrative records were kept at the MFB and Movie/MFB events to record the people who (1) engaged with Accion to open an account at a later stage and (2) actually opened an account at the event.

Four months later, in February 2013, a follow-up survey was conducted on all baseline respondents to collect longer-term data on attitudes, intentions, and behaviors with respect to saving and borrowing activities to assess the longevity of any impacts identified at the screenings.

10.5   OUTCOME MEASURES, BASELINE BALANCE, AND ATTRITION

10.5.1   Outcome measures

The main outcome measures are aligned with the essential messages of the Nolly-wood movie. They can be divided into four categories that capture (1) percep-tions of MFBs, (2) perceptions of women, (3) intentions to save or borrow, and (4) savings and borrowing behavior.

Regarding the perceptions of MFBs, the survey asked the microentrepreneurs if they agree or disagree with statements such as, "I would trust an MFB to keep my money safe," "MFBs treat people with respect," and "If I apply to an MFB for a loan, my application will be accepted." Since the movie focused on female entre-preneurs as the main protagonists, we also explore self-reported perceptions of female business competence and access to financial opportunities. Questions designed to explore perceptions of women as business owners or financial deci-sion makers ask respondents if they agree or disagree with statements such as "Women can run businesses just as well as men," "Women make better financial decisions than men," and "It is easier for men to receive loans than for women." The intention to save or borrow questions capture whether respondents agree with statements such as "I plan to apply for a loan in the next six months" or "I will save some money next month." Self-reported savings and borrowing behavior is captured through responses to questions such as "I saved money last month," the amount of total savings relative to the monthly income earned, savings kept at MFBs, savings at commercial banks, outstanding loans from commercial banks, MFBs, suppliers, moneylenders, or family/friends. Actual savings behavior is measured through administrative records of those who engaged with represen-tatives of Accion to open an account and those who actually opened an account at the screening event.

Neither financial knowledge nor basic numeracy skills were specifically addressed in the movie's storyline. Nevertheless, the survey also included six quiz-like questions with true and false choices to assess respondents' understanding of basic financial concepts as well as their numeracy skills. The underlying motivation for including these questions is that economic models of savings and investment choice consider both as indispensable for good financial decision making (Lusardi and Mitchell 2013). In particular, respondents were required to do simple division, perform basic calculations related to interest rates, identify the better bargain among two different savings and loan products, and demonstrate their under-standing of how inflation affects their savings. Lastly, one question aimed to eval-uate respondents' know-how in successfully interacting with financial institutions (awareness of required documentation for being able to open an account).

Since single questions provide a rather incomplete picture of respondents' levels of financial knowledge, an arithmetic financial knowledge score ranging from 0 to 6 was calculated by summing up the correct answers to these six questions.

To reflect the level of difficulty associated with each question, an alternative financial knowledge score has been developed, which weights every question with the inverse of the proportion of respondents who were able to provide a correct answer. Larger weights are given to questions that fewer people answered correctly.

10.5.2   Baseline balance

Table 10.1 reports summary statistics for the entire sample, as well as for each of the five assignment groups for all exogenous variables including information from the baseline listing and time-invariant variables measured at follow-up. Results are thus reported on balance for business owners who were included in both the baseline and follow-up surveys (n = 2,357). The microentrepreneurs comprising the total sample are on average 38 years old, predominantly female (71 percent), married (84 percent), Christian (64 percent), and able to speak English (70 percent); they completed high school as their highest level of education (50 percent), and live in households with an average size of 4.5 individuals. They are experienced in running a business (on average around 11 years of experience), and more than half of the sample (57 percent) already holds a savings account.

Given that treatment was randomly assigned, the five assignment groups are expected to have similar characteristics. Columns 4, 6, 8, and 10 in table 10.1 show the mean baseline characteristics of all microentrepreneurs surveyed at baseline by treatment group (including the pure control). Columns 5, 7, 9, and 11 report the p-values of the t-test for equality of each of these mean baseline characteristics against those in the placebo control group. No characteristics are significantly different from the placebo control group at the 5 percent level for the three treatments, except for the proportion of Igbo business owners in the Movie/MFB group. The expectation of balance on observable baseline characteristics also holds across treatment groups, which supports our claim that the randomization worked well. We see for the pure control group, however, that 3 of the 26 characteristics are significantly different at a 5 percent level (we would expect significant difference in 1 of every 20 measures by chance). Of particularly concern is an imbalance in having a savings account (56 percent in the placebo control group; 63 percent in the pure control group). This is likely to have been driven by differential nonresponse at follow-up, where we find higher nonresponse rates in the pure control group. We also explore balance across treatment groups for male and female business owners separately (tables 10A.1, 10A.2, 10A.3, and 10A.4 in the annex to this chapter) and find similar results.

TABLE 10.1 Baseline balance

VARIABLE	TOTAL SAMPLE N (1)	TOTAL SAMPLE MEAN (2)	CONTROL MEAN (3)	MOVIE MEAN (4)	MOVIE P-VALUE (5)	MFB MEAN (6)	MFB P-VALUE (7)	MOVIE/MFB MEAN (8)	MOVIE/MFB P-VALUE (9)	PURE CONTROL MEAN (10)	PURE CONTROL P-VALUE (11)
Personal characteristics											
Age of respondent	2,314	37.76	37.90	37.52	0.553	37.89	0.996	37.31	0.339	38.44	0.427
Gender (male)	2,358	0.29	0.26	0.30	0.173	0.30	0.220	0.29	0.371	0.31	0.138
Married	2,357	0.84	0.85	0.82	0.211	0.86	0.557	0.82	0.206	0.86	0.845
Widowed	2,357	0.02	0.02	0.03	0.094*	0.01	0.284	0.02	0.984	0.03	0.264
Single	2,357	0.14	0.13	0.15	0.551	0.13	0.795	0.16	0.190	0.12	0.494
Muslim	2,356	0.36	0.35	0.40	0.136	0.35	0.793	0.36	0.717	0.33	0.421
Christian	2,356	0.64	0.64	0.60	0.154	0.65	0.958	0.63	0.621	0.67	0.387
Can speak English	2,346	0.70	0.70	0.67	0.321	0.72	0.450	0.71	0.636	0.73	0.382
Igbo	2,356	0.20	0.17	0.17	0.925	0.21	0.141	0.22	0.104	0.24	0.012**
Yoruba	2,356	0.75	0.78	0.78	0.873	0.75	0.219	0.72	0.035**	0.71	0.025*
Other ethnicity	2,356	0.05	0.05	0.05	0.635	0.04	0.777	0.06	0.242	0.04	0.839
Education											
No completed school	2,356	0.07	0.06	0.07	0.421	0.08	0.180	0.08	0.297	0.08	0.347
Primary school	2,356	0.22	0.24	0.24	0.968	0.21	0.164	0.21	0.209	0.19	0.067*
High school diploma	2,356	0.50	0.49	0.48	0.749	0.50	0.754	0.51	0.527	0.53	0.329
Diploma	2,356	0.10	0.11	0.10	0.512	0.11	0.825	0.09	0.276	0.11	0.945
Graduate school	2,356	0.10	0.09	0.10	0.866	0.10	0.626	0.11	0.425	0.09	0.916
Household characteristics											
Household size	2,343	4.53	4.58	4.57	0.902	4.43	0.168	4.48	0.395	4.61	0.825
Number of children below 12	2,311	1.33	1.38	1.29	0.230	1.30	0.311	1.25	0.080*	1.44	0.524
Number of dependents	2,322	2.44	2.45	2.39	0.671	2.41	0.769	2.41	0.747	2.57	0.385
# of dependents outside household	2,213	1.55	1.50	1.53	0.843	1.53	0.827	1.54	0.784	1.66	0.330
Business characteristics											
Months in operation	2,310	97.40	98.69	97.58	0.847	96.98	0.771	101.02	0.698	91.03	0.218
Has a savings account	2,350	0.57	0.56	0.57	0.732	0.54	0.624	0.57	0.753	0.63	0.035**
Keeps written financial records	2,340	0.37	0.36	0.35	0.684	0.37	0.708	0.38	0.619	0.40	0.315
Operating inside main market	2,324	0.25	0.24	0.26	0.500	0.24	0.985	0.26	0.535	0.27	0.287
Number of employees	2,352	1.44	1.57	1.46	0.345	1.40	0.169	1.39	0.161	1.36	0.168
Business experience in years	2,350	10.75	10.84	10.77	0.892	10.78	0.907	10.48	0.497	10.97	0.834

Note: *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 10.2 reports the mean characteristics of those who were assigned to a screening event (column 1), which excludes individuals in the pure control group; and details observable differences of those who attended (column 2) with those who did not (column 3). As indicated in column 4, the selection into screenings is strongly correlated with more educated microentrepreneurs, who are more likely to speak English, enjoy higher access to financial products, and keep financial

TABLE 10.2 Selection into screenings

VARIABLE	TOTAL		PARTICIPATED		DID NOT PARTICIPATE		
	N (1)	MEAN (2)	N (3)	MEAN (4)	N (5)	MEAN (6)	P-VALUE (7)
Personal characteristics							
Age of respondent	1,946	37.63	1,242	38.26	704	36.52	0.000***
Gender (male)	1,984	0.29	1,260	0.28	724	0.30	0.368
Married	1,983	0.84	1,259	0.85	724	0.82	0.054*
Widowed	1,983	0.02	1,259	0.02	724	0.01	0.031**
Single	1,983	0.14	1,259	0.13	724	0.17	0.004***
Muslim	1,983	0.36	1,260	0.35	723	0.39	0.112
Christian	1,983	0.63	1,260	0.64	723	0.61	0.111
Can speak English	1,974	0.70	1,255	0.72	719	0.66	0.005***
Igbo	1,982	0.19	1,260	0.20	722	0.18	0.149
Yoruba	1,982	0.75	1,260	0.75	722	0.75	0.965
Other ethnicitiy	1,982	0.05	1,260	0.04	722	0.07	0.012**
Education							
No completed school	1,983	0.07	1,260	0.06	723	0.10	0.006***
Primary school	1,983	0.22	1,260	0.22	723	0.24	0.386
High school diploma	1,983	0.50	1,260	0.50	723	0.49	0.843
Diploma	1,983	0.10	1,260	0.11	723	0.09	0.137
Graduate school	1,983	0.10	1,260	0.11	723	0.09	0.101
Household characteristics							
Household size	1,972	4.51	1,251	4.52	721	4.51	0.873
Number of children below 12	1,948	1.30	1,234	1.31	714	1.29	0.761
Number of dependents	1,954	2.41	1,241	2.47	713	2.31	0.090*
# of dependents outside HH	1,862	1.53	1,179	1.52	683	1.54	0.882
Business characteristics							
Months in operation	1,947	98.59	1235	98.76	712	98.30	0.917
Has a savings account	1,977	0.56	1260	0.59	717	0.52	0.002***
Keeps written fin. records	1,968	0.37	1254	0.39	714	0.32	0.002***
Op. inside main market	1,979	0.25	1260	0.28	719	0.20	0.000***
Number of employees	1,980	1.45	1259	1.45	721	1.45	0.987
Business experience in years	1,977	10.70	1256	10.88	721	10.40	0.218

Note: *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

records for their business. This selection process may be explained by the way the screening events were framed: business owners were told that they were invited to a business development event, and the invitation was in English (see figure 10.1). Since a major aim of edutainment is to reach out to the "bottom of the pyramid," future edutainment activities may want to consider framing the event less as business development and more as entertainment, as well as promoting and designing it in such a way that language is not perceived as a barrier to attendance. Overall participation rates are reasonably high (60 percent) when compared to other financial literacy programs, but it is clear that nonparticipants present a target group that potentially has the most marginal added value to participation but is at the same time the most difficult group to entice into these types of events.

Although there is strong evidence of self-selection into screening events, table 10.3 shows that the drivers of this selection across screening events appear to be the same. For those who participated, we see balance across observable characteristics—which is in line with the fact that all screening events were marketed in the same way with the same characteristics. This balance of selection across events supports the possibility of comparing attendees against each other, rather than needing to rely on the intention to treat estimates.

10.5.3 Attrition

The attrition rate in this study is 21.1 percent, which is relatively high compared to other household surveys (e.g., EFInA 2010 had an attrition rate of 6 percent), but within reason when compared to enterprise surveys. Intensive efforts were made to reach all respondents who were listed at the baseline, but around 12 percent could not be contacted again, some refused to be reinterviewed (2.9 percent), and a very few (0.3 percent) were unable to participate (e.g., for health-related reasons). This attrition rate also includes former microentrepreneurs (5.7 percent), who may not be considered as being eligible anymore, because they shut down their business between the baseline listing and the endline survey. If former microbusiness owners are not taken into account, the attrition rate is reduced to 16.3 percent. There is some evidence for selective attrition for the pure control group, but good balance between the placebo and three treatment arms. Attrition is largest in the pure control group (25.5 percent) when compared to the control and treatment groups (20.2 percent). Table 10.4 suggests a random pattern of attrition for the three treatment arms when compared to the placebo control group, but a large and significant differential attrition in the pure control group. This differential attrition is reinforced by the balance results from table 10.1, and may result from the fact that pure control business owners were only contacted at baseline and follow-up. In contrast, all other groups had another intermediate contact to receive the screening invitation, making them (1) more aware of the activities, and (2) easier to track. Given the significantly lower response rate in the

TABLE 10.3 Balance across screening participants

VARIABLE	TOTAL N (1)	TOTAL MEAN (2)	CONTROL N (3)	CONTROL MEAN (4)	MOVIE N (5)	MOVIE MEAN (6)	MOVIE P-VALUE (7)	MFB N (8)	MFB MEAN (9)	MFB P-VALUE (10)	MOVIE/MFB N (11)	MOVIE/MFB MEAN (12)	MOVIE/MFB P-VALUE (13)
Personal characteristics													
Age of respondent	1,243	38.27	309	38.13	327	38.46	0.79	287	37.92	0.81	307	38.52	0.60
Gender (male)	1,261	0.28	313	0.25	333	0.26	0.78	292	0.30	0.21	310	0.30	0.19
Married	1,260	0.85	312	0.84	333	0.84	0.87	292	0.87	0.41	310	0.85	0.67
Widowed	1,260	0.02	312	0.02	333	0.04	0.15	292	0.01	0.24	310	0.02	0.56
Single	1,260	0.13	312	0.13	333	0.12	0.55	292	0.12	0.68	310	0.13	0.83
Muslim	1,261	0.35	313	0.34	333	0.40	0.080*	292	0.35	0.79	310	0.32	0.71
Christian	1,261	0.64	313	0.66	333	0.60	0.096*	292	0.65	0.72	310	0.67	0.78
Can speak English	1,256	0.72	311	0.71	331	0.70	0.76	292	0.71	0.97	309	0.77	0.13
Igbo	1,261	0.20	313	0.19	333	0.19	0.94	292	0.23	0.30	310	0.22	0.40
Yoruba	1,261	0.75	313	0.78	333	0.77	0.88	292	0.74	0.34	310	0.73	0.15
Other ethnicity	1,261	0.04	313	0.04	333	0.04	0.62	292	0.03	0.95	310	0.06	0.18
Education													
No completed school	1,261	0.06	313	0.05	333	0.08	0.26	292	0.05	0.98	310	0.06	0.85
Primary school	1,261	0.22	313	0.24	333	0.23	0.96	292	0.22	0.61	310	0.19	0.15
High school diploma	1,261	0.50	313	0.50	333	0.47	0.57	292	0.51	0.77	310	0.52	0.57
Diploma	1,261	0.11	313	0.11	333	0.11	0.94	292	0.12	0.76	310	0.11	0.92
Graduate school	1,261	0.11	313	0.11	333	0.10	0.74	292	0.10	0.91	310	0.13	0.44
Household characteristics													
Household size	1,252	4.52	311	4.49	332	4.63	0.40	289	4.37	0.36	307	4.54	0.72
Number of children below 12	1,235	1.31	307	1.39	331	1.31	0.34	285	1.27	0.19	299	1.26	0.20
Number of dependents	1,242	2.47	306	2.44	331	2.51	0.69	287	2.40	0.85	305	2.51	0.67
# of dependents outside HH	1,180	1.52	297	1.50	308	1.47	0.94	274	1.65	0.43	288	1.51	0.93
Business characteristics													
Months in operation	1,420	97.23	350	96.94	369	101.37	0.47	334	96.54	0.95	352	95.03	0.76
Has a savings account	1,448	0.59	356	0.58	378	0.61	0.30	343	0.58	0.80	356	0.60	0.48
Keeps written fin. records	1,442	0.39	355	0.40	377	0.36	0.36	341	0.40	0.89	354	0.42	0.48
Op. inside main market	1,448	0.27	356	0.27	378	0.26	0.80	343	0.26	0.86	356	0.28	0.73
Number of employees	1,448	1.52	356	1.58	378	1.56	0.89	343	1.47	0.54	355	1.48	0.53
Business experience in years	1,257	10.89	312	10.95	330	11.02	0.96	292	10.45	0.45	310	11.03	0.92

Note: *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

TABLE 10.4 Attrition in endline survey

	DEPENDENT VARIABLE INTERVIEWED IN ENDLINE SURVEY (1)
Movie	−0.014 (0.02)
MFB	−0.032 (0.02)
Movie/MFB	−0.021 (0.02)
Pure control	−0.069** (0.02)
Observations	2,437
R-squared	0
p-value of F model	0.6

Note: Robust standard errors in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

pure control group, we subsequently analyze treatment effects by comparing the placebo screening group with the different treatment arms.

When data are analyzed by simply excluding respondents with missing values for any relevant outcome measures—item nonresponse (INR)—this could again cause biased results if missingness is systematically related to a respondent's potential outcomes. Table 10.5 presents INR rates for main outcome measures across different treatment and control groups. For instance, for the question of basic understanding of inflation, it can be seen that 100 percent of the surveyed microentrepreneurs are asked this question (column 1) and that 2.37 percent of those who are asked do not give a response (column 2). Overall, the data in table 10.5 indicates that INR for main outcome measures is not a critical issue (most of the time, INR rates are less than 5 percent) and nondifferential across treatment and control groups. Interestingly, INR is the lowest for measures of intentions, saving, and borrowing behavior, whereas highest INR rates (between 10 and 20 percent) can be observed for questions related to perceptions about MFBs—possibly reflecting cases where business owners have not interacted with MFBs and therefore have not been able to form an opinion. Table 10.5 also reveals a striking increase in INR for the questions of perceptions about MFBs at the endline survey relative to the data that were collected shortly after the screening. This increase does not interact with a particular treatment status and may be due to different modes of interviews and the design of the questionnaires. While the short survey conducted right after the screenings was self-administered by attendees, the endline survey was conducted face to face. To avoid unit nonresponse and potential measurement errors, the self-administered questionnaire was designed to be as simple as possible and only asked dichotomous (yes or no) type of questions with no explicit "don't know" or "refusal" choices. This

TABLE 10.5 Item nonresponse across screening participants (%)

VARIABLE	TOTAL SAMPLE		CONTROL		MOVIE		MFB		MOVIE/MFB	
	HAVE ITEM	INR	HAVE ITEM	INR	HAVE ITEM	INR	HAVE ITEM	INR	HAVE ITEM	INR
Knowledge										
Simple division	100	7.21	100	5.75	100	8.62	100	7.11	100	6.63
Inflation	100	2.37	100	2.18	100	2.40	100	1.46	100	2.21
Necessary documentation	100	3.77	100	3.57	100	3.21	100	3.97	100	3.61
Better savings product	100	1.74	100	2.18	100	1.60	100	1.67	100	2.01
Interest rate	100	4.07	100	4.37	100	5.21	100	3.56	100	3.61
Better loan product	100	2.67	100	3.37	100	2.40	100	2.30	100	3.61
Perceptions										
MFB will accept loan ap. (S)	52	0.00	62	0.00	65	0.00	59	0.00	59	0.00
MFB will accept loan ap. (E)	100	19.34	100	19.05	100	19.24	100	20.50	100	18.27
Taking a loan is too risky (S)	52	0.00	61	0.00	66	0.00	60	0.00	60	0.00
Taking a loan is too risky (E)	100	4.03	100	2.98	100	3.41	100	3.41	100	4.62
Trust in MFBs (S)	52	0.00	61	0.00	66	0.00	59	0.00	61	0.00
Trust in MFBs (E)	100	9.88	100	8.53	100	10.62	100	12.13	100	8.63
MFBs treat people w/ respect (S)	50	0.68	59	0.00	63	0.00	56	2.60	60	0.33
MFBs treat people w/ respect (E)	100	20.23	100	19.44	100	19.44	100	21.34	100	19.88
Perceptions about women										
Women can run businesses as well as men	100	0.81	100	0.60	100	0.20	100	0.63	100	1.41
Easier for men to receive loans than for women	100	9.88	100	9.52	100	9.62	100	9.62	100	9.04
Women make better financial decisions than men	100	2.50	100	2.38	100	2.00	100	2.72	100	2.61
Intentions										
Plan to apply for loan in next 6 months (S)	52	0.16	62	0.00	67	0.00	59	0.71	61	0.00
Plan to apply for loan in next 6 months (E)	100	4.66	100	3.17	100	5.21	100	4.18	100	4.62
Will save money next month (S)	52	0.00	62	0.00	66	0.00	59	0.00	61	0.00
Will save money next month (E)	100	4.24	100	3.77	100	4.21	100	4.81	100	3.82
Savings behavior										
Opened acc. day of screening	1	0.00	0	0.00	0	0.00	1	0.00	5	0.00
Follow-up with Accion	1	0.00	0	0.00	0	0.00	7	0.00	0	0.00
Plan to follow up with Accion	5	0.00	5	0.00	6	0.00	6	0.00	7	0.00
Saved money last month	100	0.47	100	0.79	100	0.40	100	0.00	100	0.60
Savings relative to income	100	8.57	100	9.13	100	8.22	100	8.79	100	8.84
Supplier credit	100	0.25	100	0.00	100	0.20	100	0.21	100	0.40
Loan from family/friends	100	0.25	100	0.00	100	0.00	100	0.00	100	0.60

Note: (S) = screening; (E) = endline.

means that direct comparison over time (e.g., through a difference-in-difference approach) would present challenges; however, similar response patterns across treatment groups support the idea that responses are at least internally consistent.

Given the rather low INR rates for most outcome measures and the fact that they are indistinguishable across control and treatment groups, we take no specific measures to address this type of missingness. Nevertheless, we do account for missing data on covariates. In the regression analysis, coefficients of predictors of interest are adjusted using a procedure advocated by Cohen et al. (2002), whereby measures with missing values are replaced by zero and a dummy variable indicating such missing values is included. The logic behind this approach is that the dummy variables adjust the parameters for theoretically relevant predictors by removing variance that can be attributed to missing data that is lurking in the dependent variable (McKnight, McKnight, and Figueredo 2007). This also avoids losses in sample size during regression analysis in cases where observations would otherwise be dropped due to missing covariate responses.

10.6   MODEL SPECIFICATIONS

In this study, we effectively have three treatment arms: MOVIE, MFB, and MOVIE/MFB. Given that the intervention assignment was randomly allocated, we can measure the causal impact of these interventions through a simple linear regression that identifies the average treatment effect using the intention-to-treat estimator:

$$Y_i = \alpha + \sum_{j=1}^{3} \gamma_j T_{ij} + X_i + \varepsilon_i \qquad (10.1)$$

where Y_i is the outcome interest for participant i, and T_{ij} is the treatment status for person i with regard to treatment j. Treatment $j = \{1,2,3\}$, for each of the three treatment groups. X_i is a vector of exogenous control variables collected at baseline or time-invariant variables collected in the endline survey.[16] We run the same regression without controls and find point estimates to be unchanged in the analysis, consistent with the balanced nature of the selected control variables, and as such we report the adjusted results in the chapter.

Since we are particularly interested in gender differentials, our second specification explores the impact heterogeneity by gender:

$$Y_i = \alpha + \beta G_i + \sum_{j=1}^{3} (\gamma_j + G\delta_j)T_{ij} + X_i + \varepsilon_i \qquad (10.2)$$

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[16] The control variables included in the analysis are: business owner age, marital status, ethnicity, ability to speak English, education level, household size, religion, business experience, number of employees at baseline, whether they had a savings account or kept financial records at baselines, and whether they operated in the main market area or in the outskirts (geographically defined through global positioning system [GPS]).

Here $G_i = 1$ if male, 0 if female. The regression results presented in the tables generated from the analysis include the effect of treatment j on females (γ_j), the additional impact for males (δ_j) and the overall gender differential G_j. Each table of results presents results from equation 10.1 first, followed by gender-disaggregated results from equation 10.2.

In section 10.3, we see that overall selection into the movie screening is such that those who attended the events were slightly different from those who did not. However, we find that this selection pattern is the same across all screening events (based on balance of observable characteristics) and, importantly, there are no differential selection patterns between the three treatment arms and the placebo screening. In this case, we run a restricted analysis on those business owners who actually attended the event. Relying on the balance across an extensive set of baseline variables and the manner in which the events were implemented (randomized invitations at the individual level), we reasonably expect this comparison to provide an unbiased estimate of the average treatment effect on the treated—the impact for those who actually attended the event, using equations 10.1 and 10.2 with the restricted sample of 1,261 participants.

We acknowledge that, if there are large positive spillovers, this may result in a downward bias of the estimate of impact. As such, the survey included control clusters that were created through geographic discontinuities, where a self-contained cluster meant that all businesses within the cluster were at least 20 meters away from the next closest business outside of the cluster.[17] This sampling method creates a "pure" control group less exposed to treatment neighbors, thus exogenously varying the level of intensity of treatment in any particular area of the market, theoretically allowing us to explore spillovers. We see, however, in the pure control group that we experience differential attrition resulting in an imbalance based on baseline observable variables. As such, we exclude this group from analysis in this chapter. In the following section, we present results using equation 10.1 with the restricted sample of business owners who actually attended a screening, using the placebo group as our control comparison.

10.7   RESULTS

10.7.1   Exposure

Administrative records were kept on who participated in the screenings, using the personalized invitations to verify details and treatment status, which was a requirement for entry into the movie screening. The screenings were secured and

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[17] We use the rule of 20 meters for businesses outside of the main market area. Density is too high for businesses inside the main market area, in which case we use a 5-meter rule.

private with complete control over the entrance and exit of the events. Although participation rates averaged around 60 percent, contamination was very low as a result of this process. Table 10.6 highlights this fact, where less than 1 percent of invited guests went to a different screening than the one to which they had been assigned—strengthening the justification of using equations 10.1 and 10.2 with our restricted sample to measure the average treatment effect on the treated.

In the follow-up survey, we asked for self-reported exposure, partly to confirm attendance, but also to understand whether people could remember the main activities and messages from the events; this is presented as a summary in table 10.7. While people have no problem recalling the screening, they express some confusion about the details of the event. We find that 95 percent of people recall receiving an invitation and 96 percent of the people who were recorded through administrative records as attending the event confirmed that they had attended. When asked specifically about whether they saw *The Story of Gold*, 90 percent

TABLE 10.6 Compliance table (%)

TREATMENT ASSIGNMENT	DID NOT ATTEND	ATTENDED THE FOLLOWING SCREENING			
		PLACEBO	MOVIE	MFB	MOVIE/MFB
Pure control	99.0	0.0	0.2	0.4	0.4
Placebo control	41.0	57.9	1.0	0.2	0.0
Movie	38.0	0.2	61.5	0.3	0.0
MFB	42.6	0.3	0.5	56.6	0.0
Movie/MFB	41.1	0.0	0.2	0.5	58.3

in the Movie group and 93 percent in the Movie/MFB group acknowledged that they had done so; 77 percent and 82 percent, respectively, could recall the main message of the movie without prompting. However, placebo screening and MFB groups also reported having seen the movie, although at significantly lower levels (59 percent and 58 percent, respectively). Since the movie was tightly controlled and not released to the public, this suggests a potential confusion between *The Story of Gold* and the placebo movie screening—possibly confounded by the fact that neighboring businesses may have seen and mentioned something about the movie.

Recall of Accion presence was much lower. We find significant increases in recall for MFB and Movie/MFB compared to Movie and control as expected, but the proportions are still low. Only 16 percent of MFB attendees and 17 percent of Movie/MFB attendees recalled Accion's presence at the event. We also asked a falsification question to assess the level at which respondents may have been adjusting their answers to respond positively to the interview. We find that only 1 percent of people responded positively to a question asking whether a certain MFB (Jaiz Bank), which is only based in Abuja, had visited them (an impossibility);

TABLE 10.7 Self-reported exposure to interventions

	REMEMBERED RECEIVING INVITATION		ATTENDED EVENT		REMEMBERED SEEING MOVIE CALLED *THE STORY OF GOLD*		REMEMBERED ATTENDING EVENT WHERE ACCION PRESENTED		CORRECTLY IDENTIFIED MESSAGE OF MOVIE	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Movie only	0.01	−0.00	0.04	−0.01	0.23***	0.30***	0.02	0.02	0.26***	0.36***
	(0.014)	(0.011)	(0.029)	(0.016)	(0.031)	(0.031)	(0.019)	(0.027)	(0.030)	(0.035)
MFB	−0.00	−0.01	0.01	−0.00	−0.01	−0.01	0.04**	0.06**	−0.02	−0.04
	(0.014)	(0.011)	(0.030)	(0.016)	(0.031)	(0.033)	(0.019)	(0.028)	(0.030)	(0.036)
Movie/MFB	−0.00	−0.00	0.00	0.01	0.21***	0.33***	0.04**	0.07**	0.26***	0.41***
	(0.014)	(0.011)	(0.029)	(0.016)	(0.031)	(0.032)	(0.019)	(0.028)	(0.030)	(0.036)
Observations	1,976	1,259	1,975	1,259	1,974	1,258	1,974	1,259	1,979	1,261
R-squared	0.00	0.00	0.00	0.00	0.05	0.14	0.00	0.01	0.08	0.18
Controls	No	No	No	No	No	No	No	No	No	No
Restricted sample	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Control mean	0.948	0.984	0.673	0.958	0.404	0.593	0.0734	0.102	0.286	0.419

Note: Standard errors in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

this is similar across treatment arms, suggesting that positive response bias does not seem to be a problem in our case. Since the interventions were monitored carefully and Accion was indeed present at these events, this contrast between Accion and *The Story of Gold* recall highlights the differential salience of each of the interventions.

10.7.2   Financial literacy

The quiz questions test basic numeracy and financial concepts. Since the movie screening aimed to influence emotions and perceptions rather than formal financial literacy, we expected these indicators to show balance across groups, which they do. Aggregating the questions into a single index, we find two things (table 10.8): (1) scores are very similar across all groups; and (2) the aggregate scores are relatively high, with the weighted and arithmetic scores yielding similar results—perhaps reflecting a lack of variation and cognitive separating ability of the set of questions. However, when exploring the covariates associated with these financial literacy scores, we find strong relationships between the overall score and (1) whether business owners had a savings account at baseline and (2) whether they had any schooling, supporting the assertion that the indexes are informative in distinguishing between financial literacy levels, and the similarities in scores across groups reflect balance induced by the randomization.

TABLE 10.8 Financial literacy indexes

	FINANCIAL LITERACY SCORE	
	ARITHMETIC (1)	WEIGHTED (2)
Treatment		
Movie	−0.11 (0.075)	−0.14 (0.112)
MFB	0.04 (0.078)	0.10 (0.115)
Movie/MFB	−0.05 (0.077)	−0.04 (0.114)
Gender-disaggregated interaction effects (female base)		
Movie	−0.11 (0.088)	−0.12 (0.130)
MFB	0.10 (0.092)	0.14 (0.136)
Movie/MFB	−0.09 (0.091)	−0.10 (0.134)
Gender-disaggregated interaction effects (male interaction)		
Male	0.11 (0.131)	0.18 (0.193)
Male*Movie	−0.03 (0.172)	−0.07 (0.254)
Male*MFB	−0.18 (0.176)	−0.14 (0.261)
Male*(Movie/MFB)	0.12 (0.173)	0.19 (0.257)
p-values for F-tests $\delta_1 + \gamma_1 \neq 0$	0.36	0.38
$\delta_2 + \gamma_2 \neq 0$	0.57	0.98
$\delta_3 + \gamma_3 \neq 0$	0.82	0.65
Observations	1,261	1,254
R-squared	0.14	0.12
Controls	Yes	Yes
Restricted model	Yes	Yes
Control mean	5.262	7.556

Note: Standard errors in parentheses.

10.7.3 Perceptions

We find increases in self-reported trust and perceptions of MFBs directly after the screening events; however, when asked the same questions in the follow-up survey, many of the initial differences reduce or disappear.[18] While males are influenced most strongly by the movie stimulus in the short run, differentials in self-reported trust only sustain for females in the longer run. Table 10.9 presents the results from the screening and endline surveys. While the movie on its own has some impact on whether people report that they would trust an MFB to keep their money when they were asked this question at the screening, the presence of Accion seems to have a much larger effect than the movie, and there is no additivity of the interventions (although both are significant and positive). In the second follow-up survey, we see that the differential between control and treatment group trust declines; however, it is the movie treatment arms that sustain results, where the impact on MFB reduces to insignificance. This sustained impact is almost entirely driven by females, even though males were most affected by the movie in the short run. A supporting question identifying positive perceptions of MFBs ("MFBs treat people with respect") shows similar results, with larger impacts for males in the short run, followed by some limited but sustained differences for females in the longer run—even when male differentials disappear. This significant impact is only found in the combined Movie/MFB arm.

We also explore perceptions of ease in obtaining a loan and riskiness of doing so. Both the Movie and MFB treatments have a significant positive effect on business owners' perception of how likely it is that they may receive a loan if they applied for one in the short run (this falls away completely in the longer run), but none of the interventions have any impact on beliefs of the risk in taking out a loan. We also explore perceptions of female business owners (table 10.10).

10.7.4 Intentions

We tested business owners' intentions about their saving and borrowing plans, once again through the screening questionnaire and in the follow-up, with results presented in table 10.11. Here there is mixed evidence, with some impact on borrowing intentions, but no changes on what are already very high intentions to save. Intention to save is almost universal—90 percent of respondents at the screening and 95 percent in the follow-up indicated that they planned to save

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[18] Direct comparison between the two follow-up surveys should be handled carefully. Although the questions asked were identical, the response method varied across data collection activities. In the immediate follow-up, the question responses were yes/no, and the questionnaire was self-administered. In the four-month follow-up survey, the questionnaire was administered by an interviewer and response options were strongly agree, agree, disagree, strongly disagree.

TABLE 10.9 Perceptions of microfinance banks

	MFB LOAN APPLICATION WILL BE ACCEPTED		TAKING A LOAN IS TOO RISKY FOR ME		I WOULD TRUST AN MFB TO KEEP MY MONEY			MFBS TREAT PEOPLE WITH RESPECT		
	SCREENING (1)	ENDLINE (2)	SCREENING (3)	ENDLINE (4)	SCREENING (5)	ENDLINE: S (6)	ENDLINE: A+S (7)	SCREENING (8)	ENDLINE: S (9)	ENDLINE: A+S (10)
Treatment										
Movie	0.06** (0.026)	0.04 (0.033)	−0.01 (0.038)	0.01 (0.039)	0.15*** (0.034)	0.08** (0.038)	0.01 (0.033)	−0.05 (0.031)	0.03 (0.038)	0.01 (0.034)
MFB	0.10*** (0.027)	−0.01 (0.034)	−0.02 (0.039)	0.01 (0.041)	0.26*** (0.035)	0.05 (0.039)	0.01 (0.034)	0.01 (0.032)	0.06 (0.040)	0.02 (0.035)
Movie/MFB	0.08*** (0.027)	0.05 (0.034)	−0.02 (0.039)	0.01 (0.040)	0.27*** (0.034)	0.08** (0.039)	0.06* (0.033)	0.10*** (0.031)	0.10** (0.039)	0.06* (0.035)
Gender-disaggregated interaction effects (female base)										
Movie	0.04 (0.031)	0.00 (0.038)	−0.01 (0.044)	−0.01 (0.046)	0.08** (0.039)	0.06 (0.044)	0.01 (0.038)	−0.08** (0.036)	−0.00 (0.044)	−0.01 (0.040)
MFB	0.10*** (0.032)	−0.03 (0.040)	−0.03 (0.046)	−0.01 (0.048)	0.25*** (0.041)	0.07 (0.046)	0.03 (0.040)	−0.01 (0.038)	0.07 (0.047)	0.01 (0.042)
Movie/MFB	0.08** (0.032)	0.05 (0.040)	−0.02 (0.045)	−0.02 (0.047)	0.22*** (0.040)	0.12*** (0.046)	0.05 (0.039)	0.07* (0.037)	0.13*** (0.046)	0.05 (0.041)
Gender-disaggregated interaction effects (male interaction)										
Male	−0.03 (0.046)	−0.02 (0.057)	−0.08 (0.066)	−0.10 (0.068)	−0.17*** (0.058)	0.01 (0.066)	−0.00 (0.057)	−0.09 (0.054)	0.03 (0.066)	−0.02 (0.059)
Male*Movie	0.06 (0.061)	0.13* (0.075)	−0.01 (0.087)	0.10 (0.090)	0.28*** (0.077)	0.04 (0.087)	0.03 (0.075)	0.14* (0.071)	0.11 (0.087)	0.08 (0.078)
Male*MFB	−0.02 (0.062)	0.07 (0.077)	0.03 (0.089)	0.08 (0.092)	0.04 (0.078)	−0.06 (0.089)	−0.06 (0.076)	0.08 (0.074)	−0.01 (0.089)	0.03 (0.080)
Male*(Movie/MFB)	0.01 (0.061)	0.00 (0.076)	−0.02 (0.087)	0.11 (0.090)	0.19* (0.077)	−0.14* (0.087)	0.02 (0.075)	0.11 (0.071)	−0.09 (0.088)	0.03 (0.079)
p-values for *F*-tests: $\delta_1 + \gamma_1 \neq 0$	0.05	0.04	0.81	0.21	0	0.18	0.55	0.36	0.17	0.28
$\delta_2 + \gamma_2 \neq 0$	0.11	0.56	0.98	0.14	0	0.93	0.63	0.27	0.48	0.61
$\delta_3 + \gamma_3 \neq 0$	0.1	0.42	0.58	0.25	0	0.77	0.23	0	0.66	0.21
Observations	1,215	1,261	1,223	1,261	1,226	1,261	1,261	1,174	1,261	1,261
R-squared	0.04	0.05	0.05	0.04	0.11	0.05	0.05	0.06	0.05	0.05
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Restricted model	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control mean	0.820	0.754	0.356	0.495	0.586	0.581	0.757	0.808	0.559	0.722

Note: A = agree; S = strongly agree. Standard errors in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

TABLE 10.10 Perception of female financial performance at endline

	WOMEN CAN RUN BUSINESSES JUST AS WELL AS MEN (1)	IT IS EASIER FOR MEN TO RECEIVE LOANS THAN WOMEN (2)	WOMEN MAKE BETTER FINANCIAL DECISIONS THAN MEN (3)
Treatment			
Movie	−0.00 (0.020)	0.07* (0.038)	0.05 (0.030)
MFB	0.00 (0.020)	0.07* (0.039)	0.04 (0.031)
Movie/MFB	0.00 (0.020)	0.07* (0.039)	0.06* (0.031)
Gender-disaggregated interaction effects (female base)			
Movie	−0.01 (0.023)	0.04 (0.044)	−0.02 (0.035)
MFB	0.01 (0.024)	0.05 (0.046)	0.01 (0.037)
Movie/MFB	0.00 (0.024)	0.03 (0.046)	0.01 (0.036)
Gender-disaggregated interaction effects (male interaction)			
Male	−0.13*** (0.034)	0.09 (0.066)	−0.48*** (0.052)
Male*Movie	0.04 (0.045)	0.13 (0.087)	0.25*** (0.069)
Male*MFB	−0.04 (0.046)	0.06 (0.088)	0.15** (0.071)
Male*(Movie/MFB)	−0.01 (0.045)	0.16* (0.087)	0.19*** (0.070)

_p_-values for _F_-tests	$\delta_1 + \gamma_1 \neq 0$	0.55	0.03	0
	$\delta_2 + \gamma_2 \neq 0$	0.54	0.13	0.01
	$\delta_3 + \gamma_3 \neq 0$	0.88	0.01	0

Observations	1,261	1,261	1,261
_R_-squared	0.09	0.08	0.19
Controls	Yes	Yes	Yes
Restricted model	Yes	Yes	Yes
Control mean	0.936	0.342	0.751

Note: Standard errors in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

some money in the following month. When we compare this to actual saving in the past month (65 percent in the endline survey—table 10.12), it is clear that there is a disconnect between intentions and behavior, with many more business owners planning to save but not necessarily following through with these plans, reinforcing the possibility that various frictions may be reducing people's ability to

TABLE 10.11 Intentions

	I PLAN TO APPLY FOR A LOAN IN THE NEXT 6 MONTHS		I WILL SAVE SOME MONEY NEXT MONTH	
	SCREENING (1)	ENDLINE (2)	SCREENING (3)	ENDLINE (4)
Treatment				
Movie	0.05 (0.039)	−0.02 (0.039)	0.03 (0.023)	0.02 (0.017)
MFB	0.08* (0.041)	−0.06 (0.040)	−0.04* (0.024)	−0.01 (0.018)
Movie/MFB	0.10** (0.040)	0.00 (0.040)	0.02 (0.024)	−0.03 (0.018)
Gender-disaggregated interaction effects (female base)				
Movie	0.05 (0.045)	−0.03 (0.046)	0.04 (0.027)	0.02 (0.020)
MFB	0.06 (0.048)	−0.06 (0.048)	−0.04 (0.029)	−0.01 (0.021)
Movie/MFB	0.09* (0.047)	0.01 (0.047)	0.01 (0.028)	−0.03 (0.021)
Gender-disaggregated interaction effects (male interaction)				
Male	−0.01 (0.068)	0.15** (0.068)	−0.00 (0.041)	0.03 (0.030)
Male*Movie	0.03 (0.089)	0.03 (0.090)	−0.03 (0.053)	−0.01 (0.040)
Male*MFB	0.06 (0.092)	−0.02 (0.091)	−0.03 (0.055)	0.02 (0.040)
Male*(Movie/MFB)	0.04 (0.090)	−0.02 (0.090)	0.03 (0.054)	0.02 (0.040)
p-values for F-tests $\quad \delta_1 + \gamma_1 \neq 0$	0.34	0.92	0.76	0.73
$\delta_2 + \gamma_2 \neq 0$	0.12	0.31	0.16	0.84
$\delta_3 + \gamma_3 \neq 0$	0.09	0.87	0.36	0.81
Observations	1,233	1,259	1,232	1,259
R-squared	0.04	0.05	0.04	0.07
Controls	Yes	Yes	Yes	Yes
Restricted model	Yes	Yes	Yes	Yes
Control mean	0.547	0.530	0.902	0.949

Note: Standard errors in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

translate intention into action. The reason for this disconnect could be manifold—hyperbolic discounting, lack of disposable funds, overconfidence, limited access to financial products—and we cannot necessarily disentangle all of these factors. However, we do see that the interventions provided have little influence on what are already very strong self-reported intentions to save, suggesting that this is not likely the channel through which any behavior change occurs.

10.7.5   Savings behavior

At screening events with MFBs present, business owners were able to discuss savings opportunities with the MFB and sign up for a savings account on the spot if they were interested. Participants had two options when expressing interest in opening an account with the MFB: (1) business owners would meet with the MFB and sign up for a follow-up visit to open an account, or (2) business owners would sign up for an account on the spot. Table 10.13 reports on the data collected at the two types of screening events (MFB, Movie/MFB) showing that people were more likely to express interest in opening an account by visiting the MFB stand directly after the event in the MFB group (13 percent versus 8 percent). However, differentiating this visit into each of the two options available (signing up on the spot or agreeing to a follow-up visit to sign up for an account), we find substantial differences. The majority of people in the MFB group who visited the MFB stand opted for a follow-up visit rather than signing up on the spot. However, the Movie/MFB combination event was substantially more effective at incentivizing on-the-spot savings account sign-ups at the event; this effect was strongest for male participants. The Movie/MFB combination event motivated 7 percent of participants to open an account on the spot (compared to 2 percent in the MFB group). This effect was substantially different between male and female participants (5 percent of females and 11 percent of males). The overall difference is statistically significant, but the gender-disaggregated differences are only significant for males.

Although the MFB event was moderately successful in encouraging people to visit the MFB stand and agree to a follow-up visit (11 percent), on further inspection we find that none of the people in this category actually followed up after the event (table 10.12). In fact, the only people who followed up with an MFB after the screening came from the Movie group, where the MFB had not been present. Although it is a small fraction (2 percent for both males and females), this is the only group with a statistically significant increase. The results provide the following insights: (1) reducing access barriers to virtually zero (MFB condition) increases engagement with the MFB and reported interest in opening an account, but has only a modest effect on actual sign-up rates; (2) even without having an immediate call to action (the ability to open an account on the spot) *The Story of Gold* has some (although very limited) impact on short-term behavior, inducing 2 percent of participants to follow up with an MFB afterwards (Movie condition); but (3) combining the reduced access constraint with the movie designed to promote savings (Movie/MFB) provides the strongest incentive to open a savings account, mostly driven by male participant choices. The evaluation design helps to deconstruct some of the potential barriers to demand for a savings account and identifies that an educational event attached to an emotional stimulus can be an effective tool to increase take-up, but only when combined with an intervention that allows for immediate action. However, this tells us little about savings behavior after the event.

TABLE 10.12 Savings behavior

	FOLLOWED UP WITH AN MFB AFTER THE EVENT (1)	CURRENTLY HAS ANY FORM OF FORMAL SAVINGS ACCOUNT (2)	SAVED SOME MONEY LAST MONTH (3)	CURRENTLY HAS SAVINGS OF ≤ 1 MONTH OF INCOME (4)
Treatment				
Movie	0.02***	−0.01	0.02	0.01
	(0.006)	(0.029)	(0.037)	(0.039)
MFB	0.00	−0.04	0.01	0.07*
	(0.006)	(0.030)	(0.038)	(0.040)
Movie/MFB	0.00	−0.04	−0.04	0.02
	(0.006)	(0.030)	(0.038)	(0.040)
Gender-disaggregated interaction effects (female interaction)				
Movie	0.02***	0.02	0.05	0.03
	(0.007)	(0.034)	(0.043)	(0.045)
MFB	0.00	−0.05	0.02	0.05
	(0.008)	(0.035)	(0.045)	−0.047
Movie/MFB	0.00	−0.04	0.01	0.03
	(0.008)	(0.035)	(0.044)	(0.047)
Gender-disaggregated interaction effects (male interaction)				
Male	0.00	0.07	0.03	0.05
	(0.011)	(0.050)	(0.064)	(0.067)
Male*Movie	−0.02*	−0.09	−0.10	−0.05
	(0.014)	(0.066)	(0.084)	(0.089)
Male*MFB	−0.01	0.02	−0.05	0.05
	(0.015)	(0.068)	(0.086)	(0.091)
Male*(Movie/MFB)	−0.01	−0.01	−0.17**	−0.02
	(0.014)	(0.067)	(0.085)	(0.089)
p-values for F-tests $\delta_1 + \gamma_1 \neq 0$	0.92	0.18	0.43	0.73
$\delta_2 + \gamma_2 \neq 0$	0.82	0.64	0.76	0.17
$\delta_3 + \gamma_3 \neq 0$	0.78	0.38	0.03	0.93
Observations	1,261	1,261	1,256	1,261
R-squared	0.03	0.34	0.08	0.05
Controls	Yes	Yes	Yes	Yes
Restricted model	Yes	Yes	Yes	Yes
Control mean	0	0.738	0.650	0.415

Note: Standard errors in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Despite the strong impacts observed, important concerns arise from the follow-up findings. First, we find that 67 percent of all participants who opened a savings account at the event reported having a savings account at baseline (significantly higher than the average for our sample). While there may be rational reasons to hold multiple accounts (or to change accounts), the finding reinforces

TABLE 10.13 Savings account sign-up rates

	EXPRESSED INTEREST IN SIGNING UP FOR SAVINGS ACCOUNT (1)	DID NOT OPEN ACCOUNT AT SCREENING BUT PLANS TO FOLLOW UP (2)	OPENED ACCOUNT ON DAY OF SCREENING (3)
Treatment			
Movie/MFB	−0.05*	−0.09***	0.05***
	(0.024)	(0.019)	(0.017)
Gender-disaggregated interaction effects (female base)			
Movie/MFB	−0.07**	−0.10***	0.03
	(0.029)	(0.022)	(0.020)
Gender-disaggregated interaction effects (male interaction)			
Male	−0.04	−0.02	−0.02
	(0.040)	(0.030)	(0.027)
Male*(Movie/MFB)	0.09*	0.02	0.07**
	(0.054)	(0.041)	(0.037)
p-values for F-tests: $\delta_1 + \gamma_1 \neq 0$	0.73	0.02	0
Observations	607	607	607
R-squared	0.08	0.09	0.10
Controls	Yes	Yes	Yes
Restricted model	Yes	Yes	Yes
Control mean	0.128	0.108	0.0203

Note: Standard errors in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

the fact that the intervention may be inducing action only in a subpopulation that has lower marginal gains in doing so when compared to the unbanked target population. The second related concern is that in the follow-up, we find no distinguishable difference in whether respondents have a savings account—which is not surprising given that the majority of those induced to open an account already had one prior to the screenings. Of greater concern, however, we find that males in the Movie/MFB group report having been *less* likely to save some money in the month prior to the follow-up survey and show no differences in savings amounts relative to their income. While it is not clear what may be driving this result, it is possible that the event—although successfully motivating business owners to act in the moment and put money in a new savings account—only served to displace future savings, with no net gain.

10.7.6 Borrowing behavior

For borrowing behavior, we rely only on self-reported responses in the follow-up survey. The movie message centered on responsible borrowing, highlighting the problems with relying on moneylenders, and we reflect on this through two particular indicators: (1) borrowing rate in last 4 months and (2) the source of

borrowing. In particular, we were interested in identifying whether business owners used formal or informal sources for financing. We find first that borrowing rates are substantial—about half of all business owners reported taking out a loan in the past four months, and half of those who took a loan did so from an informal source. The interventions have no effect on borrowing rates (although there is a reduction in all treatment groups, it is not significant). Similarly we find little to no evidence in changes in the form of lending (table 10.14), although

TABLE 10.14 Borrowing behavior

	TAKEN OUT A LOAN IN LAST 4 MONTHS (1)	LOAN WAS FROM INFORMAL SOURCE (2)
Treatment		
Movie	−0.06 (0.039)	−0.02 (0.070)
MFB	−0.07* (0.040)	0.07 (0.070)
Movie/MFB	−0.06 (0.040)	−0.08 (0.069)
Gender-disaggregated interaction effects (female interaction)		
Movie	−0.06 (0.045)	−0.07 (0.081)
MFB	−0.06 (0.047)	0.05 (0.081)
Movie/MFB	−0.05 (0.047)	−0.14* (0.081)
Gender-disaggregated interaction effects (male interaction)		
Male	0.01 (0.067)	−0.11 (0.121)
Male*Movie	0.01 (0.089)	0.19 (0.166)
Male*MFB	−0.03 (0.091)	0.11 (0.161)
Male*(Movie/MFB)	−0.01 (0.089)	0.21 (0.159)
p-values for *F*-tests — $\delta_1 + \gamma_1 \neq 0$	0.5	0.47
$\delta_2 + \gamma_2 \neq 0$	0.25	0.27
$\delta_3 + \gamma_3 \neq 0$	0.36	0.61
Observations	1,261	410
R-squared	0.06	0.11
Controls	Yes	Yes
Restricted model	Yes	Yes
Control mean	0.508	0.470

Note: Standard errors in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

females in the Movie/MFB group reduce informal lending by 14 percentage points, which is borderline significant. Interestingly, there seems to be more congruency between intentions to borrow and actual borrowing than for savings intentions and behavior. While 54 percent of people mentioned that they were planning to take out a loan in the next six months immediately after the screening, we find four months later that 51 percent of people did so. This contrasts sharply with the intended savings (90 percent) and actual savings rates (60 percent); this seems to confirm that, in terms of savings behavior, there are several additional barriers at play besides those that the interventions address directly.

10.8   ROBUSTNESS CHECKS

Our results show a significant effect of Movie/MFB on motivating business owners to open a savings account, but little to no evidence of longer-term impact on a broad range of savings and borrowing perceptions and behavior. A null effect could be a result of (1) limited power, driven by sample sizes too small to detect true impacts; (2) spillovers improving outcomes for the control group; or (3) selection bias resulting from the control group participants having different participation decisions than our treatment groups.

Power is of particular concern when we measure heterogeneous impacts by gender, given that only 28 percent of our sample is male. We run each of the regressions reported in this chapter for the entire sample (without differentiating by gender) and continue to find mostly null to low effects on our outcomes of interest in the four-month follow-up.[19] Here our sample is substantial, and power is less of a concern. However, in most cases, the point estimate of the effects is so small that the interpretation of the results would not change even in cases we were to have enough sample power to estimate these small changes.

The study was originally designed to account directly for potential spillovers, given that all participants came from the same market area and interaction between participants was expected. The pure control group was generated using cluster randomization to address this; however, as mentioned previously, we are unable to use this group due to selective attrition and cannot rule out potential spillovers. Given that we see the strongest effects of the intervention in the immediate term, and given the nature of the program (increasing short-term motivation rather than focusing on financial content), it seems somewhat unlikely that second-hand information passed from treatment to control business owners is likely to be a serious concern.

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[19] As expected, we do find cases where significant results in the gender-disaggregated analysis become nonsignificant in the pooled specifications, particularly when male and female effect coefficients have opposite signs.

Our restricted regression analysis used throughout the chapter effectively reports on the average treatment effect on the treated, without reference to the intention-to-treat results—which limits the scope of interpretation to effects on those who were actually convinced to attend the event. We run intention-to-treat regressions, including all business owners invited to the screening events on outcomes who were recorded at the endline, but do not report these results here. Unsurprisingly (see discussion above on why we can rely on the treatment effect on the treated in this context), the null effects remain; and our outcomes where impacts were found mostly remain significant, albeit with lower point estimates for impact.[20]

Finally, reflection on the savings account take-up rates on which we find significant impacts is required. Why is it that males react most strongly to the screening event in the short run? This could reflect the fact that male emotions are affected more than females, inducing action; but may equally reflect the possibility that females have added constraints beyond motivation that affect take-up, such as low liquidity or limited autonomy in financial decision making. The literature has found that females often make decisions jointly with their spouse or other counterpart, when compared to male business owners. However, we find that business autonomy is balanced across gender in our sample, with 92 percent of males and females reporting that they make business decisions on their own. We do find, however, that business revenues and profits across gender differ significantly, with males having nearly twice the yearly profits of females. Selection equations regressing profits and revenue with the likelihood of opening an account show no relationship. Furthermore, we find that intermediate outcomes such as increased self-reported trust in MFBs are substantially stronger for males than females. This suggests that, rather than females facing added constraints that the screening event does not overcome, the events have a differential effect on perceptions by gender that seems to be driving the differential take-up of savings accounts at the event.

10.9   DISCUSSION AND CONCLUSION

The primary role of the evaluation was to explore the use of a new medium to transmit financial messages, focusing on the use of heuristics and emotions to spur action in the short run with the intention of getting business owners a foot in the door to use financial products more regularly, learning and building experience thereafter. The second objective was to identify how access to financial products and motivation interact to induce action, and whether choice architecture can be effectively utilized to promote welfare-enhancing financial decisions.

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[20] Informal lending is no longer significant.

The results from the evaluation are mixed, and warrant further discussion on three issues of importance for policy dialogue: (1) the ability of edutainment to reach out to the targeted population, (2) the role of choice architecture on influencing short-term decisions, and (3) ensuring sustained behavior change.

Recent evidence has highlighted the challenges to encouraging people to attend voluntary financial literacy workshops and other training programs (see chapter 7). Low take-up rates are common, and this is especially true for interventions targeting business owners. Business owners may be making a rational decision to avoid the training because of low perceived benefits. Using edutainment to transmit financial messages is a new approach that has the potential benefit of being more inclusive, lowering barriers to participation. Response rates in this study of approximately 60 percent reflect the fact that, even though these events are able to reach out to the majority of potential participants, this is far from universal and more effort is needed to find ways to market these events to have more mass appeal. In particular, the least educated people with lowest access to financial products were the ones who selected out of the screening events, highlighting the difficulty of reaching out to this subpopulation.

The study identifies a strong interaction between offering a stimulus (the movie) together with a direct outlet (the presence of the MFB) for acting on this motivation. This result is not surprising, and replicates what is well known among marketers in a development setting. However, applying choice architecture to a development setting requires careful attention to the potential unexpected outcomes that may result. In our case, the one-off screening was effective at encouraging people to open new accounts; but on closer inspection, nearly two-thirds of these people already had savings accounts, possibly limiting the potential marginal impact of the work. This highlights the importance of testing potential interventions at a pilot level, measuring and understanding the determinants of take-up before scaling up.

While the intervention was able to influence decisions in the short run, people make financial decisions on a daily basis, and more sustained behavior change is critical in the context of saving. Our limited longer-term impacts emphasize this point. The ability to spur people to action through the use of edutainment may have more development impact for activities that are beneficial as one-off actions, particularly given the intervention's relatively low cost and simple logistics. Examples of where these types of interventions could work in other development areas include, for instance, encouraging people to test themselves at mobile clinics for HIV/AIDS or taking vaccinations, where one-time actions of groups of people at once can have important private and public benefits. This approach could also be tailored to more sustained financial behavior change if coupled with commitment savings accounts—where decisions taken in the moment have a more binding effect in the longer run (Ashraf, Karlan, and Yin 2006). However, take-up of financial instruments tells us little about how this increased exposure may strengthen financial capabilities—responsible use of these instruments and financial decision

making more generally. The literature has traditionally explored the direction for strengthening financial capabilities as going from education to better financial decision making and increased use of financial products. There is less understanding of how a learning-by-doing approach—focusing on providing access to financial instruments and exploring how this translates into experiential learning and ultimately improved decision making. While we have seen that nudges can be developed to help overcome the access constraint, it is still unclear as to whether this can be effectively translated into strengthened financial capabilities in the longer run.

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ANNEX: DETAIL TABLES

TABLE 10A.1 Descriptive statistics (female)

VARIABLE	TOTAL SAMPLE		CONTROL	MOVIE		MFB		MOVIE/MFB		PURE CONTROL		MEANS BY GENDER	
	N	MEAN	MEAN	MEAN	P-VALUE	MEAN	P-VALUE	MEAN	P-VALUE	MEAN	P-VALUE	MALE	FEMALE
Personal characteristics													
Age of respondent	1,642	38.16	38.59	38.38	0.783	38.13	0.547	37.34	0.081*	38.48	0.900	36.79	38.16
Married	1,674	0.89	0.89	0.88	0.682	0.90	0.676	0.87	0.428	0.90	0.647	0.72	0.89
Widowed	1,674	0.03	0.02	0.04	0.103	0.01	0.321	0.02	0.929	0.03	0.465	0.00	0.03
Single	1,674	0.08	0.09	0.07	0.563	0.09	0.998	0.10	0.410	0.07	0.343	0.27	0.08
Muslim	1,674	0.34	0.34	0.38	0.341	0.32	0.470	0.37	0.484	0.29	0.192	0.40	0.34
Christian	1,674	0.66	0.66	0.62	0.341	0.68	0.524	0.63	0.436	0.71	0.192	0.59	0.66
Can speak English	1,667	0.68	0.66	0.64	0.448	0.68	0.561	0.69	0.468	0.72	0.169	0.77	0.68
Igbo	1,674	0.17	0.15	0.15	0.971	0.19	0.130	0.18	0.271	0.20	0.050*	0.28	0.17
Yoruba	1,674	0.78	0.81	0.80	0.746	0.76	0.086*	0.77	0.178	0.75	0.058*	0.67	0.78
Other ethnicity	1,674	0.05	0.04	0.05	0.588	0.05	0.512	0.05	0.503	0.05	0.842	0.05	0.05
Education													
No completed school	1,673	0.08	0.08	0.08	0.689	0.09	0.415	0.08	0.856	0.07	0.939	0.06	0.08
Primary school	1,673	0.23	0.25	0.25	0.995	0.20	0.091*	0.22	0.341	0.20	0.107	0.20	0.23
High school diploma	1,673	0.48	0.46	0.45	0.936	0.50	0.253	0.48	0.607	0.51	0.178	0.56	0.48
Diploma	1,673	0.11	0.12	0.09	0.366	0.11	0.819	0.10	0.625	0.13	0.543	0.09	0.11
Graduate school	1,673	0.10	0.10	0.11	0.762	0.10	0.956	0.12	0.486	0.08	0.441	0.09	0.10
Household characteristics													
Household size	1,665	4.63	4.73	4.71	0.861	4.51	0.060*	4.53	0.103	4.68	0.703	4.29	4.63
# of children below 12	1,644	1.35	1.38	1.38	0.970	1.33	0.591	1.26	0.193	1.41	0.743	1.27	1.35
# of dependents	1,647	2.28	2.32	2.24	0.560	2.25	0.616	2.27	0.716	2.32	0.993	2.82	2.28
# of dependents outside HH	1,572	1.41	1.23	1.38	0.291	1.58	0.024	1.33	0.477	1.58	0.030**	1.88	1.41
Business characteristics													
Months in operation	1,632	96.50	95.77	94.33	0.828	99.27	0.616	101.12	0.447	90.33	0.452	99.58	96.50
Has a savings account	1,668	0.54	0.51	0.55	0.307	0.51	0.913	0.54	0.438	0.64	0.001***	0.64	0.54
Keeps written fin. records	1,662	0.37	0.36	0.36	0.902	0.35	0.968	0.38	0.458	0.39	0.363	0.38	0.37
Op. inside main market	1,648	0.30	0.27	0.32	0.147	0.28	0.679	0.29	0.470	0.33	0.082*	0.14	0.30
Number of employees	1,672	1.27	1.38	1.31	0.551	1.29	0.482	1.28	0.435	1.02	0.004***	1.86	1.27
Business exp. in years	1,667	10.49	10.89	10.86	0.956	10.51	0.553	10.08	0.190	10.04	0.219	11.37	10.49

Note: *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

TABLE 10A.2 Descriptive statistics (male)

VARIABLE	TOTAL SAMPLE		CONTROL	MOVIE		MFB		MOVIE/MFB		PURE CONTROL		MEANS BY GENDER	
	N	MEAN	MEAN	MEAN	P-VALUE	MEAN	P-VALUE	MEAN	P-VALUE	MEAN	P-VALUE	MALE	FEMALE
Personal characteristics													
Age of respondent	672	36.79	35.97	35.53	0.715	37.34	0.231	37.23	0.296	38.35	0.054*	36.79	38.16
Married	683	0.72	0.73	0.68	0.315	0.77	0.446	0.69	0.438	0.75	0.817	0.72	0.89
Widowed	683	0.00	0.00	0.01	0.349	0.00		0.00		0.02	0.129	0.00	0.03
Single	683	0.27	0.27	0.31	0.376	0.23	0.446	0.31	0.438	0.23	0.585	0.27	0.08
Muslim	682	0.40	0.38	0.45	0.250	0.41	0.617	0.35	0.648	0.40	0.734	0.40	0.34
Christian	682	0.59	0.61	0.55	0.307	0.57	0.469	0.63	0.732	0.60	0.828	0.59	0.66
Can speak English	679	0.77	0.80	0.74	0.318	0.81	0.810	0.77	0.600	0.75	0.375	0.77	0.68
Igbo	682	0.28	0.26	0.23	0.638	0.27	0.824	0.31	0.297	0.33	0.210	0.28	0.17
Yoruba	682	0.67	0.69	0.71	0.662	0.72	0.628	0.60	0.129	0.63	0.367	0.67	0.78
Other ethnicity	682	0.05	0.05	0.05	0.991	0.01	0.072*	0.08	0.315	0.03	0.490	0.05	0.05
Education													
No completed school	683	0.06	0.02	0.05	0.187	0.06	0.101	0.08	0.041**	0.09	0.024**	0.06	0.08
Primary school	683	0.20	0.21	0.21	0.980	0.22	0.901	0.17	0.435	0.17	0.451	0.20	0.23
High school diploma	683	0.56	0.59	0.55	0.456	0.51	0.165	0.60	0.860	0.56	0.587	0.56	0.48
Diploma	683	0.09	0.10	0.11	0.822	0.10	0.998	0.06	0.186	0.07	0.418	0.09	0.11
Graduate school	683	0.09	0.08	0.07	0.939	0.11	0.299	0.09	0.652	0.11	0.316	0.09	0.10
Household characteristics													
Household size	678	4.29	4.15	4.23	0.885	4.26	0.620	4.38	0.369	4.45	0.242	4.29	4.63
Number of children below 12	667	1.27	1.39	1.09	0.040**	1.24	0.331	1.20	0.238	1.50	0.557	1.27	1.35
Number of dependents	675	2.82	2.79	2.75	0.870	2.78	0.961	2.74	0.849	3.12	0.249	2.82	2.28
# of dependents outside HH	641	1.88	2.25	1.86	0.259	1.41	0.015**	2.06	0.598	1.82	0.258	1.88	1.41
Business characteristics													
Months in operation	678	99.58	106.76	105.08	0.885	91.69	0.175	100.78	0.607	92.53	0.245	99.58	96.50
Has a savings account	682	0.64	0.70	0.62	0.176	0.61	0.144	0.64	0.347	0.62	0.189	0.64	0.54
Keeps written fin. records	678	0.38	0.38	0.32	0.342	0.42	0.506	0.36	0.796	0.40	0.693	0.38	0.37
Operating inside main market	676	0.14	0.16	0.12	0.344	0.14	0.674	0.17	0.845	0.14	0.643	0.14	0.30
Number of employees	680	1.86	2.10	1.80	0.309	1.65	0.135	1.67	0.162	2.15	0.901	1.86	1.27
Business experience in years	683	11.37	10.70	10.57	0.883	11.42	0.481	11.48	0.448	13.04	0.033**	11.37	10.49

Note: *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

TABLE 10A.3 Balance across screening participants (female)

VARIABLE	TOTAL		ATTENDED TREATMENT		MISSED TREATMENT		
	N	MEAN	N	MEAN	N	MEAN	P-VALUE
Personal characteristics							
Age of respondent	1,386	38.10	893	38.73	493	36.96	0.001***
Gender (male)	1,416	0.00	908	0.00	508	0.00	
Married	1,415	0.89	907	0.89	508	0.88	0.79
Widowed	1,415	0.02	907	0.03	508	0.01	0.047**
Single	1,415	0.09	907	0.08	508	0.10	0.16
Muslim	1,416	0.35	908	0.34	508	0.37	0.19
Christian	1,416	0.65	908	0.66	508	0.63	0.22
English	1,410	0.67	903	0.69	507	0.64	0.044**
Igbo	1,415	0.16	908	0.17	507	0.15	0.36
Yoruba	1,415	0.78	908	0.78	507	0.79	0.86
Other ethnicitiy	1,415	0.05	908	0.05	507	0.06	0.23
Education							
No completed school	1,415	0.08	908	0.07	507	0.10	0.034**
Primary school	1,415	0.23	908	0.22	507	0.25	0.33
High school diploma	1,415	0.47	908	0.47	507	0.47	0.91
Diploma	1,415	0.11	908	0.12	507	0.09	0.069*
Graduate school	1,415	0.11	908	0.11	507	0.09	0.33
Household characteristics							
Household size	1,409	4.62	903	4.57	506	4.71	0.14
Number of children below 12	1,394	1.34	892	1.32	502	1.37	0.40
Number of dependents	1,393	2.27	895	2.28	498	2.24	0.72
# of dependents outside HH	1,329	1.38	850	1.36	479	1.41	0.73
Business characteristics							
Months in operation	1,384	97.60	885	96.58	499	99.42	0.58
Has a savings account	1,410	0.53	908	0.55	502	0.48	0.013**
Keeps written fin. records	1,404	0.36	902	0.38	502	0.33	0.033**
Op. inside main market	1,412	0.29	908	0.32	504	0.24	0.001***
Number of employees	1,414	1.32	907	1.32	507	1.32	0.99
Business experience in years	1,409	10.57	904	10.84	505	10.09	0.11

Note: *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

TABLE 10A.4 Balance across screening participants (male)

VARIABLE	TOTAL		ATTENDED TREATMENT		MISSED TREATMENT		
	N	MEAN	N	MEAN	N	MEAN	P-VALUE
Personal characteristics							
Age of respondent	560	36.48	349	37.08	211	35.49	0.071*
Gender (male)	568	1.00	352	1.00	216	1.00	
Married	568	0.72	352	0.75	216	0.66	0.019**
Widowed	568	0.00	352	0.00	216	0.00	0.434
Single	568	0.28	352	0.24	216	0.34	0.015**
Muslim	567	0.40	352	0.38	215	0.42	0.408
Christian	567	0.59	352	0.61	215	0.57	0.342
English	564	0.78	352	0.81	212	0.73	0.021**
Igbo	567	0.27	352	0.29	215	0.24	0.172
Yoruba	567	0.68	352	0.68	215	0.68	0.998
Other ethnicitiy	567	0.05	352	0.03	215	0.08	0.005***
Education							
No completed school	568	0.05	352	0.04	216	0.08	0.047
Primary school	568	0.21	352	0.20	216	0.21	0.914
High school diploma	568	0.56	352	0.57	216	0.55	0.737
Diploma	568	0.09	352	0.09	216	0.09	0.855
Graduate school	568	0.09	352	0.10	216	0.06	0.127
Household characteristics							
Household size	563	4.25	348	4.39	215	4.03	0.036**
Number of children below 12	554	1.22	342	1.30	212	1.11	0.086*
Number of dependents	561	2.76	346	2.95	215	2.47	0.007***
# of dependents outside HH	533	1.89	329	1.92	204	1.84	0.740
Business characteristics							
Months in operation	563	101.02	350	104.27	213	95.68	0.282
Has a savings account	567	0.64	352	0.67	215	0.59	0.046**
Keeps written fin. records	564	0.37	352	0.41	212	0.31	0.023**
Op. inside main market	567	0.15	352	0.17	215	0.11	0.038**
Number of employees	566	1.80	352	1.81	214	1.78	0.891
Business experience in years	568	11.03	352	10.98	216	11.12	0.851

Note: *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.