SOAP OPERAS, TRUST AND FINANCIAL INCLUSION: EXPERIMENTAL EVIDENCE FROM PERUVIAN RURAL AREAS[1]

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Abstract

This study seeks to evaluate the use of short soap operas as a mechanism to promote the use of formal savings accounts among poor rural women that have been secularly excluded from healthy interactions with the formal financial sector. We developed a short soap opera (telenovela), named *Josefa*, which transmitted pro-savings messages using characters and stories that could generate a level of identification with the intended audience. We use an experimental design that randomly assigned eligible villages of Huancavelica, the poorest department in Peru, to treatment and control groups, and organized special viewing sessions inviting all beneficiaries of Juntos, the Peruvian CCT program, in the eligible villages. We find a year later that women exposed to the treatment have an improved knowledge and attitude towards formal savings, especially for the precautionary motive. We do not find a significant change in end of bimester savings balances until the July-August bimester, which we interpret as evidence that the improved pro savings attitude remained latent for several months, until right about the time cash surpluses are likely due to post-harvest season. This effect is larger for younger women (under 40). Searching for the underlined mechanisms, we find no income effect, but an important effect on trust in financial institutions and a strong empowerment effect within the household, mainly for economic and financial decisions, also among the younger women. Overall, we interpret these results as evidence that the edutainment approach can have an important contribution to financial inclusion by enhancing the trust in financial institutions of poor rural women that have faced secular exclusion from market institutions like the ones from the Peruvian Southern Sierra.

Keywords: soap operas, edutainment, financial inclusion, trust.
JEL codes: D01, D10, G21, I25, L82, O12.

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1. Introduction

Financial literacy interventions are being tried widely across the world to promote financial inclusion, transmitting key financial concepts and providing relevant information about options available to help households manage resources through time and uncertainty. Still, little is known about their effects, especially in developing countries (Xu and Zia, 2012). More recent efforts, however, are understanding the limitations of information and rationality, and are innovating by using some psychological mechanisms to help understand choices by the poor, searching for nudges that can attack self-control problems or identifying adequate role models that can improve their capacity to aspire a better future (Banerjee and Mullainathan, 2010; La Ferrara, 2015; Lybbert and Wydick, 2016). La Ferrara (2015), in particular, reviews the evidence of the impacts of commercial television and educational entertainment (edutainment) over a variety of development outcomes, including family preferences and health, education and occupational choice, gender norms and social capital (trust in government action). Edutainment, as the process of purposely designing and implementing a media message to both entertain and educate, to affect the audience's knowledge, attitudes and behaviour, in particular, may have high probability to change the behaviour of the poor by constructing popular role models that can connect to traditionally excluded audiences and exemplify the benefits of particular social attitudes or behaviour.

Many recent studies indeed suggest that well-designed telenovelas that contain a significant aspirational element close to the viewers' everyday reality can change patterns of behavior. Chong and La Ferrara (2010), la Ferrara, Chong, and Duryea (2012), and Chong, Rios, and Yanez-Pagans (2012) have demonstrated that aspirational content in telenovelas can have both short and long term effects, particularly in women. In these three studies, the authors demonstrate that telenovelas have held a central role in the functioning of contemporary Brazilian society, and that they have been crucial for the articulation, institutionalization, and changes in attitudes and patterns of behavior among women (fertility and divorce). Dellavigna and la Ferrara (2015) argue about the importance of the demand for entertainment when analyzing the impacts of media, as individuals choose a particular media independently of their preference for particular social and economic outcomes such as education, fertility, crime, or savings, even though the story may contain messages related to particular choices.

Separate studies focused on savings suggest the relevance of a theory of change in which behavior is driven by associating pro-social messages with the realizable goals and aspirations of their recipients. Karlan, et. al. (2010), for example, show that savings reminder messages can have a substantial impact on the propensity to save and the probability that individuals stick to their savings goals. Most importantly for our study is that the authors of the paper saw the strongest effects on savings when the message was associated with a goal to which the participants could connect. More specifically to media instruments, Berg and Zia (2013) analyzed the impacts of a financial management plot on risky financial behavior. They inserted such a 2-month plot within an extremely popular soap opera in South Africa called *Scandal*, and incentivized viewership during such period by offering a monetary compensation if those randomly chosen were able to answer correctly key questions about the financial management plot[2]. They found improved financial knowledge on the specific topics treated within the subplot, but not in general. The treated also reported being more prone to borrow from formal sources, less likely to engage in gambling and leasing agreements compared to the control group.

This study aims to contribute to this literature by evaluating, with the help of an experimental design, the use of a short soap opera (telenovela) called "Josefa" as a mechanism to improve savings knowledge, attitudes and behavior among rural women of Huancavelica enrolled in Juntos, the Peruvian conditional cash transfer (CCT) program. To our knowledge, this would be the first RCT that evaluates the relevance of soap operas for savings promotion, that can report on an objective measure: the changes in the daily balances observed in their BN accounts. The focus in rural Huancavelica, one of the poorest departments in Peru, with the highest rate of the population of Andean origin and

[2] The control group was encouraged to watch another soap opera that was shown at the same prime time as *Scandal*.

in villages secularly isolated from the rest of the national economy, underscores the importance of cultural factors.

We started by developing a quality mini-drama that combined a love story with characters and struggles that are close to the reality of the audience, with pro-savings messages that could affect the way they think about formal savings and their savings behavior. The pro-savings messages reminded viewers of the importance of saving for risk coping and capital accumulation, the risk of choosing an insecure mechanism, and show that women like them can save, can interact confidently with savings institutions (e.g. bank staff) and technologies (e.g. debit cards), and can even accumulate meaningful amounts through regular deposits no matter how small.

We then organized special viewing sessions in each of the eligible localities randomly assigned to treatment, using the public school or other village building, and with the help of a trained facilitator that carry the required equipment and coordinate the help from community leaders and program officials (*gestores*). Randomization was performed at the village level, stratifying at the district level[3]. Our preliminary results show that the soap opera was extremely successful in terms of capturing the interest of the targeted audience, based on the high proportion of invited people that attended the viewing sessions (average of 74%, with even a growing trend), and the way they recall the characters, the story and the key pro-saving messages, about a year after the viewing sessions. We also find that women in treatment villages have an improved pro-savings attitude, have a better understanding of the precautionary motive for savings and improved control over economic and financial decisions within the household, about a year after the viewing sessions.

Finally, we find that savings do not change significantly immediately after the viewing sessions, but a strong effect is found about a year after, about just after the harvest season when households tend to have cash surpluses. This effect is stronger

[3] Control communities faced business as usual, e.g., they were invited to regular training sessions associated to compliance of conditionalities, nutritional and childcare advice, and the likes.

among the younger women, which also reported improved participation in household economic and financial decisions. First, this result is particular important, as it takes us beyond the self-reporting towards an objective measure of savings behavior, and we are not aware of another study that has been able to report such objective measure for this kind of studies on financial inclusion[4]. Second, this result is quite astonishing as it suggests the effects remains latent for about a year, but it appears strongly significant once cash surpluses provides a space for some savings. The idea that this effect is also associated to enhanced trust in financial institutions and the empowerment of women within the household, especially among the younger women is also consistent with the importance of cultural factors.

The rest of the paper is organized in five sections, including this introduction. Section 2 presents a brief literature review and discusses the expected changes as a result of this intervention and the key research questions. Next, section 3 describes the process used to produce the video-drama and the organization of the viewing sessions. Section 4 presents the methodological framework, including a description of the experimental design, the data collected and the econometric approach to obtain the impact estimates. Section 5 presents the results, and we conclude with a summary and discussion of results.

2. Conceptual framework

The impacts of media on social outcomes have been increasingly scrutinized in the literature, for instance, for its impact of violent movies on crime. Surprisingly, though, the evidence of such connection is rather mixed. DellaVigna and La Ferrara (2015) argue that such effects are possibly hidden due to the fact that such exposure is substituting for activities that are not better for crime reduction. Another factor is the complications to capture long-run effects for this kind of exposure. More recently, however, studies have started to document the impacts of media exposure on fertility. First, we have La Ferrara

[4] Balances of the BN accounts before and until a year after the treatment were obtained with the support from the Ministry of Social Inclusion and Development (MIDIS), and establishing a protocol to guarantee confidentiality of the information.

et. al., (2012) the long term effects on fertility rates in Brazil of exposure to soap operas (*telenovelas*), taking advantage of the staggered expansion of cable into Brazil. A similar strategy is used in Kearney and Levine (2015) to show the impact of the MTV show *16 and pregnant* on teenage births in the US. DellaVigna and La Ferrara (2015) argue that the estimated impacts of the former are based on the overall demand for entertainment by the target population, making the decision to watch mostly unaffected by the social messages that could be inserted in the episodes. We argue that the decision to watch the soap of this project, although generated from an invitation by *Juntos* officials, is strongly based on the high demand for this kind of media entertainment in the rural areas in which we base our study, and is not substituting for some other pro-savings activities.

A key element of the quality of the story is the closeness of the characters and story to the reality of the intended audience, while connecting positive savings practices to aspirations of success. Closeness to the reality of the intended audience may be key to affect rural women's self-image with respect to the interactions with the formal economy that has traditionally exclude or ignore them, which may be important for them to change their attitude towards positive interactions with formal banks (La Ferrara, 2015). On the other hand, the connection between the messages in the soap opera and the aspirations of the target audience may be key to get pro-savings messages across and lead to behavioral changes with respect to the savings accounts at the BN (Karlan et. al., 2016).

Based on this, the key question behind this study is whether a soap opera with characters and a storyline close to the reality of the targeted audience (female CCT beneficiaries from rural village of southern Peru), and with clear pro-saving messages can capture their interest and transmit messages that can lead towards changes in their savings patterns, in particular in their use of their accounts at BN. In doing so, the hypothesis behind is that information about financial concepts and products is not enough to get such a change, and that a soap opera as the one produced for this study can help overcome some cultural barrier that keeps poor Peruvian rural villagers from transacting with formal banks in Peru. In particular, this study aims to answer the following research questions:

(i) Can the use of *telenovelas* linking the benefits of savings (or dangers of not saving) with women's goals change their use of savings patterns in financial (BN accounts) and non-financial (livestock, jewelry, etc.) instruments?

(ii) Do *telenovelas* affect savings levels differently when the viewing of episodes is associated to incentives that increase community-based competition and lotteries?

(iii) By what means do these changes in savings patterns empower women to change the patterns of household consumption and strategies for generating family income?

(iv) Do the effects of *telenovelas* on the patterns of saving, the empowerment of women, and the well-being of the household differ depending on their previous exposure to TV or radio programs and soap operas, or on other characteristics of the women, their families, and their communities?

Clearly, the answers to these questions in this particular setting would depend on the quality of the soap opera generated especially for this purpose and population. The next section describes the process followed to produce the soap opera and the organization of the viewing sessions.

3. Producing and showing the Soap opera

The production of the soap opera was assigned to an audiovisual firm, Antorcha Comunicaciones, that has vast experience in the development of media material that combine fiction with messages that promote positive social attitudes or behaviors among different target groups[5]. We asked Antorcha to work with a Consultative Group (CG), formed by professionals of social sciences, experienced with interventions promoting financial inclusion in poor Peruvian rural areas, to help strengthen the pro-savings messages included in the different episodes, and their consistency with other messages worked by the unit of Financial Inclusion of the Ministry of Development and Social Inclusion (MIDIS) and the *Juntos* program. The CG was led by the co-Principal Investigator (PI) Martin Valdivia (GRADE), and also included a member of the Unit of Financial Inclusion

[5] The planning and production of the soap opera was done mostly throughout 2013. See *Figure 1* for a detailed timeline of the production of the soap, as well as of the whole study.

of MIDIS, a representative of the Juntos program, and four members from Proyecto Capital and IEP[6].

The first act was for Antorcha to transmit to the CG some basic know-how about the productions of soap operas, which was followed by an agreement on a protocol for the collaboration. The CG then commissioned a qualitative study to learn about the characteristics of the CCT beneficiaries and its communities in the study location (four provinces of Huancavelica, one of the poorest departments in Peru), especially about their knowledge, perceptions and practice of sound saving strategies, formal and informal, and the way they connect to their social aspirations and role models[7]. The results of this study were intensively discussed in two workshops, which helped Antorcha define the concept for the full story in five episodes[8].

The next two workshops allowed for a discussion of the concept proposed by Antorcha for the full story (5 episodes 20 minutes each). They defined that it was going to be a story of personal development combined with a love story where the main character was going to be a young female beneficiary of *Juntos*, named Josefa[9]. The savings culture and communal solidarity were defined as key elements of the character's personal development and social success. The positive messages, pro-savings and pro-conditionalities, were going to be transmitted through the interaction between Josefa and her older sister, Rufina, who had already achieved some elements of social success, and decides to help Josefa with her struggles by transmitting to her the key values she found useful throughout. The scripts for each of the five episodes were also discussed and approved by the CG, including the definition of the key pro-savings messages in each episode, as follows:

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[6] Proyecto Capital funds *Todas Cuentan*, which is the initiative that has initially promoted and funded this project. For more information, about Proyecto Capital, and its initiatives, see: htttp://www.iep.org.pe/fp_ap_proyectos_fase_proy_proyid_192.html.

[7] The fieldwork and qualitative analysis of the information was executed by two anthropologists from Proyecto Capital: Elena Caballero and Maria Cristina Gutierrez. A key learning of this study was the importance of the community to validate any concept of individual success.

[8] The decision of five episodes of 20 minutes was mainly the result of budget considerations.

[9] Figure 2 shows the images of the two main characters of *Josefa*.

1) It is important to save some of the money you earn/have, no matter how small (buy only what you really need, avoid spending all),
2) Risks of non-financial savings (need to keep savings in safe place),
3) Always keep some savings for unexpected expenses/emergencies,
4) Savings are key for future welfare-improving investments (advantages of partnering for social and economic community enterprises)
5) Planned savings can help achieve great goals and a better future.

The shooting of *Josefa* was done in rural Junin, a department neighbor to Huancavelica between October and November of 2013, and the final version of the videos were ready by February 2014[10]. Then, we organized special group viewing sessions in the localities where the beneficiaries reside, to avoid distance to the viewing locations to affect attendance and to avoid private viewing to negatively affect the social capital that they had built through the CCT program. The sessions occurred throughout August of 2014, with the help of a group of 14 trained facilitators[11]. A key element of the organization of the viewing sessions was the protocol to invite the women in each locality to the event, for which we had the valuable support from the program's local official (*gestor*) and the community representative (madre lider). We invited all the females registered as beneficiaries of Juntos in the treatment localities. A first printed invitation card was delivered to all listed beneficiaries two weeks in advance through the *madre líder*. A reminder was later sent two or three days before the inaugural session.

The facilitators were equipped with a film projector, laptop and speakers, which they used to show each episode, with the help from key local agents they identified and

[10] The team from Antorcha planned and implement the whole shooting, including the casting and the choice of customes, locations, etc. A trailer of the *Josefa* can be found at the following link: http://www.grade.org.pe/proyectos/mini-novelas-educacion-financiera-y-promocion-del-ahorro/.
[11] Facilitators were all professionals residents of Huancavelica, with a degree in social sciences or communications, all of them fluent in Quechua, and with experience working in rural areas with female beneficiaries of Juntos. They were trained in a 2-day workshop in Huancavelica, that clarify for them the objectives of the sessions and offered guidelines for facilitating the discussion of each episode.

contacted during validation visits prior to the beginning of the viewing sessions[12]. After this validation and the call for beneficiaries, the facilitators started visiting communities every week (1 community every day from Monday to Friday and two on Saturday), organizing viewing sessions in schools or health centers, mostly in the afternoons to maximize attendance. Each episode the facilitator greeted attendees, and proceeded to present the episode. After the episode, they facilitated a brief discussion among attendees about the events of the episode and the key pro-saving messages, similar to regular training sessions usually organized by *Juntos*[13]. They then closed with an invitation to the following session.

4. Methodological framework

This study explores the impacts of having been invited to watch *Josefa* on the financial savings knowledge, attitudes and behavior of the female beneficiaries of *Juntos*, using an experimental design. In what follows, we describe the experimental design, the data collected and the econometric approach used for the data analysis.

4.1. The experiment

We first selected 150 eligible communities in the department of Huancavelica, one of the poorest departments in Peru, especifically in four provinces: Tayacaja, Acobamba, Churcampa and Huancavelica, as we chose to stay away from the 70 districts prioritized by the Ministry of Social Inclusion and Development (MIDIS) to avoid working with a population overexposed to financial literacy treatments. Our approach was to work with an eligible group that would include traditionally excluded populations, but for whom the cultural barrier was more relevant than others such as the geographical distance from the BN agency. Consequently, we included some extra eligibility criteria, based on villages'

[12] During the validation visits, facilitators met community leaders, secured a proper space for the sessions, most of the times in the school or health centers, and defined some local contact that could support them with invitations for the target audience and during the sessions.
[13] Training sessions regularly offered by the program addressed the importance of conditionalities (school attendance and health controls), nutritional information, among others.

population size, poverty level and access to electricity and financial infrastructure[14]. Access to electricity was an obvious conditionality as it was absolutely needed to allow the viewing sessions in the villages. With respect to financial infrastructure, we learned that *Juntos* beneficiaries had two mechanisms to receive the transfers, one was through a direct deposit to their BN account while the others received the cash directly via a special transport that visits the localities every two months. It was clear that the second group corresponded to the villages that were too far away from the BN agency in the district, so that we decided to restrict the eligibility to those villages that received the transfer through direct deposit, understanding the geographical barrier was not that relevant for them.

The 150 eligible rural villages were randomly assigned to the control and two treatment groups, 50 villages to each group. Women in the villages assigned to the first treatment group were invited to a viewing session organized in their own village. The second treatment group were invited to similar sessions, but also had a competition and a lottery with USD 30 value in-kind prizes for those women that were able to answer correctly questions about the characters, the storyline and the pro-saving messages. The competition and lottery were announced at the moment of the first invitation and reminded at every viewing session. The lottery was supposed to occur if more than one beneficiary was able to answer correctly the set of questions. The idea of this treatment arm was to see if such a complementary incentive was necessary and effective to increase attendance to the viewing sessions. However, this treatment arm did not work quite well, as participants rejected the idea of a lone beneficiary and demanded the value of the prize to be distributed among them all despite it was a very small amount for each, In the end, facilitators had comply with such request. As we did not see any difference in attendance rates with those villages that did not include this incentive, we have decided for this version to present the results of pooling the sample of the two original treatment groups.

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[14] More precisely, eligible villages needed to have at least 150 households, have electricity, be served by the program *Juntos*, and receiving cash transfers through direct deposits to the BN account, rather than receiving an envelope with the cash, which the program does for those villages that are too far away from the BN offices.

The randomization was stratified by district and originally established two treatment groups and one control group, with 50 localities per group[15]. Figure 3 shows the geographical distribution of villages in each treatment group across the four Huancavelica provinces. The 150 eligible villages involved 6,383 female participants registered as beneficiaries of *Juntos*, and 4,220 of them belonged to the 100 communities that were invited to the viewing sessions for *Josefa*, while 2163 beneficiaries in 50 villages were part of the control group. Table 2 shows that the randomized surveyed sample is balanced in almost all variables checked[16].

4.2. Data Collection

The analysis of the impacts of this media-based intervention is based on the use of two key sources of information: a household survey applied about a year after the viewing sessions and the administrative records of the financial transactions performed by the Juntos beneficiaries with their BN account, which were obtained through the collaboration with MIDIS, and after we defined a clear protocol to guarantee the preservation of the confidentiality of such information[17].

The follow up survey included three separate modules: one for the female beneficiary of Juntos, another one for the community leader that coordinates with the program ("Madre Líder") and a third one for the program official ("Gestor"). The latter modules asked about basic socio-economic characteristics of the corresponding agent, plus some background about their role with the program. In the treatment villages, we asked the agent about the characters, storylines and pro-saving messages included in *Josefa*, and about the way the viewing sessions affected the relationship with their constituency.

[15] We generated 100 runs of the randomization and checked for balance across the number of female beneficiary of Juntos, access to some kind of education/health infrastructure and distance to the district capital. Run number 13 was selected, which balanced the three groups of the study on the referred observables.

[16] We explain below the characteristics of the survey sample. Recall also that this survey was applied about a year after the intervention, so that we restrict ourselves to compare variables that are not likely to change with time.

[17] Budgetary restrictions did not allow for a baseline survey.

The household survey included a questionnaire that asked about the beneficiary's individual and family socio-economic characteristics, plus their financial perceptions, attitudes and practices, both for savings and credit transactions, and several measures of household vulnerability and social networks of their members. Finally, it included questions about the *telenovela*, in treatment villages, and questions about female empowerment within the household and village, trust, among others. The survey was applied to a random sample of 2,274 *Juntos* beneficiaries (about an average of 15 per village), plus 147 community leaders and 33 program officials.

We were also able to get access to the data of the financial transactions made with their BN accounts by the Juntos beneficiaries in our study sample (6383 women), which adds significantly to the contribution of this paper to the literature as it takes beyond self-perception and atittudes towards savings. With the support from the Financial Inclusion Unit at MIDIS, we were able to reach an agreement with BN to get access to the individual records between May 2014 and July 2015, a year after the viewing sessions, while preserving the confidentiality of such information. The protocol first implied for GRADE to submit to the BN the list of beneficiaries in the 150 localities (6383) with basic demographic information from Juntos database, including the locality and the ID each of them had with the program. Next, the BN used such ID number to identify the person and her account and obtain the transaction data for the requested period, which they then merge with the demographic data. Finally, the returned such database to GRADE after they erased the ID numbers. In addition, both authors signed an agreement to follow strict protocols for not sharing this information beyond the research team, and erase any trace that could allow anybody to identify the individual behind the financial activity[18].

The financial information received includes all deposits and withdrawals made by the beneficiary or the program during the period, which includes three months prior to the intervention and up to a year after it. We are not aware of any other experimental

[18] The two leading authors have currently valid Yale certificates for management of data involving human subjects.

study that have been able to use such objective measure, as most of them can only report self-reported indicators, that can be biased in case the individual senses a right answer.

4.3. Econometric approach

For the estimation of impacts, we use the treatment-control (T-C) differences based on the randomly allocated intention to treat (ITT). As explained in section 4.1, we are going to present here the effects of the treatment, having been invited to the Josefa viewing sessions, pooling the two treatment groups originally planned as the extra viewing incentives considered for the second treatment group were actually rejected by the participants. Let's denote T to the group that is invited to the viewing sessions to watch Josefa. The comparison between treatment (T) and control groups allows the estimation of the ITT effects of being exposed to *Josefa* and the messages included in it. Formally, the preferred specification is the ANCOVA estimator for the ITT effects, which we obtain through the following regression[19]:

$$Y_{ijk1} = \alpha + \beta T_{jk} + \gamma X_{ijk0} + \delta_k + \varepsilon_{ijk} \tag{1}$$

where Y_{ijk1} denotes an outcome variable for a woman i in village j coordinated by *gestor* k at time 1 (follow up), T_{jk} is a dummy variable that takes the value one if the woman belongs to village j that was assigned to the viewing session of *Josefa*. X_{ijk0} is the vector of stratifiers used in the randomization[20], δ_k is the *gestor* fixed effects and ε_{ijk} is the error term. Thus, β is the effect of basic training, and the error term is assumed to be uncorrelated across villages but not within them[21].

[19]The results section also presents the diff-in-diff estimates with village fixed effects, for some aggregate indexes, as a robustness check.

[20] See footnote 6 for the full list of stratifiers. Also, see Bruhn and McKenzie (2009) for a discussion of the need to control for the stratifiers in the estimation of treatment effects.

[21] While estimating (1), we include observations with missing data on the control variables, by assigning them a cero value and including a dummy equal to one for such observations with missing data. Attrtition is not analyzed in this version considering that we had no baseline survey and non-response rates were minimal in the survey and no different between treatment and control groups.

We evaluate the impact of this intervention upon a large number of indicators related to knowledge of financial concepts, attitudes and perception around savings, risk management, etc, and behavior. However, testing multiple outcomes using (1) independently increases the probability of rejecting a true null hypothesis for at least one outcome above the significance level used for each test (Duflo, Glennester and Kremer, 2007). We need to adjust the estimated p-values if we want to test whether *Josefa* has an impact on the family of outcomes associated to perceptions and attitudes towards savings and risk management. A summary measure that captures such idea is the mean standardized treatment effect. Following Kling, Liebman and Katz (2007), we implement that by defining a summary measure Y^* as the unweighted average of all standardized outcomes of a family. That is, we get $Y^* = \sum_k Y_k^* \big/ k$, where $Y_k^* = (Y_k - \mu_k)/\sigma_k$. Y_k denotes the outcome variables within each family and were re-defined in some cases so that a larger value is always better for the business or household. Standardization is done using mean and variance for the control group at baseline. Thus, the mean and standard deviation of β in (1) for Y^* allows us to test whether treatment had an overall positive effect on the corresponding family of outcomes.

5. Results

We present first the results in terms of attendance to the viewing session and the recollection of key characters, storylines and pro-savings messages by those women that were assigned to the treatment groups. Next, we present a series of self-reported measures of knowledge about savings options, risk management strategies, beneficiaries empowerment, savings in formal financial institutions.

5.1. Attendance and recollection

Training sessions for women attached to another high-demand service often suffer of serious problems to get people to attend the sessions, especially after the first session. That is true regardless of the theme, but it is clearly true for financial education sessions (Xu and Zia, 2012; Karlan, Ratan and Zinman, 2014). Based on the quality of the final product and the value of entertainment for rural women with low exposure to this type of media products, we hoped *Josefa* would suffer less from attendance problems, but we were astonished by the results we found.

Sessions had high attendance rates and occurred mostly without any major incidents. Only in 3 communities, one session had to be rescheduled due to problems with the infrastructure at the viewing location. In case of low attendance, a conversation with the *Madre Lider* and the *Gestor* was arranged to improve the participation of the beneficiaries for the next session. Then, the next session showed first the previous episode and then the corresponding one. On average, each week 3107 beneficiaries watched the *telenovela,* and the average attendance rate was 75% of the invited *Juntos* beneficiaries for all the treated communities. Figure 4 shows the average rate of assistance per session for the 100 communities in the first and second treatment group, and it is surprising to observe a slight increase in the attendance rate by the third session.

We also asked the beneficiaries assigned to treatment about the level of recollection of the soap opera at the survey, about a year after the viewing sessions. Table 3 shows the answers about the recollection of characters or storylines and the pro-saving messages included in *Josefa*. First, the women reported recalling on average three of the eleven characters or storylines we checked for and two of the five main pro-saving messages included in *Josefa*. The plots most mentioned related to the image of Josefa saving in the BN agency and the successful guinea pigs business initiative. With respect to the pro-savings messages, the most mentioned ones referred to “you can always save at least part of what you earn, no matter how small” and the importance of the security of the savings mechanism used. We interpret these results as an indication that the viewing session caused a significant impression on the audience, and that some of the pro-saving messages remained even a year after the viewing sessions. We also see that recollection is significantly stronger for the younger beneficiaries (under 40), as age differences account for 0.17 sd of the plot recollection and 0.12 sd of the messaging recollection.

5.2. Estimated impacts

We then look at the impacts of Josefa on the attitudes and perceptions of the beneficiaries with respect to savings, formal and informal, finding several changes that are consistent with the messages contained in the soap opera. Table 4 shows that women assigned to treatment are 6.8 percentage points (pp) more likely to report they are able to save by themselves, although at the same time, 8.4 pp more likely to having regrets after spending money in thing no that necessary. The latter is an expression of the importance of temptation to determine certain purchasing behavior, but also shows that Josefa has made them more aware that such spending needs to be controlled. Indeed, at the same time, they tend to report less that they spend any extra money immediately. Finally, the summary standardized pro-savings attitude index shows that those treated have 0.12 sd more positive attitude towards savings.

In Table 5, we observe their answers to hypothetical questions about the mechanisms they would use in the case of a need of 500 soles (about USD 185, at the time of the survey. Again, those assigned to treatment tend to answer more consistent with some of the messages in *Josefa*. They are indeed 9.6 pp more likely to report using their savings to cover that need, and 13.4 pp less likely to ask their family or friends for a loan. The situation is more undetermined when they report the strategies they used to cope with bad shocks over the 12 months prior to the survey, that is, since the *Josefa* viewing sessions. On one hand, treated beneficiaries were 6.8 pp more likely to report having used their savings to cope with bad shocks. However, at the same time, they are also more likely to report having sold livestock for such purpose, which is traditionally considered an informal mechanism rural families use to save some surplus money they may have, for instance, after selling their harvest. This may result from the fact that keeping livestock was not that immediately affected, considering that keeping livestock in rural areas also has some cultural implications that go beyond the savings motive, but it may also result from the fact that the importance of saving was a stronger message than the one of the importance of using a formal mechanism.

BN account balances

Many previous studies promoting financial education interventions are limited by the use of self-reported information about the beneficiaries' financial knowledge or their attitudes towards certain financial instruments such as credit, savings, insurance, etc., which are subject to some bias, especially if the respondent perceives a "right" answer in some dimension. There are exceptions when the financial education intervention is precisely designed to promote the adoption of a particular financial product and the financial institution can collaborate to share their records on the adoption of such product. In this case, the Josefa intervention is not connected to the adoption of a particular new product, as the beneficiaries have had their savings account for several years already by 2014. However, with the collaboration from the MIDIS unit for financial inclusion, we were able to reach an agreement with BN to get access to the records of the transactions while preserving the rights for confidentiality, which allows us to analyze the impacts of the intervention on a more objective measure.

In this version, we analyze the records of the transactions made by Juntos beneficiaries in treated and control localities with their BN accounts between March 2014, three months before the viewing sessions, up to September 2015, about 14 months after. Figure 5 shows the impacts of Josefa each bimester for the full sample of those registered in Juntos in eligible localities. We see an increase in end of bimester balances right after the viewing sessions, but they fail to be significantly positive until July of 2015, about a year after the session, which coincides with the harvest season in Huancavelica[22]. The next semester (September-October 2015) also shows an increased balance but it isagain not statistically significant, as in the months prior to the July-August bimester. We interpret this result as evidence that the improved pro-savings attitude remains latent until when cash surpluses allow for increased formal savings, while they wait for extra cash needs to

[22] Main harvest season in Huancavelica goes from May to July, according to most agro-ecological reports (see, for instance, CARE-Peru, 2007).

materialize[23]. Still, the surprising result is that such effect appears even a year after the viewing sessions.

Table 7 shows the impacts of Josefa over the average end of bimester balances for July and September of 2015, for the full sample and the randomly selected survey sample. By July 2015, the treated group shows on average higher average daily balances (20 soles, or 36% above the control group average), and the survey sample shows a similar effect (33%). Such effect, however, stops being significant by the next bimester, the one that starts with the transfer of early September. We next explore whether the effects of Josefa observed for the July-August bimester vary by the age of the beneficiary, her exposure to TV, or financial education programs (Table 8). In the case of age, we consider the differences observed in recalling Josefa's plots and prosaving messages which were stronger among the younger (Table 3). About exposure to TV, recall from Table 2 that only about 44% of the eligible population had a TV at home. We find such effects accrue mostly for younger beneficiaries (under 40) and those with less access to TV and les prior experience with financial education programs, but we fail to reject the null hypothesis of equal effects.

Exploring associated mechanisms

The next question is about what are the mechanisms that explain the important savings effect observed in the July-August bimester. One optimistic mechanism is that the Josefa intervention generated some income effect so that they can now leave their money in the BN account for a longer period, or until they need to use it. However, the evidence reported in Table 9 does not support such hypothesis, as income, expenditures or asset ownership effects are not able to reject the null hypothesis. It may be that the results reported here are more related to Josefa helping increase the trust of the beneficiaries on the formal bank, as it projects an image of a positive role model that starts to have success in life, after important struggles, while using adequately her BN account. Indeed, the

[23] *Table A. 1*, Figure A. 1 and Figure A. 2 show a similar pattern when looking at average daily balances instead of the end of bimester balances shown in the text.

results in Table 10 seem to suggest such hypothesis. The table shows no effects on self-esteem, community participation or overall trust in key market and nonmarket institutions, although when disaggregating by age, we observes that trust in financial institutions is increased for the younger treated women.

In addition, the soap operas seem to also have effects with the women feeling more empowered to make or participate in economic and financial decisions within the household. Indeed, Table 10 also shows the impacts of Josefa on four standardized indexes that summarize the role women self-report they have on a variety of household decisions. Non-economic decisions include decisions associated to fertility and the health and education of the respondent's offspring. Economic decisions include occupational decisions while financial decisions refer especifically to credit and saving decisions. Interviewed women report about if they make those decisions by themselves, whether they participate in such decision and with whom. What we find is no effect of Josefa on non-economic decisions, but a significant positive effect on economic and financial decisions, a year after the viewing sessions. In the case of economic decisions, the effect is about 0.11 sd, while the effect on financial decisions is almost 0.14 sd. Furthermore, we find such empowerment effects to accrue around the younger beneficiaries and those that do not have access to TV at home, although actually the null hypothesis of equal treatment effects is not rejected.

6. Summary and discussion

This study uses an experimental design to explore whether exposure to a soap opera that combines a typical love story with clear pro-saving messages can contribute to the financial inclusion of poor rural women by increasing their knowledge and attitudes towards formal savings. Based on the literature on the value of entertainment for educational purposes, we first developed a 5-episode soap opera that included characters and plot lines that could connect with our intended audience, poor rural women that have been traditionally excluded from healthy interactions with the formal sector, in particular, with financial institutions, despite residing in villages with relative manageable geographical access to banking agencies and other basic social and economic infrastructure. Then, we organized special viewing sessions in their own villages with the help of facilitators that travelled with the equipment required to show the soap opera, Josefa, to the invited audience.

Our preliminary results show that the soap opera was extremely successful in terms of capturing the interest of the targeted audience, based on the high proportion of invited people that attended the viewing sessions (average of 74%, with even a growing trend), and the way they recall the characters, the story and the key pro-saving messages, about a year after the viewing sessions. Furthermore, we also find that women in treatment villages have an improved pro-savings attitude, and have a better understanding of the precautionary motive for savings about a year after the viewing sessions. Finally, we find that the improved pro savings attitude remains latent for about a year but materializes in increased temporary savings about a year later, likely when cash surpluses appear as a result of post-harvest season. The BN savings account balances by the end of the July-August bimester is 30% higher for the treated group compared to the control group. Such effect remains positive by the next bimester, but stops being statistically significant, similar to the situation in the months prior to July 2015. We interpret this result as evidence that the improved pro-savings attitude remains latent until when cash surpluses allow for increased formal savings, while they wait for extra cash needs to materialize. Still, the surprising result is that such effect appears even a year after the viewing sessions. Finally, the savings effect in the July-August bimester is especially strong among the younger women (under 40), and those that had less access to TV at home.

We do not find an income effect that can be attributed to Josefa, but those women exposed to the soap opera did showed an increased trust in financial institutions and an improved control over economic and financial decisions within the household. Furthermore, such effects are stronger among the younger women, which is consistent with the increased savings effect found for the July-August bimester.

The temporary formal savings effect is particular important, as it takes us beyond the self-reporting towards an objective measure of savings behavior, and we are not aware of another study that has been able to report such objective measure for this kind of studies on financial inclusion. We interpret these results as evidence that, beyond traditional financial education approaches, the edutainment approach can have an important contribution to the financial inclusion by increasing the trust market institutions by poor rural women that have faced secular exclusion from formal financial institutions like the ones from the Peruvian Southern Sierra.

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Figure 1: Timeline of the study

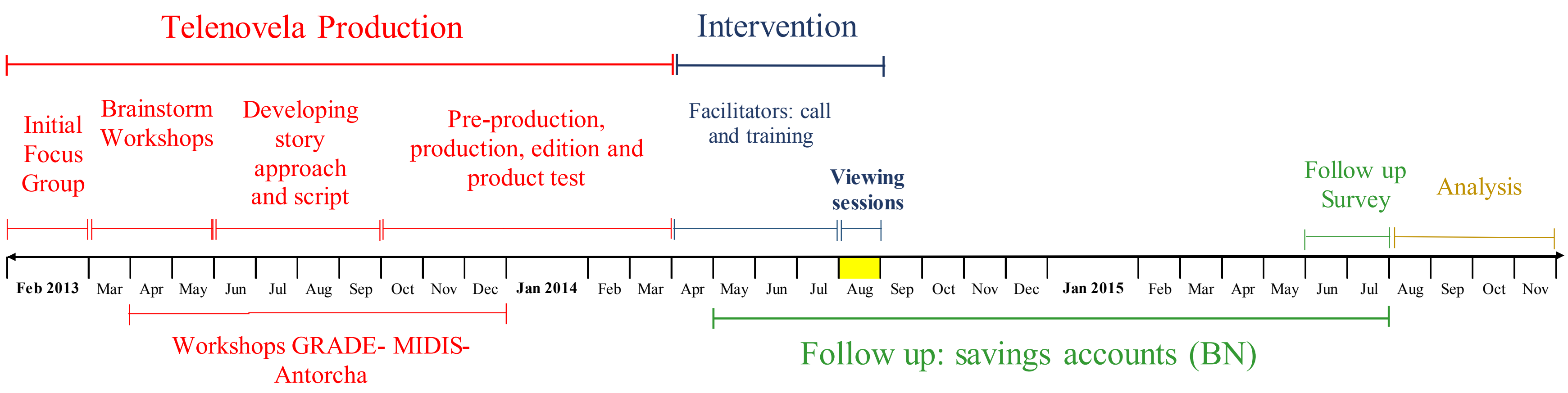


Figure 2: Josefa's main characters

Josefa

Rufina

Figure 3: Eligible communities by treatment

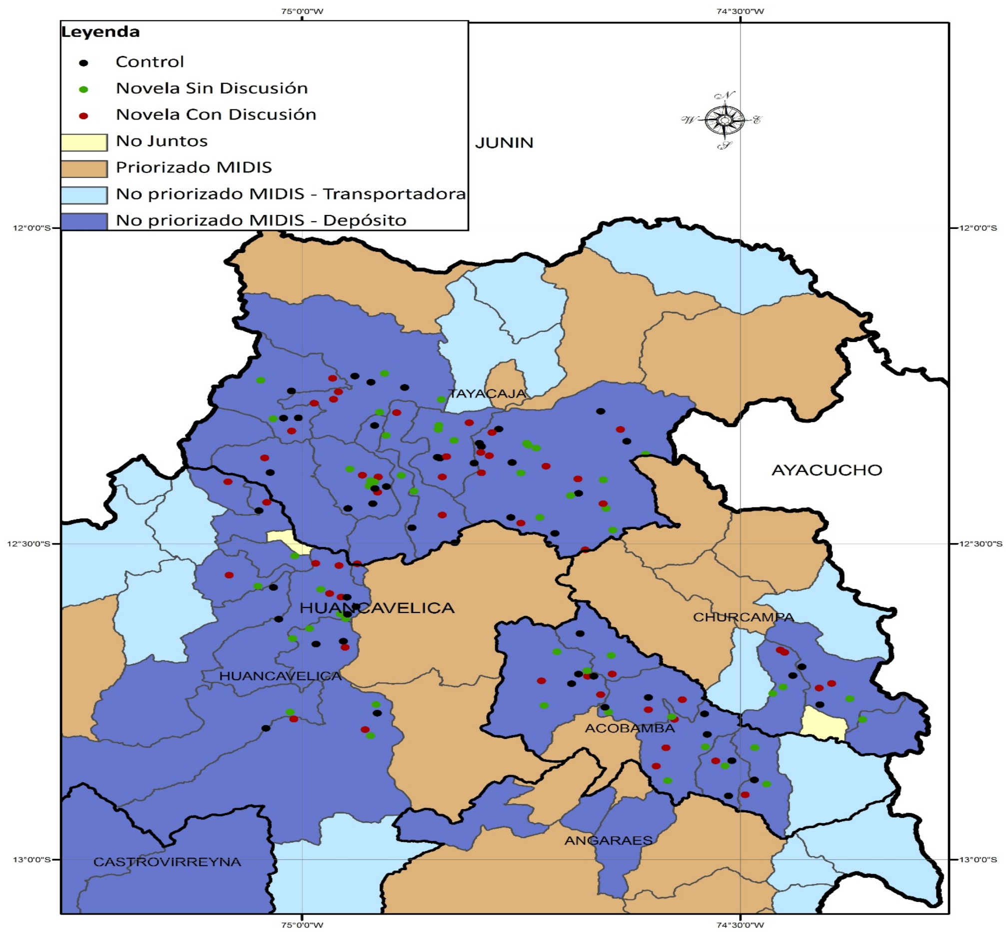


Figure 4: Attendance rates by session, and treatment group

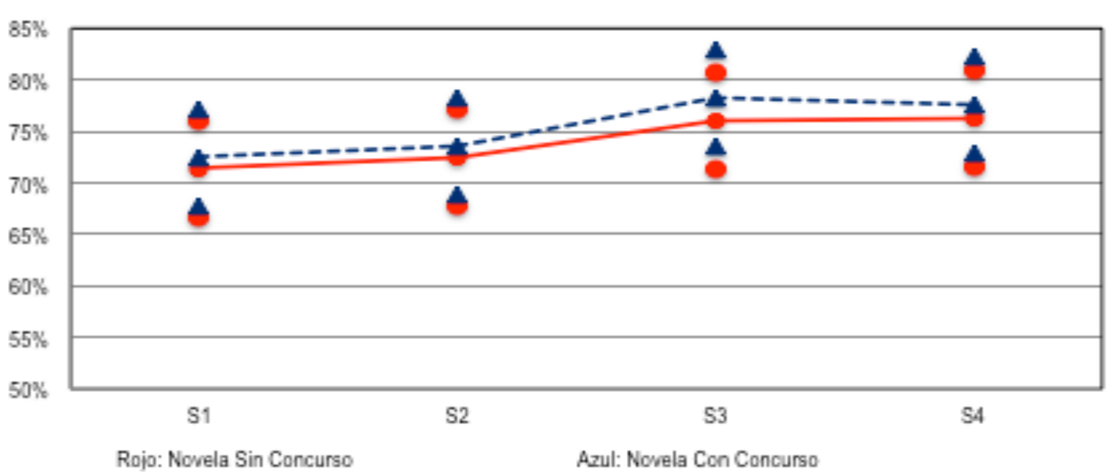
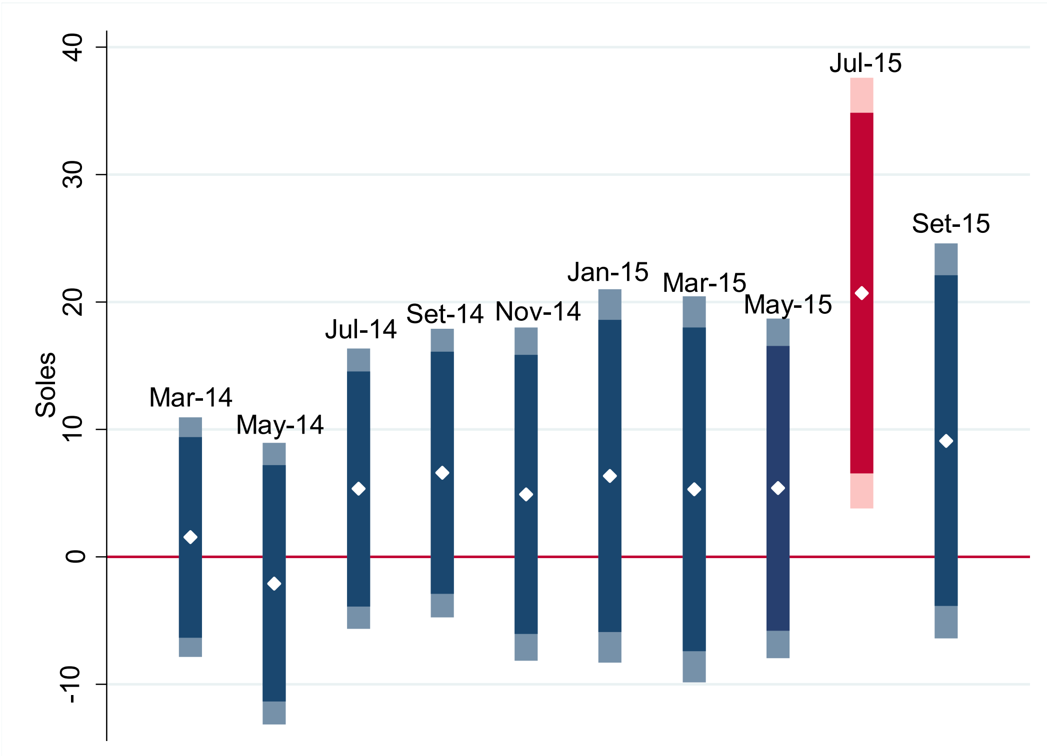


Figure 5: ATE estimates - BN account balances (local currency)



Notes: Account balance 60 days after Juntos transference

Table 1: Number of eligible districts, localities per province, and randomized allocation

		# Localities			
Provinces	# Districts	Control	T1: Soap	T2: Soap+ incentives	Total
Acobamba	6	11	11	11	33
Churcampa	3	3	4	4	11
Huancavelica	9	10	10	10	30
Tayacaja	8	26	25	25	76
	26	50	50	50	150

Table 2: Basic socio-economic characteristics (Balance analysis)

	Obs	Control	Treatment	C vs T
Characteristics of the junto's beneficiaries				
Age	2,274	41.465	42.337	0.0695 *
		(1.258)	(1.227)	
Educational attainment				
None	2,273	0.248	0.260	0.587
		(0.102)	(0.096)	
Up to primary education	2,273	0.480	0.463	0.498
		(0.049)	(0.051)	
Secondary school or more	2,273	0.272	0.277	0.840
		(0.108)	(0.104)	
Language most used at home				
Spanish (%)	2,274	0.210	0.186	0.510
		(0.117)	(0.118)	
Quechua(%)	2,274	0.789	0.815	0.469
		(0.118)	(0.118)	
Besides JUNTOS, # of programs affiliated to				
None (%)	2,274	0.208	0.222	0.464
		(0.019)	(0.018)	
One (%)	2,274	0.808	0.766	0.157
		(0.026)	(0.023)	
Two (%)	2,274	-0.003	0.002	0.810
		(0.013)	(0.010)	
three or more (%)	2,274	-0.012	0.009	0.111
		(0.010)	(0.008)	
Owns a tv	2,271	0.438	0.446	0.008
		(0.018)	(0.022)	
Asset index - dwelling (i)	2,274	0.008	-0.008	0.270
		(0.036)	(0.036)	
Asset index - home assets and services (ii)	2,274	-0.083	-0.079	0.893
		(0.053)	(0.052)	
	2,274	-0.025	-0.034	0.629
Asset index - dwelling (i)+(ii)		(0.040)	(0.039)	
Tenure of leader/coordinator				
Leader Mother	147	0.607	0.393	0.529
		(0.555)	(0.578)	
Junto's Representative	107	1.028	1.028	0.994
		(0.028)	(0.040)	

Table 3: Recall levels of Josefa – characters, storyline, pro-saving messages

	Obs	Full Sample	Age of the beneficiary		
			(< 40)	(> 40)	Diff
Recalled characters/storyline (11)					
Average #	1,127	2.97	3.12	2.797	0.323***
SI	1,127	0	0.078	-0.093	0.171***
At least 3	1,127	0.538	0.566	0.503	0.063**
At least 6	1,127	0.079	0.101	0.054	0.047**
Recalled pro-saving messages (7)					
Average #	1,127	2.02	2.079	1.951	0.128**
SI	1,127	0	0.054	-0.063	0.117**
At least 1	1,127	0.986	0.996	0.973	0.023**
At least 2	1,127	0.628	0.649	0.603	0.046*

Notes: SI denotes a standardized index based on the number of options provided for each aspect in the questionarie

Table 4: ATE estimates – savings attitudes

			ATE	
	Obs	Control	OLS	FE
Savings attitude				
They usually …				
Save money on their own (%)	2,273	0.507	0.042	0.068
		(0.044)	(0.053)	(0.038)*
Regret after spending money (%)	2,273	0.488	0.044	0.084
		(0.050)	(0.058)	(0.047)*
Want to save more than their husbands (%)	2,273	0.523	0.036	0.023
		(0.044)	(0.052)	(0.042)
Have to save their money separately (%)	2,273	0.378	0.060	0.033
		(0.046)	(0.056)	(0.050)
Desired savings in a year (ln)	2,195	6.154	0.022	-0.083
		(0.128)	(0.163)	(0.157)
Average savings in a year (ln)	2,210	0.445	0.421	0.807
		(0.500)	(0.573)	(0.395)**
Satisfied with their savings (%)	2,273	0.125	0.034	0.032
		(0.042)	(0.045)	(0.031)
Spends immediately (%)	2,273	0.641	-0.112	-0.152
		(0.045)	(0.054)**	(0.040)***
Necessity of hiding money from the husband or other adult withing the household				
Hides her money inside her household (%)	2,273	0.333	0.045	0.029
		(0.039)	(0.050)	(0.047)
Doesn't hide her money (%)	2,273	0.638	-0.063	-0.045
		(0.041)	(0.052)	(0.050)
Pro-savings attitudes standarized index	2273	-0.037	0.100	0.115**
		(0.055)	(0.068)	(0.052)

Notes: Regressions include fixed effect by the program's "gestor"and the errors are clusterized at the village level. Standardized index is constructed based on all questions included in this variable.

Table 5: ATE estimates – Self-reported preference for options when in hypothetical need of cash

	Obs	Control	ATE	
			OLS	FE
In case you ever need S/. 500 would you				
Use your savings (%)	2,273	0.148	0.091	0.096
		(0.025)	(0.035)***	(0.031)***
Sell anything (%)	2,273	0.311	0.035	0.047
		(0.038)	(0.045)	(0.032)
Lower expenses (%)	2,273	0.040	0.001	0.009
		(0.011)	(0.015)	(0.018)
Apply for a loan:				
Financial Institution (%)	2,273	0.054	-0.005	-0.011
		(0.014)	(0.017)	(0.011)
Non-Financial Institution (%)	2,273	0.004	0.007	0.003
		(0.003)	(0.004)	(0.005)
Family and Friends (%)	2,273	0.529	-0.091	-0.134
		(0.044)	(0.050)*	(0.035)***
Government (%)	2,273	0.008	-0.002	-0.004
		(0.004)	(0.005)	(0.004)
It would be impossible (%)	2,273	0.121	-0.020	-0.006
		(0.023)	(0.029)	(0.022)

Table 6: ATE estimates – Self-reported strategies used to cope with bad shocks over last 12 months

	Obs	Control	ATE OLS	ATE FE
Temporary migration …				
To apply for a job (%)	2,273	0.130	-0.007	-0.000
		(0.029)	(0.034)	(0.026)
To a friend's/relative's house (%)	2,273	0.024	-0.004	-0.004
		(0.008)	(0.010)	(0.008)
Indebt with …				
Family or Friends (%)	2,273	0.097	-0.018	-0.023
		(0.019)	(0.022)	(0.017)
Financial Entity (%)	2,273	0.006	-0.001	-0.001
		(0.003)	(0.003)	(0.004)
Moneylenders (%)	2,273	0.008	-0.006	-0.006
		(0.005)	(0.005)	(0.005)
Sale …				
Assets (%)	2,273	0.014	0.005	0.004
		(0.008)	(0.009)	(0.008)
Livestock (%)	2,273	0.174	0.077	0.060
		(0.031)	(0.043)*	(0.029)**
Use savings (%)	2,273	0.171	0.084	0.068
		(0.032)	(0.040)**	(0.030)**
Work longer shifts (%)	2,273	0.255	-0.024	-0.024
		(0.037)	(0.043)	(0.035)
Children work longer shifts (%)	2,273	0.036	-0.011	-0.007
		(0.014)	(0.015)	(0.007)
Others (%)	2,273	0.118	-0.051	-0.006
		(0.025)	(0.044)	(0.032)

Table 7: ATE estimates - BN account balances (local currency)

	Obs	Control	AtE	
			Ols	FE
Full Sample				
Jul-15	6,349	55.181	2.507	20.698
		(4.851)	(5.945)	(8.572)**
Set-2015	6,349	38.988	0.329	9.11
		(4.538)	(5.562)	(7.859)
Survey Sample				
Jul-15	2,271	48.37	-3.629	16.363
		(6.865)	(8.464)	(10.227)
Set-2015	2,271	31.003	-8.455	-5.043
		(6.052)	(7.462)	(8.702)

Notes: Account balance 60 days after Juntos transference

Table 8: ATE estimates and interactions – BN account balances (local currency)

	Obs	FE
ATE		
Full Sample	6,349	20.698
		(8.572)**
Survey Sample	2,271	16.363
		(10.227)
Age		
<=40	2,271	20.788
		(12.956)
>40		10.557
		(14.899)
P.val		0.591
TV exposure		
<=1 hours a day	2,270	20.63
		(10452)**
>1 hours a day		-7.714
		(34.713)
P.val		0.439
Exposure to other financial literacy programs		
None	2,258	22.669
		(10.435)**
At least 1		-32.482
		(55.408)
P.val		0.339
Social Capital Index		
Hight intensity	2,271	16.632
		(14.322)
Low intensity		16.0741
		(0.258)
P.val		0.978

Notes: Account balance 60 days after Juntos transference in july 2015

Table 9: ATE estimates – Income and wealth effects

	N	Control	ATE OLS	ATE FE
HH Income (log)	2,271	6.386	0.004	0.036
		(0.032)***	(0.040)	(0.071)
HH Expenses (log)	2,268	5.745	0.027	0.082
		(0.023)***	(0.029)	(0.055)
Asset index 1 - dwelling	2,271	-0.000	0.000	-0.009
		(0.036)	(0.044)	(0.065)
Asset index 2 - home assets & services	2,271	-0.030	0.046	0.006
		(0.036)	(0.044)	(0.074)

Notes: Asset indexes are standardized summary measures obtained as explained in the section 4.3. FE Regressions include fixed effect by the program's "gestor"and the errors are clusterized at the village level.

Table 10: ATE estimates – Social capital and Empowerment effects

	Obs	Control	ATE		Age			Has TV		
			OLS	FE	< = 40	> 40	P.val	Yes	No	P.val
		(1)	(2)	(3)	(4)	(5)	(5)-(4)	(6)	(7)	(6)-(7)
Trust										
Overall Trust Index	2,271	0.025	-0.039	-0.093	-0.059	-0.134	0.369	-0.074	-0.110	0.743
			(0.044)	(0.084)	(0.081)	(0.107)		(0.124)	(0.073)	
in Financial Institutions	2,271	0.319	0.068	0.040	0.062	0.014	0.255	0.036	0.044	0.889
			(0.021)***	(0.033)	(0.039)	(0.039)		(0.048)	(0.039)	
Self-esteem	2,271	0.560	0.008	0.007	0.007	0.007	0.988	0.012	0.007	
			(0.022)	(0.037)	(0.036)	(0.047)		(0.050)	(0.43)	
Community Participation	2,271	0.634	-0.003	0.000	-0.016	0.021	0.319	0.029	-0.024	0.224
			(0.021)	(0.043)	(0.045)	(0.047)		(0.050)	(0.046)	
Empowermeny										
Non-economic decisions	2,271	-0.021	0.031	0.033	0.055	0.017	0.65	-0.051	0.097	0.15
		(0.036)	(0.044)	(0.058)	(0.067)	(0.077)		(0.077)	(0.077)	
Financial and economic decision	2,271	-0.045	0.069	0.132	0.171	0.109	0.46	0.069	0.18	0.26
		(0.036)	(0.044)	(0.059)**	(0.065)***	(0.080)		(0.074)	(0.081)**	
Economic decisions	2,271	-0.035	0.053	0.109	0.129	0.102	0.76	0.034	0.167	0.15
		(0.036)	(0.044)	(0.062)*	(0.069)*	(0.083)		(0.077)	(0.078)**	
Financial decisions	2,271	-0.049	0.075	0.138	0.187	0.104	0.31	0.088	0.173	0.42
		(0.036)	(0.044)*	(0.057)**	(0.064)***	(0.077)		(0.073)	(0.082)**	

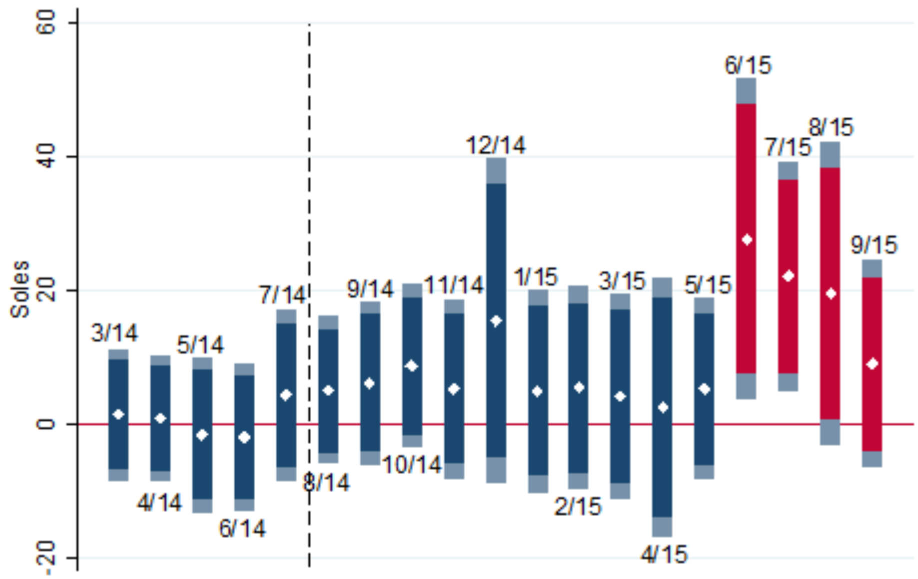
Notes: FE regression includes fixed effects for the Juntos local coordinator and corrects for clustering at the village level. Trust index is a standardized summary measure of trust in several market and non-market institutions. All regressions but those in OLS column include fixed effects for the Juntos local coordinator and corrects for clustering at the village level. * Significant at 10%; ** Significant at 5%; *** Significant at 1%

Table A. 1: ATE estimates - BN account daily balances (local currency)

	Obs	Control	AtE	
			Ols	FE
Full Sample				
Jul-15	6,349	122.172	6.391	28.129
		(1.017)	(1.246)***	(6.977)***
Set-2015	6,349	116.682	-2.056	12.462
		(0.945)	(1.158)*	(6.623)*
Survey Sample				
Jul-15	2,271	121.287	-4.407	15.741
		(1.512)	(1.864)**	(10.251)
Set-2015	2,271	113.839	-12.771	0.762
		(1.369)	(1.688)	(9.492)

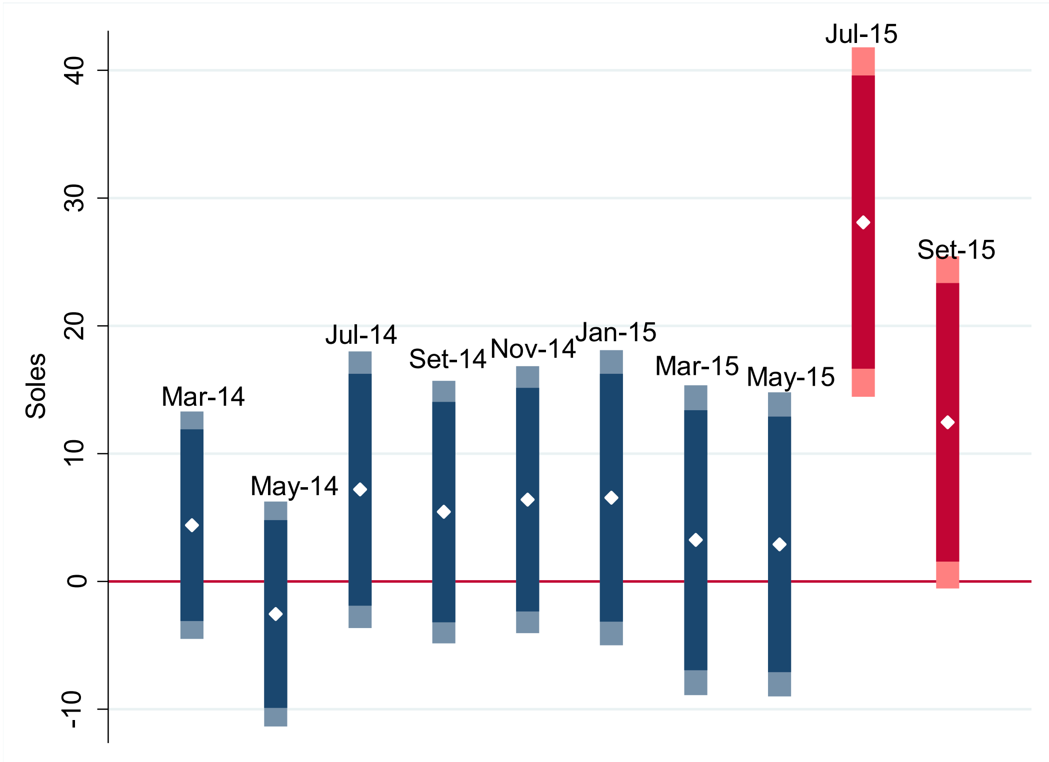
Notes: BN account daily balance of 30 days after Juntos transference (including)

Figure A. 1: ATE estimates - BN account last day of the month balance (local currency)



Notes: Account balance in the last day of the month

Figure A. 2: ATE estimates - BN account daily balance (local currency)



Notes: BN account daily balance of 30 days after Juntos transference in july 2015 (including)