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Fostering savings by commitment: Evidence from a quasi-natural experiment at The Small Enterprise Foundation in South Africa

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ABSTRACT

We studied the effects of a pilot project that strengthened savings incentive mechanisms. The project was established by The Small Enterprise Foundation (SEF), a leading microfinance institution based in South Africa. The program introduced a savings stimulus in the form of a *Goal Card*: clients subscribing to this (non-coercive) tool were required to identify a savings goal and to commit to regular payments to reach it. The experiment had a quasi-natural approach as it was implemented by SEF in non-randomly selected locations. Difference-in-differences estimates show improved savings habits among those of the foundation's customers who were involved in the program, compared to the counterfactual that are identified using propensity score matching. The effect of the program manifested in its second semester, suggesting a persistent change of habits but a slow accumulation of savings. We conclude that asking microcredit customers to identify a savings goal and commit to a regular savings amount to achieve it is a promising savings incentive mechanism.

1. Introduction

Savings are often the only way the poor can pay for major unexpected events or take advantage of business opportunities (Consultative Group to Assist the Poorest, 2002; Dupas & Robinson, 2013a). Even in disadvantaged contexts, there is a conspicuous demand for savings products (Collins, Morduch, Rutherford, & Ruthven, 2009) as poor people are faced not only with extremely low income, but also with income unpredictability. However, the poor rarely have access to deposit services that are offered by formal or semi-formal institutions; they resort to informal mechanisms, which are often risky, illiquid, and rigid (Ambec & Treich, 2007; Anderson & Baland, 2002; Besley, Coate, & Loury, 1993; Vonderlack & Schreiner, 2002).

When formal or semi-formal deposit services are available, some form of obligation can play an important role in helping the poor to save. Many microfinance institutions (MFIs), for instance, apply withdrawal restrictions or other mechanisms that share the common feature of assistance with deposit discipline (Atkinson, de Janvry, McIntosh, & Sadoulet, 2013). However, in the literature, there is a lively debate regarding the effects of imposing coercive savings plans and withdrawal restrictions on MFIs' customers versus adopting more leniency in fostering discipline and savings accumulation (e.g., Labie, Laureti, & Szafarz, 2017).

In this study, we examined the effects of a pilot project in which a savings plan with specific savings goals was promoted. The project was established by The Small Enterprise Foundation (SEF), a leading MFI based in South Africa. SEF was founded in 1992 in Tzaneen, Limpopo, to combat poverty sustainably. To achieve this goal, SEF chose microcredit to provide relief to the poorest people who, otherwise, would be excluded from the traditional financial system, and adopted the methodology of group lending with joint liability.

SEF used two strategies to encourage its clients to acquire a habit of saving. The first was a loan-size strategy that required cli-

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ents had to have, in their savings accounts opened at a bank or post office, a savings balance of at least 10% of the amount they sought to borrow, as well as to make a deposit of at least 2% of their current loan size fortnightly. The second strategy entailed training sessions delivered regularly by SEF's "development facilitators" (i.e., credit officers (COs))[1] to their customers to promote regular savings.

The new pilot program under study introduced a further stimulus to customers to acquire a habit of saving in the form of a "Goal Card," through which card holders were asked to identify a savings goal and to commit to a regular savings amount. The Goal Card was a non-coercive tool because it did not have any real sanctions or commitment devices associated with it. The project was implemented from May 2015 to April 2016, and offered an opportunity to investigate whether encouraging clients to set firm savings commitments was effective in increasing their savings.

The pilot program was a quasi-natural experiment as SEF implemented it in non-randomly selected locations or centres (Goal Card centres). After using propensity score matching (PSM) techniques at the centre level to identify a control group of centres similar to the Goal Card centres, we performed a difference-in-differences (DID) analysis at client level to evaluate the effects of the program.

The estimates show a significant increase in the savings of SEF's customers in the Goal Card centres, compared to the counterfactual. Additionally, the positive effect of the Goal Card program manifested in the second semester of the project, suggesting a persistent change in the savings habits, but a slow accumulation of savings. Furthermore, the Goal Card program effect was positive and significant both when we considered only the people who had been SEF's customers for the entire observation period and when we included customers who had dropped out of SEF, as well as new customers.

Overall, the results suggest that a savings incentive program can be effective without being coercive. Additionally, there is evidence that the motivational effect may be prevalent, consistent with the goal-setting theory (e.g., Locke & Latham, 2006) that claims that setting specific, challenging goals leads to an increasing level of task performance. Furthermore, our study indicates that feedback is important for helping individuals trace their progress.

The paper is organized as follows: Section 2 reviews the main literature findings. Section 3 outlines the research objectives, while Section 4 illustrates the dataset. Section 5 explains the methodology used, followed by Section 6, which presents the results. Finally, Section 7 concludes, with suggested pilot adjustments and further research.

2. Literature review

There are well known examples of informal saving instruments, such as rotating savings, credit associations (ROSCAs), or in-kind storage, used to accumulate savings in poor contexts (Guirkinger, 2008; Udry, 1990; Vonderlack & Schreiner, 2002).[2] However, these forms of saving suffer from many disadvantages. For example, funds in ROSCAs are difficult to access in times of need, while investment in kind cannot be liquidated easily to meet contingency requirements. Furthermore, Banerjee and Mullainathan (2010) illustrate that the portion of the marginal dollar that is devoted to temptation goods declines with total consumption and income. Therefore, it is more important, but also more difficult, for low-income people to resist the temptation to spend the money saved informally or stored at home on these goods (Banerjee & Duflo, 2007; De Alwis, 2011; Labie et al., 2017).

The above difficulties arise because disadvantaged people rarely have access to deposit services that are offered by formal or semi-formal institutions that provide safe forms of savings tools and assistance in developing a habit of saving. In this context, the introduction of incentives to promote the accumulation of savings can significantly impact the behavior of the poor (Ashraf, Karlan, & Yin, 2006; Brune, Giné, Goldberg, & Yang, 2011; Dupas & Robinson, 2013b).

Empirical evidence on the instruments aimed at fostering savings (such as voluntary or compulsory deposit obligations, withdrawal restrictions, and other forms of incentives) suggests a non-monotonic effect of commitment devices, with extremely restrictive rules that appear to decrease savings, and less restrictive ones that, instead, tend to encourage them considerably. For instance, Karlan and Linden (2016), using a school-based commitment savings program for educational expenses in Uganda, compared an account that was fully-committed to educational expenses to one with a weaker commitment (i.e., funds could be withdrawn in cash, rather than through a voucher), and found that the latter generated higher account savings. Furthermore, Fiorillo, Potok, and Wright (2014), in a behavioral diagnosis of the primary barriers to improving savings outcomes, found that setting strict savings targets induced clients to save lower amounts than they potentially could. This suggests that the intensity of any form of restrictions should be carefully evaluated when designing saving-incentive tools. Generally, as Karlan and Linden (2016) suggest, commitments should be linked to the duration savings accounts: for short-run needs, looser commitments may be best, while for long-term savings, stronger obligations may be more appropriate.

In addition, according to the goal-setting theory (Locke, Shaw, Saari, & Latham, 1981) establishing specific, challenging goals leads to an increasing level of task performance, compared to simple and indefinite goals. Instead, in the absence of a clear and ex-ante plan to use and manage savings, clients may eventually use the saved money for impending needs. Ashraf et al. (2006), for instance, found that a Philippine bank's commitment savings product that required the client to set a goal at the opening of the account, either in terms of a date or an amount, and prohibited withdrawals until the target was achieved, led to a savings' balance increase of 81 percentage points after 12 months. Furthermore, there is evidence from an experiment, conducted in 2014 by Ideas42 and the Grameen Foundation, in which goal-setting was fixed for increasing CARD Bank clients' savings balance in the Philippines: according to the clients who achieved the goal, the key elements of the program were the feeling of having made a commitment, the implementation intention, and the personalization of their experience.

Finally, feedback is crucial since it helps individuals trace their progress. In terms of savings, reminders play an important role, per se. Karlan, McConnell, Mullainathan, and Zinman (2016) led an experiment—jointly with three different banks in Bolivia, Peru, and the Philippines—that demonstrated that monthly reminders helped clients to meet their savings goals. More specifically, they found that messages that featured both a savings goal and a financial incentive were particularly effective. Moreover, other than increasing the likelihood of clients meeting their goal, reminders improved the overall savings balance. Consistently, Kast, Meier,

[1] These are staff members who manage the centres into which each of SEF's branches is divided.

[2] Similar tools, such as accumulating savings and credit associations (ASCAs) and savings clubs (Ambec & Treich, 2007; Anderson & Baland, 2002; Besley et al., 1993), which compel participants to deposit a regular amount of money to satisfy both the consumption and the production needs of all participants, are often used by the poor to save money. In addition, door-to-door deposit collectors supposedly encourage the poor to put money aside (Ashraf et al., 2006; de Mel, McIntosh, & Woodruff, 2013; Seibel, 2001; Steel & Aryeetey, 1994). Alternatively, the poor often adopt in-kind storage of high value items, such as jewelry, but also cattle, goats, or bottles of alcoholic beverages, that can be exchanged for liquidity in case of an emergency (Vonderlack & Schreiner, 2002).

and Pomeranz (2012) found positive results from introducing a weekly text feedback service in two randomized trials among 2687 micro-entrepreneurs in Chile.[3] Karlan, Morten, and Zinman (2015) also investigated the impact of reminders in the form of text messages regarding the availability of overdraft usage, and found that simple messages were more effective than more specific ones that mentioned other details, such as existing discounts.

In light of the above evidence, we conjecture that a program that helps interested people to identify a savings goal that is important to them, and to set appropriate and clearly planned savings commitments to reach it, while preventing them from falling into temptation, could be effective in enabling them to manage their finances better, ultimately improving their life conditions. What should be carefully considered by an implementing financial institution is the importance and complexity of the goal: clients should be assisted in setting meaningful goals as part of a vision. Indeed, studies maintain that perceiving the objective as significant will boost the commitment (Locke & Latham, 2006; Masuda, Kane, Shoptaugh, & Minor, 2010). Meanwhile, the goal chosen should be reasonably challenging. Locke and Latham (2006) conclude that task complexity, defined as an inverse measure of the likelihood of task achievement, is related to an individual's performance: assigning difficult goals may not be productive as individuals may perceive them as intimidating. Indeed, the peak in effort arises when the task is "reasonably" hard; the lowest levels arise when the task is either very easy or very arduous (Locke & Latham, 2002).

In the next section, we illustrate the design of the experiment conducted at SEF, preceded by a description of the institutional setting.

3. Project design

3.1. Institutional context

SEF is a large, non-profit MFI operating in South Africa, and was founded in January 1992, with the goal of fighting poverty sustainably. Particularly, the institution allows the poor to increase their income through microcredits, and assists them in savings accumulation.

On June 30, 2016, SEF had 138,827 active clients in 28,200 groups, with an average outstanding portfolio of approximately R 294 million (about USD 19 million)[4]; of their customers, 99% were female, while 70% of the staff were female (The Small Enterprise Foundation, 2016).[5] SEF is headquartered in Tzaneen, in Limpopo province. The business is divided into four regions: Limpopo, Eastern Cape, Expansion (which includes Northwest and Gauteng), and Mpumalanga.[6]

Loans are disbursed through the group lending methodology with joint liability (The Small Enterprise Foundation, 2016), i.e., group members are required to guarantee one another's payments.[7] New groups comprise five females, i.e., the maximum number of members allowed. Each of the five members can apply for a loan for their individual business.[8] The loan amount ranges from R 1,000 to R 2,200 (from USD 65 to USD 142) for the first loan, and from R 1,000 to R 22,000 (from USD 65 to USD 1,422) for subsequent loans (The Small Enterprise Foundation, 2015, 2016).[9] No collateral is required. Loan duration is 4, 6, or 12 months, with monthly repayments.[10]

Loan repayments start one month after the loan disbursement and usually take place in the first Centre Meeting (CM) of the month. SEF considers the repayments made after the Friday of the week of the due date as "delays" or "arrears", and COs can impose penalties on customers that pay the loan installments late, the minimum amount being R 5 (about USD 0.3). However, late payments are rare and generally occur within a few days of the deadline. The default rate is almost zero. Repayments of individual members' quotes are accepted; however, individual members cannot access further lending until the full amount of the group loans has been repaid.

All the groups that belong to the same centre meet fortnightly at the CM. CMs are held for several reasons: i) to collect loan repayments and issue payment receipts, ii) to track deposits made by customers into their savings account opened at a bank or postal office, iii) to approve new requests for loans, after checking and tracking savings account balances, iv) to discuss issues related to the development of customers' businesses, and v) to allow new groups and new members to join the centre and apply for loans. All the CMs at SEF are scheduled to take place either at 8 am or at 12 pm, and normally last no more than 1 h and a half.[11] They are held in a public place in the village identified as a centre.

Attendance at CMs is compulsory for all group members; any absence must be justified by means of a written document approved by the CO. SEF's acceptable reasons for not attending a CM are limited to pregnancy or maternity leave, illness, funerals, and mourning periods. If absence is not justified, the CO can, and does impose a fine on the customer, the amount of which is discretionary. Fines are normally collected in the following CM.

3.2. The Goal Card program

SEF used two strategies to encourage its clients to acquire a habit of saving. The first was a loan-size strategy, which required all clients to have a savings balance of at least 10% of the amount they sought to borrow in their savings accounts, opened at a bank or the post office, as well as making a deposit of at least 2% of their current loan size fortnightly. The second entailed the program "Be Safe and Save," which focused on how to set savings goals, strategies to increase and protect savings, when to borrow and when to use savings, and saving for emergencies. Training sessions were delivered by the COs to their customers regularly.

The new pilot program introduced a further stimulus for clients to acquire a habit of saving, in the form of a "Goal Card," which

[3] Precisely, the study compared the different effects of text messages and self-help groups, and concluded that the former constituted a potentially more scalable alternative.

[4] The South African Rand is the national currency of South Africa, with the symbol R being the currency abbreviation used in the country, and the symbol ZAR being the currency abbreviation in foreign exchange markets. We used the ZAR-USD exchange rate as on January 1, 2016, equal to 15.47.

[5] SEF's primary program is the Tshomisano Credit Programme, which explicitly targets females with an income below half the income corresponding to the poverty line.

[6] Annex 14 shows a map of the South African provinces in which SEF operates.

[7] At the date of the experiment, SEF had started introducing individual lending in some branches. However, our analysis focused on the centres in the Jane Furse branch, which provided only group lending.

[8] All group members have to apply simultaneously; however, not all members of a group are required to apply for a loan.

[9] To compare these amounts with clients' living standards, consider that the annual per capita GDP was approximately R 81,465 (USD 5,266) in South Africa in 2016 (IMF).

[10] However, first- and second-time borrowers can only access 4- and 6-month loans, and are required to repay fortnightly. These latter clients are still considered vulnerable and, with this loan term policy, SEF attempts to limit the risks related to financial liability, for which the clients are not yet sufficiently prepared. Additionally, this helps the borrowers to enter into a perspective of constant and continuous repayment on time.

[11] Including the travel time, the time commitment required for attending CMs is at most approximately half a day.

required card holders to identify a savings goal and to commit to a regular savings amount.[12] The Goal Card project was launched by the R&D team at SEF in May 2015, with a pilot phase implemented in seven centres that fell under the Jane Furse branch, in Limpopo province.[13]

Specifically, the project worked as follows. First, in the CMs, the CO illustrated the importance of saving to meet family needs, using real examples. Individual meetings followed, to define the savings goals and the future use of the savings. This process was iterative, as the COs worked with clients not only to explain how the program worked, but also to evaluate their savings capacity against the cost of the target. Customers were taught how to improve the management of money saved, how and when to withdraw it, and how much.

Thereafter, the CO and the client identified a customized savings plan that included a qualitative assessment of the cost of the goal in terms of the required effort and skills, the related challenges, and strategies to address them. The savings plan incorporated into the Goal Card included the goal completion date and milestones. There was an intermediate evaluation date on which the CO and the customer met to assess progress, normally set halfway between the beginning and the expected final date of the savings project. A few days before the expected savings collection date, the CO monitored the customer to provide a reminder, and provided encouragement and support for the resolution of any related problems. When the client completed the goal, public recognition was expected. Additionally, the client would be offered the chance to share their story, encouraging them to define a new goal.

The Goal Card was a non-coercive tool because it did not have any real sanctions or commitment devices associated with it. Indeed, subscription to the program was voluntary: there were neither rewards nor sanctions. Moreover, if a client did not meet their saving goal, they had no obligation to the CO or group, and neither did the CO and group to them.

Moreover, since the Goal Card was a tool to encourage customers to save to achieve a specific savings goal that, in many cases, was a spending goal, customers were expected to use the accumulated savings on reaching the goal. Therefore, the Goal Card itself was not meant to ensure more timely repayment of loans or an increase in customers' savings. However, these objectives could be achieved with the change in customer habits and abilities induced by the program.

Additionally, it is important to stress that customers deposited the Goal Card's savings into their own savings accounts at a bank or a post office, and therefore had sole access to the funds; thus, SEF could not use the customers' savings as collateral or to finance itself. However, by teaching them longer term savings skills and habits, and improving their cash flow management and ability to weather shocks, SEF intended to achieve the goals of encouraging larger loan sizes among the clients, thus reducing portfolio risk (The Small Enterprise Foundation, 2016).

Noteworthily, both savings and timely repayments (at the centre level) were considered by SEF in evaluating COs' performance, and both were given equal weight in the computation of the performance-based incentives. Because SEF did not change the evaluation criteria following the introduction of the project, the Goal Card program did not disrupt the COs' existing incentives. Thus, with the introduction of the Goal Card, the COs did not have any particular interest in incentivizing individuals to save more instead of repaying debt installments on time, even in the case of Goal Card subscribers.

A key element for program evaluation purposes is that no other policy changes, such as the introduction of new initiatives at the centre or branch level, or variations in the microcredit program, occurred with the introduction of the Goal Card.

The pilot experiment had a quasi-natural nature as SEF's managers selected the "Goal Card centres" in which to introduce the program according to some specific criteria, which are detailed in the next sections. Furthermore, the clients in these centres could decide to sign up for the Goal Card voluntarily. Consequently, we considered all the clients in the Goal Card centres as "treated," and mainly estimated the effect of an intention to treat. We focused on the initial treatment assignment, i.e., the launch of the Goal Card project in the selected centres, and not on the actual adoption of the Goal Card by individual clients. In the next sections, we describe the dataset and illustrate the empirical methodology, including the criteria used to form the control group of centres whose characteristics are as similar as possible to the Goal Card centres.[14]

4. Data

4.1. Centre variables and customers' individual information

To accomplish the distinct research goals outlined in the previous section, we utilized different data sources. As Fig. 1 shows, we considered data from November 2014 (six months before the pilot) to April 2016 (one year after the start-up of the Goal Card program).

To identify the seven centres of the Jane Furse branch in which the program was introduced, and the clients that signed up for and completed the Goal Card, we used the Goal Card Master sheet that was provided by the R&D team at SEF. In total, 177 Goal Cards were signed up for during the observation period, while 93 of them were completed. To build a counterfactual group using PSM, we used the data provided by SEF concerning the average attendance, number of arrears, and savings balance in the pre-treatment period for all the 50 centres in the Jane Furse branch.

Subsequently, to quantitatively estimate the impact of the Goal Card program on individual saving performance, we used individual data collected by the R&D team on clients' savings balances. This dataset was integrated with other relevant variables: age, years in business (YIB), and a poverty index (PPI) drawn from SEF's archives.[15] Individual data were collected only for the clients belonging to the centres in which the program was implemented, and for the counterfactual. In total, of the customers for whom savings data were available, 42 people subscribed to the Goal Card, all completing it in the observation period.

The observations of customers' savings balances were very sparse. Indeed, whereas centres' COs tracked clients' fortnightly deposits into, but not withdrawals from their savings accounts during the fortnightly CMs, they recorded the savings balances only when they granted a new loan. Individual savings balances

[12] For example, clients set savings goals for purchases of household assets, construction costs, educational expenses, and emergency or long term savings. In many cases, the savings goal was indeed a spending goal: customers saved for an expense they felt was important to themselves or their family. The periodic savings amount was defined as the savings amount per fortnight. Annex 13 shows the Goal Card template used by SEF's COs.

[13] Limpopo province is one of the poorest in South Africa.

[14] We conducted a robustness analysis to provide further insights into the clients who actually adopted the card, on the one hand, and into those who did not adopt it, on the other, even though they belonged to centres in which the program was active. We additionally investigated the clients' understanding of the pilot and the challenges experienced, as well as their attitudes toward savings, through the administration and analysis of surveys that were conducted on both the treated and the control groups of clients. Finally, we sought to understand the pilot's administration and its operational challenges through the field surveys.

[15] For a comprehensive list of all the variables used, refer to Annex 1 in the Appendix.

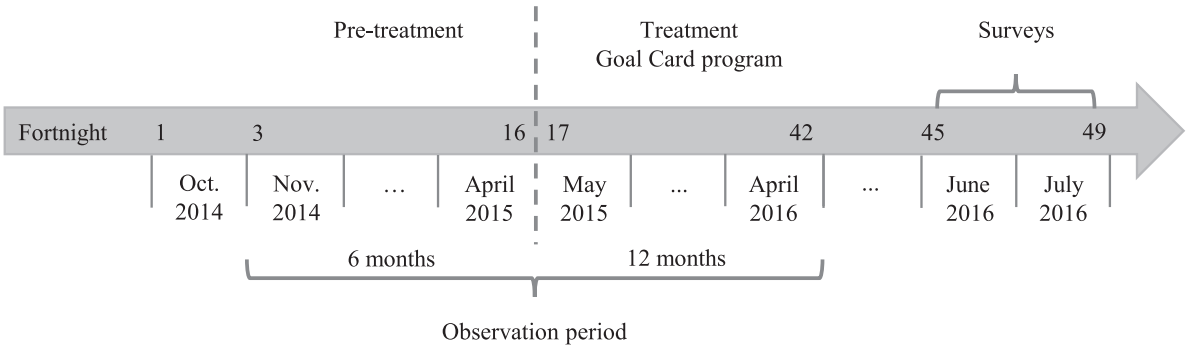

Fig. 1. Data collection.

were subsequently imputed by the R&D team in SEF's archives, from which we extracted the database containing information at the individual level. Because most of the loans granted by SEF have a duration of four months (some have a duration of six months, while only a few have an annual duration), clients' savings balances were usually recorded every four months. Moreover, although this was the most common practice, not all customers took a new loan as soon as they had finished repaying the old one.

To overcome the problem of the sparse observations of customers' savings balances, we adopted two strategies. The first was to expand the collection of the data on savings balances to the period from January 2014 to October 2016, and to linearly interpolate the available observations by using fortnights as a time reference. The advantage of linear interpolation is that it increases the frequency of observations, leaving the mean in the period considered unchanged.[16] The drawbacks are that it may introduce a bias when the replacement period includes both the pre-treatment and the post-treatment periods, and that it may not be justified in the specific case of application. Indeed, in our study, the linear interpolation of savings balances is equivalent to assuming a linear and consistent savings behavior on the customer's part. This assumption is difficult to sustain, even considering a period of only four months, bearing in mind that most of SEF's borrowers are poor people who carry out self-employed economic activities and, therefore, can have considerably variable income and expenses.

The second, and more reliable, strategy was to aggregate available observations over longer time intervals: quarters, semesters, and pre and post periods. Thus, the density of the observations increased with the length of the time interval considered. We decided to set a quarter as the minimum time interval because it was the first criterion that provided a density greater than 50% (Table 4). When more than one observation was available for the same client in each time interval, we used the average of the observed savings balances. In the following, to distinguish the observations aggregated over longer time intervals from the linearly interpolated savings balances, we refer to the former as raw data.

Table 3 reports the baseline summary statistics and tests of balance in the order of the analysis carried out in the next sections. In the main analysis, we considered all the customers of the Goal Card and control centres (selected using PSM, Section 5.1) who had been SEF's clients for the entire observation period, identifying them by ascertaining that they had taken out a loan both before, during, and after this period. Table 3, Panel A reports the baseline summary statistics and tests of balance for these clients by considering Goal Card and control centres. Subsequently, we separately considered the clients in the Goal Card centres who had actually signed up for a Goal Card (Goal Card subscribers) and those who had not (Non-Goal Card subscribers). Table 3, Panels B–D report the baseline summary statistics and tests of balance for these clients, dividing them into three groups: Goal Card subscribers, Non-Goal Card subscribers, and control centres customers.

4.2. Surveys

As anticipated, to address the more qualitative research goals (i.e., to investigate clients' understanding of the pilot and the challenges they experienced, their attitude toward savings, and to explore their openness to a new tool such as the Goal Card), we administered two separate surveys to both the pilot and the control centres. The 218 clients that were interviewed were distributed as outlined in Table 1. The number of collected interviews mostly depended on the clients' attendance and availability. When visiting the Goal Card centres, we interviewed only the clients who had completed a Goal Card.[17]

5. Research methodology

To uniquely ascribe the change observed in the savings performance to the implementation of the Goal Card program, we identified the control centres using PSM, and then evaluated the impact on the clients' savings balances using the DID estimator.

5.1. Propensity score matching: identification of control centres

SEF randomly selected Jane Furse, which had 50 centres, as the branch for launching the Goal Card pilot. Within the Jane Furse branch, SEF's managers selected four best and four worst performing centres, based on three criteria: the average customers' attendance rate at CMs, their average savings balances, and the average percentage of arrears, i.e., late repayments.[18] However, one of the best performing centres that had originally been selected dropped out of the pilot after changing the CO; thus the Goal Card was introduced in seven centres.

Given the quasi-experimental nature of the pilot, we resorted to PSM (Rosenbaum & Rubin, 1983) to identify the control centres.[19]

[16] For instance, linear interpolation means that a vector with three missing values in five periods, e.g., (100, x, x, x, 500), is replaced by a vector in which the missing values are replaced by linearly interpolated values, leaving unchanged the available observations, i.e., (100, 200, 300, 400, 500). Thus, the frequency of observations is increased, while the mean in the period considered is left unchanged, i.e., 300.

[17] The questionnaires were administered by Margherita Carrozzi and Emanuele Ferrari, who also carried out the interviews.

[18] Random selection was applied among the branches operating under the group lending methodology in the Limpopo region because of their proximity to the Tzaneen headquarters. See Annex 2 for further details on the performances of all the Jane Furse branch centres.

[19] This technique estimates the conditional probability of receiving the treatment given the pre-treatment variables, i.e., the propensity score, and uses it to select a counterfactual that is the most similar to the treated group, thus countering possible selection bias.

Table 1
The fourteen centres in the Jane Furse branch under study.

Centre Code	Centre ID	Goal Card centre	Credit officer	Number of groups	Number of clients	Number of Goal Card subscribers	Number of clients interviewed	Average attendance (%)	Average number of arrears (%)	Average savings balance	Propensity score	Nearest Neighbor Matching
JAB	1	1	4	4	12	4	10	0.75	0	20,131	0.210	1
JAX	2	1	3	15	38	0	3	0.85	1.50	30,403	0.333	2
JBE	3	0	3	5	11	0	17	0.81	0	13,839	0.099	7
JBL	4	0	3	8	28	0	21	0.80	0	34,708	0.362	2
JDC	5	0	3	9	33	0	33	0.86	0	34,851	0.423	4
JDJ	6	0	6	5	10	0	20	0.58	2.78	15,357	0.076	5
JDL	7	1	6	5	19	18	17	0.60	4.76	11,882	0.059	3
JDO	8	0	1	5	8	0	11	0.64	7.62	16,773	0.059	3
JDQ	9	0	5	6	23	0	10	0.83	0	23,416	0.293	6
JEB	10	0	5	14	41	0	26	0.61	0	36,423	0.217	1
JEE	11	1	6	5	15	7	16	0.65	1.30	63,919	0.435	4
JEL	12	1	2	8	21	2	10	0.59	0	6,182	0.075	5
JEN	13	1	3	5	18	5	15	0.90	0	17,123	0.307	6
JEQ	14	1	4	7	25	6	9	0.73	1.02	25,297	0.210	7
Total	14	7	6	101	302	42	218	–	–	–	–	–

Notes. This table shows the Goal Card (1) and control (0) centres under study in the Jane Furse branch. The credit officers remained the same throughout the observation period. The number of clients shown is the number of borrowers that have been clients of SEF the entire observation period and have taken at least one loan in the observation period. Centers' average attendance, number of arrears, and savings balance refer to the six-month period before the start-up of the Goal Card project, and are the variables used by SEF to select the centres in which launching the program. In particular, the average number of arrears is the percentage of clients having repaid their installments after the end of the week of the due date, and the average attendance refers to the percentage of clients participating to the fortnightly centre meetings. We have selected the control centres by means of propensity score matching (see Section 5) by using the same variables. The last two columns show the propensity score for each centre and the pairs of Goal Card and control centres obtained using the nearest neighbor matching technique.

Table 2
Propensity Score Matching: Nearest Neighbor matching – Summary of balance.

Panel A – Summary of balance for all centres

	Means Goal Card centres	Means Non-Goal Card centres	SD Non-Goal Card centres	Mean Difference	eQQ Median	eQQ Mean	eQQ Max
Propensity Score	0.233	0.125	0.107	0.108	0.123	0.097	0.181
Attendance	0.724	0.642	0.120	0.081	0.085	0.082	0.190
Arrears	0.012	0.030	0.040	−0.018	0.010	0.029	0.117
Savings	24,991	16,299	9,738	8,692	6,413	7,540	21,036

Panel B – Summary of balance for matched centres

	Means Goal Card centres	Means matched Non-Goal Card centres	SD matched Non-Goal Card centres	Mean Difference	eQQ Median	eQQ Mean	eQQ Max
Propensity Score	0.233	0.234	0.137	−0.002	0.007	0.009	0.029
Attendance	0.724	0.732	0.118	−0.009	0.023	0.030	0.072
Arrears	0.012	0.015	0.029	−0.003	0.010	0.009	0.029
Savings	24,991	25,053	10,079	−62	4,448	8,018	27,497

Panel C – Percent balance improvement with matching

	Mean Difference	eQQ Median	eQQ Mean	eQQ Max
Propensity Score	98.57	94.28	90.90	84.09
Attendance	89.16	72.55	63.56	62.28
Arrears	85.22	0.00	68.18	75.59
Savings	99.29	30.64	−6.34	−30.71

Notes. Panel A shows the summary of balance for each balance measurement (propensity score, average attendance, average percentage of arrears, and average savings balance) by comparing Goal Card centres with all the other centres in the Jane Furse branch. Panel B shows the summary of balance for each balance measurement after nearest neighbor matching by comparing Goal Card centres and matched centres. Panel C indicates the percentage of improvement obtained by applying nearest neighbor matching for each balance measurement, defined as $100^*((|b|-|a|)/|a|)$, where a is the measurement before the matching, and b is the one after the matching. Values close to 100 indicate a better matching.

Table 3
Goal Card and control centres, Goal Card subscribers and non-subscribers - Baseline summary statistics and tests of balance.

Panel A	Control centres					Goal Card centres					Control – Goal Card centres			
	Obs.	Min	Max	Mean	Std. Error	Obs.	Min	Max	Mean	Std. Error	Mean Diff.	Std. Error	p-value	Obs.
Age	154	30	84	54.64	11.79	148	26	85	51.73	12.76	2.91**	1.413	0.040	302
Poverty index	154	0.162	0.990	0.638	0.16	148	0.019	0.990	0.53	0.204	0.104***	0.021	0	302
Years in business	154	2	24	8.25	3.55	148	1	19	6.45	3.618	1.81***	0.413	0	302
Loan cycle	154	3	27	14.04	6.81	148	3	28	10.06	6.449	3.98***	0.764	0	302
Loan amount	154	1,000	20,000	3,845	3,287	148	1,000	20,000	4,092	3,175	−246	372	0.508	302
Pre-treatment average savings balance	138	20	6812	874	927	128	20	5400	706	787	167	106	0.112	266
Panel B	**Control centres**					**Goal Card subscribers**					**Control - Goal Card subscribers**			
	Obs.	Min	Max	Mean	Std. Error	Obs.	Min	Max	Mean	Std. Error	Mean Diff.	Std. Error	p-value	Obs.
Age	154	30	84	54.64	11.79	42	28	68	52.55	10.29	2.10	2	0.296	196
Poverty index	154	0.162	0.990	0.638	0.16	42	0.060	0.865	0.530	0.197	0.108***	0.029	0	196
Years in business	154	2	24	8.25	3.55	42	2	12	5.33	2.69	2.92***	0.590	0	196
Loan cycle	154	3	27	14.04	6.81	42	3	26	10.38	6.13	3.66***	1.162	0.002	196
Loan amount	154	1,000	20,000	3,845	3,287	42	2,000	18,200	4329	2,892	−483	558	0.388	196
Pre-treatment average savings balance	138	20	6812	874	927	37	40	5,400	1068	1,098	−194	179	0.279	175
Panel C	**Control centres**					**Non-Goal Card subscribers**					**Control – Non-Goal Card subscribers**			
	Obs.	Min	Max	Mean	Std. Error	Obs.	Min	Max	Mean	Std. Error	Mean Diff.	Std. Error	p-value	Obs.
Age	154	30	84	54.64	11.79	106	26	85	51.41	13.64	3.24**	1.59	0.042	260
Poverty index	154	0.162	0.990	0.638	0.16	106	0.019	0.990	0.536	0.208	0.102***	0.023	0	260
Years in business	154	2	24	8.25	3.55	106	1	19	6.89	3.85	1.37***	0.464	0.004	260
Loan cycle	154	3	27	14.04	6.81	106	3	28	9.93	6.60	4.11***	0.849	0	260
Loan amount	154	1,000	20,000	3,845	3,287	106	1,000	20,000	3,998	3,288	−153	415	0.713	260
Pre-treatment average savings balance	138	20	6812	874	927	91	20	3,420	558	561	316***	108	0.004	229
Panel D	**Non-Goal Card subscribers**					**Goal Card subscribers**					**Non-subscribers – Goal Card subscribers**			
	Obs.	Min	Max	Mean	Std. Error	Obs.	Min	Max	Mean	Std. Error	Mean Diff.	Std. Error	p-value	Obs.
Age	106	26	85	51.41	13.64	42	28	68	52.55	10.29	−1.14	2.33	0.625	148
Poverty index	106	0.019	0.990	0.536	0.208	42	0.060	0.865	0.530	0.197	0.006	0.037	0.873	148
Years in business	106	1	19	6.89	3.85	42	2	12	5.33	2.69	1.53**	0.649	0.018	148
Loan cycle	106	3	28	9.93	6.60	42	3	26	10.38	6.13	−0.447	1.18	0.705	148
Loan amount	106	1,000	20,000	3,998	3,288	42	2,000	18,200	4329	2,892	−331	580	0.570	148
Pre-treatment average savings balance	91	20	3,420	558	561	37	40	5,400	1068	1,098	−510***	147	0.001	128

Notes. Baseline summary statistics and tests of balances of observed variables at the start-up of the Goal Card program. Pre-treatment average savings balances have been computed by using raw data. Panel A compares clients in Goal Card centres and clients in centres matched by means of propensity score matching (control clients). Panel B, C, and D compare Goal Card subscribers and control clients, non-Goal Card subscribers and control clients, and Goal Card subscribers and non-subscribers, respectively. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Specifically, we chose to implement the nearest neighbor matching technique, which matches to every treated unit a control unit that has the closest propensity score, because this technique provided the best results in terms of the balance improvement obtained with matching compared to other applicable techniques.[20]

We implemented PSM at the centre level, the same level chosen by SEF to introduce the Goal Card, using a linear logit model in which the outcome was a binary variable that indicated the treatment status, i.e., whether the centre was chosen for the Goal Program (1) or not (0), while the covariates were the same pre-treatment variables used by SEF: the average customers' attendance rate at CMs, the average savings balance, and the average percentage of arrears. The data needed for the implementation of the PSM were collected from SEF's database, which comprised monthly reports that the institution drew up and used for its assessments. For each of the above variables, the R&D staff at SEF provided us with the average value at the centre level over the six months preceding the beginning of the pilot (November 2014 – April 2015). Thus, the propensity scores were estimated based on six-month average values of each of the three variables, measured in a period prior to the start-up of the Goal Card program to preclude them from the effects of the project.

The propensity scores were estimated for all the 50 centres of the Jane Furse branch that were active during the period of the Goal Card program; therefore, the control group was drawn up by selecting a group of seven centres from a larger pool of 43 in which the Goal Card had not been introduced (non-Goal Card centres).[21]

Table 1 shows the Goal Card centres and the control centres. In particular, the table's last columns show the values of the three variables used to apply PSM, the propensity score for each centre,

[20] See comparison with Genetic Matching, Annex 2.

[21] This pool also satisfies the usual 1:6 ratio of treated and untreated units, which is standard practice for selection through PSM. See Table A2.1 in Annex 2 for details on the estimated propensity scores for the 50 centres in the Jane Fuse branch.

Table 4
Estimated effects of the Goal Card program on customers' savings behavior.

Dependent variable: Savings balance	(1) Level	(2) Log	(3) Level	(4) Level	(5) Level	(6) Level	(7) Level	(8) Level
Model	RE	RE	RE	RE	RE	RE	RE	FD
Time interval	Fortnight	Fortnight	Fortnight	Quarter	Quarter	Semester	Pre/Post	Pre/Post
Savings balance data	Linearly interpolated	Linearly interpolated	Raw data	Raw data	Raw data	Raw data	Raw data	Raw data
Goal Card centre	−91.1	−0.258	−220	−235	−267	−185	−119	
	(4 0 7)	(0.488)	(3 8 8)	(3 9 1)	(3 4 5)	(3 9 6)	(5 9 3)	
Program	−187*	−0.247***	33.2	21.0	−649***	−150**	11.76	
	(97.6)	(0.082)	(73.7)	(68.8)	(1 3 4)	(58.5)	(52.2)	
Goal Card centre * Program	334***	0.304***	362***	371***	311***	388***	367***	340*
	(87.7)	(0.117)	(1 2 7)	(1 2 7)	(1 1 5)	(1 1 1)	(1 2 0)	(1 8 1)
Age	1.77	0.214	0.975	1.141	0.754	1.081	1.408	
	(3.32)	(0.235)	(4.30)	(4.23)	(3.50)	(4.32)	(3.81)	
Poverty index	−289	−0.737***	−273	−268	−190	−297	−352*	
	(2 0 5)	(0.279)	(2 1 7)	(2 2 3)	(2 2 5)	(2 2 7)	(1 9 8)	
Years in business	−6.90	−0.068	−7.95	−8.48	−9.508	−7.85	3.996	
	(15.5)	(0.141)	(14.6)	(14.6)	(14.8)	(16.8)	(13.9)	
Loan cycle	−4.03	−0.042	−4.20	−3.99	−4.269	−4.703	−5.055	
	(6.72)	(0.196)	(7.37)	(7.60)	(6.91)	(7.03)	(7.97)	
Loan amount	0.159***	0.847***	0.185***	0.186***	0.186***	0.169***	0.178***	
	(0.030)	(0.127)	(0.029)	(0.030)	(0.033)	(0.028)	(0.024)	
Constant	371	−1.54	178	164	437	278	145	55.9
	(2 8 5)	(1.06)	(3 5 9)	(3 7 0)	(3 7 0)	(3 3 3)	(2 7 8)	(58.3)
Time FE	YES	YES	NO	NO	YES	YES	–	–
Credit officer FE	YES	YES	YES	YES	YES	YES	YES	NO
No. of observations	12,080	12,080	936	911	911	765	559	257
No. of clients	302	302	302	302	302	302	302	
R-squared: within	0.0613	0.0541	0.0284	0.029	0.121	0.0773	0.074	
R-squared: between	0.363	0.45	0.361	0.361	0.376	0.352	0.39	
R-squared: overall (R-squared in Col. (8))	0.281	0.353	0.246	0.244	0.289	0.254	0.322	0.03
No. of clients × No. of time intervals	302x40	302x40	302x40	302x6	302x6	302x3	302x2	257x2
No. of observations in a balanced panel	12,080	12,080	12,080	1,812	1,812	906	604	514
No. of observations	12,080	12,080	936	911	911	765	559	514
Density of observations (percentage)	100	100	7.7	50.3	50.3	84.4	92.5	100

Notes. Difference in differences estimates. The treated group is composed by individuals belonging to Goal Card centres, the control group is composed by individuals belonging to centres selected by means of propensity score matching. Columns (1) and (2) report estimates done by using fortnightly linearly interpolated savings balances, Columns (3)-(8) report estimates done by using fortnightly, quarterly, six-monthly, and pre-treatment and post- treatment raw savings balances. Bootstrap standard errors clustered at the centre levels in parentheses. All variables are in level form except in Column (2), where they are in log form. Columns (1)-(7) report random effects (RE) estimates, and Column (8) reports first differences (FD) estimates. The lower part of the table shows the density of observations of the savings balances in each panel of observations. Annex 7 provides more details of the estimates and fixed effects (FE) models. * p < 0.10, ** p < 0.05, *** p < 0.01

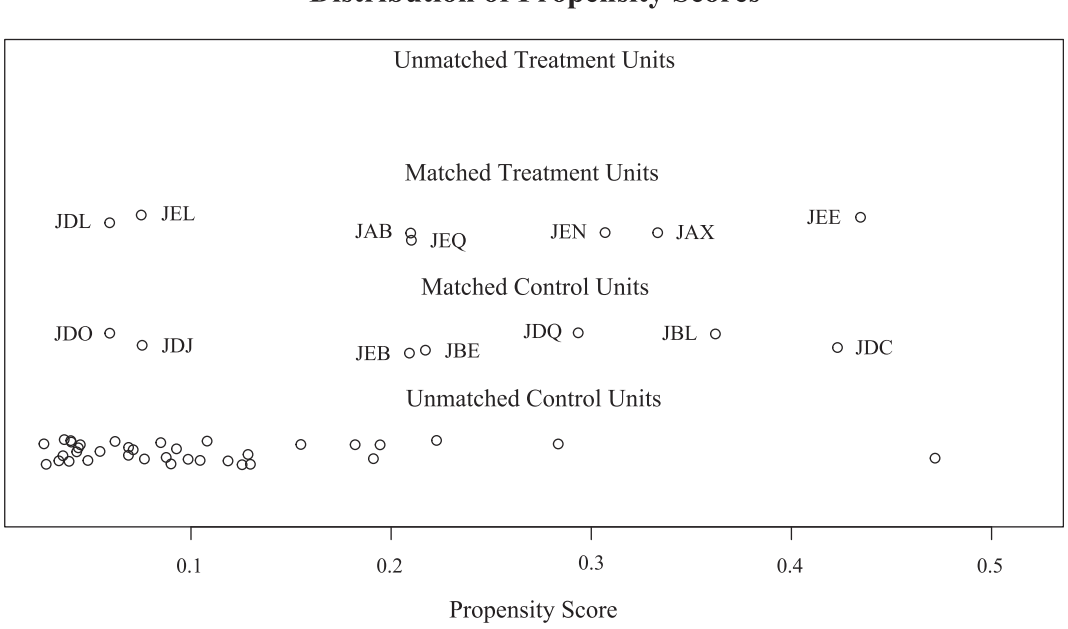

Fig. 2. Nearest Neighbor Matching – Distribution of Propensity Scores.
Notes. This figure shows the Goal Card centres (matched treatment unites), the centres selected by means of nearest neighbor matching (matched control units), and the other centres in Jane Furse branch (unmatched control units) on the propensity score support.

and the pairs of Goal Card and control centres obtained by means of the nearest neighbor matching technique.

Table 2, Panel A shows a summary of balance for all centres before matching (i.e., the comparison of Goal Card centres with all the remaining 43 non-Goal Card centres); Panel B shows a summary of balance for matched centres after nearest neighbor matching, i.e., the comparison of Goal Card centres with the seven centres selected using nearest neighbor matching (hereinafter, the control centres), while Panel C shows the balance improvement obtained with matching. As Panel B shows, the Goal Card centres and control centres are closely similar in terms of average customers' attendance rate at CMs, savings balance, and percentage of arrears.

Fig. 2 provides a visual representation of the distribution of the Goal Card and matched centres on the propensity score support. This figure confirms that SEF indeed did choose the Goal Card centres among the best and worst centres in the Jane Furse branch, based on the three declared criteria. Indeed, the propensity score support has a range between 0.05 and 0.45, with the center in 0.25: the three best centres (JAX, JEE, and JEN) have a propensity score greater than 0.25, whereas the four worst centres (JAB, JDL, JEL, and JEQ) have a propensity score lower than 0.25. Among the worst centres, which were more numerous, SEF chose two of the worst (JAB and JEQ,) and two of the best centres (JDL and JEL). Overall, SEF selected the centres to introduce the Goal Card in such a way as to cover well enough the distribution of the Jane Furse centres according to the indicated criteria.[22]

We verified the goodness of matching by comparing the Goal Card centres with the matched centres (Fig. 2 and Table 2). Additionally, we carried out two further checks to establish whether PSM was effective for the purposes of our analysis. First, we performed tests of balance of the savings balances at the individual level in the period prior to the treatment, comparing the Goal Card and matched (control) centres (Table 3 Panel A). This confirmed that the Goal Card and control centres were balanced.[23] Second, we verified that the DID standard parallel trend hypothesis was satisfied, through a visual inspection of the pattern of saving balances in the period before the Goal Card pilot was introduced (Fig. 3).[24] Both the graph of the fortnightly linearly interpolated savings balances (Fig. 3, Panel A) and that of the quarterly raw savings balances (Fig. 3, Panel B) show parallel trends in the pre-treatment period.

Finally, noteworthily, the economic activities conducted by SEF's customers are remarkably similar; therefore, any shock is either aggregate (for example due to unfavorable weather conditions) or idiosyncratic (such as mourning), but not copying differently either the treated group or the control group. Hence, although we selected through PSM to balance the number of Goal Card and control centres the external validity of the experiment should reasonably be preserved, as the excluded centres were not substantially different from the selected ones.[25]

5.2. Difference-in-differences models

To study the effects of the Goal Card program, we conducted three different analyses using DID models.

In the first and main analysis, we considered the Goal Card and control centres and, within these centres, all the customers who had been SEF's clients for the entire observation period. We chose this approach to avoid possible confounding factors, such as those related to new customers and clients that dropped out of SEF.[25]

The main estimated equation was a random effects (RE) model with covariates and time fixed effects (FE):

$$y_{it} = \alpha + \lambda_t + \beta_1 Treated_i + \beta_2 Program_t + \beta_3 (Treated_i^* Program_t) + \beta_4 X_i + CO_j + \varepsilon_{it} \quad (1)$$

where i is the observational unit, i.e., the client, t is the time unit, i.e., fortnights, quarters, semesters, or pre and post periods, and λ_t are time FE for capturing possible seasonality in the client's behavior. y_{it} is the dependent variable of interest, i.e., the savings balance of client i at time t. $Treated_i$ is a dummy variable, equal to 1 if the client belongs to a Goal Card centre (treated group, hereafter), and equal to 0 if the client belongs to control centres selected through PSM (control group, hereafter). Since, in the dataset, there are no customers who have changed centre, this variable changes across individuals, but not through time. The parameter, β_1, can be interpreted as the pre-treatment mean difference in the dependent variable between the treated and control groups. $Program_t$ is a dummy variable, equal to 1 after the start-up of the Goal Card program, and 0 before.[27] The parameter, β_2, can be interpreted as the pre-post treatment variation of the dependent variable for the control group.

$Treated_i^* Program_t$ is the interaction between the two previous dummy variables, and is equal to 1 only for the treated group during the pilot period. This variable represents the treatment, i.e., the Goal Card program, while the coefficient, β_3, estimates its effect. In particular, the double difference, β_3, measures the effect of the treatment on the outcome variable, and can be interpreted as the difference between the pre-post variation of the dependent variable for the treated group and the pre-post variation of the dependent variable for the control group.

We added a matrix of covariates (X_i) to allow an unbiased estimate of the treatment effect. We selected those variables that presented significant mean differences between the control and treatment groups, identified by performing t-tests for mean equality on available (time-invariant) covariates (Table 3, Panel A). Precisely, we included age, poverty index (PPI), loan cycle, loan amount, and credit officer FE (CO_j) (Table 4).[28] ε_{it} is a zero-mean error term.

[22] Figure A2.4 in Annex 2 shows that, indeed, SEF used all three criteria for choosing the centres for the Goal Card project.

[23] Table A4.6 in Annex 4 shows that the best and worst matched centres are balanced with respect to pre-treatment average savings balance, and that, in addition, the best Goal Card centres and best control centres are balanced. However, there is an unbalance between the worst Goal Card centres and worst control centres, i.e., the worst control centres have a significantly greater pre-treatment average savings balance.

[24] Annex 6 shows the graphs of the savings balances for the Goal Card and control centres for all the time intervals considered, with both raw and linearly interpolated data.

[25] Potential spillovers between treated and control centres could undermine the quality of the results of our analysis as they would tend to make a positive effect of the Goal Card program less identifiable. However, spillovers between different centres are unlikely to occur because they are considerably far from each other (Annex 14).

[26] More precisely, in the main analysis, we considered the 302 clients that received at least one loan, and for which the savings balance was therefore recorded, in each of the following three periods: i) January 1, 2014 – October 31, 2014, i.e., before the observation period, ii) November 1, 2014 – April 30, 2016, i.e., during the observation period, and iii) May 1, 2016 – October 31, 2016, i.e., after the observation period. Instead, we considered as clients who dropped out of SEF the 138 customers that did not receive at least one loan after the observation period, i.e., in the third and last period, despite having received at least one loan in the first and second periods. Finally, we considered as new clients the 248 customers that received at least one loan in the observation period, without having received loans before. Some 120 of these new clients received their first loan after the start-up of the Goal Card program. The number of dropouts and new clients for each centre is reported in Annex 9, Table A9.5. OLS estimates do not provide evidence that the Goal Card project affected the number of dropouts or new customers (Annex 9, Table A9.6 and Table A9.7). Clients who dropped out of SEF and new clients in the Goal Card centres are not significantly different from those in the control centres (Annex 9, Table A9.8, Table A9.9, and Table A9.10), i.e., the mean differences are either not statistically significant or extremely small.

[27] This variable changes through time, but not across individuals.

[28] See Annex 1 for full variable descriptions, Annex 3 for descriptive statistics, Annex 4 for baseline statistics and tests of balance, and Annex 5 for correlation matrix.

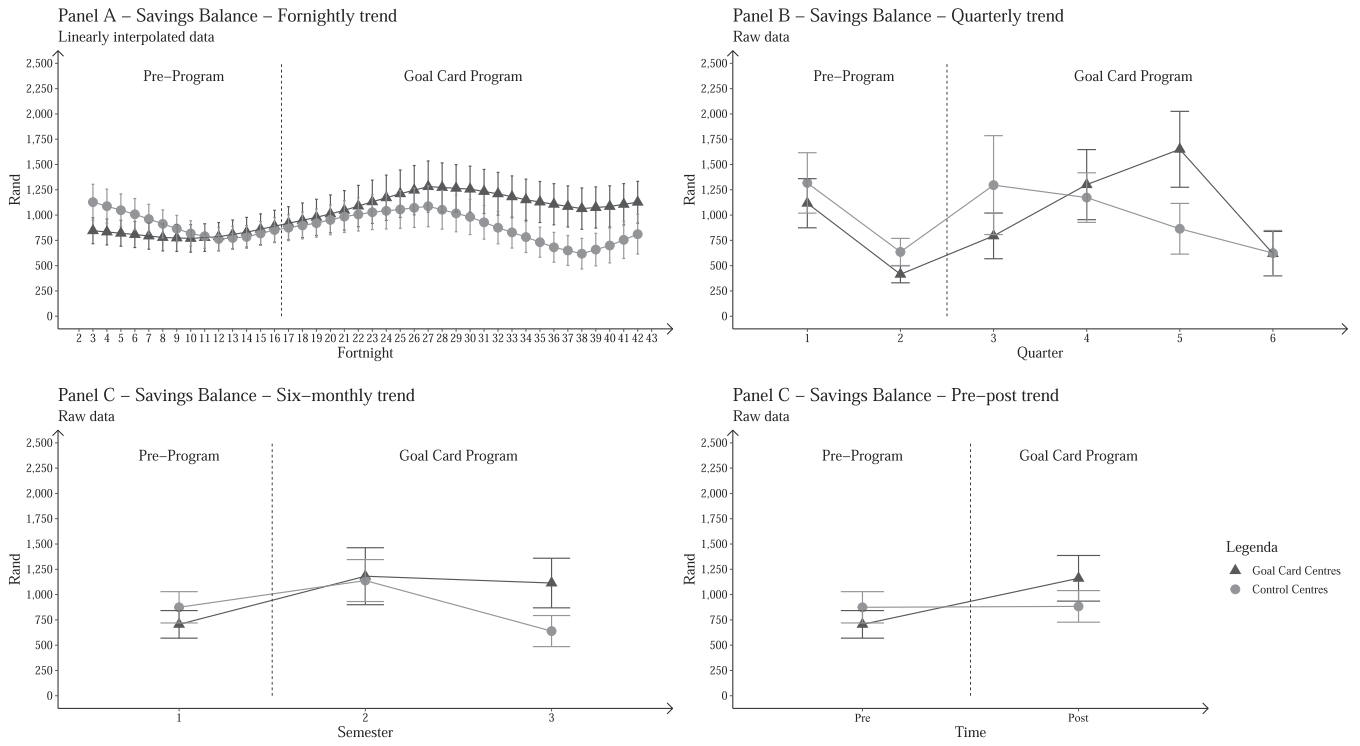

Fig. 3. Savings balance trends in Goal Card and control centres.
Notes. Panels show the mean of savings balances in the period considered and the corresponding 95% confidence interval for both the Goal Card and control centres. Panel A shows the trends of fortnightly linearly interpolated savings balances. Panel B, C, and D show the trends of quarterly, six-monthly, and pre-treatment and post-treatment raw savings balances.

In addition to the described RE model (Table 4, Columns (1), (5)–(7)), as robustness checks, we estimated a first differences (FD) model (Table 4, Column (8)), RE models without time FE (Table 4, Columns (3) and (4), and a RE model in natural logarithms (Table 4, Column (2)). Since only 14 centres were involved, regular clustering at the centre level would not be appropriate. Rather, we opted for using bootstrap techniques, clustering standard errors at the centre level.

Moreover, to study the possible heterogeneous impact of the program on the savings behavior of clients in the Goal Card centres, and the dynamics of the Goal Card program effects, we conducted a second analysis in which we separately considered the clients in the Goal Card centres who actually signed up for a Goal Card (Goal Card subscribers) and those who did not (non-Goal Card subscribers). The aim of this analysis was to investigate whether the overall impact was due mainly to customers who had signed up for and completed a Goal Card or to those who had not signed up for it, despite being in the centres in which the pilot had been initiated. Additionally, we studied the time pattern of customers' savings behavior to determine whether the Goal Card program had had a strong initial effect that had quickly worn off or, instead, a constant change with a gradually increasing pattern had occurred, possibly indicating persistent effects.

By considering semesters as a time interval, and raw data without linear interpolation, we estimated two equations for the following three (treated) groups: the set of all Goal Card centres' clients, as in the former analysis, and the two subsets of this group comprising Goal Card subscribers and non-subscribers, separately. In all three cases, the control group comprised the control centres' customers.

The first estimated equation was Model (1) presented above, whereas the second estimated(Ashraf et al., 2006) equation was an event study DID, an RE model with covariates and time FEs (e.g., Angrist & Pischke, 2009, p. 237):

$$y_{it} = \alpha + \beta_1 Treated_i + \beta_2 Semester_1 + \beta_3 Treated_i^* Semester_1 + \beta_4 Semester_2 + \beta_5 Treated_i^* Semester_2 + \beta_4 X_i + CO_j + \varepsilon_{it} \quad (2)$$

where $Semester_1$ and $Semester_2$ are the first and second semesters of the Goal Card project, respectively. The other variables have the same meaning as in Model (1). We estimated FE and RE models, using the six-monthly raw data. Additionally, in this model, estimates were made by clustering bootstrap standard errors at the centre level. Additionally, we applied wild bootstrap tests (Roodman, Nielsen, MacKinnon, & Webb, 2019) on the DID parameters estimating the treatment effects for robustness.[29]

In Eq. (2), the parameter, β_1, can be interpreted as the pre-treatment mean difference in the dependent variable between the treated and control groups, while the parameters, β_2 and β_4, can be interpreted as the variation of the dependent variable for the control group between the pre-treatment and the first semesters of the program and between the pre-treatment and the second semesters of the program, respectively. The coefficients, β_3 and β_5, are the DID parameters that estimated the Goal Card program effects in the first and second semesters of the project, respectively. In particular, β_3 and β_5 can be interpreted as the differences between the variation of the dependent variable for the treated group and the variation of the dependent variable for the control group between the pre-treatment semester and the first and second semesters of the project, respectively.

Finally, for robustness, we conducted a third analysis by expanding the number of clients considered within the Goal Card and control centres, first including customers that dropped out of SEF, and then new customers. By considering semesters as a time interval and raw data, we estimated Models (1) and (2) as follows:

[29] The wild bootstrap tests are reported in Table A8.7, in Annex 8.

i) we initially considered a first group of Goal Card centres' customers who had been SEF clients for the entire observation period, ii) we added the Goal Card centres' customers who dropped out of SEF to the first group, and iii) we integrated the second group with the Goal Card centres' new customers. The control groups include, respectively, i) the control centres' customers who had been SEF clients for the entire observation period, ii) the previous group integrated with the control centres' customers who had dropped out of SEF, and iii) the previous group integrated with the control centres' new customers.

6. Results

6.1. Quantitative analysis

Table 4 shows the estimates from the first analysis, in which we considered the Goal Card and control centres and, within these centres, all the customers that were SEF clients for the entire observation period.[30] At the individual level, the estimates were performed using RE Model (1), including covariates and time FEs to account for possible seasonality in the savings behavior (Columns (1), (2), (5)–(7)). Additionally, as a robustness check, we report the results of the model in first differences (FD) (Column (8)) and two RE models without time FEs (Columns (3) and (4)).

Columns (1)–(8) differ in the frequency of savings balances' data. In particular, Table 4 shows the estimates using fortnightly data in Columns (1)–(3), quarterly data in Columns (4)–(5), six-monthly data in Column (6), and pre- and post-treatment data in Columns (7)–(8). Whereas Columns (1) and (2) show the estimates using linearly interpolated data, the other columns in Table 4 show the estimates obtained using raw data. All the estimates were based on variables in level form, except those in Column (2), which were based on variables in log form.[31] Bootstrap standard errors were clustered at the centre level.

The lower part of Table 4 shows the density of observations of savings balances and the corresponding percentage of missing values. Whereas the reported share of fortnightly linearly interpolated data is extremely high (92.3%), the density of savings balances observations is 50.3% for quarterly raw data, 84.4% for six-monthly raw data, and 92.5% for pre-post treatment raw data.

The estimates show that the overall impact of the Goal Card pilot on the savings balance of the clients in the treated group is positive and significant, as shown by the parameter associated with the interaction term, *Goal Card centre*Program*, throughout all the columns in Table 4. The results are robust and consistent across model specifications, for all the time intervals considered, and for the two types of data used, raw and linearly interpolated. Generally, the empirical evidence is that the Goal Card program led to an increase in clients' savings balances relative to the counterfactual. Expectedly, given SEF's lending policy, Table 4 highlights that the loan amount is positively and significantly associated with the savings balance.

Because the coefficient of the *Program* variable is sometimes negative and significant, we additionally considered the effect of the treatment in absolute, and not relative, terms. Indeed, because the parameter of the *Program* variable estimated the pre-post treatment variation of the dependent variable for the control group, and the parameter of the interaction term, *Goal Card centre*Program*, estimated the difference between the pre-post variation of the dependent variable for the treated group and the pre-post variation of the dependent variable for the control group, the sum of the two parameters estimated the pre-post treatment variation of the dependent variable for the treated group. In other words, we considered the possibility that the effect of the program was positive and significant, in relative terms, despite a decrease, in absolute terms, in the savings balances of the Goal Card centres' customers, only because the decrease in the savings balances of the control centres' customers was greater. In this case, the Goal Card program would have had a mostly protective effect on the savings of the treated centres' customers, mitigating some of the seasonal decline in savings observable in the control group.[32]

This analysis showed that the negative coefficient of the *Program* variable was always smaller, in absolute value, than the positive coefficient of the *Treated*Program* variable, with the only exception in Column (5).[33] Considering the sum of the two coefficients in the other columns, we concluded that the Goal Card program also had a positive and significant impact on savings growth, although the estimates of this effect, in absolute terms, varied across the models in a range between R 367 (Column (7)) and R 147 (Column (1)). In particular, the standard DID model in Column (7) did not yield a significant parameter for the *Program* variable, and the estimated increase in saving balances was R 367 (about USD 24), i.e., 52% of the initial saving balance of the treated group, which was, on average, equal to R 706 (Table 3, Panel A). Even the worst estimated percentage increase in the savings balances in the treated group, obtained from Column (1), is not negligible, being equal to 147/706 = 21%.

Table 5 shows the estimates from the second analysis, in which we still considered the Goal Card and control centres and, within these centres, all the customers who were SEF's clients for the entire observation period; however, the Goal Card centres' clients were divided into the two treated groups of the customers who signed up for a Goal Card (Goal Card subscribers) and those who did not (non-Goal Card subscribers).[34] As support for the interpretation of the estimates, Figure 4 shows the six-monthly trends for the Goal Card subscribers and non-Goal Card subscribers, and for the clients in the control centres.

In detail, Columns (1) and (2) of Table 5 show the estimates obtained by considering, as the treated group, all the individuals in the Goal Card centres who were SEF's clients for the entire observation period, Columns (3) and (4) show the estimates obtained by considering, as the treated group, the subset of individuals that signed up for the Goal Card (Goal Card subscribers), while Columns (5) and (6) show the estimates obtained by considering, as the treated group, the subset of individuals that did not sign up for the Goal Card (non-Goal Card subscribers). The control group, as in the first analysis, comprised the control centres' customers who were SEF's clients for the entire observation period.

This analysis of the heterogeneous effect of the Goal Card program was performed using RE Models (1) and (2), considering semesters as time intervals and raw data. In detail, Columns (1), (3), and (5) show the estimates obtained by applying Model (1), i.e., by doing a pre-post analysis, while Columns (2), (4), and (6) show the estimates obtained by applying Model (2), i.e., by studying the dynamics of the savings behavior in the project period.

Considering the parameter of the interaction term, *Treated group*Program*, the estimates show that most of the positive

[30] Annex 7 reports additional results and FE estimates.

[31] We chose the level form due to the low density of observations of the dependent variable in the raw data and the unbalance in the pre-treatment average savings balance between the Goal Card and control centres when the log form was considered.

[32] Based on the information gathered at SEF, it appears that the seasonal trend in savings is more related to holidays than to the business activities of the customers. Should this be the case, this Goal Card program's protective effect on the customers' savings would also fully correspond with SEF's goal of directing savings toward basic family needs.

[33] However, we obtained the estimates in Column (5) using quarterly raw data with a 50.3% density (missing values were 49.7%). Therefore, we interpreted Column (5) as an exception.

[34] Annex 8 reports additional results and FE estimates.

Table 5
Estimated effects of the Goal Card program on Goal card subscribers and non-subscribers' savings behavior.

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable	Savings balance		Savings balance		Savings balance	
Treated group	Clients in Goal Card centres		Goal Card subscribers		Non-Goal Card subscribers	
Control group	Clients in control centres		Clients in control centres		Clients in control centres	
Treated group	−185	−176	801	800	−267	−256
	(3 9 6)	(3 9 9)	(5173)	(5 2 3)	(3 9 2)	(3 9 1)
Program	−150**		−238***		−145**	
	(58.5)		(72.6)		(60.2)	
Treated group * Program	388***		612		280**	
	(1 1 1)		(4 4 5)		(1 1 3)	
First semester of the program		227***		249***		244***
		(67.5)		(80.4)		(72.0)
Treated group * First semester of the program		217		603		30.7
		(2 0 0)		(5 7 5)		(1 2 0)
Second semester of the program		−229***		−240***		−237***
		(71.1)		(67.2)		(73.4)
Treated group * Second semester of the program		566***		619+		557***
		(66)		(3 8 0)		(1 3 3)
Age	1.08	1.17	2.94	2.95	5.09	5.09
	(4.32)	(4.32)	(8.89)	(8.85)	(3.61)	(3.53)
Poverty index	−297	−285	−12.9	−12. 4	−227	−215
	(2 2 7)	(2 2 5)	(3 2 5)	(3 2 1)	(2 0 1)	(2 0 1)
Years in business	−7.85	−7.34	8.65	8.64	0.761	1.68
	(16.8)	(17.1)	(27.3)	(27.0)	(12.3)	(12.3)
Loan cycle	−4.70	−4.85	−2.88	−2.88	−6.86	−7.14
	(7.03)	(6.86)	(16.5)	(16.3)	(8.57)	(8.38)
Loan amount	0.169***	0.169***	0.162***	0.162***	0.188***	0.188***
	(0.028)	(0.028)	(0.036)	(0.036)	(0.023)	(0.023)
Constant	278	277	−50.0	−50.0	−160	−164
	(3 3 3)	(3 4 4)	(3 7 5)	(3 7 6)	(2 3 8)	(2 4 2)
Time FE	YES	–	YES	–	YES	–
Credit officer FE	YES	YES	YES	YES	YES	YES
No. of observations	765	765	516	516	654	654
No. of clients	302	302	196	196	260	260
R-squared: within	0.0773	0.0885	0.109	0.109	0.0763	0.112
R-squared: between	0.352	0.349	0.304	0.304	0.442	0.436
R-squared: overall	0.254	0.258	0.242	0.242	0.335	0.344

Notes. Difference in differences estimates. The treated group is composed by individuals belonging to Goal Card centres in Columns (1) and (2), by the individuals belonging to Goal Card centres that subscribed a Goal Card in Columns (3) and (4), by the individuals belonging to Goal Card centres that did not subscribe a Goal Card in Columns (5) and (6). The control group is composed by individuals belonging to centres selected by means of propensity score matching in all columns. Estimates have been done by using six-monthly raw savings balances. Bootstrap standard errors clustered at the centre levels in parentheses. All variables are in level form. All columns report random effects (RE) estimates. Annex 8 provides more details of the estimates, fixed effects (FE) estimates, and wild bootstrap tests.
$^{+}p = 0.104$, * p < 0.10, ** p < 0.05, *** p < 0.01

and significant impact of the Goal Card pilot on the savings balances of the Goal Card centres' clients (Column (1)) depended on those who did not subscribe to the Goal Card (Column (5)). In contrast, the overall impact of the Goal Card program on the savings balances of the Goal Card subscribers is positive and larger in magnitude, but weakly significant (Column (3), p-value 0.104).

These results can be interpreted by considering that, in the pre-treatment period, the customers who subscribed to the Goal Card had more savings than the treated centres' clients who did not subscribe to it (Table 3, Panel D) who, in turn, had less savings than the control centres' clients (Table 3, Panel C). Therefore, the subscribers to the Goal Card selected themselves from among customers who already had a savings-oriented behavior; thus, the project did not have a strongly significant impact on their savings balances. By contrast, the program had a positive and significant impact on the savings balances of the treated centres' other clients, even if they had not signed up for the Goal Card. These customers, who would have had more difficulties in completing a Goal Card, did not subscribe to it, but modified their saving behavior substantially, perhaps to prepare themselves for completion of the Goal Card once they subscribed to it.

Considering the parameters of the interaction terms, $Treated^{*}Semester_1$ and $Treated^{*}Semester_2$, which captured the dynamics of the Goal Card program effects, the estimates show that the longer-term effect in the second semester of the project was greater and the only significant one. These results also depended on the seasonality of the trend in the savings balances of the control group (Figs. 3 and 4).

Overall, the regression output indicates that the effect of the Goal Card program is positive and significant only in the second semester of the project, suggesting a persistent change in the savings habits of, but a slow accumulation of savings by the treated centres' clients. Furthermore, the positive and significant effect of the project is not due to the actual subscription to the Goal Card, suggesting that all the various activities related to the program, including the example represented by those who signed up for and completed a Goal Card, were important for the program results.

Table 6 shows the estimates from the third analysis, in which we still considered the Goal Card and control centres but, within these centres, we extended the analysis by progressively adding to the customers who had been SEF's customers throughout the

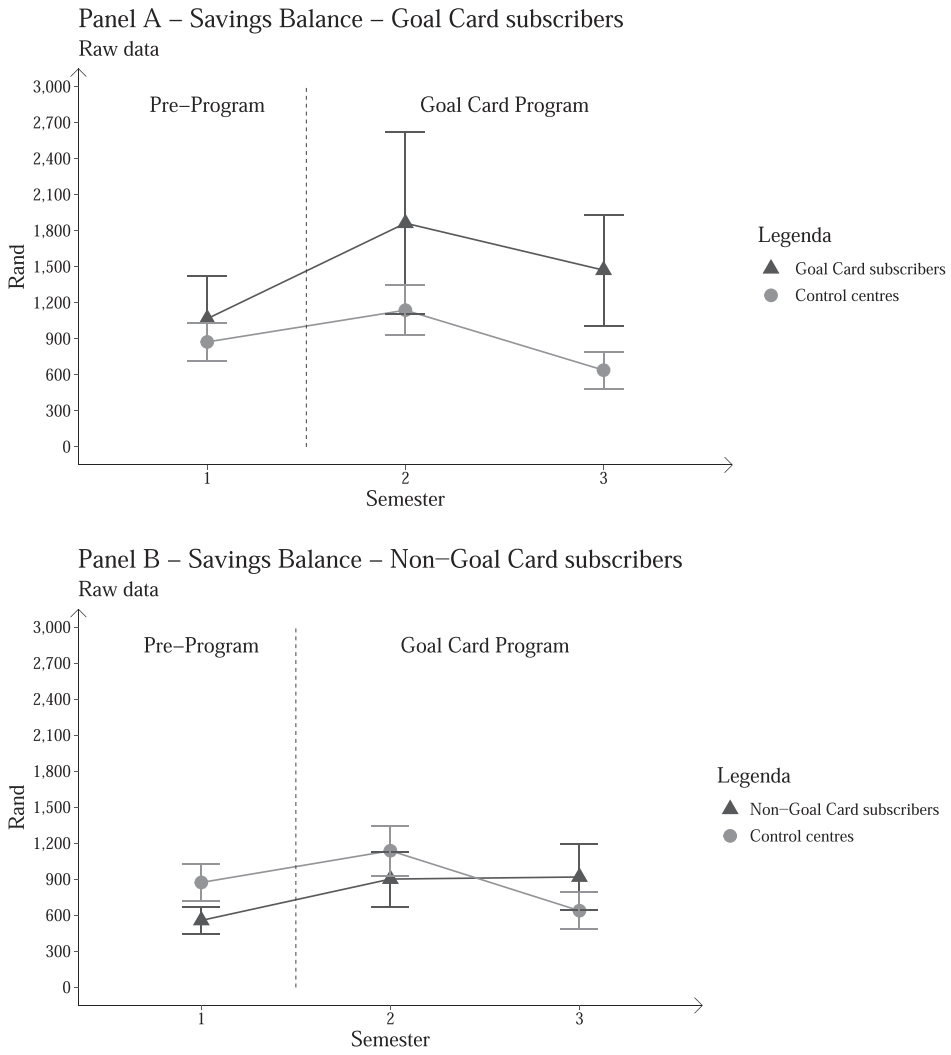

Fig. 4. Savings balance trends for Goal Card subscribers and non-subscribers, and clients in control centres.
Notes. Panels show the mean of the six-monthly raw savings balances and the corresponding 95 percent confidence intervals for the Goal Card subscribers (Panel A) and for the non-Goal Card subscribers (Panel B), both compared with those of the clients in the centres selected by means of propensity score matching.

observation period i) customers who had dropped out of SEF, and then ii) new customers.[35]

This robustness analysis was conducted using RE Models (1) and (2), and by considering semesters as time intervals and raw data. In detail, Columns (1), (3), and (5) show the estimates obtained using Model (1), i.e., by doing a pre-post analysis, while Columns (2), (4), and (6) show the estimates obtained using Model (2), i.e., by studying the dynamics of the savings behavior in the project period.

Furthermore, Columns (1)–(2) show the estimates for the individuals who were SEF's clients for the entire observation period, Columns (3)–(4) show the estimates for both the individuals who were SEF's clients for the entire observation period and the customers who dropped out of SEF, while Columns (5)–(6) show the estimates for all the clients in the Goal Card and control centres, i.e., including the new clients. The control groups include the corresponding clients in the control centres.

The estimates confirm that the overall impact of the Goal Card pilot on the savings balances of the treated group's clients was positive and significant, as shown by the parameter associated with the interaction term, *Goal Card centre*Program*, throughout all the samples in Table 6 (Columns (1), (3), and (5)). However, the parameter value decreases as the considered sample of clients expands, indicating that the program effect was greater for the customers who had been SEF's clients for the entire observation period. Additionally, the estimates confirm the dynamics of the change in the savings behavior, and show that the longer-term effect was greater and the only significant one.

7. Qualitative analysis

We conducted and analyzed surveys to gain insights into how well the program was perceived by the clients, their motivation, and how it could be further improved. Before detailing the survey outcome, it is necessary to acknowledge that the interviewers explicitly stated that the purpose of the survey was precisely to help SEF through this research. This could conceivably have given respondents an incentive to respond in a way that pleased the interviewers. Consequently, the results discussed later in this section should be interpreted with caution.

[35] Annex 9 reports additional results and FE estimates.

Table 6
Robustness analysis.

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable	Savings balance		Savings balance		Savings balance	
Sample	Clients for the entire observation period (baseline)		+ Dropped-out clients		+ New clients	
Goal Card centre	−185	−176	−203	−199	−159	−161
	(396)	(399)	(337)	(337)	(257)	(258)
Program	−150**		−129**		−63.2	
	(58.5)		(61.8)		(68.1)	
Goal Card centre * Program	388***		329***		264**	
	(1 1 1)		(99.3)		(1 0 5)	
First semester of the program		227***		210***		157***
		(67.5)		(54.6)		(32.4)
Goal Card centre * First semester of the program		217		180		145
		(2 0 0)		(1 6 9)		(1 4 0)
Second semester of the program		−229***		−208***		−121*
		(71.1)		(51.8)		(65.3)
Goal Card centre * Second semester of the program		566***		511***		392***
		(66)		(56.6)		(95.8)
Age	1.08	1.17	2.35	2.29	4.22**	4.21**
	(4.32)	(4.32)	(4.11)	(4.04)	(1.72)	(1.68)
Poverty index	−297	−285	−253	−252	−147	−146
	(2 2 7)	(2 2 5)	(1 8 4)	(1 8 9)	(1 4 7)	(1 5 0)
Years in business	−7.85	−7.34	−2.96	−3.08	−3.70	−3.88
	(16.8)	(17.1)	(14.2)	(14.5)	(11.4)	(11.3)
Loan cycle	−4.70	−4.85	−9.18	−8.82	−1.93	−1.77
	(7.03)	(6.86)	(6.96)	(6.75)	(6.98)	(6.91)
Loan amount	0.169***	0.169***	0.171***	0.171***	0.178***	0.178***
	(0.028)	(0.028)	(0.025)	(0.025)	(0.023)	(0.023)
Constant	278	277	277	279	−62.0	−62.7
	(3 3 3)	(3 4 4)	(2 6 6)	(2 6 9)	(1 4 2)	(1 4 2)
Time FE	YES	–	YES	–	YES	–
Credit officer FE	YES	YES	YES	YES	YES	YES
No. of observations	765	765	995	995	1,497	1,497
No. of clients	302	302	440	440	688	688
R-squared: within	0.0773	0.0885	0.0781	0.0884	0.0538	0.064
R-squared: between	0.352	0.349	0.338	0.337	0.361	0.359
R-squared: overall	0.254	0.258	0.255	0.259	0.27	0.272
No. of clients in Goal Card centres	148	148	228	228	349	349
No. of clients in control centres	154	154	212	212	339	339

Notes. Difference in differences estimates. The treated group is composed by individuals that have been SEF clients in Goal Card centres for the entire observation period in Columns (1) and (2), it includes also clients that dropped out of SEF in Columns (3) and (4), and also new clients in Columns (5) and (6). The control group is composed by the corresponding groups of clients belonging to centres selected by means of propensity score matching. The lower part of the table shows the number of clients in Goal Card and control centres for each group. All variables are in level form. Savings balances are considered at the six-monthly time interval, by using the raw data. Bootstrap standard errors clustered at the centre levels in parentheses. All Columns report random effects (RE) estimates. Annex 9 provides more details of the estimates, and fixed effects (FE) estimates. * p < 0.10, ** p < 0.05, *** p < 0.01.

We conducted two separate surveys for the Goal Card subscribers and control centres' clients. In what follows, we refer to the survey questions as Q*x*/T or Q*x*/C, where *x* stands for the question number and T and C stand, respectively, for the treatment group and control group surveys.[36]

7.1. Importance of savings

All the clients that were interviewed, barring one in the control group, recognized savings as important or very important, with the clients in the control group valuing them more. Indeed, 71% and 63% in the control and treatment groups, respectively, stated that they considered savings as very important (Q1/T, Q1/C). In particular, 80% in both groups declared having savings dedicated to emergencies and unexpected events (Q13/T, Q10/C).

7.2. Savings Management

Most of the clients were already well prepared to manage their savings: 95% of the control group had a saving goal (Q5/C), whereas 96% of the treatment group had one before the Goal Card was introduced (Q5/T). The clients in the two groups save for different reasons, mostly furniture, building material, and children's future needs. Interestingly, none of the clients from the control group reported business as a reason for saving, nor did anyone among the treated clients before the pilot's introduction. During the pilot, only approximately 2% of the respondents started saving for their businesses (Q7/T), which confirms that the targets for the Goal cards were chosen with reference to basic family needs.

Furthermore, more than 70% of the control group already had a savings plan (Q7/C), while 90% of them declared that they managed to keep up with it (Q8/C)[37]. Additionally, 78% of the treated clients

[36] Annexes 10 and 11 report the full surveys. Annex 12, particularly Tables A12.1 and A12.2, reports some details on the distribution of answers and the tests on the proportions across the Goal Card subscribers and control centres' clients.

[37] These figures may not be entirely accurate as there is the possibility that some clients might have been referring to the 2% mandatory savings.

succeeded in meeting their savings plan commitment, confirming the previous quantitative findings.

Despite the awareness about the importance of savings and the clients' apparent ability to manage them, most clients (62% of the treatment group and 66% of the control group) did not have any other savings besides the amount that SEF encouraged them to put aside in the group savings account (Q3/T, Q3/C). The rest of them kept their extra-savings in one other form, which was mostly a bank or post office account (Q4/T, Q4/C).

7.3. Pilot experience

Overall, the pilot was well perceived: when asked about how helpful they found the Goal Card tool, all the clients answered positively—with approximately 85% reporting "very helpful," and the remainder, "helpful" (Q20/T)—while none of them regretted taking part in it (Q22/T).[38] Moreover, the clients appeared to be open to the introduction of similar tools: most females in the control group (90%) would be "pleased" if SEF asked them to save constantly for a goal they could set themselves, whereas only 3.6% felt "constrained" (Q12/C).

7.4. Pilot management

COs played a crucial role in the success of the pilot. Approximately 50% of the respondents reported that a CO helped them choose the goal (Q8/T) and stay motivated throughout the program (Q17/T). Furthermore, COs periodically checked the achievements of 80% of the respondents (Q18/T), while almost all of the clients (more than 96%) recalled that a CO used to constantly verify their progress on the pre-defined milestone date at the CMs (Q19/T).

An area of improvement that emerged concerns the various forms of recognition (Q23/T, Q16/C) for goal achievement: some of the clients suggested prizes or larger loan amounts. Most, however, only needed some kind of acknowledgment from either the CO, the centre, or other SEF employees.

Finally, the customers highlighted that different time horizons should be allowed for the savings goal: only 18% would save for a long-term goal (more than 2 years), half of the group for a medium-term goal (between 6 months and 2 years), and a substantial 32% for a short-term goal (<6 months).

8. Conclusions

The aim of this research was to quantitatively estimate the impact of the Goal Card program on clients' individual savings behavior. SEF introduced this project in selected centres of the Jane Furse branch to promote savings that were oriented to the basic family needs of its customers and to help clients choose clear saving goals and savings plans appropriately.

According to the literature, setting specific goals and tracking the progress toward them, and acknowledging progress made, leads to an improved task performance of microfinance clients in poor contexts. Consistently, we found that the Goal Card program led to an increase in the savings of SEF's customers in the Goal Card centres, compared to the counterfactual. Particularly, we found that the effect of the Goal Card program mainly depended on the treated centres' clients who did not subscribe to the Goal Card. Since the customers who signed up for the Goad Card were those who already had the most savings in the pre-treatment period, these results suggest that the Goal Card was subscribed to by the customers for whom completing it would be easier, given that they already possessed the savings behavior that the program intended to promote. By contrast, the customers for whom completing the Goal Card would have been more difficult chose not to sign up for it; however, they began to change their savings behavior, plausibly to prepare themselves to complete the Goal Card once they subscribed.

Indeed, the estimates show that the positive effect of the Goal Card program manifested in the second semester of the project, suggesting a persistent change in the savings habits, but a slow accumulation of savings, possibly due to the difficulties encountered by the customers in changing their savings conduct. Furthermore, the effect of the Goal Card program was positive and significant both for those who were SEF's customers for the entire observation period, as well as when we included the customers who left SEF in the second half of the program and new customers who became part of it.

These results are startlingly significant, given that this project was an addition to a microcredit program that already included savings requirements and provided savings guidance. The main reasons for the program's success probably reside in its introduction of two important mechanisms: i) explicit goal setting and ii) semi-public progress recognition. Although the Goal Card was conceived as a tool to formalize savings goals, it is reasonable that even the Goal Card centres' customers who did not subscribe to it had in some way made their own savings plan, because they were involved in the whole introductory phase of the program and the subsequent phases, including the publicly acknowledged positive examples given by the subscribers to the Goal Card. Indeed, all SEF's customers have shown themselves aware, in the answers given in the surveys, of the importance of planning their savings; the Goal Card program may have provided them with both the tools and the motivation to implement this awareness.

Based on these findings, we recommend further research, as well as some program improvements. Regarding further research, we suggest, in particular, i) an analysis of different outcome variables, such as the probability of fulfilling a savings goal and other measures of wellbeing, ii) randomization of treatment to overcome selection biases, and iii) extending follow-up analyses to track the savings behavior of the customers who participated in the program. As for the program, we suggest that attention be paid to the progress monitoring and milestones date check. Indeed, as it emerged from our surveys, keeping track of the progress toward a goal is fundamental for improved performance, and clients highly value the support received from MFIs. Meanwhile, clients would appreciate some form of recognition; therefore, it would be useful to carefully craft the "milestone moment." Most clients desire acknowledgment from SEF: sharing their results and achievements was a way not only to encourage themselves, but also to inspire other members by setting a good model. Further improvements include the introduction of systematic reminders to keep the clients motivated and focused on the goal throughout the period of the project. Indeed, a lack of focus and forgetfulness can represent a major obstacle to the achievement of the savings goal.

SEF should also clearly define the goals of the project and select appropriate instruments to measure their achievement. This is because the value added of a tool such as the Goal Card for the customers is in terms of motivation, appropriate goal selection, savings planning, money management, and use.

In light of the positive results achieved in the pilot phase in the Jane Furse branch, SEF scaled up the Gold Card program, accounting for many of these suggestions. Presently, the program, which has been renamed "Savings Plan," is active in 15 of the 95 branches (The Small Enterprise Foundation, 2019, p. 16).

Further research could investigate how the program affected the customers' behavior as borrowers, i.e., the percentage of indi-

[38] Clients also understood why SEF introduced it (Q15/T): in more than 50% of the cases, they indicated, "To remind us [of] the importance of savings," and 41% answered, "To help us realize our potential."

viduals in arrears and the trends in their loan profiles over time. It would also be interesting to explore how the project affected attendance at the CMs, which may be relevant for the creation of social capital (Dalla Pellegrina, De Michele, Di Maio, Landoni, & Parravicini, 2021; Feigenberg, Field, & Pande, 2013), and how it impacted customers' welfare (consumption, food security, income generating activities, etc.).

Finally, although MFIs operate in many different locations and use several different models, we believe that these results can be useful for many of them. Indeed, our experiment was conducted in an institution that used a standard microfinance model, while thousands of other organizations, globally, adopt this model, i.e., group lending to poor females, weekly or monthly repayment, and fixed-term loans usually lasting close to a year. We hope our results encourage further research on this topic, as well as the replication of similar experiments in other contexts to further assess the impact of introducing methods that aim to spread a habit of saving and to encourage the planning of savings to meet family needs.

CRediT authorship contribution statement

Lucia Dalla Pellegrina: Conceptualization, Data curation, Formal analysis, Methodology, Resources, Writing - original draft, Writing - review & editing. **Angela De Michele:** Conceptualization, Data curation, Methodology, Project administration, Writing - original draft, Writing - review & editing. **Giorgio Di Maio:** Conceptualization, Data curation, Formal analysis, Methodology, Software, Visualization, Writing - original draft, Writing - review & editing. **Paolo Landoni:** Conceptualization, Methodology, Project administration, Resources, Writing - original draft, Writing - review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.worlddev.2021.105660.

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