Why Do Defaults Affect Behavior? Experimental Evidence from Afghanistan*

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Abstract

We report on an experiment examining why default options impact behavior. By randomly assigning employees to different varieties of a salary-linked savings account, we find that default enrollment increases participation by 40 percentage points—an effect equivalent to providing a 50% matching incentive. We then use a series of experimental interventions to differentiate between explanations for the default effect, which we conclude is driven largely by present-biased preferences and the cognitive cost of thinking through different savings scenarios. Default assignment also changes employees' saving habits, and makes them more likely to actively decide to save after the study concludes.

JEL classification: D14, O12, O16

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1 Introduction

Default assignments impact behavior. This observation is among the most influential and policy relevant insights from behavioral economics (Madrian, 2014). From organ donation (Johnson and Goldstein, 2003; Abadie and Gay, 2006) and vaccine use (Chapman et al., 2010) to exercise (DellaVigna and Malmendier, 2006) and marketing (Johnson et al., 2002), and especially in the domain of retirement savings decisions (Madrian and Shea, 2001; Choi et al., 2004; Beshears et al., 2009; Carroll et al., 2009; Chetty et al., 2014), individuals tend to remain at their default assignment. Yet, particularly as relates to retirement savings, economists still have an incomplete understanding of why defaults work.

This paper reports results from a field experiment designed to study the impact of default savings assignments and to more precisely identify the reasons why defaults affect behavior. For the experiment, we worked with Afghanistan's largest mobile phone operator to design and evaluate a new phone-based savings account, called "M-Pasandaz."[1] The study took part in two phases. In the first, each of 949 employees was randomly assigned to have either 0% or 5% of his or her salary automatically directed into a savings account. Separately, each employee was randomly assigned a financial incentive to save, with one third of employees receiving a 50% match on all contributions; one third receiving a 25% match; and the final third receiving no match. This phase makes it possible to compare the effect of 'nudging' employees with defaults and of incentivizing them with matches, and to experimentally estimate how defaults affect employee decisions and savings. In the second phase of the study, we implemented a series of interventions designed to unstick employees from their default assignment, and experimentally test several prominent explanations for default effects discussed in the literature.

The first phase of the study produces three basic results. First, default assignments have large and significant impacts on employee participation and savings, of comparable magnitude to what is reported in the U.S. literature (Appendix Table A1). Two months after the launch of the product and after almost all switching of contribution rates had ceased, employees randomly assigned a default contribution rate of 5 percent were 40 percentage points more likely to contribute to the account than individuals assigned a default contribution rate of zero. Notably, increased savings in M-Pasandaz were not offset by reductions in other savings instruments. We collected several rounds of follow-up surveys with each employee and find that, if anything, participating in M-Pasandaz may have crowded in other savings. While the literature has speculated that savings arising from defaulting employees into plans reflects new savings, ours is the first, to our knowledge, to confirm this with longitudinal

[1] "Pasandaz" means savings in Dari, the most common language spoken in Afghanistan.

surveys designed to capture each employee's full financial portfolio.

Second, we "price" the default relative to matching contributions, and estimate the elasticity of participation with respect to the match rate. While a substantial body of research suggests that savings programs that incorporate default contributions are more likely to increase participation than programs that rely on monetary incentives alone (Chetty et al., 2014; Madrian, 2013), to our knowledge this is the first study to experimentally compare default and incentive effects on a single population. We find that default assignment increases participation by roughly the same amount as a 50% match on employee contributions. We further find that the elasticity of participation with respect to the match rate is about one, independent of default status.

Third, we find that defaults affect employee attitudes and habits, even long after the experiment concludes. Most notably, we removed all financial incentives to contribute at the end of a six-month trial, and asked each employee to make an active decision about whether to continue to contribute. Even absent incentives, 45% of employees elected to contribute, with participation 25% higher in the group that was randomly assigned a positive default contribution rate at the beginning of the trial. Employees defaulted into savings reported significantly higher levels of financial security, and two years later, their savings balances remained larger than those randomly defaulted out of savings during the trial. Such evidence is consistent with the idea that employees might form habits through the experience of saving (Becker and Murphy, 1988; Charness and Gneezy, 2009), perhaps through better financial planning (Thaler, 1999; Schaner, 2016). More broadly, these results can inform the larger discussion of whether using defaults to change financial behavior is welfare improving by suggesting that under certain conditions a default assignment can cause employees to learn about the costs and benefits of saving (Bernheim et al., 2015).

The rest of the paper explores *why* default assignment has such a large impact on savings. Here, we attempt to differentiate between five explanations offered by the literature; the first three are consistent with rational models, and the latter two with behavioral models.[2] First, defaults may persist because of an 'employer endorsement' effect whereby decisionmakers, unsure of the best course of action, take the default as reflecting a recommendation by a benevolent planner (Madrian and Shea, 2001; Choi et al., 2004; Madrian, 2014). Second, there may be significant real or perceived costs involved in switching from the default election, due to mechanical frictions in changing the election. Third, and closely related, there may be a large mental cost associated with the complexity of forming a financial plan (Lusardi and Mitchell, 2011; Cole et al., 2011; Drexler et al., 2014). Fourth, turning to behavioral theories, employees may be unaware of their election, or the possibility of switching may not be salient

[2] Madrian (2013), Beshears et al. (2009), and DellaVigna (2009) provide excellent reviews of this literature.

in their minds (Karlan et al., 2016b; Taubinsky, 2013; Kast et al., 2016).Finally, because changing defaults involves some immediate costs with delayed benefits, individuals may not switch, particularly if they are present-biased and naive about their future preferences (O'Donoghue and Rabin, 1999).

Our data contradict the first two explanations for why defaults affect behavior. First, our research design eliminates 'employer endorsement' effects by construction: the open lottery used to assign default status and matching incentives makes clear to employees that assignments do not reflect the deliberation of a benevolent planner, and this understanding is clearly visible in follow-up surveys with employees.[3] We also see little evidence that the "default in" assigned rate of 5% was perceived as optimal – only 8 of 447 employees (1.8%) actively chose to contribute at 5% (most people who opted in did so at the maximum of 10%). Second, every effort was made to minimize the mechanical cost of switching. For instance, to change their contribution rate, employees simply needed to let someone from their human resources department know – this could be done in person, via a phone call, or by sending an email or text message. Our survey data indicate that employees were clearly aware of their contribution level and knew how to change it if they wanted to.[4]

Similarly, we find that large default effects persist after deploying a series of interventions designed to increase the salience of default assignment. These include randomly assigned text messages as well as randomly assigned financial surveys, neither of which resulted in significant switching. The strongest evidence we can find of inattention occurred three weeks into the study on the first payday, when 22 of our 943 participants (2.33%) switched their contribution, which was a modest increase over the number of switches on previous days. Thus, while limited attention clearly affects savings decisions in other contexts and plays a small role here, it cannot explain the large default effects observed in our context.

By contrast, there is much in our data to suggest that default effects in savings persist because employees face significant cognitive costs associated with identifying their optimal contribution rate, and that this cost, in combination with present-biased preferences, creates procrastination. Employees who exhibited present bias in both hypothetical and incentivized behavioral elicitations were significantly more likely to remain at their default assignment (even controlling for their long run discount factor and a broad set of observables). Further, of the experimental interventions we implemented – all of which were designed to encourage

[3]75% of the 838 employees contacted in the face-to-face endline survey confirmed their belief that the assignment of matching incentives was random, while 14% indicated they did not think it was truly random, and 11% indicated that they were unsure. In focus groups, employees expressed gratitude and surprise at observing the truly random assignment of incentives, since past promotions and bonuses had created an expectation of favoritism.

[4]For instance, 87% of employees report fully understanding how the product works, and 96% of participants were aware of their match rate.

employees to choose a non-default contribution rate – the only one that proved effective was to offer employees a thorough financial consultation designed to reduce the cognitive cost of designing a financial plan. This consultation consisted of several modules, and the component that stands out as most associated with switching is one that . We directly observe the interaction between present bias and the cognitive cost through a final experiment in which we randomize between subjects whether the financial consultation would commence immediately, or would happen with a one week delay. Employees who exhibit present bias in the incentivized preference measurement task are more likely to accept the consultation with a delay than when it is offered immediately. In other words, present-biased employees, who are already less likely to switch from their default election, are also more likely to delay undertaking an activity that involves the immediate cost of determining how much to contribute.

Lastly, we use a novel empirical approach to test for peer effects in the decision to save. This helps us address concerns that employees might have behaved strategically, and relates to a broader literature on peer effects in financial decisions (cf. Duflo and Saez, 2003; Banerjee et al., 2013; Bursztyn et al., 2014; Beshears et al., 2015). Specifically, we obtained from the mobile phone operator transaction records covering the universe of mobile phone calls made between employees at the firm. These data make it possible to quantify the extent to which each employee is connected to other employees in the experiment. Since employees' friends are also randomly assigned default rates and matching incentives, this means some people have social networks where rates of saving are exogenously larger. However, under a variety of plausible definitions of what consititutes a "social contact," we find little evidence that employees' financial decisions are influenced by the savings decisions of their peers.

To summarize, this paper makes several contributions relative to existing research on the impact of default assignment on savings behaviors. First, we provide the first experimental evaluation of a default payroll contribution account, and show that experimental estimates of the default effect in a developing country are comparable to quasi-experimental estimates from the U.S. and western Europe.[5] Second, our controlled environment makes it possible to answer outstanding questions about default effects, including the 'price' of the default relative to financial incentives, how defaults affect the entire savings portfolio, and how defaults impact attitudes toward savings and future active savings decisions. Finally, our design

[5]Two recent papers by Brune et al. (2016) and Somville and Vandewalle (2017) show that beneficiaries who receive transfers to a bank account accrue more savings than beneficiaries who are given cash. Our setting differs in that we hold the payment modality fixed and experimentally vary the portion of an employee's salary that is earmarked for savings. We believe this better isolates the default effect from other potentially confounding differences between a bank account and cash (such as the transaction costs involved in depositing and withdrawing cash from a bank account, the trust and reputation of the bank, and the visibility of savings).

allows substantial exploration of the mechanisms underlying the default, which together highlight the cognitive cost of deciding how much to save and the role of present-bias in the persistence of default effects.

This paper relates closely to three recent and important empirical papers that link default effects to present bias and procrastination. First, Brown and Previtero (2014) study employees of the University of Illinois and find that procrastinators—individuals who wait until the last day of health care open enrollment to make an election—are more likely to stick with their default 401(k) portfolio allocation, in addition to contributing less and taking longer to sign up for a 401(k) in the first place. Second, studying the same population, Brown et al. (2016) look at the predictors of staying at a default. Similar to the heterogeneity we observe, they find that individuals with a tendency toward procrastination, which they measure using five questions taken from the Melbourne decision-making questionnaire (a instrument from psychology used to measure decisionmaking tendencies), are much more likely to be defaulted into a defined benefit contribution (which happens after six months of employment) rather than make an active plan election. Last, Goda et al. (2015) examine retirement savings levels in the American Life Panel, finding that it is correlated with present-bias, measured using questions regarding time-dated monetary payments. Our findings are consistent with these three papers. However, relative to these efforts, this study benefits from experimental variation in default assignment, as well as a series of cross-randomized interventions designed specifically to compare present bias to other common explanations for default effects offered in the behavioral literature.

More broadly, this experiment also provides a set of results of potential interest to development economists. In Afghanistan, formal financial institutions are widely distrusted and only 4 percent of the population saves in a bank (Demirguc-Kunt et al., 2015). By contrast, 90 percent of Afghans have access to a mobile phone, and a growing share use mobile money. This is emblematic of a global pattern: only 22% of adults in developing countiries report saving in formal accounts (Demirguc-Kunt et al., 2015), and in sub-Saharan Africa, the number of mobile money accounts has already surpassed bank accounts (GSMA, 2017). In concert, the International Labor Organization estimates that the share of the developing world's households in the middle class or above more than doubled from 1991 to 2011, and is projected to pass 50% in 2017, with over 60% of these workers in wage employment (Kapsos and Bourmpoula, 2013).[6] As the share of wage earners in developing countries increases, and as electronic payment systems become more common, products like M-Pasandaz can

[6]Demirguc-Kunt et al. (2015) find that 400 million unbanked adults currently receive wages or government transfers in cash. The payment of salaries via mobile money is now happening in South Asia, Sub-Saharan Africa and Latin America (cf. Karlan et al., 2016a; Aker et al., 2016; Breza et al., 2017); phone-based and electronic welfare payments are also becoming increasingly common (Muralidharan et al., 2016).

provide new options for mobilizing savings.

The key feature of M-Pasandaz is that default salary contributions are passive. Once enrolled, contributions are automatic and do not require any action from the saver (Chetty et al., 2014). This may be particularly important in developing countries where many of the primary obstacles to saving, from simple transactions costs associated with traveling to the bank (Burgess and Pande, 2005; Callen et al., 2015), to intra-household disagreements regarding savings (Anderson and Baland, 2002; Ashraf, 2009; Schaner, 2015), behavioral issues of dynamic inconsistency (Ashraf et al., 2006; Karlan et al., 2016b; Dupas and Robinson, 2013), temptation good (including drug and alcohol) consumption (Banerjee and Mullainathan, 2010; Schilbach, 2017), and ego depletion (Shah et al., 2012), all relate to the fact that savings must first pass through the saver's hands, who must then make an active decision to save (Karlan et al., 2014; Madrian, 2013). Indeed, in developed countries, it is frequently the poorest and least financially sophisticated who respond most strongly to automatic contributions (Madrian and Shea, 2001; Choi et al., 2004; Beshears et al., 2010a). Taking this approach to its logical conclusion, we show that one of the most effective means of increasing savings in a developed country context also has immediate relevance to the fast-growing population of individuals in developing countries receiving digital payments.

The rest of the paper proceeds as follows. Section 2 provides background on the Afghan context. Section 3 describes the M-Pasandaz product and the experimental design to evaluate its effect on savings. Section 4 reports the impact of default enrollment and Section 5 discusses the role of present-biased preferences in creating a default effect. We address several alternative explanations, incuding the possibility of peer effects, strategic behavior, and loss-aversion in Section 6. Section 7 concludes.

2 Financial Inclusion in Afghanistan

After nearly four decades of political instability and conflict, Afghanistan remains one of the poorest countries in the world. The formal financial sector is small, with only 2.3 banks per 100,000 adults, and only 4% of adults reporting any formal savings over the past year (International Monetary Fund, 2015; Demirguc-Kunt et al., 2015).[7] Yet a demand for savings exists, as roughly 25% of Afghans report saving in the previous year, primarily through cash or in-kind holdings (Demirguc-Kunt et al., 2015; Chipchase et al., 2013). Among our subjects, many respondents report keeping American dollars rather than Afghanis, the local

[7] Afghan banks offer short-term savings accounts with a floating interest rate and long-term "fixed deposit" accounts with a fixed interest and term, though the reported rates often fall below the annual inflation rate, which ranges between 5% and 10%.

currency, and when making long-distance transfers forego wire services in favor of hawalas, a trust-based network of money brokers. While saving money to buy a house or a car seems out of reach for most, saving money in case of death or illness is essential. They often store their money in a metal box at home (a traditional method), or with a trustworthy (often richer) relative. They tell stories of themselves or people they know going hungry or reducing food quality after a shock of some kind, and describe the humiliation of young men unable to marry for lack of money.

While bank presence is limited, mobile phones are prevalent throughout the country, with approximately 75 mobile cellular subscriptions for every 100 Afghan adults (International Telecommunication Union, 2015). More recently, several operators in Afghanistan launched "mobile money" platforms, which deliver rudimentary financial services to subscribers over the mobile phone network. We focus on one such mobile money platform, "M-Paisa," which was launched in 2008 by Roshan Telecom, and which at the time of our study was the nation's largest mobile money network with 1.2 million unique subscribers. In Afghanistan, as in other countries, mobile money uses SMS-like functionality to enable the exchange and storage of value over a basic mobile phone interface, complemented by a real-world network of agents providing "cash-in" deposit and "cash-out" withdrawal services. As mobile phone penetration rates surge in developing countries, mobile money has emerged as a possible financial instrument for the poor, and there are now more than 500 million active users using over 277 mobile money services in 92 countries (GSMA, 2017). These accounts have historically been used primarily for interpersonal transfers (Jack and Suri, 2014; Blumenstock et al., 2016), and in Kenya, the country where mobile money is most widespread, have led to reductions in poverty (Suri and Jack, 2016). More recently, however, many mobile operators have begun to offer more sophisticated financial services, including interest-bearing savings accounts, insurance, and credit products. As of late 2015, roughly 32 million individuals possessed mobile savings accounts, with an average acount balance of US$16.18 (GSMA, 2016).[8]

3 "Mobile-izing" Savings with M-Pasandaz

We worked with Roshan, Afghanistan's largest mobile network operator, to develop a new product for the M-Paisa mobile money system, called "M-Pasandaz." M-Pasandaz facilitates automatic payroll deductions and employer matching contributions using mobile money.[9]

[8]See Aker and Blumenstock (2014) for a review of recent literature, and GSMA (2017) for a survey of empirical data on mobile money in developing countries.

[9]Prior to our collaboration, Roshan had for a number of years aspired to create a defined contribution program for their employees. Automatic payroll deductions are widely used to promote savings in developed

Specifically, a Roshan subscriber who owns a mobile money (M-Paisa) account and is paid via mobile money can enable a parallel mobile M-Pasandaz wallet and select to have a portion of her salary automatically deducted into this wallet during each pay cycle. Consistent with Islamic principles, these contributions do not earn interest, but employers may provide matching incentives.[10]

Through our study, we provided different versions of the M-Pasandaz account to all eligible Roshan employees. Our study population consists of 949 full-time Afghan national employees of Roshan, about 15% of whom are women (Table A2). Employees hold job titles such as Manager, Engineer, Security Guard and Janitor and are located in six major regional offices: Kabul, Kandahar, Mazar, Herat, Ghazni and Kunduz. Prior to the launch of M-Pasandaz, all of these employees were being paid with M-Paisa direct deposits; that is, each month their monthly wages are deposited into their normal M-Paisa mobile money account.[11] The average tenure in our sample was 5.8 years, and all of Roshan's Afghan employees had received mobile salary payments since 2010, so this population was familiar with the mobile money system.[12]

Several aspects of the M-Pasandaz account were held constant across all employees. Most relevant to our design, deposits into M-Pasandaz could only be made via direct deposit at the time of the regular monthly salary payment; there was no other way to transfer funds into the M-Pasandaz account. Each pay cycle, regardless of the amount contributed by the employee to M-Pasandaz, the employee would receive an SMS confirmation indicating how much had been paid via direct deposit and how much had been placed in the employee's M-Pasandaz account. Employees were free to check the balance on their accounts and to electronically withdraw money at any time; this was done to enable access to liquidity in times of urgent need. However, any withdrawal made during the initial six-month commitment period would forfeit that employee's eligibility for matching incentive payments and eliminate the accrued

countries (Beshears et al., 2009). There are also examples of automatic payroll deductions for savings in developing countries, such as publicly-mandated pension (or "provident") funds for private sector workers in India, Malaysia and elsewhere. While Afghanistan does not currently mandate pension plans for private sector employers, several of the larger employers, including telecoms and international NGOs, voluntarily offered such programs. During the study, several private pension and savings schemes were active in Afghanistan, permitting employee contribution rates between 5-10% of monthly salaries with employer matches of up to 100% of deposits and vesting periods ranging from monthly to annual.

[10] 24 employees (2.5%) described the product as un-Islamic when explaining why they did not to participate.

[11] While there is a withdrawal fee for "cashing out" of the mobile money system, each mobile salary payment includes the cost of one withdrawal to ensure the entire salary was transfered.

[12] At the time of our baseline survey in June 2014, Roshan had roughly 1,100 employees, of whom roughly 90% were Afghan national staff paid using mobile money. We exclude from our sample a group of 18 employees who participated in qualitative focus groups and pilot product development, as well as those employees who had left Roshan prior to the launch of M-Pasandaz in January 2015, leaving us with an experimental sample of 949 employees.

matches from their employer.[13] All employees were required to attend a 60-minute training session, during which a representative from Roshan Human Resources described M-Pasandaz as a "new benefit offered by Roshan" and explained the details of the account.

Two key features of M-Pasandaz account were randomized between employees. First, employees were randomly assigned a *default contribution rate*. For half of employees, the default contribution was set to 5% of their monthly salary; for the other half, the default contribution was set to 0%. To simplify the later exposition, we will occassionally refer to the 5% group as the "default in" group, and the 0% group as the "default out" group. Note, however, that all employees were given an account and enrolled, the difference between groups was simply their default-assigned contribution rate, which all employees had the option to change at any time.

Employees were informed of both their matching assignment and their default contribution rate at the end of the HR training session through a personalized card that was distributed by the HR representative. During training, employees were informed that they could change their contribution rate at any time by calling or visiting the HR department, and this contact number was included on the personalized card; the goal was to minimize the friction involved in switching contribution rates. Employees were free to set their contribution rate to any value between 0% and 10% of their monthly salary. Importantly, this created scope for the default in group to either increase or decrease their contribution, while the default out group could only increase their contribution. Any change in the contribution rate was instantaneous and applied to all future salary payments, with the caveat that each month's contribution was locked in on the 15th of the month to give HR sufficient time to prepare monthly payments, which typically occurred on the 20th of the month.

Subjects were also randomly assigned to one of three different levels of *matching incentive* for M-Pasandaz contributions, creating a 2 x 3 design. The employer characterized these as three different M-Pasandaz "plans" that are distinguished only by the level of matching incentives: White (0% match), Blue (25% match) and Red (50% match).[14] Thus, for each monthly deposit to M-Pasandaz made by the employee, the employer would make a corresponding deposit at the level specified by the employee's plan. Employees were informed that these matching incentives would be available at the end of the six-month commitment period, but that all accrued incentives would be lost if a withdrawal was made before then.

[13]The M-Pasandaz account was similar to a commitment savings account in that withdrawals prior to the six-month deadline forfeited a potential incentive payment, but had key differences in that default enrollment was linked to salary payments and participants could recover their own contributions at any time without penalty. For a review of commitment savings products, see Bryan et al. (2010).

[14]These incentive levels are similar to those in prior literature from developed country (Duflo et al., 2006) and developing country settings (Carter et al., 2015), and were consistent with savings incentives provided by Roshan's competitors in Afghanistan.

As opposed to the contribution rate, which the employee could change easily, the employee could not change his or her matching incentive. Finally, Roshan paid taxes in advance on the matching incentives, so employees received the exact amount specified by their plan.

Both treatments were stratified by employee salary terciles, self-reported perceptions of physical insecurity, and provincial office locations, using data collected in a face-to-face baseline survey of all employees in May and June 2014. Table A2 reports balance tests on a range of observable characteristics across all six resulting combinations of the primary treatments.

In December 2014, employees attended the HR training session and were informed of their default contribution rate and plan assignments. An "open enrollment" period during which employees could change their contribution rate lasted until January 15, 2015, and the first automatic contributions were made on January 21, 2015. The sixth and final automatic contribution occurred on June 21, 2015, and incentive payments were distributed on July 23, 2015.

Over the study period, we conducted four phone-based follow-up survey waves with a randomly selected panel of half the employees. In August 2015 we conducted a final face-to-face endline survey with all employees participating in the study.

4 The Default Effect

4.1 The Default Effect on Participation and Contributions

During the six-month study window, 459 of the 949 employees (48.3%) elected to change their contribution rate from their default assignment; the remaining 490 employees remained at the default. As shown in Figure 1, most of the employees who switched did so in the first three weeks of the study. Employees who switched came from all plan types (Figure A1) and cited a variety of reasons for doing so (Table A3).[15] While many employees did change their contribution rate, the effect of the default is evident in the large number of employees who never moved from their default (Figure 2). For instance, 39% of employees who were assigned a default rate of 0% in the Red plan – all of whom would have received significant financial incentives to save – left "cash on the table" by continuing to contribute 0% of their salary to M-Pasandaz. Similarly, 36% of the employees in the White plan who were assigned a default rate of 5% continued to contribute 5% of their salary to M-Pasandaz, even though

[15]The primary reasons for switching up were a desire to save more and a desire to take advantage of matching incentives. The main reasons employees switched down were not having enough salary and not being provided enough a financial incentive to contribute.

they received no financial incentives to do so.[16]

We estimate the causal effect of defaults in Table 1. Employees who are "defaulted in" at 5% are 40 percentage points more likely to contribute to the account than employees defaulted to 0% (Panel A, column 1).[17] Similarly, random assignment to a 5% contribution increases 6-month contribution rates by 1.77 percentage points (Panel B, column 1), equivalent to a 66% increase over the control group's average contribution rate of 2.7%.[18] Thus, the net effect of default enrollment was to increase monthly employee contributions by 2,426 Afghanis (US$40, Panel C), roughly 10% of the median monthly wage. As reviewed in Table A1, these magnitudes are consistent with previous non-experimental estimates of the default effect in large US companies.

4.2 Comparing the Default Effect to Matching Incentives

Employees also responded strongly to the matching incentives provided by the employer. As can be inferred from the constant terms in columns 2-4 of Table 1 (Panel A), among employees initially assigned a contribution rate of 0%, the participation rate was 1% for employees with no matching contributions, 27% for employees with 25% matching contributions, and 57% for employees with 50% matching contributions.

Our design enables us to directly compare the default effect to the effect of matching incentives. To our knowledge, this is the first experimental study to do so. Figure 3 relates the default effect to the effect of matching incentives, using the coefficients estimated in Table 1. At all levels of matching incentives, participation and contribution rates are higher for the group of employees with a 5% default than for those with a 0% default, and for both groups the elasticity of participation with respect to the employer match rate is approximately one.

These results can inform the broader debate regarding the effectiveness of behavioral nudges relative to traditional incentives (cf. Chetty et al., 2014). In our context, the employer would need to match employee contributions at 50% to achieve the same participation rate as from merely having employees contribute by default. More concretely, we can calculate the implicit value of the nudge to the employer in forgone matching incentives: At the end

[16]These percentages reflect behavior after two months, and prior to the launch of several randomized follow-up interventions designed to nudge employees from their default assignment. Behavior over other relevant periods is presented in Table 5.

[17]In Table A4, when participation is defined as making a non-zero contribution and never making a withdrawal, defaulting enrollment increases participation by 31 percentage points. In Table A5, we find qualitatively similar effects for particiption and contribution rate using the values of these variables at the end of the study on July 15th instead of February 28th.

[18]Whereas the effect on participation is present for all levels of matching incentives (Panel B, columns 1-3), the effect on contribution rates is only present in the White (0% matching contributions) and Blue (25% matching contributions) plans (Panel B, columns 2-4), suggesting that the strongest financial incentives may have been sufficient to overcome the default effect.

of the six month pilot, the 159 employees in the 50% match plan who were defaulted out received a total payout of 699,323 AFA ($13,986.46 USD). If the employer instead only gave all employees a 50% match and defaulted them in at 0%, Roshan would need to provide $83,479 USD (or $87.97 USD per employee) in incentives to achieve the same participation rate as from only defaulting employees in at 5% with 0% match.[19]

4.3 The Effect on Total Savings

We wish to understand whether the substantial increase in M-Pasandaz savings represents a net increase in total savings, or whether employees are instead substituting out of other financial instruments, as has been the case in several studies in the U.S. and Western Europe.[20] We thus conducted a series of longitudinal follow-up surveys with a random subset of employees, asking employees about their financial behaviors.[21] We measure this activity at the household level, since most participants are the primary breadwinner in their household. The monthly surveys captured flows in the five main financial household savings instruments relevant for our sample: (i) the M-Pasandaz wallet; (ii) the M-Paisa wallet; (iii) as cash; (iv) in a bank account; or (v) as loans given to family and friends. We also aggregate these five types of savings to look at a sixth savings measure: total financial savings. Given our sample of urban salaried employees, these measures provide a fairly comprehensive overview of potential savings.[22] These survey data are likely reported with error, but the fact that we observe M-Pasandaz balances in both the survey and administrative data gives us some insight into potential misreporting. As we discuss in Appendix B.2, there is evidence of confusion by some employees on whether to report stocks (which can be read easily and

[19]To generate an equivalent average contribution, rather than an equivalent degree of participation, requires a 25% matching incentive. To see this, in Table 1 Panel B, defaults increase the average contribution in the 0% match group by 2.38 pp, which is roughly the average contribution of the group defaulted out with a 25% matching contribution.

[20]Prominent examples include Benjamin (2003), Engelhardt and Kumar (2007), and Chetty et al. (2013). To our knowledge, no prior work has studied the impact of an automatic contribution program in the developing country context. However, both Brune et al. (2017) and Somville and Vandewalle (2017) study "default" effects by experimentally manipulating whether beneficiaries are paid in cash or to a bank account. In both studies, benficiaries paid via bank transfer save more than those paid in cash. Somville and Vandewalle (2017) find that consumption is higher in the cash arm (after a series of small payments), but Brune et al. (2017) find no differences in spending habits between the two groups (after a single large payment).

[21]All employees participated in face-to-face baseline (January 2015) and endline (August 2015) surveys. Half of all employees were also randomly selected to participate in higher-frequency phone surveys, which occurred in March, May, June, and July of 2015. As we discuss in greater detail in Section 5.3, only half of all employees were selected for high-frequency surveys out of concern that being surveyed might, by itself, change savings behavior (in short, it did not).

[22]While previous development studies have focused on non-financial savings behaviors (cf. Rosenzweig et al., 1993), including jewelry, livestock or durables, these appear to be less relevant in our population of urban wage-earners. At the baseline survey, only 2% of respondents reported non-traditional savings, and we do not find evidence of default effects on self-reported asset ownership in Appendix Table A6.

precisely by looking at the M-Paisa interface) or flows; after correcting for this, we observe a correlation between the survey and administrative measures of $r = 0.85$.

Table 2 examines the impact of defaults on different types of savings.[23] Estimates in Panel A indicate that default enrollment in M-Pasandaz causes a positive but statistically insignificant increase in total savings (Column 1). Across all savings instruments, the only significant effect is an increase in M-Pasandaz savings, which is evident in both the administrative (Column 2) and survey (Column 3) data. We also find positive effects of default enrollment on regular M-Paisa account flows using survey data (Column 4). The remaining columns report somewhat imprecisely measured effects of default assignment on alternative savings instruments (Columns 5-6), loans and transfers made (Column 7) and expenditures (Columns 8-9).[24] While the estimates are imprecise, in the aggregate, they indicate that both M-Pasandaz and M-Paisa savings are going up, and that may reflect a reduction in cash savings and/or consumption expenditure.

The average default effect masks considerable heterogeneity. In particular, our sample has remarkable variation in salary levels, ranging from about $115 USD a month (e.g., guards and janitors) to $5,600 USD a month (senior managers). Consistent with prior work showing that the default is most important for poorer individuals (Madrian and Shea, 2001; Choi et al., 2004; Beshears et al., 2010a), we find large and statistically significant increases in total savings for employees in the lowest salary quartile (Panel B of Table 2). In this quartile, the net increase in savings is driven by increases in M-Pasandaz and M-Paisa, and is partially offset by a reduction in cash savings. We interpret these results with some caution, however. First, while the 'sources and uses' add up sensibly for the aggregate sample, in the poorest

[23] Our base specification uses a difference-in-difference estimator by regressing monthly flows (Y_{it}) between individuals assigned a default contribution rate of 5% ($Default\ In_i = 1$) and 0% ($Default\ In_i = 1$):

$$Y_{it} = \gamma_1 Default\ In_i \cdot Post_t + \eta_i + \psi_t + \varepsilon_{it},$$

Here, $Post_t$ is an indicator equal to one in the post-treatment period (survey waves 2 - 5) and η_i and ψ_t are employee and survey wave fixed effects, respectively. We investigate whether the default effect varies depending on the assigned employer match rate by estimating:

$$\begin{aligned} Y_{it} = {} & \beta_1\ 25\%\ Match \cdot Default\ Out_i \cdot Post_t + \beta_2\ 50\%\ Match \cdot Default\ Out_i \cdot Post_t \\ & + \beta_3\ 0\%\ Match \cdot Default\ In_i \cdot Post_t + \beta_4\ 25\%\ Match \cdot Default\ In_i \cdot Post_t \\ & + \beta_5\ 50\%\ Match \cdot Default\ In_i \cdot Post_t + \eta_i + \psi_t + \varepsilon_{it}, \end{aligned}$$

such that each β coefficient provides the difference-in-difference estimate of the effect of treatment assignment relative to the omitted category (0% employer match and defaulted out). In this latter specification, our power for pairwise tests of differences in means is somewhat limited by the fact that we are comparing 6 different treatment conditions across only 470 employees.

[24] We might expect the increase in M-Pasandaz savings to crowd out other forms of borrowing (Beshears et al., 2010b). We observe no effect on borrowing, but this may be due to the fact that our population tended to be net lenders – less than 6% of our population (53/947) reported receiving loans or transfers at baseline, a number that did not change significantly over the course of our study.

quartile it appears that both savings and consumption are increasing. Logically, this is only possible if employees or their household members are taking on additional outside work, which we did not record as our sample is salaried (though janitors and guards in the sample certainly could be increasing household labor participation).[25] We additionally examine whether the M-Pasandaz account assisted subjects in dealing with shocks, but find no empirical evidence that it did so over the 6 months of this study (results available on request).

In addition to the default effects discussed above, the financial incentives offered by M-Pasandaz led to sizable increases in total savings (see Appendix Table A7), which appear to come from reductions in general expenditures (though food expenditure, specifically, is unaffected). Employees in the 50% match group, for example, save about 4,000 more AFs per month (about $60 USD), independent of default status, than those defaulted out in the 0% match group. The median monthly salary in our sample is about $330 USD, so the M-Pasandaz program increased monthly savings by about 18% of monthly wages.

4.4 Active Decision and Long-Run Effects

Employees who were randomly induced to save more through our interventions also developed different savings habits that persisted after the termination of the experiment. Most notably, at the conclusion of the 6-month study period, all financial incentives were removed, and employees were individually asked whether they would like to have a portion of their future salary automatically deposited into their M-Pasandaz account. We required each employee to make this decision actively, and the decision was the same for all employees independent of their treatment status during the main experiment. As shown in Table 3, the desire to continue contributing was significantly higher for the employees who were exogenously induced to contribute more through a positive default-assigned contribution rate, particularly in the 0% matching rate group. Overall, employees defaulted in to participating during the experiment were 10 percentage points (25%) more likely to actively decide to continue to contribute a portion of their salary to M-Pasandaz. We find that matching incentives had similar effects.[26]

[25] Callen et al. (2015) find that a new savings product increases labor market participation for microentrepreneurs in Sri Lanka. An additional concern with these types of outcomes is that, especially in richer populations, the underlying distributions are fat-tailed, which may mean that substantial samples are required for the sampling distribution of the regression estimates to converge to their limiting distribution. This is potentially less of a concern in the bottom quartile of this sample, where monthly flows are smaller.

[26] Among defaulted out employees, 33.6% of employees originally assigned a match rate of 0% elected to continue contributing; 39.2% of those originally assigned a match rate of 25% continued (s.e. of difference = .058, p = .328), and 47.7% of those originally assigned a match rate of 50% opted to continue (s.e. of difference = 0.060, p = 0.018).

Using Roshan's administrative data, which spans one and a half years after experiment, we can also examine how long default effects persist after matching incentives were removed.[27] Figure 4 shows M-Pasandaz participation rates and balances, separately by default status, for the six months of our study as well as the following 18 months. As discussed above, savings increased substantially during the study period, and differentially for employees defaulted in. Participation dropped steeply once financial incentives were removed, but many employees continued to contribute, particularly among those randomly assigned to a 5% default. These results are tabulated and disaggregated by matching incentive in Appendix Table A8.[28]

4.5 Savings Habits

Why were employees initially defaulted in to savings more likely to later make an active decision to save, and to continue to contribute long after financial incentives were removed? Our survey data indicate that part of the explanation is that the experience of saving changed employee perceptions. Employees defaulted in to savings during the experiment were less likely to report feeling too financially constrained to save, more likely to feel that savings is important, and more likely to feel confident in meeting their financial obligations. These results are presented in Table 4, where column 1 indicates the average response among employees assigned a default contribution rate of 0%, and column 2 indicates the increase in response for employees assigned a default contribution rate of 5%. Since this table includes several outcomes that were not a part of our pre-analysis plan, we focus on three summary indices in Panel A (importance of saving, financial security, and general well-being), and report a set of p-values that asymptotically control the Family Wise Error Rate (the probability that any true null is rejected) at 0.05.[29] Panels B-D report the individual survey responses from which the indices are constructed.

The impact of the default on financial perceptions can be seen in the first two rows of Table 4, Panel A. Default enrollment increased a composite index of the perceived importance of saving by 0.142 standard deviations and a summary measure of perceived financial security

[27] Charness and Gneezy (2009), Schaner (2016), and Hussam et al. (2017) provide other examples of how short-run incentives can affect behavior even after incentives are removed.

[28] We see large and statistically significant differences by default status six months after the conclusion of the program (column 1). Columns 2 - 4 separate samples by the initial matching incentive. The group assigned a 25% matching incentive exhibits the largest separation during the six months following the study, but over the following year it is employees in the 0% match group who show the most persistent evidence of increased savings due to the default effect.

[29] This practice follows a growing literature on addressing potential Type I error arising from multiple hypothesis testing in experiments (Casey et al., 2012; Bidwell et al., 2016). Romano (2010) provide a review. List et al. (2016) describe a technique that simultaneously controls for several sources of Type I error in field experiments. We control the Family Wise Error Rate for consumption and the three summary indices and then for all of the variables that comprise the indices separately.

by 0.111 standard deviations. Results for each of the survey outcomes that comprise the two composite indices are reported in Panels B and C. Most notably, defaulting employees in substantially raised the share of employees who believed that they were not too financially constrained to save. This might reflect the relaxation of a real constraint, where participation in M-Pasandaz moved employees beyond some minimum threshold of savings to begin to feel comfortable saving every month, or might reflect a realization that their prior perception that they were too constrained to save was inaccurate.[30] This seems reasonable in the context of a six-month pilot that meaningfully affected short-run finances, but which ended before more sustained impact could be realized. Modest but significant default effects are likewise observed in employees' attempts to save each month, and in their sense that the M-Pasandaz program itself changed their desire to save. In Panels D and E, we examine a broader set of measures of well-being. In general, we do not find evidence that the M-Pasandaz program impacted such measures of food security, happiness, or employment outcomes.[31]

Collectively, these data indicate that the M-Pasandaz program—and default assignment in particular—significantly increased savings during the 6-month trial. Additionally, it appears that using the product caused employees to change their beliefs about how much they could feasibly save, causing them to change their behavior. The data suggest that using the product caused employees' savings habits to change such that it became more consistent with their own stated long-run preferences. Indeed, prior to the study, participants expressed a strong sense that savings was important to them, but that they simply did not have enough money to save.[32] This is broadly consistent with evidence in more familiar contexts. For instance, Choi et al. (2004) find that many employees report wanting to save more, suggesting that defaults might help them overcome a behavioral issue that is impeding their savings goals.[33] And to the extent that policy makers privilege welfare determined using ex ante preferences (Bernheim et al., 2015), these results suggest that the inducement to save was, on average, welfare improving. This is important in our setting, where 27% of subjects reported that at least one family member went without a meal in the week prior to the baseline survey, and there is a concern that defaults may cause employees to 'over save.'

[30] In Appendix Table A9, we find the results on the importance of savings are driven primarily by the 0% matching rate group, consistent with updating prior beliefs about their ability to save without incentives.

[31] In Appendix Table A10, we report the effects of randomly assigned matching rates on the above variables.

[32] Only one of the 161 employees defaulted to a 0% contribution with no matching incentive opted in during the first two pay periods. Under the active decision, which effectively placed all employees in the White plan with no matching incentives, 45 percent of employees chose to contribute.

[33] In our context, these considerations are made more important by the evidence we present later, which suggests the present-biased preferences appear to play a role in driving the default effect.

5 Understanding the Default Effect

The effect of the default rate assignment – approximately equivalent to a 50% employer match – is striking, and consistent with evidence on automatic payroll deductions in wealthier nations.[34] Madrian (2013) and Beshears et al. (2009) review common explanations for this large default effect. First, and prominent in the U.S. literature, is the possibility of an endorsement effect: employees may perceive their initial assignment as a recommendation from the employer, leading the employee to defer to the employer's wisdom and remain at the assigned rate. Second, there may be mechanical frictions involved in switching; when this cost exceeds the benefit from switching, employees will remain at their default. Third and related, employees may face large (real or perceived) cognitive costs of forming a financial plan. Fourth, employees may be aware of their contribution and know how to switch, but the decision may not be salient to the employee, or the employee may be inattentive (Karlan et al., 2016b; Mullainathan and Shafir, 2013; Taubinsky, 2013; Mani et al., 2013). A final possibility is that employees with present-biased preferences may procrastinate over the decision to change from the default assignment, repeatedly postponing today what they believe they will do tomorrow (O'Donoghue and Rabin, 1999; Carroll et al., 2009).

To differentiate between these mechanisms, we randomly assigned three additional experimental interventions, conducted a series of behavioral games to elicit employees' time preferences, and asked a battery of pointed questions in our panel surveys. Below, we discuss the extent to which the empirical evidence refutes (in the case of endorsement effects, mechanical frictions, and inattention) or supports (cognitive costs and present bias) each potential mechanism.

5.1 Endorsement effects

A priori, we do not think our context is one in which employer endorsement effects are highly relevant. The nature of the individual randomization, whereby each employee knew he or she had an equal chance to be given a 0% or 5% default contribution rate, largely eliminates the potential that employees would perceive that they were given a default rate for any reason other than random chance.[35]

[34]For instance, Madrian and Shea (2001) find that default enrollment increases retirement participation rates by more than fifty percentage points, and Choi et al. (2002, 2004) note that the vast majority of employees at several large U.S. corporations keep the contribution rate to which they are assigned.

[35]Specifically, all employees were informed during the mandatory training sessions that both their matching rate and initial contribution rate would be randomly assigned by the research team. The HR staff carefully explained that matching rates (represented by the three M-Pasandaz plans: White, Blue, and Red) could not be changed, but that the initial contribution rate could be changed at any time by contacting HR. And at the end of each training, each employee was provided a personalized assignment card with their

Further evidence of this lack of perceived endorsement can be seen in the fact that only a few employees actively decided to switch to a 5% contribution rate (see Figure 2), which was one of the two rates "endorsed" by the employer. This is most evident in the right-most panel of Figure 2. There, we see that among the population of employees offered 50% matching incentives, a majority of employees initially assigned a default contribution rate of 0% (the peach colored bars) chose to contribute. However, only one employee increased his contribution rate to the "endorsed" level of 5%; the vast majority instead chose to opt in at 10% (which was not a default rate).

Qualitatively too, we found no evidence of a perceived endorsement.[36] When we asked employees who remained at their default why they did not change their contribution rate, none of the employees mentioned employer endorsement, or any factor involving their employer, as influencing their decision.[37] Thus, while endorsement effects are undoubtedly consequential in other settings, we believe that the employees in our study did not perceive such a recommendation from the employer.

5.2 Mechanical frictions

We similarly find it unlikely that the default effects were driven by superficial transaction costs involved in switching, such as confusion about how the savings account works, ambiguity about how to switch, or mechanical difficulties in executing a switch. Roshan went to great lengths to train all employees on the M-Pasandaz account, and each employee was sent a monthly text message on payday to indicate how much of their salary was being direct deposited into their normal M-Paisa account, and how much was being put into M-Pasandaz. In follow-up surveys, we also find strong evidence that most employees understood their plan type and understood what was required to change their contribution rate.[38] Of course, there

name and position, matching plan assignment, initial contribution assignment, and the HR phone number to contact to change their contribution rate. These personalized cards further reinforced that both matching rate and initial contribution rates were being randomly assigned, and that employees were free to change the contribution rate.

[36]Employees who participated in focus groups expressed surprise (and pleasure) at observing that plan assignments appeared to them to be truly random, and not distributed in a manner that favored more senior employees.

[37]Specifically, two months after the product launch, we randomly surveyed half of employees about reasons for changing or not changing their contributions (N=428). None of those surveyed mentioned factors involving the employer; rather, the most common reasons for not changing included (i) the inability to save, (ii) not wanting to participate, and (iii) satisfaction with the default.

[38]For instance, 284 of 293 (96%) of employees reached for the financial consultation were fully aware of their match rate and their contribution rate. Similarly, in a phone-based survey taken at midline, 87% of employees reported fully understanding how the M-Pasandaz product worked, more than 90% correctly identified their plan assignment, and over 70% knew that they could change their contribution rate by calling HR.

was no way to entirely eliminate all switchings costs, but relative to the hassle of hcanging a 401(k) contribution in the U.S., the cost of notifying Roshan's HR department was extremely small.

5.3 Inattention

Looking closely at Figure 1, there is some evidence that employees may have initially been unaware of their default assignment. Specifically, we observe a modest increase in switches on January 23rd, the day after the first payday. Some of these employees likely received a paycheck that was different from what they expected, and this led them to switch. Subsequently, however, we see no more payday effects (row 4 of Table 5), and by February 28, virtually all switching had ceased. Thus, starting in March 2015, we conducted two experimental interventions to see if increasing the salience of the default assignment would induce employees to change their contribution rate.

The first "intervention" was simply a series of monthly phone surveys, in which we asked employees questions about their financial behaviors as well as their understanding of the M-Pasandaz account. While the primary function of these interviews was to collect panel data on employee activities that could not be inferred from the administrative records, we also suspected that the survey itself might impact employee behavior by increasing their awareness of M-Pasandaz and the salience of their financial decisions (cf. Zwane et al., 2011). Panel phone surveys were conducted with a randomly selected half of all employees.

The second intervention was designed to increase awareness and salience by reminding employees how to switch their contribution rate. The treatment consisted of a series of text messages, sent roughly at the halfway point of the study, which reminded the employee of his or her current M-Pasandaz contribution rate, as well as the phone number to call in order to change his or her contribution rate. These messages were sent in English, Dari, and Pashto, and came from an official Roshan phone number. Messages were sent to a random subset of employees, and were tailored to the current status of the employee. For instance, an example message read, "M-Pasandaz Reminder: Next payday, 5% of your salary will be deposited in your M-Pasandaz account. If you want to change your contribution, call 079999-3708" (Appendix Figure A4).

Neither of these interventions designed to increase the salience of M-Pasandaz had much impact on employee's switching behavior. This is visibly apparent in Figure 1 (grey and blue shaded regions), is tabulated in Table 5, and is estimated in the regression results shown in Table A11. We thus conclude that, after the initial one-month period during which roughly one third of employees switched into a non-default contribution rate, the

remaining default effect was not driven by limited attention on the part of the employee. As we discuss below, we believe this is partially due to the fact that many employees appear to be unable to determine what their optimal contribution should be. This stands in contrast to other settings, such as commitment and group savings (Karlan et al., 2016b; Kast et al., 2016), where subjects understand their preferred course of action but need nudges to behave consistently with those preferences.

5.4 Present Bias and Cognitive costs

An important insight from O'Donoghue and Rabin (1999) is that when an action involves immediate costs (such as the cognitive cost of determining how much to save) and delayed benefits (such as the payout from M-Pasandaz), then naïve present-biased individuals are likely to procrastinate. Appendix A develops a simple model to situate this insight in our setting, focusing on how present bias might cause individuals to remain at their default assignment.

Utility is modeled as:

$$U^t(\tau) = \begin{cases} \beta v_\tau - c_\tau & \text{if } \tau = t \\ \beta v_\tau - \beta c_\tau & \text{if } \tau > t \end{cases}$$

where τ is the period when the switch is made, v_τ is the reward (which is always delayed, even in the sixth month of the program), and c_τ is the cost. This cost includes both the cognitive cost of determining how much to save, mechanical frictions, and any other cost that must be borne to participate in M-Pasandaz. Individuals can either be exponential discounters ($\beta = 1$), present-biased sophisticates ($\beta < 1$) who have correct beliefs, denoted as $\hat{\beta}$ about their future preferences ($\hat{\beta} = \beta$), or present-biased naifs, who incorrectly assume they will not be present-biased in the future ($\hat{\beta} = 1$).

The essential implication, as in O'Donoghue and Rabin (1999), is that while a sophisticate correctly knows that her future self is unlikely to participate (given current non-participation), a naif incorrectly believes the participation constraint for her future self will be less onerous, because she underestimates the future cost of switching. An additional implication is that individuals who discount the future more heavily, regardless of whether they are present biased, are less likely to participate at all because participation involves immediate costs and delayed rewards.

This section provides three pieces of evidence which favor this characterization of the default effect. First, an experimental measure of present bias strongly predicts remaining at the default. Second, we find that reducing the cognitive cost of working through alternative contribution scenarios leads to significant switching. Finally, we find that employees pro-

crastinate in accepting a financial consultation (which includes an opportunity to switch), and that this is particularly true for present biased employees. We present each of these results in turn.

5.4.1 Present Bias Predicts Remaining at the Default

Table 6 examines whether an experimental measure of present bias predicts remaining at the default. We find that our measure of present bias (β) robustly predicts whether an employee remains at the default assignment (column 1), even when controlling for a broad range of other factors including employee salary, gender, a proxy for intelligence based on "cognitive reflection" (Frederick, 2005), financial sophistication (based on whether the employee has a bank account), salary withdrawal habits, and total baseline savings (column 2).[39] The coefficient indicates that moving from the tenth percentile of β in our sample ($\beta = 0.67$) to the 90th percentile ($\beta = 1.36$) is associated with a 11 percentage point decrease in the probability that the employee remains at his default assignment. This result is robust, and persists when we restrict the analysis to employees who are both at their default and who have never made any withdrawals (columns 3 and 4), and when using a simpler, unincentivized measure of present bias collected at baseline (Table A12).[40] Finally, in Table A13, we check for heterogeneity in our main effects on participation by interacting default enrollment with a range of potentially relevant covariates including present bias, cognitive reflection (intelligence), risk preferences, salary, tenure, gender, education level and banked status and find no evidence of heterogeneity by factors other than present bias.

It is important to distinguish whether the short run or the long run discount factor more robustly predicts remaining at the default. Procrastination, in the O'Donoghue and Rabin (1999) sense, means explicitly failing to accomplish something at the point in time determined in a previous intertemporal plan. An exponential discounter who chooses not to participate does so according to a fully optimal intertemporal plan. A partially naive

[39] We trim extreme values of the β present bias parameter at the 5% and 95% level, and extreme outliers of the δ discount factor parameter, as these appear to reflect respondents who did not understand the exercises.

[40] The measurement protocol for the present bias parameter used in the regression in Table 6 was a modified version of the time-dated price list method proposed by Andreoni et al. (2015) and described in detail in Appendix C.3. This is an incentivized measure based on actual time-dated monetary payments. One drawback of this approach, especially given recent discussions on the elicitation of present-biased preferences using potentially fungible monetary payments (Cubitt and Read, 2007; Chabris et al., 2008; Andreoni and Sprenger, 2012; Augenblick et al., 2015; Carvalho et al., 2014; Andreoni et al., 2016), is the reliance on monetary payments. Since we had a short window of time to survey each employee, and as surveys were conducted at the employee's place of work, we had limited options for measuring present bias. We also felt that the protocol might be more appropriate in our context, given that a substantial share of our sample is credit constrained. The results reported in Table A12 and described in Appendix C.3 use an unincentivized measure of present bias, and are qualitatively unchanged. An additional advantage of using the baseline measure to test for treatment effect heterogeneity is that it could not have been affected by treatment.

present-biased individual, by contrast, experiences a preference reversal, and fails to enroll at a point in time when they had previously decided that they would like to do so. While prior work, including Brown et al. (2016) and Brown and Previtero (2014), correlates individuals' self-reported tendency to procrastinate with remaining at a default (in their case, staying in a defined benefit, rather than switching to a defined contribution, plan), it does not allow one to distinguish whether this is due to present-bias, or instead a low exponential discount factor. By contrast, our setting allows for experimental measures of present bias. The role of present bias is further suggested by the fact that the random assignment of an opportunity to switch leads to greater take up when it is offered with a greater delay.

5.4.2 Are Cognitive Costs the Relevant Friction?

The financial consultation was designed to help reduce the employee's cognitive cost of developing a financial plan. Specifically, we had a representative from Human Resources call a random subset of employees to offer them customized consultations that would answer questions about the M-Pasandaz product, estimate the employee's payouts under different contribution rates, and allow the employee to change his or her contribution rate immediately. The consultation script is provided in Appendix C.1. Relating this exercise to the model, we think of it as reducing c_τ and identifying which of the costs captured by this parameter constrain switching.

As can be seen in Figure 1 (green shaded regions) and Table 5 (row 7), the consultation led a significant number of employees to switch (11.5%, vs no more than 3% for the other interventions). But what about this consultation – which may have affected employees in several ways – was critical to helping employees switch? In our data, we observe employee response to the consultation offer at six different stages: (i) whether the consultation offer was accepted and scheduled; (ii) whether the employee answered the phone for the scheduled consultation; (iii) whether they requested a review of the product; (iv) whether they requested a review of their current rate; (v) whether the employee asked the HR officer to walk him or her through different contribution scenarios; and (vi) whether they wanted to change their contribution. Importantly, the employees were asked at each distinct stage of the consultation whether they would like to skip ahead. This provides some scope for exploring which element of the consultation is most strongly associated with switching from the default.

The data indicate that it is the penultimate stage – asking for assistance with financial consultations during the call – that leads individuals to switch their contribution. 469 of the 928 employees still active in our study were assigned to be offered a consultation. Of these, 443 employees answered the first call making the initial offer. Of these 443, 327 employees

agreed to a full consultation. Of the 327 employees who accepted the consultation, 295 were reached by the second caller offering the consultation. Of the 295 employees who both accepted and who were reached for a consultation, 95 requested assistance with calculating how much money they would earn in different contribution scenarios. 54 employees switched their contribution rate during the consultation (49 switched up and 5 switched down), of which 47 (87%) had requested calculation assistance.

Table 7 uses a regression to predict which stage of the consultation most strongly predicts switching. Estimates on the dummy equal to one for employees requesting calculation assistance is largely unchanged even after controlling for a broad set of control variables, and are entirely driven by employees increasing their contribution rates after the consultation. While the decision to solicit assistance is endogenous, the robustness of this correlation to several variables which should be relevant for the decision to seek calculation assistance (e.g., financial sophistication and salary) provides some indication that the cognitive cost of switching is a meaningful obstacle. This appears to be particularly true for those assigned a positive default rate and still at their default, as in Table A16. It may be that for these employees, the loss from not switching is smaller, because they are making some positive contribution.

5.4.3 The Consultation as an Experimental Test of Procrastination

An employee may not switch their election for many reasons. In developed countries, this is a very broad set including confusion related to tax concerns, asset mixes, finding time to complete the process, and so on. While the range of potential frictions in our setting is smaller, we wanted to focus narrowly on the time and mental effort involved in switching as a key friction driving procrastination.

Thus, in implementing our consultation experiment, we randomly varied whether employees were offered a consultation immediately, or with a week's delay. This experiment was intended to mimic the experimental tests of present bias that require the completion of some costly task either immediately, or with a delay, as implemented in the lab in Augenblick et al. (2015) and the field in Andreoni et al. (2016). More specifically, when employees were offered this consultation, they were either told that the consultation would occur immediately following the scheduling call, or that the consultation would occur roughly one week after the scheduling call. Whether the offer was for a consultation now or later was randomized, in order to experimentally vary each subject's ability to procrastinate over developing a financial plan. Importantly, however, in our setting the costly task used to test for present bias is specifically the friction that is potentially relevant to driving present bias (i.e., the cost and mental effort required to switch elections).

Table 8 reports results from this experiment. The consultations were very popular, with 73% of employees accepting when offered an immediate consultation and 79% accepting when offered a consultation with a week delay. This difference, reported in column 1, suggests slightly more demand for consultations offered with a delay, although this difference is not statistically significant (s.e. = 0.046, p = 0.218). The difference increases slightly when controlling for other employee characteristics (column 2: s.e. = 0.048, p = 0.089), which suggests that procrastination over the time and mental effort required to switch elections may be an obstacle to switching elections. Interestingly, estimates reported in column 3 indicate that for employees with $\beta < 1$, the difference is 18.4 percentage points, and is significant at conventional levels. In column 5, we additionally interact a dummy variable equal to one for subjects offered the consultation with a week delay with a measure of their long run discount factor (a dummy equal to one when $\delta < 1$). There is no evidence of heterogeneity along this dimension.[41] However, the main interaction of interest loses significance after adding a full set of covariates and their interactions with the consult later treatment dummy (column 7: s.e. = 0.094, p = 0.208), though the point estimate remains comparable.[42] But while the financial consultation was the most effective approach to induce employees to switch from their default rate, even this very heavy-handed treatment only moves a small fraction of employees.[43]

Relating this observation back to the potential role for (naive) present bias to create default effects, the consultation – and providing assistance with financial math in particular – can be thought of as removing an important cost to switching. Even for naive and severely present-biased individuals, in the model of O'Donoghue and Rabin (1999), for example, completely eliminating transaction costs will eliminate procrastination. This is empirically what we observe. This also carries a policy implication: one way to eliminate persistent procrastination that is welfare-reducing, at least when evaluating using long run preferences, might be to eliminate switching costs.[44]

[41] There is also no evidence of heterogeneity when interacting the delay dummy only with δ.

[42] In Table A14 we also find negative effects using the unincentivized basline measure of present bias, but lack statistical power to reject the null hypothesis.

[43] Table A15 explicitly compares the effects of the financial consultation and the SMS reminders on the employee's decision to switch. While the effect of the text messages is small and statistically indistinguishable from zero, the offer of the financial consultation has a large and significant effect, particularly for subjects still at their default election (Column 2). Within this subsample, the effect of offering a financial consultation was even larger for those subjects who were enrolled by default, i.e., who were assigned a default contribution rate of 5% (column 3 of Table A15).

[44] Of course, the finding that financial consultations reduces the default effect is consistent with alternative explanations. For example, it could just be that an extended consultation is the only action that raises the salience of the decision enough to induce switching. However, such an explanation would be hard to reconcile with other survey-based evidence indicating employees were acutely aware of M-Pasandaz activity. Alternatively, the financial consultation may have influenced employees in other ways as well, for instance

The evidence presented thus far indicates that present-biased employees are most likely to remain at their default-assigned contribution rate, that present-biased employees are more likely to accept a financial consultation when it is offered with a week delay, and that the financial consultation – which we believe reduced the mental costs faced by employees when deciding to switch – was the lone experimental intervention that induced a significant share of employees to switch. These distinct pieces of evidence lead us to believe that a significant portion of the default effect in our setting can be explained by present bias exacerbating the cognitive cost associated with calculating alternative savings scenarios.

6 Peer Effects and Alternative Explanations

Before concluding, we address three alternative explanations for the results we have presented. The first two concern the possibility that the individual-level randomization of default and matching rates may have caused employees to behave differently than they would have had all employees been assigned the same default contribution rate and matching incentives. The final point we discuss is the possibility that loss aversion, or a related form of reference-dependent preferences, might explain the default effects.

6.1 Peer effects

To our knowledge, this study is the first to estimate the effect of default assignments in automatic payroll deduction within the context of a randomized experiment, where employees within a single firm are randomly assigned different default contribution rates and different financial incentives to contribute. This design offers distinct advantages. It makes it possible to experimentally compare defaults against financial incentives as inducements to save. It also reduces the likelihood that employees will perceive an endorsement effect in their default-assigned rate, which is critical to understanding the mechanism behind the default effect.

At the same time, individual randomization raises concerns about the external validity of the effects we observe. In particular, it is possible that employees could base their contribution decisions on the plan they were assigned relative to their peers (as in Duflo and Saez, 2003; Banerjee et al., 2013; Bursztyn et al., 2014; Beshears et al., 2015), and that they might make different decisions if all employees were assigned a uniform plan. For instance, an employee with no matching incentives and a default contribution rate of 0% might choose not to increase his contribution because he feels he got an inferior plan, relative to his coworkers

by providing information that would help the employee choose an optimal contribution rate. This may be a part of the explanation, but outside of the consultation, very few employees took the initiative to consult an HR representative for such advice.

who receive a 50% match on contributions. If this employee would have changed his contribution rate in a world where everyone received the same 0% match, we would overestimate the default effect. We were concerned about this possibility from the project's inception, and therefore worked closely with our partners at Roshan to minimize the possibility that employees would react to their co-worker's assignment. Specifically, the M-Pasandaz program was introduced to employees during hour-long training sessions that emphasized the private nature of the individually-assigned plan and the importance that each employee make a personal decision about his or her preferred contribution rate. Great care was taken to explain that the study was being run by academic researchers, and that each employee had an equal chance of being assigned to each of the different plans. Plan details were handed out on written information cards, and employees were instructed not to ask their coworkers about the details of their plans. While we do not believe these efforts eliminated information sharing or possible feelings of jealousy, every effort was made to encourage each employee to make a personal financial decision.

In addition, we developed a novel strategy to test, ex post, for peer effects in the financial decisions made by employees during the trial. To measure each employee's connections to other employees, we obtained the original transaction records of all phone calls placed between Roshan employees in October 2014, two months prior to the launch of the M-Pasandaz program. Roshan, the employer in our study, is also Afghanistan's largest mobile phone operator, and provides each Roshan employee with a special phone that allows for free calling to any other Roshan employee. We use these data to model the structure of the social network formed by Roshan employees (Appendix Figure A5), and consider a social tie to exist between two Roshan employees if we observe any phone communication between the two employees in that month. Within this firm, employees use their phones much as white-collar workers in the US use email, so while we do not observe any friendships that never involve mobile communication, we believe our dataset allow us to observe the majority of real-world social connections. In our empirical specifications, we consider several different thresholds of minimum communication that might reasonably be indicative of a social tie.

We find little evidence that employees' financial decisions are influenced by the random assignments of their peers. To estimate these peer effects, we use an estimation framework similar to that of Miguel and Kremer (2004), where we estimate the primary treatment effect (of default assignment) on an individual i, conditional on the treatment assignment of i's peers. The intuition we are testing is that if peer effects exist, we would expect them to appear amongst employees who have an exogenously larger share of their social network assigned to a certain plan type. For instance, a "jealousy" effect might be manifest in lowered contributions among employees who have a larger share of their social network

randomly assigned to the largest matching contribution incentive. Of key concern is whether these peer effects bias our estimates of the default effect presented in Table 1.

Column 1 of Table 9 shows the average treatment effect of i's default assignment, replicated from Table 1. The subsequent columns include controls for the random assignment of i's peers, where "peer" is defined as individuals with whom i had communicated over the mobile phone network on k different occassions, with k increasing from 1 to 10 in columns 2 through 11. Across all of these variants, the main treatment effect never significantly deviates from the original estimate from Table 1. The peer effects themselves are also generally quite small and insignificant. Indeed, when we compute the total predicted peer effect for each employee, using the coefficients from Column 2 of Table 9 and the actual social network structure of each employee, we find the predicted peer effects are all quite close to zero (Appendix Figure A6). Additional robustness tests, presented in Appendix Figure A7, indicate that in addition to the lack of peer effects on the decision to participate, we see no evidence of peer effects on the intensive margin of contribution rate or total savings.

6.2 Strategic behavior

A related concern is that employees, who know that this is a 6-month pilot study, could behave strategically if they believe their actions can impact future policy decisions made by the firm. However, we believe such strategic behavior to be unlikely for several reasons. First, as noted in Section 4 (Table 3), the default effect persisted even after all employees were standardized onto a single plan, when employees were asked to decide about future contributions to M-Pasandaz. At this point in the study, there was no scope for strategic behavior. Second, we have presented robust evidence in Section 5.4.1 that a large share of employees are present biased (roughly 41% have $\beta < 1$). The sort of strategic behavior we are concerned with would require making a short-run sacrifice to improve the long-run outcome, which is particularly hard to reconcile with the fact that the company has had very high rates of employee churn: roughly 10% of all employees left the company in the year between our baseline and endline surveys, and two years after the completion of the study, less than 50% of employees remained active at the company. Third, while such a motivation could help explain the decision not to opt in among employees who didn't get matching contributions, it does not explain why the employees randomly assigned a 5% rate did not opt out. Finally, we raised this concern with our partners at Roshan early in the planning stages of the project, and they considered it a highly implausible proposition. Their perception was that most employees lived paycheck-to-paycheck, and would therefore be unlikely to intentionally forgo salary (or matching incentives) to influence policy. Even

in the relatively short 6-month window, an employee's contribution decisions had major economic consequences.

6.3 Loss aversion

In Section 5 we discussed the extent to which our empirical evidence could support or refute several distinct explanations for default effects in savings decisions. The candidate explanations we focused on are the ones most commonly raised in the literature – see Appendix Table A1 and recent reviews by Madrian (2013), Beshears et al. (2009), and DellaVigna (2009). One final possibility is that the default creates a reference point and employees experience greater disutility from giving up some benefit than the utility they would receive from getting it (Kahneman et al., 1991; Tversky and Kahneman, 1991).

In our setting, this could be manifest in two ways. First, employees who are assigned a default contribution rate of zero may not increase their contribution because they have grown accustomed to their current level consumption, and are averse to reducing their monthly consumption expenditures. However, such loss aversion would not explain the substantial default effects we observe for those employees who are initially assigned a default contribution rate of 5%. This is perhaps most evident for those employees who receive no matching incentives. As can be seen in the first panel of Figure 2, 36% of employees with no matching incentives and a default contribution rate of 5% still contribute 5% at the end of the study (a portion that is almost identical to the portion of employees assigned a default contribution rate of 5% who receive 25% or 50% matching incentives).

A second possibility is that employees are averse to losing the benefit that they have accrued in the M-Pasandaz account. However, the design of the account – which ample evidence suggests that employees fully understood – does not penalize employees for changes to the contribution rate. All accrued benefits are retained regardless of contribution rate; the only action that causes employees to forfeit matching incentives is if they make an early withdrawal from their account. Thus, the relevant reference point would have to involve the monthly flow into the account; i.e., employees must be averse to losing the month-on-month M-Pasandaz accumulation. While such a possibility cannot be conclusively rejected – indeed, this version of loss aversion is quite similar to what we have characterized as employees learning the value of saving – it is harder to reconcile with the behavior of the employees who receive no financial incentive to save, where the default effects are greatest (Table 1, Column 2).

7 Conclusions

Exploiting the carefully planned launch of a new phone-based savings account, we evaluate the role of defaults and financial incentives on the savings decisions of a heterogenous group of Afghan employees. Both effects are substantial, and together help employees accumulate meaningful savings, with the average participating employee saving 12,270 Afghanis, equal to 37.2% of the average monthly salary, over the initial 6-month evaluation period. In exit interviews with the subjects in our study, we were struck by the extent to which employees embraced the new technology. One employee told us that on payday, all of the neighborhood clothing and cosmetics vendors would be excited to see her because they knew she was out to spend a good chunk of her paycheck. M-Pasandaz helped her precommit to cutting down on that spending, and she was happy with that change.

This paper also adds nuance to our understanding of why defaults affect behavior, through what to our knowledge is the first experimental estimate of the effect of automatic payroll withdrawals. Here, our results support the notion that default effects exist in part because present-biased employees procrastinate over the task of making a non-default election. While the link between present bias and default effects was widely suspected in prior literature, our context allows us to make substantial progress in characterizing why the default effect influences behavior. Here too the regression results resonate with stories on the ground: one employee in the default-in group, when forced to make the active savings decision at the conclusion of our study, reported that he had been meaning to force himself to change his rate for each of the prior six months, but had never managed to find the time to think through how a change would impact his monthly budget.

To the extent our study makes progress, it is mainly because our implementing partner committed to a deep collaboration from the outset (and perhaps because more fine-grained data collection was feasible in our setting). We believe this example is potentially instructive for models of engagement where these questions are most studied: in firms in developed countries. Our partner allowed us to work on the design and experimental implementation of the product and to conduct a series of experiments and longitudinal surveys with their employees. This added value for the firm. It provided them evidence on whether the default works, the matching incentive they would need to provide to achieve a similar affect, what matching levels they should consider, and, most importantly, whether and how this product affected the lives of their employees. In addition, because we worked with the phone company, this provided them evidence to determine whether they should add it to their set of commercial products (which they have done).

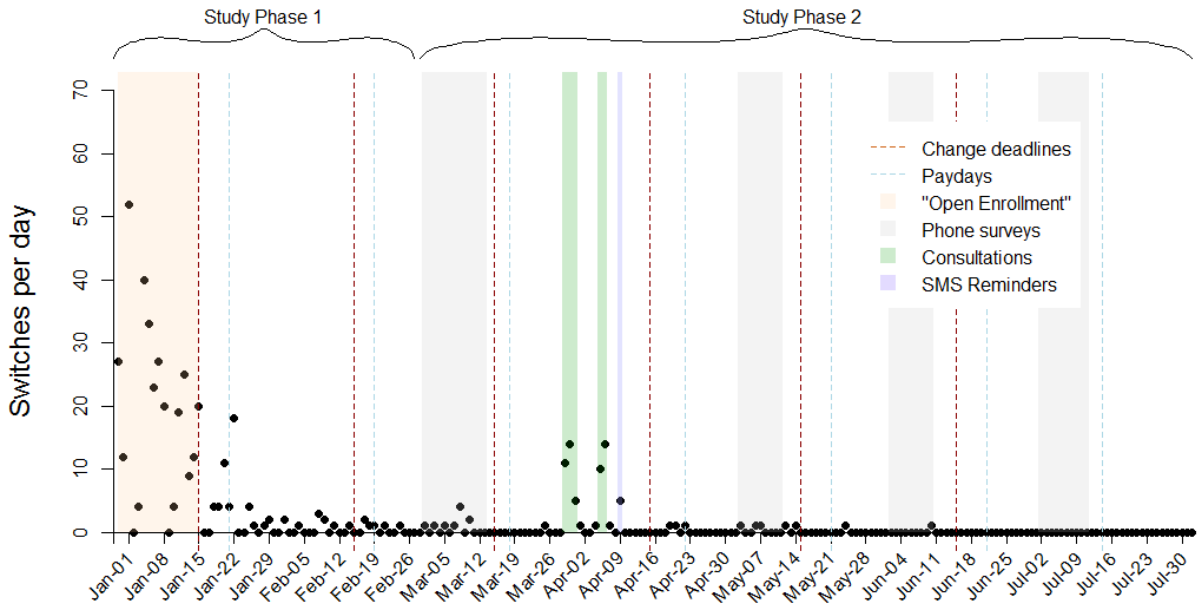
Nonetheless, we are still some distance from fully understanding how to characterize

the inertia that results from defaults, and in developed countries additional complications arise (for instance, regarding taxes and asset mixes). In our view, comparable projects in developed countries could shed substantial insight on key policy questions related to savings.

Indeed, in rich countries, the use of defaults to encourage retirement savings provides, perhaps, the canonical example of applying behavioral insights to policy design. Appropriately, most academic research on the subject uses data from these settings; this is by and large where these programs exist. However, a growing body of research emphasizes the potential for behavioral departures from rationality to be even more damaging in developing countries. The world's poor may face a much greater scarcity of mental resources to think carefully about the long run; they may be credit and resource constrained in ways that exacerbate behavioral tendencies; they often face worse decision environments; and they typically benefit from far fewer institutions for financial protection. Our hope in designing and evaluating this product is to provide an example of how policies designed to overcome these obstacles in developed countries might be ported to developing countries.

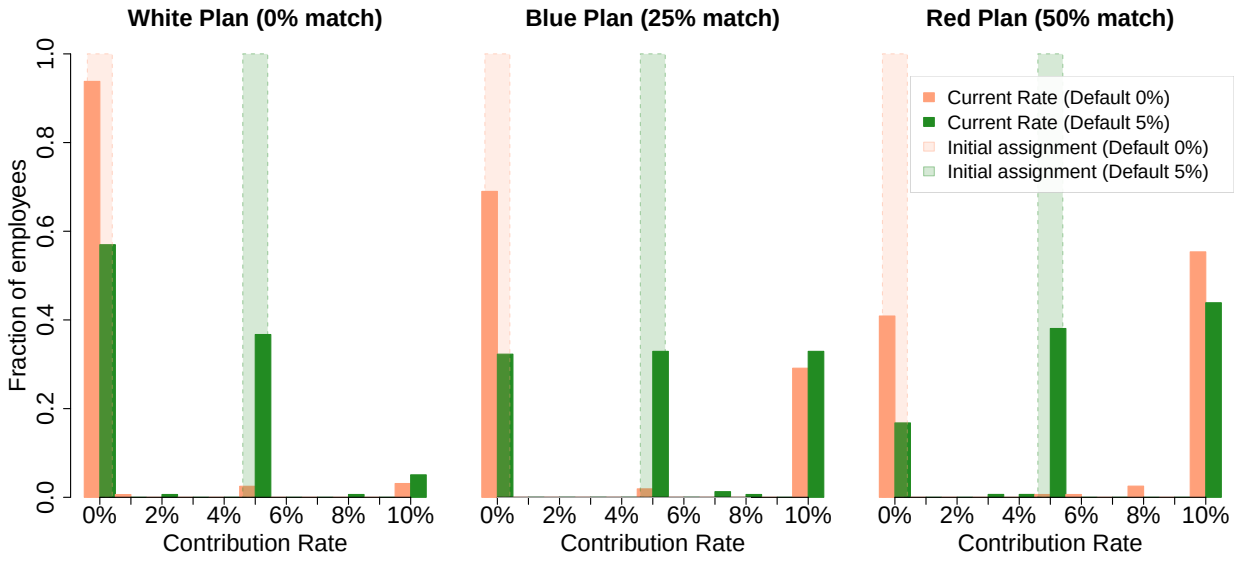
Tables and Figures

Figure 1: Switching behavior over time

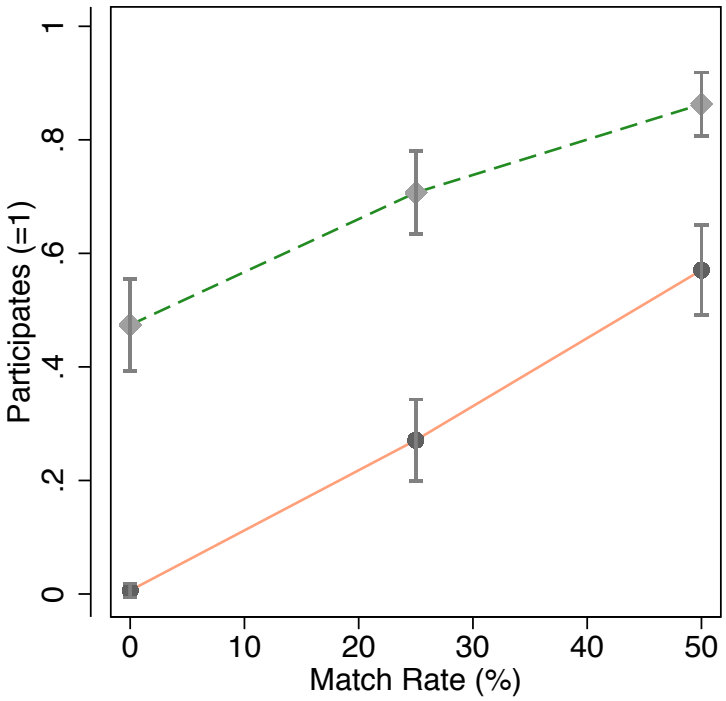


Notes: Black dots indicate the number of employees calling in, on each day of the study, to change their contribution rate. Dashed vertical lines indicate the days when employees receive their salary (dashed blue line), and the deadline to make changes for that pay cycle (dashed red line). Shaded regions indicate the experimental interventions of our study.

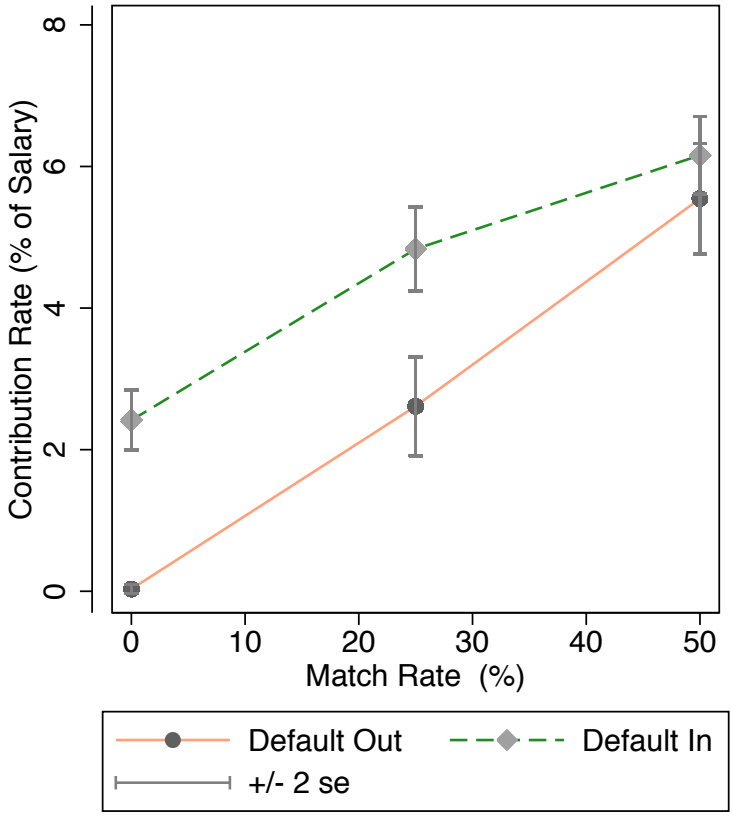
Figure 2: Employee contributions: Initial assignments and final contribution rates



Notes: Distribution of final M-Pasandaz contribution levels in July 2015, as a percentage of monthly salary. Individuals were randomized into either a default 0% contribution (peach bars, N=478) or a default 5% contribution (green bars, N=471). Individuals were further randomized into three different incentive rates: White (0% match, N=319), Blue (25% match, N=316) and Red (50% match, N=314). Semi-transparent bars indicate the original assigned contribution rate, solid bars indicate final contribution rate.



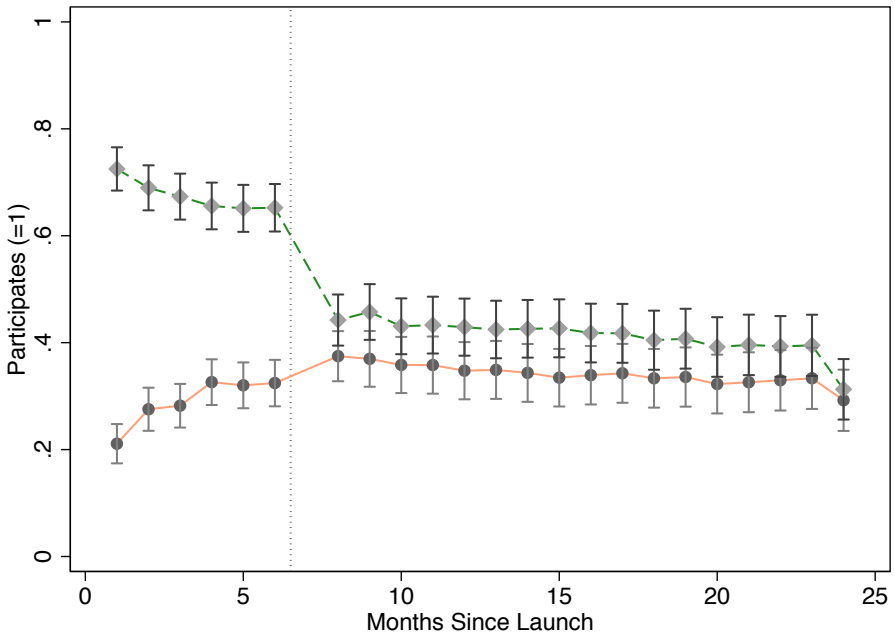
(a) Participation Rate



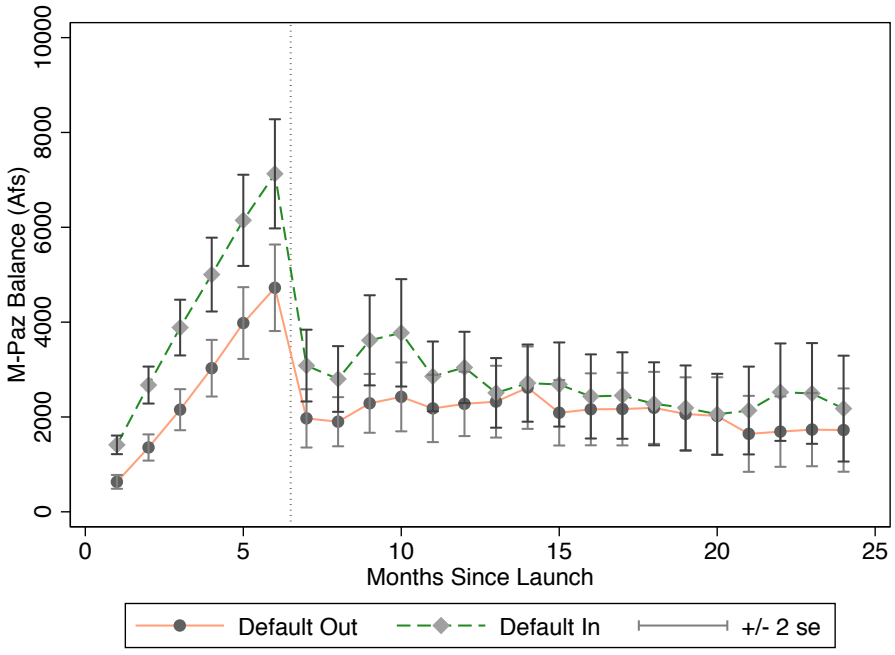
(b) Contribution Rate

Figure 3: Effect of automatic enrollment and matching contributions on (a) participation rates (non-zero contributions), measured on February 28, 2015, following the first two pay-days but prior to the rollout of phone surveys or secondary interventions; and (b) contribution rates, as a fraction of the employee's total salary, measured on February 28, 2015.

Figure 4: M-Pasandaz participation and balance during and after RCT



(a) Average Participation Rate (administrative data)



(b) Average M-Pasandaz Balance (administrative data)

Notes: The randomized trial ran from January 2015 (month 1) until July 2015 (month 7), when bonus payments were paid. Average participation and balance are calculated separately for employees assigned a default contribution of 0% of their salary (Default Out) and those assigned a default contribution of 5%. Participation is coded as missing in July 2015 as no automatic contributions were made while endline surveys took place; deposits resumed in August 2015 based on active savings decisions in the endline survey (see text for details).

Table 1: The Effect of Automatic Enrollment - Total Contributions

	(1)	(2)	(3)	(4)
Panel A. Dependent Variable = Participates (non-zero contribution rate)				
Default In (=1)	0.40***	0.47***	0.44***	0.29***
	(0.03)	(0.04)	(0.05)	(0.05)
Constant	0.28***	0.01	0.27***	0.57***
	(0.02)	(0.01)	(0.04)	(0.04)
Sample	Complete	0% Match	25% Match	50% Match
# Observations	936	315	312	309
R-Squared	0.161	0.304	0.190	0.105
Panel B. Dependent Variable = Contribution Rate (% of Salary)				
Default In (=1)	1.77***	2.38***	2.22***	0.61
	(0.26)	(0.21)	(0.46)	(0.48)
Constant	2.70***	0.03	2.61***	5.54***
	(0.20)	(0.03)	(0.35)	(0.39)
Sample	Complete	0% Match	25% Match	50% Match
# Observations	936	315	312	309
R-Squared	0.046	0.293	0.071	0.005
Panel C. Dependent Variable = Total M-Pasandaz Contributions (Afs)				
Default In (=1)	2426.40***	2244.30***	2996.73**	2052.39
	(750.24)	(656.96)	(1335.00)	(1567.93)
Constant	4724.44***	416.75***	5015.57***	8797.03***
	(465.52)	(157.60)	(802.11)	(1040.07)
Sample	Complete	0% Match	25% Match	50% Match
# Observations	949	319	316	314
R-Squared	0.011	0.036	0.016	0.005

Notes: Dependent variable in top panel, Participates (=1), is a binary variable that equals one if the contribution rate is greater than zero, and dependent variable in middle panel, Contribution Rate (% of Salary), is the monthy contribution rate into M-Pasandaz as a percent of total salary. Participates and Contribution Rate reflect values observed as of February 28, 2015, following the first two paydays but prior to the rollout of phone surveys or secondary interventions. Dependent variable in third panel is total contributions made by the employee to M-Pasandaz, in Afghanis, as observed in administrative data. Value reflects total contributions net of withdrawals as of July 15, 2015, just prior to the disbursement of matching incentives. Value does not include matching contributions made by the employer. $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Robust standard errors reported in parentheses.

Table 2: The Impact of Being Defaulted Into M-Pasandaz on Household Savings

	Total Savings (Survey) (1)	M-Paz Savings (Admin) (2)	M-Paz Savings (Survey) (3)	M-Paisa Savings (Survey) (4)	Cash Savings (Survey) (5)	Bank Savings (Survey) (6)	Loans or Transfers (Survey) (7)	Consumption Expenditure (Survey) (8)	Food Expenditure (Survey) (9)
Panel A: *Default Effects*									
Default In * Post	1711.09	464.75**	550.19***	1395.14*	-743.54	419.57	377.36	-1537.40	619.65
	(2311.38)	(191.91)	(171.42)	(772.04)	(847.62)	(1288.12)	(582.45)	(3355.89)	(462.19)
Contol Mean	10214.54	658.57	596.35	2658.82	2458.58	2407.01	1066.93	37488.00	3801.98
# Employees	470	470	470	470	470	470	470	470	470
# Observations	1969	1969	1969	1969	1969	1969	1969	1969	1549
R-Squared	0.013	0.084	0.135	0.007	0.023	0.010	0.011	0.005	0.021
Panel B: *Heterogeneity by Salary Quartile*									
Default In*Post*1st Salary Quartile	4329.82*	254.20**	189.80	3134.45***	-822.24	-51.33	1099.95	4705.62	621.65
	(2344.65)	(102.67)	(125.26)	(1098.43)	(885.47)	(478.40)	(745.21)	(6485.91)	(692.46)
Default In*Post*2nd Salary Quartile	-1743.08	-48.45	49.65	-196.10	-288.65	-914.93	390.71	-1924.55	-672.24
	(2709.33)	(173.88)	(148.44)	(1442.35)	(1573.56)	(925.29)	(652.14)	(4845.72)	(684.66)
Default In*Post*3rd Salary Quartile	-6157.88	687.19***	626.16***	1658.07	-1759.29	-4199.33*	-32.37	467.25	1061.03
	(4563.54)	(237.47)	(233.61)	(1299.94)	(1446.66)	(2399.69)	(989.18)	(4968.89)	(892.39)
Default In*Post*4th Salary Quartile	10420.76	831.69	1202.38**	903.30	-95.98	6933.39	239.80	-8743.88	1484.75
	(7046.77)	(643.89)	(548.66)	(2120.49)	(2405.42)	(4407.49)	(1825.19)	(9561.56)	(1304.32)
Control Mean - 1st Salary Quartile	4638.85	171.68	250.38	1494.81	1700.71	518.67	321.58	27083.28	2502.07
Control Mean - 2nd Salary Quartile	6704.00	565.64	475.23	2161.44	1814.23	537.45	952.81	25212.03	3137.96
Control Mean - 3rd Salary Quartile	8532.11	538.60	550.00	2917.55	2201.91	1301.56	941.25	35475.43	3942.26
Control Mean - 4th Salary Quartile	21860.22	1400.98	1144.10	4147.36	4263.95	7721.89	2107.30	64537.17	5785.96
# Employees	470	470	470	470	470	470	470	470	470
# Observations	1969	1969	1969	1969	1969	1969	1969	1969	1549
R-Squared	0.022	0.122	0.187	0.010	0.031	0.020	0.019	0.008	0.025

Notes: Table reports the effect of M-Pasandaz on total household savings, expenditure, and savings sub-categories. An observation is a respondent-month. Dependent variables indicate, in Afghanis, monthly asset (columns 2-7) and expenditure (columns 8-9) flows. Coulmn (1) is the sum of columns (3), (4), (5), (6) and (7). Column (2) uses administrative data for monthly flows into M-Pasandaz. Column (3) reports survey responses for monthly flows into M-Pasandaz accounts, adjusted to correct for stock reporting (see text for details). Column (4) reports survey responses for monthly flows into M-Paisa accounts. Column (7) includes loans or transfers given (not received) by the respondent. Sample includes baseline pre-treatment responses and 4 follow-up surveys, except in columns (8) - (9) where it includes pre-treatment responses and 3 follow-up surveys due to data availability. These variables are constructed using a "sources and uses" approach where respondents are asked to account for all household income, and then asked to account for all savings, and reconcile both numbers. Consumption is calculated as the residual of income minus savings. Food expenditure is captured in a separate survey module where respondents are asked to recall the previous week's expenditure by item. Total weekly food expenditure is multiplied by four to produce an estimate of monthly food consumption. All variables are winsorized at the 99th percentile. Consumption is additionally winsorized at 0, replacing 102 observations that report a negative value (respondents who report adding to household savings by more than the household earned). All regressions include employee fixed effects, survey wave fixed effects and a "Post" binary variable that equals one for all waves after the baseline. $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Robust standard errors, clustered at employee level, reported in parentheses.

Table 3: The Effect of Automatic Enrollment - Active Decision at Trial End

	Continued M-Pasandaz After Program (=1)			
	(1)	(2)	(3)	(4)
Default In (=1)	0.10***	0.16***	0.07	0.08
	(0.03)	(0.06)	(0.06)	(0.06)
Constant	0.40***	0.34***	0.39***	0.48***
	(0.02)	(0.04)	(0.04)	(0.04)
Sample	Complete	0% Match	25% Match	50% Match
# Observations	811	272	277	262
R-Squared	0.011	0.025	0.005	0.007

Notes: Dependent variable is a binary indicator that equals one if the employee made an active decision to continued contributing to the M-Pasandaz after the 6 month study ended with no matching incentives offered. $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Robust standard errors reported in parentheses.

Table 4: The Default Effect on Savings Behavior, Financial Security, and Well-Being

Outcome:	Control Mean	Default Effect	Naive p-Value	List et al p-Value	Bonferonni p-Value
Panel A: Composite Indices					
Importance of Saving Index	-0.004	0.142	0.002	0.007	0.008
Financial Security Index	0.002	0.111	0.005	0.013	0.020
Well-Being Index	-0.001	0.025	0.512	0.505	1
Panel B: Importance of Saving Index Variables:					
Savings is Important (=1)	0.954	0.004	0.756	0.767	1
Attempts to Save Each Month (=1)	0.627	0.074	0.026	0.051	0.078
M-Paz Changed Desire to Save	0.539	0.092	0.009	0.032	0.034
Panel C: Financial Security Index Variables:					
Not Too Financially Constrained to Save (=1)	0.639	0.073	0.026	0.100	0.128
Confident Meeting Current Fin. Obligations (=1)	0.929	0.036	0.020	0.091	0.097
Confident Meeting Future Fin. Obligations (=1)	0.798	0.023	0.412	0.663	1
Will Retire Someday (=1)	0.373	0.001	0.971	0.973	1
Financial Satisfaction (1 - 10)	6.443	0.323	0.027	0.083	0.142
Panel D: Well-Being Index Variables:					
Nights No One Without Food During Prior Week	6.616	0.042	0.518	0.892	1
Happy Overall (=1)	0.932	0.003	0.853	0.851	1
Life Satisfaction (1 - 10)	7.863	0.036	0.810	0.965	1
Good Physical Health (=1)	0.768	0.072	0.010	0.051	0.055
Healthy Last Three Months (=1)	0.968	0.010	0.441	0.902	1
Panel E: Other Variables:					
Satisfied at Roshan (=1)	0.771	0.017	0.548	0.799	1
Left Roshan (=1)	0.142	0.004	0.850	0.855	1

Notes: This table reports the effects of defaulting employees into the M-Pasandaz automatic salary withdrawal savings account. Indices are created as the covariance-weighted sum of z-scores of the underlying variables, following the technique described in Anderson (2008). List et al. (2016) and Bonferonni P-values are calculated controlling for the Family Wise Error Rate for the first five variables reported in the table, and then for each set of variables underlying the index respectively. Full text of the survey questions used to create indices is available in Appendix C.2.

Table 5: Contribution rate switches, by default contribution and matching incentives

				Default Out			Default In		
	N	Total	%	0%	25%	50%	0%	25%	50%
Changed In Open Enrollment	326	943	34.57	0	32	68	75	80	71
Changed After 1st Payday	22	943	2.33	0	7	4	3	6	2
Changed By February 28th	385	936	41.13	1	42	89	84	89	80
Changed After Other Payday	2	936	0.21	0	1	0	0	0	1
Changed After Survey	3	441	0.68	0	0	0	1	2	0
Changed After SMS	6	224	2.68	0	0	2	2	2	0
Changed After Consultation	54	469	11.51	10	7	6	8	11	12
Changed More Than Once	14	949	1.48	2	2	5	2	3	0
Ever Changed Contribution	459	949	48.37	11	49	96	100	107	96
Never Changed Contribution	456	890	51.24	142	101	57	51	50	55
Observations				161	158	159	158	158	155

Notes: "*N*" indicates the number of unique employees who changed their contribution rate as a result of the action. "Total" indicates the number of participants that were treated by the specified treatment and is adjusted to account for attrition at the time of calculation. For example, "Ever Changed Contribution" row includes all 949 employees, while "Never Changed Contribution" includes only 890 employees still present in final month of study. Payday, Survey, SMS and Consultation switches are recorded if corresponding to the day of the intervention or the day immediately afterwards.

Table 6: Present Bias and Contribution Changes

Dependent Variable:	Still at Default on February 28		Still at Default and No Withdrawal on Feb. 28	
	(1)	(2)	(3)	(4)
Present Bias Parameter (β)	-0.132**	-0.132**	-0.088*	-0.089*
	(0.051)	(0.052)	(0.052)	(0.052)
Long Run Discount Factor (δ)		0.028		0.029
		(0.053)		(0.054)
Cognitive Reflection Test (0-3)		-0.060**		-0.069***
		(0.025)		(0.025)
Risk Preference (1-10)		0.008		0.009
		(0.006)		(0.006)
Salary (1000 Afs)		0.000		0.000
		(0.000)		(0.000)
Tenure at Roshan (Years)		-0.009		-0.004
		(0.007)		(0.007)
Male (=1)		0.055		0.055
		(0.055)		(0.055)
Education Level		-0.002		-0.005
		(0.018)		(0.018)
Uses a Bank Account (=1)		-0.041		-0.037
		(0.041)		(0.041)
Withdraws Entire Salary on Payday (=1)		0.024		0.026
		(0.040)		(0.040)
Capable of Fixing Phone (=1)		0.077**		0.056
		(0.039)		(0.039)
Constant	0.726***	0.679***	0.634***	0.589***
	(0.054)	(0.126)	(0.055)	(0.128)
Control Mean	0.72	0.73	0.72	0.73
R-Squared	0.009	0.032	0.004	0.026
# Employees	702	678	702	678

Notes: This table reports on the variables that predict whether a participant remains at their default election on February 28, 2015, two months after the start of the experiment. β is a measure of present bias obtained in an experimental elicitation completed at endline with real stakes (see paper text for details). Cognitive Reflection Test (0-3) is the total of three questions answered correctly using a variant of Frederick (2005)'s cognitive reflection test. The remaining variables are described in Appendix C.2. $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Robust standard errors reported in parentheses.

Table 7: Which Element of the Consultation is Associated with Switching

Dependent Variable:	Changed Contribution After February 28 (=1)			
	(1)	(2)	(3)	(4)
Assigned Consultation (=1)	0.091***			
	(0.018)			
Accepted Consultation (=1)		0.154***		
		(0.024)		
Did Not Delay Consultation (=1)			-0.083	-0.090
			(0.270)	(0.273)
Asked for Overview of M-Paz (=1)			0.042	0.070
			(0.047)	(0.051)
Initial Questions about M-Paz (=1)			0.047	0.050
			(0.049)	(0.052)
Aware of M-Paz Plan and Rate (=1)			-0.139*	-0.171*
			(0.079)	(0.088)
Asked to Repeat Projected Balance (=1)			0.124*	0.114*
			(0.066)	(0.069)
Calculation Assistance (=1)			0.377***	0.387***
			(0.058)	(0.058)
Additional Questions about M-Paz (=1)			0.043	0.034
			(0.058)	(0.064)
Control Mean	0.06	0.10	0.15	0.16
Covariates	NO	NO	NO	YES
R-squared	0.027	0.040	0.312	0.332
# Employees	927	443	295	287

Notes: This table reports which elements of the financial consultation predict whether an employee switches their contribution. 469 of the 928 employees still active in our study at the time of this intervention were assigned to be offered a consultation, establishing the sample for column (1). Of these, 443 employees answered the call making the initial offer, establishing the sample for column (2). Of these 443, 327 employees agreed to a full consultation. Accepted Consultation is a dummy variable equal to 1 for these employees. Of the 327 employees who accepted the consultation, 295 were reached by the second caller offering the consultation, forming the sample for column (3). Of the 295 employees who both accepted and who were reached for a consultation, all completed the consultation. 291 were able to talk immediately (Did Not Delay Consultation=1), while 4 could not and were reached later. 259 requested an overview of the M-Pasandaz product (Asked for Overview of M-Paz=1), while 36 did not. 91 employees had initial questions about the M-Pasandaz product (Initial Questions about M-Paz=1), while 204 did not. 285 confirmed that they were aware of their plan and contribution rate (Aware of M-Paz Plan and Rate=1), while 10 were not. All were informed of their projected balance after six months including any potential bonus payments, and 52 employees asked for this information to be repeated (Asked to Repeat Projected Balance=1), while 242 did not. All were offered assistance with calculating how much money they would earn in different contribution scenarios, 95 requested assistance (Calculation Assistance=1), while 200 did not. Requesting assistance was not required to change the level of contribution to M-Pasandaz during the consultation call. 53 employees had additional questions about the M-Pasandaz product (Additional Questions about M-Paz=1), while 242 did not. Sample size in column 1 includes full sample subject to attrition when consultation was offered, column 2 sample includes all employees assigned a consultation, column 3 sample includes all employees who accepted a consultation, and column 4 excludes employees missing covariates. The additional covariates are: cognitive reflection test, risk preference, salary, tenure at Roshan, gender, education level, uses a bank account, withdraws entire salary on payday, and capable of fixing a phone. $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Robust standard errors are reported in parentheses.

Table 8: Consultation Offer Results By Present Bias

	Accepted Consultation (=1)				
	(1)	(2)	(3)	(4)	(5)
Consult Later (=1)	0.063	0.081*	0.008	0.056	0.510*
	(0.047)	(0.048)	(0.065)	(0.126)	(0.271)
Present Biased (=1)			-0.038	-0.035	0.005
			(0.071)	(0.071)	(0.072)
Impatient (=1)				0.018	0.048
				(0.098)	(0.098)
Consult Later x Present Biased			0.177*	0.168*	0.119
			(0.093)	(0.093)	(0.094)
Consult Later x Impatient				-0.053	-0.080
				(0.125)	(0.125)
Consult Later x Cognitive Reflection Test					-0.054
					(0.068)
Consult Later x Risk Preference					-0.013
					(0.017)
Consult Later x Salary					-0.004**
					(0.002)
Consult Later x Tenure at Roshan					0.003
					(0.017)
Consult Later x Male					-0.093
					(0.153)
Consult Later x Education Level					-0.015
					(0.038)
Consult Later x Uses a Bank Account					0.068
					(0.103)
Consult Later x Withdraws Entire Salary on Payday					-0.170*
					(0.097)
Consult Later x Capable of Fixing Phone					-0.063
					(0.104)
Constant	0.727***	0.769***	0.801***	0.787***	0.555***
	(0.034)	(0.116)	(0.122)	(0.157)	(0.209)
Control Mean	0.77	0.77	0.77	0.77	0.77
Covariates	No	Yes	Yes	Yes	Yes
# Observations	329	329	329	329	329
R-Squared	0.005	0.039	0.052	0.052	0.091

Notes: Accepted Consultation Offer (=1) is a binary variable that equals one if the employee agreed to participation in a financial consultation regarding their participation in the M-Pasandaz program (see paper text for details). Consult Later (=1) is a binary variable that equals zero if the employee was randomly assigned to receive a consultation on the same day as the consultation offer was made, and equals one if the consultation was assigned to take place one week later. Present Biased (=1) is a binary variable that equals one if an employee is identified as having $\beta < 1$ in an experimental present bias elicitation completed at endline with real stakes and Impatient (=1) is a binary variable that equals one if an employee is identified as having $\delta < 1$ (see paper text for details). Columns (2), (4) and (5) include covariates for cognitive reflection task, risk preference, salary, tenure at Roshan, gender, education level, uses a bank account, withdraws entire salary on payday, and capable of fixing a phone – see Appendix C.2 for questions. $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Robust standard errors reported in parentheses.

Table 9: Peer Effects - Participates (=1)

	Participates (=1)										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Default In (=1)	0.40***	0.39***	0.39***	0.40***	0.40***	0.40***	0.40***	0.40***	0.40***	0.40***	0.40***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Degree Red		-0.01*	-0.02*	-0.01	-0.00	0.01	0.01	0.02	0.01	0.02	0.01
		(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Degree White		-0.00	-0.00	0.01	0.02	0.03*	0.03	0.03	0.03	0.04**	0.03
		(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Degree Default In		0.00	-0.00	-0.01	-0.00	0.00	-0.01	-0.00	-0.00	-0.00	0.01
		(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)
Degree Total		0.00	0.01	0.00	-0.00	-0.02	-0.01	-0.02	-0.01	-0.03*	-0.03
		(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
Constant	0.28***	0.28***	0.28***	0.29***	0.29***	0.30***	0.30***	0.29***	0.29***	0.30***	0.30***
	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Control Mean	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
Degree Cutoff	N/A	1	2	3	4	5	6	7	8	9	10
P-Value of Equality		0.80	0.80	0.88	0.97	0.98	0.94	0.96	0.94	0.92	0.93
Mean Degree Total		23.72	14.61	10.31	8.01	6.40	5.30	4.53	3.90	3.38	2.92
# Observations	936	936	936	936	936	936	936	936	936	936	936
R-Squared	0.161	0.165	0.165	0.165	0.164	0.166	0.165	0.164	0.163	0.166	0.165

Notes: Dependent variable, Participates (=1), is a binary variable that equals one if the monthly M-Pasandaz contribution rate is greater than zero, and reflects values observed as of February 28, 2015, following the first two paydays but prior to the rollout of phone surveys of secondary interventions. Remaining columns control for the number of social network contacts the employee has which were randomly assigned to each plan type. For instance, "Degree Red" indicates the number of social contacts the employee has who were randomly assigned to the Red plan (50% matching incentives). A social contact is defined as an coworker of the employee with whom the employee was observed to communicate k or more times over the mobile phone network in October 2015 (two months prior to the study period), where k is the "Degree Cutoff" and varies from 1 to 10. Column 1 replicates results from Table 1. $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Robust standard errors reported in parentheses.

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Appendices - For Online Publication

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A Present Bias and the Default Effect

Following O'Donoghue and Rabin (1999), it is evident that when an action involves *immediate costs* and delayed benefits, then naïve present-biased individuals are likely to procrastinate. The decision of whether to undertake the costly action of enrolling in M-Pasandaz today, in order to received the delayed benefits of an employer match, reflect such a decision. This section presents a simple framework to situate this insight in our setting.

Consider an employee who is defaulted out of M-Pasandaz and in the 50% match group who faces an immediate cost of switching κ. The employee is deciding whether to enter the program. To simplify, imagine the employee is considering whether to make a \$2 monthly contribution and if the employee enters, then they will make no further switches. The program runs for six months $t \in \{1, 2, ..., 6\}$, benefits are paid out in $t = 7$ at the conclusion of the trial, and, without loss of generality, that the employee has a one period discount factor $\delta = 1$. If the employee starts making contributions in period t, they will invest $\$2(7-t)$ of principal over the course of the trial and receive back $\$(7-t)$ in employer matches.

Following O'Donoghue and Rabin (1999), assume the employee has utility function:

$$U^t(\tau) = \begin{cases} \beta \upsilon_\tau - c_\tau & \text{if } \tau = t \\ \beta \upsilon_\tau - \beta c_\tau & \text{if } \tau > t \end{cases}$$

where τ is the period when the switch is made, υ_τ is the reward (which is always delayed, even in the sixth month of the program), and c_τ is the cost. Individuals can either be exponential discounters ($\beta = 1$), present-biased sophisticates ($\beta < 1$) who have correct beliefs, denoted as $\hat{\beta}$ about their future preferences ($\hat{\beta} = \beta$), or present-biased naifs, who incorrectly assume they will not be present-biased in the future ($\hat{\beta} = 1$). We assume that the payoff for never participating in M-Pasandaz is 0.

The benefits to participation are therefore $\upsilon_\tau = 3(7-\tau)$, as two dollars in principal plus one dollar in employer match is provided per period of participation, and the costs are $c_\tau = \kappa + 2 + \beta 2(6-\tau)$, reflecting the switching cost and the stream of payments into the account over the life of the trial.

An exponential discounter switches if $(9-\tau) > \kappa + 2$. Because this is declining in τ, a basic prediction is that if an exponential discounter is going to switch at all, they do so immediately. This embodies the simple intuition that if participation is worthwhile in one period, then, with no discounting, it is worthwhile in every period, so the employee should take advantage of the full potential employer match.

A present-biased sophisticate displays a similar pattern of equilibrium behavior. In any period, a present-biased sophisticate should switch if $\beta(9-\tau) > \kappa + 2$. For a fixed κ, there

exist degrees of present bias such that an exponential discounter will enroll and a present-biased sophisticate will never enroll. Nonetheless, if it is ever worthwhile for a sophisticate to enroll, they should do so in the first period.

A present-biased naif, by contrast, could potentially never enroll, while always incorrectly believing that they will do so in the next period. Consider the simple example of $\beta = 1/2$ and $\kappa = 3$. Then, in period 1, the employee will not enroll $8\beta < \kappa + 2 \Leftrightarrow 4 < 5$, as the present discounted benefits are less than the current cost of switching. However, in period 1, they incorrectly believe that they will invest in period 2 if $7 > \kappa + 2$, which, in this case holds. Yet, when period 2 arrives, they will not invest, as $7\beta < \kappa + 2$.

The essential insight here is that while a sophisticate correctly knows that his future self will only participate if $\beta(9 - \tau) > \kappa + 2$, a naif incorrectly believes their future self will participate if $9 - \tau > \kappa + 2$. That is, they think the constraint for their future selfs to participate is less onerous than it will in fact be when the future becomes the present.

An additional, albeit basic, insight that follows is that individuals who discount the future more heavily, regardless of whether they are present biased, are less likely to participate at all because participation involves immediate costs and delayed rewards. For this reason, we also include estimates of the one period discount factor in addition to a separate measure for present bias when trying to predict which of our subjects remain at the default.

B Additional Tests of Robustness

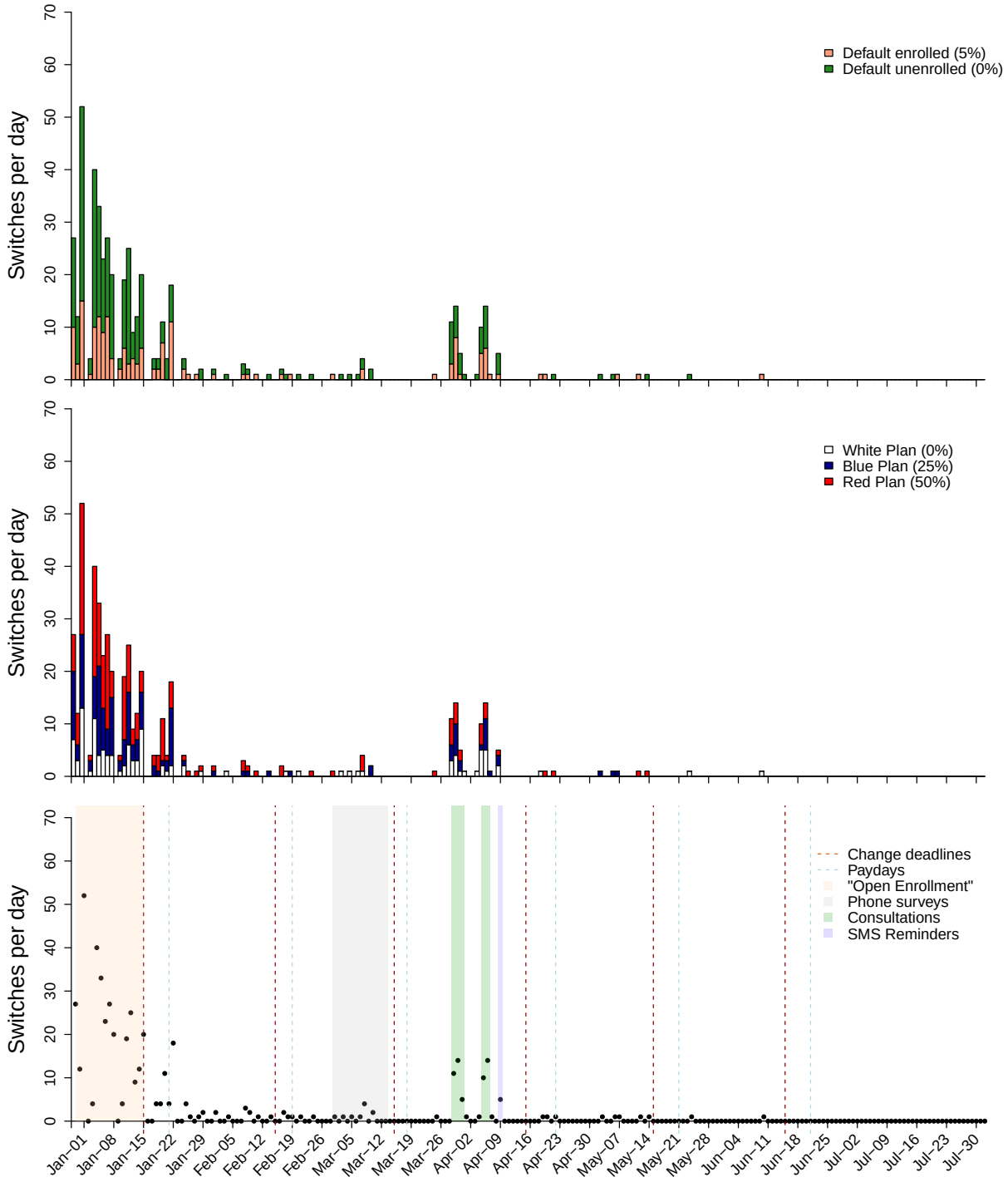
B.1 Robustness of Main Effects

Employees assigned a default contribution rate of 5% could also exit their account by making monthly withdrawals, rather than calling Human Resources and switching their contribution. In Table A4, we test robustness of the observed default effect when participation is redefined to mean both contributing some portion of salary to the program and never having made a withdrawal. Using this definition, defaulting employees in increases employee participation by 34 percentage points in the white and blue plans, and by 26 percentage points in the red plan, with all three differences being highly statistically significant. In Table A5, we show the main effects for particiption and contribution rate using the values of these variables at the end of the study on July 15th instead of February 28th, following the series of follow-up interventions. At this time, defaulting employees in increases participation by 33 percentage points, and contribution rates by 1.56 percentage points, with similar patterns by matching rates to Table 1.

B.2 Measurement Error in Survey Data

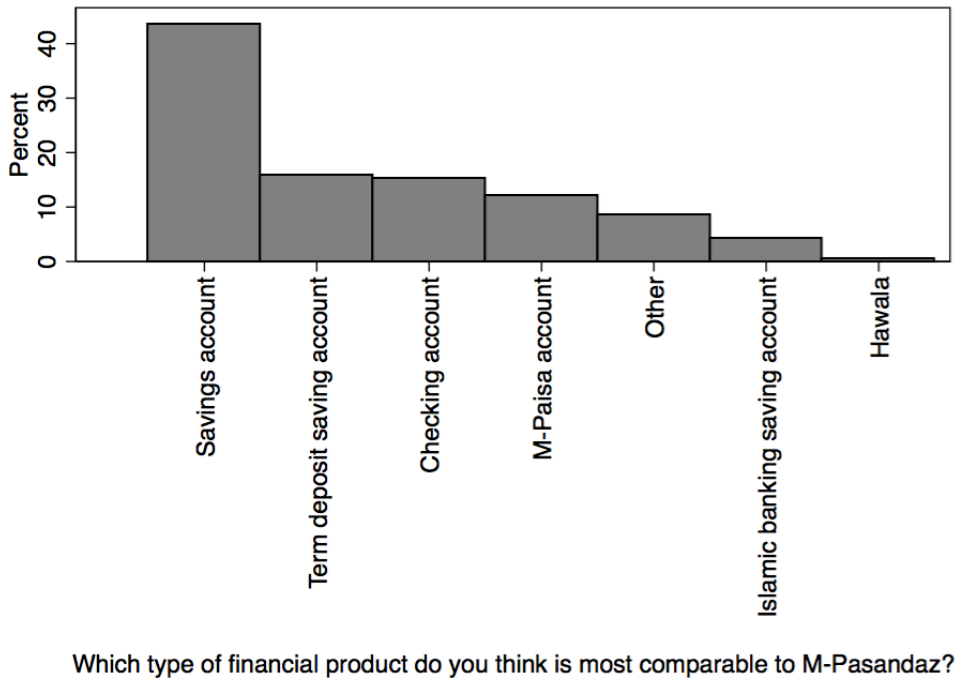
To assess the quality of our panel survey data, we first examine whether survey data on M-Pasandaz balances, which is potentially subject to measurement error due to inaccurate recall or misreporting, corresponds to our administrative data which is measured without error. For the specific case of the M-Pasandaz balance, however, we can directly compare our survey measure of reported flows into the account with the administrative record. This comparison reveals two systematic problems with the survey measure. First, a subsample of employees appears to respond to the survey question, designed to measure monthly flows, by reporting their current stock. If we adjust the data by replacing the monthly survey flow as the difference between monthly survey responses, the correlation between the administrative and the survey measure rises from 0.51 to 0.71. Second, all respondents appear to report negative flows as zero. The correlation between the adjusted survey measure and the administrative measure rises to 0.85 if we exclude individuals who report a monthly flow of zero from the data. Table 2 reports results using both the administrative data and the monthly survey data adjusting the survey response to a monthly flow using the difference between monthly survey responses for those who appear to be reporting their current stock.

Figure A1: Switching behavior over time



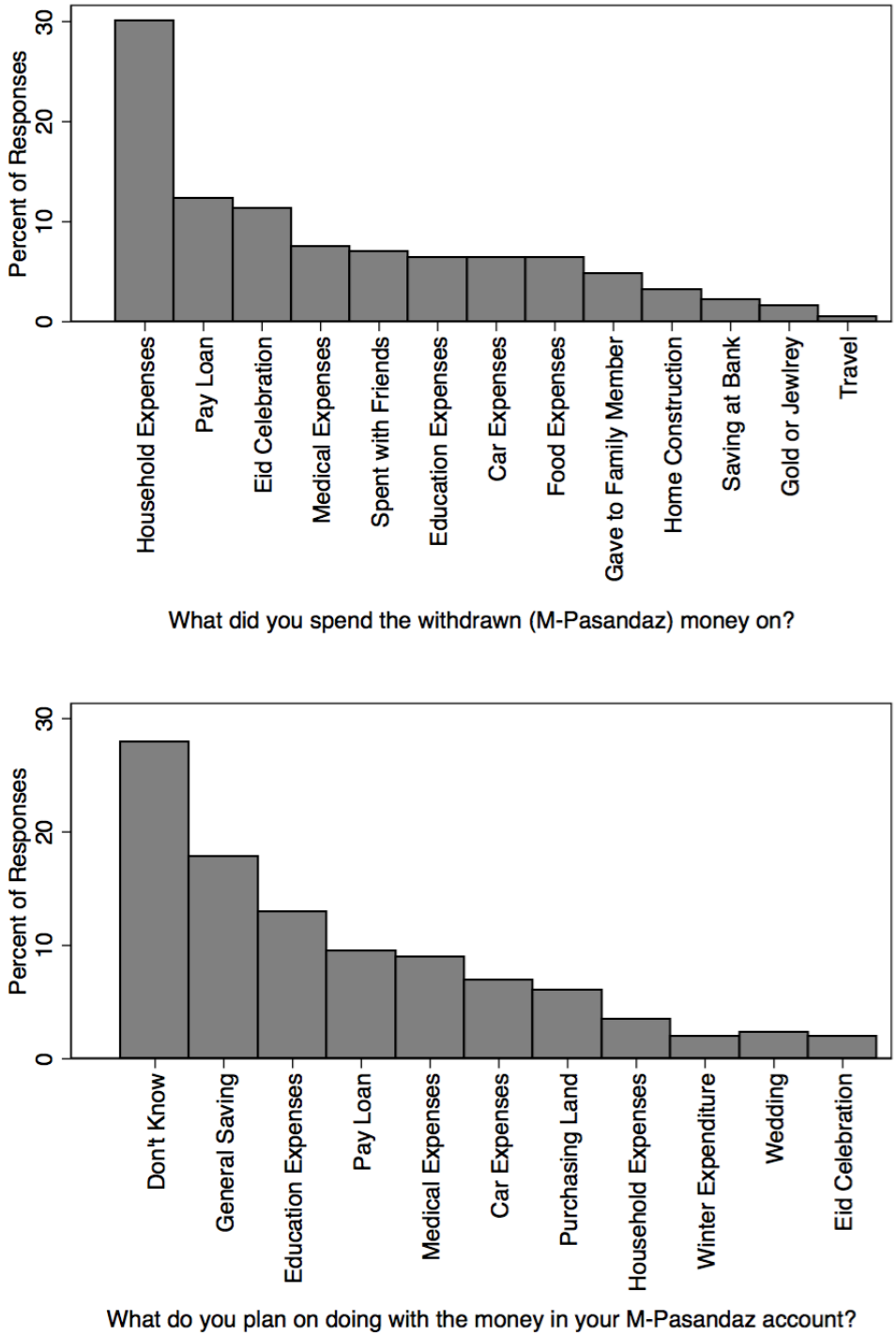
Notes: Dots indicate the number of individuals calling in, on a given day, to change their contribution rate. Top figure shows number of switches by default enrollment status; middle figure shows switches by plan assignment; bottom figure shows these switches in the context of the treatments that were administered to random subsets of the population over the course of the study.

Figure A2: Employee perceptions of M-Pasandaz



Notes: Responses collected in the endline survey, after the termination of the study period. Bars indicate the percent of employees who chose each option. Employees could only choose one option.

Figure A3: Employee uses and plans for M-Pasandaz savings



Notes: Responses collected in the endline survey, after the termination of the study period. Employees could give multiple responses to each question. Bars indicate the fraction of all employee responses that were affirmative for each expenditure category.

Figure A4: M-Pasandaz reminder message

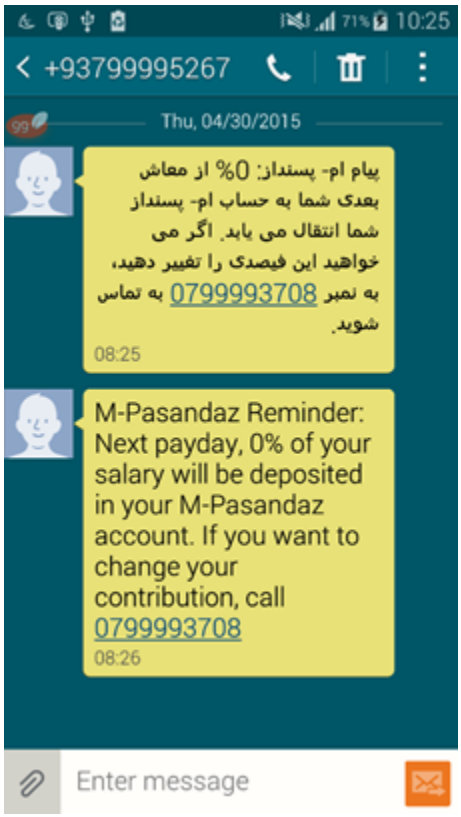
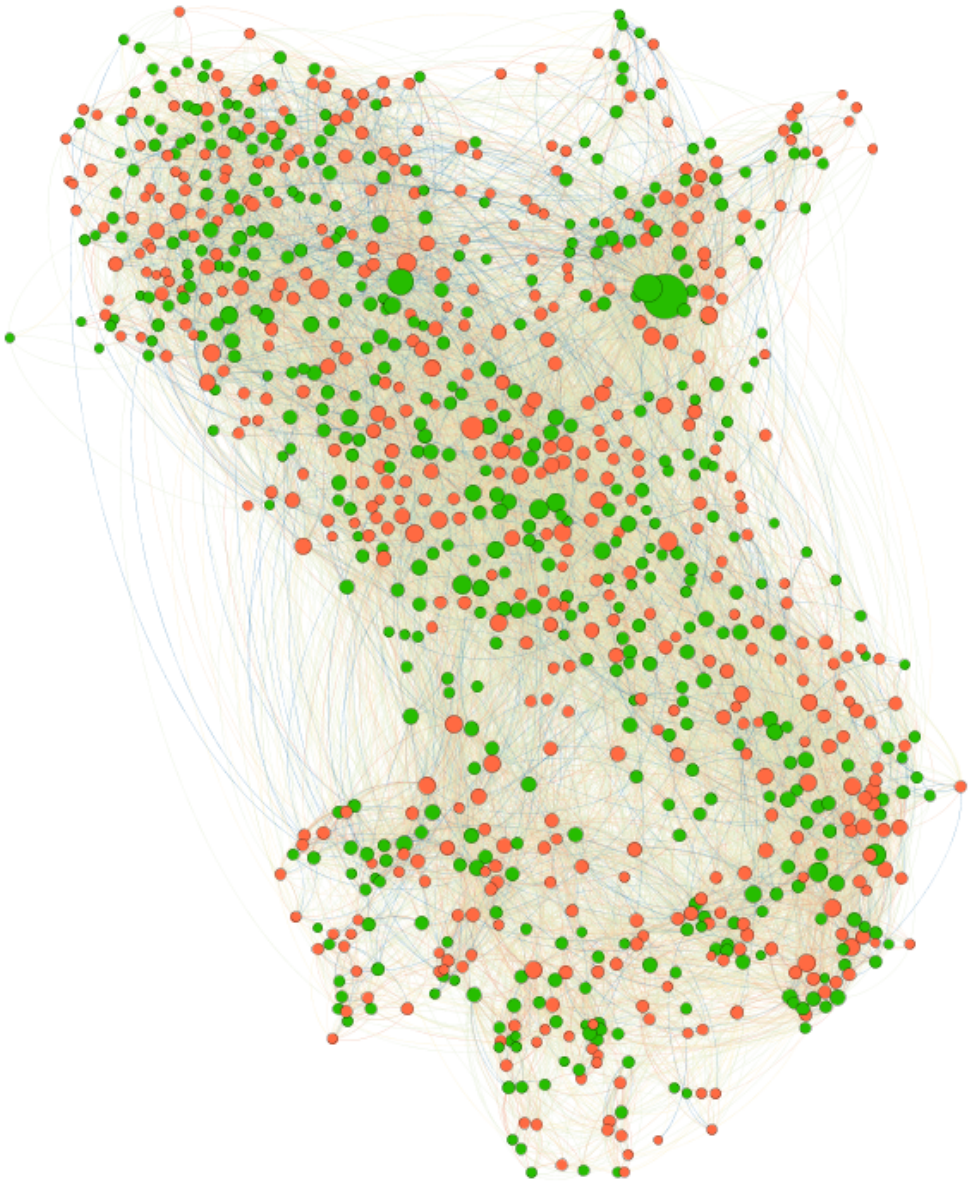
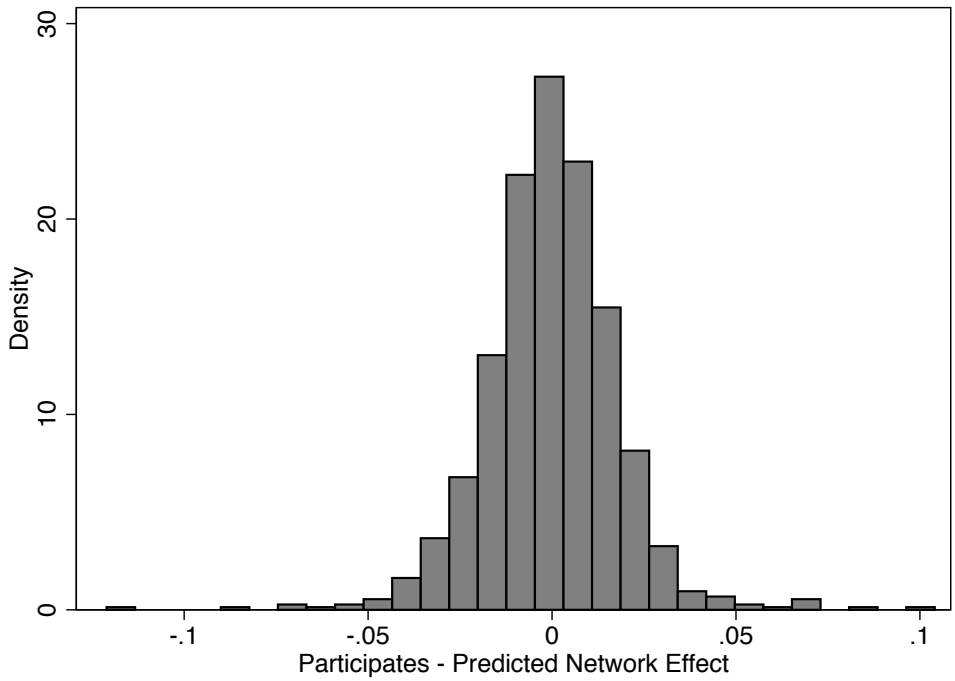


Figure A5: Roshan employee social network



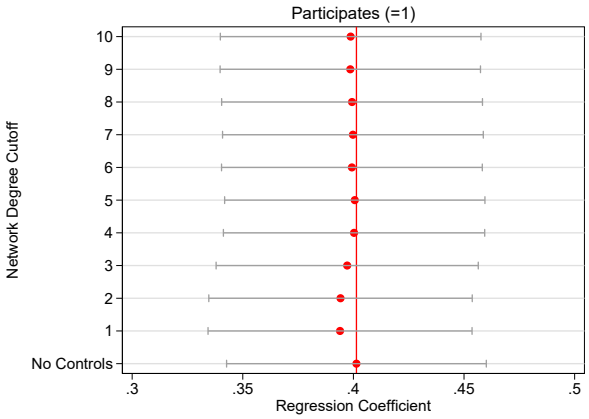
Notes: Each dot represents an employee. Red dots indicate employees who were assigned a contribution rate of 5%; green dots indicate employees assigned a default contribution rate of 0%. Dots are sized proportional to the degree centrality of the employee (i.e., the number of unique contacts in the employee's network). Edges indicate the presence of one or more phone calls between a pair of employees; edge color is shaded by the number of calls, ranging from one call (blue) to many calls (red). The layout of the graph is determined by an algorithm that places connected nodes close to each other on the 2-dimensional plane (Jacomy et al., 2014).

Figure A6: Predicted effect of network on participation

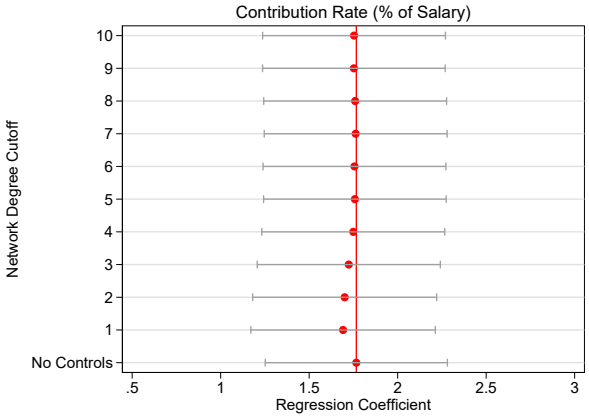


Notes: For each employee, we calculate the predicted peer effects on that employee's participation decision. Specifically, we calculate the number of that employee's social contacts who were randomly assigned to each of the different plan variants, and use the coefficients in Table 9 to estimate the total predicted peer effect. Histogram shows the distribution of these predicted peer effects.

(a) Participation Rate



(b) Contribution Rate



(c) Total M-Pasandaz Contributions

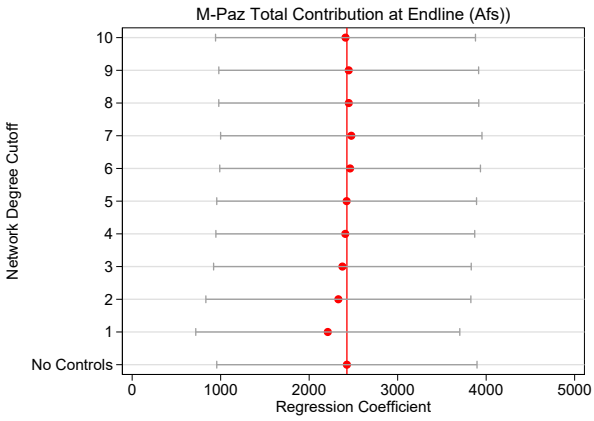


Figure A7: Coefficients and confidence intervals estimated from peer effects regressions on (a) participation rates (non-zero contributions), measured on February 28, 2015; (b) contribution rates, as a fraction of a employee's total salary, measured on February 28, 2015; and (c) Total M-Pasandaz Contributions, measured at the end of the six-month study period.

Table A1: Default Savings Effects in Related Literature

Reference	Study population	Default Effect Estimate
Bernheim et al. (2015)	Employees across three large U.S. firms in chemicals, insurance and food	Estimating a model of costly opt-out in retirement savings decisions, 60% of workers have positive opt-out costs, and 40% act as if opt-out costs are negligible (Table 3).
Beshears et al. (2009)	Subset of employees of a U.S. office equipment firm	When the default contribution rate is increased from 3% to 6%, participation at the default increases from 28% to 49%. Participation at or above 6% increases from 65% to 79% (Figure 5.3).
Beshears et al. (2010b)	645 employees at a U.S. information sector firm	89% of employees participated when given a 25% match; 80.7% participated with no match. The average contribution rate also fell from 3.60 percent to 2.89 percent (Table 11.2).
Bronchetti et al. (2011)	259 eligible tax filers at 8 IRS sponsored Volunteer Income Tax Assistance (VITA) sites in the U.S.	The treatment raised savings bond participation by no more than 8 percentage points (Table 3).
Brune et al. (2016)	593 households in 10 villages in Malawi	Net deposits are 13.6% higher for treatment households who are given a direct transfer compared to the control group who receives their transfer in cash (Page 4).
Carroll et al. (2009)	4,580 of 46,944 employees at a U.S. financial services firm	Enrollment rates are 29 percentage points higher when employees are forced to make an active enrollment decision (69%) than under a standard enrollment process with default non-enrollment (41%) (Figure 1).
Chetty et al. (2014)	4 million individuals with savings accounts from the population of Denmark	85% of individual savers in Denmark can be described as passive savers who do not respond to subsidies for retirement accounts, but are instead influenced by the automatic contributions made for them (Page 1143).
Dobrescu et al. (2016)	16,988 members of an Australian pension plan	Among highly educated permanent employees, there is a 4.4% decreased probability that a default member will opt out of the voluntary contributions default (Table 3).
Luco (2013)	8,888 individuals enrolled in the Chilean Pension System	55% of people in the Chilean fixed pension system did not switch from the default saving option, despite significant changes in the economic environment over the period of fourteen years (Figure 4).
Goda and Manchester (2013)	925 existing union employees at at U.S. non-profit firm	When an age threshold determines enrollment in defined benefit (DB) vs. defined contribution (DC), employees defaulted into DC are 60 percentage points more likely to enroll in DC plan than those defaulted into DB (Figure 1).
Madrian and Shea (2001)	13,355 employees from a U.S health care insurance firm	61 percent of employees hired under automatic enrollment do nothing to move away from the employer-set default rate for their 401(k) plan (Table 8).
Somville and Vandewalle (2017)	442 villagers in 18 villages in rural India	Being paid in bank account instead of cash increases the account balance by 420 Rupees (110 percent) after three months of weekly payments. Villagers paid in cash do not save more in other assets and rather increase expenditures on regular consumption by 402 Rupees (Table 4).

Table A2: Summary Statistics

		Default Out			Default In			
	All	0% Match	25% Match	50% Match	0% Match	25% Match	50% Match	P-Value of F-Test
Gender (Male = 1)	0.85	0.85	0.87	0.85	0.84	0.81	0.88	0.59
	(0.36)	(0.36)	(0.33)	(0.36)	(0.37)	(0.39)	(0.33)	
Married (=1)	0.64	0.66	0.64	0.62	0.66	0.64	0.65	0.98
	(0.48)	(0.47)	(0.48)	(0.49)	(0.48)	(0.48)	(0.48)	
Age (Years)	30.39	30.30	30.13	30.58	30.51	29.98	30.87	0.94
	(7.88)	(7.51)	(7.33)	(8.34)	(8.14)	(7.63)	(8.38)	
Cognitive Reflection Task	0.60	0.60	0.52	0.60	0.61	0.61	0.67	0.70
	(0.82)	(0.81)	(0.77)	(0.80)	(0.85)	(0.86)	(0.80)	
Risk Preference (1-10)	4.93	5.06	4.74	5.11	5.22	4.59	4.88	0.43
	(3.05)	(3.17)	(3.18)	(2.96)	(3.04)	(3.02)	(2.92)	
Monthly Salary (1000 Afs)	32.43	30.41	31.20	33.86	34.39	31.72	33.04	0.84
	(30.79)	(25.01)	(24.12)	(38.68)	(34.84)	(26.25)	(33.27)	
Monthly Savings (1000 Afs)	15.73	12.20	28.26	11.78	16.49	10.77	14.97	0.28
	(57.96)	(27.70)	(119.05)	(25.90)	(35.77)	(21.11)	(52.61)	
Tenure At Roshan (Years)	5.83	5.73	6.02	5.76	6.02	5.47	6.01	0.53
	(3.14)	(3.12)	(3.15)	(3.35)	(3.08)	(3.08)	(3.04)	
Education Level (1-6)	4.79	4.80	4.74	4.73	4.87	4.86	4.76	0.84
	(1.23)	(1.19)	(1.30)	(1.24)	(1.10)	(1.23)	(1.30)	
Has Bank Account (=1)	0.41	0.42	0.39	0.38	0.41	0.44	0.40	0.88
	(0.49)	(0.49)	(0.49)	(0.49)	(0.49)	(0.50)	(0.49)	
Delayed a Bill Payment (=1)	0.41	0.43	0.36	0.47	0.41	0.37	0.42	0.40
	(0.49)	(0.50)	(0.48)	(0.50)	(0.49)	(0.48)	(0.50)	
Withdraws Entire Salary (=1)	0.41	0.37	0.42	0.42	0.41	0.44	0.40	0.82
	(0.49)	(0.48)	(0.49)	(0.50)	(0.49)	(0.50)	(0.49)	
Capable of Fixing Phone (=1)	0.47	0.50	0.49	0.45	0.46	0.42	0.48	0.71
	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)	(0.49)	(0.50)	
Interested in M-Pasandaz (=1)	0.85	0.85	0.87	0.84	0.83	0.89	0.84	0.63
	(0.35)	(0.36)	(0.33)	(0.37)	(0.38)	(0.31)	(0.37)	
Present Biased Baseline (=1)	0.32	0.25	0.36	0.31	0.35	0.30	0.33	0.30
	(0.47)	(0.43)	(0.48)	(0.46)	(0.48)	(0.46)	(0.47)	
Present Biased Endline (=1)	0.41	0.44	0.43	0.34	0.41	0.42	0.44	0.61
	(0.49)	(0.50)	(0.50)	(0.48)	(0.49)	(0.49)	(0.50)	
Observations	949	161	158	159	158	158	155	

Notes: Standard deviations reported in parentheses. See Appendix C.2 for covariate questions. Present Biased Baseline (=1) is a binary variable that equals one if an employee is identified as having $\beta < 1$ in an unincentivized present bias elicitation completed at baseline, and Present Biased Endline (=1) is a binary variable that equals one if an employee is identified as having $\beta < 1$ in an experimental present bias elicitation completed at endline with real stakes (see paper text for details).

Table A3: Self-reported Reasons for Switching Contribution Rates

				Default Out			Default In		
	N	Total	%	0%	25%	50%	0%	25%	50%
Panel A: Reasons for increasing contribution rate									
Increased - Savings Important	189	285	66.32	7	32	59	9	36	46
Increased - Wanted Incentives	107	285	37.54	0	15	46	0	18	28
Increased - Support Roshan	10	285	3.51	1	1	1	1	3	3
Increased - Demand Commitment	8	285	2.81	0	3	3	0	2	0
Increased - Thought Automatic	5	285	1.75	0	3	2	0	0	0
Panel B: Reasons for decreasing contribution rate									
Decreased - Salary Too Low	52	170	30.59	0	0	0	22	17	13
Decreased - Incentives Too Low	49	170	28.82	0	0	0	48	0	1
Decreased - Expenses Too High	35	170	20.59	0	0	0	10	19	6
Decreased - Un-Islamic Product	24	170	14.12	0	0	0	5	10	9
Decreased - Better Options	4	170	2.35	0	0	0	3	1	0

Notes: Total in column 2 reports number of participants that either decreased their contribution rate (rows 1-5) or increased their contribution rate (rows 6-10). Reasons were not mutually exclusive and respondents were asked to report all relevant reasons for changing their contribution. "Decreased - Salary Too Low" indicates that respondents felt their salary was not sufficiently large to allow for savings. "Decreased - Incentives Too Low" indicates that respondents felt the incentives were not sufficiently high for savings. "Decreased - Expenses Too High" indicates that respondents felt their other expenses were too high for savings. "Decreased - Un-Islamic Product" indicates that respondents felt the M-Pasandaz product did not conform with Islamic practices. "Decreased - Better Options" indicates that respondents reported having better alternative savings options available. "Increased - Savings Important" indicates that respondents said savings was an important goal for them. "Increased - Wanted Incentives" indicates that respondents mentioned the incentives as important to their decision. "Increased - Support Roshan" indicates that respondents mentioned wanting to support Roshan's development of a new product. "Increased - Demand Commitment" indicates that respondents mentioned needing commitment devices to help save. "Increased - Thought Automatic" indicates that respondents mentioned thinking they were automatically enrolled in the program when they were not.

Table A4: The Effect of Defaults - Robustness to Withdrawing to Exit the Account

Dependent Variable:	Participates and No Withdrawal (=1)			
	(1)	(2)	(3)	(4)
Default In (=1)	0.33***	0.33***	0.25***	0.31***
	(0.04)	(0.05)	(0.05)	(0.03)
Constant	0.01	0.26***	0.55***	0.27***
	(0.01)	(0.04)	(0.04)	(0.02)
Sample	0% Match	25% Match	50% Match	Full Sample
# Observations	316	313	309	938
R-Squared	0.194	0.111	0.073	0.096

Notes: Participates and No Withdrawal (=1) is a binary variable that equals one if the contribution rate is greater than zero and the employee never withdrew from their account. The dependent variable reflect employees' status as of February 28, 2015, following the first two paydays but prior to the rollout of phone surveys or secondary interventions. $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Robust standard errors reported in parentheses.

Table A5: The Effect of Automatic Enrollment - July 15 Values

Panel A: The effect on participation				
Dependent Variable:	Participates (=1)			
	(1)	(2)	(3)	(4)
Default In (=1)	0.33***	0.36***	0.38***	0.23***
	(0.03)	(0.05)	(0.05)	(0.05)
Constant	0.32***	0.07***	0.32***	0.60***
	(0.02)	(0.02)	(0.04)	(0.04)
Sample	Complete	0% Match	25% Match	50% Match
# Observations	890	298	299	293
R-Squared	0.108	0.174	0.148	0.064
Panel B: The effect on contribution rate				
Dependent Variable:	Contribution Rate (% of Salary)			
	(5)	(6)	(7)	(8)
Default In (=1)	1.56***	1.89***	2.20***	0.42
	(0.29)	(0.29)	(0.50)	(0.50)
Constant	3.11***	0.46***	3.07***	5.92***
	(0.22)	(0.16)	(0.38)	(0.40)
Sample	Complete	0% Match	25% Match	50% Match
# Observations	890	298	299	293
R-Squared	0.032	0.125	0.062	0.002

Notes: Participates (=1) is a binary variable that equals one if the contribution rate is greater than zero, Contribution (% of Salary) is the monthy contribution rate into M-Pasandaz as a percent of total salary, and an observation is an employee. Variables reflect contribution rate values observed as of July 15, 2015, just prior to the disbursement of matching incentives. $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Robust standard errors reported in parentheses.

Table A6: Effect of Default Assignments on Asset Ownership

	Baseline		Endline			
	Default Out	Default In	Default Out	Default In	P-Value of T-Test	P-Value of DiD
Asset Index	0.04	-0.04	0.01	-0.01	0.87	0.72
	(2.25)	(2.18)	(2.25)	(2.27)		
Rooms (#)	3.31	3.23	3.74	3.58	0.25	0.56
	(2.08)	(1.98)	(2.23)	(1.77)		
Beds (#)	0.81	0.77	0.80	0.92	0.20	0.10
	(1.16)	(1.17)	(1.24)	(1.32)		
Air Conditioners (#)	0.21	0.19	0.33	0.38	0.38	0.18
	(0.80)	(0.63)	(0.82)	(0.85)		
Heaters (#)	1.31	1.25	1.21	1.32	0.19	0.08
	(1.38)	(1.17)	(1.15)	(1.30)		
Stoves (#)	1.38	1.39	1.35	1.41	0.42	0.26
	(0.89)	(0.99)	(1.04)	(0.87)		
Washing Machines (#)	1.05	1.02	1.10	1.09	0.76	0.53
	(0.62)	(0.55)	(0.72)	(0.59)		
Refrigerators (#)	0.86	0.87	1.00	0.94	0.13	0.04
	(0.66)	(0.59)	(0.60)	(0.59)		
Sewing Machines (#)	1.10	1.07	1.09	1.09	0.95	0.81
	(0.77)	(0.77)	(0.85)	(0.67)		
Televisions (#)	1.76	1.76	1.88	1.87	0.92	0.87
	(1.07)	(1.11)	(1.25)	(1.17)		
VCR/DVD Players (#)	0.61	0.66	0.64	0.66	0.85	0.61
	(0.86)	(0.86)	(0.93)	(0.89)		
Mobile Phones (#)	4.97	4.85	4.70	4.49	0.28	0.69
	(2.59)	(2.91)	(2.77)	(2.79)		
Computers (#)	1.40	1.36	1.38	1.42	0.59	0.21
	(1.17)	(1.08)	(1.11)	(1.14)		
Bicycles (#)	0.82	0.76	0.86	0.77	0.15	0.87
	(0.91)	(0.96)	(0.95)	(0.92)		
Motorcycles (#)	0.17	0.21	0.16	0.18	0.54	0.66
	(0.51)	(0.51)	(0.50)	(0.46)		
Automobiles (#)	0.41	0.41	0.45	0.43	0.63	0.45
	(0.56)	(0.62)	(0.61)	(0.64)		
Livestock (#)	0.54	0.52	0.60	0.34	0.04	0.21
	(2.78)	(2.86)	(2.24)	(1.39)		
Observations	473	467	409	404		

Notes: Standard deviations reported in parentheses. Asset Index is the first principal component of the full set of asset variables below. Columns (1) and (2) report mean values during the baseline survey in October 2014 for default out and default in groups, respectively. Columns (4) and (5) report mean values during the endline survey in August 2015 for default out and default in groups, respectively. Column (7) reports the p-value from a t-test comparing default out and default in groups at endline, while Column (8) reports the p-value from a difference-in-difference estimate of default out and default in groups between endline and baseline.

Table A7: Default Impacts on Savings, by Matching Rate

	Total Savings (Survey) (1)	M-Paz Savings (Admin) (2)	M-Paz Savings (Survey) (3)	M-Paisa Savings (Admin) (4)	M-Paisa Savings (Survey) (5)	Cash Savings (Survey) (6)	Bank Savings (Survey) (7)	Loans or Transfers (Survey) (8)	General Exp (Survey) (9)	Food Exp (Survey) (10)
β_1: Default Out x 25% Match x Post	-1121.78	645.62***	412.12***	-3111.20	-1534.95	441.22	-454.08	-278.92	-1719.55	711.80
	(2966.74)	(200.75)	(132.34)	(4200.67)	(1337.80)	(1257.00)	(2280.89)	(1219.56)	(3282.98)	(773.53)
β_2: Default Out x 50% Match x Post	4221.00	1703.13***	1590.37***	-2390.95	298.82	907.55	-323.04	538.51	-2995.64	457.94
	(2968.33)	(286.07)	(223.68)	(2913.31)	(1460.17)	(1201.55)	(2139.07)	(1028.32)	(4580.51)	(833.74)
β_3: Default In x 0% Match x Post	2041.33	323.80*	513.04***	-3056.22	224.44	-1267.55	144.73	792.69	-5623.64	625.80
	(3809.67)	(193.46)	(179.87)	(4339.40)	(1074.73)	(1435.44)	(2770.91)	(1167.02)	(6273.38)	(826.03)
β_4: Default In x 25% Match x Post	3585.35	1358.97***	1337.34***	74.61	1925.06	355.62	-915.67	123.63	-981.01	686.30
	(3047.85)	(235.83)	(226.49)	(2935.55)	(1207.62)	(1263.08)	(2250.46)	(1168.60)	(4088.32)	(828.99)
β_5: Default In x 50% Match x Post	3804.46	1931.97***	1645.53***	1537.37	243.51	-617.27	510.61	833.56	-7656.92*	951.27
	(3146.93)	(294.99)	(244.46)	(3479.64)	(1233.53)	(1404.96)	(2224.97)	(935.99)	(4202.88)	(770.28)
Control Mean	8508.89	659.33	577.36	-1447.47	2390.02	2163.13	1680.69	843.23	16567.11	3629.36
# Employees	470	470	470	468	470	470	470	470	469	470
# Observations	1951	1957	1957	1937	1958	1956	1952	1955	1578	1536
Default Effect At 0% Match: $\beta_3 = 0$	0.592	0.095	0.005	0.482	0.835	0.378	0.958	0.497	0.370	0.449
Default Effect At 25% Match: $\beta_1 = \beta_4$	0.079	0.020	0.000	0.461	0.010	0.945	0.743	0.748	0.834	0.972
Default Effect At 50% Match: $\beta_2 = \beta_5$	0.881	0.574	0.867	0.273	0.970	0.250	0.456	0.715	0.338	0.495
R-Squared	0.020	0.111	0.172	0.005	0.010	0.025	0.007	0.018	0.025	0.023
Waves	1 - 5	1 - 5	1 - 5	1 - 5	1 - 5	1 - 5	1 - 5	1 - 5	1 - 4	1 - 4
Trim	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Employee FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Wave FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Notes: See Table 2 notes. All regressions include employee fixed effects, survey wave fixed effects and a "Post" binary variable that equals one for all waves after the baseline. All variables are trimmed at 1%. $^*p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Robust standard errors, clustered at employee level, reported in parentheses.

Table A8: Long Term Effect of Defaults on M-Paz Balances by Quarter

	(1)	(2)	(3)	(4)
Panel A. Dependent Variable = M-Pazandaz Monthly Participation (=1)				
Defaulted In X 2015:Q1 (During Study)	0.440***	0.495***	0.472***	0.346***
	(0.028)	(0.039)	(0.048)	(0.046)
Defaulted In X 2015:Q2 (During Study)	0.330***	0.366***	0.374***	0.234***
	(0.031)	(0.045)	(0.053)	(0.050)
Defaulted In X 2015:Q3 (Post Study)	0.077**	0.114*	0.047	0.064
	(0.035)	(0.059)	(0.059)	(0.062)
Defaulted In X 2015:Q4 (Post Study)	0.076**	0.108*	0.063	0.052
	(0.038)	(0.065)	(0.064)	(0.068)
Defaulted In X 2016:Q1 (Post Study)	0.083**	0.098	0.088	0.062
	(0.039)	(0.067)	(0.066)	(0.069)
Defaulted In X 2016:Q2 (Post Study)	0.075*	0.099	0.084	0.040
	(0.039)	(0.067)	(0.067)	(0.070)
Defaulted In X 2016:Q3 (Post Study)	0.070*	0.105	0.072	0.031
	(0.040)	(0.068)	(0.067)	(0.072)
Defaulted In X 2016:Q4 (Post Study)	0.049	0.066	0.055	0.027
	(0.040)	(0.068)	(0.067)	(0.071)
Employer Match	Complete	0%	25%	50%
Month FE	YES	YES	YES	YES
Employee FE	YES	YES	YES	YES
# Employees	943	318	315	310
# Observations	15932	5297	5436	5199
R-Squared	0.07	0.10	0.08	0.11
Panel B. Dependent Variable = M-Pazandaz Monthly Balance (AFs)				
	(1)	(2)	(3)	(4)
Defaulted In X 2015:Q1 (During Study)	1276.151***	1451.145***	1232.411***	1149.819**
	(243.711)	(266.035)	(426.033)	(497.305)
Defaulted In X 2015:Q2 (During Study)	2181.255***	2328.027***	2548.884**	1676.520
	(619.173)	(558.224)	(1103.583)	(1289.838)
Defaulted In X 2015:Q3 (Post Study)	1101.753***	437.328	1910.186**	854.693
	(424.186)	(319.477)	(884.962)	(830.137)
Defaulted In X 2015:Q4 (Post Study)	937.288*	62.507	2298.533***	251.866
	(508.617)	(770.410)	(883.006)	(963.910)
Defaulted In X 2016:Q1 (Post Study)	291.542	-101.046	481.555	437.174
	(542.742)	(875.935)	(801.500)	(1129.017)
Defaulted In X 2016:Q2 (Post Study)	214.531	733.462	-103.568	1.781
	(569.544)	(1043.831)	(909.243)	(1035.179)
Defaulted In X 2016:Q3 (Post Study)	216.215	1122.238	-57.349	-427.992
	(577.237)	(1173.663)	(905.239)	(941.989)
Defaulted In X 2016:Q4 (Post Study)	689.448	1390.079	662.317	9.217
	(660.593)	(1254.212)	(1112.137)	(1078.826)
Employer Match	Complete	0%	25%	50%
Month FE	YES	YES	YES	YES
Employee FE	YES	YES	YES	YES
# Employees	949	319	316	314
# Observations	17051	5672	5805	5574
R-Squared	0.03	0.02	0.04	0.07

Notes: Dependent variable in top panel is the monthly participation decision to contribute to the M-Pasandaz account, and in the bottom panel is the M-Pasandaz balance at the end of each month (in Afghanis, or AFs). Each observation is a respondent-month. All regressions include employee fixed effects and month fixed effects. $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Robust standard errors, clustered at employee level, reported in parentheses.

Table A9: Default Effects on Savings Behaviors and Attitudes, by Match Rate

Outcome:	Control Mean	Default Effect	Naive p-Value	List et al p-Value	Bonferonni p-Value
Panel A: Composite Indices (0% Match)					
Importance of Saving Index	-0.143	0.259	0.003	0.006	0.007
Financial Security Index	-0.007	0.118	0.080	0.147	0.235
Well-Being Index	0.091	0.021	0.727	0.732	1
Panel B: Composite Indices (25% Match)					
Importance of Saving Index	0.056	0.003	0.966	0.966	1
Financial Security Index	-0.002	0.110	0.120	0.297	0.347
Well-Being Index	-0.018	0.038	0.557	0.801	1
Panel C: Composite Indices (50% Match)					
Importance of Saving Index	0.071	0.147	0.044	0.103	0.112
Financial Security Index	0.022	0.091	0.190	0.332	0.566
Well-Being Index	-0.032	0.004	0.949	0.946	1

Notes: See Table 4 notes.

Table A10: Effect of Matching Incentives on Savings Behavior, Financial Security, and Well-Being

Outcome:	0% Only Mean	25% v. 0% Effect	Naive p-Value	List et al p-Value	Bonferonni p-Value	50% v. 0% Effect	Naive p-Value	List et al p-Value	Bonferonni p-Value
Panel A: Composite Indices									
Importance of Saving Index	-0.003	0.01	0.231	0.975	1	0.124	0.005	0.016	0.017
Financial Security Index	0.003	0.005	0.96	0.913	1	0.013	0.765	0.746	1
Well-Being Index	-0.001	0.019	0.12	0.945	1	0.074	0.023	0.153	0.248
Panel B: Importance of Saving Index Variables:									
Savings is Important (=1)	0.96	0.004	0.717	0.821	1	0.002	0.768	0.893	1
Attempts to Save Each Month (=1)	0.608	0.013	0.247	0.914	1	0.099	0.002	0.008	0.009
M-Paz Changed Desire to Save	0.513	0.02	0.05	0.932	1	0.088	0.002	0.035	0.054
Panel C: Financial Security Index Variables:									
Not Too Financially Constrained to Save (=1)	0.626	0.018	0.368	0.83	1	0.094	0.005	0.026	0.028
Confident Meeting Current Fin. Obligations (=1)	0.952	0.002	0.743	0.919	1	0.006	0.632	0.925	1
Confident Meeting Future Fin. Obligations (=1)	0.802	0.036	0.617	0.606	1	0.047	0.243	0.249	0.462
Will Retire Someday (=1)	0.403	0.034	0.211	0.712	1	0.009	0.399	0.794	1
Financial Satisfaction (1 - 10)	6.614	0.281	0.338	0.323	0.383	0.305	0.222	0.171	0.235
Panel D: Well-Being Index Variables:									
Nights No One Without Food During Prior Week	6.688	0.098	0.682	0.379	0.58	0.242	0.003	0.009	0.01
Happy Overall (=1)	0.941	0.008	0.442	0.962	1	0.009	0.435	0.883	1
Life Satisfaction (1 - 10)	8.077	0.023	0.31	0.988	1	0.323	0.02	0.145	0.193
Good Physical Health (=1)	0.849	0.067	0.008	0.117	0.123	0.001	0.158	0.989	1
Healthy Last Three Months (=1)	0.956	0.001	0.627	0.926	1	0.01	0.404	0.869	1
Panel E: Other Variables:									
Satisfied at Roshan (=1)	0.832	0.073	0.004	0.044	0.045	0.004	0.109	0.892	1
Left Roshan (=1)	0.144	0.035	0.312	0.135	0.27	0.029	0.599	0.436	0.5

Notes: This table reports the effects of randomly assigned match rates for the M-Pasandaz savings account. Col 1 reports the mean outcome value for the 0% match rate group, Col 2 reports the mean difference between the 25% match rate group and the 0% group, and Col 7 reports the mean difference between the 50% match rate group and the 0% group. Cols 3-6 and Cols 8-10 report standard, List et al. (2016) and Bonferonni P-values for the estimates in Col 2 and Col 7, respectively. See Table 4 notes for additional detail.

Table A11: "Top of the Mind" Treatments

Dependent Variable:	Changed After Phone Survey (=1)			Changed After SMS Reminder (=1)		
	(1)	(2)	(3)	(4)	(5)	(6)
Phone Survey (=1)	0.006*	-0.000	0.006			
	(0.004)	(0.000)	(0.006)			
Default * Phone Survey		0.013*				
		(0.007)				
25% Match * Phone Survey			0.007			
			(0.011)			
50% Match * Phone Survey			-0.006			
			(0.006)			
SMS Reminder (=1)				0.026**	0.017	0.026
				(0.010)	(0.012)	(0.018)
Default * SMS Reminder					0.018	
					(0.021)	
25% Match * SMS Reminder						-0.001
						(0.025)
50% Match * SMS Reminder						-0.000
						(0.026)
Default In (=1)		-0.000			-0.000	
		(0.000)			(0.000)	
Match Rate = 25%			0.000			-0.000
			(0.000)			(0.000)
Match Rate = 50%			0.000			-0.000
			(0.000)			(0.000)
# Observations	949	949	949	473	473	473
R-Squared	0.003	0.010	0.008	0.013	0.016	0.013

Notes: Changed After Phone Survey equals one if an employee changed their contribution rate either on the day they received a phone survey or the day immediately following. Changed After SMS Reminder is a binary variable that equals one if an employee changed their contribution rate either on the day they received a sms reminder or the day immediately following. Phone Survey is a binary variable if the employee was randomly assigned to receive a phone survey. SMS Reminder is a binary variable if the employee was randomly assigned to receive an sms reminder. $*p < 0.1$, $**p < 0.05$, $***p < 0.01$. Robust standard errors reported in parentheses.

Table A12: Present Bias and Contribution Changes (Unincentivized Baseline Measure)

Dependent Variable:	Still at Default on February 28		Still at Default and No Withdrawal on Feb. 28	
	(1)	(2)	(3)	(4)
Present Bias Parameter (β)	-0.510***	-0.460***	-0.457***	-0.407**
	(0.161)	(0.170)	(0.169)	(0.179)
Long Run Discount Factor (δ)		-0.147		-0.146
		(0.288)		(0.294)
Cognitive Reflection Test (0-3)		-0.051**		-0.049**
		(0.023)		(0.022)
Risk Preference (1-10)		0.002		0.003
		(0.006)		(0.006)
Salary (1000 Afs)		0.001		0.001
		(0.001)		(0.001)
Tenure at Roshan (Years)		-0.013**		-0.009
		(0.006)		(0.006)
Male (=1)		0.025		0.033
		(0.052)		(0.052)
Education Level		-0.001		-0.007
		(0.017)		(0.017)
Uses a Bank Account (=1)		-0.041		-0.045
		(0.037)		(0.038)
Withdraws Entire Salary on Payday (=1)		0.008		0.006
		(0.037)		(0.037)
Capable of Fixing Phone (=1)		0.051		0.039
		(0.035)		(0.036)
Constant	1.075***	1.210***	0.977***	1.120***
	(0.156)	(0.309)	(0.164)	(0.319)
R-Squared	0.010	0.025	0.008	0.020
# Employees	829	804	829	804

Notes: This table reports on the variables that predict whether a participant remains at their default election on February 28, 2015, two months after the start of the experiment. β is a measure of present bias obtained using a hypothetical price list at baseline. The remaining variables are described in Appendix C.2. $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Robust standard errors reported in parentheses.

Table A13: The Effect of Automatic Enrollment - Heterogeneity

	Participates (=1)												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Default In (=1)	0.413***	0.365***	0.495***	0.439***	0.448***	0.410***	0.435***	0.399***	0.416***	0.392***	0.413***	0.372***	0.565***
	(0.034)	(0.046)	(0.076)	(0.043)	(0.063)	(0.050)	(0.072)	(0.088)	(0.135)	(0.045)	(0.045)	(0.048)	(0.213)
Default In x Present Biased		0.117*											0.095
		(0.069)											(0.074)
Default In x Impatient			-0.099										-0.107
			(0.085)										(0.089)
Default In x Cognitive Reflection Test				-0.049									-0.037
				(0.045)									(0.050)
Default In x Risk Preference					-0.007								-0.005
					(0.011)								(0.011)
Default In x Salary						0.000							0.000
						(0.000)							(0.000)
Default In x Tenure at Roshan							-0.004						-0.009
							(0.011)						(0.013)
Default In x Male								0.013					-0.045
								(0.096)					(0.102)
Default In x Education Level									0.000				-0.016
									(0.027)				(0.032)
Default In x Uses a Bank Account										0.048			0.020
										(0.070)			(0.075)
Default In x Withdraws Entire Salary on Payday											-0.002		0.027
											(0.070)		(0.074)
Default In x Capable of Fixing Phone												0.092	0.119*
												(0.069)	(0.072)
Present Biased (=1)		-0.083*											-0.085*
		(0.048)											(0.049)
Impatient (=1)			0.021										-0.009
			(0.057)										(0.059)
Cognitive Reflection Test (0-3)				0.052									0.052
				(0.032)									(0.034)
Risk Preference (1-10)					0.004								0.002
					(0.007)								(0.007)
Salary						0.000							0.000
						(0.000)							(0.000)
Tenure at Roshan (Years)							0.003						0.002
							(0.008)						(0.009)
Male (=1)								-0.106					-0.087
								(0.074)					(0.079)
Education Level									-0.017				-0.024
									(0.019)				(0.024)
Uses a Bank Account										0.014			0.036
										(0.049)			(0.054)
Withdraws Entire Salary on Payday											-0.036		-0.058
											(0.048)		(0.052)
Capable of Fixing Phone												-0.016	-0.033
												(0.048)	(0.050)
Constant	0.276***	0.310***	0.260***	0.248***	0.259***	0.263***	0.258***	0.367***	0.352***	0.271***	0.291***	0.284***	0.480***
	(0.024)	(0.032)	(0.050)	(0.029)	(0.041)	(0.038)	(0.050)	(0.069)	(0.094)	(0.030)	(0.032)	(0.033)	(0.151)
# Observations	702	702	702	693	701	702	689	702	701	702	702	702	678
R-Squared	0.171	0.175	0.173	0.173	0.171	0.172	0.169	0.176	0.174	0.173	0.172	0.174	0.197

Notes: Participates (=1) is a binary variable that equals one if the contribution rate is greater than zero, and reflect values observed as of February 28, 2015, following the first two paydays but prior to the rollout of phone surveys or secondary interventions. Present Biased (=1) is a binary variable that equals one if an employee is identified as having $\beta < 1$ in an experimental present bias elicitation completed at endline with real stakes and Impatient (=1) is a binary variable that equals one if an employee is identified as having $\delta < 1$ (see paper text for details). The additional covariates are: cognitive reflection task, risk preference, salary, tenure at Roshan, gender, education level, uses a bank account, withdraws entire salary on payday, and capable of fixing a phone – see Appendix C.2 for questions. $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Robust standard errors reported in parentheses.

Table A14: Consultation Offer and Present Bias (Unincentivized Baseline Measure)

	Accepted Consultation (=1)				
	(1)	(2)	(3)	(4)	(5)
Consult Later	0.063	0.067	0.064	0.042	0.395
	(0.045)	(0.045)	(0.053)	(0.064)	(0.251)
Present Biased (=1)			-0.048	-0.051	-0.058
			(0.074)	(0.076)	(0.077)
Consult Later x Present Biased			0.018	-0.002	0.015
			(0.100)	(0.101)	(0.103)
Impatient (=1)				0.009	0.008
				(0.070)	(0.071)
Consult Later x Cognitive Reflection Test					-0.022
					(0.058)
Consult Later x Risk Preference					0.001
					(0.016)
Consult Later x Salary					-0.003*
					(0.002)
Consult Later x Tenure at Roshan					-0.004
					(0.017)
Consult Later x Male					-0.214
					(0.148)
Consult Later x Education Level					-0.014
					(0.042)
Consult Later x Uses a Bank Account					0.094
					(0.096)
Consult Later x Withdraws Entire Salary on Payday					-0.042
					(0.096)
Consult Later x Capable of Fixing Phone					-0.005
					(0.097)
Constant	0.716***	0.820***	0.829***	0.827***	0.631***
	(0.032)	(0.120)	(0.122)	(0.122)	(0.174)
Control Mean	0.76	0.76	0.76	0.76	0.76
Covariates	No	Yes	Yes	Yes	Yes
# Observations	380	380	380	380	380
R-Squared	0.005	0.036	0.038	0.041	0.063

Notes: Accepted Consultation Offer (=1) is a binary variable that equals one if the employee agreed to participation in a financial consultation regarding their participation in the M-Pasandaz program (see paper text for details). Consult Later (=1) is a binary variable that equals zero if the employee was randomly assigned to receive a consultation on the same day as the consultation offer was made, and equals one if the consultation was assigned to take place one week later. Present Biased (=1) is a binary variable that equals one if an employee is identified as having $\beta < 1$ in an unincentivized present bias elicitation completed at baseline and Impatient (=1) is a binary variable that equals one if an employee is identified as having $\delta < 1$ (see paper text for details). Columns (2), (4) and (5) include covariates for cognitive reflection task, risk preference, salary, tenure at Roshan, gender, education level, uses a bank account, withdraws entire salary on payday, and capable of fixing a phone – see Appendix C.2 for questions. $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Robust standard errors reported in parentheses.

Table A15: Which Treatments Move Participants From Their Default Contribution?

Dependent Variable:	Changed Contribution After Feb. 28 (=1)		
	(1)	(2)	(3)
Financial Consultation (=1)	0.078***	0.045	0.045
	(0.025)	(0.028)	(0.042)
Financial Consultation x Still at Default		0.059	
		(0.047)	
Financial Consultation x Defaulted In			0.155**
			(0.079)
SMS Reminder (=1)	0.002	0.029	-0.016
	(0.026)	(0.033)	(0.044)
SMS x Still at Default		-0.045	
		(0.050)	
SMS x Defaulted In			0.010
			(0.083)
Still at Default (=1)		0.080**	
		(0.034)	
Defaulted In (=1)			0.059
			(0.058)
Constant	0.088***	0.041**	0.096***
	(0.018)	(0.020)	(0.033)
R-squared	0.013	0.039	0.065
# Employees	949	949	552
Sample	Full	Full	Still at Default

Notes: This table reports the comparative effectiveness of different treatments designed to move participants from their default election. SMS Reminder is a dummy variable equal to one for participants receiving an SMS reminder message, Consultation is dummy equal to one for subjects receiving an offer of a financial consultation, Still at Default is a dummy variable equal to one for participants who have not moved from their default election, and β is a measure of present-bias obtained from a hypothetical price list experiment at baseline. $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Robust standard errors reported in parentheses.

Table A16: Which Element of the Consultation is Associated with Switching: Heterogeneity

Dependent Variable:	Changed Contribution After February 28 (=1)			
	(1)	(2)	(3)	(4)
Panel A: Assigned Consultation				
Assigned Consultation (=1)	0.091***	-0.006	0.061***	0.039
	(0.018)	(0.015)	(0.021)	(0.034)
Assigned Consultation x Still at Default		0.165***		0.031
		(0.027)		(0.040)
Assigned Consultation x Defaulted In			0.060*	-0.068**
			(0.031)	(0.034)
Assigned Consultation x Still at Default x Defaulted In				0.298***
				(0.062)
Constant	0.037***	0.037***	0.037***	0.037***
	(0.009)	(0.009)	(0.009)	(0.009)
R-squared	0.027	0.071	0.033	0.123
# Employees	927	927	927	927
Panel B: Accepted Consultation				
Accepted Consultation (=1)	0.154***	0.028	0.124***	0.079*
	(0.024)	(0.022)	(0.030)	(0.043)
Accepted Consultation x Still at Default		0.214***		0.066
		(0.036)		(0.054)
Accepted Consultation x Defaulted In			0.060	-0.084*
			(0.042)	(0.043)
Accepted Consultation x Still at Default x Defaulted In				0.312***
				(0.078)
Constant	0.017	0.017	0.017	0.017
	(0.012)	(0.012)	(0.012)	(0.012)
R-squared	0.040	0.112	0.046	0.165
# Employees	443	443	443	443
Panel C: Calculation Assistance				
Calculation Assistance (=1)	0.439***	0.143**	0.362***	0.193**
	(0.054)	(0.071)	(0.069)	(0.095)
Calculation Assistance x Still at Default		0.447***		0.277**
		(0.092)		(0.128)
Calculation Assistance x Defaulted In			0.178*	-0.147
			(0.102)	(0.128)
Calculation Assistance x Still at Default x Defaulted In				0.399**
				(0.174)
Constant	0.045***	0.045***	0.045***	0.045***
	(0.015)	(0.015)	(0.015)	(0.015)
R-squared	0.278	0.373	0.294	0.398
# Employees	295	295	295	295

Notes: See Table 7 notes. This table reports which elements of the financial consultation predict whether an employee switches their contribution. *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$. Robust standard errors are reported in parentheses.

C Experimental Scripts

C.1 Financial Consultation

Hello XXX. I am calling on behalf of the M-Pasandaz research team department. I am calling because you recently requested that a representative call you to provide you with additional information about M-Pasandaz, and determine how to use M-Pasandaz in the way that is best for you. This consultation will last roughly 5-10 minutes. Are you able to speak to me now? [RECORD RESPONSE]

Thank you for taking the time to speak with me. As you know, M-Pasandaz is a new benefit that is being offered to Roshan employees. In this call, you will have the opportunity to ask questions about M-Pasandaz. I will provide information about how much savings you would have for different levels of monthly contribution. At the end of the call, you will also have the opportunity to change the level of your contribution if you would like.

First of all, would you like me to give you a brief overview of the M-Pasandaz account? [YES/NO]

If YES: M-Pasandaz is a new benefit for all Roshan employees that was designed to help increase your savings. It is a mobile savings account that is linked to your M-Paisa account. A portion of your monthly salary - up to a maximum of 10% - can be automatically deposited into your M-Pasandaz account each month. Participating in the M-Pasandaz account is voluntary and you may receive benefits from Roshan to encourage you to save for the future. You can access the money in your M-Pasandaz account at any time, but if you contribute and dont make any withdrawals for 6 months, you may be eligible for a bonus from Roshan as a reward for savings.

To begin, we would like to ask if there are any questions we might answer about M-Pasandaz. [YES/NO]

Now, since every person has a different situation, I would like to explain several different scenarios, to help you understand how different levels of M-Pasandaz contributions would work for you. According to our records, you are in the [WHITE/BLUE/RED] plan, and you currently have a monthly contribution rate of [XX%]. Were you aware that this was your plan and contribution rate? [YES/NO]

According to our records, you have a monthly salary of XXX. Since you are in the [WHITE/BLUE/RED] plan, you are eligible to receive a matching contribution Roshan of [0/25/50] percent for all money that you save in your M-Pasandaz account. Our records also show that you [HAVE/HAVE NOT] made a withdrawal from your M-Pasandaz account, meaning that you [ARE NOT/ARE] still eligible to receive your matching contribution. Therefore, if you continue to contribute at your current rate and make no withdrawals, at

the end of the trial period in July, you would have a total value of MMM in your M-Pasandaz account. This reflects both your contribution and the contribution of Roshan to the account on your behalf. Would you like me to repeat this information for you? [YES/NO]

Thank you. Of course, you are always free to change your monthly contribution rate. If you like, I can explain to you exactly what would happen if you decided to change your match to a different amount. Would you like me assist you by explaining what would happen if you changed your contribution rate to a different amount? [YES/NO]

If YES: What scenario would you like me to explain? The contribution rate can be anywhere between 0% and 10% of your monthly salary. [RECORD ANSWER]

Do you have any additional questions about how M-Pasandaz works, or can I provide any additional information that can help you determine how to use M-Pasandaz in the way that is best for you? [YES/NO]

Thank you. Now, I would like to offer you the opportunity to change your contribution rate. If you wish, you can tell me your preferred rate, and I will change it for you. Alternatively, you always have the opportunity to call HR at a later date and change the contribution. Would you like me to change your contribution rate? [YES/NO]

If YES: What would you like your new rate to be: [RECORD RESPONSE]

Thank you very much for your time. Goodbye.

C.2 Survey instrument (selected questions)

Endline survey questions (savings behavior, financial security, and wellbeing)

Roshan leadership is reviewing the results of the M-Pasandaz pilot program, and will be making a decision in the next few months about its future. In the meantime, we would like to offer you the opportunity to continue to have a portion of your salary deposited automatically in the M-Pasandaz account each month. For deposits made starting in August there will be no matching incentive paid, but you are welcome to continue to have part of your salary deducted and placed in savings if you find this useful. For these deposits, you will be free to make withdrawals at any time without penalty.

	Would you enroll now to have part of your salary deposited each month starting in August?		
1	Yes	98	Don't Know
2	No	99	Refuse to Answer

	How important do you think savings is - extremely important, very important, somewhat important, not very important, not at all important?		
1	Extremely important	4	Not very important
2	Very important	5	Not at all important
3	Somewhat important		

	Do you attempt to save money each month?		
1	Yes	98	Don't Know
2	No	98	Refuse to Answer

	If "1" means you are completely dissatisfied on this scale, and "10" means you are completely satisfied, where would you put your satisfaction with your household's financial situation?
	|___|___|
99	Refuse to Answer

	On a scale of 1-10, how satisfied are you personally with the financial situation of your household?
	|___|___|
99	Refuse to Answer

	How confident do you feel that you will be able to meet your financial obligations (pay your bills, buy food/clothes) during the coming month: Highly confident, somewhat confident, Somewhat not confident, Not confident at all?		
1	Highly confident	3	Some What not confident
2	Somewhat confident	4	Not confident at all

	How confident do you feel that you will be able to meet your financial obligations 1 year from now: Highly confident, somewhat confident, Somewhat not confident, Not confident at all?		
1	Highly confident	3	Some What not confident
2	Somewhat confident	4	Not confident at all

	Do you feel that you will be able to someday retire, stop working, and live off of your accumulated savings?		
1	Yes	2	No

	What prevents you from saving? (not important, too many expenses, benefits are too small, no place to save, etc)		
1	Not important	3	Benefits too small
2	Too many expenses	4	No place to save
5	Other (Specify)		

	During the last seven days how many times did one or more people in your household not receive a regular daily meal?
|___|___| Times

	Taking all things together, do you think you are, Very happy, Somewhat happy, little happy or Not at all Happy:		
1	Very happy	3	little happy
2	Somewhat happy	4	Not at all happy
99	Refuse to Answer		

	All things considered, how satisfied are you with life as a whole? Please tell me your answer on a 10 point scale, where 1 represents Most Dissatisfied, 10 represents Most Satisfied."
	10 point scale: 10=Satisfied; 1=Dissatisfied
	|___|___|
99	Refuse to Answer

	All in all, how would you describe your state of physical health these days? Would you say it is…?		
1	Very good	4	Poor
2	Good	98	Don't Know
3	Fair		

	Over the past 3 months were you unable to perform normal activities for at least 7 days due to an illness/injury?		
1	Yes	2	No

	Has your participation in M-Pasandaz changed your desire to save?		
1	Yes	98	Don't Know
2	No	99	Refuse to Answer

Baseline survey questions (intelligence, risk, preferences)

	If it takes five machines five minutes to make five widgets, how long does it take 100 machines to make 100 widgets?
	|___|___| Min
98	Don't Know
99	Refuse to Answer

	In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half of the lake?
	|___|___| Days
98	Don't Know
99	Refuse to Answer

	Suppose Ahmad earns a salary of 1000 dollars a month. He obtains a ten percent raise this year and a ten percent raise next year. How much exactly will his income be after the second raise?
	|___|___|___|___|
98	Don't Know
99	Refuse to Answer

There are many decisions we make in life that could lead to a range of outcomes. For example, when we make a business investment, we are not sure that the business will be successful. This phenomenon is called risk. Many decisions involve risk. For example, if you decide to sell a new type of product or service, how much profit will you earn? We are interested in understanding more about how business owners think about risk.

	How do you see yourself - are you in general a person who takes risk or do you try to avoid risks? Please self-grade your choice (ranging between 0-10), where 0 represents "not at all prepared to take risk" and 10 represents extremely prepared to take risk.
	|___|___|

	How many bank accounts do you personally do you have?		**|___|**
98	Don't Know	99	Refuse to Answer

	If you had a technical problem with your cell phone, who would you mainly ask for help? (for example if your phone would not turn on or allow you to make calles)		
1	I can fix it myself	4	Cell phone retailer/repair shop
2	A relative	5	I would purchase a new phone
3	A neighbor or friend		
6	Other (Specify)		

	Do you withdraw your entire salary each month after you are paid, or do you leave a fraction on M-paisa?
1	Withdraw entire monthly salary
2	Leave some fraction on as an M-paisa balance

C.3 Present Bias Elicitation

Below, we provide the survey instrument used to elicit the present bias parameter used in the regression in Table 6. This instrument is a modified version of the time-dated price list method proposed by Andreoni et al. (2015), where payments were made using M-Paisa (mobile money). In our case, the incentivized measure leverages the fact that employees had received their salaries using mobile money for several years, and therefore had a high degree of confidence that they would receive their payments.

As noted in the text, however, this measure may my fungible to respondents (Cubitt and Read, 2007; Chabris et al., 2008; Andreoni and Sprenger, 2012; Augenblick et al., 2015; Carvalho et al., 2014; Andreoni et al., 2016). In addition, we lack endline inconsistency measures for 175 employees, or 18.4% of our sample. Of these, 131 (13.8% of sample) did not complete an endline survey - primarily due to leaving Roshan before the end of the experiment. The remaining 44 employees (4.6% of sample) completed endline surveys but did not complete the inconsistency elicitation.

For this reason, we also separately estimate the regressions in Table 6 using a different measure of present bias, elicited at baseline. In this protocol, subjects were asked: "Suppose someone was going to pay you USD 450 in one month. He/she offers to pay you a lower amount today. What amount today would make you just as happy as receiving USD 450 in one month?" and "Suppose someone was going to pay you USD 450 in 13 months. He/she offers to pay you a lower amount in 12 months time. What amount in 12 months would make you just as happy as receiving USD 450 in 13 months?" We identify someone as present-biased if the response to the first question is a lower amount than the response to the second question.

Results using this measure of present bias are reported in Table A12, and are qualitatively similar to those in the main text. All employees in our sample completed a baseline survey but 53 employees (5.5% of sample) did not complete the baseline elicitation.

TODAY and 4 WEEKS from today

For each decision number (1 to 5) below, decide the AMOUNTS you would like for sure today AND in 4 weeks by checking the corresponding box.

Example: In Decision 1, if you wanted AFN 250 today and AFN 0 in four weeks you would check the left-most box. Remember to check only one box per decision!

1. Would you like to receive	Payment TODAY	AFN 250	AFN 125	AFN 0
	and			
	payment in 4 WEEKS	AFN 0	AFN 125	AFN 250
		☐	☐	☐
2. Would you like to receive	Payment TODAY	AFN 225	AFN 113	AFN 0
	and			
	payment in 4 WEEKS	AFN 0	AFN 125	AFN 250
		☐	☐	☐
3. Would you like to receive	Payment TODAY	AFN 200	AFN 100	AFN 0
	and			
	payment in 4 WEEKS	AFN 0	AFN 125	AFN 250
		☐	☐	☐
4. Would you like to receive	Payment TODAY	AFN 175	AFN 88	AFN 0
	and			
	payment in 4 WEEKS	AFN 0	AFN 125	AFN 250
		☐	☐	☐
5. Would you like to receive	Payment TODAY	AFN 150	AFN 75	AFN 0
	and			
	payment in 4 WEEKS	AFN 0	AFN 125	AFN 250
		☐	☐	☐

4 WEEKS *and* 8 WEEKS from today

For each decision number (6 to 10) below, decide the **AMOUNTS** you would like for sure **in 4 weeks AND in 8 weeks** by checking the corresponding box.

Example: In Decision 6, if you wanted AFN 250 in four weeks and AFN 0 in eight weeks you would check the left-most box. Remember to check only one box per decision!

6. Would you like to receive	payment in 4 WEEKS…	AFN 250	AFN 125	AFN 0
	and			
	payment in 8 WEEKS	AFN 0	AFN 125	AFN 250
		☐	☐	☐
7. Would you like to receive	payment in 4 WEEKS…	AFN 225	AFN 113	AFN 0
	and			
	payment in 8 WEEKS	AFN 0	AFN 125	AFN 250
		☐	☐	☐
8. Would you like to receive	payment in 4 WEEKS…	AFN 200	AFN 100	AFN 0
	and			
	payment in 8 WEEKS	AFN 0	AFN 125	AFN 250
		☐	☐	☐
9. Would you like to receive	payment in 4 WEEKS…	AFN 175	AFN 88	AFN 0
	and			
	payment in 8 WEEKS	AFN 0	AFN 125	AFN 250
		☐	☐	☐
10. Would you like to receive	payment in 4 WEEKS…	AFN 150	AFN 75	AFN 0
	and			
	payment in 8 WEEKS	AFN 0	AFN 125	AFN 250
		☐	☐	☐