

Rewarding Effort or Luck? Performance Pay and Morale among Credit Officers in Uganda*

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October 21, 2026

Abstract

Even within the same job, workers may face very different conditions because they serve different clients or markets. As a result, measured performance can reflect both worker effort and assignment quality. This creates a challenge for incentive design: uniform individual performance pay may reward workers with favorable assignments more than equally productive workers facing worse ones. We study two ways employers can address this problem: team incentives, which pool performance across workers, and rotation, which periodically reallocates assignments. Both can make rewards more equitable, but team incentives can weaken individual incentives and rotation can disrupt workers' accumulated local knowledge. We study these trade-offs in a randomized controlled trial among credit officers in Uganda, whose lending and repayment outcomes depend on both effort and portfolio quality. Individual incentives without rotation generate the highest performance per active worker, driven mainly by new lending. In contrast, team incentives and rotation reduce worker exit and improve job satisfaction, workplace support and cohesion. The results highlight a broad trade-off: incentive schemes that maximize short-run worker performance may come at the cost of worker retention and well-being.

Keywords: performance pay, individual and team incentives, rotation, performance, retention, worker morale. *JEL classification:* D22, J28, J33, J63, M52.

*Throughout the project, we benefited from invaluable field research assistance from Giuliana Ghia, Ulrike Lich, Benedict Pfeuffer, and Myrna Shehata and excellent research assistance from Noga Barak, Alessio Giorgetta, Mira Heinonen, Francesco Marchese, Valentina Piersanti, Joonatan Mottershead, Matteo Ruzzante, Sunakshi Jindal, and Efrat Shamir. Implementation would not have been possible without the support of BRAC and BRAC IERC, especially Malik Asif Rusd, Denis Kiseka, Wameq Raza and Munshi Sulaiman, and all the enumerators who worked on data collection for this study. We are also grateful for helpful comments from many seminar and conference participants.

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1 Introduction

Workers doing the same job may face different conditions, causing equal effort to produce different levels of measured performance. Salespeople face markets with different demand levels, teachers handle classes with stronger or weaker initial preparation and responsiveness to teaching, and loan officers are assigned borrowers with better or worse repayment prospects. Because these conditions are largely outside workers' control, and tailoring incentives to every assignment would be prohibitively complex, individual performance pay may reward assignment quality as well as effort. Workers with less favorable assignments may therefore earn less than equally hard-working colleagues with better assignments, potentially reducing job satisfaction and increasing turnover.

In this paper, we study two possible organizational responses to the challenge of fairly incentivizing workers who face different assignments or working conditions. First, employers can base compensation on team performance, thereby pooling the consequences of favorable and unfavorable assignments across workers. Second, they can retain individual performance pay but periodically rotate assignments, thereby reducing the persistence of these differences across workers. Both can insure workers by reducing the extent to which pay depends on any single assignment. They may also strengthen workers' sense of teamwork and encourage mutual support. However, these benefits may come at a cost. Team incentives weaken the link between a worker's own effort and compensation and may encourage free-riding, while rotation may disrupt the learning and relationships that workers develop through repeated interactions.

We examine these trade-offs among credit officers employed by BRAC, a large microfinance institution in Uganda. Credit officers manage portfolios of group-based microloans. Their effort can affect loan volume and repayment through borrower screening, loan disbursement, and follow-up on late payments. However, these outcomes also depend on the quality of the portfolio assigned to each officer. Portfolio allocations are largely outside the officers' control, and some officers are assigned borrower groups with stronger demand for loans and better repayment prospects than others.

We conducted a nationwide field experiment in collaboration with BRAC, covering 158 branches and 683 credit officers (COs). BRAC introduced a quarterly bonus, paid on top of officers' fixed salaries when specified performance targets were met, and we randomly assigned branches to one of three treatments. Under Individual, each officer's bonus depended on the

performance of her own loan portfolio. Under Team, each officer's bonus depended on the aggregate performance of all officers in her branch. Under Rotation, bonuses depended on each officer's own performance, but portfolios were reassigned across officers every two quarters. In all three treatments, the bonus rewarded borrower growth, loan disbursement, and repayment performance. We study how Individual, Team, and Rotation affect retention and performance, as well as workplace support and cohesion.

To organize the empirical analysis, we develop a conceptual framework in which workers choose effort and whether to stay in the job. The framework highlights three channels through which the treatments affect retention and shows that their overall effects are theoretically ambiguous. First, Team and Rotation provide portfolio insurance: they shift expected payoffs from COs with better initial portfolios to those with worse ones. Because COs with weak portfolios are the most likely to be at the margin of exit, this shift tends to raise retention, even without increasing average expected payoffs or well-being. Second, the treatments change the externalities COs impose on one another, with ambiguous effects on retention. Team incentives weaken the link between a CO's own effort and her payoff, inviting free riding, but they also reward helping colleagues, which can offset this. Both Team and Rotation can also improve perceived fairness and cohesion when initial portfolios are unequal, which may support retention independently of effort incentives. Third, exits may raise workload and effort costs of the COs who remain, an indirect channel that favors the treatments with higher retention.

In the data, we find that worker exit is about 40% lower under Team and Rotation than under Individual. The additional quitting under Individual comes primarily from workers with weaker initial portfolios. Exit under Individual is also higher than before the bonus scheme was introduced. Together with survey evidence that workers under Individual report weaker workplace support and cohesion, these results suggest that higher exit may reflect both lower expected bonuses among workers with weaker portfolios and non-monetary costs, such as perceived unfairness and weaker workplace relationships.

Turning to performance, aggregate branch outcomes are broadly similar across treatments on all measures. Performance *per active worker*, however, is higher under Individual. Part of this difference is mechanical: because Individual branches retain fewer workers, the remaining COs manage more existing groups and loans. Higher new lending, however, does not follow mechanically from portfolio reassignment. Originating new loans requires COs to identify and screen borrowers, verify their businesses, and process their applications. The results indicate

that COs under Individual issue 9% more new loans than under Team and 13% more than under Rotation, although only the difference with Rotation is statistically significant. This pattern is consistent with stronger effort under Individual, where bonuses depend directly on each CO’s performance and are not subject to free-riding. Moreover, unlike under Rotation, portfolios remain with the same CO, preserving portfolio-specific knowledge. However, Individual also shifts lending toward shorter-term loans and borrowers who are presumably easier to serve – that is, those who are less remote and more educated – creating a trade-off between lending quantity and outreach to disadvantaged borrowers.

The treatments also differ in bonus attainment. Workers are more likely to receive a bonus under Individual or Rotation than under Team. Yet higher bonus receipt under Individual does not translate into greater reported well-being. Workers under Individual report lower job satisfaction and a lower expectation of remaining in the job, especially among those with weaker initial portfolios. They also report weaker perceived workplace support and cohesion than workers under Team or Rotation. Portfolio insurance alone cannot account for these patterns: it redistributes well-being across workers but does not change average well-being, whereas we observe differences in average well-being across treatments. The results are instead consistent with the presence of non-monetary workplace benefits under Team and Rotation.

Our paper contributes to the literature on incentive design in organizations. A large theoretical literature studies performance pay when effort is not contractible and compensation must be tied to observable performance ([Hart and Holmström, 1987](#); [Holmström, 1982](#); [Lazear, 1986](#); [Prendergast, 2000](#)). We focus on a feature common to many workplaces: workers face persistent differences in assigned conditions and can respond through both effort and retention. Because a weaker portfolio makes a given target harder to reach, an identical individual bonus scheme can generate unequal returns to effort. We argue that this creates a role for team incentives and rotation, which pool assignment risk.

We also speak to the empirical literature on worker incentives.¹ Much of this literature has focused on worker performance, with relatively less attention to retention, although turnover can erode worker experience and disrupt workplace stability ([Deserranno et al., 2026](#)). We study both outcomes and show that incentive schemes need not improve them together.² In

¹For reviews of the literature on worker incentives, see [Finan et al. \(2017\)](#), [Besley et al. \(2022\)](#), [Xu et al. \(2023\)](#), and [Hoffman and Stanton \(2025\)](#). For studies of incentives and credit officer performance and well-being in microfinance, see [Cole et al. \(2015\)](#); [Czura et al. \(2026\)](#); [Giné et al. \(2020\)](#); [Tzioumis and Gee \(2013\)](#).

²[Leaver et al. \(2021\)](#) find that teacher performance pay in Rwanda improved student learning without affecting

our setting, individual incentives without rotation create a trade-off for the firm: they increase short-term performance per active worker but reduce retention and workforce stability.

Our experiment also connects the distinct literatures on team incentives and worker rotation. Existing studies examine these policies separately (on team incentives, see [Delfgaauw et al., 2022](#); [Erev et al., 1993](#); [Hamilton et al., 2003](#); [Muralidharan and Sundararaman, 2011](#); on worker rotation, see [Bhowal et al., 2021](#); [Eriksson and Ortega, 2006](#); [Fisman et al., 2017](#); [Hertzberg et al., 2010](#)).³ We compare both team incentives and individual incentives combined with rotation against individual incentives without rotation in the same experiment, explicitly studying how each performs when workers begin with unequal assigned conditions.

Finally, we contribute to the literature on incentives and worker well-being ([Baktash et al., 2022](#); [Dahl and Pierce, 2020](#); [Dur and Sol, 2010](#)), and to broader work on morale, inequality, and fairness within organizations ([Akerlof and Yellen, 1990](#); [Fehr and Schmidt, 1999](#)). [Breza et al. \(2018\)](#) show that workers may reduce effort when coworkers receive different wages and the productivity differences underlying these wage gaps are not clearly observable. We show that morale can also suffer when workers face the same incentive formula but differ in their likelihood of earning a bonus because of differences in their assigned portfolios.

2 Context, Empirical Design and Data

2.1 Context

We conduct the experiment within BRAC’s microfinance group lending program in Uganda, that offers small business loans to women with limited access to formal credit.

BRAC organizes its operations around local branch offices, and our study covers nearly the entire network: 158 branches.⁴ Each branch is headed by a branch manager and typically

teacher retention. By contrast, in [George and Mattsson \(2026\)](#), for example, a large salary increase for frontline bureaucrats in India reduced quitting but did not improve performance. In [Kala and McKelway \(2026\)](#), manager-allocated recognition increased productivity without affecting worker exit, whereas worker-allocated recognition increased attendance but affected neither productivity nor exit.

³In [Hamilton et al. \(2003\)](#), a US garment plant’s shift to team production and group piece rates increased productivity. [Muralidharan and Sundararaman \(2011\)](#) find that both individual and group teacher bonuses in India increased test scores, with larger long-run effects under individual bonuses. In banking, [Hertzberg et al. \(2010\)](#) find that anticipated rotation made loan officers’ reports more accurate, [Fisman et al. \(2017\)](#) document via rotation-induced matches that officer – borrower cultural proximity improved lending and repayment, and [Bhowal et al. \(2021\)](#) show mandatory rotation worsened loan performance when lending relied on soft information.

⁴We exclude three branches that faced operational problems. One of these was part of our original sample (which originally included 159 branches) but was inactive at the start of the intervention. The sample covers 89 of

employs between four and six credit officers (COs), who are the focus of this paper. COs are responsible for managing BRAC's microfinance groups and the borrowers within them.

The average CO oversees 15 microfinance groups comprising 307 active loans. Each group is based in a different village, where the CO organizes weekly or bi-weekly meetings to collect repayments on outstanding loans. COs also follow up on late repayments and generate new lending. They identify and encourage potential borrowers to apply, verify their businesses and eligibility, help them complete the required paperwork, and submit their applications for approval. To make travel and group meetings more manageable, the groups assigned to each CO are typically located in a geographically clustered set of villages.⁵ Taken together, these field activities account for approximately 79% of COs' working time. They spend the remaining 21% on administrative duties, including attending meetings with colleagues and managers and completing paperwork at the branch office.

COs have an average tenure at BRAC of 48 months and an average age of 30. Fifty-four percent have a post-secondary degree, and 56% are married. In accordance with BRAC policy, all COs, branch managers, and clients in the program are women. These descriptive statistics are reported in Table 1, which combines BRAC's administrative records with the CO survey data described in Section 2.3.

Differences in portfolio quality across COs and portfolio persistence. On average, a CO manages a loan portfolio with a total volume of approximately UGX 337 million, or USD 227,300 in PPP terms. At baseline, 2.3% of loans are in arrears.

These averages mask substantial differences in portfolio size and quality, both across and within branches. Table 1 shows that, across branches, the average loan volume per CO ranges from UGX 251 million at the 25th percentile to UGX 429 million at the 75th percentile, while the share of loans in arrears ranges from 0.86% to 2.76% at the same percentiles.

Differences also emerge among COs working in the *same* branch. Figure A2 displays the within-branch dispersion in loan volume and the share of loans with any arrears, showing substantial dispersion in both outcomes across the distribution of branch-level means. Overall, within-branch variation accounts for 52% of the total variance in the share of loans with any arrears and 44% of the total variance in loan volume. Thus, even COs working side by side in

Uganda's 128 districts, and 56% of the branches are rural.

⁵All loans have individual liability and require no physical collateral, but they vary in duration: borrowers repay them over either 20, 30, or 40 weeks.

the same branch may face substantially different assignment quality, with some managing more favorable portfolios than others.

Portfolios differ across COs not only in their levels but also in their trajectories. Before the intervention, for example, some portfolios were growing in loan volume and borrower numbers and improving in repayment performance, while others were stagnant or declining. To summarize these trajectories, we construct a baseline portfolio-quality measure for each CO by averaging the shares of pre-intervention months in which loan volume, the number of loans and repayment performance improved relative to the previous month. Section 2.3 describes this measure in detail. 30% of the total variation in this portfolio quality measure occurs within branches.

Differences in portfolio quality across COs largely reflect the timing of hiring, rather than systematic differences in CO experience or qualifications. When a CO joins a branch, for example to replace a departing colleague, she typically takes over groups located in a geographically clustered set of villages. Her initial portfolio quality therefore depends largely on which groups or villages are unassigned when she arrives. Consistent with this assignment process, Table A2 shows that portfolio quality is uncorrelated with CO tenure, education, or branch manager quality. Average portfolio quality is similar among workers with below- and above-median tenure (Table 1).

Before the experiment, compensation was largely fixed and did not depend on the quality of the portfolio a CO managed. COs received a fixed monthly salary of UGX 550,000 (USD 439 in PPP terms).⁶ Portfolio assignments were also highly persistent. Once assigned a set of groups, COs typically continued to manage them, as there was no formal rotation policy.⁷ Initial differences in portfolio quality could therefore persist over time. A CO who started with a relatively weak portfolio could remain at a disadvantage relative to her colleagues in the same branch, without any adjustment to her compensation. The experiment changes these two features of the status quo by varying how performance determines bonus pay and whether portfolio assignments persist over time, as described in the next section.

⁶A branch-level bonus existed, but with very demanding targets: fewer than 2% of branches received a payment.

⁷Portfolios were reassigned only in exceptional circumstances, such as when a CO took maternity leave or left the organization.

2.2 Empirical Design

In October 2018, BRAC introduced a new bonus scheme for COs nationwide. The scheme rewards COs for maintaining a minimum number of borrowers, increasing the number of borrowers, and keeping loans with arrears under control. Our experiment randomized two features of the new scheme across branches: whether bonuses were based on individual or branch-level performance, and whether COs remained assigned to the same portfolios or were periodically rotated across portfolios. We first describe the bonus scheme implemented in all branches, then describe the treatments, and finally highlight important features of the context.

New incentive scheme. The incentive scheme rewards COs for maintaining a minimum borrower base, expanding the number of borrowers, increasing new loan disbursements, and limiting arrears. Specifically, COs receive a quarterly bonus if they meet four KPIs:

1. Minimum borrower base: the average number of borrowers per CO must be at least 260 in branches where groups meet weekly and at least 300 in the 13% of branches that BRAC categorizes as “hard-to-reach areas,” where groups meet every two weeks.

2. Arrears growth: relative to the previous quarter, the share of loans more than 30 days in arrears (PAR30) must not increase by more than 0.20 percentage points. If branch-level PAR30 exceeds 5% at the start of the quarter, it must not increase at all.

3. Borrower growth: each CO must meet a minimum growth target defined relative to the borrower base at the end of the previous quarter. Branch-level targets for this KPI are set centrally by the head office. See Appendix Table A1 for more details.

4. New loan disbursement: each CO must attain at least 95% of a target for total new loan disbursement volume. As with KPI 3, branch-level disbursement targets are set centrally by the head office. See Appendix Table A1 for more details.

Performance on KPI 4 determines the bonus amount, which ranges from UGX 150,000 when a CO attains 95% of the target to UGX 450,000 when she attains 110%. This is a substantial incentive: the bonus ranges from USD 120 to USD 359 in PPP terms, equivalent to approximately 8 to 21% of a CO’s quarterly income.

Treatment assignment. The 158 branches were randomly assigned to one of three treatments. In the *Individual treatment* (52 branches), a CO receives a bonus if the performance of *her*

own portfolio meets the KPIs. In the *Team treatment* (53 branches), eligibility is determined using the same KPI rules and thresholds, but these are applied to *branch-level averages*. In the *Rotation treatment* (53 branches), bonuses remain individual, as in the Individual treatment, but portfolios are periodically rotated across workers within the branch.

More precisely, the treatments differ in how KPIs 2, 3, and 4 are measured. KPI 1 is always measured at the branch level using the average number of borrowers per CO and is therefore calculated identically across treatments. Under Individual, KPIs 2, 3, and 4 are measured using the performance of each CO's own portfolio.

Under Team, performance on KPIs 2, 3, and 4 is first averaged across COs in the branch. These branch-level averages are then compared with the same targets used under Individual. If the branch meets all four KPI targets, every CO in the branch receives the same bonus, regardless of her individual performance.

Under Rotation, bonuses are calculated as under Individual, but all portfolios are reassigned across COs every two quarters according to a prespecified randomized schedule. The first rotation took place in January 2019, three months after the introduction of the bonus scheme. At each rotation, a CO hands over her full set of groups to a colleague and takes over a new set of groups previously managed by another CO (see Figure A1 for an illustration). Staff are informed at the start of the experiment that rotation will take place every six months, but they learn which groups they will inherit only when the branch receives the assignment schedule for the upcoming rotation.⁸

Treatments were randomized at the branch level so that all COs within a branch faced the same incentive scheme, thereby limiting spillovers. Randomization was stratified by area, the number of COs in the branch, whether the branch was urban or rural, and baseline branch-level repayment performance (share of loans in arrears over the 12 months before the experiment).

Table A3 presents balance checks using administrative data from the quarter before the intervention and the baseline survey described in Section 2.3. Overall, the treatment groups are well balanced, with a few exceptions. COs under Rotation appear to have slightly longer tenure and are more likely to be married and have children than those under Team.

⁸The research team randomized the rotation schedule. Before each rotation, each branch received a hard copy of the CO-group assignments for the subsequent two quarters, which was posted on the branch notice board. Compliance was high: close to 90% of groups were assigned to the intended CO after rotation. Our estimates therefore capture intent-to-treat effects of the rotation schedule.

Important features of the design. BRAC chose the bonus structure and rotation frequency to fit its operations. Three features are particularly important for interpreting the results.

First, in the Rotation treatment, BRAC scheduled portfolio rotations every two quarters, at the boundary between quarterly bonus periods. This avoided changing assignments within a performance period while giving COs time to learn their new portfolios. Over six months, a CO would typically meet each group between 20 and 25 times. The interval also aligned with the lending cycle: it covered a complete 20-week loan cycle and more than half of a 40-week cycle. The rotation frequency was chosen to balance two forces: more frequent rotation may reduce the persistence of unequal portfolio assignments, but it can disrupt borrower relationships and soft information. Less frequent rotation preserves these relationships but may weaken the disciplining effect of reassignment and allow portfolio differences to persist longer (Bhowal et al., 2021; Drexler and Schoar, 2014; Hertzberg et al., 2010). Because longer loans could remain outstanding when a portfolio was reassigned, Rotation could also require coordination between the CO who originated a loan and the CO who subsequently collected its repayments.

Second, BRAC used a threshold bonus, a common form of compensation for salespeople and other frontline agents (Annan and Raymond, 2026; Oyer, 2000). This scheme is simple and transparent, and workers receive a bonus only if they meet prespecified performance targets. Requiring COs to meet all KPIs also limits the scope for a quantity-quality trade-off: a CO cannot compensate for poor repayment performance by increasing loan volume.

Third, the thresholds set centrally by BRAC partly account for local conditions. Borrower-growth targets vary across branches, disbursement targets depend on branch size, and minimum borrower requirements vary with meeting frequency, which partly reflects local economic activity and population density. Branch-specific targets reduce the extent to which differences in market potential across branches' catchment areas affect how hard the thresholds are to reach, but they do not address differences in portfolio quality within a branch: achieving the same growth may remain easier in portfolios with stronger demand and repayment conditions.⁹

⁹Fully individualized targets are not practically implementable. BRAC would need to assess the conditions of each portfolio, estimate how they affect attainable performance, and continually update the targets, making the process administratively complex.

2.3 Data

We use administrative records to measure worker retention, branch performance, bonus receipt, and baseline portfolio quality, and staff surveys to measure job satisfaction and workplace support. The portfolio-quality measure allows us to test a key implication of the framework: treatment effects may vary with workers' initial conditions.

Administrative data. We use loan-level administrative records from Q3 2018 to Q4 2019 to measure lending activity and repayment. For each loan, we observe the disbursement date, loan amount, loan duration, and loan cycle. These records allow us to construct measures of lending activity at the branch and CO level including the number of groups, loans, and loan volume. For each loan, we also have repayment data that record scheduled repayment dates and repayments received. These data allow us to determine whether a loan is in arrears and calculate the share of loans in arrears, but not the exact amount overdue or BRAC's official PAR30 measure.

For each CO, we observe whether she is active in each full quarter between Q3 2018 and Q4 2019 and which borrower groups she is assigned to. This allows us to track worker exits and new hires.^{10,11} Dismissals are nearly non-existent in our context, so throughout the paper, worker exit refers to voluntary departures.

Because of registration lags, for instance after COs exit, loans sometimes temporarily appear without an updated CO assignment in our data. This means that a share of loans that we observe in the disaggregated loan data cannot be matched to any CO, only to a branch. To ensure that we capture all lending activity we therefore conduct the main performance analysis at the branch-quarter level, ensuring that these loans remain included when analyzing outcomes for both baseline COs and new hires.

Survey data. We complement the administrative records with two staff surveys. The baseline survey was administered in September 2018, one month before the new bonus scheme was introduced, and was completed by 98% of COs. It contained demographic characteristics and measures of job satisfaction and support from branch managers and colleagues. The endline survey was administered in February 2020, about one and a half years after the introduction of

¹⁰We match 637 of the 683 baseline COs (93%) to the Q3 2018 loan records. The remaining 46 COs did not manage their own portfolios in that quarter. The data also include "returning" workers who were not active at baseline – for example, because they were on maternity leave – but returned later.

¹¹March 2020 was impacted by the COVID-19 pandemic, with the COs' field visits severely disrupted at the end of the month. We therefore do not have corresponding quarterly activity measures for Q1, 2020. Using records from January and February 2020 combined with administrative data and survey response data we can, however, construct a reliable measure of COs active at endline (Feb 2020) which we use to define our "endline sample".

the bonus scheme. It contained the same core measures, along with more detailed measures of workplace cohesion and cooperation. The target sample was all COs active at endline, comprising both retained baseline workers and new hires, and 97% completed the survey. Both surveys were collected through face-to-face interviews by enumerators hired by the research team.

Between August and October 2019, we also administered a phone survey to a random subsample of approximately 7,000 borrowers with active loans. We collected individual borrower characteristics (e.g., household income, education, distance to microfinance group meetings), information on loan experience and use, and measures of borrower’s interaction with their CO.

Measuring portfolio quality. We measure baseline portfolio quality as the simple average of three shares, each computed using administrative data from 2017: (1) the share of months in which portfolio volume increased relative to the previous month; (2) the share of months in which the number of loans increased; and (3) the share of months in which arrears declined. The measure does not require all three outcomes to improve in the same month. The “baseline portfolio” is the portfolio assigned to the CO at the start of the intervention. Because measuring these trajectories requires multiple months, we use the full year 2017. The portfolio-quality measure is missing for 13% of baseline COs whose portfolios are not observed in the 2017 data. As we will see later, higher baseline portfolio quality positively correlates with meeting the individual KPI targets and attaining the bonus for a given level of effort.

3 Conceptual framework

We develop a stylized framework to understand how Individual incentives, Team incentives, and portfolio Rotation affect worker effort, performance, retention, and well-being. The framework centers on a key feature of our setting: COs have portfolios of different quality for reasons outside their control. It shows how the treatments alter the relationship between initial portfolio quality, expected bonuses, and the value of remaining on the job. The framework also clarifies the distinct trade-offs generated by Team incentives and Rotation and motivates comparisons of both average treatment effects and how these effects vary with a CO’s initial portfolio quality. In particular, it illustrates how Team incentives and Rotation generate a portfolio-insurance effect. The framework is deliberately stylized and is intended to organize the empirical analysis rather than make a separate theoretical contribution.

3.1 Model

Let a branch consist of COs $N = \{1, \dots, n\}$, $n \geq 2$, under treatment $\omega \in \Omega = \{\text{Ind}, \text{Team}, \text{Rot}\}$, with initial portfolio qualities $q^0 = (q_1^0, \dots, q_n^0) \in [0, 1]^n$. Suppose outside options $\underline{v}_i$ are i.i.d. across COs with a c.d.f. F and a unimodal density f , independent of q^0 .

Timing. We approximate the multi-period interactions with a single-round sequential game.¹² Each CO i observes q^0 and her outside option $\underline{v}_i$ and chooses whether to exit ($\chi_i = 0$) or stay ($\chi_i = 1$). A CO who exits receives $\underline{v}_i$ and is replaced by a new CO who takes over slot i and portfolio q_i^0 . We let the payoffs depend on the participation vector $\chi := (\chi_1, \dots, \chi_n)$ to account for possible disruption caused by turnover. Then, the potential portfolio rotation takes place: $q = q^0$ if $\omega \in \{\text{Ind}, \text{Team}\}$, and $q_i = q_{\pi(i)}^0$ if $\omega = \text{Rot}$, where π is drawn uniformly from the permutations of N . Given the adjusted portfolios, each CO chooses an effort vector $e_i \in [0, 1]^k$, where k denotes the number of tasks across which the CO allocates effort; $e = (e_1, \dots, e_n) \in E^n := [0, 1]^{k \times n}$ denotes an effort profile.¹³ Finally, performance is realized and bonuses, b_i , are paid.

Payoffs. We write $B_i^\omega(e, q; \chi) := \mathbb{E}^\omega[b_i \mid e_i, e_{-i}, q_i, q_{-i}, \chi]$ for the expected bonuses and assume that it is non-decreasing in (e, q) . A CO receives

$$u_i^\omega(e, q; \chi) = s + B_i^\omega(e, q; \chi) - C_i^\omega(e, q; \chi), \quad (1)$$

where s is the base salary and $C_i^\omega(e, q; \chi)$ the cost of effort that is non-decreasing in e_i . We assume that u_i^ω satisfies the following regularity conditions: for all ω , i , and χ , B_i^ω and C_i^ω are differentiable in (e, q) , and u_i^ω is quasi-concave in e_i . The general formula includes both the case when others' effort and portfolio affect bonuses, as is natural under Team incentives, and the case when bonuses depend only on own effort and portfolio, as under Individual and Rotation.

¹²Note that the general functional form captures potential intertemporal incentives arising from the repeated nature of the setting in reduced form.

¹³Multi-dimensional effort allows for distortions in how COs allocate effort across different tasks, such as screening borrowers, collecting repayments, and helping colleagues.

3.2 Key Trade-offs and Empirical Implications

We use the above framework to organize the empirical comparisons and refer to them as empirical implications rather than formal propositions.

Portfolio insurance and Rotation. We start by deriving the *portfolio insurance effect* of Rotation relative to pure Individual incentives. To do so, consider a simple form of (1):

$$u_i(e_i, q_i) = s + B(e_i, q_i) - C(e_i, q_i), \quad (2)$$

where payoffs depend only on own effort and portfolio and, in particular, not on the treatment or colleagues' participation or effort decisions. We consider how adding these elements would plausibly change our predictions at the end of this section. Under specification (2), Individual and Rotation yield the same optimal effort and payoff conditional on the adjusted portfolio. Let the payoff under optimal effort be $u^*(q_i)$. We assume that better portfolios make the job more valuable, so that u^* is increasing in q_i . This holds, for instance, when B is increasing and C is non-increasing in q_i .

However, when it comes to exit decisions, COs face different expected payoffs under Individual and Rotation. Under Individual, the relevant payoff is $u^*(q_i^0)$. Under Rotation, portfolio adjustment implies that the relevant payoff is the branch average, $\bar{u} := \mathbb{E}[u^*(q_i)] = \frac{1}{n} \sum_{j=1}^n u^*(q_j^0)$. A CO stays if this value weakly exceeds her outside option, so her retention probability is $P_i^{\text{Ind}} = F(u^*(q_i^0))$ or $P_i^{\text{Rot}} = F(\bar{u})$, respectively for Individual and Rotation.

Rotation raises the retention of every CO whose initial portfolio is worth less than the branch average, $u^*(q_i^0) < \bar{u}$, and lowers it for COs with above-average portfolios. Because outside options are independent, the probability that all COs in the branch stay is $F(\bar{u})^n$ under Rotation and $\prod_j F(u^*(q_j^0))$ under Individual. The former is weakly larger whenever F is log-concave, which holds for most standard distributions, including the normal, logistic, uniform, and log-normal.¹⁴

In practice, these gains must be weighed against the loss of portfolio-specific knowledge under Rotation. A CO who takes over a new portfolio must learn about new borrowers, which can make each task more costly. To capture this, replace the cost function in (2) with $C^{\text{Rot}}(e_i, q_i) =$

¹⁴Taking logs, the comparison is $n \ln F(\bar{u}) \geq \sum_j \ln F(u^*(q_j^0))$, which follows from Jensen's inequality when $\ln F$ is concave.

$C^{\text{Ind}}(\gamma e_i, q_i)$ with $\gamma \geq 1$. Because the cost of effort is non-decreasing, the payoff from any given portfolio is weakly lower under Rotation. Fewer COs gain from Rotation, and if γ is large enough, Rotation lowers retention for all COs. Higher effort costs also reduce effort, so performance per worker may decline. However, if the loss of portfolio-specific knowledge raises effort costs only modestly (γ close to one), the portfolio-insurance effect dominates, increasing retention:

Implication 1 (Portfolio rotation). If the loss of portfolio-specific knowledge does not raise effort costs, Rotation increases retention among COs with low initial portfolio quality relative to Individual incentives. For standard distributions of outside options, it also increases the probability that all COs stay, and it increases average retention if retention is high, in the sense that every CO would stay with probability at least one half under Individual incentives.¹⁵ If learning about new borrowers raises effort costs under Rotation, these retention gains are smaller and performance per worker may decline.

Importantly, higher retention under Rotation does not reflect higher well-being. Without adjustment costs, rotation only redistributes expected payoffs across COs: the sum $\sum_j u^*(q_j^0)$ is the same under both treatments. Retention changes because the exit decision responds nonlinearly to the value of staying, not because the job becomes more attractive on average. The portfolio-insurance effect also does not rely on risk aversion; it arises with risk-neutral COs.

Team incentives. Under Team incentives, a CO's bonus depends on colleagues' effort and portfolios, so effort choices form a game. Under the regularity conditions above, it has a Nash equilibrium.

To isolate the monetary trade-offs, consider one-dimensional effort and expected individual performance $y(e_i, q_i)$ that is increasing in own effort and portfolio quality and independent of others' effort and portfolios. Effort and portfolio quality are complements: a better portfolio raises the marginal product of effort and does not raise its marginal cost. Suppose linear bonuses: $B(e_i, q_i) = \alpha y(e_i, q_i)$ under Individual incentives, and $B(e, q) = \frac{\alpha}{n} \sum_{j=1}^n y(e_j, q_j)$ under Team incentives, with $\alpha > 0$. The marginal bonus from a given effort is $\frac{\alpha}{n} \partial y(e_i, q_i) / \partial e_i$ under

¹⁵Let m be the mode of F . Because f is nonincreasing above its mode, F is concave on $[m, \infty)$. If every CO stays with probability at least $F(m)$ under Individual incentives, then $u^*(q_j^0) \geq m$ for all j , and Jensen's inequality gives $F(\bar{u}) \geq \frac{1}{n} \sum_{j=1}^n F(u^*(q_j^0))$: average retention is higher under Rotation. If f is symmetric, $F(m) = \frac{1}{2}$. If f is right-skewed, as wage distributions typically are, $F(m)$ is typically below $\frac{1}{2}$, so the condition is weaker.

Team, compared with $\alpha \partial y(e_i, q_i) / \partial e_i$ under Individual. A CO bears the full cost of her effort but receives only $1/n$ of the resulting bonus under Team incentives. This is the classic free-riding effect (Holmström, 1982): effort and bonuses are lower than under Individual incentives.

Free riding lowers overall payoffs, but COs with low portfolio quality may still be better off than under Individual incentives. This is true, for instance, when performance depends strongly on portfolios and the marginal cost of effort is not too high. Then, the average performance under Team is higher than what a CO with a low-quality portfolio would achieve under Individual incentives. As argued for Rotation, when the COs with low-quality portfolios are the likeliest marginal leavers, a policy that makes them better off is likely to improve overall retention through the portfolio insurance effect.

Implication 2 (Team incentives). Team incentives lower effort and bonuses relative to Individual incentives. They may nevertheless increase retention when the portfolio-insurance effect outweighs the free-riding loss.

Because the analysis above assumes one-dimensional effort, it abstracts from the multitasking distortions arising when workers shift effort away from less rewarded tasks toward more rewarded ones, as in Holmstrom and Milgrom (1991). In our empirical context, the bonus rewards borrower growth, loan disbursement, and repayment, but not, for example, outreach to underserved borrowers. Team incentives may mitigate multitasking distortions. Weaker incentives reduce the gains from shifting effort between tasks. In addition, helping colleagues is itself a task that only Team incentives rewards. We return to helping and other externalities at the end of this section.

The role of portfolio quality. Implications 1 and 2 focus on retention levels across treatments. Taken together, the same mechanisms also predict how the association between a CO's initial portfolio quality and her retention differs across treatments. Under Individual incentives, retention, captured by $F(u^*(q_i^0))$, increases with own portfolio quality. Under Rotation, every CO in a branch faces the same value of staying, $\bar{u}$, so her own initial portfolio matters only through its $1/n$ weight in the branch average. Under Team incentives, every CO receives the same bonus, $\bar{b}^{\text{Team}} := \frac{\alpha}{n} \sum_j y(e^{\text{Team}}(q_j^0), q_j^0)$, so her own portfolio raises her bonus only through her $1/n$ share of branch performance. Portfolio quality may also affect the cost of effort, but

the effect should be the same under Team and Individual. Hence, the value of staying rises less steeply with initial portfolio quality under Team than under Individual incentives.¹⁶

Implication 3 (Portfolio quality). Initial portfolio quality is more strongly associated with retention under Individual incentives than under Team incentives or Rotation.

Non-monetary externalities and well-being. Team incentives create a monetary externality: a CO's effort raises her colleagues' bonuses, and this is the source of free riding. The general payoff (1) also allows for non-monetary externalities through the cost term $C_i^\omega(e, q; \chi)$. We highlight three types of externalities. First, exits may impose costs on the COs who stay. Turnover disrupts work, shifts workload, and breaks up working relationships, so a CO's payoff may depend on colleagues' participation decisions, χ . Second, effort choices can reduce colleagues' costs through cooperation, for example by helping with difficult borrowers, so C_i^ω may decrease in some components of e_{-i} . Team incentives strengthen this channel because colleagues' resulting higher performance also raises one's own bonus. Third, perceived fairness depends on the allocation of portfolios and on how the treatment maps that allocation into pay. Under Individual incentives, unequal initial portfolios translate directly into unequal bonuses. Under Team incentives, bonuses are equal, and under Rotation, portfolios are essentially shared. C_i^ω may therefore depend on q_i relative to q_{-i} , and more strongly so under Individual incentives.

These externalities can change COs' well-being in ways that exit decisions do not reveal. A CO's exit decision shows only whether her value of staying exceeds her outside option. Changes in well-being among COs who would stay either way are therefore invisible in retention. Moreover, retention and well-being need not move together: the portfolio insurance effect can raise retention without raising average payoffs, as shown above. We therefore measure job satisfaction and perceived workplace support directly.

Implication 4 (Well-being). Without non-monetary externalities, average well-being is no higher under Team incentives or Rotation than under Individual incentives. Higher average job satisfaction or perceived workplace support under Team or Rotation, despite lower or equal bonuses, therefore indicates that non-monetary externalities matter for COs' welfare.

¹⁶Notice that the value of staying depends on q_i through $\phi^\omega(q_i) := \max_{e_i} \{a^\omega y(e_i, q_i) - C(e_i, q_i)\}$ under both Individual and Team, with $a^{\text{Ind}} = \alpha$ and $a^{\text{Team}} = \alpha/n$. As discussed in the next part, non-monetary benefits, if anything, likely strengthen the stronger link between portfolio quality and retention under Individual.

In the next section, we bring these implications to the data, examining the treatments’ effects on retention, performance, and worker well-being, as well as whether their effects vary with initial portfolio quality as predicted by the framework.

4 Results

4.1 Exit and Number of Active Workers

We first compare worker exit and the number of active workers across treatments using the following branch-level specification:

$$Y_b = \beta_0 + \beta_1 \text{Team}_b + \beta_2 \text{Rotation}_b + \delta X_b + \varepsilon_b, \quad (3)$$

where, depending on the specification, Y_b is the share of workers present at the start of the intervention who had quit by endline (Q4 2019), the number of retained baseline workers, the number of new hires, or the total number of active workers in branch b . Team_b and Rotation_b are treatment indicators, and X_b is the vector of branch-level stratification variables defined above. Individual is the omitted category, so β_1 and β_2 capture the effects of Team and Rotation relative to Individual.

Exit rate. Column 1 of Table 2 shows that 27.4% of baseline COs had exited under Individual by endline, compared with 16.9% under Team and 14.6% under Rotation. Thus, Team and Rotation reduce worker exit relative to Individual by 38% and 47%, respectively. Both differences are statistically significant at the 1% level.¹⁷

Figure 1 plots exits over time. For each treatment, the “pre” coefficient reports the average quarterly exit rate from January to September 2018, before the intervention. The first “post” coefficient reports the exit rate in Q4 2018, the first quarter after the incentive scheme was introduced. The subsequent coefficients report cumulative exit since baseline for the four following quarters.

Two patterns are noteworthy. First, the cumulative exit rate is higher under Individual than under the other two treatment arms throughout the intervention period: the gap emerges in

¹⁷Recall the prediction from Section 3.1 that the portfolio insurance effect reduces exits if most COs stay. This is the case in our sample: 80% of branches lose at most one CO, and 92% lose at most half of their COs during the study period.

Q4 2018, immediately after the incentive scheme is introduced, and persists throughout the study period. Second, exit rises sharply at the start of the experiment under Individual, while it appears, if anything, to decline under Team and Rotation. Although this evidence is only suggestive, it is consistent with the introduction of individual-level performance pay increasing rather than reducing exit. Together with the lower job satisfaction under Individual documented in Section 4.3, this pattern suggests that the non-monetary costs associated with Individual incentives may have outweighed their financial benefits for some workers. We return to this interpretation below.

We next examine which workers are most likely to quit. Implication 3 from the theoretical framework is that initial portfolio quality should be more strongly associated with exit under Individual incentives than under Team incentives or Rotation because Individual bonuses depend more directly on the quality of each worker's own portfolio. We examine this using a CO-level specification that allows the relationship between exit and baseline portfolio quality to vary across treatments:

$$Y_{ib} = \beta_0 + \beta_1 \text{Team}_b + \beta_2 \text{Rotation}_b + \beta_3 Z_{ib} + \beta_4 (\text{Team}_b \times Z_{ib}) + \beta_5 (\text{Rotation}_b \times Z_{ib}) + \delta X_b + \varepsilon_{ib} \quad (4)$$

where Y_{ib} indicates whether CO i in branch b had quit by endline, and Z_{ib} is her baseline portfolio quality. As explained in Section 2.3, higher values of Z_{ib} indicate that the portfolio was already on a stronger trajectory, making the targets easier to reach for a given level of effort. We estimate equation (4) among workers present at baseline. The coefficient β_3 captures the relationship between portfolio quality and exit under Individual, while β_4 and β_5 show how this relationship differs under Team and Rotation.

Table 3, column 2, shows that, under Individual, a 10-percentage-point increase in baseline portfolio quality is associated with a 2.9-percentage-point reduction in exit, relative to the mean of 24.7%. This relationship is significantly weaker under Team. Under Rotation, the relationship is also weaker than under Individual, as the interaction is positive, but smaller and not statistically significant. This is consistent with portfolio reassignment making baseline portfolio quality less predictive of the conditions workers face later in the experiment.

Table A4 examines whether treatment effects on exit vary with other baseline characteristics. We find no significant heterogeneity by education, tenure, marital status, having children, or spending an above-average share of time in the field. We find some heterogeneity by household

income: under Individual incentives, workers from lower-income households are more likely to exit. One possible explanation is that these workers depend more heavily on bonus income and are therefore more likely to exit when their probability of receiving it is low.

Taken together, these results clarify which forces in the theoretical framework dominate. Higher retention under Rotation and Team than under Individual suggests that the portfolio-insurance effect together with non-monetary benefits outweighs the potential costs of changing portfolios and free-riding and weaker individual incentives. Consistent with the portfolio-insurance mechanism, baseline portfolio quality also predicts worker exit more strongly under Individual than under Team, suggesting that Team partly insulates workers from weak initial portfolios.

Number of active workers. Table 2, columns 2-4, shows how differences in exit affect the number of active workers, depending on whether departing workers are replaced. Team and Rotation branches retain more baseline workers, while Individual branches hire more new workers, although the differences in hiring are imprecisely estimated.¹⁸ This additional hiring partly, but not fully, offsets lower retention under Individual. Relative to the Individual mean of 4.29 active workers, Team branches have 0.31 more workers and Rotation branches have 0.62 more, increases of approximately 7% and 14%.

These staffing differences also affect workforce composition. Because Individual branches retain fewer baseline workers and rely more heavily on new hires, their active COs have somewhat lower average tenure than those under Team or Rotation, although the differences are not statistically significant (Table A5). Apart from tenure and some differences in marital status, active workers are similar across treatments in education, presence of children, and the share of time spent in the field at baseline.

4.2 Performance

We now turn to performance. We estimate treatment effects using the branch-level specification (3).¹⁹ We measure performance in Q4 2019 – the last complete quarter for which we observe

¹⁸COs who join during the intervention know the branch’s incentive scheme when they are hired but become eligible for bonuses only after six months of employment.

¹⁹As described in Section 2.3, we use the branch rather than the individual CO as the unit of analysis because a fraction of loans (approx. 5%, balanced across treatment arms) cannot be assigned to a particular worker. Omitting these loans would understate total performance.

performance – using the number and volume of outstanding loans, the share of loans in arrears, and the number and volume of new loans disbursed. We report both aggregate branch and per worker outcomes where the latter is calculated by dividing each branch total by the number of COs active at endline in February 2020.²⁰

Panel A of Table 4 shows no statistically significant differences across treatments in the total number of loans, the share of loans in arrears, or the number and volume of new loans. The only significant difference is in total loan volume, which is higher under Rotation than under Individual, significant at the 10% level. Aggregate branch performance is therefore broadly similar across treatments, even though Individual branches operate with fewer workers.

Panel B shows a different pattern when outcomes are expressed *per active worker*. Relative to Individual, COs under Rotation manage 44 fewer loans (11%), disburse 15 fewer new loans (13%), and issue UGX 15.6 million less in new lending (12%) per quarter. The differences under Team are also economically meaningful, although less precisely estimated: COs manage 26 fewer loans (6%), have UGX 25.1 million less in total loan volume (7%), disburse 11 fewer new loans (9%), and issue UGX 13.9 million less in new lending (10%) per quarter.

These differences in performance per active worker are partly mechanical. Individual branches have fewer active workers, so existing groups and outstanding loans are divided among fewer COs, automatically raising each worker's caseload (Table A6, column 1). However, the increase in new loan disbursements also points to greater effort. Increased workload alone does not generate new loans: originating loans requires recruiting and screening borrowers, verifying their businesses, and processing applications. Consistent with the increase in new lending, COs under Individual report spending 10% more time searching for new borrowers (Table A7, column 1), suggesting they actively seek new clients rather than relying only on their larger portfolios. They also devote a larger share of their working time to monitoring existing clients' businesses (Table A7, column 2), consistent with greater effort to maintain repayment performance. Meanwhile, COs under Team and Rotation spend a higher share of work time interacting with colleagues (columns 3-4).²¹ Finally, the additional time devoted to monitoring existing clients under Individual may help explain why arrears rates remain similar to those under the other treatments

²⁰Results are similar when we instead divide by the number of COs active in all three months of Q4 2019, the quarter in which performance is measured (Table A9, panel A). The share of loans in arrears is reported only at the branch level and is not divided by the number of COs.

²¹The treatments do not significantly affect total weekly hours or the shares of time spent on borrower group meetings, overdue-payment follow-up, or one-on-one meetings with the branch manager.

despite larger caseloads and the lower-quality groups inherited from departing workers.

Differences in worker selection do not appear to explain the higher lending per active worker under Individual. Individual branches experience higher exit and consequently have a larger share of less-experienced new hires. Holding workforce composition fixed should therefore, if anything, increase the performance advantage of Individual, consistent with our results in Table A9.²²

We next examine whether the greater effort devoted to borrower growth, loan disbursement, and repayment under Individual – all directly rewarded by the bonus scheme – comes at the expense of objectives that are not explicitly incentivized. BRAC aims to expand financial inclusion among women with limited access to credit, but the bonus does not specifically reward lending to remote or underserved borrowers. COs may therefore prioritize borrowers who are easier to reach or loans that require less time to originate. Consistent with this, Table A6 shows that COs under Individual issue more short-duration, 20-week loans per worker than those under Team or Rotation. These loans require less screening and can be processed more quickly than other loans. Table A8 also shows that borrowers under Individual have businesses located closer to their group meeting points and are more educated, with differences more pronounced relative to Team. Taken together, this suggests that Individual generates more new lending per active worker partly by favoring shorter loans and borrowers who are easier to reach.

Finally, we use equation (4) to examine whether individual performance effects vary with baseline portfolio quality. This worker-level analysis focuses on outcomes that can be linked to individual COs: the number and volume of outstanding and new loans, and the share of loans in arrears.²³ Table 3 shows that, under Individual, stronger baseline portfolio quality is associated with higher numbers and volumes of outstanding and new loans. These relationships are weaker under Rotation, which is expected since under this scheme, the initial portfolios have been reassigned.

Overall, the results indicate that COs under Individual devote more effort to finding new borrowers and monitoring existing ones. This is consistent with stronger returns to own effort

²²In Panel B of Table A9, reweighting the results to account for differences in the shares of retained workers and new hires increases the estimated advantage of Individual per CO in both the number and volume of new loans relative to Team and Rotation.

²³For loan counts and volumes, we assign zero performance to baseline workers who had exited by endline, so the estimates incorporate treatment effects on worker exit. We do not impute the share of loans in arrears. Table A10 reports the corresponding analysis for the outcomes available among retained workers, although these estimates are subject to endogenous selection.

when each CO's bonus depends on her own performance. Under Team, the link between own effort and compensation is weaker because rewards depend on aggregate branch performance. Rotation retains individual incentives, but the disruption of portfolio-specific knowledge implies extra effort costs. Consistent with a loss of portfolio-specific knowledge under Rotation, the last two columns of Table A8 show that COs in Rotation branches are less familiar with their borrowers and have less contact with them.

4.3 Bonus and Well-being

We next examine workers' bonus attainment and well-being on the job. We estimate a CO-level version of specification (3), with standard errors clustered at the branch level. Bonus attainment and amount are measured using administrative records, while worker well-being is measured using endline survey questions on job satisfaction, work pressure, stress, and support from colleagues and managers.

Bonus attainment. Columns 1 and 2 of Table 5 show that COs under Team are less likely to receive a bonus than those under Individual. Relative to Individual, Team reduces bonus attainment by 6.3 percentage points, compared with an Individual mean of 10.5%, and lowers the average bonus per CO by approximately UGX 20,000, compared with an Individual mean of UGX 33,000. This lower bonus receipt reflects the structure of eligibility under Team: even a CO with a strong portfolio receives no bonus if the branch misses any target. Finally, Table 5 shows that bonus attainment does not differ significantly between Rotation and Individual.²⁴

Table A11 further examines whether bonus attainment (columns 1 and 2) and amounts (columns 3 and 4) vary with baseline portfolio quality, using specification (4). Both outcomes are positively associated with baseline portfolio quality under Individual, but the differences across treatments are imprecisely estimated.

Well-being and workplace cohesion. We examine the well-being and workplace perceptions of workers employed at endline. We construct a satisfaction index from job satisfaction and expectations of remaining in the job, and a support index from workplace commitment, support from managers and other COs, feedback, workplace atmosphere, cooperation, and sense of

²⁴Thus, higher lending per active worker under Individual did not translate into higher bonuses, either because some COs failed to meet all four KPI targets or because, among those who qualified, the additional lending was insufficient to move them into a higher payment tier.

community. Both indices are standardized relative to the Individual group. We examine stress separately.²⁵

Columns 3 and 4 of Table 5 show that Team increases satisfaction and support by 0.24 and 0.17 standard deviations, respectively. Both effects remain significant after adjusting for multiple hypothesis testing. Table A12 shows improvements in both components of the satisfaction index and in nearly all components of the support index, particularly workplace commitment, cooperation, and workplace atmosphere. Rotation has no detectable effect on satisfaction but increases support by 0.15 standard deviations, driven mainly by support from other COs and workplace atmosphere. One possible explanation for its limited effect on satisfaction is that reassignment decreases portfolio-specific knowledge which increases workload.

Table A13 shows that Team reduces severe stress by 3.8 percentage points, relative to an Individual mean of 4.7%, while Rotation has no detectable effect. Workers under both Team and Rotation also report less physical conflict within the team. In this setting, physical conflict can include aggression by coworkers, such as pushing or slapping. Thus, Team improves both well-being and workplace cohesion, while Rotation primarily improves workplace support and reduces physical conflict.

Importantly, these satisfaction and well-being outcomes are observed only for workers employed at endline, including retained workers and new hires. Because exit is higher under Individual, some of the most dissatisfied workers with weaker initial portfolios may have already left and are therefore absent from the endline sample. The observed differences in satisfaction and well-being are thus likely attenuated by selection and would, if anything, be larger after accounting for it.

Taken together, the bonus and well-being results of this subsection help us unpack the retention effects. We previously saw that Rotation reduces exit without significantly increasing bonuses, consistent with the portfolio-insurance mechanism in the theoretical framework; the positive effect on workplace support under Rotation suggests that non-monetary factors may also contribute. Meanwhile, Team reduces exit and improves well-being despite generating lower bonuses. This points to the importance of job satisfaction, cooperation, and workplace support in retaining workers.²⁶

²⁵Stress is measured using six symptoms experienced during the previous month: frequent headaches, poor sleep, feeling nervous or tense, difficulty thinking clearly, constant tiredness, and stomach discomfort. Severe stress is defined as reporting all six symptoms.

²⁶Table A7 shows that COs under Team and Rotation spend more time in staff meetings and COs in Team also

5 Conclusion

This paper studies how to incentivize workers who face unequal starting conditions. We compare Individual incentives, Team incentives, and Individual incentives combined with periodic portfolio rotation among credit officers, whose performance depends on both their effort and the quality of their assigned portfolios. Individual generates the highest performance per active worker, allowing branches to achieve similar aggregate outcomes with fewer workers. However, relative to Individual incentives, Team and Rotation substantially improve retention and workplace support among workers who remain employed, while Team also increases job satisfaction and reduces severe stress. These results are consistent with Team and Rotation both providing portfolio insurance and strengthening workplace cohesion and support.

The welfare implications are ambiguous and depend partly on the cost of turnover. Individual incentives may appear attractive to the organization because branches achieve similar aggregate performance with fewer workers, potentially reducing salary costs. This advantage, however, depends on turnover being relatively inexpensive. Under Individual, the organization loses experienced workers, particularly those assigned weaker portfolios, and must recruit and train replacements. Remaining workers also manage more groups and report lower job satisfaction and workplace support, potentially contributing to further turnover over time. If turnover is sufficiently costly, Team or Rotation may therefore be preferable. Both reduce turnover to a similar extent, but Team entails fewer bonus payments and generates higher job satisfaction.

From the workers' perspective, Team provides lower bonuses but higher job satisfaction, greater workplace support, less severe stress, and greater job stability. Rotation provides bonuses similar to Individual and improves retention and workplace support, but portfolio reassignment may increase workload by requiring workers to learn about new borrowers and groups. In our context, Team may therefore offer the more attractive balance for both the organization and its workers if its non-monetary benefits and greater job stability compensate workers for lower expected bonuses. A definitive welfare comparison, however, would require precise information on workers' valuation of these monetary and non-monetary benefits.

More broadly, our findings highlight the importance of accounting for differences in workers' assigned conditions when designing incentive schemes, and that the effectiveness of such schemes cannot be evaluated based on performance alone.

report spending more time talking to colleagues about borrower matters, consistent with more teamwork in those treatment arms.

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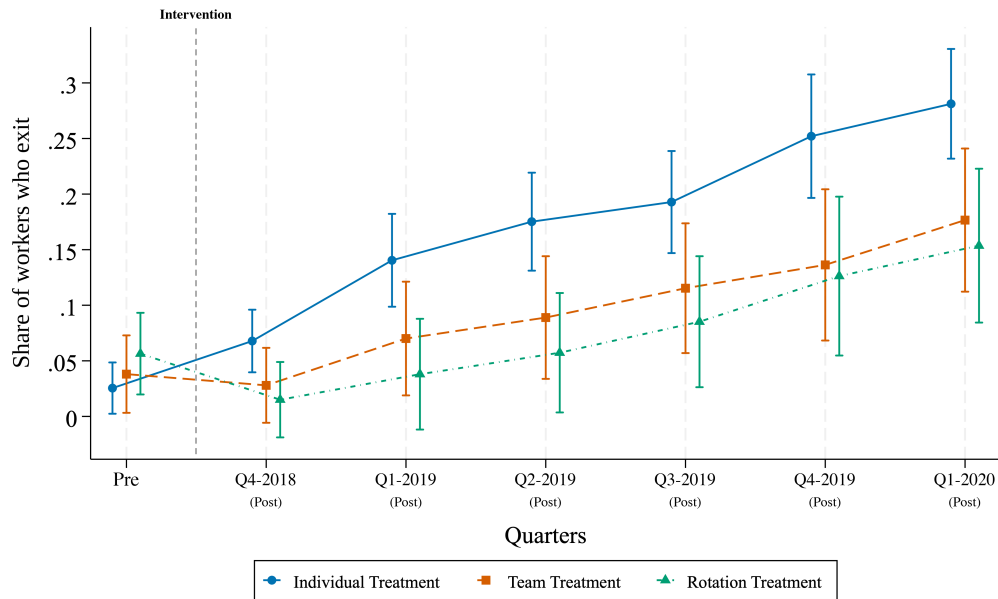
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Figures and Tables

Figure 1: Cumulative exit over time



Notes: The figure reports adjusted treatment-specific cumulative exit rates by quarter. Each point is the coefficient on a treatment-by-quarter indicator from a branch level regression where the outcome is the share of initial COs who had left BRAC by the end of that quarter. “Pre” is an estimate of average quarterly exit prior to the intervention. This measure is based on staff lists from January and October 2018, where we calculate the exit over the 9-month period divided by 3 to express it as a quarterly equivalent. The remaining coefficients are cumulative: the estimate for quarter t includes all exits in quarter t and earlier quarters, rather than only exits during quarter t . During the intervention, employment is measured using monthly staff lists and aggregated to quarters. Regressions include the branch-level stratification variables (area, urban/rural status, baseline repayment performance, and # COs per branch at baseline) as controls. Vertical bars show 95% confidence intervals based on heteroskedasticity-robust standard errors.

Table 1: Summary statistics

	(1) Mean	(2) SD	(3) P25	(4) P50	(5) P75
<i>Panel A: Branch characteristics (N = 158)</i>					
Rural branch	0.56	-	-	-	-
# COs per branch	4.32	1.17	4	4	5
# microfinance groups per branch	64.54	17.02	53.00	63.00	73.00
# loans per CO	306.59	70.38	263.83	304.67	338.83
Loan volume per CO (million UGX)	337.08	117.98	250.91	338.74	429.01
# new loans per CO in quarter	109.88	29.66	89.20	104.25	123.00
% loans with arrears	2.26	2.48	0.86	1.41	2.76
<i>Panel B: CO characteristics (N = 683)</i>					
Tenure in BRAC (months)	47.80	33.42	17.87	39.33	77.10
Age (years)	30.12	3.11	27.93	29.98	32.10
Has a post-secondary degree	0.54	-	-	-	-
Married	0.56	-	-	-	-
Has children	0.67	-	-	-	-
Household income in past year (thousand UGX)	7517.23	7854.01	4000.00	5800.00	8640.00
Job satisfaction (0-10)	6.88	1.82	5.00	7.00	8.00
Share of time CO spends in the field	0.79	0.09	0.74	0.81	0.86
Portfolio quality (share of improving months)	0.50	0.15	0.42	0.48	0.55
... for tenure > median	0.48	0.11	0.40	0.47	0.53
... for tenure ≤ median	0.52	0.17	0.42	0.48	0.57

Notes: This table reports summary statistics at the branch level in Panel A and at the credit officer (CO) level in Panel B. In Panel A, # COs per branch, and % of loans in arrears are measured in September 2018, the month preceding the intervention. # microfinance groups per branch, # loans and loan volume are based on administrative data from Q3 2018. The remaining CO-level variables in Panel B come from the baseline survey and are missing for 14 COs (2%) that were not surveyed. Baseline portfolio quality averages three 2017 shares: months when loan volume increased, loan count increased, and repayment performance improved from the previous month. Because the components are calculated separately, the outcomes need not improve in the same month. This variable is missing for 88 COs (13% of the full sample) because their baseline portfolios are not observed in 2017.

Table 2: Exit and employment (branch-level regressions)

	(1) Share of workers who exit	(2) # retained workers	(3) # new hires	(4) # active workers
Team	-0.105*** (0.039)	0.409* (0.229)	-0.096 (0.191)	0.314 (0.280)
Rotation	-0.128*** (0.042)	0.654*** (0.223)	-0.032 (0.180)	0.621** (0.268)
Observations (# branches)	158	158	158	158
Mean Individual	0.274	3.135	1.154	4.288
<i>p</i> -value: Team - Rotation	0.547	0.261	0.745	0.275

Notes: This table reports treatment effects on worker exit in column 1, the number of retained workers in column 2, the number of new hires in column 3, and the number of active workers in column 4. “Share of workers who exit” is the fraction of COs in the branch who were active at baseline (Q4 2018) but had left the job by endline (Q1 2020). Each observation represents a branch. The branch-level stratification variables (area, urban/rural status, baseline repayment performance, and the number of COs per branch at baseline) are included as controls. An area is an internal administrative unit comprising approximately four or five geographically proximate branches supervised by an area manager. There were 37 areas in Uganda in 2018. Baseline branch repayment performance is measured by the average monthly share of loans more than 30 days in arrears during the 12 months preceding the experiment. Standard errors are heteroskedasticity-robust. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 3: Exit and performance by portfolio quality (worker-level regressions)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Exit		# loans		Loan volume (million UGX)		# new loans		New-loan volume (million UGX)		Share loans with arrears	
Team	-0.066*	-0.367***	26.922*	162.114***	38.995*	176.153**	7.415	40.059**	8.831	43.281**	-0.003	-0.028
	(0.038)	(0.113)	(15.956)	(61.481)	(20.474)	(68.199)	(5.036)	(16.472)	(6.625)	(20.683)	(0.009)	(0.022)
Rotation	-0.093**	-0.239*	22.199	54.407	44.806**	70.507	8.692*	16.795	13.748**	22.504	0.006	-0.024
	(0.037)	(0.123)	(16.254)	(64.282)	(20.204)	(66.247)	(4.837)	(16.358)	(6.373)	(19.252)	(0.008)	(0.024)
Portfolio quality		-0.289*		248.628**		192.929**		60.761**		51.464**		-0.003
		(0.171)		(102.960)		(89.543)		(24.142)		(25.400)		(0.035)
Team × Portfolio quality		0.600***		-271.585**		-274.739**		-65.586**		-69.031*		0.051
		(0.216)		(126.968)		(133.352)		(32.871)		(39.716)		(0.038)
Rotation × Portfolio quality		0.290		-62.924		-50.247		-15.844		-17.219		0.060
		(0.236)		(131.500)		(124.656)		(32.249)		(35.372)		(0.045)
Observations (# baseline workers)	595	595	595	595	595	595	595	595	595	595	454	454
Mean Individual	0.247	0.247	224.263	224.263	274.358	274.358	69.379	69.379	85.330	85.330	0.072	0.071
p-value Team - Rotation	0.390	0.276	0.737	0.054	0.751	0.124	0.773	0.147	0.406	0.324	0.144	0.798
p-value Team + Team × Portfolio quality		0.046		0.116		0.169		0.156		0.226		0.262
p-value Rotation + Rotation × Portfolio quality		0.677		0.904		0.755		0.956		0.774		0.127

Notes: This table reports estimated treatment effects of the Team and Rotation treatments on worker exit and performance outcomes by baseline portfolio quality. The sample is restricted to the 87% of baseline COs for whom portfolio quality is observed. We exclude new hires because their baseline portfolio quality is unavailable and consider only outcomes measured at the CO level. Performance outcomes are set to zero for baseline COs who had quit by endline, except for the share of loans with arrears, which is not imputed. For each dependent variable, the first column reports the baseline specification with treatment dummies only, while the second column adds interactions with baseline portfolio quality. Outcomes are: in columns 1-2 an indicator for the worker having left the job at endline; in columns 3-4, the number of active loans in Q4 2019; columns 5-6, loan volume in million UGX; columns 7-8, the number of new loans in Q4 2019; columns 9-10, new-loan volume in million UGX; and columns 11-12, the share of loans with arrears. Baseline portfolio quality averages three 2017 shares: months when loan volume increased, loan count increased, and repayment performance improved from the previous month. Because the components are calculated separately, the outcomes need not improve in the same month. The branch-level stratification variables (area, urban/rural status, baseline repayment performance, and # COs per branch at baseline) are included as controls. Each observation represents a CO. Standard errors are clustered at the branch level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 4: Performance (branch-level regressions)

	(1)	(2)	(3)	(4)	(5)
		Stock of all loans		New loans only	
	# loans	Loan volume (million UGX)	Share loans with arrears	# new loans	New-loan volume (million UGX)
<i>Panel A: Aggregate performance</i>					
Team	34.973 (75.138)	35.942 (88.379)	-0.001 (0.010)	-1.371 (21.765)	-1.713 (31.022)
Rotation	79.600 (83.692)	163.383* (98.387)	0.008 (0.009)	19.024 (24.248)	47.241 (34.989)
Observations (# branches)	158	158	158	158	158
Mean Individual	1600.308	1548.567	0.065	454.462	538.617
p-value Team - Rotation	0.598	0.213	0.365	0.420	0.181
<i>Panel B: Performance per CO (Aggregate performance / number of COs)</i>					
Team	-25.693 (23.245)	-25.053 (21.272)	-	-10.643 (6.810)	-13.864* (7.403)
Rotation	-44.165** (21.763)	-32.126 (21.519)	-	-15.157** (6.359)	-15.590** (7.697)
Observations (# branches)	158	158	-	158	158
Mean Individual	400.395	378.030	-	114.601	132.999
p-value Team - Rotation	0.420	0.754	-	0.493	0.825

Notes: This table reports treatment effects on performance at the aggregate branch level (Panel A) and per CO (Panel B), measured in the last complete quarter during our experiment: Q4 2019. The per-CO averages are obtained by dividing aggregate branch performance by the number of COs active at endline in February 2020. The outcomes in columns 2 and 5 are measured in million UGX. The share of loans with arrears cannot be meaningfully divided by the number of COs. The branch-level stratification variables (area, urban/rural status, baseline repayment performance, and # COs per branch at baseline) are included as controls. Each observation represents a branch. Standard errors are heteroskedasticity-robust. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

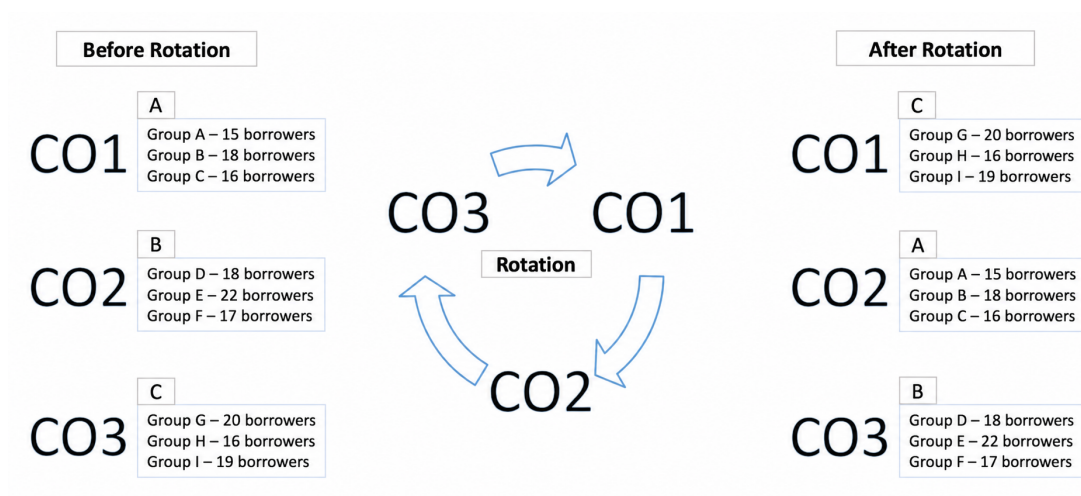
Table 5: Bonus, satisfaction and support (worker-level regressions)

	(1)	(2)	(3)	(4)
	Bonus outcomes		Satisfaction and support	
	Bonus attainment	Bonus amount (thousand UGX)	Satisfaction index	Support index
Team	-0.063*	-19.841*	0.237**	0.171*
	(0.033)	(11.164)	(0.096)	(0.091)
Rotation	0.006	10.197	-0.014	0.150*
	(0.032)	(11.818)	(0.098)	(0.090)
Observations (# endline workers)	711	711	694	663
Mean Individual	0.105	32.955	0.000	0.000
p-value Team - Rotation	0.025	0.009	0.004	0.807
Anderson q-value Team	0.047	-	0.047	0.047
Anderson q-value Rotation	1.000	-	1.000	0.417
Anderson q-value Team - Rotation	0.026	-	0.012	0.369

Notes: This table reports treatment effects on bonus attainment, bonus amount, satisfaction, and support. The sample is restricted to COs active at endline. Bonus attainment is an indicator for receiving a bonus, and bonus amount is measured in thousands of UGX. The satisfaction index is the average of job satisfaction and the expectation of staying in the job. The support index combines workplace commitment, support from managers and other COs, whether workers feel that their problems are heard and their performance is discussed, workplace atmosphere, cooperation, and sense of community. Both indices are standardized relative to the Individual treatment. Missing values reduce the support-index sample. The branch-level stratification variables (area, urban/rural status, baseline repayment performance, and # COs per branch at baseline) are included as absorbed fixed effects. Each observation represents a CO. Standard errors are clustered at the branch level. Reported q-values are Anderson (2008) sharpened q-values, adjusted over the family consisting of bonus attainment, the satisfaction index, and the support index. Because bonus attainment and bonus amount are mechanically linked - the amount is zero whenever the CO does not receive a bonus - we include only bonus attainment in this family. Substituting bonus amount for bonus attainment produces similar results: q-values range from 0.047 to 0.055 for Team and from 0.639 to 1.000 for Rotation. The Team - Rotation q-values are 0.026 in column 1, 0.012 in column 3, and 0.369 in column 4. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

1 Appendix Figures and Tables

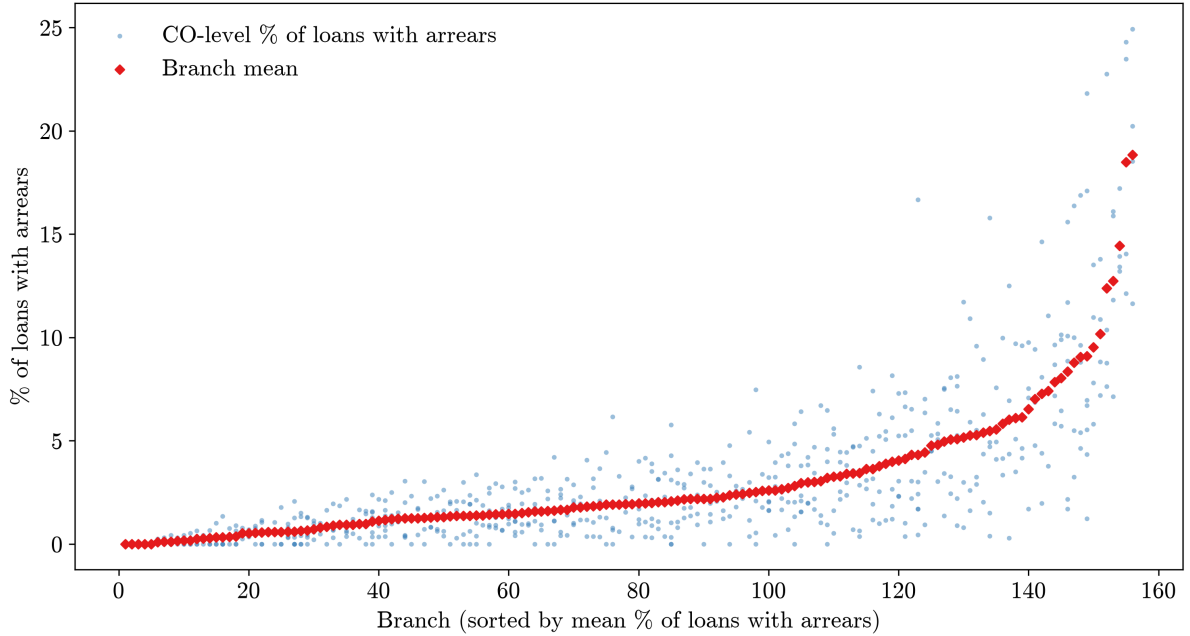
Figure A1: Rotation example



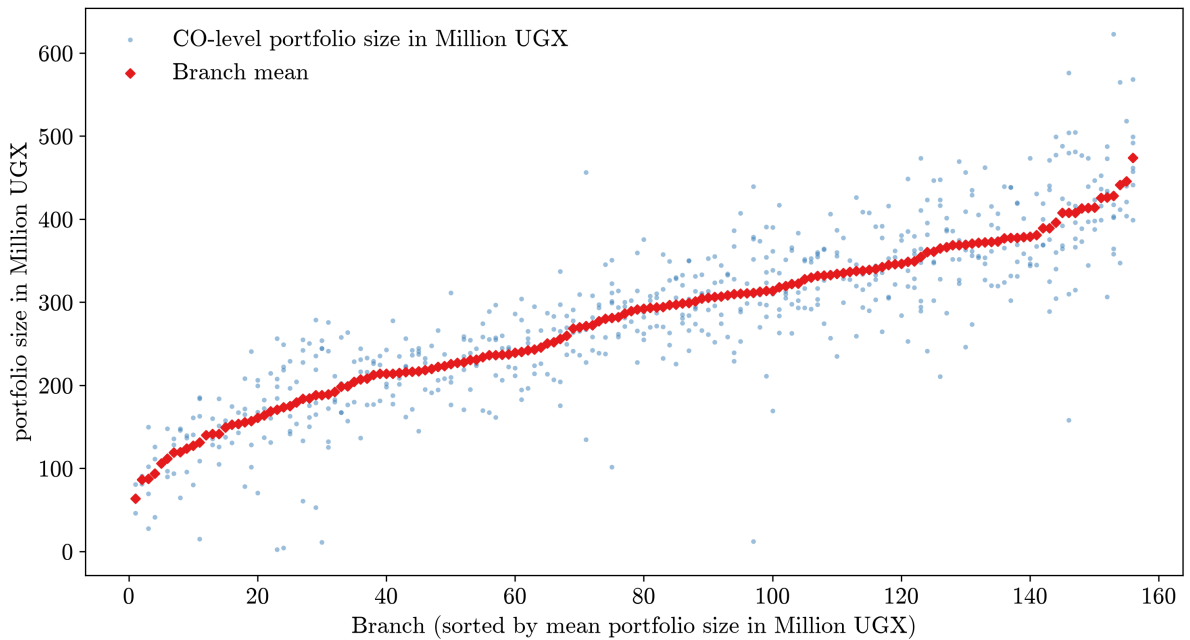
Notes: The figure shows a simplified example of portfolio rotation in a branch with three credit officers (COs), each responsible for three microfinance groups. In practice, a branch has 4.32 COs on average at baseline, and COs are typically responsible for about 15 groups each.

Figure A2: Within-branch variation in baseline portfolio performance

Panel A: % loans with arrears



Panel B: Portfolio size (million UGX)



Notes: Panel A shows the dispersion in each branch of % of loans with arrears while panel B shows it for Portfolio size in Million UGX. Each blue dot is the value for one portfolio (CO) in that branch at baseline (September 2018), plotted vertically above or below the branch mean. Branches are sorted in ascending order of their mean value, separately in each panel. Branch means are indicated by red diamonds.

Table A1: Incentive KPIs and measures

KPI	Parameter	Measure considering last day of previous quarter's closing position as base	
1.	Current borrower per CO	Should be a minimum of 260 on average for branches with weekly collection and a minimum of 300 on average for biweekly branches.	
2.	PAR>30 days	For branches with PAR>30 days $\leq 5.00\%$ at start of quarter, not increase by more than 0.20 percentage points at the end of the quarter. For branches with PAR>30 days more than 5.00% at start of quarter, no increase at the end of the quarter.	
3.	Current borrower position	Increase by the minimum percentage as per the attached list by end of quarter, considering last day of previous quarter's closing position as base.	
4.	Loan disbursement	Achieve at least 95% of quarterly loan disbursement target.	
		Loan disbursement achieved	Payoff
		95% or more	UGX 150,000
		100% or more	UGX 250,000
		105% or more	UGX 350,000
		110% or more	UGX 450,000

Notes: The table provides details on the four Key Performance Indicators (KPIs) used to determine performance pay. KPIs 2 - 4 are calculated at the individual CO level under Individual incentives and at the team (branch) level under Team incentives. KPI 1 is a branch-level measure that varies only according to whether COs in a branch meet borrowers weekly or biweekly. Meeting frequency is determined centrally based on population density and the difficulty of travel within the branch's catchment area. Of the 158 branches, 20 (13%) hold meetings biweekly. The loan-disbursement payoffs reported under KPI 4 apply only if the CO meets KPIs 1 - 3. Conditional on meeting these KPIs, performance on KPI 4 determines the bonus amount. KPIs 3 and 4, for borrower growth and disbursement, respectively, vary across branches, but all COs within a branch face the same targets. These targets are set centrally based on estimates of branch potential informed by previous quarters' disbursement and borrower figures. The payoff range corresponds to USD 120 - 359 in PPP terms, or approximately 8 - 21% of a CO's quarterly income.

Table A2: Correlates of portfolio quality

	(1) Portfolio quality	(2)	(3)
	Low	High	p-value: High vs. Low
<i>CO characteristics (N=584-595)</i>			
Share of time CO spends in the field	0.803	0.783	0.016
Tenure in BRAC (years)	4.291	3.987	0.220
New hire (tenure <6 months)	0.013	0.011	0.904
Has a post-secondary degree	0.520	0.556	0.441
Bad manager	0.207	0.247	0.283
Good manager	0.636	0.581	0.227
Excellent manager	0.157	0.172	0.655
Rural branch	0.513	0.555	0.260
<i>Performance at baseline (N=583-591)</i>			
% loans with arrears	3.424	2.781	0.030
# loans	339.281	368.321	0.000

Notes: This table compares characteristics of COs with low- and high-quality portfolios. Our portfolio quality measure is available for 87% of baseline COs whose baseline portfolios could be tracked back to 2017. Baseline portfolio quality averages three 2017 shares: months when loan volume increased, loan count increased, and repayment performance improved from the previous month. Because the components are calculated separately, the outcomes need not improve in the same month. Low and high portfolio quality are defined by a median split of this index. The p-value reports the test of equality across the two groups. Standard errors are clustered at the branch level. Tenure is from BRAC administrative staff data combined with baseline survey information. Rural branch comes from BRAC administrative records. Remaining CO characteristics come from the baseline survey conducted in September 2018. Manager quality is reported by COs in the baseline survey and categorized as bad (ratings 1-3), good (rating 4), or excellent (rating 5). % loans with arrears and # loans at baseline are measured in Q3, 2018

Table A3: Balance checks

	(1)	(2)	(3)	(4)	(5)	(6)
	Individual	Team	Rotation	Indiv. vs Team	Indiv. vs Rot.	Team vs Rot.
<i>Panel A: Branch characteristics (N = 158)</i>						
# COs per branch	4.29 (1.21)	4.30 (1.14)	4.38 (1.20)	0.71	0.31	0.18
# microfinance groups per branch	64.06 (16.41)	64.06 (17.31)	65.50 (17.59)	0.89	0.25	0.22
# loans per CO	310.30 (67.87)	310.73 (83.61)	298.72 (57.56)	0.65	0.71	0.40
Loan volume per CO (million UGX)	343.43 (121.92)	336.20 (116.26)	331.76 (117.82)	0.71	0.84	0.56
# new loans per CO in quarter	108.84 (30.03)	113.68 (32.94)	107.09 (25.75)	0.31	0.76	0.16
% loans with arrears	2.44 (2.57)	1.78 (1.81)	2.57 (2.91)	0.10	0.87	0.17
<i>Panel B: CO characteristics (N = 683)</i>						
Tenure in BRAC (months)	46.93 (34.67)	46.35 (31.78)	50.09 (33.81)	0.62	0.23	0.09
Age (years)	30.10 (3.28)	29.83 (3.06)	30.44 (2.99)	0.33	0.36	0.05
Has a post-secondary degree	0.56 (0.50)	0.52 (0.50)	0.53 (0.50)	0.33	0.57	0.73
Married	0.56 (0.50)	0.51 (0.50)	0.61 (0.49)	0.56	0.17	0.05
Has children	0.65 (0.48)	0.67 (0.47)	0.70 (0.46)	0.33	0.04	0.32
Household income in past year (thousand UGX)	7900.80 (10459.80)	7397.62 (6353.13)	7266.90 (6101.73)	0.58	0.48	0.86
Job satisfaction (0-10)	6.89 (1.81)	6.80 (1.91)	6.95 (1.74)	0.64	0.67	0.38
Share of time CO spends in the field	0.79 (0.10)	0.79 (0.08)	0.80 (0.09)	0.96	0.74	0.75
Portfolio quality (share of improving months)	0.50 (0.15)	0.50 (0.16)	0.50 (0.14)	0.67	0.84	0.55

Notes: This table reports baseline characteristics by treatment arm at the branch level in Panel A and at the credit officer (CO) level in Panel B. The outcomes in columns 1-3 are treatment-group means, and columns 4-6 report p-values for pairwise equality tests. In Panel A, # COs per branch, and % of loans in arrears are measured in September 2018, the month preceding the intervention. # microfinance groups per branch, # loans and loan volume are based on administrative data from Q3 2018. The remaining CO-level variables in Panel B come from the baseline survey and are missing for 14 COs (2%) that were not surveyed. Baseline portfolio quality averages three 2017 shares: months when loan volume increased, loan count increased, and repayment performance improved from the previous month. Because the components are calculated separately, the outcomes need not improve in the same month. This variable is missing for 88 COs (13% of the full sample) because their baseline portfolios are not observed in 2017. Standard deviations are reported in parentheses.

Table A4: Exit by baseline characteristics (worker-level regressions)

	(1)	(2)	(3)	(4) Exit	(5)	(6)	(7)
	Variable defining Z						
		Has a post- secondary degree	Above- median household income	Married	Has children	Tenure in BRAC	> 80% time in field
Team	-0.098*** (0.034)	-0.052 (0.054)	-0.130*** (0.041)	-0.022 (0.050)	-0.065 (0.074)	-0.119* (0.064)	-0.126** (0.058)
Rotation	-0.108*** (0.035)	-0.098* (0.057)	-0.163*** (0.043)	-0.042 (0.058)	-0.094 (0.074)	-0.052 (0.067)	-0.132** (0.065)
Z		0.044 (0.060)	-0.112** (0.057)	0.142** (0.060)	-0.061 (0.077)	-0.004 (0.012)	-0.104 (0.066)
Team $\times$ Z		-0.086 (0.075)	0.084 (0.073)	-0.137* (0.078)	-0.046 (0.096)	0.005 (0.014)	0.039 (0.080)
Rotation $\times$ Z		-0.016 (0.080)	0.140** (0.069)	-0.121 (0.076)	-0.013 (0.093)	-0.013 (0.014)	0.040 (0.086)
Observations (# baseline workers)	669	669	669	669	669	669	666
Mean Individual	0.257	0.257	0.257	0.257	0.257	0.257	0.257
p-value Team - Rotation	0.770	0.306	0.407	0.717	0.680	0.282	0.896
p-value Team + Team $\times$ Z		0.004	0.443	0.003	0.017	0.032	0.071
p-value Rotation + Rotation $\times$ Z		0.025	0.678	0.001	0.022	0.246	0.056

Notes: The table reports treatment effects on exit by baseline CO characteristics. The outcome variable in all columns is an indicator for whether the worker had left the job by endline. In columns 2-7, Z is defined by the baseline characteristic reported in the corresponding column heading. Each observation represents a CO. The branch-level stratification variables (area, urban/rural status, baseline repayment performance, and # COs per branch at baseline) are included as controls. Standard errors are clustered at the branch level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A5: Characteristics of active workers at endline

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Mean			<i>p</i> -value			
	Individual	Team	Rotation	Team - Individual	Rotation - Individual	Team - Rotation	Observations
Tenure in BRAC (months)	50.87 (36.68)	52.42 (35.46)	56.69 (38.49)	0.72	0.20	0.33	711
Has a post-secondary degree	0.61 (0.49)	0.58 (0.49)	0.56 (0.50)	0.31	0.13	0.54	711
Married	0.50 (0.50)	0.47 (0.50)	0.57 (0.50)	0.91	0.05	0.04	711
Has children	0.64 (0.48)	0.65 (0.48)	0.68 (0.47)	0.31	0.08	0.42	711
Share of time CO spends in the field	0.79 (0.07)	0.79 (0.08)	0.79 (0.07)	0.71	0.38	0.25	662

Notes: This table compares workforce composition across treatments at endline. The sample includes all COs active at endline, including retained baseline workers and new hires. Standard deviations are reported in parentheses below the means. The *p*-values are from regressions of each outcome on treatment indicators controlling for the branch-level stratification variables: area, urban/rural status, baseline repayment performance, and the number of COs per branch at baseline, and standard errors are clustered at the branch level.

Table A6: Additional performance measures (branch-level regressions)

	(1)	(2)	(3)	(4)	(5)	(6)
	# groups	# new borrowers	# new loans w. 20-week duration	# new loans w. 30-week duration	# new loans w. 40-week duration	share new loans w. 20-week duration
<i>Panel A: Aggregate performance</i>						
Team	-1.117 (3.036)	0.001 (7.740)	-29.597* (17.559)	7.944 (13.066)	20.240 (21.293)	-0.073** (0.032)
Rotation	1.781 (3.511)	8.670 (8.327)	-26.259* (13.302)	13.298 (15.130)	31.954 (21.796)	-0.060** (0.026)
Observations (# branches)	158	158	158	158	158	158
Mean Individual	73.212	105.058	126.365	142.327	185.769	0.279
p-value Team - Rotation	0.395	0.267	0.837	0.715	0.576	0.701
<i>Panel B: Performance per CO</i>						
Team	-1.632 (1.124)	-1.290 (2.294)	-10.774** (5.107)	-4.585 (3.858)	4.710 (5.985)	-0.073** (0.032)
Rotation	-2.040* (1.188)	-2.555 (2.187)	-10.900*** (3.674)	-4.447 (4.285)	0.185 (5.377)	-0.060** (0.026)
Observations (# branches)	158	158	158	158	158	158
Mean Individual	18.330	26.235	33.110	36.882	44.609	0.279
p-value Team - Rotation	0.726	0.546	0.978	0.973	0.405	0.701

Notes: This table reports treatment effects on additional performance measures using administrative data for Q4 2019, the last complete quarter of the experiment. Column 1 reports the number of microfinance groups, column 2 reports the number of new borrowers, and columns 3-5 report the numbers of new loans with 20, 30- and 40-week durations, respectively. Panel A reports branch-level totals in columns 1 to 5. Panel B divides these totals by the number of COs active at endline. Column 6 reports the branch-level share of new loans with a 20-week duration, expressed as a fraction. This share is not divided by the number of COs, so its estimates are identical across panels. Each observation represents a branch. Regressions control for the branch-level stratification variables: area, urban/rural status, baseline repayment performance, and the number of COs per branch at baseline. Standard errors, reported in parentheses, are heteroskedasticity-robust. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A7: Time use (worker-level regressions)

	(1)	(2)	(3)	(4)
Share time spent:	Searching for new borrowers	Monitoring existing clients	Talking w. COs about borrowers	In staff meetings
Team	-0.010* (0.005)	-0.009** (0.004)	0.011** (0.005)	0.004* (0.002)
Rotation	-0.014*** (0.005)	-0.008* (0.004)	0.003 (0.005)	0.005** (0.002)
Observations (# endline workers)	663	663	663	663
Mean Individual	0.122	0.104	0.070	0.044
p-value Team - Rotation	0.367	0.834	0.076	0.658

Notes: This table reports treatment effects on self-reported time use. Columns 1 and 2 report the shares of total working time spent searching for new borrowers and assessing existing clients' businesses, respectively. Total working time is calculated by summing hours reported across work activities. Columns 3 and 4 report the shares of time spent talking with other COs about borrowers and in staff meetings with other COs and the manager. Shares are expressed as fractions. All outcomes are self-reported and should therefore be interpreted with caution. Each observation represents a CO employed at endline. The branch-level stratification variables (area, urban/rural status, baseline repayment performance, and number of COs per branch at baseline) are included as controls. Standard errors, reported in parentheses, are clustered at the branch level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A8: Borrower characteristics and borrower interactions with COs (borrower-level regressions)

	(1)	(2)	(3)	(4)	(5)
	Borrower characteristics			Knowledge of and interaction with CO	
	Distance to group meeting	No education	Below median income	Knows CO well	CO visits business at least monthly
Team	5.058** (1.988)	0.021** (0.010)	-0.025 (0.028)	-0.008 (0.008)	0.011 (0.013)
Rotation	2.018 (1.934)	0.010 (0.010)	0.002 (0.027)	-0.025** (0.010)	-0.043** (0.017)
Observations (# borrowers)	7,051	7,072	7,072	7,072	7,072
Mean Individual	29.84	0.0870	0.520	0.983	0.850
p-value Team - Rotation	0.115	0.260	0.405	0.055	0.001

Notes: This table reports treatment effects on borrower characteristics and on borrowers' knowledge of and interactions with their COs. The data come from our borrower survey of a random sample of borrowers who took loans from BRAC in 2019. Column 1 measures the distance between the borrower's business and the microfinance group meeting location. Column 2 is an indicator for whether the borrower has no education. Column 3 is an indicator for whether the borrower's reported household income is below or equal to the sample median. Columns 4 and 5 are indicators for whether the borrower knows her CO well and whether the CO visits the borrower's business at least once a month. The branch-level stratification variables (area, urban/rural status, baseline repayment performance, and number of COs per branch at baseline) are included as controls. Each observation represents a borrower. Standard errors are clustered at the branch level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A9: Performance per CO, robustness checks (branch-level regressions)

	(1)	(2)	(3)	(4)
	Stock of all loans		New loans only	
	# loans	Loan volume (million UGX)	# new loans	New-loan volume (million UGX)
<i>Panel A: Performance per CO: using alternative denominator for number of COs</i>				
Team	-23.035 (22.435)	-24.559 (20.763)	-10.080 (6.771)	-13.746* (7.182)
Rotation	-42.046* (21.891)	-31.447 (21.477)	-14.675** (6.610)	-15.219* (7.766)
Observations (# branches)	158	158	158	158
Mean Individual	384.751	365.330	110.461	128.681
p-value Team - Rotation	0.390	0.754	0.473	0.847
<i>Panel B: Performance per CO, reweighted to account for staff composition</i>				
Team	-34.019 (23.457)	-32.790 (20.489)	-12.370* (7.062)	-16.097** (7.317)
Rotation	-55.671*** (20.771)	-43.496** (21.214)	-17.528*** (6.476)	-18.763** (7.899)
Observations (# branches)	158	158	158	158
Mean Individual	400.395	378.030	114.601	132.999
p-value Team - Rotation	0.322	0.627	0.425	0.731

Notes: This table reports performance per active CO in two alternative ways as compared to Table 4. Panel A reports treatment effects on performance in the last complete quarter of our experiment: Q4 2019. The per-CO averages are obtained by dividing aggregate branch performance by the number of COs active in all three months of Q4 2019. The outcomes in columns 2 and 4 are measured in million Ugandan Shillings. Panel B reports performance per active CO, calculated as in Table 4 but standardized to the pooled workforce composition. The adjustment holds constant workforce composition, captured via the shares of new hires and returnees relative to retained staff (the omitted category), using a branch-level regression that controls for these composition shares. Because workforce composition is measured after treatment assignment, these estimates should be interpreted as composition-adjusted comparisons rather than total treatment effects. The branch-level stratification variables (area, urban/rural status, baseline repayment performance, and # COs per branch at baseline) are included as controls. Each observation represents a branch. Standard errors are heteroskedasticity-robust. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A10: Performance, bonus, satisfaction and support by portfolio quality (worker-level regressions; conditional on retention)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	# loans		Loan volume (million UGX)		# new loans		Share loans with arrears		Bonus attainment		Satisfaction index		Support index	
Team	-0.805 (10.037)	53.202 (37.911)	9.317 (13.834)	29.490 (49.371)	-2.996 (4.253)	10.564 (16.829)	-0.003 (0.009)	-0.028 (0.022)	-0.073** (0.034)	0.017 (0.129)	0.164 (0.123)	0.366 (0.447)	0.167 (0.120)	-0.028 (0.428)
Rotation	-13.297 (9.508)	29.726 (37.776)	7.363 (13.308)	14.190 (49.911)	-1.610 (4.187)	5.817 (15.585)	0.006 (0.008)	-0.024 (0.024)	-0.006 (0.037)	0.107 (0.125)	-0.036 (0.124)	0.071 (0.454)	0.197 (0.120)	-0.102 (0.421)
Portfolio quality		174.884** (70.547)		53.470 (77.515)		30.446 (26.114)		-0.003 (0.035)		0.320 (0.207)		-0.072 (0.634)		-1.193* (0.639)
Team × Portfolio quality		-104.942 (80.117)		-39.460 (96.608)		-26.676 (33.211)		0.051 (0.038)		-0.176 (0.263)		-0.406 (0.859)		0.364 (0.777)
Rotation × Portfolio quality		-82.810 (78.400)		-12.791 (94.512)		-14.299 (30.516)		0.060 (0.045)		-0.219 (0.256)		-0.221 (0.883)		0.561 (0.798)
Observations (# baseline workers)	454	454	454	454	484	484	454	454	483	483	468	468	440	440
Mean Individual	339.459	339.459	414.391	414.391	98.538	98.538	0.071	0.071	0.105	0.105	0.000	0.000	0.000	0.000
p-value Team - Rotation	0.153	0.373	0.890	0.736	0.702	0.701	0.154	0.798	0.067	0.420	0.054	0.511	0.811	0.864
p-value Team + Team × Portfolio quality		0.244		0.846		0.358		0.262		0.261		0.929		0.383
p-value Rotation + Rotation × Portfolio quality		0.212		0.977		0.598		0.127		0.423		0.748		0.267

Notes: This table reports estimated treatment effects of the Team and Rotation treatments on performance, bonus attainment, satisfaction, and support by baseline portfolio quality. The sample is restricted to workers for whom the portfolio quality measure is available (87% of the baseline sample) and who are active at endline. These estimates are conditional on retention because performance, satisfaction, and support are observed only for workers active at endline. Table 3 reports the corresponding performance analysis that retains baseline workers who exited and assigns zero to their performance outcomes where feasible. We exclude new hires because their baseline portfolio quality is unavailable and consider only outcomes measured at the CO level. For each dependent variable, the first column reports the baseline specification with treatment dummies only, while the second adds interactions with baseline portfolio quality. The outcomes in columns 1-2 are the number of active loans in Q4 2019; columns 3-4, loan volume in million UGX; columns 5-6, the number of new loans in Q4 2019; columns 7-8, the share of loans with arrears; columns 9-10, bonus attainment; columns 11-12, the satisfaction index; and columns 13-14, the support index. The satisfaction index is the average of standardized job satisfaction and the expectation of staying in the job. The support index is the average of standardized workplace commitment, support from managers and other COs, whether workers feel that their problems are heard and their performance is discussed, workplace atmosphere, cooperation, and sense of community. All index components are standardized relative to the Individual treatment. Missing values reduce the support-index sample. Baseline portfolio quality averages three 2017 shares: months when loan volume increased, loan count increased, and repayment performance improved from the previous month. Because the components are calculated separately, the outcomes need not improve in the same month. This variable is missing for 88 COs (13% of baseline COs). The branch-level stratification variables (area, urban/rural status, baseline repayment performance, and # COs per branch at baseline) are included as controls. Each observation represents a CO. Standard errors are clustered at the branch level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A11: Bonus by portfolio quality (worker-level regressions)

	(1)	(2)	(3)	(4)
	Bonus attainment		Bonus amount (thousand UGX)	
Team	-0.046*	0.079	-18.413*	33.863
	(0.027)	(0.126)	(9.981)	(45.137)
Rotation	0.017	0.092	11.540	33.040
	(0.030)	(0.123)	(11.960)	(54.601)
Portfolio Quality		0.321*		135.734*
		(0.188)		(77.261)
Team $\times$ Portfolio Quality		-0.253		-105.514
		(0.256)		(92.766)
Rotation $\times$ Portfolio Quality		-0.148		-42.217
		(0.256)		(114.438)
Observations (# baseline workers)	595	595	595	595
Mean Individual	0.079	0.079	29.211	29.211
p-value Team - Rotation	0.046	0.923	0.009	0.987
p-value Team + Team $\times$ Portfolio Quality		0.201		0.150
p-value Rotation + Rotation $\times$ Portfolio Quality		0.689		0.882

Notes: This table reports estimated treatment effects of the Team and Rotation treatments on bonus attainment and bonus amount by baseline portfolio quality. The sample is restricted to workers who were active at baseline and for whom the portfolio quality measure is available (87% of the baseline sample), and zeros are imputed for COs who had quit by endline. For each outcome, the first column reports the specification with treatment dummies, while the second adds interactions with baseline portfolio quality. Columns 1-2 report bonus attainment; columns 3-4 report bonus amount in thousands of UGX. Baseline portfolio quality averages three 2017 shares: months when loan volume increased, loan count increased, and repayment performance improved from the previous month. Because the components are calculated separately, the outcomes need not improve in the same month. The branch-level stratification variables (area, urban/rural status, baseline repayment performance, and # COs per branch at baseline) are included as controls. Each observation represents a CO. Standard errors are clustered at the branch level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A12: Job satisfaction and work cohesion (worker-level regressions)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Satisfaction-index components (standardized)		Support-index components (standardized)							
	Job satisfaction	Expectation of staying in the job	Commitment to workplace	Support from manager	Support from COs	Problems are heard	Work performance is discussed	Good atmosphere	Good cooperation	Sense of community
Team	0.189** (0.089)	0.187* (0.103)	0.148* (0.085)	0.139 (0.093)	0.094 (0.095)	0.052 (0.093)	0.031 (0.096)	0.142* (0.086)	0.154 (0.099)	0.076 (0.093)
Rotation	0.012 (0.093)	-0.036 (0.098)	-0.014 (0.092)	-0.002 (0.096)	0.169* (0.086)	0.084 (0.093)	0.102 (0.094)	0.204** (0.085)	0.117 (0.092)	0.075 (0.089)
Observations (# endline workers)	694	691	694	663	663	663	663	663	663	694
p-value Team - Rotation	0.043	0.016	0.087	0.145	0.391	0.735	0.400	0.444	0.656	0.992
Anderson q-value Team	0.076	0.076	0.368	0.368	0.368	0.494	0.600	0.368	0.368	0.388
Anderson q-value Rotation	1.000	1.000	1.000	1.000	0.221	0.675	0.675	0.156	0.675	0.675
Anderson q-value Team - Rotation	0.033	0.033	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Notes: This table reports treatment effects on the components of the satisfaction and support indices. The sample is restricted to COs active at endline. Each outcome is standardized by subtracting its mean in the Individual treatment and dividing by its standard deviation in the Individual treatment. The coefficients can therefore be interpreted in standard-deviation units, and the Individual-treatment mean is zero for every outcome by construction and is not reported. Columns 1-2 report the components of the satisfaction index, and columns 3-10 report the components of the support index; the indices themselves are excluded. Missing values reduce some support-component samples. The branch-level stratification variables (area, urban/rural status, baseline repayment performance, and # COs per branch at baseline) are included as absorbed fixed effects. Each observation represents a CO. Standard errors are clustered at the branch level. Anderson (2008) sharpened q-values are adjusted separately across the two satisfaction outcomes in columns 1-2 and across the eight support outcomes in columns 3-10. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A13: Stress and quarrels at the workplace (worker-level regressions)

	(1) Highly stressed	(2) # stress symptoms	(3) No quarrels (standardized)	(4) No physical conflict (standardized)
Team	-0.038** (0.018)	-0.003 (0.151)	-0.012 (0.071)	0.169** (0.076)
Rotation	0.004 (0.017)	0.136 (0.145)	-0.051 (0.067)	0.139* (0.076)
Observations (# endline workers)	694	694	694	694
Mean Individual	0.047	2.159	-	-
p-value Team - Rotation	0.013	0.366	0.563	0.349
Anderson q-value Team	0.069	0.967	0.967	0.069
Anderson q-value Rotation	1.000	0.790	0.790	0.382
Anderson q-value Team - Rotation	0.055	0.578	0.732	0.578

Notes: This table reports treatment effects on stress, quarrels, and physical conflict. The sample is restricted to COs active at endline. The outcomes in columns 3-4 are standardized by subtracting their means in the Individual treatment and dividing by their standard deviations in the Individual treatment. Their Individual-treatment means are therefore zero and are not reported. The stress outcomes in columns 1-2 are not standardized, so their Individual-treatment means are reported. The branch-level stratification variables (area, urban/rural status, baseline repayment performance, and # COs per branch at baseline) are included as absorbed fixed effects. Each observation represents a CO. Standard errors are clustered at the branch level. Reported p-values are standard regression p-values. Anderson (2008) sharpened q-values are adjusted jointly across all four outcomes in columns 1-4. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.