Repayment Flexibility and Risk Taking: Experimental Evidence from Credit Contracts *

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Abstract

A widely held view is that small firms in developing countries are prevented from making profitable investments by lack of access to credit and insurance markets. One solution is to provide repayment flexibility in credit contracts. Repayment flexibility eases both the credit constraint, as it allows for increased spending during the startup phase, and offers insurance, in case of fluctuations in income. In a field experiment among traditional microfinance clients and larger collateralized borrowers in Bangladesh, we randomly assign the option to delay up to 2 monthly repayments at any point during a 12-month loan cycle. The flexible contract leads to substantial improvements in the traditional microfinance clients' business outcomes, driven by borrowers in the upper tail of the distribution. In addition, we find a significant impact on socioeconomic status, combined with lower default rates. We show theoretically and empirically that these effects are induced by an increase in entrepreneurial risk taking, implying that the primary mechanism is insurance provision. Repayment flexibility also attracts less risk-averse borrowers interested in business expansion. At the same time, the effects for the larger loan are much more modest. Our findings suggest that lack of insurance is an important constraint for small firms but that a simple financial product that increases repayment flexibility can be an effective tool for enabling enterprise growth.

Keywords: Repayment flexibility, Insurance, Credit, Microfinance, Entrepreneurship

JEL codes: C93, D22, D24, D25, G21, G22, O12, O14, O16

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1 Introduction

Starting or expanding a business often entails undertaking costly and risky investments. In developing countries, where credit and insurance markets are imperfect, entrepreneurs face constraints on both fronts. It is well established that small enterprises are severely credit constrained (de Mel et al., 2008; Banerjee and Duflo, 2014) and operate under high levels of risk, having to tackle frequent aggregate and idiosyncratic shocks (Samphantharak and Townsend, 2018). While improved availability of credit and insurance ought to help aspiring entrepreneurs, existing evidence shows that conventional microcredit has not generated substantial firm growth, at least on average (Banerjee et al., 2015, 2019). In an environment where business growth requires access to capital and insurance against entrepreneurial risk, the ideal financial contract should cater to both of these constraints. In line with this, a large literature in corporate finance highlights the importance of financial flexibility for businesses (Graham and Harvey, 2001; Gamba and Trianti, 2008), but evidence from developing countries is scant.

In this article, we study an innovative loan product that provides credit and reduces uninsured risk and examine which constraint is more important. To this end, we experimentally alter the debt contract terms by making the repayment obligation more flexible. Improved flexibility eases the credit constraint, as it allows for increased spending during the startup phase, and provides insurance, in case of fluctuations in income. We conduct the randomized evaluation of the flexible contract in Bangladesh together with one of the largest microfinance institutions in the world, BRAC. The regular product BRAC offers has a 12-month loan repayment cycle with monthly installments of equal size. By contrast, the flexible contract allows borrowers to delay up to 2 monthly repayments at any point during the loan cycle using repayment vouchers. On the day of their monthly repayment, borrowers can present a voucher, thereby postponing the repayment and extending the loan cycle. We study the effect of repayment flexibility on both collateral-free microfinance provided to women (*Dabi*), where BRAC reaches four million borrowers in Bangladesh alone, and larger collateral-backed debt (*Progoti*), available to female and male borrowers.[1]

We begin our analysis by developing a financial contracting model to illustrate how repayment flexibility affects credit and insurance rationing as compared to the standard credit contract. In the model, entrepreneurs either invest in a safe liquid or a risky illiquid technology. Repayment flexibility can alleviate uninsured risk by covering loan payments in bad times, allowing entrepreneurs to increase their investments in illiquid assets more sensitive to aggregate uncertainty. Flexibility can also lessen the need to save for the first repayment, thus increasing upfront investment funds. This eases the credit con-

[1]Both loans entail individual liability and a flat 22% annual interest rate. In the case of traditional microfinance (*Dabi*), borrowers attend monthly group meetings but are individually liable for their loans.

straint for poorer and (assuming skills and investment capital are complements) skilled entrepreneurs. If the credit-constraint channel is more important, flexibility primarily benefits the poor and skilled. By contrast, when the insurance mechanism prevails, borrowers take on more risk. If entrepreneurs have other external obligations in addition to the loan payment (such as recurrent costs), our theory further predicts that repayment flexibility may not be sufficient to induce risk taking but will still allow for an increase in the safer, low-return, technology. Finally, we show that repayment flexibility has an ambiguous effect on the share of risk-averse clients in the resulting borrower pool, with the degree of risk aversion decreasing if the flexible contract primarily attracts borrowers willing to take risks to expand their businesses.

In order to assess the effects of increased flexibility, we collaborated with BRAC to conduct a field experiment in Bangladesh. BRAC identified borrowers with good credit histories deemed to be eligible for the new contract in 50 of its branches. Following this, we surveyed a random sample of these borrowers. After our baseline survey, BRAC offered the flexible loan contract to eligible clients in 25 branches that we randomly selected. The same respondents were then resurveyed 1 and 2 years after the baseline. The experimental variation captures the relative benefit of the flexible versus the standard credit contract and allows us to study the importance of credit and insurance constraints.

We find that repayment flexibility improves the business outcomes and socioeconomic status of traditional microfinance (*Dabi*) clients. In particular, the flexible contract increases borrowing, business investments, and revenues relative to the control group. The intention-to-treat estimates reveal that treated microfinance clients increase their borrowing from BRAC by 11%, the value of their business assets is 51% higher, they generate 87% more revenues, and have 25% higher profits. In terms of their socioeconomic status, they end up with higher household income (17%), more household assets (25%), and own more land (26%). A natural question is whether these improvements came at a cost to the lender in terms of default rates. If anything, we find that the likelihood of default diminishes marginally among the treated microfinance clients. When we examine the corresponding impact on larger firms with collateral-backed (*Progoti*) loans, there are no significant effects, on average, in terms of business or other outcomes.

To understand if the treatment effects are primarily driven by credit or insurance constraints, we first test if the flexible contract increased risk taking among the eligible borrowers. Specifically, we investigate four pieces of evidence. First, we examine if the flexible contract affected sales volatility, as captured by the difference between the value of sales in the best versus the worst month, and find that treated *Dabi* clients' sales volatility doubled. In the same vein, we also compare the distribution of earnings in the treatment and control samples. We observe that *Dabi* borrowers in the left tail of the distribution experience lower revenue and lower income growth relative to the control group, while they do better

in the upper quantiles. These two findings are consistent with flexibility leading to greater risk taking, causing some individuals in the treatment group to lose out (relative to control), while others gain. Second, we study how treated businesses are affected by demand uncertainty. Greater uncertainty should matter more for borrowers that take on additional risk. In particular, we find that the effects on the *Dabi* clients' revenues and profits are driven by borrowers in areas where expected demand uncertainty is higher at baseline. Third, we explore quasi-experimental variation in the form of local demand shocks. In Bangladesh, excessive flooding during the growing season of the main crop (Boro rice) is particularly harmful and constitutes an important downturn in local economic activity. We find that treatment effects on business profits and revenues for *Dabi* borrowers are significant and positive, only in locations that experienced favorable rainfall. In locations with extreme flooding, the treatment impact is indistinguishable from zero. This implies that the flexible contract induced a shift to activities more sensitive to aggregate uncertainty, at least among the *Dabi* clients. Finally, we show that *Dabi* borrowers increased their holdings across a range of illiquid business assets.

The findings agree with our theory's prediction that repayment flexibility induces risk taking, establishing the importance of insurance rationing among the smaller *Dabi* firms. When we study the same four dimensions for the larger *Progoti* borrowers, we do not see evidence of any meaningful heterogeneity nor an increase in the value of the business assets used. One explanation for these results rationalized by the model is that larger firms have other external commitments such that too much risk remains even with repayment flexibility. In this case, large insurance-rationed firms refrain from taking on additional risk (explaining the much more modest treatment effects).

In order to assess if the effects of the flexible contract are also driven by the credit-constraint mechanism, we examine the heterogeneity of the effects with respect to clients' baseline economic status and skills (as proxied by their schooling level). We find no evidence of significant heterogeneity along these dimensions for the *Dabi* sample. While this implies that credit rationing is less important in explaining the relative benefit of the flexible over the standard contract for the *Dabi* borrowers, it does not necessarily mean that eligible *Dabi* clients would not be credit constrained if no external financing was available. We do, however, find that the lack of an average treatment effect on the *Progoti* borrowers masks important heterogeneity in the response across the skill level of the entrepreneur: treatment leads to an increase in the revenues and profits among *Progoti* clients with higher skills at baseline. This is consistent with the theoretical prediction that more able *Progoti* borrowers might be held back under the standard contract, indicating that repayment flexibility helped alleviate the credit constraint of the larger firms.

Finally, we consider how the new contract affected the selection of individuals into borrowing. In particular, we test if the introduction of the flexible loan attracted different types

of clients in the treated branches relative to control. To do this, we conducted a census of small and medium enterprises (SMEs) operating in the 50 branches at baseline, surveying a random sample of the SMEs prior to branch randomization. We then compare, within this representative sample of SMEs, whether those borrowing from BRAC in the treatment branches at followup are significantly different in terms of their baseline characteristics. We find that the degree of risk aversion in the borrower pool declines as less risk-averse entrepreneurs with a desire to start a new business were more likely to become BRAC borrowers in the treated branches. According to our model, this suggests that the flexible contract primarily attracts borrowers willing to take risks to grow their businesses.

In sum, the results imply that repayment flexibility benefits traditional microfinance borrowers mainly through the provision of insurance, enabling riskier investments at lower default rates. To the extent other contractual obligations hold back the *Progoti* clients, there is some evidence that the flexible contract alleviates the credit constraint faced by the larger firms, with the returns to the flexible contract being higher for more able entrepreneurs. The contract also draws in borrowers that are less averse to risk and more willing to expand their business activities. The findings highlight the benefit of a novel product that simultaneously provides credit and insurance to microfinance clients, contributing to work examining the overall success of microfinance by focusing on the inframarginal borrowers (Banerjee et al., 2015). At the same time, some caution is warranted as the effects for larger loans are less transformative.

The present paper builds on and adds to three main literatures. First, it provides causal evidence on the joint importance of capital constraints and incomplete insurance on the growth of non-agricultural firms. While a large literature has studied the role of credit constraints for firms (see e.g., Fafchamps et al., 2014), empirical work on insurance has mainly focused on the agricultural sector. Past studies show that the provision of (subsidized) access to insurance leads to higher farm investment and take up of new technologies, increasing farm profit through greater risk taking (Giné and Yang, 2009; Mobarak and Rosenzweig, 2013; Cai, 2016; Carter et al., 2016; Cole et al., 2017).[2] Our paper is related to Karlan et al. (2014) who evaluate the relative importance of credit and insurance constraints by providing cash grants and rainfall insurance to farmers in Ghana. They find that the binding constraint is uninsured risk, with farmers making riskier production choices when offered insurance. Our results complement Karlan et al. (2014) by highlighting the role of risk taking in small firms.[3] Another closely connected study is Bianchi and

[2]Also, Groh and McKenzie (2016) evaluate an insurance against macroeconomic shocks provided to microfinance clients in Egypt. While demand was high, there are no effects on investments or firm growth. Similarly, Lane (2018) studies the impact of an emergency loan following floods in Bangladesh, showing that it increases consumption and asset levels and reduces default in the event of flooding. By contrast, we focus on the joint provision of credit and insurance (for both aggregate and idiosyncratic shocks) via repayment flexibility for a given loan.

[3]Unlike Karlan et al. (2014), we study the incremental effect of a contractual change rather than access to

Bobba (2013) who find that cash transfers in Mexico increased entrepreneurship. Exploiting variation in the timing of the transfers they show that insurance as opposed to credit constraints drive this effect. While their focus is on entry into entrepreneurship, we study investments in and the growth of existing businesses.

Second, we link to a small but growing literature that investigates credit contract structure in microfinance, with the most notable precursor to our work being Field et al. (2013). They evaluate the effects of giving a two-month grace period to microfinance clients and find that this leads to an increase in short-term investments and long-run business profits, but also in default rates. Barboni and Agarwal (2018) show that three-month blocks of repayment holidays chosen in advance attracts financially disciplined clients and leads to higher repayment rates and higher sales.[4] Unlike previous work, borrowers' complete flexibility over their voucher use allows us to evaluate the relative importance of credit and insurance constraints. As such, the contract we study not only encompasses an early grace period or planned blocks, but also caters to unexpected shocks occurring in any given month throughout the loan cycle.[5]

Finally, the analysis contributes to research in corporate finance on firms' ability to take advantage of opportunities and deal with shocks, and how this affects their capital structure. Work on financial flexibility (Gamba and Trianti, 2008; DeAngelo et al., 2011) and liquidity and risk management (see e.g., Holmström and Tirole, 1998, 2011) emphasizes the capacity to restructure financing, hoard reserves, and hedge against risk to facilitate unexpected changes in cash flows or investment opportunities, especially in a volatile business environment.[6] We provide causal evidence demonstrating that such flexibility can increase risk taking, and that this is more valuable when firms face aggregate uncertainty.[7]

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either credit or insurance or both for small retail and manufacturing firms, instead of farmers. While Karlan et al. (2014) experimentally investigate the relative importance of credit versus insurance constraints, the bundled nature of our treatment implies that our findings on mechanisms should be interpreted as theoretically guided suggestive evidence.

[4]Czura (2015) investigates a loan targeted to dairy farmers that tailored repayments to the period when cattle produces milk, finding that it increased milk production and income as well as default rates.

[5]Our findings further complement research (Attanasio et al., 2018) showing how joint as opposed individual-liability contracts in microfinance reduce the negative effect of aggregate risk on loan take up by offering implicit insurance. Moreover, by providing evidence on the selection effects of introducing a new loan product with greater repayment flexibility, we also contribute to empirical work gauging selection in developing-country credit markets (see e.g., Karlan and Zinman, 2009; Beaman et al., 2020; Jack et al., 2018; Ahlin et al., 2020).

[6]We also link to studies on the timing of repayments in consumer mortgage products, where flexibility in choosing the monthly payments have been shown to smooth consumption (Cocco, 2013) but also increase delinquency rates (Garmaise, 2013).

[7]The importance of aggregate risk, and its consequences for asset illiquidity, also rationalizes why businesses in our setting prefer the flexible over the standard credit contract. Shleifer and Vishny (1992) show that asset illiquidity resulting from economy-wide shocks lowers firms' debt capacity. With a flexible contract, borrowers avoid having to sell their assets at the same time as everyone else hit by the aggregate shock in order to cover the repayment. This may in turn increase firms' willingness to take on risk.

2 Theory

Our financial contracting model illustrates how repayment flexibility affects credit and insurance constraints as compared to the standard debt contract. We also discuss how the theory extends to account for entrepreneurial ability, other contractual obligations, and selection into borrowing. Formal proofs are in the Online Appendix.

2.1 Setup

We consider a risk-neutral entrepreneur with limited liability and assets A in a three-period economy ($t = 1, 2, 3$). The entrepreneur can finance a fixed investment I at date 1 using either a liquid short-term or an illiquid long-term technology. The liquid project returns φ at $t+1$ per unit invested at t, subject to aggregate uncertainty in period 2, yielding φ_H with probability π and φ_L with probability 1-π. The illiquid project returns γ at date 2 and Γ at date 3 per unit of initial investment, with $\Gamma > \varphi_H > \varphi_L > \gamma > 1$. The period-2 return is uncertain, yielding γ or 0 with probabilities π and 1-π, respectively. If liquidated in period 2, the long-term project's salvage value is $\lambda < 1$ per unit of initial investment. The entrepreneur saves τ_t at $t = 1$ to cover (part of) consumption and reinvestment if faced with a project-return shortfall in period 2. In periods 1 and 3, she also receives income y to meet any remaining needs. Entrepreneurs have utility $U = u(c_1) + \beta \mathrm{E}[u(c_2) + \beta u(c_3)]$, where c_t is consumption at date t and $\beta < 1$ is the discount factor.

An unconstrained entrepreneur prefers the riskier illiquid project over the safer liquid one, given $\pi\gamma + \beta\Gamma \geq \pi\varphi_H + (1-\pi)\varphi_L - 1 + \beta\varphi_H$. However, due to insufficient wealth, $A < I + \tau_1$, she turns to the financial market for capital. Credit is limited as repayment is imperfectly enforceable. While the investment is fully contractible, the entrepreneur may divert project returns by defaulting on the loan (ex-post moral hazard), yielding benefit $\phi < 1$ per unit diverted.[8] If she avoids diversion, she gains a net continuation value V, representing the utility of future credit access.[9] The lender's marginal cost of funds is $\rho > 0$. Free market entry ensures all surplus goes to the borrower, subject to incentive compatibility.[10] To fit our experimental context, the lender offers two contracts: a standard two-period repayment contract and a flexible contract allowing full payment deferral to the last period via a repayment voucher. Applying the compound interest formula, the standard contract requires two equal payments of $P_S \equiv bR^2/(1+R)$ in periods 2 and 3, where b is the amount borrowed and R the gross, per-period interest rate (simplified as $R = 1/\beta < \gamma$). The flexible contract demands a single payment of $P_F \equiv bR^2$ in period 3.

[8] Without diversion opportunities ($\phi = 0$), perfect legal protection of creditors would allow even a wealthless borrower to fund the investment, eliminating credit rationing. To make our problem interesting, we assume $\phi > \underline{\phi}$ (defined in the Appendix).

[9] V reflects the common practice of microfinance institutions punishing default by denying future credit.

[10] Alternatively, the lender could be a non-profit maximizing borrower welfare, subject to break-even.

With the addition of a repayment burden, the entrepreneur also enters an informal risk-sharing scheme to cover consumption, reinvestment, and repayment in case of a return shortfall in period 2. The arrangement, where all project-return risk is pooled ex post, leaves each group member the investment's expected value plus savings. Without informal insurance, we assume savings constraints, $\tau_1 < \bar{\tau}$, hinder the entrepreneur from fully covering consumption, reinvestment, and the repayment.

2.2 Discussion of Assumptions

The setup incorporates our two main mechanisms. To capture the credit-constraint mechanism, we rely on the conventional idea that moral hazard at the repayment stage gives rise to credit rationing of poor entrepreneurs.[11] To this generic model we add the need to save in period 1 to cover consumption, reinvestment, and repayment in the next period. Repayment vouchers reduce this need, allowing poor borrowers to allocate more funds for investment which relaxes the credit constraint.

To capture the insurance-constraint mechanism, entrepreneurs choose between a safe liquid and a risky illiquid investment.[12] Without informal risk sharing, we assume that uninsured revenue shocks promote investment in the safe technology under the standard contract. By insuring against costly liquidation (to repay the loan), the vouchers alleviate the insurance constraint and facilitate investment in riskier illiquid assets.

The key premise of the model is that entrepreneurs may need additional funds at various stages of the project: for the initial investment and/or to address earnings shortfalls later. To differentiate the credit from the insurance mechanism, we view constraints related to the initial investment as distinct from those tied to managing a state-contingent shock later in the loan cycle. While credit constraints might prevent the investment from taking place, insurance constraints could result in an inability to hedge against future income loss risks. However, a funds shortage is the common friction underlying both constraints.

By assuming constrained savings, we illustrate how the standard payment obligation limits the entrepreneur when no other means of insurance is available.[13] While savings can supplement self-financed entrepreneurs' consumption and reinvestment in period 2, they cannot also cover the standard repayment. Thus, a negative period-2 shock forces the entrepreneur to either not reinvest the returns from the liquid project or liquidate if invested

[11] See, e.g., Hart (1995), Shleifer and Wolfenzon (2002), and Ellingsen and Kristiansen (2011) for similar models of financial contracting under imperfect enforcement and Blouin and Macchiavello (2019) for empirical work on the prevalence of strategic default in developing markets.

[12] Illiquid business assets, including special purpose tools, machinery but also certain types of inventory, are common in our setting. On average, 38% of the firms' asset value is lost in case of a fire sale. See Section 5.4.1 for more details.

[13] There is abundant evidence that savings constraints, caused by transaction costs, social constraints, lack of trust, regulatory practices, informational gaps, and behavioral biases, prevent the poor from smoothing over time (see e.g., Dupas and Robinson, 2013; Karlan et al., 2014; Casaburi and Macchiavello, 2019).

in the illiquid technology.[14] When informal risk pooling is available, the assumption that the scheme eliminates all uninsurable risk allows us to study the implications of binding credit constraints without a risk-based motivation for saving across periods.

Figure 1 depicts the model stages and tradeoffs in project choice and repayment/diversion decisions. Next, we analyze each contract (standard and flexible) to understand how credit and insurance market imperfections affect investment. The analysis, grouped by the completeness of the informal insurance market, starts with the standard contract.

2.3 Equilibrium

Imperfect Insurance Without informal risk pooling, a wealth-constrained entrepreneur opts for the safer technology, as the expected benefit of avoiding intermediate period liquidation exceeds the final period gain from the riskier illiquid project. We use backward induction to characterize the incentive constraint for the two-period loan, focusing on the low-return realization in $t = 2$, where diversion temptation is highest. In the Appendix, we show that it suffices to look at the second period constraint. The entrepreneur pays the lender if the residual return after repaying exceeds the benefit from diverting all resources

$$I\varphi_L + \tau_1 R - P_S + \beta\left(y - P_S\right) + \beta^2 V \geq \phi\left(I\varphi_L + \tau_1 R + \beta y\right). \tag{1}$$

The entrepreneur only repays in the second period if she does not plan to default in the third.[15] As there is no default in equilibrium, the equilibrium interest rate ensuring zero profit is $R = 1 + \rho$. The following proposition summarizes our first result.

Proposition 1. *When ex-post risk pooling is absent and lenders offer the standard contract, there is an asset threshold $\tilde{A}(\phi) > 0$ such that entrepreneurs with $A < \tilde{A}(\phi)$ make no investment. If $A \geq \tilde{A}(\phi)$, then entrepreneurs borrow and invest in the safe project.*

A poor entrepreneur with $A < \tilde{A}$ would need to borrow significantly to finance the investment. The large repayment obligation would yield a residual return below the payoff from diverting all resources. Consequently, only entrepreneurs with $A \geq \tilde{A}$ secure funding, while those with $A < \tilde{A}$ cannot obtain a loan.

With the flexible contract, borrowers can use a payment voucher in $t = 2$ to defer the full loan payment P_F to the final period. If the entrepreneur chooses the liquid project, the voucher enables reinvestment of project proceeds at date 2, even under the low-return realization. If she invests in the illiquid technology, she avoids the intermediate period liquidation risk and fully benefits from the high-return project. Given the (unconstrained)

[14] Beyond limiting the entrepreneur's ability to hoard liquidity across periods, we also exclude the option of period-2 refinancing. This assumption is due to our partner organization not offering this option, few viable alternatives exist for most borrowers, and the incentive incompatibility of "finance-as-you-go" as new claims dilute old ones, a concern amplified for poorer borrowers with larger debt burdens (Tirole, 2006, Chapter 5 and Holmström and Tirole, 2011).

[15] Diversion is an all-or-nothing decision, as we assume the lender claims all resources upon default.

illiquid project's higher expected value, the availability of repayment vouchers encourages the entrepreneur to undertake the riskier project.

Unlike above, there is only one relevant incentive constraint to consider. In the final period, the temptation to divert all resources is resisted in favor of repaying the full loan if

$$I\Gamma + y - P_F + \beta V \geq \phi \left(I\Gamma + y \right). \tag{2}$$

Proposition 2. *When ex-post risk pooling is absent and lenders offer the flexible contract, there is an asset threshold $\tilde{\tilde{A}}(\phi) > 0$ such that entrepreneurs with $A < \tilde{\tilde{A}}(\phi)$ make no investment. If $A \geq \tilde{\tilde{A}}(\phi)$, then entrepreneurs borrow and invest in the risky project.*

Since vouchers increase the discounted project value, Proposition 2 also characterizes the outcome when both credit contracts are offered simultaneously. Repayment flexibility raises the return to both technologies, but in different ways. Vouchers alleviate the insurance constraint by eliminating the liquidation risk for the illiquid project, and they free up working capital for reinvestment in the liquid technology. As the illiquid project's expected value is higher, the former effect prevails, leading entrepreneurs to invest in illiquid assets with greater sensitivity to aggregate uncertainty.

If $\tilde{A} > \tilde{\tilde{A}}$, vouchers also ease the credit constraint. Two opposing forces are at play. On one hand, vouchers eliminate the need to save for the first repayment, freeing more funds for the initial investment. Additionally, the gross return to honoring the contract is higher with the riskier project. Both effects increase the value of investment over diversion, making lending to poorer borrowers incentive compatible. On the other hand, the standard contract's spread-out payments reduce the instantaneous repayment burden and the temptation to divert. Overall, the inequality holds when the savings reduction and the illiquid project's higher return offset the larger one-time payment.

Lastly, while all borrowers take up the vouchers, they are indifferent between using them and adhering to the standard contract upon a positive period-2 realization. Essentially, vouchers offer an option value that protects entrepreneurs against future unforeseen fluctuations. The subsequent corollary collects these additional results.

Corollary 1. *When ex-post risk pooling is absent and lenders offer standard and flexible contracts: (i) entrepreneurs prefer the flexible contract and invest in the risky project; (ii) a lower asset level is required to obtain a loan under the flexible contract if $\tilde{A} > \tilde{\tilde{A}}$; (iii) entrepreneurs weakly prefer using the vouchers independent of the state of nature.*

Perfect Insurance With a complete risk market and the standard contract on offer, ex-post risk pooling eliminates the liquidation risk, leading the entrepreneur to select the illiquid project. As before, we focus on the no-diversion constraint in $t = 2$ given by

$$I\bar{\gamma} + \tau_1 R - P_S + \beta \left(I\Gamma + y - P_S \right) + \beta^2 V \geq \phi \left[I\bar{\gamma} + \tau_1 R + \beta \left(I\Gamma + y \right) \right], \tag{3}$$

where $I\bar{\gamma}$ is the expected period-2 return under risk pooling. With vouchers, entrepreneurs still invest in the riskier project but defer the full payment to $t = 3$, altering the incentive constraint to equation (2). Like above, the credit constraint eases if $\bar{A} > \bar{\bar{A}}$ (the minimum incentive-compatible asset size under the standard and flexible contract, respectively). This condition holds if the savings from postponing the first repayment outweigh the increased diversion cost due to the higher repayment burden. Formally

Proposition 3. *Suppose $\bar{A} > \bar{\bar{A}}$ and lenders offer standard and flexible contracts. Then there are asset thresholds $\bar{A}(\phi) > \bar{\bar{A}}(\phi) > 0$ such that entrepreneurs with $A < \bar{\bar{A}}(\phi)$ make no investment, those with $A \in [\bar{\bar{A}}(\phi), \bar{A}(\phi))$ prefer the flexible contract and invest in the risky project, and those with $A \geq \bar{A}(\phi)$ are indifferent between the contracts and invest in the risky project.*

2.4 Extensions

In the current model, the entrepreneur's only input is her assets. However, if ability and investment capital are complements, then more able entrepreneurs will have a higher productivity for a given level of assets. Since vouchers ease the credit constraint, the return to relaxing this constraint is higher for entrepreneurs of greater ability (the formal argument is detailed in the Appendix).

We have so far assumed that the loan payment is the primary obligation. However, there could be other commitments (on top of the repayment), such as recurrent costs. Particularly, larger firms are often committed to periodic expenses like rent, utilities, and salaries. In the Appendix, we show that even with vouchers, entrepreneurs may still face considerable risk under the illiquid project due to these additional obligations. While vouchers release liquidity that can be reinvested in the safe project, the net gain from introducing more flexibility is reduced, especially if the return to the liquid technology is low.[16]

In the basic model, vouchers provide an insurance mechanism, even in the context of universal risk neutrality. To explore how repayment flexibility affects the selection of individuals into borrowing along the risk dimension, we modify the model to incorporate risk aversion. In line with our empirical setting, we assume a smaller self-financed project is available, which appeals to less risk-averse individuals interested in business expansion and thus, in need of external credit.[17] To capture that the self-funded entrepreneurs who want to expand are more prone to risk, the smaller project is a scaled-down version of the illiquid technology, now referred to as a large project.

[16] An alternative explanation related to recurrent costs is that larger firms, unconstrained by risk, use vouchers to smooth consumption. These firms, already undertaking risky projects, will demand more flexibility as recurrent costs rise, without affecting firm outcomes. Conversely, our extension shows that when higher recurrent costs prevent riskier projects (due to too low net income in the bad state even with vouchers), repayment flexibility can still boost low-return liquid investments.

[17] In our SME sample, less risk-averse firm owners are significantly more willing to start a new business, aligning with literature dating back to Cantillon (1755), Knight (1921), and more recently Kihlstrom and Laffont (1979), where business risk bearers are less risk averse than the general population.

In the Appendix, we demonstrate that the effect of repayment flexibility on the borrower pool's level of risk aversion is ambiguous. While it attracts clients deterred by the risk of existing investment technologies, it also appeals to borrowers who find the large illiquid project too risky and the large liquid project too safe. If the latter group of entrepreneurs, keen on expanding their risky but smaller businesses, predominantly selects the flexible contract, the borrower pool's risk aversion level may decrease.[18]

3 Theoretical Predictions

Table 1 summarizes the theory's main predictions, conditional on different market imperfections. We start with the case when the loan payment is the key outstanding obligation (Panel A). When insurance is imperfect and firms are credit rationed under the standard contract (row 1), repayment flexibility increases risk taking by enabling illiquid investments more exposed to aggregate uncertainty for $A \geq \tilde{\tilde{A}}$. It is especially beneficial for the least wealthy by allowing more upfront investment funds, thus lowering the incentive-compatible asset level for $A \in [\tilde{\tilde{A}}, \tilde{A})$. High-ability entrepreneurs also see greater benefits when $A = \tilde{\tilde{A}}$. If only the risk market imperfection is a constraint for $A \geq \tilde{A}$ (row 2), the flexible contract mainly boosts risk-taking, with potential positive or negative selection with respect to risk aversion (similar to row 1). When only credit is rationed (row 3), repayment flexibility improves conditions for poorer and more able borrowers for $A \in [\bar{\bar{A}}, \bar{A})$ and $A = \bar{\bar{A}}$, respectively, who now undertake risky investments. With complete credit and insurance markets (row 4), repayment vouchers have no impact on outcomes.

We then consider the case when other contractual obligations are important (Panel B). The theory suggests that vouchers lead credit and risk-rationed firms to boost their safe investments (row 1). While flexibility still benefits able entrepreneurs, poorer individuals may not gain due to the low investment return. If insurance provision is imperfect (row 2), the theory predicts a rise in the safe investment. Similar to Panel A, risk aversion can induce borrower selection (rows 1 and 2). Vouchers benefit poor and high-ability entrepreneurs now making safe investments if only credit constraints bind (row 3). With well-functioning markets, vouchers have no effect (row 4).

The model guides our understanding of small firms' financial environment by allowing us to assess whether imperfect insurance, credit constraints, or both are binding. A key prediction is that increased risk taking is the single most important response if entrepreneurs are limited by imperfect risk markets. However, the theory also suggests that if firms have

[18]Other aspects of selection, independent of risk aversion, could affect investments. The flexible loan may increase the default temptation for present-biased borrowers (see e.g., Bauer et al., 2012; Fischer and Ghatak, 2016; Barboni, 2017), who prefer the standard contract's smaller, spread-out payments. Additionally, the contract's complexity could impose a cost on financially illiterate borrowers, potentially inducing them to overconsume early in the loan cycle. If a large share of new borrowers has time-inconsistent preferences or is financially illiterate, this could result in tighter credit constraints and reduced investment in equilibrium.

other contractual obligations beyond the loan payment, repayment flexibility alone may not increase risk taking. We use this framework to structure our empirical analysis and interpret the results in the subsequent sections.

4 Experiment

4.1 Context

Our study is set in Bangladesh where our partner, BRAC, is one of the main providers of microfinance services. BRAC's microfinance program mainly targets two types of clients.[19] The most common microfinance product is the "*Dabi* loan", which is meant to finance microenterprises, typically with no employees except for family workers (e.g., tailoring, small retail shops, poultry and livestock rearing, and carpentry). The average size of a *Dabi* loan is 275 nominal USD (range between \$100-\$1,000). Currently, BRAC has four million *Dabi* borrowers in Bangladesh. BRAC also offers "*Progoti* loans" for small and medium-sized enterprises. The *Progoti* loans are intended for working capital in shops, agricultural businesses, and small-scale manufacturers and have an average loan size of \$2,200 (range between \$1,000-\$10,000). They require collateral of equal value to the loan and a guarantor. Both types of loan products entail individual liability (with group meetings in the case of *Dabi* loans), a flat 22% annual interest rate, and a 12-month loan repayment cycle with monthly installments of equal size.

We collaborated with BRAC to implement a pilot assessing the viability of a flexible loan product. The flexible contract allowed borrowers to delay up to two repayments within their loan cycle through the use of repayment vouchers. BRAC decided to offer the option to borrow under the flexible contract to *Dabi* and *Progoti* clients with good credit histories. The eligible clients were selected by credit officers at the branch office level on the basis of having no defaults and few or no arrears. Under the flexible contract, borrowers had 2 vouchers that enabled them to postpone 2 monthly repayments in their loan cycle. On the day of the repayment, borrowers could present the voucher thereby postponing the repayment and extending the loan cycle. Specifically, by extending the cycle to 14 instead of 12 months the borrowers had 2 months during which they were not required to make any payments to BRAC. E.g., if borrowers skipped the first two installments, the repayments started in month 3 and continued up to month 14 (corresponding to a contract that provides a 2-month grace period). If clients decided to use their vouchers to avoid any other installment(s), the repayment in that month would be skipped and the full loan cycle was extended by an additional month. Hence, the contract provided the borrowers with full flexibility to tailor-make their loan cycle according to their expected and unexpected cash-

[19] BRAC also has specialized loans for sharecroppers, migrant workers' households, and students. We do not study these products. Further details about the loan products BRAC offers are available from BRAC's microfinance program's website (http://www.brac.net/program/microfinance/).

flow needs (they were still limited to delaying no more than 2 repayments). Moreover, if borrowers wanted, they could skip 2 repayments and pay up their remaining balance within the 12th month, thus keeping the length of the loan cycle unchanged. As such, the vouchers offered considerable payment flexibility.[20] No extra cost was charged for the use of the voucher(s).

4.2 Evaluation and Data

To evaluate the effects of the new loan contract, we randomized the introduction of the flexible loan at the BRAC branch office level. The typical branch office covers an area of a roughly 6-km radius with 200 *Progoti* and nearly 1,200 *Dabi* borrowers. BRAC selected fifty branches for the study and credit officers in each branch identified *Dabi* and *Progoti* borrowers that they deemed eligible for the flexible loan. BRAC subsequently provided us with a list of the eligible clients in each branch. From this list, we randomly sampled 2,717 eligible borrowers; 1,115 *Dabi* and 1,602 *Progoti* clients. We also obtained a list of all ineligible clients in the same 50 branches.

In addition to eligible BRAC clients, we collected information on a representative sample of SMEs (independent of their borrowing status with BRAC). For this, we first conducted a census within the geographic location of each BRAC branch office by going door-to-door, capturing a comprehensive listing of all SMEs operating in selected sectors in the study branches. The objective was to identify microenterprises with fewer than 10 workers operating in light manufacturing and retail. These characteristics were chosen to make them comparable with potential BRAC borrowers.[21] This provided us with a listing of 7,270 firms. From the census, we randomly sampled and surveyed 3,504 firms at baseline (the "SME sample").[22]

The baseline survey for our two samples was conducted between January and June 2015. After the baseline, we randomly selected half of the 50 branches as treatment and the rest as control. The randomization was stratified by district (15 randomization strata), each containing 2-5 of the branch offices in our study. Figure 2 shows the locations of the BRAC branches included and their randomization status. The flexible loan product was launched in mid-August 2015. By the end of September 2015, the intervention had been introduced in all branches. Immediately following the product launch, we collaborated with BRAC to implement an information campaign in the treatment branches. Its goal

[20]Note that while there may be some de facto flexibility in BRAC's modus operandi, the extent of this flexibility is rather limited (see section A.2.2 in the Online Appendix). Nevertheless, the flexible contract that we evaluate should be interpreted as comparing the effects of introducing explicit flexibility (in the form of allowing 2 monthly repayments to be delayed at no cost to the borrower) relative to any de facto flexibility that BRAC already provided.

[21]Manufacturing includes SMEs active in food processing, carpentry, plumbing, handicraft, and garments while retail comprises grocery, supermarkets, wholesale shops, clothing, and hardware.

[22]By construction, the SME sample contains both current BRAC clients (about 10%) and non-client firms located within each study location.

was to ensure that information regarding the new loan that BRAC was piloting reached the firms in the SME sample. This was achieved through: (i) phone calls, conducted by BRAC's phone call centre, to every business owner in our SME sample. During these phone calls, the terms of the new loan product were explained; and (ii) leaflets, describing the same information, delivered by BRAC credit officers to the firms in the SME sample and to firms in the eligible-borrower sample.[23]

Approximately one year after the baseline, between May and July 2016, we implemented the first follow-up survey (the midline). Since the intervention was launched in August 2015, the effects at midline capture short-run impacts (8 to 10 months after treatment started). Nearly one year after the midline (and two years after the baseline), we conducted the endline survey.[24] At the end of that survey (August 2017), we received BRAC's administrative records on its borrowers (eligible and ineligible borrowers at baseline, as well as the new borrowers that joined BRAC after the launch of the experiment). The records contain data on the last as well as past loans of current or past borrowers, providing us with detailed reports on borrowers' repayment behavior.

Finally, to measure local rainfall shocks, we use monthly rainfall data at 0.25-degree resolution obtained from the NOAA-maintained PERSIANN-CDR dataset which covers the period 1983-2017.[25] The information on precipitation is used to construct local demand shocks across the 50 branches under study.

4.3 Descriptives and Validity Checks

Table A.1 provides descriptive statistics on the baseline characteristics of the eligible *Dabi* clients, while Table A.2 does the same for the eligible *Progoti* borrowers.[26] The average eligible *Dabi* client in our sample is 38-39 years old, has 4.5 years of schooling, approximately half of them own some land, and the typical household labor income is about 7,000 USD PPP per year. In terms of business ownership, 45% of *Dabi* clients report having a business at baseline.[27] The average *Dabi* borrower owns 4,300 USD PPP worth of busi-

[23]For most eligible *Dabi* clients, the information on the flexible contract was provided during their regular group meetings. At the end of the meeting, the credit officers described the new product and its features to the eligible borrowers. In order to make sure that it was well understood, they also gave them a leaflet. For eligible *Progoti* clients, the credit officers visited their business to provide them the same information. These meetings/visits were part of the routine operations that BRAC's credit officers conduct for their borrowers.
[24]The mid- and endline surveys were planned to be in the same period of the year in order to appease concerns about seasonality in profits and other outcomes.
[25]See https://www.ncei.noaa.gov/products/climate-data-records/precipitation-persiann for more details about the rainfall data.
[26]Throughout the paper, all monetary values are deflated to 2015 prices, using CPI figures published by the Central Bank of Bangladesh, and converted to USD PPP terms using conversion rates published by the World Bank's International Comparison Program database (1 USD PPP $\approx$ 28.25 TAKAs).
[27]This is similar to the rates of business ownership among microfinance clients in other studies (see e.g., Field et al., 2013). Among the *Dabi* clients in our sample, only 5% reported owning multiple businesses. In the analysis, we focus on the main household business reported by the respondent (the borrower), but the results are similar if we aggregate all business-related variables at the household level.

ness assets, employs 0.5 workers (excluding the owner of the business but including other family workers) and generates 4,200 USD PPP worth of annual profits.[28] In contrast to the *Dabi* clients, *Progoti* borrowers are older (44 years old), more educated (7.5 years of schooling) and wealthier (83% own land and average annual household income is above 20,000 USD PPP). They are also more likely to be business owners (87%), and their businesses are larger in terms of capital (around 25,000 USD PPP), number of workers (1.9 workers on average), and profits.

For all of the outcome variables we study as well as other key characteristics, Tables A.1 and A.2 report balance tests where we compare the sample means by treatment status. In particular, column 3 shows the standard difference, column 4 the randomization inference p-values, and column 5 reports the normalized difference (Imbens and Wooldridge, 2009). With the exception of two characteristics (out of 31), none of the baseline differences are statistically significant at conventional levels and the normalized differences are smaller than 1/4th of the combined sample variation. Hence, we conclude that the randomization was successful in achieving baseline balance in key observable characteristics. In Appendix Table A.3, we test for differential attrition at the mid- and endline surveys. At midline, the attrition rate was 5% among eligible *Dabi* clients, 9% among eligible *Progoti* borrowers, and 11% in the SME sample. At endline, the rates were slightly higher (8% among eligible *Dabi* clients, 15% among eligible *Progoti* borrowers, and 17% in the SME sample). The attrition rates are balanced by treatment status in both followup surveys. Thus, it is unlikely that differential attrition drives the treatment effects we find in the empirical analysis.

5 Results

5.1 Estimation

To identify the effects of the flexible loan contract on eligible borrowers, we estimate an ANCOVA model (McKenzie, 2012) of the form:

$$y_{it} = \beta \cdot T_i + \lambda \cdot y_{i0} + E_t + \sum_{s=1}^{15} \gamma_s + \epsilon_{it}, \tag{4}$$

where y_{it} is the outcome of interest for respondent i at mid- (t=1) or endline (t=2), T_i is a dummy variable equal to 1 if the respondent is located in a treated branch, y_{i0} is the baseline level of the outcome for individual i, E_t is a survey-wave fixed effect, and γ_s are district (randomization strata) fixed effects. Since our randomization was conducted at the branch-office level, we cluster standard errors by BRAC branch office (50 clusters). In

[28] The measure of profits we use is based on a direct question on the level of profits as opposed to subtracting costs from revenues. de Mel et al. (2009) show that for small businesses, this method provides a more accurate measure of profits compared to calculations based on detailed questions on revenues and costs.

addition, we report randomization inference p-values (Fisher's exact test), estimating the coefficient of interest in 1,000 alternative assignments chosen randomly with replacement from the set of possible assignments given our stratified randomization procedure. The randomization inference p-values report the percentile of the coefficients found under actual treatment in the distribution of coefficients identified under the alternative treatment assignments (Young, 2018). The parameter of interest is β, the average difference between treatment and control observations at mid- and endline. Under the assumption that the control observations constitute a valid counterfactual for the treatment sample, this identifies the causal effect of the offer of the flexible loan contract to eligible client i. In other words, this is the intention to treat (ITT) estimate.

5.2 The Effect of Repayment Flexibility

We first examine the treatment effects on the eligible borrowers' credit market outcomes. Table 2 presents the results for the *Dabi* (Panel A) and *Progoti* clients (Panel B), respectively. Columns 1 and 2 show the impact on borrowing from BRAC, where the information is obtained from BRAC's administrative records. In the control group, 57% of the eligible *Dabi* clients were borrowing from BRAC under the standard contract at mid- or endline (column 1). Compared to this, the introduction of repayment flexibility increased borrowing from BRAC by 6.3 percentage points (*ppt*), or 11% relative to the control group. For *Progoti* clients, the flexible loan offer increased take up from BRAC by 2 *ppt*, but this effect is imprecisely estimated. We also note that 55% of the eligible clients accepted the offer. The take-up rate was slightly higher among eligible *Dabi* (57%) relative to *Progoti* borrowers (53%), but the difference is not significant at conventional levels (p-value=0.123). On the intensive margin, Column 2 of Table 2 shows that the value of BRAC borrowing increased by 302 USD PPP or 26% relative to the control group among the *Dabi* clients, with a randomization inference (RI) p-value of 0.001. The corresponding effect for the *Progoti* borrowers is an insignificant 259 USD PPP (5%) increase in the value of BRAC loans.

The rest of Table 2 explores other outcomes related to credit and transfers. Starting with *Dabi*, while the treatment decreased the likelihood of having a non-BRAC loan by 4 *ppt* (column 3), the impact on the intensive margin is small and imprecisely estimated (column 4), barring any definitive conclusions on substitution effects away from non-BRAC lenders toward BRAC. Eligible *Dabi* borrowers also receive more informal transfers from their social networks (with the point estimate similar in size to the effect on the BRAC loan), albeit insignificantly so (column 5). Column 6 examines transfers and loans provided to the social network. It shows that the financial outflow from the average *Dabi* client in the treatment group went up by 122 USD PPP or a 73% boost relative to the control sample (RI p-value<0.01). Overall, net borrowing and transfers combined increased by 511 USD PPP or 17% relative to the control group (RI p-value=0.121). Together, this im-

plies that access to the flexible contract led to important changes in the *Dabi* clients' credit market outcomes. The last column presents the effect on an aggregate index that combines the 7 indicators related to the credit market outcomes of the *Dabi* clients. We find that the aggregate index is significantly higher by 0.172 standard deviations (SDs) among the treatment group relative to control (RI p-value=0.009). By contrast, Panel B indicates that the impact on the eligible *Progoti* borrowers is insignificant (with the exception of one outcome: the likelihood of having a non-BRAC loan in column 3). As the aggregate index in column 8 is indistinguishable from zero, we conclude that the treatment did not significantly affect the credit market outcomes of the eligible *Progoti* clients.[29]

Next, we examine the impact of repayment flexibility on a range of business outcomes. The upper panel of Table 3 shows effects for the eligible *Dabi* clients, starting with business ownership in column 1.[30] Eligible *Dabi* clients in the treatment branches are 3 *ppt* more likely to own a business at followup relative to control, but this effect is imprecisely estimated. In terms of inputs, the treated *Dabi* borrowers invest significantly more in their business assets but not in labor. The treatment impact on business assets (1,881 USD PPP) is equivalent to a 51% increase relative to the mean in the control group. We do not find any significant effect in terms of labor inputs (number of workers, business operating hours, and hours worked by the business owner). Column 6 shows that treatment raised revenues by 28,153 USD PPP (annually) relative to the control sample. This corresponds to a statistically and economically significant increase of 86% (RI p-value<0.01). Eligible clients also had higher costs which is likely related to the larger investments in their business capital (e.g., cost of purchasing tools, machines, or inventories). The ITT estimate on annual business profits (column 8) shows a sizable increase (of 25%) relative to the control group, but this is imprecisely estimated at conventional levels (RI p-value=0.171). Column 9 indicates that the effect on monthly profits (during the month preceding the survey) is similar in magnitude with the point estimate corresponding to a 26% increase relative to the control group (RI p-value=0.182). Column 10 shows that *Dabi* businesses in the treatment group had more volatile revenues. As a proxy for volatility, we use the range of monthly revenues. The ITT estimate reveals that the treatment group had 106% higher sales volatility relative to the control group (RI p-value=0.066). Finally, column 10 shows that the aggregate index is up by 0.183 SDs among the treatment group relative to control (RI p-value=0.050). Overall, these findings suggest that the flexible contract not only led to more business activity and greater business investments, but also increased the volatility of the monthly business revenues among the *Dabi* borrowers.[31] When we study the effects

[29] In Appendix Table A.4, we test and reject the null hypothesis of equality of the treatment effects of the *Dabi* versus the *Progoti* borrowers for the aggregate index but not for most of the individual outcomes.
[30] All business outcomes are coded as zero for respondents who do not own a business.
[31] As noted in section 4.3 above, only 45% of the eligible *Dabi* clients reported having a business at baseline. In order to understand whether the effects in Table 3 are driven by business survival and growth versus

on the *Progoti* clients, we find a strikingly different pattern. In particular, there are no significant effects on any of the business outcomes except for the number of workers, and the overall impact on the aggregate index in column 11 is close to zero and insignificant.[32,33]

The third and final set of outcomes are related to the socioeconomic status of the eligible borrowers. Panel A of Table 4 shows that eligible *Dabi* clients in the treatment group had higher household (labor) income, corresponding to an increase of 17% relative to the control sample. The rest of the panel indicates that, while there was no significant impact on per-capita consumption, the value of non-business assets owned by the respondent's household increased by 18% compared to control (RI p-value=0.039). Treated clients were also 8 *ppt* more likely to own land (RI p-value<0.01), with land size increasing by 10 decimals (0.04 hectares) or 27% relative to the control group mean (RI p-value=0.012).[34] Assessing land use reveals that most of the new, larger landholdings, were rented out (see Table A.9). Treated borrowers are twice as likely to rent out land and hold four times as much land for this purpose, increasing the land rent received by about 47 USD PPP (RI p-value=0.011) – nearly a 100% increase relative to the control group. Given that land ownership is a key indicator of socioeconomic status in rural Bangladesh, this is an important sign that the status of the eligible *Dabi* clients improved as a result of the intervention. The aggregate index in column 6 also shows a significant increase of 0.165 SDs (RI p-value=0.026). In contrast to the *Dabi* borrowers, there are no significant effects on any of the outcomes nor on the aggregate index for the *Progoti* clients (Panel B of Table 4).[35]

Figure 3 provides a visual summary of the treatment impact on the eligible clients. It plots the ITT effects on standardized indicators related to the three families of outcomes we study (credit market, business, and household economic status). All the *Dabi*-related out-

starting up of new businesses, we tested for the heterogeneity of the business outcomes with respect to baseline business ownership (see Appendix Table A.5). Overall, results show that the treatment did not have a significant impact on business ownership and most of the effects on revenues, costs, and profits are observed in households who already had a business at baseline. This suggests that the treatment effects are mainly driven by growth of existing businesses as opposed to starting up of new ones.

[32]Similar to the credit market outcomes, we can reject the null hypothesis of equality of the treatment effects of the *Dabi* versus the *Progoti* borrowers for the aggregate index but not for most of the individual outcomes (see Table A.6).

[33]Firm outcomes, such as profits and revenues, are notoriously noisy. In Tables A.7 and A.8, we assess the sensitivity of the treatment effects on all monetary business outcomes with respect to outliers. Each table reports estimates where the data is winsorized at the 99.5th (Panel A), 99th (Panel B), 98th percentile (Panel C). Qualitatively, the estimates confirm those reported in Table 3. The only outcome variable for which we lose significance is the range of revenues – when we winsorize the data at the 99th or 98th percentile, the effect on the range of monthly revenues is still positive but no longer precisely estimated for the *Dabi* sample. In terms of magnitude, the treatments effects on many outcomes diminish considerably when winsorizing the top 2%. This alludes to there being considerable heterogeneity in the treatment effects on *Dabi* clients, which we discuss in detail in Section 5.4.

[34]The findings are in line with existing evidence on land ownership and land transactions in Bangladesh (see Section A.2.3 in the Online Appendix).

[35]In Table A.10, we test for and reject the null hypothesis of equality of the treatment effects on household socioeconomic status of the *Dabi* versus the *Progoti* borrowers for the aggregate index, household income, and land ownership, but not for the other outcomes.

comes (shown in Figure 3a), with the exception of non-BRAC loan value and per-capita consumption expenditure, are positively affected, with a majority of them being statistically significant. In particular, we observe large effects on business revenues (0.24 SDs), profits (0.13 SDs), and household income (0.14 SDs).[36] The corresponding effects on the eligible *Progoti* clients are depicted in Figure 3b. Overall, we do not find evidence of a significant average impact on the outcomes of the *Progoti* clients. As noted above, one business outcome where we do observe a significant treatment effect is the number of workers employed in the *Progoti* clients' businesses. The borrowers in the treatment group hire on average 1 additional worker, which implies a 42% increase relative to the control group (RI p-value=0.035). Nevertheless, since the effect is observed on only 1 out of a number of business outcomes, we conclude that repayment flexibility did not have a significant impact on *Progoti* clients' businesses, at least on average.

A possible concern with the large treatment effects detected among the *Dabi* clients is whether the results are driven by some peculiarity of our context or the eligible sample itself. To assess this, we compare our estimates to the treatment effects found in Field et al. (2013) who evaluate the impact of an initial two-month grace period provided to microfinance clients in India. Even though the product we examine is quite different, allowing borrowers to manage payments freely over the loan cycle in a state-contingent manner, Field et al. (2013) is the most similar study to ours that we are aware of in terms of context (traditional microfinance borrowers), methodology, and the type of contractual deviation analyzed. The grace period increased the business assets by 81%, weekly profits by 57%, and monthly household income by 22%. Our ITT estimates correspond to a 51% increase in business assets, 26% increase in monthly profits, and 17% increase in annual household income. As the grace period was mandatory, take up was 100% by design. Considering that the take-up rate of the flexible loan product is 57% among our eligible *Dabi* clients, the ITT estimates are very similar to the effects found in Field et al. (2013) (assuming no spillover effects on borrowers who did not take up the flexible loan). This builds confidence in the external validity of our findings and suggests that the large treatment effects are not driven by some special feature of our context or sample.

5.3 Client Retention and Default Rates

To study the effect on the eligible borrowers' repayment behavior, we use BRAC's administrative records. In particular, we test if the repayment rates of the eligible clients and their demand for BRAC loans are affected by the introduction of the flexible loan contract.

[36] In the Appendix, we present the results of estimating the treatment effects at mid- and endline separately and test for the differential impact between the two surveys to shed light on the dynamics. Table A.11 shows this for the ITT estimates for *Dabi* and Table A.12 for *Progoti* clients. Overall, the treatment impact does not appear to be significantly different for most outcome variables across the two surveys. Notably, there is no significant difference in the aggregate indices for the three families of outcomes across mid- and endline.

Table 5 reports the impact on client retention and default for the eligible borrowers. Column 1 shows that treated *Dabi* clients are 6.8 *ppt* less likely to have left BRAC by August 2017, 2 years following the start of the experiment. The effect on *Progoti* borrowers is also negative but imprecisely estimated.[37] In the remaining columns we investigate the repayment rates. We first present the official default classification used by BRAC (column 2) and then assess how repayments change depending on the time elapsed since the start of the contract (columns 3 and 4) or since the end of the loan cycle (columns 5–7). Specifically, column 2 reports the effect on the official default rate defined as the likelihood of not having repaid the loan by the end of the loan cycle. We find that the provision of repayment flexibility leads to a significant reduction in the rate of default for eligible *Dabi* borrowers (RI p-value=0.095). In the treatment branches, they are 1.7 *ppt* (or 35% at the mean) less likely to default. The corresponding impact is close to zero for the *Progoti* clients.[38]

Next, we examine the likelihood that the loan was not fully paid in 12 months to quantify the proportion of borrowers who extended the loan by using at least one voucher. Treated *Dabi* borrowers are 8.2 *ppt* more likely to not repay the loan within 12 months relative to the control group, suggesting an increase in the likelihood to extend the loan by 8.2 *ppt*. Similarly, we see a 5.2 *ppt* increase for treated *Progoti* borrowers. Column 4 investigates the actual end of the loan cycle, defined as 12 months in the control and 14 months in the treatment branches.[39] *Dabi* clients are 6.4 *ppt* less likely to not repay the full loan by the end of the loan cycle, while the *Progoti* borrower are 9.4 *ppt* less likely to do so (RI p-value<0.01 for both). Hence, by the end of the contract, the de facto default rate was significantly lower in the treatment branches. The remaining columns report the effects on the probability of not having repaid the full loan within 2, 6, and 12 months (columns 5, 6, and 7) after the end of the loan cycle as defined in column 4. Eligible *Dabi* clients are 1.9 *ppt* less likely not to have repaid the full loan up to 12 months later. While imprecisely estimated, the effect is similar in magnitude to the default indicator (column 2) used by BRAC. Overall, the patterns imply that the flexible contract improved repayment among the eligible clients in the treatment branches, at least in the short run, while loan repayment rates were more similar in the treatment and control groups in the longer term.

[37] We define leaving BRAC as a dummy equal to one if the borrower repaid her loan(s) and had not taken a new one by August 2017; and equal to zero if the borrower has a current loan or remain in default by August 2017. As the default rate decreased, columns 2 and 4–7 in Table 5, the probability of remaining with BRAC is driven by a higher likelihood of taking up a new loan.

[38] The default indicator in column 2 is based on a classification entered into the system by BRAC's credit officers. While the officers were instructed to account for the possibility of extending the loan cycle (up to 2 months) for borrowers with flexible loans, it is possible that they may not have implemented this 100% correctly. That is why we use an alternative classification in columns 5–7, which yields similar results.

[39] Thus, in columns 4–7, the end of the loan cycle is computed starting two months after the expected last collection date in the treatment branches (to account for the extension possibility induced by the vouchers) and by the expected last collection date in the control branches.

5.4 Credit or Insurance Rationing?

The results so far demonstrate that repayment flexibility led to improvements in business outcomes and socioeconomic status without an increase in the default rates for the *Dabi* clients, with much more modest and insignificant effects for the *Progoti* borrowers. Viewed through the lens of our model, these findings provide some initial evidence of the mechanisms at play. The relatively large impact experienced by the *Dabi* clients is consistent with increased risk taking because of imperfect insurance markets and, possibly, credit rationing. By contrast, the absence of discernible effects for *Progoti* either implies that these firms were unconstrained or that they face too much risk even with the vouchers due to other external commitments. In the latter case, the model shows that the flexible contract induces safer low-return investments, again owing to imperfect insurance, binding credit constraints, or an incompleteness in both markets. To shed light on the channels, we now test more directly for the presence of insurance and credit rationing.

5.4.1 Insurance Rationing

According to our theory, repayment flexibility should increase risk taking if insurance markets are imperfect and the loan payment is the main outstanding obligation. To examine this link empirically, we explore four pieces of evidence. First, an implication of greater risk taking is that some firms will flourish while others, if unsuccessful, may fail. The finding that treatment increases sales volatility (column 10, Table 3) is supportive of this, at least for the sample of eligible *Dabi* clients. To probe the idea further, we study the heterogeneity of the treatment effects.

Average treatment effects in terms of business growth and household economic wellbeing may mask considerable heterogeneity that can tell us something more about whether the flexible contract induces risk taking, resulting in success as well as failure. To explore this, we estimate the following quantile treatment effect (QTE) specification:

$$Quant_{\tau}\left(\Delta y_{it}\right) = \beta_{\tau} T_i + \phi_{\tau} E_t + \sum_{s=1}^{15} \psi_{s\tau} \gamma_s, \tag{5}$$

where Δy_{it} is the change in the outcome of interest for individual i at survey t (mid- or endline) relative to the baseline and the rest of the parameters are defined as in equation (4) above. One caveat to bear in mind is that, due to the small sample size, we lack the power to estimate precise treatment effects across the distribution.

Figure 4 displays the results for the eligible *Dabi* clients. The QTE estimates reveal substantial heterogeneity in the effects of the flexible contract. While we observe a positive impact on business asset value at any centile above the median (Figure 4a), the treatment effect at the lowest centile is negative (although insignificant). The pattern is even more striking

when we study the QTEs on business revenues and household (labor) income (Figures 4b and 4c). While most treated clients raise their revenue and household income, those at the lower end of the distribution do worse relative to the control group. As an alternative way of exploring the effects throughout the distribution, we also plot the cumulative distribution function (CDF) of log household income in Figure 4d.[40] The CDF of log income for the control group lies to the right of the treatment group until the income level reaches about 9 log-points, but after that the CDFs of the two samples reverse position. This is consistent with repayment flexibility leading to greater risk taking among treated clients, causing some households in the treatment group to lose out (relative to control) while others do better. By contrast, when we conduct the same analysis for the *Progoti* borrowers, we find no evidence of any heterogeneity.[41]

Second, we estimate the heterogeneity of the treatment effect with respect to the uncertainty of the local business environment. As implied by the model, the flexible contract should facilitate riskier investments more exposed to aggregate uncertainty in the case insurance constraints bind. As an indicator of business uncertainty, we rely on the baseline data from the SME sample.[42] Every firm owner in this sample was asked about the subjective probability distribution of future demand for their product(s), similar to the method used by Guiso and Parigi (1999). Using this information, we calculate the average coefficient of variation (CV) of expected demand growth among SME-owners within a cluster (BRAC branch office) and divide the clusters into two groups: those where the average CV of expected demand growth is high (above median) or low (below median) at baseline. If the flexible contract helps eligible borrowers undertake riskier investments, we expect the effects to be larger in clusters with greater demand uncertainty. Table 6 shows that this is indeed the case among the *Dabi* borrowers. In branches with higher volatility in expected demand growth, the ITT-estimates on business revenues and costs increase: the interaction effect on revenues is 42,986 USD PPP (RI p-value=0.02). Moreover, the impact on profits seems to be concentrated among borrowers located in clusters with higher demand growth uncertainty (the interaction terms in columns 4 and 5 are large and positive though somewhat imprecise). This implies that among the *Dabi* borrowers, repayment flexibility helped borrowers particularly in markets with high demand uncertainty at baseline. Importantly, the corresponding analysis for the *Progoti* clients shows no detectable heterogeneity.[43]

[40] We use the log transformation in order to smooth outliers and make the pattern clearer and add 1 to household (labor) income as some households (about 17% of the sample) report zero income.

[41] The corresponding figures for the *Progoti* sample are reported in Appendix Figure A.1. There is no evidence of heterogeneity, neither in the QTEs nor in the distribution of log income.

[42] As this is a representative sample, it provides a sense of the business uncertainty facing the typical small firm in the local market at baseline.

[43] The results for the *Progoti* sample are report in Table A.13 in the Appendix. They show that the treatment effects are, if anything, lower in markets with higher demand uncertainty. However, with the exception of the differential effect on revenues, all estimates are imprecisely estimated at conventional levels.

Third, in addition to expectations about future demand, the realization of actual shocks should be particularly important for borrowers who take on more risk. To test this, we explore variation in local demand shocks caused by changes in agricultural productivity. In Bangladesh, agriculture is the key economic sector, accounting for 20% of GDP and 65% of the labor force, with rice subsuming 90% of total agricultural production (World Bank, 2008; Yu et al., 2010). In addition, Bangladesh is one of the most climate-vulnerable countries in the world, with droughts and heavy floods having a strong negative effect on rice yields and subsequent income (Khandker, 2012; Bandyopadhyay and Skoufias, 2015; Rahman et al., 2017). To capture sharp changes to rice productivity and thus to the local economy, we explore the occurrence of heavy floods during the growing season (December to May) of the most important rice variety, Boro. As Boro contributes to over 50% of total rice production, and as extreme flooding or drought during this period causes fatal damage to crop yields, the flooding constitutes an important downturn in local economic activity (Sarker et al., 2012; Bangladesh Bureau of Statistics, 2016; Ara et al., 2017).[44] While the firms in our sample operate in non-agricultural sectors, large agricultural productivity shocks that lower aggregate income are likely to lower demand for their products and services (Santangelo, 2019).

To construct the shocks, we compute the rainfall distribution for a 25 km radius from the centroid of each branch separately over the period 1983-2017. A negative shock is proxied by a one standard deviation increase in rainfall within the 25 km buffer zone. To match our mid- and endline survey, collected in May through August of 2016 and 2017, we measure shocks in December to May in 2016 and in 2017 relative their historical distribution. Importantly, this implies that the extreme floods occur unexpectedly after the announcement of the flexible credit contract offer in September 2015. Moreover, the closeness in time to each of our survey rounds minimizes concerns of recall bias when measuring the shocks' effect on business outcomes. In Table 7, we study the riskiness of the business activity by interacting the rain shock with the treatment indicator as well as adding an independent shock variable. A negative coefficient on the interaction term implies that activities undertaken with access to vouchers were more sensitive to demand shocks (as captured by the undesirable rainfall shock). The effect of the shock itself should also be negative as it lowers overall demand.[45] Columns 2-5 support the idea that excessive rainfall in the growing season constitutes a negative shock to the business, especially in treatment branches. We have a negative and significant interaction term for business revenues, costs, and profits.

[44] While normal floods may increase productivity and income, heavy floods have devastating effects on households (Bandyopadhyay and Skoufias, 2015).

[45] To account for the possibility that climate change affects the probability of rainfall, and that this change is correlated with changes in investment behavior, we include district-by-survey year fixed effects in the regressions. To further ensure that we exploit weather variation across branches with similar baseline likelihood of flooding, we also control flexibly for rainfall by including dummy variables corresponding to the quartiles in the rain probability distribution of the two most recent years prior to baseline.

Specifically, the treatment effect on revenues is 38,886 USD PPP in the absence of the negative rainfall shock, while the impact is only 7,200 USD PPP and imprecisely estimated for borrowers exposed to the shock. The difference between the two effects is statistically significant at -31,685 USD PPP (RI p-value=0.03). When we look at the impact of the negative rainfall realization alone, we see that in control branches the effect is -31,982 USD PPP and marginally significant. This is in line with the shock lowering sales in general. In treatment branches, the effect of the rainfall shock almost doubles. The impact in the treatment group is -63,667 USD PPP. Similarly, the responsiveness is also sizable in terms of costs and profits. Annual profits are up by 1,454 USD PPP (or over 30% at a mean of 4,276 USD PPP) in treated businesses who did not experience the rainfall shock, while for those who did, the treatment effect is indistinguishable from zero. A similar pattern is observed for monthly profits, but the interaction term (of treatment with the rainfall shock) is imprecisely estimated at conventional levels.

Overall, the interaction effect with the negative rainfall shock entirely removes the positive impact of treatment on revenues, costs, and profits which in absence of floods is significantly greater among *Dabi* clients in the treatment group relative to control. We also see a negative effect on the extensive margin, as fewer individuals are business owners in treated branches who experienced the negative rainfall realization. Together, these findings imply that *Dabi* clients with access to the flexible contract shift their activities to take on more demand-related risk.[46] When we implement the analogous analysis on the sample of *Progoti* borrowers, we find no significant treatment heterogeneity with respect to the rain shocks.[47]

Fourth, the theory is based on the idea that the flexible contract raises investments in illiquid and thus riskier business assets if the insurance market is incomplete. Hence, as a final test of risk taking, we examine how access to repayment flexibility affects the eligible borrowers' asset holdings. According to Table 3, treatment increased the eligible *Dabi* clients' business assets' value by over 50% relative to control. We begin by breaking down this effect (for the *Dabi* borrowers) into 6 different categories: tools and utensils, furniture, machines, vehicles, inventories, and buildings. While Panel A of Table 8 shows that

[46]There can be alternative mechanisms through which local rain shocks affect non-agricultural firms. E.g., Bustos et al. (2019) show that agricultural productivity may influence the supply of capital available to firms in the non-agricultural sector. If this was the relevant mechanism, then the pattern in Table 7 could be interpreted as treated firms being more exposed to capital shocks (caused by the flooding). Alternatively, treated firms may have invested in inputs, such as machines, that are more dependent on infrastructure (e.g. electricity or roads) that becomes less accessible during heavy rains. Both of these channels are in line with the interpretation that treated firms are more exposed to aggregate risk (relative to firms in the control group).

[47]The results for the *Progoti* clients are reported in Appendix Table A.14. In Appendix Tables A.15 and Table A.16, we assess the robustness of the results on heterogeneity of the treatment effects on the *Dabi* sample with respect to expected demand uncertainty and rainfall shocks. Overall, the results of the heterogeneity analysis are robust to winsorizing the data at the top. This rules out the concern that the heterogeneity results could be driven by a handful of outliers.

treatment and control were as likely to own an asset within each group, Panel B reveals that the aggregate value increased across the majority of categories. Specifically, treatment increased the ownership of tools and utensils by 73 USD PPP (column 1), furniture by 57 USD PPP (column 2), machinery by 148 USD PPP (column 3), and inventories by 1,105 USD PPP (column 5). These effects correspond to a 63% increase in tools and utensils (RI p-value=0.032), a 45% increase in furniture (RI p-value=0.020), a 154% increase in machines (RI p-value=0.194), and a 41% increase in inventories (RI p-value=0.043) relative to the mean in the control group. The point estimates for vehicles and buildings are negative but imprecisely estimated.

To better understand borrowers' ability to liquidate these assets and also to validate the model's assumption on asset illiquidity, we collected additional information on the value lost in case eligible clients were forced to rapidly sell their assets.[48] Specifically, all eligible borrowers were asked to report how much they could sell their assets for if they had one month to sell them versus if they were to sell the assets within 24 hours. In Figure 5, we plot the percentage of the asset value that respondents reported they would lose in case of a rapid sale (conditional on having a given type of asset). On average, respondents stated that they would obtain 38% less if they had to sell their assets in one day as opposed to one month. For all types of assets, the eligible borrowers reported that they would lose more than 30% of the value under a fire sale, with the highest value lost for tools (42%), followed by inventories (38%), and other assets (37%). While these findings need to be interpreted with some caution (with data collected 5 years after the baseline survey and during the Covid-19 pandemic), the evidence suggests that business assets in general are difficult to liquidate in this setting and, as such, investing in them entails substantial risk for small businesses.

Returning to Table 8, in Panel C we explore the variety of business assets held by the eligible *Dabi* clients by counting the number of different asset types within tools and utensils, furniture, machines, and vehicles.[49] The results show that eligible *Dabi* borrowers in treated branches increased the variety of tools and furniture they own by about 13% compared to the control group (RI p-values=0.067-0.072). Finally, Panel D of Table 8 reports differences in terms of the unit value of the business assets held in each category.[50] We find that the unit value of tools and utensils goes up by 25 USD PPP (43%) and that of furniture by 9 USD PPP (14%), but these effects are somewhat imprecisely estimated

[48] For this, we resurveyed all eligible borrowers in our sample in May 2020. Due to the ongoing Covid-19 pandemic, the survey was conducted via phone. The attrition rate was 33% (26%) among the *Dabi* (*Progoti*) clients, but balanced by treatment status [RI p-value=0.493 (0.717) for the *Dabi* (*Progoti*) samples].

[49] Asset type was not recorded for the inventory and building categories.

[50] The sample size shrinks, as the value per unit is undefined for respondents who do not own any assets of a given category. While Panel A of Table 8 shows that there is no selection into a specific asset category, it is still possible that the results in Panel D are partly driven by selection into a particular asset type. As we lack data on the unit value of inventories and buildings, we omit these categories.

as the RI p-values are above 10%. To the extent that the wider variety of inputs captures increased experimentation with the production process (Panel C) and that these (possibly less common) inputs carry a higher unit price (Panel D), it is a further indication of more risk taking.[51] Finally, we note that there is no evidence of an increase in the value or variety of types of business assets for the *Progoti* sample.[52]

While the results square well with the theoretical prediction that repayment flexibility induces risk taking, pointing to the presence of insurance rationing at least for the *Dabi* clients, they are open to interpretation for the *Progoti* borrowers. The lack of increased risk taking among the larger firms either suggests that insurance constraints are less important to them or that too much risk remains because of other (periodical) external commitments, such as rent, utilities, transportation, and salaries. To investigate this last point, we compare annual recurrent costs across the *Progoti* and *Dabi* firms. On average, *Progoti* respondents report recurrent expenses over the last 12 months (including building and land rent, electricity, transportation, and wages/benefits) corresponding to 7,238 USD PPP compared to 1,394 USD PPP for *Dabi* respondents at baseline.[53] The more than five-fold difference offers a possible explanation in line with our theory for why the *Progoti* borrowers, who take up the flexible contract at a similar rate to the *Dabi* clients, refrain from undertaking riskier projects.

5.4.2 Credit Rationing

If the effects of the flexible contract are driven mainly by the credit-constraint mechanism, our model predicts that repayment flexibility should be particularly valuable to poorer and higher-ability individuals. To study this hypothesis, we examine the heterogeneity of the treatment effects with respect to the baseline economic status and schooling level. We use two different indicators of baseline economic status: land ownership and household income. For the *Dabi* sample, both measures show consistently that the treatment effects are not significantly different for respondents who had a lower economic status at baseline (see Appendix Table A.18). If anything, the point estimates imply that better-off borrowers (who owned land or had higher household income) benefitted more, not less, from the flexible loan in terms of business profits. Similarly, we find no consistent and significant impact of ability (as proxied by schooling) – see Appendix Table A.19. When we estimate the same set of specifications for the *Progoti* clients, there is no significant heterogeneity with respect to baseline economic status (see Appendix Table A.20), but we do find

[51] An alternative interpretation of the findings in Panel D is that the eligible *Dabi* clients buy higher-quality inputs.
[52] The results for the *Progoti* borrowers are presented in Appendix Table A.17.
[53] The difference is highly significant, with t=8.28 in a t-test for the equality of means. Annual recurrent costs were balanced at baseline by treatment status.

that the average treatment effects hide important heterogeneity across the borrowers' skill level. Appendix Table A.21 shows that the treatment effects on revenues and profits are significantly higher among *Progoti* clients with high (above-median) schooling at baseline, suggesting that skilled *Progoti* borrowers benefitted more from the flexibility. The lower panels of Table A.21 show that this heterogeneity is not simply driven by highly-educated clients being wealthier (as proxied by the size of land owned at baseline) or by them being less liquidity constrained (as proxied by a higher household income at baseline) – if anything, once we control for these indicators, the treatment heterogeneity with respect to schooling is more precisely estimated.

In summary, the lack of differential treatment effects among *Dabi* clients, despite their larger overall impact, indicates that the effects of the flexible contract on traditional microfinance borrowers are not primarily driven by the credit mechanism.[54] Conversely, for larger firms, the credit-constraint channel could be more relevant as the benefits of repayment flexibility are greater for more able *Progoti* borrowers.

5.5 Selection Effects

We now turn to the question of how repayment flexibility affected the selection of individuals into borrowing at the market level. According to our theory, to the extent the flexible contract provides insurance, it may attract more or less risk averse borrowers. We investigate this prediction by comparing the characteristics of the firm owners that choose to borrow from BRAC in the treatment and control branches after the introduction of the flexible contract.

To test whether the introduction of the flexible loan attracted different types of borrowers in treated branches relative to control, we rely on the representative sample of SMEs. Specifically, we examine if the launch of the flexible contract in the treated branches affected the pool of microentrepreneurs that were borrowing from BRAC by mid- or endline relative to the control group. We estimate the following model:

$$y_{it} = \beta \cdot T_i + \theta \cdot x_{i0} + \sigma \cdot T_i \cdot x_{i0} + \lambda \cdot y_{i0} + E_t + \sum_{s=1}^{15} \gamma_s + \epsilon_{it}, \tag{6}$$

where y_{it} is an indicator for having taken a loan from BRAC for business purposes by mid- or endline, x_{i0} is some characteristic of respondent i as measured at baseline, and the other parameters are defined as in specification (4) above. In equation (6), σ identifies

[54] These results should be interpreted with some caution due to the small sample size and noisy indicators, which affect the precision of the empirical tests. We view this as suggestive evidence that the credit-constraint channel is not the main mechanism determining the treatment effects on *Dabi* clients. It is possible that the ability to delay only two monthly payments is insufficient to alleviate the credit constraint, thereby limiting *Dabi* clients from making larger investments. If additional vouchers were available, the relevance of the credit-constraint channel might increase.

the heterogeneity of the treatment effect with respect to x_{i0}. It tests the null hypothesis that treatment induced differential selection of microentrepreneurs along the dimension captured by x_{i0}. In particular, we evaluate if SME owners who borrow from BRAC for their businesses are different in terms of risk aversion and entrepreneurial skills. To proxy for the latter, we use the baseline willingness to start a new business, the willingness to expand the existing business (by hiring more workers), and the productivity of the entrepreneurs' business (profit per worker). Finally, we test for the importance of the respondent's wealth via the size of the landholdings.

Table 9, columns 2-9 show the main results on selection, whereas column 1 examines average take up. Although take up increases, the estimate is noisy suggesting that the introduction of the flexible contract and the information campaign about the new loan made it no more likely that SME owners in treated branches joined BRAC relative to the control group. However, most of the remaining columns indicate substantial evidence of selection among those drawn in. Column 2 shows that risk-averse business owners were less likely to become BRAC clients in the treatment branches. In particular, take up of BRAC loans increased 3.5 *ppt* more for SME owners with low (below-median) risk aversion (RI p-value=0.029). In column 3, we find that respondents who expressed an interest in opening up a new business were 8.8 *ppt* more likely to have become BRAC clients in the treatment branches (RI p-value=0.017). The next column suggests that business owners who were interested in hiring new workers are 4 *ppt* more likely to become BRAC clients in the treatment branches, but this effect is imprecisely estimated at conventional levels. While column 5 shows that profits per worker measured at baseline was unimportant, we do see a significant differential impact on take up using the aggregated entrepreneurship index (in column 6), which combines the indicators in columns 2-5 (RI p-value<0.01). Finally, column 7 implies that wealthier SME owners with higher land ownership were more likely to borrow from BRAC in the treatment branches. If the effects were induced by vouchers alleviating the credit constraint, we would expect the share of less wealthy borrowers in the client pool to increase with the introduction of repayment flexibility. Importantly, the last two columns show that the effects on risk aversion and the entrepreneurship index are insensitive to the inclusion of land size as a proxy for wealth. Together, these estimates are in line with the predictions of our theory. In the model, the degree of risk aversion in the resulting borrower pool declines if individuals selecting in under repayment flexibility predominately belongs to the group of less risk-averse firm owners who wants to expand their operations.[55]

In the Appendix, we assess the robustness of these findings. We show that the observable characteristics x_{i0} in specification (6) do not predict differential demand for BRAC loans

[55]In addition to the market-wide selection of BRAC clients, we could also have differential take up among the eligible borrowers. In Appendix Section A.2.1, we discuss selection along this margin.

across treatment and control branches at baseline (Table A.22); that the results are insensitive to the inclusion of respondent characteristics such as age and education (Table A.23); and that the findings are similar for SME owners who had taken a loan from BRAC in the past, ruling out concerns that the information campaign had the additional effect of informing about the existence of BRAC as opposed to the new product alone or that the extra contact by the enumerators signaled that they were particularly desirable candidates for BRAC loans (Table A.24).

Overall, the results in Table 9 suggest that the flexible repayment contract is particularly attractive for less risk-averse borrowers who are willing to take risks in order to grow their businesses.

6 Discussion

In this section, we discuss the interpretation of the empirical results in light of our theoretical framework and consider alternative explanations. We then test for possible spillover effects that the flexible loan offer may have had on borrowers not eligible to receive the contract. Finally, we assess the potential policy implications of our findings.

6.1 Interpreting the Results

The empirical analysis shows that traditional microfinance clients taking the flexible *Dabi* loan experienced meaningful improvements in their business outcomes and socioeconomic status. Investigating specific channels, we see an increase in risk taking but no evidence that repayment flexibility helped poorer or more able borrowers. These findings are consistent with the effects of the flexible contract being primarily driven by the insurance mechanism (see Section 3 and Table 1 for a summary of our theory's main predictions). Putting the larger *Progoti* businesses to the same test, we find a small and insignificant impact overall, with no indication of increased risk taking but some support for higher returns among the skilled clients. One explanation for these results is that larger firms have other external obligations, in addition to the loan payment, implying that too much risk remains even with repayment flexibility at hand.[56] In this case, our model illustrates that the flexible contract leads to smaller gains that could be particularly valuable to higher-ability clients, suggesting the presence of credit constraints for the larger businesses. Finally, we show that the flexible contract decreased the degree of risk aversion in the representative pool of microentrepreneurs that were borrowing from BRAC. This is what our theory predicts, if the entrepreneurs entering under repayment flexibility primarily consist of less risk-averse individuals with a desire to expand their firms. The selection results add further support to the view that an important mechanism driving our findings, at least for

[56]Note that this is one potential explanation. Given that the two samples (*Dabi* and *Progoti*) and associated loan products are different along a number of key dimensions (e.g., collateral requirements, group meetings, loan size etc.), other alternative explanations are possible.

smaller businesses, is the need to alleviate binding insurance constraints.

There are alternative mechanisms through which the new, flexible loan product may have affected the borrowers' outcomes. First, by delaying the loan repayment without having to pay additional interest, the eligible clients are effectively charged a lower interest rate. While this price or income effect could potentially drive our results, it is unlikely to be the main mechanism explaining the findings for the *Dabi* clients where we observe the larger treatment effects. To see this, note that the average loan size among eligible *Dabi* clients in the treatment branches is 1,484 USD PPP, yielding a monthly loan payment (principal and interest) of 150.9 USD PPP. Among the treated eligible borrowers, 17% spent one voucher and 21% used both, implying a maximum saving of 89 USD in loan payments for the average client, $[(0.17 \times 150.9) + (0.21 \times 150.9 \times 2) = 89]$. In order for this to explain the entire effect on monthly business profits (97 USD), the annual rate of return has to be more than ten-fold (1,090%). This is much higher than what is found in experimental studies on comparable samples (e.g., de Mel et al., 2008 find returns to capital of 55%–63% per year among microenterprises in Sri Lanka). Therefore, the income effect is unlikely to be the main channel driving our findings. Moreover, the income effect ought to be especially valuable for poor clients, but (as previously shown) we do not find any evidence of this. In addition, to benefit as much as possible from the income effect, both vouchers should be exhausted and spent upfront in the first two months. However, about 40% of the borrowers who took the flexible loan did not employ any voucher and vouchers were rarely used consecutively in months 1 and 2, but instead employed throughout the loan cycle or not at all. The fact that a large share of the flexible loan clients did not use their vouchers is in line with the theoretical prediction of Corollary 1. It suggests that some borrowers held on to their vouchers as an option value but that the need to use them did not arise.[57]

Second, another channel could be that the flexible contract offer was perceived as an encouragement to borrow from BRAC and that the encouragement itself explains part of the treatment. To assess whether this potential effect is important, we exploit variation in the number of prior BRAC loans taken by the eligible borrowers. If an encouragement effect is present, it should be stronger among less regular clients. On average, eligible *Dabi* (*Progoti*) borrowers had taken 6.8 (5.7) loans from BRAC by the 2015 baseline. There is substantial variation – the standard deviation of the number of previous BRAC loans is 3.3, both among eligible *Dabi* and *Progoti* clients. In Table A.25, we check the heterogeneity of the treatment effects with respect to the number of past BRAC loans. We note the following. First, a higher number of previous BRAC loans is positively correlated with the

[57] A complementary explanation for borrowers not using the vouchers could be that they wanted to appear risk free to obtain a better standing with BRAC. Section A.2.4 in the Online Appendix provides further information on the timing and pattern of voucher use among *Dabi* and *Progoti* clients.

likelihood to re-borrow from BRAC within the control group.[58] This is in line with more "regular" clients being more likely to keep their relationship with BRAC. Therefore, we expect any encouragement effect (to re-borrow) that the flexible offer may have had to be weaker for them. Second, the treatment effect on the extensive margin of BRAC borrowing is, if anything, stronger for more regular BRAC clients.[59] This implies that the encouragement effect is unlikely to be driving the treatment impact we observe on borrowing from BRAC.[60] Finally, we do not see any significant heterogeneity in the treatment effects across the business outcomes. While the interaction terms in Panel A (for *Dabi* clients) are positive, they are imprecisely estimated at conventional levels. Overall, this suggests that the results are not driven by less regular borrowers, making it unlikely that an encouragement effect could explain our findings.

Third, our current theoretical framework assumes a fixed investment, implying that the loan value only increases for the voucher clients that were rationed under the standard contract. In a more general model with a variable investment size and decreasing returns-to-scale technology, repayment flexibility will boost the investment size and borrowing for all clients (as the illiquid project generates a higher return). This provides an explanation for the increase in the BRAC loan value that we observe among the eligible *Dabi* borrowers in the treatment branches.

Finally, there are other complementary reasons for the *Progoti* findings. While it is possible that the larger firms were unconstrained to begin with, this does not explain why they took up the flexible loan offer at almost the same rate as the *Dabi* clients. Another explanation has to do with the onerous collateral requirement, equal in value to the loan (unlike the collateral-free *Dabi* loan). Although the vouchers should be particularly valuable to borrowers who stand to lose their collateral, all of the eligible *Progoti* clients selected into BRAC under the standard contract. As it is costlier to take on risk under this contract (especially with collateral at stake), it may have attracted firms less prone to risk taking even when offered repayment flexibility.

6.2 Spillover Effects on Other Clients' Repayment Behavior

Since the flexible contract was offered to borrowers with good credit histories, this could affect the incentives of other clients: for existing ineligible borrowers as well as for borrowers arriving after the experiment was initiated. In particular, if ineligible clients also

[58] Column (1) of Table A.25 shows that a one standard deviation increase in number of previous BRAC loans is associated with a 5 *ppt* increase in likelihood to re-borrow from BRAC within the control group.

[59] In particular, a one standard deviation increase in the number of previous loans taken from BRAC is associated with a 5 *ppt* increase in the treatment effect on likelihood to re-borrow from BRAC. While the magnitude of the point estimate is identical in both the *Dabi* and the *Progoti* samples, it is borderline insignificant in the *Dabi* sample according to the RI p-value.

[60] The fact that treatment had a stronger effect (on borrowing from BRAC) among more regular BRAC clients could be due to them being more experienced with the standard BRAC loan contract and therefore being better able to understand and appreciate the value of the new, flexible loan product they were offered.

value access to flexible loans, they may improve their efforts to meet their repayment obligations. Alternatively, they may resent not having been selected and quit BRAC or default on their loans.

To test for spillover effects on ineligible borrowers' repayment behavior, we acquired the identifiers for all clients who were borrowing at baseline, but deemed ineligible to receive the flexible loan offer.[61] When we examine the impact on their repayment behavior, we do not find any significant effects. Panel A of Table A.26 shows that the ineligible *Dabi* clients in the treated branches were 4 *ppt* less likely to leave BRAC, but this effect is imprecisely estimated. As for default rates, all effects are close to zero. We also have administrative information for borrowers who became BRAC clients after the launch of the experiment. Panel B of Table A.26 shows that the introduction of the flexible contract in the treatment branches did not have any impact on the repayment behavior of these borrowers. Similarly, we do not find any significant differences for newly arrived *Progoti* clients (reported in Table A.27 in the Appendix). Together, the findings imply that the flexible loan pilot did not have significant spillover effects on the repayment behavior of other clients.

6.3 Policy Implications

Given the sizable and positive impact of the flexible contract on traditional microfinance clients, it is important to consider whether the new loan product is viable more generally. To do so, we compare the magnitude of the benefits for the *Dabi* borrowers relative to the costs of the pilot and estimate its internal rate of return. The results are presented in Appendix Table A.30. We initially set the social discount rate at 5%, in line with World Bank guidelines (column 1), and then report two alternative rates: 10% (column 2) and 22% (column 3), with the last one corresponding to the interest rate charged by BRAC. The average cost of the pilot per eligible *Dabi* client in the treatment branches was 58.61 USD PPP.[62] This is the result of an initial cost (at year 0) corresponding to 51.10 USD PPP per beneficiary and the cost of foregone interest payments per client during each year of 1.11 USD PPP. As a measure of benefits, we use changes in household income at mid- (year 1) and endline (year 2). The "total benefits" sum up the changes in household income to compute the net present value of benefits, corresponding to 2,606 USD PPP.[63] This is divided by the

[61] We were able to identify 88% of the borrowers ineligible at baseline (69,801 *Dabi* clients) using BRAC's administrative records as of August 2017.

[62] This cost is calculated as if there were no *Progoti* clients in the experiment. That is, we assume that the fixed cost of setting up the experiment would have been the same if we had done it only with the *Dabi* borrowers. As such, it is likely an upper bound of the true cost per *Dabi* client.

[63] The underlying assumption is that the effect of increased business assets is fully incorporated in the household income changes. If capital accumulation as of year 2 leads to even greater increases in household income in the future, we will underestimate the benefits of the program. The "change in household income in year 1" and "year 2" report, respectively, the ITT estimates of the program on household income, for the mid- and endline surveys. As the impact on household income is insignificant in year 1 and significant at the 10% level in year 2, an alternative would be to assume that the effect in year 1 is zero. In this case, the cost-benefit ratio is 15 and the internal rate of return is equal to 4 for the case of a social discount rate of 22%.

program cost to obtain the benefit/cost ratio. The estimates show that the average benefit of the pilot was 45, 39, or 30 times larger than the cost, depending on the social discount rate we apply. The average internal rate of return in our baseline specification is 26, positive, and clearly above the discount rate. Since we find few significant treatment effects on the outcomes of the *Progoti* clients, introducing a flexible loan product for such clients does not seem to be viable from a cost-benefit perspective.

If the costs of introducing a flexible loan product for traditional microfinance clients are so small compared to the benefits, why do most microfinance institutions still prefer to offer traditional loans with a strict repayment structure? One reason could be related to the selection effects discussed in Section 5.5. We observe that even the pilot of a loan product with repayment flexibility attracted less risk-averse borrowers, with a greater desire to invest in riskier projects. This is in line with concerns reported by many practitioners and credit officers in the microfinance industry that moving away from the traditional microfinance model may cause default rates to increase in the long run. However, since our findings show that the repayment behavior remained the same (or even improved) for clients that were offered the flexible contract, the industry's view may be overly pessimistic. In fact, an underlying rationale for repayment flexibility is precisely to provide state-contingent insurance to avoid difficulties in meeting payments on time. This is an important distinction compared to earlier work assessing features of the typical credit contract. E.g., Field et al. (2013) find that the provision of a grace period increased default rates. Unlike a grace period, repayment flexibility caters to unexpected shocks throughout the loan cycle (allowing for greater risk taking without jeopardizing the repayment obligation).[64] At the same time, our results are based on the short-term effects of a pilot where the terms of the traditional microfinance product were altered. It is important to be careful when extrapolating beyond our population of borrowers who had built good credit histories under the standard credit contract. If BRAC, or other lenders, were to offer loans with flexible repayment plans to first-time borrowers, the effects may be different.[65] More work on the long-run impact of flexible loan products on lenders' portfolio is necessary to shed further light on this question.

7 Conclusion

Based on the extensive evidence of credit rationing and risk holding back small firm growth, our conjecture was that a financial instrument that could address imperfections in the credit and insurance market would improve the outcomes of poor microentrepreneurs.

[64] Also, in contrast to Field et al. (2013), the flexible contract was optional whereas the grace period was mandatory for all treated borrowers. It is possible that default rates would have been higher (or lower) in our setting if repayment flexibility had been made a compulsory feature of the contract.

[65] In line with this, Brune et al. (2022) find that offering first-time borrowers in Colombia a flexible microcredit product similar to the one we evaluate increased defaults, with no effect on clients' profits.

Together with the NGO BRAC, we designed an intervention aimed at relaxing both of these constraints via the provision of repayment flexibility. We followed existing and potential microfinance clients across 50 branch offices and local markets in Bangladesh over a two-year period to examine the relative benefit of flexible versus standard credit contracts, the importance of credit and insurance constraints, and the selection into borrowing.

We document substantial improvements in the business outcomes and socioeconomic status of the traditional microfinance clients offered the flexible as opposed to the standard credit contract and find that uninsured risk helps explain these results. The effects are heterogenous, driven by clients who faced greater demand uncertainty at baseline and clients who did not experience negative demand shocks during the experiment. The impact of repayment flexibility is less transformative for borrowers with larger businesses and larger loans. To the extent that other contractual obligations hold back these clients, there is some evidence that larger firms are credit rationed, with the returns to the flexible contract being higher for more able entrepreneurs. Repayment behavior for both traditional microcredit and larger loans weakly improve, suggesting that the intervention is fairly cost-effective, at least for the traditional microfinance clients. We also show that repayment flexibility attracts less risk-averse borrowers interested in expanding their business activities. This last finding, together with the increased risk taking that we observe among borrowers offered the contract, indicates that repayment flexibility provides a simple but novel way to spur risk taking and entrepreneurship among the poor. From a policy perspective, the contract is a cost-effective financial product that promotes business outcomes by insuring against entrepreneurial risks. However, the flexible contract is not a cure-all. The less than universal take-up rates suggest that the product may not appeal to all potential borrowers.

There are several interesting avenues for future research. While the evidence in this paper indicates that the flexible loan promotes business activities, it could also allow for increased consumption smoothing. To fully capture consumption behavior, one would need diaries that track households regularly over longer periods. Richer, high-frequency data on borrowers' social networks and their transfers would further enable an analysis of how the insurance provided by the vouchers extend through the network. The repayment flexibility could also be expanded to include additional vouchers up to paying everything at the end of the loan cycle. Such a contract would probably have to balance the optimal amount of insurance or credit provision or both against potential concerns of opportunistic behavior. Future research should also address how recurrent contractual obligations, in addition to the loan payments, affect borrowing, risk taking, and subsequent growth of larger firms.

Data Availability Statement

The data and code underlying this research is available on Zenodo at https://doi.org/10.5281/zenodo.8155039

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Tables and Figures

TABLE 1: SUMMARY OF PREDICTIONS

Market environment under the standard contract		*Predicted change under repayment flexibility*				
Credit is rationed	Insurance is rationed	Increase in risky investment	Increase in safe investment	Poor benefit more	Able benefit more	Selection wrt. risk aversion
Panel A: Other contractual obligations do not matter						
✓	✓	+	0	+	+	$\lessgtr 0$
	✓	+	0	0	0	$\lessgtr 0$
✓		$+^{*}$	0	+	+	0
		0	0	0	0	0
Panel B: Other contractual obligations may matter						
✓	✓	0	+	≥ 0	+	$\lessgtr 0$
	✓	0	+	0	0	$\lessgtr 0$
✓		0	$+^{**}$	+	+	0
		0	0	0	0	0

Notes: The table summarizes the predictions of the theoretical model, conditional on the different market imperfections. *In contrast to row 1 of Panel A, the increase in risky investment in row 3 is confined to poor borrowers. **Contrary to row 1 of Panel B, the increase in safe investment in row 3 is limited to poor borrowers.

TABLE 2: EFFECTS ON CREDIT MARKET OUTCOMES

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	BRAC loan		Non-BRAC loan		Transfers	Transfers or	Net borrowing	Aggregate
	yes=1	value	yes=1	value	received	loans given	or transfers	index
					Panel A: *Dabi*			
Treatment	0.063**	302.413***	-0.041*	-28.041	336.187	122.002***	510.867*	0.172***
	(0.024)	(73.246)	(0.023)	(95.669)	(283.589)	(42.091)	(272.666)	(0.051)
	[0.044]	[0.001]	[0.150]	[0.792]	[0.366]	[0.003]	[0.121]	[0.009]
Observations	2168	2168	2168	2168	2168	2168	2168	2168
Mean in control	0.571	1181.671	0.234	543.632	1449.935	165.716	3009.522	0.000
					Panel B: *Progoti*			
Treatment	0.024	258.669	-0.038**	-306.144	-558.212	13.723	-1078.712	-0.034
	(0.024)	(257.204)	(0.015)	(509.519)	(388.486)	(56.182)	(843.309)	(0.046)
	[0.443]	[0.422]	[0.051]	[0.619]	[0.291]	[0.848]	[0.308]	[0.527]
Observations	3066	3066	3066	3066	3066	3066	3066	3066
Mean in control	0.522	4793.960	0.227	2681.145	3277.109	391.655	10360.559	0.000

Notes: The table presents the treatment effects on loans and transfers of eligible *Dabi* and *Progoti* borrowers. Data comes from the midline (2016) and endline (2017) surveys, except in columns 1-2 where the data comes from BRAC's administrative records. All regressions control for the baseline (2015) value of the outcome, an indicator variable for the endline survey and district (strata) fixed effects. "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered it to the eligible clients. The regressions are OLS regressions based on specification (4). Standard errors are clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets. In column 1, the dependent variable is a dummy =1 if the respondent had a *BRAC Loan* at the midline or endline survey. In column 2, the dependent variable is the principal amount (in USD PPP) of the *BRAC Loan* the respondent had at the midline or endline survey. In column 3, the dependent variable is a dummy =1 if the respondent had a *Non-BRAC Loan* at the midline or endline survey. *Non-BRAC Loan Value* is the monetary value (in USD PPP) of all formal and informal loans taken from other lenders (banks, MFIs other than BRAC, informal money-lenders or relatives and friends) during the past 12 months. *Transfers Received* is the monetary value (in USD PPP) of any cash or in-kind informal transfers that the respondent's household received over the last 12 months. *Transfers or Loans Given* is the total monetary value (in USD PPP) any cash or in-kind informal transfers and any loans that the respondent's household gave to others over the last 12 months. *Net Borrowing or Transfers* is the monetary value (in USD PPP) of net borrowing (loans borrowed minus loans lent) and net tranfers (tranfers received minus transfers given) combined. "Aggregate index" is constructed by first standardizing all outcome variables in columns (1)-(7) with respect to the control group in the relevant survey wave (subtracting the mean in the control and dividing by the standard deviation of the control group), then taking their average and standardizing again with respect to the control group.

TABLE 3: EFFECTS ON BUSINESS OUTCOMES

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Business owner	Business assets	Number of workers	Business hours	Owner's hours worked	Revenues (annual)	Costs (annual)	Profits (annual)	Profits (month)	Range of revenues	Aggregate index
Panel A: *Dabi*											
Treatment	0.026	1881.254**	0.172	127.789	71.219	28153.189***	24392.605***	1087.586	96.576*	2801.612**	0.183**
	(0.025)	(926.570)	(0.326)	(83.059)	(69.523)	(8716.036)	(8099.027)	(651.456)	(56.069)	(1215.694)	(0.079)
	[0.350]	[0.064]	[0.680]	[0.187]	[0.389]	[0.006]	[0.003]	[0.171]	[0.182]	[0.066]	[0.050]
Observations	2087	2086	2087	2087	2087	2087	2087	2087	2087	2087	2087
Mean in control	0.549	3685.413	1.091	1577.286	1474.800	32561.844	26870.630	4275.948	358.718	2647.696	-0.000
Panel B: *Progoti*											
Treatment	-0.004	1740.773	1.068**	74.965	38.695	6851.723	-1.33e+04	145.652	-6.950	-8073.473	0.015
	(0.013)	(1653.815)	(0.438)	(73.042)	(55.291)	(18148.570)	(15979.711)	(880.334)	(77.065)	(5411.127)	(0.054)
	[0.844]	[0.426]	[0.035]	[0.407]	[0.588]	[0.752]	[0.486]	[0.879]	[0.938]	[0.295]	[0.812]
Observations	2854	2854	2854	2854	2854	2854	2854	2854	2854	2854	2854
Mean in control	0.893	20936.624	2.428	2923.813	2615.572	1.68e+05	1.69e+05	13521.567	1101.980	22956.038	0.000

Notes: The table presents the treatment effects on business outcomes of eligible *Dabi* and *Progoti* borrowers. Data comes from the midline (2016) and endline (2017) surveys. All regressions control for the baseline (2015) value of the outcome, an indicator variable for the endline survey and district (strata) fixed effects. "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered it to the eligible clients. "Flexible loan" is a dummy variable equal to 1 if the respondent borrowed under the new, flexible loan contract and 0 otherwise. The regressions are OLS regressions based on specification (4). Standard errors are clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets. *Business Owner* is a dummy variable equal to one if the respondent owns a business. *Business Assets* is the monetary value (in USD PPP) of business assets (tools, machinery, furniture, vehicle and inventories) at the time of the survey. *Number of Workers* is the number of workers (other than household members) who work in the business on a typical working day. *Business Hours* is the number of hours that the enterprise was in operation over the last twelve months. *Owner's Business Hours* is the number of hours that the business-owner worked in the business over the last twelve months. *Revenues* is the monetary value (in USD PPP) of sold products or delivered services of the business over the last twelve months. *Costs* is the monetary value (in USD PPP) of the total amount the enterprise spent on personnel expenses, machines, tools, equipment, space, transportation, electricity, fuel for machines, and total purchase of stock over the last twelve months. *Profits (annual)* is profit (in USD PPP) of the business over the last twelve months. *Profits (month)* is profit (in USD PPP) of the business over the month preceding the survey. *Range of Revenues* is the difference between the level of revenues during the worst month in terms of sales and the level of revenues during the best month in terms of sales during the past year. If the respondent reported that revenues did not fluctuate throughout the year, the range of revenues is set equal to zero. "Aggregate index" is constructed by first standardizing all outcome variables in columns (1)-(10) with respect to the control group in the relevant survey wave (subtracting the mean in control and dividing by the standard deviation of the control group), then taking their average and standardizing again with respect to the control group.

TABLE 4: EFFECTS ON HOUSEHOLD SOCIOECONOMIC STATUS

	(1)	(2)	(3)	(4)	(5)	(6)
	Household income	Consumption per capita	Non-business assets value	Land owner (Yes=1)	Size of land owned	Aggregate index
			Panel A: *Dabi*			
Treatment	1309.195*	12.417	610.540**	0.076***	10.366***	0.165***
	(774.989)	(82.422)	(243.284)	(0.022)	(3.319)	(0.056)
	[0.194]	[0.888]	[0.039]	[0.002]	[0.012]	[0.026]
Observations	2168	2085	2168	2087	2168	2168
Mean in control	7820.156	1613.159	3433.611	0.472	37.953	-0.000
			Panel B: *Progoti*			
Treatment	-667.980	-119.154	-392.274	-0.005	-13.853	-0.050
	(918.048)	(118.311)	(397.728)	(0.017)	(14.714)	(0.037)
	[0.576]	[0.346]	[0.382]	[0.778]	[0.438]	[0.260]
Observations	3066	2853	3066	2854	3066	3066
Mean in control	18641.784	2296.669	7954.081	0.820	168.575	-0.000

Notes: The table presents the treatment effects on indicators of household socioeconomic status outcomes of eligible *Dabi* and *Progoti* borrowers. Data comes from the midline (2016) and endline (2017) surveys. All regressions control for the baseline (2015) value of the outcome, an indicator variable for the endline survey and district (randomization strata) fixed effects. "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered it to the eligible clients. The regressions are OLS regressions based on specification (4). Standard errors are clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets. *Household Income* the monetary value (in USD PPP) of the household members' total earnings from wage-employment over the past 12 months and the profit(s) of any household business(es) operated by the household. *Consumption per capita* is the monetary value (in USD PPP) of the total household expenditure per capita (in PPP USD) over the last twelve months divided by the household size on consumption measures). *Non-Business Assets Value* the monetary value (in USD PPP) of durable non-business assets owned by the respondent's household at the time of the survey. *Land Owner* is a dummy variable =1 if the household owns any land (excluding the homestead). *Size of Land Owned* is the amount (in decimals) of land owned by the household (excluding the homestead). "Aggregate index" is constructed by first standardizing all outcome variables in columns (1)-(5) with respect to the control group in the relevant survey wave (subtracting the mean in control and dividing by the standard deviation of the control group), then taking their average and standardizing again with respect to the control group.

TABLE 5: EFFECTS ON REPAYMENT BEHAVIOR

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Borrower no longer with BRAC	Classified as "Default"	Loan not fully paid in 12 months	Loan not fully paid by the end of the loan cycle	Full loan not repaid within 2 months after the end of the loan cycle	6 months	12 months
			Panel A: *Dabi*				
Treatment	-0.068*	-0.017**	0.082***	-0.064***	-0.018	-0.019	-0.019
	(0.036)	(0.008)	(0.025)	(0.017)	(0.013)	(0.013)	(0.013)
	[0.152]	[0.095]	[0.007]	[0.001]	[0.269]	[0.217]	[0.218]
Observations	945	945	914	914	914	914	914
Mean in control	0.371	0.048	0.109	0.109	0.046	0.042	0.040
			Panel B: *Progoti*				
Treatment	-0.025	-0.003	0.052***	-0.094***	0.004	0.007	0.006
	(0.028)	(0.007)	(0.018)	(0.016)	(0.009)	(0.008)	(0.007)
	[0.478]	[0.712]	[0.023]	[0.000]	[0.725]	[0.473]	[0.412]
Mean in control	0.48	0.03	0.145	0.145	0.031	0.027	0.023
Observations	1467	1467	1402	1402	1402	1402	1402

Notes: The table presents the treatment effects on retention and loan repayment of eligible *Dabi* and *Progoti* borrowers. Data comes from BRAC's administrative records collected at endline (2017). "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered it to the eligible clients. *Borrower no longer with BRAC* is a dummy variable taking the value of one if the client has repaid the loan and not taken out a new one (as opposed to having a current loan or having defaulted). *Default* is a dummy variable taking the value of one if the borrower was categorized by the credit officer as not having repaid the loan by the end of the loan cycle. *Loan not fully paid in 12 months* is a dummy variable taking the value of one if the borrower does not repay the full loan by the end of the loan cycle (12 months). *Loan not fully paid by the end of the loan cycle* is a dummy variable taking the value of one if the borrower does not repay the full loan within the 14th month in the treatment branches and by the 12th month in the control branches. *Full loan not repaid within 2 (6) [12] months after the end of the loan cycle* are dummy variables taking the value of one if the borrower did not repay the full loan by the second (sixth) [twelfth] month after the end of the loan cycle. For eligible clients in treatment branches, the end of the loan cycle is computed starting two months after the expected last collection date; in control branches from the expected last collection date (see Appendix B for further details). Robust standard errors clustered at the branch level in parentheses (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets.

TABLE 6: HETEROGENEITY W.R.T. EXPECTED DEMAND GROWTH UNCERTAINTY

	(1)	(2)	(3)	(4)	(5)
	Business owner	Revenues (annual)	Costs (annual)	Profits (annual)	Profits (month)
Treatment	0.01	3860.08	-1957.58	44.02	11.06
	(0.03)	(12064.47)	(9969.81)	(1016.88)	(106.32)
	[0.78]	[0.72]	[0.84]	[0.97]	[0.92]
High expected demand uncertainty	-0.09	-3497.83	-2876.41	-618.39	-50.12
	(0.06)	(18192.53)	(15049.16)	(1231.53)	(124.35)
Treatment × High expected demand uncertainty	0.05	42985.55**	46482.92***	1927.03	157.90
	(0.05)	(17607.55)	(15114.98)	(1406.95)	(138.89)
	[0.40]	[0.02]	[0.00]	[0.16]	[0.20]
Observations	2087	2087	2087	2087	2087
Mean in control	0.55	32561.84	26870.63	4275.95	358.72
Treatment effect under high uncertainty	0.06	46845.62***	44525.34***	1971.05**	168.96**
	(0.04)	(11045.76)	(9968.73)	(872.49)	(71.80)

Notes: The table presents the heterogeneity of the treatment effects on key business outcomes of the eligible *Dabi* borrowers with respect to uncertainty of demand growth at baseline among local businesses. "High expected demand uncertainty" is a dummy variable = 1 if the respondent is located in a branch where the average coefficient of variation (CV) of expected sales growth among a representative sample of SMEs at baseline was high (above the sample median). All regressions control for the baseline (2015) value of the outcome, an indicator variable for the endline survey and district (randomization strata) fixed effects. "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered it to the eligible clients. Standard errors are clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets. "Treatment effect under high uncertainty" corresponds to the sum of the coefficients of "Treatment" and "Treatment × High exp. demand uncertainty". *Business Owner* is a dummy variable equal to one if the respondent owns a business. *Revenues* is the monetary value (in USD PPP) of sold products or delivered services of the business over the last twelve months. *Costs* is the monetary value (in USD PPP) of the total amount the enterprise spent on personnel expenses, machines, tools, equipment, space, transportation, electricity, fuel for machines, and total purchase of stock over the last twelve months. *Profits (annual)* is profit (in USD PPP) of the business over the last twelve months. *Profits (month)* is profit (in USD PPP) of the business over the month preceding the survey.

TABLE 7: HETEROGENEITY W.R.T. RAIN SHOCKS

	(1)	(2)	(3)	(4)	(5)
	Business owner	Revenues (annual)	Costs (annual)	Profits (annual)	Profits (month)
Treatment	0.03	38886.00***	33632.15***	1453.54*	125.21**
	(0.02)	(10087.61)	(9070.40)	(760.79)	(59.75)
	[0.30]	[0.00]	[0.00]	[0.10]	[0.09]
Rain shock	-0.01	-31981.57*	-30197.79**	-2976.85*	-277.95*
	(0.06)	(18275.70)	(13993.84)	(1483.50)	(157.51)
Treatment × Rain shock	-0.10**	-31685.31**	-21644.12**	-1471.06*	-107.77
	(0.05)	(12751.50)	(8399.06)	(778.66)	(82.14)
	[0.16]	[0.03]	[0.05]	[0.12]	[0.25]
Observations	2087	2087	2087	2087	2087
Mean in control	0.55	32561.84	26870.63	4275.95	358.72
Treatment effect with Rain shock	-0.06	7200.69	11988.03	-17.52	17.45
	(0.05)	(13767.09)	(10114.93)	(857.76)	(85.91)
Rain shock effect in Treatment	-0.10	-63666.88***	-51841.91***	-4447.9***	-385.72**
	(0.05)	(18751.91)	(14319.25)	(1399.19)	(150.15)

Notes: The table presents the heterogeneity of the treatment effects on key business outcomes of the eligible *Dabi* borrowers with respect to the likelihood of having experienced an excessive rainfall shock. Data comes from the midline (2016) and endline (2017) surveys. "Rain shock" is a dummy variable = 1 if the amount of rainfall in the months of December to May preceding the survey (2016 or 2017) was one standard deviation above rainfall in December to May over the period 1983-2015. The geographical area over which the rainfall amount was calculated corresponds to a 25 km radius around the branch where the firm is located. All regressions control for the baseline (2015) value of the outcome, an indicator variable for the endline survey, district-by-survey year fixed effects, and flexible controls for the probability of rain. "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered it to the eligible clients. Standard errors are clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets. "Treatment effect with Rain shock" corresponds to the sum of the coefficients of "Treatment" and "Treatment × Rain shock". "Rain shock effect in Treatment" corresponds to the sum of the coefficients of "Rain shock" and "Treatment × Rain shock". *Business Owner* is a dummy variable equal to one if the respondent owns a business. *Revenues* is the monetary value (in USD PPP) of sold products or delivered services of the business over the last twelve months. *Costs* is the monetary value (in USD PPP) of the total amount the enterprise spent on personnel expenses, machines, tools, equipment, space, transportation, electricity, fuel for machines, and total purchase of stock over the last twelve months. *Profits (annual)* is profit (in USD PPP) of the business over the last twelve months. *Profits (month)* is profit (in USD PPP) of the business over the month preceding the survey.

TABLE 8: EFFECTS ON BUSINESS ASSETS

	(1)	(2)	(3)	(4)	(5)	(6)
	Tools	Furniture	Machines	Vehicles	Inventories	Buildings
			Panel A: Likelihood of Having Assets			
Treatment	0.029	0.022	0.005	-0.004	0.019	0.025
	(0.021)	(0.014)	(0.011)	(0.009)	(0.020)	(0.017)
	[0.207]	[0.168]	[0.666]	[0.763]	[0.418]	[0.221]
Observations	2087	2087	2087	2087	2087	2087
Mean in control	0.436	0.294	0.102	0.084	0.414	0.150
			Panel B: Value of Assets			
Treatment	72.957**	57.567**	148.011*	-259.199	1105.186**	-1892.675
	(31.429)	(25.784)	(86.854)	(208.002)	(444.002)	(1614.798)
	[0.032]	[0.020]	[0.194]	[0.230]	[0.043]	[0.271]
Observations	2087	2087	2087	2087	2085	2087
Mean in control	112.677	124.653	96.139	697.062	2642.783	6899.173
			Panel C: Types of Assets			
Treatment	0.116**	0.109**	0.009	-0.004		
	(0.054)	(0.049)	(0.019)	(0.010)		
	[0.072]	[0.067]	[0.665]	[0.735]		
Observations	2168	2168	2168	2168		
Mean in control	0.897	0.852	0.137	0.083		
			Panel D: Unit Value of Assets			
Treatment	24.675*	8.831*	677.479	-1739.745		
	(12.496)	(4.718)	(562.900)	(1092.355)		
	[0.143]	[0.113]	[0.386]	[0.192]		
Observations	975	698	252	202		
Mean in control	57.688	50.691	497.587	5010.280		

Notes: The table presents the treatment effects on business assets of the eligible *Dabi* borrowers. Data comes from the midline (2016) and endline (2017) surveys. All regressions control for the baseline (2015) value of the outcome, an indicator variable for the endline survey and district (randomization strata) fixed effects. "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered it to the eligible clients. Panel A reports estimates of the extensive margin (likelihood of owning assets of each type), Panel B on the intensive margin (monetary value of assets owned of each type). In Panel C, the dependent variable is the number of distinct types of assets owned within each asset category, in Panel D the outcome is the per unit value of assets of each type owned by the firm. Standard errors are clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets.

TABLE 9: SELECTION EFFECTS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Treatment	0.013	0.031**	0.007	0.009	0.012	0.012	0.013	0.020	0.013
	(0.011)	(0.014)	(0.012)	(0.012)	(0.011)	(0.011)	(0.011)	(0.015)	(0.011)
	[0.357]	[0.083]	[0.623]	[0.502]	[0.379]	[0.368]	[0.336]	[0.274]	[0.346]
Treatment × Risk averse		-0.035**						-0.031**	
		(0.015)						(0.015)	
		[0.029]						[0.055]	
Treatment × Wants to start new business			0.088***					0.079***	
			(0.029)					(0.029)	
			[0.017]					[0.031]	
Treatment × Wants to hire new worker				0.040				0.032	
				(0.033)				(0.033)	
				[0.225]				[0.369]	
Treatment × Profit per worker					0.003			0.001	
					(0.007)			(0.007)	
					[0.596]			[0.907]	
Treatment × Entrepreneurship Index						0.026***			0.025***
						(0.008)			(0.008)
						[0.003]			[0.005]
Treatment × Size of land owned							0.025***	0.022**	0.022**
							(0.008)	(0.008)	(0.008)
							[0.004]	[0.016]	[0.011]
Observations	6582	6582	6582	6582	6582	6582	6582	6582	6582
Mean in control	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108

Notes: The table shows the results of estimating specification (6) where the dependent variable is an indicator for having taken any BRAC loan in the last 12 months for the business. Standard errors are clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets. *Risk Averse* is a dummy variable taking the value of one if the respondent's risk aversion score is greater than or equal to the sample median (see Appendix B for further details on the risk aversion score). *Wants to Start a New Business* is a dummy variable =1 if at baseline the respondent reported that s/he or someone in the household wants to start a new business in the following twelve months. *Wants to Hire New Workers* is a dummy variable =1 if at baseline the respondent reported that s/he or someone in the household wants to hire new workers for a household business in the following twelve months. *Profit per Worker* is the baseline level of the profit of the business over the last twelve months divided by the number of workers, including the business owner, at baseline. The variable is then standardized by subtracting the sample mean and dividing by the sample standard deviation. *Entrepreneurship Index* is the first principal component of the variables *Risk Averse*, *Wants to Start a New Business*, *Wants to Hire New Workers*, and *Profit per Worker*. *Size of Land Owned* is the amount of land owned by the household (excluding the homestead) at baseline, standardized by subtracting the sample mean and dividing by the sample standard deviation.

FIGURE 1: TIMING OF EVENTS

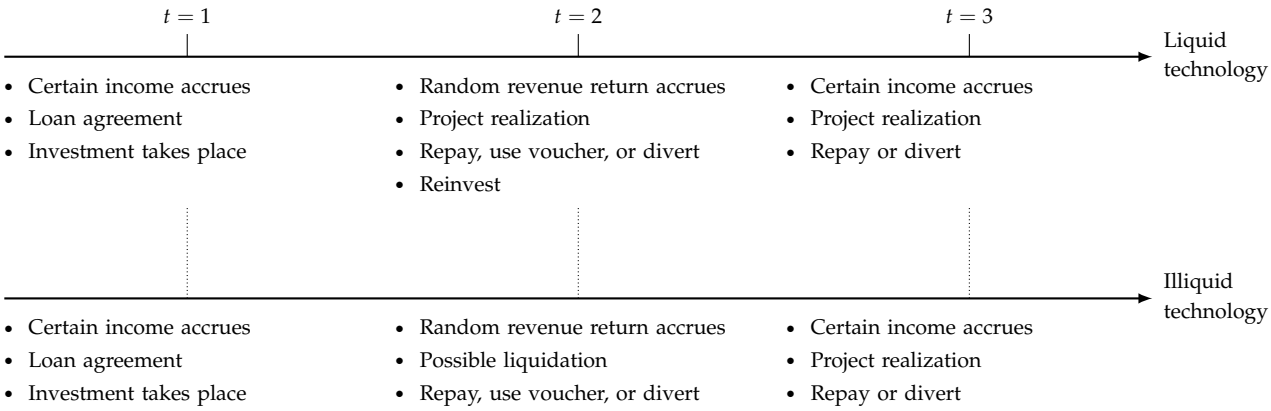
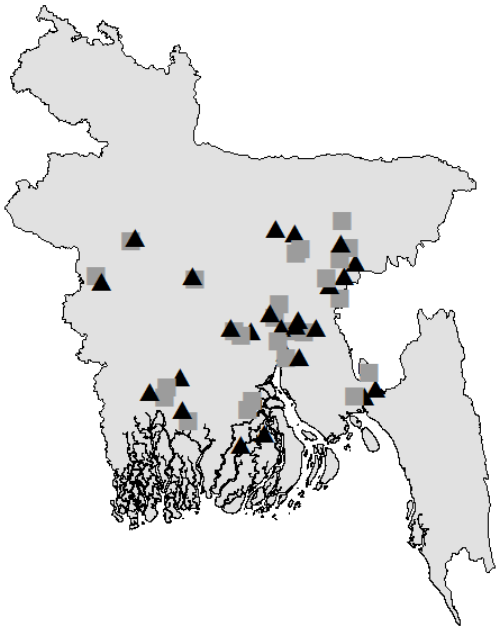


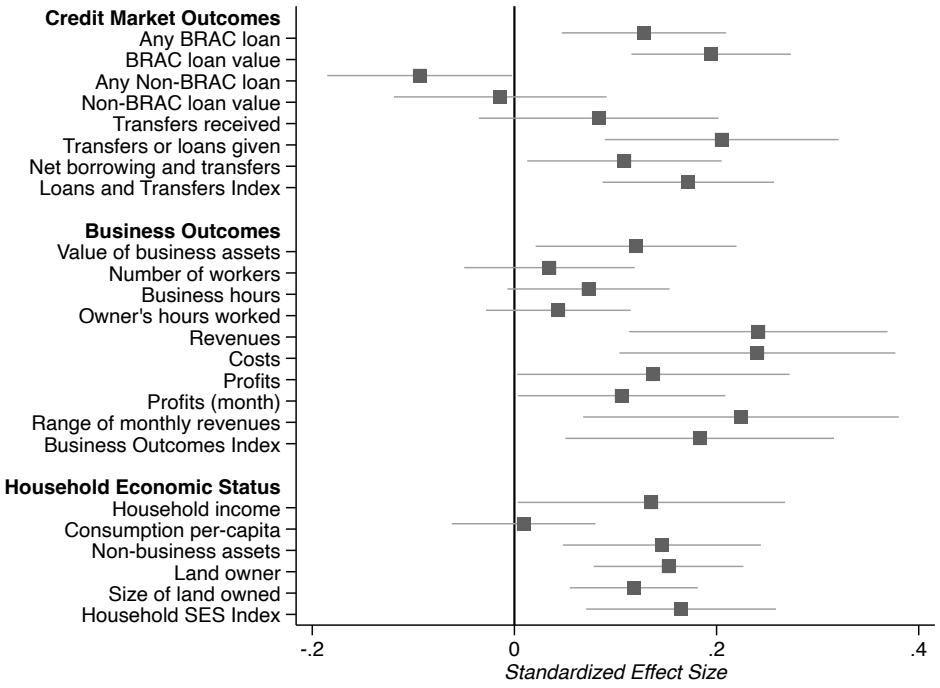
FIGURE 2: LOCATIONS



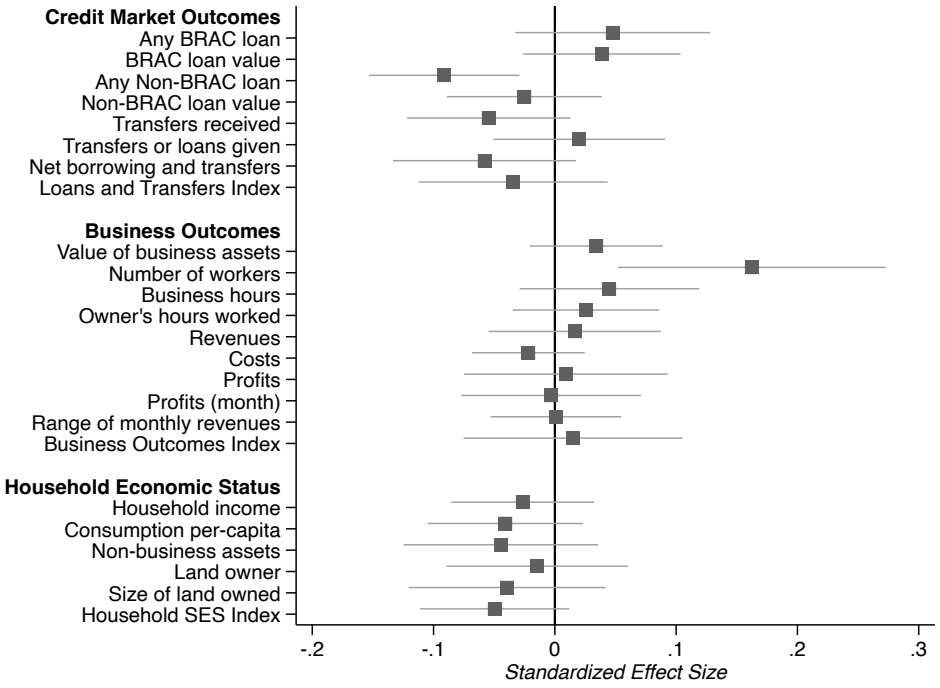
Notes: The map shows the locations of the BRAC branch offices that were part of the study. The treatment branches are represented with black triangles while the control branches are denoted with gray squares.

FIGURE 3: ITT EFFECTS

(A) EFFECTS ON DABI BORROWERS



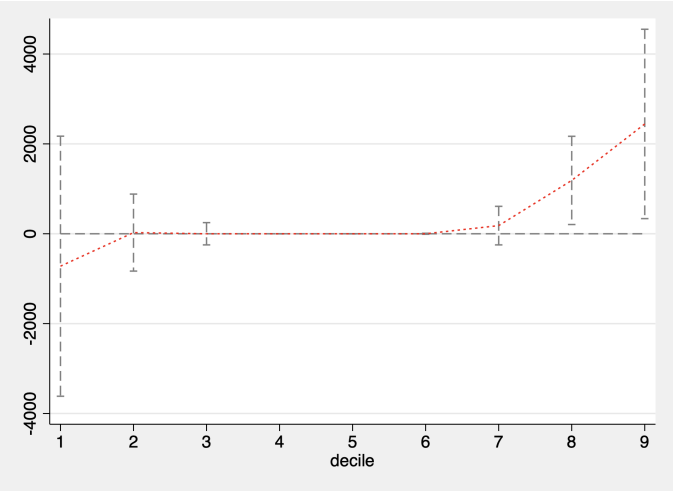
(B) EFFECTS ON PROGOTI BORROWERS



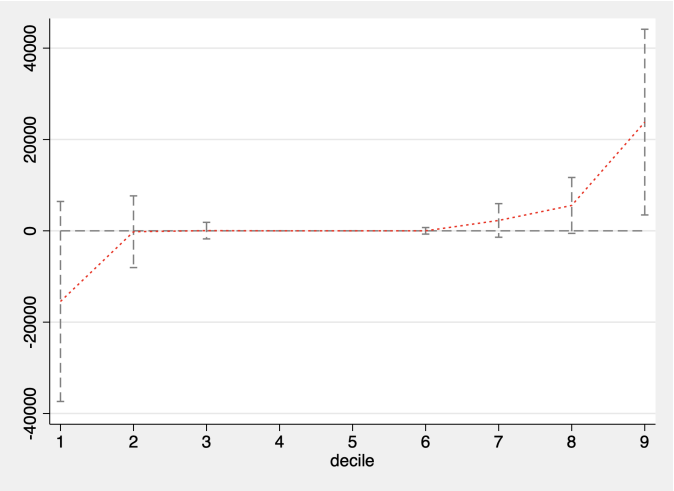
Notes: The figures plot the standardized effect sizes and 90% confidence intervals around the treatment effects estimated using ordinary least square estimates based on specification (4). The sample includes eligible *Dabi* borrowers in Panel A; and eligible *Progoti* clients in Panel B. Data comes from the midline (2016) and endline (2017) surveys. All regressions control for the baseline (2015) value of the outcome, an indicator variable for the endline survey and district (randomization strata) fixed effects. Standard errors are clustered at the BRAC branch office level.

FIGURE 4: HETEROGENEITY OF TREATMENT EFFECTS AMONG DABI BORROWERS

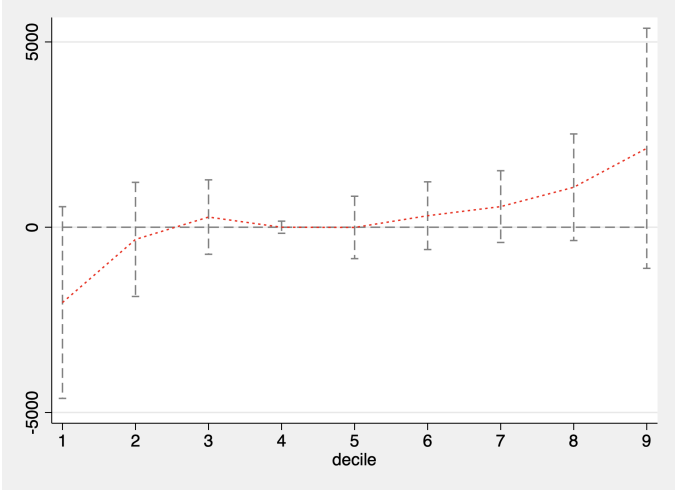
(A) BUSINESS ASSETS VALUE



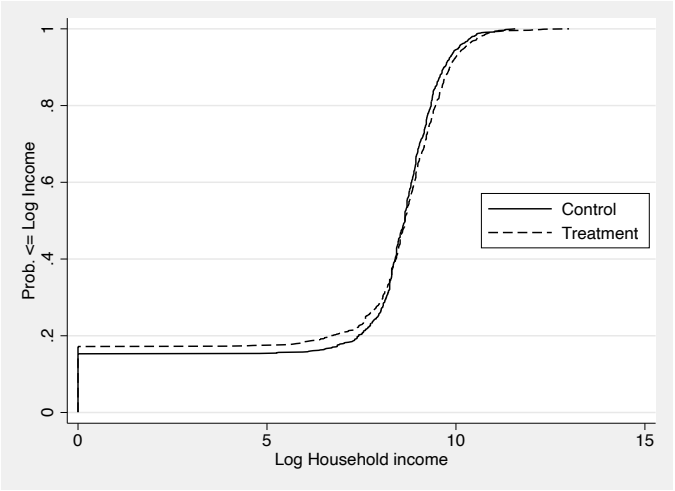
(B) BUSINESS REVENUES (ANNUAL)



(C) HOUSEHOLD INCOME (ANNUAL)

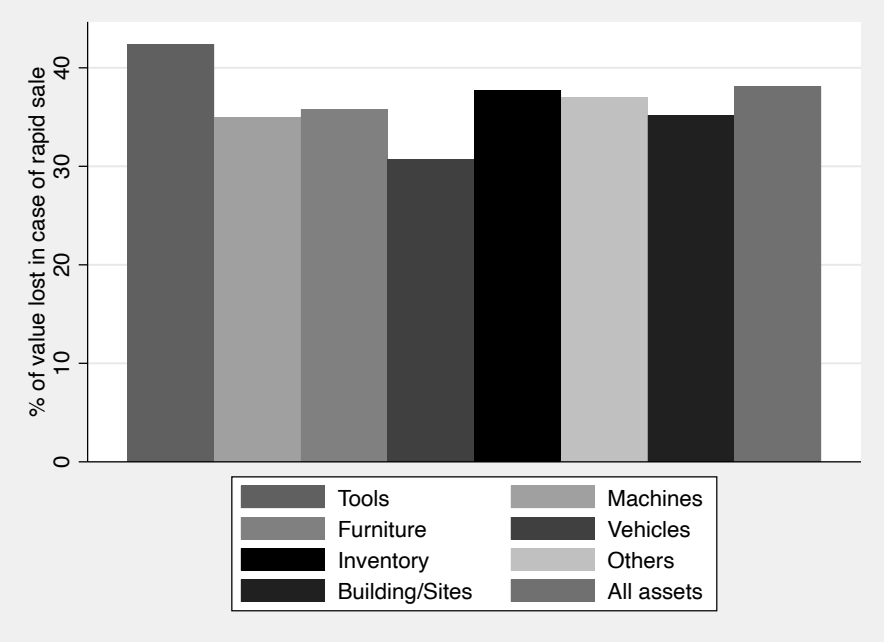


(D) CDF OF LOG HOUSEHOLD INCOME



Notes: The sample includes eligible *Dabi* borrowers. Data comes from the midline (2016) and endline (2017) surveys. Figures (a)-(c) plot quantile treatment effects estimated according to specification (5). 90% confidence intervals are based on bootstrapped (with 500 replications) standard errors clustered at the BRAC branch office level (unit of randomization). Each specification controls for the survey wave. Values are in PPP USD. Figure (d) plots the cumulative distribution function of log household income (plus 1) in the treatment and control samples.

FIGURE 5: LIQUIDITY OF BUSINESS ASSETS



Notes: The figure shows the liquidity of business assets owned by eligible borrowers (*Dabi* or *Progoti*) by category, and overall. The information comes from a phone survey that was conducted in May 2020. The figure plots the mean level for the percentage of value lost if a firm has to liquidate assets in one day as opposed to one month (conditional on having any assets of a given type).

ONLINE APPENDIX: MATERIAL NOT INTENDED FOR PUBLICATION

A Appendix

A.1 Mathematical Proofs

Proof of Proposition 1

We begin by showing the outcome for the unconstrained entrepreneur and proceed with the (constrained) investment choice under the standard contract. We then derive the relevant incentive constraint and demonstrate the existence and uniqueness of the minimum incentive-compatible asset size $\tilde{A}(\phi)$.

First, note that an unconstrained entrepreneur's investment decision is independent of wealth, $A \geq I + \tau_1$, that the liquid investment return together with her period-1 savings cover period-2 consumption and reinvestment, $I\varphi_L + \tau_1 R \geq c_2 + I$, and that the period-1 savings exceed period-2 consumption, $\tau_1 R \geq c_2$. Hence, when she implements the liquid project her date-1 consumption, c_1, is given by $y + A - I - \tau_1$, where y is the certain income and A the internal assets, net of the investment, I, and the savings set aside for possible project return shortfalls, τ_1 (earning the gross, per-period interest rate R). Period-2 consumption, c_2, equals $\pi(I\varphi_H + \tau_1 R - I) + (1-\pi)(I\varphi_L + \tau_1 R - I)$, where the high return, φ_H, is realized with probability π. She also reaps the amount saved from the previous period, $\tau_1 R$. This allows the entrepreneur to reinvest I. With probability 1-π, she realizes the low return, φ_L, and her savings, $\tau_1 R$. As $I\varphi_L + \tau_1 R \geq c_2 + I$, she is able to reinvest her proceeds into the project even when obtaining the low return. In $t = 3$, consumption, c_3, is given by $I\varphi_H + y$, regardless of the date-2 state of nature. Together, this yields the following expected discounted value

$$y + A - I + \beta\pi I\varphi_H + \beta(1-\pi) I\varphi_L - \beta I + \beta^2 I\varphi_H + \beta^2 y. \tag{A1}$$

To derive the equivalent utility of the illiquid technology we have that date-1 consumption, c_1, is given by $y + A - I - \tau_1$. Period-2 consumption, c_2, equals $\pi(I\gamma + \tau_1 R) + (1-\pi)\tau_1 R$, where the high return, γ, is realized with probability π and the low return, 0, is realized with probability 1-π. As $\tau_1 R \geq c_2$, there is no liquidation in period 2. In $t = 3$, consumption, c_3, is given by $I\Gamma + y$, independent of the date-2 state of nature. Summing up, this yields

$$y + A - I + \beta\pi I\gamma + \beta^2 I\Gamma + \beta^2 y. \tag{A2}$$

Under the assumption that the present value of the illiquid project exceeds that of the liquid project, we have [subtracting (A1) from (A2)]

$$\pi\gamma + \beta\Gamma \geq \pi\varphi_H + (1-\pi)\varphi_L - 1 + \beta\varphi_H. \tag{A3}$$

Next, we show the expected discounted value of the liquid and illiquid project under the standard contract when the entrepreneur lacks sufficient wealth, $A < I + \tau_1$, and informal risk pooling is absent. Before we proceed, we define the savings constraint above which an entrepreneur could save to cover consumption, reinvestment, and the debt repayment.

Definition 1. The period-1 savings constraint $\tau = \bar{\tau}$ is given by

$$\tau_1 < \bar{\tau} = \frac{[c_2 + P_S - I(\varphi_L - 1)]}{R}. \tag{A4}$$

The condition follows from the assumption that period-2 consumption, the reinvestment, and the

repayment together exceed the low liquid investment return and the period-1 savings, $c_2 + I + P_S > I\varphi_L + \tau_1 R$ (implying that period-2 consumption together with the repayment surpass the period-1 savings, $c_2 + P_S > \tau_1 R$).

When the entrepreneur implements the liquid project and repays the loan, her date-1 consumption, c_1, is given by $y + A + b - I - \tau_1$, where the difference from before is b, the amount borrowed.[66] Period-2 consumption, c_2, equals $\pi\left(I\varphi_H + \tau_1 R - I - P_S\right) + (1-\pi)\left(I\varphi_L + \tau_1 R - \tau_2 - P_S\right)$, where the high-return utility is as before barring the repayment, P_S. As $\tau_1 < \bar{\tau}$, she uses her (low) return, $I\varphi_L$, and her savings, $\tau_1 R$, to cover the repayment, P_S, and saves the residual, τ_2, for the final period. In $t = 3$, consumption, c_3, is $\pi\left(I\varphi_H + y - P_S + \beta V\right) + (1-\pi)\left(\tau_2 R + y - P_S + \beta V\right)$, where the certain income, y, and the continuation value, V, are realized regardless of the date-2 state of nature. If the entrepreneur incurred a positive shock, she further receives the high return, $I\varphi_H$, net of the payment, P_S. In the event of a negative date-2 shock, she collects the saved amount from period 2, $\tau_2 R$, net of the loan payment. Together, this yields the following expected discounted value [solving for $P_S \equiv {}^{bR^2}/_{(1+R)}$]

$$y + \beta\pi I\left(\varphi_H - 1\right) + \beta\left(1-\pi\right) I\varphi_L + \beta^2\pi I\varphi_H + \beta^2 y + \tau_1 - b + \beta^3 V. \tag{A5}$$

Using the same steps when deriving the present value for undertaking the illiquid project, we have in $t = 1$ that c_1 is given by $y + A + b - I - \tau_1$. Period-2 consumption, c_2, equals $\pi\left(I\gamma + \tau_1 R - P_S\right) + (1-\pi)\left(I\lambda + \tau_1 R - \tau_2 - P_S\right)$, where she has to liquidate her project in the low-return state since $\tau_1 < \bar{\tau}$. The liquidation value equals $I\lambda$ and the remaining terms are defined as above. Period-3 consumption, c_3, is $\pi\left(I\Gamma + y - P_S + \beta V\right) + (1-\pi)\left(\tau_2 R + y - P_S + \beta V\right)$, where the certain income, y, and the continuation value, V, are realized independent of the date-2 state of nature. If the entrepreneur incurred a positive shock, she further receives the high return $I\Gamma$, net of the payment P_S. In the event of a negative date-2 shock, she collects the saved amount from period 2, $\tau_2 R$, net of the loan payment. Together, we have [solving for $P_S \equiv {}^{bR^2}/_{(1+R)}$]

$$y + \beta\pi I\gamma + \beta\left(1-\pi\right) I\lambda + \beta^2\pi I\Gamma + \beta^2 y + \tau_1 - b + \beta^3 V. \tag{A6}$$

The entrepreneur chooses the liquid over the illiquid technology if the expected benefit of not having to liquidate in $t = 2$ exceeds the final period gain of undertaking the riskier, illiquid project, or equivalently that [subtracting (A6) from (A5)] $\pi\left(\varphi_H - \gamma - 1\right) + (1-\pi)\left(\varphi_L - \lambda\right) \geq \beta\pi\left(\Gamma - \varphi_H\right)$.

To determine the relevant incentive constraint, we proceed by backward induction and focus on the low-return realization where the temptation to divert is the most severe. In period 3, the entrepreneur pays the lender if the residual return after repaying exceeds the benefit from diverting all available resources

$$\tau_2 R + y - P_S + \beta V \geq \phi\left(\tau_2 R + y\right). \tag{A7}$$

Turning to the repayment decision in the second period, the date-2 incentive compatibility constraint is given by (1) in the main text. The entrepreneur will only repay in the second period if she does not plan to default in the third. To establish which constraint is more binding, we compare the minimum asset size for which repayment is incentive compatible. We start with the asset size consistent with period-2 incentive compatibility, solving for P_S from the binding incentive constraint in (1). This yields $P_S = {}^{(1+\rho)}/_{(2+\rho)}\left\{\left(1-\phi\right)\left[I\varphi_L + \tau_1\left(1+\rho\right) + {}^{y}/_{(1+\rho)}\right] + {}^{V}/_{(1+\rho)^2}\right\}$.

[66] We show below that the entrepreneur prefers to invest all her assets, A, into the project (accounting for the constant amount set aside to cover project return deficits). Thus, $A + b - I - \tau_1 = 0$.

Noting that $P_S \equiv b(1+\rho)^2/(2+\rho)$ and $b = I + \tau_1 - A$, we have $A = I + \phi\tau_1 - I\varphi_L(1-\phi)/(1+\rho) - y(1-\phi)/(1+\rho)^2 - V/(1+\rho)^3$. Using the minimum savings needed to satisfy period-2 and period-3 consumption, $\tau_1(1+\rho) + I\varphi_L - \tau_2 - P_S = c_2$ and $\tau_2(1+\rho) + y - P_S = c_3$, and combining the two expressions by solving for τ_2, yields $\tau_2(1+\rho) + I\varphi_L + y/(1+\rho) - P_S(2+\rho)/(1+\rho) = c_2 + c_3/(1+\rho)$. Using that $P_S = (1+\rho)/(2+\rho)\{(1-\phi)[I\varphi_L + \tau_1(1+\rho) + y/(1+\rho)] + V/(1+\rho)^2\}$, we get $\phi\tau_1 = c_2/(1+\rho) + c_3/(1+\rho)^2 - \phi\varphi_L/(1+\rho) - \phi y/(1+\rho)^2 + V/(1+\rho)^3$. Solving for A using $\phi\tau_1$, the minimum asset size for which repayment in the second period is incentive compatible can be expressed as

$$\tilde{A}(\phi) = I + \frac{c_2 - I\varphi_L}{(1+\rho)} + \frac{c_3 - y}{(1+\rho)^2}. \tag{A8}$$

To derive the minimum asset size consistent with date-3 incentive compatibility, we solve for P_S from the binding incentive constraint in (A7) or $P_S = (1-\phi)[\tau_2(1+\rho) + y] + V/(1+\rho)$. Proceeding in a similar manner to above (using the minimum savings needed to satisfy period-2 and period-3 consumption and the definition of P_S) we have that the minimum asset size is given by

$$\tilde{A}'(\phi) = I + \frac{c_2 - I\varphi_L}{(1+\rho)} + \frac{c_3 - y}{(1+\rho)^2} - \frac{V}{(1+\rho)^3}. \tag{A9}$$

Subtracting $\tilde{A}'$ from $\tilde{A}$ yields $V/(1+\rho)^3 > 0$. Hence, the repayment incentive compatibility constraint in the second period is the relevant one as it is more binding.[67]

Before showing the existence and uniqueness of $\tilde{A}(\phi)$, we define the threshold level of ϕ below which a penniless entrepreneur would be able to fund an investment I under the standard contract. To rule out this uninteresting case, we assume that $\phi > \underline{\phi}$ (where $\underline{\phi}$ is the threshold).

Definition 2. The threshold $\phi = \underline{\phi}$ is given by setting $\tilde{A} = I + \tau_1 - \frac{(1-\phi)[I\varphi_L + \tau_1(1+\rho) + y/(1+\rho)] + V/(1+\rho)^2}{(1+\rho)}$ to zero and solving for ϕ.[68] Specifically,

$$\underline{\phi} = \frac{I\varphi_L + y/(1+\rho) + V/(1+\rho)^2 - I(1+\rho)}{I\varphi_L + \tau_1(1+\rho) + y/(1+\rho)}. \tag{A10}$$

Lemma A1. *There exists a unique threshold $A = \tilde{A}(\phi) > 0$ such that $b + A - \tau_1 = I$ and $A = I + \tau_1 - \{(1-\phi)[I\varphi_L + \tau_1(1+\rho) + y/(1+\rho)] + V/(1+\rho)^2\}/(1+\rho)$.*

Proof. Solving for the binding equilibrium incentive constraint using (1) in the main text yields

$$I\varphi_L + \tau_1(1+\rho) + \frac{y}{(1+\rho)} - b(1+\rho) + \frac{V}{(1+\rho)^2} - \phi\left[I\varphi_L + \tau_1(1+\rho) + \frac{y}{(1+\rho)}\right] = 0. \tag{A11}$$

This constraint is only binding if increasing b by epsilon would make the repayment burden too large, leading the entrepreneur to divert all assets (otherwise b could be increased without violating the incentive constraint). Using (A11) and solving for A gives $A = I + \tau_1 - \frac{(1-\phi)[I\varphi_L + \tau_1(1+\rho) + y/(1+\rho)]}{(1+\rho)} - V/(1+\rho)^3$. To show that there is a unique value of A such that $A + b - \tau_1 = I$, it suffices to show

[67] The threshold given by (A8) also makes clear why it is optimal for the borrower to invest all her assets, accounting for amount saved, in period 1 (footnote 66). To see this, suppose she consumes ϵ (in addition to y) and thus invests $A - \epsilon$. If the project is funded, she still enjoys the entire social surplus. On the other hand, it becomes more difficult to obtain a loan. Now, her initial assets must exceed $\tilde{A} + \epsilon$ in order for the project to go ahead. Therefore, the borrower cannot gain by not investing her entire wealth.

[68] $\tilde{A}$ is obtained by solving for A from the binding incentive constraint using (1) in the main text.

(i) that $0 + b - \tau_1 < I$ and (ii) that b increases in A. Part (i) is a result of the assumption that $\phi > \underline{\phi}$. Part (ii) follows from the fixed investment cost I, where the loan size is zero for $A < \tilde{A}(\phi)$ and at its maximum as defined by (A11) for $A = \tilde{A}(\phi)$. □

Proof of Proposition 2

We first characterize the outcome and investment choice under the flexible contract and then demonstrate the existence and uniqueness of the minimum incentive-compatible asset size $\tilde{\tilde{A}}(\phi)$.

Borrowers can now use a payment voucher in $t = 2$ that defers the full loan payment P_F to the final period. If the entrepreneur undertakes the liquid project, the voucher allows her to reinvest the project proceeds at date 2 even under the low-return realization. This changes the expected discounted value for the liquid project to

$$y + \beta\pi I\varphi_H + \beta(1-\pi) I\varphi_L - \beta I + \beta^2 I\varphi_H + \beta^2 y + \tau_1 - b + \beta^3 V. \tag{A12}$$

If the entrepreneur invests in the illiquid technology, she no longer faces the liquidation risk in the intermediate period and reaps the full benefit of the high-return project. The present value becomes

$$y + \beta\pi I\gamma + \beta^2 I\Gamma + \beta^2 y + \tau_1 - b + \beta^3 V. \tag{A13}$$

As the illiquid project's expected value exceeds that of the liquid technology, or $\pi\gamma + \beta\Gamma \geq \pi\varphi_H + (1-\pi)\varphi_L - 1 + \beta\varphi_H$ (the unconstrained outcome), the availability of repayment vouchers leads the entrepreneur to undertake the riskier, illiquid project.

Before considering the properties of $\tilde{\tilde{A}}(\phi)$, we need to strengthen our earlier parameter restriction on ϕ as less incentive-compatible wealth might be needed to fund an investment I under the flexible contract.

Definition 3. The threshold $\phi = \underline{\underline{\phi}}$ is given by setting $\tilde{\tilde{A}} = I + \tau_1 - {}^{(1-\phi)(I\Gamma+y)}/_{(1+\rho)^2} - {}^{V}/_{(1+\rho)^3}$ to zero and solving for ϕ.[69] Specifically,

$$\underline{\underline{\phi}} = \frac{I\Gamma + y + {}^{V}/_{(1+\rho)} - (I+\tau_1)(1+\rho)^2}{I\Gamma + y}. \tag{A14}$$

Lemma A2. *There exists a unique threshold $A = \tilde{\tilde{A}}(\phi) > 0$ such that $b + A - \tau_1 = I$ and $A = I + \tau_1 - {}^{(1-\phi)(I\Gamma+y)}/_{(1+\rho)^2} - {}^{V}/_{(1+\rho)^3}$.*

Proof. Solving for the binding equilibrium incentive constraint using (2) in the main text yields

$$I\Gamma + y - b(1+\rho)^2 + \frac{V}{(1+\rho)} - \phi(I\Gamma + y) = 0. \tag{A15}$$

The rest of the proof is analogous to the proof of Lemma A1 and hence omitted. □

Proof of Corollary 1

[69] $\tilde{\tilde{A}}$ is obtained by solving for A from the binding incentive constraint using (2) in the main text.

Proof. Part (i): Denote U_j^c the expected discounted value of each project, where $i \in \{liquid, illiquid\}$ and $c \in \{standard, voucher\}$. Since $U_i^v > U_l^v$ and $U_l^s > U_i^s$ from above, it is sufficient to show that $U_l^v > U_l^s$. Subtracting U_l^s given by (A5) from U_l^v given by (A12) yields $\beta I(1-\pi)(\beta\varphi_H - 1) > 0$ as $\varphi_H > R = 1/\beta$.

Part (ii): To obtain the condition for which $\tilde{A} > \tilde{\tilde{A}}$, we compare the minimum incentive-compatible asset size under the standard and voucher contract. The minimum wealth under the standard contract [given by (A8)] can be rewritten as $\tilde{A} = I + \phi\tau_1^S - I\varphi_L(1-\phi)/(1+\rho) - y(1-\phi)/(1+\rho)^2 - V/(1+\rho)^3$, where τ_1^S is the amount saved in period 1 under the standard contract. The equivalent threshold under the voucher contract is $\tilde{\tilde{A}} = I + \tau_1^V - (1-\phi)(I\Gamma+y)/(1+\rho)^2 - V/(1+\rho)^3$, where τ_1^V is the amount saved in period 1 using vouchers. Subtracting $\tilde{\tilde{A}}$ from $\tilde{A}$, we have $\tilde{A}(\phi) > \tilde{\tilde{A}}(\phi) \Leftrightarrow (1+\rho)^2(\phi\tau_1^S - \tau_1^V) + (1-\phi)I\Gamma > (1-\phi)(1+\rho)I\varphi_L$.

Part (iii): The discounted value of the illiquid long-term project when ending up in the good state using vouchers is equivalent to the discounted value of the same project using the standard contract, or $y + \beta I\gamma + \beta^2 I\Gamma + \beta^2 y + \tau_1 - b + \beta^3 V$. □

Proof of Proposition 3

We begin by characterizing the outcome and investment choice when the standard and flexible contract is on offer, respectively. We then demonstrate the existence and uniqueness of the minimum incentive-compatible asset sizes $\bar{A}(\phi)$ and $\bar{\tilde{A}}(\phi)$, and show the equilibrium outcomes when both contracts are offered simultaneously.

When the informal risk market is complete, the discounted utility of investing in the liquid project under the standard contract is

$$y + \beta I\bar{\varphi} - \beta I + \beta^2 I\varphi_H + \beta^2 y + \tau_1 - b + \beta^3 V, \tag{A16}$$

where $\bar{\varphi} = \pi\varphi_H + (1-\pi)\varphi_L$ is the expected value of the period-2 project return. Because of the risk sharing agreement, the entrepreneur is always able to reinvest I in $t = 2$, thus yielding the certain return $I\varphi_H$ in period 3. Similarly, the discounted utility of investing in the illiquid project is

$$y + \beta I\bar{\gamma} + \beta^2 I\Gamma + \beta^2 y + \tau_1 - b + \beta^3 V, \tag{A17}$$

where $\bar{\gamma} = \pi\gamma$ is the expected value of the period-2 project return. The risk pooling allows the entrepreneur to avoid liquidation in the second period, resulting in the higher illiquid return, $I\Gamma$, in period 3. Since the liquidation risk is removed, the entrepreneur chooses the illiquid project as $\bar{\gamma} + \beta\Gamma = \pi\gamma + \beta\Gamma \geq \bar{\varphi} - 1 + \beta\varphi_H = \pi\varphi_H + (1-\pi)\varphi_L - 1 + \beta\varphi_H$ (the unconstrained outcome).

As before, by backward induction we have that the period-3 incentive constraint is given by

$$I\Gamma + y - P_S + \beta V \geq \phi(I\Gamma + y), \tag{A18}$$

while date-2 incentive compatibility is determined by (3) in the main text. To derive which constraint is the relevant one we solve for the minimum critical asset level and start with the asset size consistent with period-2 incentive compatibility. Proceeding as above [solving for A from (3) and

replacing the values for P_S and τ_1] we have that

$$\bar{A}(\phi) = I - \frac{I\bar{\gamma}}{(1+\rho)} + \frac{\phi(2+\rho)c_2 - (1-\phi)(I\Gamma+y)/(1+\rho) - V/(1+\rho)^2}{(1+\rho)[1+\phi(1+\rho)]}. \tag{A19}$$

Solving for A from (A18) in a similar manner yields

$$\bar{A}'(\phi) = I + \frac{c_2 - I\bar{\gamma} - (1-\phi)(I\Gamma+y)/(1+\rho) - V/(1+\rho)^2}{(1+\rho)}. \tag{A20}$$

Under the assumption that the utility from period-3 consumption, $c_3 = I\Gamma + y - P_S = \phi(I\Gamma+y) - \beta V$ [from the binding equation in (A18)], weakly dominates consumption in period 2, c_2, we have that $\bar{A} - \bar{A}' = \{(1-\phi)[\phi(I\Gamma+y)-c_2]+\phi V/(1+\rho)\}/(1+\rho)[1+\phi(1+\rho)] = [(1-\phi)(c_3-c_2)+V/(1+\rho)]/(1+\rho)[1+\phi(1+\rho)] > 0$. Hence, we can focus on the incentive constraint provided by equation (3) in the main text.

With a complete informal risk market and repayment vouchers on offer, P_F replaces P_S and the present value from the liquid and illiquid project is given by (A16) and (A17), respectively. As before, the entrepreneur chooses the illiquid project. The relevant incentive constraint is provided by (2) in the main text. In equilibrium, the critical asset level satisfying (2) is

$$\bar{\bar{A}}(\phi) = I + \tau_1 - \frac{(1-\phi)(I\Gamma+y)}{(1+\rho)^2} - \frac{V}{(1+\rho)^3}. \tag{A21}$$

Next, we show the existence and uniqueness of $\bar{A}(\phi)$ and $\bar{\bar{A}}(\phi)$.

Lemma A3. *For $c_3 \geq c_2$, there exist unique thresholds $\bar{A}(\phi)$ and $\bar{\bar{A}}(\phi)$ such that*

(i) $b + A - \tau_1 = I$ and $A = I + \tau_1 - (1-\phi)[I\bar{\gamma}+\tau_1(1+\rho)]/(1+\rho) - (1-\phi)(I\Gamma+y)/(1+\rho)^2 - V/(1+\rho)^3$ for $A = \bar{A}(\phi)$;

(ii) $b + A - \tau_1 = I$ and $A = I + \tau_1 - (1-\phi)(I\Gamma+y)/(1+\rho)^2 - V/(1+\rho)^3$ for $A = \bar{\bar{A}}(\phi)$;

(iii) $\bar{A}(\phi) > \bar{\bar{A}}(\phi) > 0$.

Proof. Part (i): The threshold $\bar{A}(\phi)$ is the smallest asset level such that the entrepreneur can fund the risky, illiquid investment under the standard contract. Solving for the binding equilibrium incentive constraint using (3) in the main text yields

$$I\bar{\gamma} + \tau_1(1+\rho) + \frac{I\Gamma+y}{(1+\rho)} - b(1+\rho) + \frac{V}{(1+\rho)^2} - \phi\left[I\bar{\gamma} + \tau_1(1+\rho) + \frac{I\Gamma+y}{(1+\rho)}\right] = 0. \tag{A22}$$

The rest of the proof is analogous to the proof of Lemma A1 and hence omitted.

Part (ii): The proof is analogous to the proof of Lemma A2 and hence omitted.

Part (iii): To derive the condition for which $\bar{A}(\phi) > \bar{\bar{A}}(\phi)$, we subtract $\bar{\bar{A}}(\phi)$ as defined by (A21) from $\bar{A}(\phi) = I + \tau_1 - (1-\phi)[I\bar{\gamma}+\tau_1(1+\rho)]/(1+\rho) - (1-\phi)(I\Gamma+y)/(1+\rho)^2 - V/(1+\rho)^3$ which yields $\bar{A}(\phi) > \bar{\bar{A}}(\phi) \Leftrightarrow \phi\tau_1^S - \tau_1^V > (1-\phi)I\bar{\gamma}/(1+\rho)$, where τ_1^S is the amount saved in period 1 using the standard contract and τ_1^V the period-1 amount saved using vouchers. Solving for τ_1^S and τ_1^V gives us $(1-\phi)(I\Gamma+y)/(1+\rho)[1+\phi(1+\rho)] + \phi V/(1+\rho)^2[1+\phi(1+\rho)] > (1-\phi)c_2/(1+\rho)[1+\phi(1+\rho)]$. Similar to above, this inequality holds under the assumption that the utility from period-3 consumption, c_3, weakly dominates consumption in period 2, c_2. Finally, $\bar{\bar{A}}(\phi) > 0$ is a result of the assumption that $\phi > \underline{\underline{\phi}}$. □

Finally, we derive the equilibrium outcomes when both contracts are offered simultaneously.

Lemma A4. *When lenders offer standard and flexible contracts, then the entrepreneur undertakes no investment if $A < \bar{\bar{A}}(\phi)$. If $A \in [\bar{\bar{A}}(\phi), \bar{A}(\phi))$ the entrepreneur prefers the flexible contract and invests in the risky project. If $A \geq \bar{A}(\phi)$ the entrepreneur is indifferent between the standard and flexible contract and invests in the risky project.*

Proof. From Lemma A3 it follows that entrepreneurs with assets below $\bar{\bar{A}}(\phi)$ are unable to access the needed credit and, hence, do not undertake any investment. When credit is available, we prove in the text above that entrepreneurs borrow and invest in the illiquid project. If $A \in [\bar{\bar{A}}(\phi), \bar{A}(\phi))$, Lemma A3 shows that investment is possible only under the voucher contract. If $A \geq \bar{A}(\phi)$, both contracts yield the same utility, $y + \beta I\bar{\gamma} + \beta^2 I\Gamma + \beta^2 y + \tau_1 - b + \beta^3 V$. □

Extensions

Entrepreneurial Ability

We start with the case when the risk market is imperfect and the entrepreneur's credit constraint binds. Suppose output now depends on φ_H and φ_L (Γ and γ), the investment return for the liquid (illiquid) project, and on α, the ability of the entrepreneur. Under the standard contract, the minimum incentive-compatible asset size changes to $\tilde{A}^{\alpha} = I + (c_2 - \alpha I\varphi_L)/(1+\rho) + (c_3 - y)/(1+\rho)^2$, where $\partial\tilde{A}^{\alpha}/\partial\alpha = -I\varphi_L/(1+\rho) < 0$. With vouchers, the critical minimum asset size is $\tilde{\bar{A}}^{\alpha} = I + c_2/(1+\rho) - (1-\phi)(\alpha I\Gamma + y)/(1+\rho)^2 - V/(1+\rho)^3$, where $\partial\tilde{\bar{A}}^{\alpha}/\partial\alpha = -(1-\phi)I\Gamma/(1+\rho) < 0$. Subtracting $|\partial\tilde{A}^{\alpha}/\partial\alpha|$ from $|\partial\tilde{\bar{A}}^{\alpha}/\partial\alpha|$, we get $I[(1-\phi)\Gamma - (1+\rho)\varphi_L]/(1+\rho)^2 > 0$ for $(1-\phi)\Gamma > (1+\rho)\varphi_L$. Intuitively, when the return to the illiquid project is sufficiently high or the return to the liquid project is sufficiently low or both, an increase in entrepreneurial ability relaxes the credit constraint more with vouchers in place.

When only credit constraints bind, an α-induced change in the minimum incentive-compatible asset size under the standard contract yields $\partial\bar{A}^{\alpha}/\partial\alpha = -I\bar{\gamma}/(1+\rho) - (1-\phi)I\Gamma/(1+\rho)^2[1+\phi(1+\rho)] < 0$, while the same change with vouchers gives us $\partial\bar{\bar{A}}^{\alpha}/\partial\alpha = -I\bar{\gamma}/(1+\rho) - (1-\phi)I\Gamma/(1+\rho)^2 < 0$. Subtracting $|\partial\bar{A}^{\alpha}/\partial\alpha|$ from $|\partial\bar{\bar{A}}^{\alpha}/\partial\alpha|$, we get $\phi(1-\phi)I\Gamma/(1+\rho)[1+\phi(1+\rho)] > 0$. An increase in α relaxes the credit constraint and decreases the critical asset threshold, where this change is more pronounced under repayment flexibility.

Other Contractual Obligations

To explore the importance of extra commitments, we first reconsider the situation with imperfect risk markets and add that the entrepreneur pays recurrent costs κ in periods 2 and 3. To make the problem interesting, we assume that the costs only constrain the entrepreneur when she is the most financially vulnerable. Specifically, with vouchers she can still reinvest in the liquid project, while the illiquid technology now has to be liquidated (regardless of contract) in case of a period-2 shock to cover the recurrent expenditures. That is, $\kappa \in (\tau_1 R - c_2, I\varphi_L + \tau_1 R - I - c_2)$. As before, the entrepreneur chooses the liquid project under the standard contract, with the amended second period incentive constraint given by

$$I\varphi_L + \tau_1 R - \kappa - P_S + \beta(y - \kappa - P_S) + \beta^2 V \geq \phi(I\varphi_L + \tau_1 R + \beta y).^{70} \tag{A23}$$

[70] With the recurrent cost obligation, we assume that if the entrepreneur decides to renege on the repayment there is no reason to pay the other bills.

Unlike before, however, the entrepreneur does not shift to the illiquid project when vouchers are on offer but continues to invest in the safer low-return technology, with the following date-3 no-diversion constraint

$$I\varphi_H + y - \kappa - P_F + \beta V \geq \phi\left(I\varphi_H + y\right). \tag{A24}$$

The minimum incentive-compatible asset size that satisfies equation (A23) is $\tilde{A}^{o.oblig.} = I + \phi\tau_1^S - I\varphi_L(1-\phi)/(1+\rho) - y(1-\phi)/(1+\rho)^2 - V/(1+\rho)^3 + \kappa(2+\rho)/(1+\rho)^2$, where τ_1^S is the amount saved in period 1 using the standard contract. Similarly, the critical asset level derived from (A24) is given by $\tilde{\tilde{A}}^{o.oblig.} = I + \tau_1^V - (1-\phi)(I\varphi_H + y)/(1+\rho)^2 - V/(1+\rho)^3 + \kappa/(1+\rho)^2$, where τ_1^V is the amount saved in period 1 using vouchers. Subtracting $\tilde{\tilde{A}}^{o.oblig.}$ from $\tilde{A}^{o.oblig.}$ we have $\tilde{A}^{o.oblig.} > \tilde{\tilde{A}}^{o.oblig.} \Leftrightarrow (1+\rho)^2(\phi\tau_1^S - \tau_1^V) + (1-\phi)I\varphi_H + \kappa(1+\rho) > (1-\phi)(1+\rho)I\varphi_L$. If $I(1-\phi)(\Gamma - \varphi_H) > \kappa(1+\rho)$, then the credit constraint is more binding for poor entrepreneurs compared to the case when other obligations do not matter.

Finally, if risk markets are perfect, extra obligations still constrain the choice of technology, but the entrepreneur is able to reinvest her liquid proceeds in period 2 even under the standard contract.[71] The incentive constraint for the standard contract is given by

$$I\bar{\varphi} + \tau_1 R - I - \kappa - P_S + \beta\left(I\varphi_H + y - \kappa - P_S\right) + \beta^2 V \geq \phi\left[I\bar{\varphi} + \tau_1 R - I + \beta\left(I\varphi_H + y\right)\right], \tag{A25}$$

while the no-diversion constraint under flexibility is provided by equation (A24) above. In this case, subtracting the minimum incentive-compatible asset size under the voucher contract [derived from (A24)] from that under the standard contract [corresponding to (A25)] yields $\bar{A}^{o.oblig.} - \bar{\tilde{A}}^{o.oblig.} = \phi\tau_1^S - \tau_1^V + \kappa/(1+\rho) - (1-\phi)I(\bar{\varphi}-1)/(1+\rho)$, where τ_1^S is the amount saved in period 1 using the standard contract and τ_1^V the period-1 amount saved using vouchers. From Lemma A3, Part (iii) it follows that this expression is positive.

Other Contractual Obligations and Entrepreneurial Ability

When the informal risk market is incomplete and credit constraints bind, we have that $\left|\partial\tilde{\tilde{A}}^{o.oblig.\,\alpha}/\partial\alpha\right| - \left|\partial\tilde{A}^{o.oblig.\,\alpha}/\partial\alpha\right| = (1-\phi)I\varphi_H/(1+\rho)^2 > 0$. When only credit is rationed, we instead have that $\left|\partial\bar{\tilde{A}}^{o.oblig.\,\alpha}/\partial\alpha\right| - \left|\partial\bar{A}^{o.oblig.\,\alpha}/\partial\alpha\right| = \phi(1-\phi)I\varphi_H/(1+\rho) > 0$. In sum, increased ability relaxes the credit constraint more with voucher contracts even when other obligations matter.

Selection Effects and Risk Aversion

To understand how repayment flexibility affects the selection of individuals into borrowing along the risk dimension, we extend the theory to allow for risk aversion. To this end, we assume that entrepreneurs have mean-variance preferences over consumption, or $U = u(c_1) + \beta\mathrm{E}\left[u(c_2) + \beta u(c_3)\right] - \nu\sigma_{c_t}^2$, where $\nu \geq 0$ is the degree of risk aversion and $\sigma_{c_t}^2$ the variance.[72] In addition, a smaller self-financed project is also available, where the smaller project is a proportionally scaled down version of the illiquid technology studied above (that we will call a large project for clarity). Specifically, the

[71] Alternatively, if we assume that the transfer received through ex-post risk pooling is sufficient to cover both the loan and the other recurrent payments, then extra obligations no longer constrain the choice of technology and outcomes resemble those characterized in Proposition 3 in the main text. To maintain the equivalence between the vouchers and the informal risk market in terms of eliminating a similar risk component, we discard this possibility.

[72] Mean-variance utility is equivalent to CARA preferences under normality (see, e.g., Chavas, 2004). The formulation keeps the model tractable and allows us to obtain closed-form solutions.

small project costs an initial investment equal to sI and returns $sI\gamma$ at date 2 and $sI\Gamma$ at date 3, with $s \in (0,1)$.[73]

The benchmark case without wealth and insurance constraints yields the same outcome as in the basic setup. That is, the entrepreneur undertakes the large illiquid project since full risk pooling implies perfect consumption smoothing.[74] When entrepreneurs are poor, lack access to informal insurance, and the standard contract is on offer, the expected discounted utility of investing in the large safe liquid project is given by

$$\begin{aligned} y + \beta\pi I\left(\varphi_H - 1\right) + \beta\left(1-\pi\right) I\varphi_L + \beta^2\pi I\varphi_H + \beta^2 y + \tau_1 - b + \beta^3 V \\ -\nu\pi\left(1-\pi\right)\beta^2 I^2\left(\varphi_H - 1 + \beta\varphi_H - \varphi_L\right)^2, \end{aligned} \tag{A26}$$

while the equivalent expression for the large risky illiquid project is

$$y + \beta\pi I\gamma + \beta\left(1-\pi\right) I\lambda + \beta^2\pi I\Gamma + \beta^2 y + \tau_1 - b + \beta^3 V - \nu\pi\left(1-\pi\right)\beta^2 I^2\left(\gamma + \beta\Gamma - \lambda\right)^2. \tag{A27}$$

If the entrepreneur carries out the small illiquid project using her own funds, her utility is

$$y + \beta\pi sI\gamma + \beta\left(1-\pi\right) sI\lambda + \beta^2\pi sI\Gamma + \beta^2 y - \nu\pi\left(1-\pi\right)\beta^2 s^2 I^2\left(\gamma + \beta\Gamma - \lambda\right)^2. \tag{A28}$$

Unlike the basic model, we require that the large illiquid project's expected value exceeds the value of the large liquid project.[75] As the illiquid technology also has a higher variance, this captures the risk-return tradeoff, where a higher risk is associated with a higher expected return and a lower risk with a lower return. Intuitively, while less risk-averse borrowers prefer the gamble on the illiquid project, more risk-averse individuals are attracted to the lower but more certain liquid return.

With this in hand, we can show that there exist risk aversion thresholds, $\underline{\nu} < \bar{\nu} < \nu^*$, such that entrepreneurs prefer the large illiquid project for $\nu < \underline{\nu}$, the small illiquid project for $\nu \in (\underline{\nu}, \bar{\nu})$, and the large liquid project for $\nu \in (\bar{\nu}, \nu^*)$. While the ordering across the large illiquid and liquid technology follows from the risk-return assumption, the preference for the smaller project is driven by its size. Entrepreneurs opt for the self-financed project if the scale of the undertaking lies in some intermediary range (s_1, s_2), where the expected return and variance of the small project are (i) lower than the return and variance of the large risky project; and (ii) higher than the return and variance of the large safe project. That is, self-financed entrepreneurs are more risk averse than those who undertake the large illiquid project and less risk averse than individuals who invest in the large liquid project.[76] The outcome is depicted in Figure A.2, where the solid lines display each project

[73] A difference between the large and small illiquid project besides the scale is the assumption that self-financed entrepreneurs cannot save across periods but are forced to put all of their assets into the project. The rationale is that poor entrepreneurs without access to credit lack the funds needed to invest and save at the same time. As a consequence, the small project is liquidated in $t = 2$ to cover subsistence consumption if the negative shock is realized. Hence, risk is consumption related when investing in the small illiquid project while driven by repayment concerns when using external credit to finance the large illiquid project.

[74] As the ex-post insurance scheme removes all uncertainty, the present value of the large liquid and illiquid project is the same as before. Since the small illiquid project is a reduced version of the larger illiquid project it is dominated by the latter for all s. Similarly, even with imperfect credit markets, risk plays no role, and the outcomes are the same as under the basic model presented in the main text.

[75] That is, the additional return to the illiquid project in period 3, $\beta\pi\left(\Gamma - \varphi_H\right)$, is now higher than the benefit of not having to liquidate in $t = 2$, $\pi\left(\varphi_H - \gamma - 1\right) + \left(1-\pi\right)\left(\varphi_L - \lambda\right)$.

[76] The more detailed argument for why $\bar{\nu} > \underline{\nu}$ for (s_1, s_2) goes as follows: in the relevant "s-range", the risk-aversion cut-off $\underline{\nu}$ that makes the entrepreneur indifferent between the large and small illiquid project de-

choice and the associated utility as a function of the degree of risk aversion.

Next, we formally characterize the existence and uniqueness of $\underline{\nu}$, $\bar{\nu}$, and ν^* and show that $\nu^* > \bar{\nu} > \underline{\nu}$. We then proceed with the relevant incentive constraints and the related asset thresholds. The results are summarized in Proposition A4.

To prove the risk-aversion properties, it is helpful to define

$$\bar{\lambda} = \frac{(\gamma + \beta\Gamma)\left[\beta(\varphi_H - 1 + \beta\varphi_H) + \beta\varphi_L - \beta(\gamma + \beta\Gamma) - 1\right]}{2\beta(\varphi_H - 1 + \beta\varphi_H) - \beta(\gamma + \beta\Gamma) - 1}.$$

Lemma A5. *For* $1 - 2\beta(\varphi_L - 1) > 0$ *and* $\beta(\varphi_H - 1 + \beta\varphi_H) + \beta\varphi_L - \beta(\gamma + \beta\Gamma) - 1 > 0$, $\bar{\lambda} \in (0, 1)$.

Proof. First, $\bar{\lambda} > 0$ follows from the assumption that $\beta(\varphi_H - 1 + \beta\varphi_H) + \beta\varphi_L - \beta(\gamma + \beta\Gamma) - 1 > 0$. Second, to show $\bar{\lambda} < 1$, we subtract the denominator from the nominator giving us $(\gamma + \beta\Gamma - 2) \times \{\beta\left[\gamma + \beta\Gamma - (\varphi_H - 1 + \beta\varphi_H)\right] + 1 - \beta(\varphi_L - 1)\} + 1 - 2\beta(\varphi_L - 1) > 0$ as $1 - 2\beta(\varphi_L - 1) > 0$ and $\gamma + \beta\Gamma > \varphi_H - 1 + \beta\varphi_H$ (the unconstrained outcome). □

Lemma A6. *For* $s \in (s_1, s_2)$, $\gamma + \beta\Gamma > {}^{\lambda(1+\beta)(\beta\varphi_H - 1)}/_{(\beta\varphi_L - 1)}$, *and* $\lambda < \bar{\lambda}$ *there exist threshold values* $\underline{\nu}$, $\bar{\nu}$, *and* ν^* *such that*

(i) $(I - A) - (1 - s)\,\beta I\left[\pi(\gamma + \beta\Gamma) + (1 - \pi)\,\lambda\right] - \beta^3 V - \nu\pi(1 - \pi)\beta^2 I^2(1 - s^2)(\gamma + \beta\Gamma - \lambda)^2 = 0$ *for* $\nu = \underline{\nu}$;

(ii) $s\beta I[\pi\,(\gamma + \beta\Gamma) + (1 - \pi)\lambda] + (I - A) - \beta^3 V - \beta I[\pi\,(\varphi_H - 1 + \beta\varphi_H) + (1 - \pi)\varphi_L] - \nu\pi(1 - \pi) \times \beta^2 I^2[s^2(\gamma + \beta\Gamma - \lambda)^2 - (\varphi_H - 1 + \beta\varphi_H - \varphi_L)^2] = 0$ *for* $\nu = \bar{\nu}$;

(iii) $y + \beta\pi I\,(\varphi_H - 1) + \beta\,(1 - \pi)\,I\varphi_L + \beta^2\pi I\varphi_H + \beta^2 y - (I - A) + \beta^3 V - \nu\pi\,(1 - \pi)\,\beta^2 I^2 \times (\varphi_H - 1 + \beta\varphi_H - \varphi_L)^2 = 0$ *for* $\nu = \nu^*$;

(iv) $\nu^* > \bar{\nu} > \underline{\nu} > 0$.

Proof. Part (i): The entrepreneur is indifferent between the small and large illiquid project for $(I - A)$ $- (1 - s)\,\beta I\left[\pi(\gamma + \beta\Gamma) + (1 - \pi)\,\lambda\right] - \beta^3 V - \nu\pi(1 - \pi)\beta^2 I^2(1 - s^2)(\gamma + \beta\Gamma - \lambda)^2 = 0$ [obtained by subtracting (A27) from (A28)]. Hence, the threshold level of risk aversion must satisfy

$$\underline{\nu} = \frac{(1 - s)\,\beta I\left[\pi(\gamma + \beta\Gamma) + (1 - \pi)\,\lambda\right] - (I - A) + \beta^3 V}{\pi(1 - \pi)\beta^2 I^2(1 - s^2)(\gamma + \beta\Gamma - \lambda)^2}. \tag{A29}$$

The denominator in (A29) is positive for $s < s_2 = {}^{\left\{\beta I[\pi(\gamma+\beta\Gamma)+(1-\pi)\lambda]-(I-A)+\beta^3 V\right\}}/_{\beta I[\pi(\gamma+\beta\Gamma)+(1-\pi)\lambda]}$, where $s_2 < 1$ as $I > A + \beta^3 V$ under the assumption that the value of obtaining credit from the lender in the future decreases (monotonically) with wealth, with $V = 0$ for $A = I$ and $V < R^3 I$ for $A = 0$. Also, the nominator is positive for all $s < 1$ as $\gamma > 1$ and $\lambda < 1$. Together this implies that $\underline{\nu} > 0$ for all $s < s_2$.

creases in the size of the smaller project. This is because the two investments become more similar (in terms of risk and return) for a higher s, which lowers the level of risk aversion required to make the entrepreneur switch to the smaller project. By contrast, the risk-aversion threshold $\bar{\nu}$ that makes the entrepreneur indifferent between the small illiquid and large liquid project increases in the size of the smaller venture. The reason is again that the smaller project resembles the risk-return profile of the larger illiquid technology as s increases, but now the implication is that it takes a higher level of risk aversion for the safer project to dominate. As $\underline{\nu}$ ($\bar{\nu}$) decreases (increases) in s, it follows that there exist a unique cut-off s_1, where $\bar{\nu} > \underline{\nu}$ for $s > s_1$. Beyond s_2, $\underline{\nu} < 0$. See the proof below for more details.

The threshold is unique if $\underline{\nu}$ decreases in s for $s < s_2$. To show this, we take the derivative of $\underline{\nu}$ in (A29) with respect to s. To ease notation, define $p = \pi(\gamma + \beta\Gamma) + (1-\pi)\lambda$, $y = I - A - \beta^3 V$, $\Theta = \pi(1-\pi)(\gamma + \beta\Gamma - \lambda)^2$, and $\sigma_{LI}^2 - \sigma_{SI}^2 = \beta^2 I^2 (1-s^2)\Theta$, where subscript $j \in \{LI, SI, LL\}$ indicates whether the entrepreneur invests in the large illiquid (LI), small illiquid (SI), or large liquid (LL) project. This gives us

$$\frac{\partial \underline{\nu}}{\partial s} = \frac{-\beta I p(\sigma_{LI}^2 - \sigma_{SI}^2) - [(1-s)\beta I p - y]^{\partial(\sigma_{LI}^2 - \sigma_{SI}^2)/\partial s}}{(\sigma_{LI}^2 - \sigma_{SI}^2)^2}.$$

We first solve for $^{\partial(\sigma_{LI}^2 - \sigma_{SI}^2)/\partial s} = -2s\beta^2 I^2 \Theta$. Using this, the denominator simplifies to (with some manipulation) $-\beta I p \beta^2 I^2 (1-s^2)\Theta + 2s(1-s)\beta I p \beta^2 I^2 \Theta - 2sy\beta^2 I^2 \Theta = -p\beta^3 I^3 (1-s)^2 \Theta - 2sy\beta^2 I^2 \Theta$. As $-p\beta^3 I^3 (1-s)^2 \Theta < 0$ and $2s\beta^2 I^2 \Theta > 0$, it is sufficient to show that $y = I - A - \beta^3 V \geq 0$ for $^{\partial \underline{\nu}/\partial s} < 0$. By assuming (as above) that the value of obtaining future credit from the lender decreases (monotonically) with wealth, with $V = 0$ for $A = I$ and $V \leq R^3 I$ for $A = 0$, the result follows.

Part (ii): As the entrepreneur is indifferent between the small illiquid and large liquid project for $s\beta I[\pi(\gamma + \beta\Gamma) + (1-\pi)\lambda] + (I - A) - \beta^3 V - \beta I[\pi(\varphi_H - 1 + \beta\varphi_H) + (1-\pi)\varphi_L] - \nu\pi(1-\pi)\beta^2 I^2 \times [s^2(\gamma + \beta\Gamma - \lambda)^2 - (\varphi_H - 1 + \beta\varphi_H - \varphi_L)^2] = 0$ [obtained by subtracting (A26) from (A28)], the threshold level of risk aversion must satisfy

$$\bar{\nu} = \frac{\beta I s[\pi(\gamma + \beta\Gamma) + (1-\pi)\lambda] - \beta I[\pi(\varphi_H - 1 + \beta\varphi_H) + (1-\pi)\varphi_L] - \beta^3 V + (I - A)}{\pi(1-\pi)\beta^2 I^2 [s^2(\gamma + \beta\Gamma - \lambda)^2 - (\varphi_H - 1 + \beta\varphi_H - \varphi_L)^2]}. \quad \text{(A30)}$$

The denominator in (A30) is positive for $s > s_0 = {}^{\beta I[\pi(\varphi_H - 1 + \beta\varphi_H) + (1-\pi)\varphi_L]}/_{\beta I[\pi(\gamma + \beta\Gamma) + (1-\pi)\lambda]} - {}^{[(I-A) - \beta^3 V]}/_{\beta I[\pi(\gamma + \beta\Gamma) + (1-\pi)\lambda]}$, where $s_0 > 0$ as $\varphi_H > 1$. A sufficient condition for the nominator being positive is that s exceeds ${}^{(\varphi_H - 1 + \beta\varphi_H - \varphi_L)}/_{(\gamma + \beta\Gamma - \lambda)}$. To determine the relevant threshold for which $\bar{\nu} > 0$, we subtract ${}^{(\varphi_H - 1 + \beta\varphi_H - \varphi_L)}/_{(\gamma + \beta\Gamma - \lambda)}$ from s_0 and simplify the expression giving us ${}^{\{I[(\beta\varphi_L - 1)(\beta\Gamma + \gamma) - \lambda(\beta\varphi_H - 1)(\beta + 1)] + (A + \beta^3 V)(\gamma + \beta\Gamma - \lambda)\}}/_{\beta I(\gamma + \beta\Gamma - \lambda)[\pi(\gamma + \beta\Gamma) + (1-\pi)\lambda]} > 0$ as $\gamma + \beta\Gamma > {}^{\lambda(1+\beta)(\beta\varphi_H - 1)}/_{(\beta\varphi_L - 1)}$. Hence, $\bar{\nu} > 0$ for all $s > s_0$.

The threshold is unique if $\bar{\nu}$ increases in s for $s > s_0$. To show this, we take the derivative of $\bar{\nu}$ in (A30) with respect to s. To ease notation, in addition to p and y above, we also define $L = \pi(\varphi_H - 1 + \beta\varphi_H) + (1-\pi)\varphi_L$, $\Omega = s\beta I(\gamma + \beta\Gamma - \lambda)$, $\Psi = \beta I(\varphi_H - 1 + \beta\varphi_H - \varphi_L)$, and $\sigma_{SI}^2 - \sigma_{LL}^2 = \pi(1-\pi)(\Omega^2 - \Psi^2)$. We thus have

$$\frac{\partial \bar{\nu}}{\partial s} = \frac{\beta I p(\sigma_{SI}^2 - \sigma_{LL}^2) - [s\beta I p - \beta I L + y]^{\partial(\sigma_{SI}^2 - \sigma_{LL}^2)/\partial s}}{(\sigma_{SI}^2 - \sigma_{LL}^2)^2}.$$

Solving for $^{\partial(\sigma_{SI}^2 - \sigma_{LL}^2)/\partial s}$ gives $2\pi(1-\pi)\Omega\beta I(\gamma + \beta\Gamma - \lambda)$, and the denominator becomes $\pi(1-\pi) \times \beta I\left[p(\Omega^2 - \Psi^2) - (s\beta I p - \beta I L + y)2\Omega(\gamma + \beta\Gamma - \lambda)\right]$. Focusing on the terms in the square brackets yields (after expanding and rearranging) $\Omega[\beta I(\gamma + \beta\Gamma - \lambda)(2L - ps) - 2(\gamma + \beta\Gamma - \lambda)y] - \Psi^2 p$. This becomes $\Psi p(\Omega - \Psi) + \Omega[\beta I(\gamma + \beta\Gamma - \lambda)(2L - ps) - \Psi p - 2(\gamma + \beta\Gamma - \lambda)y]$ after adding and subtracting Ψp. Since $\Psi p(\Omega - \Psi) = \Psi p \beta I[s(\gamma + \beta\Gamma - \lambda) - (\varphi_H - 1 + \beta\varphi_H - \varphi_L)] > 0$ for $s > s_0$, it is sufficient to show that the remaining terms are positive. Rearranging and solving for L, p, and y gives us $\beta I[\varphi_L(\gamma + \beta\Gamma) - \lambda(\varphi_H - 1 + \beta\varphi_H)] + \beta I(\gamma + \beta\Gamma - \lambda)[\pi(\varphi_H - 1 + \beta\varphi_H) + (1-\pi)\varphi_L] - 2(\gamma + \beta\Gamma - \lambda)(I - A - \beta^3 V) - s\beta I(\gamma + \beta\Gamma - \lambda)[\pi(\gamma + \beta\Gamma) + (1-\pi)\lambda]$. This expression exceeds

zero for $s < s^*$, where s^* is defined as

$$s^* = \frac{\beta I[\varphi_L(\gamma+\beta\Gamma)-\lambda(\varphi_H-1+\beta\varphi_H)]+\beta I\left(\gamma+\beta\Gamma-\lambda\right)[\pi(\varphi_H-1+\beta\varphi_H)+(1-\pi)\varphi_L]}{\beta I\left(\gamma+\beta\Gamma-\lambda\right)[\pi(\gamma+\beta\Gamma)+(1-\pi)\lambda]} - \frac{2\left(\gamma+\beta\Gamma-\lambda\right)\left(I-A-\beta^3V\right)}{\beta I\left(\gamma+\beta\Gamma-\lambda\right)[\pi(\gamma+\beta\Gamma)+(1-\pi)\lambda]}.$$

As shown in Part (i), the permissible range for s to satisfy $\underline{\nu} > 0$ is $s < s_2$. Hence, $s < s^*$ will be satisfied if $s^* > s_2$ and $s \in (s_0, s_2)$ [where the latter condition is proved in Part (iv) below]. Subtracting s_2 from s^* and focusing on the terms in the denominator we get $\beta I\left[\varphi_L(\gamma+\beta\Gamma)-\lambda(\varphi_H-1+\beta\varphi_H)\right]+\beta I\left(\gamma+\beta\Gamma-\lambda\right)[\pi(\varphi_H-1+\beta\varphi_H)+(1-\pi)\varphi_L]-\left(\gamma+\beta\Gamma-\lambda\right)\left(I-A-\beta^3V\right)-\beta I\left(\gamma+\beta\Gamma-\lambda\right)\times[\pi(\gamma+\beta\Gamma)+(1-\pi)\lambda]$. As the expression decreases in π, it suffices to show that it is positive for $\pi = 1$. Setting $\pi = 1$ (and $A = \beta^3 V = 0$ to simplify, making the expression as negative as possible) yields $I\left\{(\gamma+\beta\Gamma)[\xi+\beta\varphi_L]-\lambda[\beta(\varphi_H-1+\beta\varphi_H)+\xi]\right\} > 0$, where the last inequality follows from our assumption that $\lambda < \bar{\lambda}$, with $\xi = \beta(\varphi_H-1+\beta\varphi_H)-\beta(\gamma+\beta\Gamma)-1$.

Part (iii): The entrepreneur is indifferent between refraining from any investment and the large liquid project for $y+\beta\pi I\left(\varphi_H-1\right)+\beta\left(1-\pi\right)I\varphi_L+\beta^2\pi I\varphi_H+\beta^2 y-(I-A)+\beta^3V-\nu\pi\left(1-\pi\right)\beta^2I^2\times\left(\varphi_H-1+\beta\varphi_H-\varphi_L\right)^2=0$ [obtained by setting (A26) equal to zero]. Hence, the threshold level of risk aversion must satisfy

$$\nu^* = \frac{y+\beta\pi I\left(\varphi_H-1\right)+\beta\left(1-\pi\right)I\varphi_L+\beta^2\pi I\varphi_H+\beta^2 y-(I-A)+\beta^3V}{\pi\left(1-\pi\right)\beta^2I^2\left(\varphi_H-1+\beta\varphi_H-\varphi_L\right)^2}. \tag{A31}$$

The threshold $\nu^* > 0$ since $y^1+\beta^2 y+\beta^3V+\beta I[\pi\left(\varphi_H-1\right)+\left(1-\pi\right)\varphi_L+\beta\pi\varphi_H-R]+A>0$, as $\varphi_H > \varphi_L > R = 1/\beta$. To show the existence and uniqueness for $\nu^* > 0$, we note that (letting U_j denote the entrepreneur's utility) $U_{LL} = \mathrm{E}_{LL}-\nu\sigma^2_{LL} = U_{SI} = \mathrm{E}_{SI}-\nu\sigma^2_{SI} > 0$ for $\nu = \bar{\nu}$, $U_{LL} = \mathrm{E}_{LL}-\nu\sigma^2_{LL} = 0$ for $\nu = \nu^*$, and $\partial U_{LL}/\partial\nu < 0$. By continuity, there exists a unique threshold $\nu = \nu^*$ at which $U_{LL} = 0$.

Part (iv): We first establish $\bar{\nu} > \underline{\nu} > 0$ and begin by showing that $s_2 > s_0$ by subtracting s_0 from s_2 as defined in Parts (i) and (ii). This yields $[\pi(\gamma+\beta\Gamma)+(1-\pi)\lambda-\pi(\varphi_H-1+\beta\varphi_H)-(1-\pi)\varphi_L]/[\pi(\gamma+\beta\Gamma)+(1-\pi)\lambda] > 0$, where the inequality follows from the assumption that $\pi(\gamma+\beta\Gamma)+(1-\pi)\lambda > \pi(\varphi_H-1+\beta\varphi_H)+(1-\pi)\varphi_L$. Next, as $\bar{\nu} > 0$ and $\partial\bar{\nu}/\partial s > 0$ for $s > s_0$ and $\underline{\nu} > 0$ and $\partial\underline{\nu}/\partial s < 0$ for $s < s_2$, there must exist a unique threshold $s = s_1 > 0$, where $\bar{\nu} > \underline{\nu} > 0$ for $s_1 \in (s_0, s_2)$. Second, to show that $\nu^* > \bar{\nu}$, we have from Part (iii) that $U_{LL} = \mathrm{E}_{LL}-\nu\sigma^2_{LL} = \chi > 0$ for $\nu = \bar{\nu}$ or $\bar{\nu} = (\mathrm{E}_{LL}-\chi)/\sigma^2_{LL}$. Also, $U_{LL} = \mathrm{E}_{LL}-\nu\sigma^2_{LL} = 0$ for $\nu = \nu^*$ or $\nu^* = \mathrm{E}_{LL}/\sigma^2_{LL}$. Subtracting $\bar{\nu}$ from ν^* yields $\chi > 0$. □

Lemma A7. *If $\nu < \underline{\nu}$ then the entrepreneur borrows and invests in the large risky, illiquid project. If $\nu \in (\underline{\nu}, \bar{\nu})$ then the entrepreneur self-finances the smaller risky, illiquid project. If $\nu \in (\bar{\nu}, \nu^*)$ then the entrepreneur borrows and invests in the large safe, liquid project.*

Proof. From Lemma A6 it follows that $U_{LI} > U_{SI} > U_{LL}$ for $\nu < \underline{\nu}$, where $U_{LI} > U_{LL}$ is a result of $U_{SI} > U_{LL}$ for $\nu < \bar{\nu}$ [Part (i)], $U_{SI} > U_{LI}$ and $U_{SI} > U_{LL}$ for $\nu \in (\underline{\nu}, \bar{\nu})$ [Part (ii)], and $U_{LL} > U_{SI} > U_{LI}$ for $\nu \in (\bar{\nu}, \nu^*)$, where $U_{LL} > U_{LI}$ is a result of $U_{SI} > U_{LI}$ for $\nu > \underline{\nu}$ [Part (iii)]. □

Finally, we show the relevant incentive constraints and asset thresholds. As before, incentive compatibility requires that the residual return after repaying the loan under the low-return realization exceeds the benefit from diverting all available resources. Since uncertainty is resolved in $t = 2$,

the terms associated with the variance drop out and we have the same constraint as provided by (1) in the main text for the large liquid project [for $\nu \in (\bar{\nu}, \nu^*)$]. The equivalent condition for the large illiquid project (when $\nu < \underline{\nu}$) is given by

$$I\lambda + \tau_1 R - P_S + \beta (y - P_S) + \beta^2 V \geq \phi (I\lambda + \tau_1 R + \beta y). \tag{A32}$$

The properties of the related wealth thresholds are as follows.

Lemma A8. *There exist unique thresholds $\hat{A}(\phi)$ and $\tilde{A}(\phi)$ such that*

(i) $b + A - \tau_1 = I$ and $A = I + {}^{(c_2 - I\lambda)}/_{(1+\rho)} + {}^{(c_3 - y)}/_{(1+\rho)^2}$ for $A = \hat{A}(\phi)$;

(ii) $b + A - \tau_1 = I$ and $A = I + {}^{(c_2 - I\varphi_L)}/_{(1+\rho)} + {}^{(c_3 - y)}/_{(1+\rho)^2}$ for $A = \tilde{A}(\phi)$;

(iii) $\hat{A}(\phi) > \tilde{A}(\phi) > 0$.

Proof. Part (i): The threshold $\hat{A}(\phi)$ is the smallest asset level such that the entrepreneur can fund the large risky, illiquid investment under the standard contract. Solving for the binding equilibrium incentive constraint using (A32) yields

$$I\lambda + \tau_1 (1+\rho) + \frac{y}{(1+\rho)} - b(1+\rho) + \frac{V}{(1+\rho)^2} - \phi \left[I\lambda + \tau_1 (1+\rho) + \frac{y}{(1+\rho)} \right] = 0. \tag{A33}$$

The rest of the proof is analogous to the proof of Lemma A1 and hence omitted.

Part (ii): The threshold $\tilde{A}(\phi)$ is the smallest asset level such that the entrepreneur can fund the large safe, liquid investment under the standard contract. The proof of existence and uniqueness of this threshold is analogous to the proof of Lemma A1 and hence omitted.

Part (iii): Subtracting $\tilde{A}(\phi)$ given by (A8) from $\hat{A}(\phi) = I + {}^{(c_2 - I\lambda)}/_{(1+\rho)} + {}^{(c_3 - y)}/_{(1+\rho)^2}$ yields ${}^{(\varphi_L - \lambda)}/_{(1+\rho)} > 0$, as $\varphi_L > 1 > \lambda$. Finally, $\tilde{A}(\phi) > 0$ is a result of the assumption that $\phi > \underline{\phi}$. □

Collecting the findings, we have the following proposition (assuming that the relevant asset thresholds are satisfied as characterized in Lemma A8 above).

Proposition A4. *Under the standard contract, there are risk-aversion thresholds $\nu^* > \bar{\nu} > \underline{\nu} > 0$ such that entrepreneurs with $\nu < \underline{\nu}$ borrow and invest in the large risky project, entrepreneurs with $\nu \in (\underline{\nu}, \bar{\nu})$ self-finance the small risky project, and entrepreneurs with $\nu \in (\bar{\nu}, \nu^*)$ borrow and invest in the large safe project.*

With vouchers, the repayment-related risk is removed, and the large illiquid project strictly dominates the large safe and small illiquid project for all values of ν below ν^{**} if the large risky project is illiquid enough and the small risky project is sufficiently large (the precise conditions are derived in Lemma A9). The utility associated with the large liquid technology is now given by

$$y + \beta\pi I\varphi_H + \beta(1-\pi) I\varphi_L - \beta I + \beta^2 I\varphi_H + \beta^2 y + \tau_1 - b + \beta^3 V - \nu\pi(1-\pi)\beta^2 I^2 (\varphi_H - \varphi_L)^2, \tag{A34}$$

while the large illiquid project yields

$$y + \beta\pi I\gamma + \beta^2 I\Gamma + \beta^2 y + \tau_1 - b + \beta^3 V - \nu\pi(1-\pi)\beta^2 I^2 \gamma^2. \tag{A35}$$

Lemma A9. *For $\varphi_H - \varphi_L > \gamma$ and $s \geq \gamma/(\gamma+\beta\Gamma-\lambda)$, where $s \in (s_0, s_2)$ the entrepreneur chooses the large illiquid project over the large liquid and the small illiquid project.*

Proof. To show that the large illiquid project dominates the large liquid project, we subtract (A34) from (A35) yielding $\beta I[\pi\gamma + \beta\Gamma - \pi\varphi_H - (1-\pi)\varphi_L + 1 - \beta\varphi_H] + \nu\pi(1-\pi)\beta^2 I^2\left[(\varphi_H - \varphi_L)^2 - \gamma^2\right] > 0$ as $\pi\gamma + \beta\Gamma > \pi\varphi_H + (1-\pi)\varphi_L - 1 + \beta\varphi_H$ (unconstrained outcome) and $\varphi_H - \varphi_L > \gamma$. To show that the large illiquid technology is preferred to the smaller counterpart, we subtract the equation given in (A28) from the one defined by (A35) which yields $\beta I\{\pi\gamma + \beta\Gamma - s[\pi\gamma + (1-\pi)\lambda + \beta\pi\Gamma]\} - (I-A) + \beta^3 V + \nu\pi(1-\pi)\beta^2 I^2\left[s^2(\gamma + \beta\Gamma - \lambda)^2 - \gamma^2\right] > 0$ for $s \geq \tilde{s} = \gamma/(\gamma+\beta\Gamma-\lambda)$. Finally, to satisfy $s \in (s_0, s_2)$, we assume that $\tilde{s} - s_0 = \gamma\beta I[\pi(\gamma+\beta\Gamma) + (1-\pi)\lambda]/\beta I(\gamma+\beta\Gamma-\lambda)[\pi(\gamma+\beta\Gamma) + (1-\pi)\lambda] - (\gamma+\beta\Gamma-\lambda)\{\beta I[\pi(\varphi_H - 1 + \beta\varphi_H) + (1-\pi)\varphi_L] - (I-A) + \beta^3 V\}/\beta I(\gamma+\beta\Gamma-\lambda)[\pi(\gamma+\beta\Gamma) + (1-\pi)\lambda] > 0$ and that $s_2 - \tilde{s} = \langle(\gamma+\beta\Gamma-\lambda)\{\beta I[\pi(\gamma+\beta\Gamma)+(1-\pi)\lambda] - (I-A) + \beta^3 V\} - \gamma\beta I[\pi(\gamma+\beta\Gamma)+(1-\pi)\lambda]\rangle/\beta I(\gamma+\beta\Gamma-\lambda)[\pi(\gamma+\beta\Gamma)+(1-\pi)\lambda] > 0$. □

Following Lemma A9, we note that the large illiquid technology both has a lower variance and a higher expected return than the remaining two projects. Consequently, the risk-aversion cut-off for undertaking any investment moves up to ν^{**}. Before deriving the associated incentive constraint and related asset threshold, we show the existence and uniqueness of ν^{**} and $\nu^{**} > \nu^*$.

Lemma A10. *There exists a threshold value ν^{**} such that*

(i) $y + \beta\pi I\gamma + \beta^2 I\Gamma + \beta^2 y - (I-A) + \beta^3 V - \nu\pi(1-\pi)\beta^2 I^2\gamma^2 = 0$ for $\nu = \nu^{**}$;

(ii) $\nu^{**} > \nu^* > 0$.

Proof. Part (i): The entrepreneur is indifferent between refraining from investment and the large illiquid project for $y + \beta\pi I\gamma + \beta^2 I\Gamma + \beta^2 y - (I-A) + \beta^3 V - \nu\pi(1-\pi)\beta^2 I^2\gamma^2 = 0$ [obtained by setting (A35) equal to zero]. Hence, the threshold level of risk aversion must satisfy

$$\nu^{**} = \frac{y + \beta\pi I\gamma + \beta^2 I\Gamma + \beta^2 y - (I-A) + \beta^3 V}{\pi(1-\pi)\beta^2 I^2\gamma^2}. \tag{A36}$$

To show $\nu^{**} > 0$, we first note that the expected value of the large [illiquid] (liquid) investment under the [voucher] (standard) contract, E^V_{LI} (E^S_{LL}), is given by the denominator in [A36] (A31). Since $\mathrm{E}^V_{LI} - \mathrm{E}^S_{LL} = \beta I[\pi\gamma + \beta\Gamma - \pi(\varphi_H - 1) - (1-\pi)\varphi_L - \beta\varphi_H] > 0$ as $\pi\gamma + \beta\Gamma > \pi(\varphi_H - 1) + (1-\pi)\varphi_L + \beta\varphi_H$ (the unconstrained outcome), the conclusion follows. To show the existence and uniqueness for $\nu^{**} > 0$, we further note that the variance of the large [liquid] (illiquid) investment under the [standard] (voucher) contract, $\sigma^2_{LL^S}$ ($\sigma^2_{LI^V}$), is given by the nominator in [A31] (A36), where $\sigma^2_{LL^S} > \sigma^2_{LI^V}$ by Lemma A9, implying that $U^V_{LI} = \mathrm{E}^V_{LI} - \nu\sigma^2_{LI^V} > U^S_{LL} = \mathrm{E}^S_{LL} - \nu\sigma^2_{LL^S}$. As $U^V_{LI} > U^S_{LL} = \mathrm{E}^S_{LL} - \nu\sigma^2_{LL^S} = 0$ for $\nu = \nu^*$, $U^V_{LI} = \mathrm{E}^V_{LI} - \nu\sigma^2_{LI^V} = 0$ for $\nu = \nu^{**}$, and $\partial U^V_{LI}/\partial\nu < 0$, there exists a unique threshold $\nu = \nu^{**}$ at which $U^V_{LI} = 0$ by continuity.

Part (ii): From Part (i) we have that the denominator (nominator) in (A36) exceeds (is smaller than) the denominator (nominator) in (A31) and hence $\nu^{**} > \nu^*$. Finally, $\nu^* > 0$ follows from Lemma A6, Part (iii). □

Lemma A11. *If $\nu < \nu^{**}$ then the entrepreneur borrows and invests in the large risky, illiquid project.*

Proof. The proof is analogous to the proof Lemma A9 except for the condition that $\nu < \nu^{**}$. □

Finally, the associated incentive constraint is given by equation (2) in the main text and the critical wealth threshold has the following properties.

Lemma A12. *There exist unique thresholds $\hat{A}(\phi)$, $\tilde{A}(\phi)$, and $\tilde{\tilde{A}}(\phi)$ such that*

(i) $b + A - \tau_1 = I$ and $A = I + \tau_1 - {}^{(1-\phi)(I\Gamma+y)}/_{(1+\rho)^2} - {}^{V}/_{(1+\rho)^3}$ for $A = \tilde{\tilde{A}}(\phi)$;

(ii) $\hat{A}(\phi) > \tilde{A}(\phi) > \tilde{\tilde{A}}(\phi) > 0$.

Proof. Part (i): The threshold $\tilde{\tilde{A}}(\phi)$ is the smallest asset level such that the entrepreneur can fund the large risky, illiquid investment under the flexible contract. The proof of existence and uniqueness of this threshold is analogous to the proof of Lemma A2 and hence omitted.

Part (ii): $\hat{A}(\phi) > \tilde{A}(\phi)$ is shown in Lemma A8, Part (iii) and $\tilde{A}(\phi) > \tilde{\tilde{A}}(\phi)$ follows from the proof of Corollary 1, Part (ii). Finally, $\tilde{\tilde{A}}(\phi) > 0$ is a result of the assumption that $\phi > \underline{\underline{\phi}}$. □

Taken together, we have the following final proposition (assuming that the relevant asset threshold is satisfied as characterized in Lemma A12 above).

Proposition A5. *Under the flexible contract, there is a risk-aversion threshold $\nu^{**} > \nu^{*}$ such that entrepreneurs with $\nu < \nu^{**}$ borrow and invest in the large risky project.*

Figure A.2 summarizes how the two contracts affect selection into borrowing. The prediction of this extension is that repayment flexibility has an ambiguous effect on the degree of risk aversion in the resulting borrower pool. The average client using vouchers is less risk averse if self-financed entrepreneurs under the standard contract [with $\nu \in (\underline{\nu}, \bar{\nu})$] is a sufficiently large group such that they dominate the really risk-averse agents who only invest with the vouchers on offer [with $\nu \in (\nu^{*}, \nu^{**})$], and that these groups together are less averse to risk than the average borrower with the standard loan [who consists of individuals with $\nu < \underline{\nu}$ or $\nu \in (\bar{\nu}, \nu^{*})$]. By contrast, the share of risk averse borrowers increases if there are relatively few self-funded entrepreneurs under the standard contract.

A.2 Tables

TABLE A.1: BASELINE DESCRIPTIVES AND BALANCE TESTS FOR DABI CLIENTS

			Baseline balance tests		
	Treatment group	Control group	Basic difference	R.I. p-value	Normalized difference
Respondent's age (years)	38.172	39.072	-0.950	0.255	-0.064
	(10.043)	(9.993)	(0.673)		
Respondent's schooling (years)	4.668	4.479	0.179	0.479	0.036
	(3.829)	(3.524)	(0.208)		
Household size	4.887	4.963	-0.054	0.647	-0.029
	(1.854)	(1.856)	(0.100)		
Land owner (Yes=1)	0.509	0.459	0.039	0.317	0.072
	(0.500)	(0.499)	(0.032)		
Size of land owned (decimals)	53.108	47.510	5.453	0.431	0.034
	(108.496)	(125.789)	(5.412)		
Household income ($ PPP)	7,367.477	6,612.345	850.744	0.481	0.040
	(14,712.623)	(11,738.333)	(947.075)		
Household consumption per capita ($ PPP)	1,763.617	1,602.624	164.808	0.436	0.035
	(3,926.820)	(2,357.382)	(170.799)		
Business owner ($ PPP)	0.453	0.451	0.006	0.897	0.002
	(0.498)	(0.498)	(0.035)		
Business assets (Yes=1)	4,297.422	4,287.708	-174.528	0.849	0.000
	(14,740.318)	(20,630.973)	(790.288)		
Number of workers	0.692	0.453	0.266	0.194	0.058
	(3.161)	(2.654)	(0.171)		
Business hours	1,581.789	1,644.411	-46.176	0.748	-0.022
	(1,996.573)	(1,961.233)	(123.652)		
Owner's business hours	1,496.525	1,550.826	-42.547	0.782	-0.020
	(1,911.295)	(1,891.693)	(118.814)		
Monthly profits ($ PPP)	365.039	282.240	86.149	0.216	0.067
	(1,096.682)	(578.630)	(55.488)		
Annual profits ($ PPP)	4,505.895	3,890.152	649.273	0.470	0.036
	(12,861.632)	(11,323.915)	(746.466)		
Annual revenues ($ PPP)	39,413.473	32,484.365	7,633.284	0.497	0.033
	(173403.844)	(121854.297)	(8,678.426)		
Costs ($ PPP)	33,997.918	22,934.883	11,527.271	0.208	0.057
	(173206.672)	(87,447.234)	(7,348.327)		
Range of monthly revenues ($ PPP)	2,325.837	2,067.991	286.824	0.695	0.018
	(9,012.927)	(10,886.763)	(564.873)		
BRAC loan (Yes=1)	0.845	0.857	-0.011	0.743	-0.023
	(0.362)	(0.351)	(0.027)		
BRAC loan value ($ PPP)	1,770.179	1,583.697	179.851	0.143	0.090
	(1,595.545)	(1,317.807)	(111.984)		
Non-BRAC loan value (Yes=1)	0.089	0.106	-0.020	0.304	-0.042
	(0.285)	(0.309)	(0.017)		
Non-BRAC loan value ($ PPP)	164.602	205.375	-45.014	0.415	-0.033
	(777.383)	(951.971)	(47.326)		
Transfers received ($ PPP)	2,214.264	1,815.397	339.136	0.520	0.048
	(5,904.317)	(5,783.917)	(440.272)		
Transfers and loans given ($ PPP)	207.735	71.180	150.143	0.038	0.070
	(1,896.242)	(410.110)	(83.020)*		
Net borrowing and transfers ($ PPP)	3,941.310	3,533.289	323.829	0.579	0.045
	(6,582.683)	(6,139.601)	(487.153)		
Non-business assets value ($ PPP)	4,192.344	3,492.141	684.134	0.036	0.103
	(4,875.080)	(4,707.035)	(287.596)**		
Risk aversion	3.506	3.582	-0.051	0.748	-0.029
	(2.004)	(1.759)	(0.139)		
Patience	2.504	2.618	-0.133	0.337	-0.042
	(1.935)	(1.915)	(0.118)		
Classified as default (Yes=1)	0.009	0.019	-0.011	0.246	-0.062
	(0.094)	(0.138)	(0.007)		
High expected demand uncertainty (Yes=1)	0.574	0.442	0.102	0.364	0.187
	(0.495)	(0.497)	(0.097)		
Sector: Retail (Yes=1)	0.202	0.231	-0.031	0.356	-0.050
	(0.402)	(0.422)	(0.027)		
Sector: Agriculture-related (Yes=1)	0.170	0.163	0.008	0.820	0.012
	(0.376)	(0.370)	(0.027)		

Notes: The sample includes eligible *Dabi* clients; it is limited to baseline observations who were resurveyed at the midline or the endline survey. Columns 1-2 give the mean and the standard deviation of observations in treatment and control groups respectively; column 3 reports the coefficient of "Treatment" indicator in a regression controlling for district (strata) fixed effects with the standard errors clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Column 4 reports the randomization inference p-values for the null hypothesis of no difference between treatment and controls groups. Column 5 reports the normalized difference between treatment and control groups, computed as the difference in means in treatment and control observations divided by the square root of the sum of the variances. Variables are described in Appendix B

TABLE A.2: BASELINE DESCRIPTIVES AND BALANCE TESTS FOR PROGOTI CLIENTS

			Baseline balance tests		
	Treatment group	Control group	Basic difference	R.I. p-value	Normalized difference
Respondent's age (years)	43.563	44.082	-0.620	0.403	-0.033
	(10.511)	(11.616)	(0.583)		
Respondent's schooling (years)	7.485	7.470	0.017	0.948	0.003
	(3.965)	(4.033)	(0.196)		
Household size	5.628	5.823	-0.203	0.208	-0.057
	(2.263)	(2.565)	(0.140)		
Land owner (Yes=1)	0.828	0.835	-0.009	0.750	-0.014
	(0.378)	(0.371)	(0.022)		
Size of land owned (decimals)	1,850.157	205.951	1,998.341	0.261	0.037
	(44,533.188)	(354.066)	(1,763.918)		
Household income ($ PPP)	22,382.643	20,497.238	1,847.360	0.698	0.030
	(56,550.324)	(29,037.510)	(3,067.776)		
Household consumption per capita ($ PPP)	2,327.093	2,256.000	37.221	0.872	0.018
	(3,355.874)	(1,964.298)	(161.283)		
Business owner ($ PPP)	0.871	0.879	-0.005	0.879	-0.018
	(0.336)	(0.326)	(0.025)		
Business assets (Yes=1)	25,382.990	27,314.578	-1,686.298	0.650	-0.020
	(55,288.418)	(76,851.062)	(3,158.019)		
Number of workers	1.882	1.947	-0.025	0.962	-0.009
	(6.332)	(4.221)	(0.358)		
Business hours	3,476.416	3,474.084	1.334	0.992	0.001
	(1,737.542)	(1,701.972)	(133.578)		
Owner's business hours	3,119.832	3,139.336	-16.389	0.919	-0.009
	(1,627.194)	(1,617.191)	(118.428)		
Monthly profits ($ PPP)	1,476.584	1,179.643	281.274	0.457	0.057
	(4,877.159)	(1,924.295)	(253.255)		
Annual profits ($ PPP)	17,741.604	15,590.364	2,077.285	0.658	0.039
	(50,169.312)	(22,321.520)	(2,763.875)		
Annual revenues ($ PPP)	198747.938	177980.969	21,863.986	0.553	0.029
	(565427.938)	(431943.562)	(28,886.484)		
Costs ($ PPP)	184111.047	158301.625	25,627.602	0.534	0.034
	(605984.688)	(446243.344)	(30,080.332)		
Range of monthly revenues ($ PPP)	39,577.422	13,798.673	24,518.008	0.282	0.065
	(393704.531)	(39,624.559)	(14,593.208)*		
BRAC loan (Yes=1)	0.934	0.912	0.027	0.320	0.057
	(0.249)	(0.283)	(0.023)		
BRAC loan value ($ PPP)	7,424.608	7,768.680	-232.556	0.652	-0.042
	(5,327.831)	(6,138.507)	(435.853)		
Non-BRAC loan value (Yes=1)	0.084	0.077	0.004	0.804	0.017
	(0.278)	(0.267)	(0.014)		
Non-BRAC loan value ($ PPP)	5,608.620	330.810	6,361.217	0.026	0.040
	(132148.172)	(1,518.435)	(5,231.907)		
Transfers received ($ PPP)	3,526.029	4,171.873	-848.448	0.323	-0.043
	(9,408.028)	(11,800.642)	(740.371)		
Transfers and loans given ($ PPP)	452.810	331.220	133.092	0.289	0.034
	(3,226.721)	(1,536.460)	(94.769)		
Net borrowing and transfers ($ PPP)	16,106.447	11,940.143	5,147.122	0.394	0.031
	(132074.312)	(13,735.193)	(5,221.650)		
Non-business assets value ($ PPP)	10,881.253	8,845.546	1,854.504	0.369	0.051
	(36,323.082)	(16,806.346)	(1,374.488)		
Risk aversion	2.876	2.927	-0.025	0.889	-0.017
	(2.095)	(2.052)	(0.150)		
Patience	2.609	2.661	-0.102	0.496	-0.018
	(2.037)	(2.005)	(0.126)		
Classified as default (Yes=1)	0.010	0.010	0.001	0.810	0.003
	(0.101)	(0.099)	(0.004)		
High expected demand uncertainty (Yes=1)	0.536	0.432	0.109	0.440	0.148
	(0.499)	(0.496)	(0.104)		
Sector: Retail (Yes=1)	0.525	0.536	-0.011	0.742	-0.016
	(0.500)	(0.499)	(0.029)		
Sector: Agriculture-related (Yes=1)	0.281	0.296	-0.013	0.620	-0.024
	(0.450)	(0.457)	(0.021)		

Notes: The sample includes eligible *Progoti* clients; it is limited to baseline observations who were resurveyed at the midline or the endline survey. Columns 1-2 give the mean and the standard deviation of observations in treatment and control groups respectively; column 3 reports the coefficient of "Treatment" indicator in a regression controlling for district (strata) fixed effects with the standard errors clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Column 4 reports the randomization inference p-values for the null hypothesis of no difference between treatment and controls groups. Columns 5 reports the normalized difference between treatment and control groups, computed as the difference in means in treatment and control observations divided by the square root of the sum of the variances. Variables are described in Appendix B

TABLE A.3: ATTRITION

Sample:	*Dabi*	*Progoti*	SMEs
	(1)	(2)	(3)
Panel A: Attrition at Midline Survey			
Treatment	0.009	-0.003	0.002
	(0.012)	(0.013)	(0.011)
	[0.562]	[0.858]	[0.860]
Observations	1115	1602	3504
Average attrition in control	0.048	0.085	0.114
Panel B: Attrition at Endline Survey			
Treatment	-0.015	-0.019	-0.024
	(0.013)	(0.017)	(0.019)
	[0.360]	[0.350]	[0.335]
Observations	1115	1602	3504
Average attrition in control	0.080	0.146	0.171

Notes: The dependent variable in all regressions in Panel A (B) is a dummy =1 if the respondent was surveyed at baseline but not at midline (endline). In column 1, the sample includes all eligible *Dabi* clients surveyed at baseline; in column 2 the sample includes all eligible *Progoti* clients surveyed at baseline, in column 3 the sample includes all SME's surveyed as part of the SME sample at baseline. All regressions control for the baseline (2015) value of the outcome, an indicator variable for the endline survey and district (randomization strata) fixed effects. "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered it to the eligible clients. Standard errors are clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets.

TABLE A.4: EFFECTS ON CREDIT MARKET OUTCOMES – DIFFERENCE BETWEEN DABI V.S. PROGOTI

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	BRAC loan		Non-BRAC loan		Transfers	Transfers or	Net borrowing	Aggregate
	yes=1	value	yes=1	value	received	loans given	or transfers	index
Treatment	0.07**	409.95**	-0.04*	-169.33	389.95	126.68***	679.08	0.18**
	(0.03)	(188.65)	(0.03)	(407.25)	(343.12)	(45.62)	(523.18)	(0.09)
	[0.02]	[0.00]	[0.12]	[0.18]	[0.29]	[0.01]	[0.11]	[0.01]
Treatment × Progoti	-0.05	-110.41	0.01	-206.71	-1026.50*	-115.92	-1788.15*	-0.22*
	(0.04)	(397.78)	(0.03)	(827.04)	(557.18)	(83.00)	(1033.54)	(0.11)
	[0.27]	[0.75]	[0.80]	[0.74]	[0.05]	[0.21]	[0.06]	[0.00]
Observations	5234	5234	5234	5234	5234	5234	5234	5234
Mean in control	0.542	3317.855	0.230	1807.684	2530.463	299.329	7356.674	0.000

Notes: The table presents the treatment effects on credit market outcomes of eligible *Dabi* and *Progoti* borrowers. Data comes from the midline (2016) and endline (2017) surveys. All regressions control for the baseline (2015) value of the outcome, an indicator variable for the endline survey, district (strata) fixed effects, an indicator for whether the borrower has a *Progoti* loan and the interaction of the *Progoti* indicator with Treatment. "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered it to the eligible clients. "Flexible loan" is a dummy variable equal to 1 if the respondent borrowed under the new, flexible loan contract and 0 otherwise. All regressions are OLS regressions based on specification (4). Standard errors are clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets. *BRAC Loan Value* is principal amount (in USD PPP) of the loan taken from BRAC, as recorded in BRAC's administrative records. *Non-BRAC Loan Value* is the monetary value (in USD PPP) of all formal and informal loans taken from other lenders (banks, MFIs other than BRAC, informal money-lenders or relatives and friends) during the past 12 months. *Transfers Received* is the monetary value (in USD PPP) of any cash or in-kind informal transfers that the respondent's household received over the last 12 months. *Transfers or Loans Given* is the total monetary value (in USD PPP) any cash or in-kind informal transfers and any loans that the respondent's household gave to others over the last 12 months. *Net Borrowing or Transfers* is the monetary value (in USD PPP) of net borrowing (loans borrowed minus loans lent) and net tranfers (tranfers received minus transfers given) combined. "Aggregate index" is constructed by first standardizing all outcome variables in columns (1)-(5) with respect to the control group in the relevant survey wave (subtracting the mean in control and dividing by the standard deviation of the control group), then taking their average and standardizing again with respect to the control group.

TABLE A.5: HETEROGENEITY W.R.T. DABI CLIENTS' BASELINE BUSINESS-OWNERSHIP

	(1)	(2)	(3)	(4)	(5)
	Household owns a business	Revenues (annual)	Costs (annual)	Profits (annual)	Profits (month)
Treatment	0.00	8869.39	9787.85	463.29	26.79
	(0.04)	(8806.01)	(7662.63)	(649.31)	(71.89)
	[0.90]	[0.24]	[0.11]	[0.45]	[0.73]
Treatment × Business-owner	0.05	42437.85*	32379.95	1394.55	159.71
	(0.05)	(22565.25)	(21611.15)	(1584.90)	(133.18)
	[0.35]	[0.04]	[0.10]	[0.39]	[0.23]
Observations	2087	2087	2087	2087	2087
Mean in control	0.55	32561.84	26870.63	4275.95	358.72
Effect of T. for business-owners	0.05	51307.24***	42167.79***	1857.84	186.50*
	(0.04)	(18477.40)	(17849.14)	(1347.56)	(102.87)

Notes: The table presents the heterogeneity of the treatment effects on key business outcomes of eligible *Dabi* borrowers with respect to business ownership at baseline. "Business-owner" is a dummy variable =1 if the respondent's household owned and operated any business at baseline. "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered it to the eligible clients. All regressions control for the baseline (2015) value of the outcome, an indicator variable for the endline survey and district (randomization strata) fixed effects, "Business-owner" and the interaction of "Business-owner" with "Treatment". Standard errors are clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets. "Treatment + Treatment × Business-owner" corresponds to the sum of the coefficients of "Treatment" and "Treatment × Business-owner". The dependent variable in column 1 is a dummy variable equal to one if the respondent owns a business. *Revenues* is the monetary value (in USD PPP) of sold products or delivered services of the business over the last twelve months. *Costs* is the monetary value (in USD PPP) of the total amount the enterprise spent on personnel expenses, machines, tools, equipment, space, transportation, electricity, fuel for machines, and total purchase of stock over the last twelve months. *Profits (annual)* is profit (in USD PPP) of the business over the last twelve months. *Profits (month)* is profit (in USD PPP) of the business over the month preceding the survey.

TABLE A.6: EFFECTS ON BUSINESS OUTCOMES – DIFFERENCE BETWEEN DABI V.S. PROGOTI

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Business owner	Business assets	Number of workers	Business hours	Owner's hours worked	Revenues (annual)	Costs (annual)	Profits (annual)	Profits (month)	Range of revenues	Aggregate index
Treatment	0.03	1822.58	0.06	130.74	76.54	28329.38**	27196.52**	1132.88	113.97	2185.79	0.20**
	(0.03)	(1144.64)	(0.41)	(95.28)	(82.45)	(12565.03)	(11887.36)	(780.57)	(72.90)	(4353.04)	(0.09)
	[0.38]	[0.08]	[0.91]	[0.20]	[0.37]	[0.01]	[0.00]	[0.14]	[0.09]	[0.28]	[0.03]
Treatment × Progoti	-0.03	-36.49	1.05	-53.56	-33.06	-21408.09	-41051.66*	-1031.92	-121.93	-11424.38	-0.18*
	(0.03)	(1965.38)	(0.63)	(117.64)	(103.94)	(24534.38)	(22935.62)	(1098.21)	(102.09)	(8624.78)	(0.10)
	[0.21]	[0.99]	[0.07]	[0.60]	[0.65]	[0.38]	[0.05]	[0.31]	[0.13]	[0.09]	[0.06]
Observations	4941	4940	4941	4941	4941	4941	4941	4941	4941	4941	4941
Mean in control	0.749	13732.671	1.870	2361.515	2139.196	1.11e+05	1.09e+05	9660.678	791.600	14475.455	-0.000

Notes: The table presents the treatment effects on business outcomes of eligible *Dabi* and *Progoti* borrowers. Data comes from the midline (2016) and endline (2017) surveys. All regressions control for the baseline (2015) value of the outcome, an indicator variable for the endline survey, district (strata) fixed effects, an indicator for whether the borrower has a *Progoti* loan and the interaction of the *Progoti* indicator with Treatment. "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered it to the eligible clients. "Flexible loan" is a dummy variable equal to 1 if the respondent borrowed under the new, flexible loan contract and 0 otherwise. All regressions are OLS regressions based on specification (4). Standard errors are clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets. *Business Owner* is a dummy variable equal to one if the respondent owns a business. *Business Assets* is the monetary value (in USD PPP) of business assets (tools, machinery, furniture, vehicle and inventories) at the time of the survey. *Number of Workers* is the number of workers (other than household members) who work in the business on a typical working day. *Business Hours* is the number of hours that the enterprise was in operation over the last twelve months. *Owner's Business Hours* is the number of hours that the business-owner worked in the business over the last twelve months. *Revenues* is the monetary value (in USD PPP) of sold products or delivered services of the business over the last twelve months. *Costs* is the monetary value (in USD PPP) of the total amount the enterprise spent on personnel expenses, machines, tools, equipment, space, transportation, electricity, fuel for machines, and total purchase of stock over the last twelve months. *Profits (annual)* is profit (in USD PPP) of the business over the last twelve months. *Profits (month)* is profit (in USD PPP) of the business over the month preceding the survey. *Range of Revenues* is the difference between the level of revenues during the worst month in terms of sales and the level of revenues during the best month in terms of sales during the past year. If the respondent reported that revenues did not fluctuate throughout the year, the range of revenues is set equal to zero. "Aggregate index" is constructed by first standardizing all outcome variables in columns (1)-(10) with respect to the control group in the relevant survey wave (subtracting the mean in control and dividing by the standard deviation of the control group), then taking their average and standardizing again with respect to the control group.

TABLE A.7: EFFECTS ON BUSINESS OUTCOMES, DABI BORROWERS – SENSITIVITY TO OUTLIERS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Business owner	Business assets	Number of workers	Business hours	Owner's hours worked	Revenues (annual)	Costs (annual)	Profits (annual)	Profits (month)	Range of revenues	Aggregate index
Panel A: Winsorized at 99.5th percentile											
Treatment	0.026	1166.510***	0.172	127.789	71.219	19550.801***	16756.523***	336.458	61.896	877.131*	0.124**
	(0.025)	(422.572)	(0.326)	(83.059)	(69.523)	(5561.198)	(4690.723)	(399.370)	(39.521)	(500.384)	(0.055)
	[0.350]	[0.019]	[0.680]	[0.187]	[0.389]	[0.010]	[0.005]	[0.471]	[0.203]	[0.149]	[0.064]
Observations	2087	2086	2087	2087	2087	2087	2087	2087	2087	2087	2087
Mean in control	0.549	3181.137	1.091	1577.286	1474.800	32092.811	26426.550	4211.617	348.917	2572.215	0.000
Panel B: Winsorized at 99th percentile											
Treatment	0.026	1103.391***	0.172	127.789	71.219	14158.803***	11156.362***	292.217	53.674*	644.612	0.114**
	(0.025)	(373.564)	(0.326)	(83.059)	(69.523)	(4689.952)	(3861.901)	(352.732)	(31.648)	(438.667)	(0.056)
	[0.350]	[0.015]	[0.680]	[0.187]	[0.389]	[0.020]	[0.018]	[0.489]	[0.185]	[0.223]	[0.086]
Observations	2087	2086	2087	2087	2087	2087	2087	2087	2087	2087	2087
Mean in control	0.549	2911.051	1.091	1577.286	1474.800	29828.307	24315.907	4074.953	332.150	2417.212	-0.000
Panel C: Winsorized at 98th percentile											
Treatment	0.026	943.614***	0.172	127.789	71.219	8744.447**	7598.518**	298.433	42.341*	366.964	0.099*
	(0.025)	(306.935)	(0.326)	(83.059)	(69.523)	(3853.254)	(3381.181)	(333.189)	(24.983)	(289.847)	(0.055)
	[0.350]	[0.014]	[0.680]	[0.187]	[0.389]	[0.067]	[0.060]	[0.457]	[0.191]	[0.289]	[0.140]
Observations	2087	2086	2087	2087	2087	2087	2087	2087	2087	2087	2087
Mean in control	0.549	2683.946	1.091	1577.286	1474.800	27657.534	22775.735	3973.295	309.771	2042.260	0.000

Notes: The table presents the treatment effects on business outcomes of eligible *Dabi* borrowers. Data comes from the midline (2016) and endline (2017) surveys. All monetary variables (i.e. dependent variables in columns 2,6,7,8,9,10) are winsorized at the 99.5th percentile in Panel A, 99th percentile in Panel B and at the 98th percentile in Panel C. We winsorize the data by setting all data points above the relevant percentile equal to that percentile, with separate cutoffs by survey round. All regressions control for the baseline (2015) value of the outcome, an indicator variable for the endline survey and district (strata) fixed effects. "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered it to the eligible clients. All regressions are OLS regressions based on specification (1). Standard errors are clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets. *Business Owner* is a dummy variable equal to one if the respondent owns a business. *Business Assets* is the monetary value (in USD PPP) of business assets (tools, machinery, furniture, vehicle and inventories) at the time of the survey. *Number of Workers* is the number of workers (other than household members) who work in the business on a typical working day. *Business Hours* is the number of hours that the enterprise was in operation over the last twelve months. *Owner's Business Hours* is the number of hours that the business-owner worked in the business over the last twelve months. *Revenues* is the monetary value (in USD PPP) of sold products or delivered services of the business over the last twelve months. *Costs* is the monetary value (in USD PPP) of the total amount the enterprise spent on personnel expenses, machines, tools, equipment, space, transportation, electricity, fuel for machines, and total purchase of stock over the last twelve months. *Profits (annual)* is profit (in USD PPP) of the business over the last twelve months. *Profits (month)* is profit (in USD PPP) of the business over the month preceding the survey. *Range of Revenues* is the difference between the level of revenues during the worst month in terms of sales and the level of revenues during the best month in terms of sales during the past year. If the respondent reported that revenues did not fluctuate throughout the year, the range of revenues is set equal to zero. "Aggregate index" is constructed by first standardizing all outcome variables in columns (1)-(10) with respect to the control group in the relevant survey wave (subtracting the mean in control and dividing by the standard deviation of the control group), then taking their average and standardizing again with respect to the control group.

TABLE A.8: EFFECTS ON BUSINESS OUTCOMES, PROGOTI BORROWERS – SENSITIVITY TO OUTLIERS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Business owner	Business assets	Number of workers	Business hours	Owner's hours worked	Revenues (annual)	Costs (annual)	Profits (annual)	Profits (month)	Range of revenues	Aggregate index
Panel A: Winsorized at 99.5th percentile											
Treatment	-0.004	756.091	1.068**	74.965	38.695	1942.248	-9664.950	149.772	-10.904	-1597.805	0.026
	(0.013)	(1183.255)	(0.438)	(73.042)	(55.291)	(13352.582)	(11979.712)	(713.273)	(70.246)	(1018.111)	(0.040)
	[0.844]	[0.624]	[0.035]	[0.407]	[0.588]	[0.901]	[0.504]	[0.865]	[0.888]	[0.228]	[0.641]
Observations	2854	2854	2854	2854	2854	2854	2854	2854	2854	2854	2854
Mean in control	0.893	19566.532	2.428	2923.813	2615.572	1.61e+05	1.56e+05	13421.685	1091.264	13293.249	-0.000
Panel B: Winsorized at 99th percentile											
Treatment	-0.004	795.051	1.068**	74.965	38.695	392.094	-8684.229	53.663	-8.436	-1153.799	0.026
	(0.013)	(1080.616)	(0.438)	(73.042)	(55.291)	(10604.407)	(9839.815)	(673.935)	(64.160)	(912.258)	(0.040)
	[0.844]	[0.559]	[0.035]	[0.407]	[0.588]	[0.971]	[0.456]	[0.942]	[0.893]	[0.310]	[0.632]
Observations	2854	2854	2854	2854	2854	2854	2854	2854	2854	2854	2854
Mean in control	0.893	18967.837	2.428	2923.813	2615.572	1.52e+05	1.44e+05	13206.074	1068.904	12373.258	-0.000
Panel C: Winsorized at 98th percentile											
Treatment	-0.004	654.699	1.068**	74.965	38.695	105.446	-6899.046	-122.750	-13.629	-1179.356	0.021
	(0.013)	(978.731)	(0.438)	(73.042)	(55.291)	(8599.474)	(8112.999)	(602.918)	(57.146)	(838.146)	(0.039)
	[0.844]	[0.603]	[0.035]	[0.407]	[0.588]	[0.996]	[0.471]	[0.875]	[0.821]	[0.269]	[0.687]
Observations	2854	2854	2854	2854	2854	2854	2854	2854	2854	2854	2854
Mean in control	0.893	18098.023	2.428	2923.813	2615.572	1.44e+05	1.32e+05	12883.666	1023.056	11779.266	0.000

Notes: The table presents the treatment effects on business outcomes of eligible *Progoti* borrowers. Data comes from the midline (2016) and endline (2017) surveys. All monetary variables (i.e. dependent variables in columns 2,6,7,8,9,10) are winsorized at the 99.5th percentile in Panel A, 99th percentile in Panel B and at the 98th percentile in Panel C. We winsorize the data by setting all data points above the relevant percentile equal to that percentile, with separate cutoffs by survey round. All regressions control for the baseline (2015) value of the outcome, an indicator variable for the endline survey and district (strata) fixed effects. "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered it to the eligible clients. All regressions are OLS regressions based on specification (1). Standard errors are clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets. *Business Owner* is a dummy variable equal to one if the respondent owns a business. *Business Assets* is the monetary value (in USD PPP) of business assets (tools, machinery, furniture, vehicle and inventories) at the time of the survey. *Number of Workers* is the number of workers (other than household members) who work in the business on a typical working day. *Business Hours* is the number of hours that the enterprise was in operation over the last twelve months. *Owner's Business Hours* is the number of hours that the business-owner worked in the business over the last twelve months. *Revenues* is the monetary value (in USD PPP) of sold products or delivered services of the business over the last twelve months. *Costs* is the monetary value (in USD PPP) of the total amount the enterprise spent on personnel expenses, machines, tools, equipment, space, transportation, electricity, fuel for machines, and total purchase of stock over the last twelve months. *Profits (annual)* is profit (in USD PPP) of the business over the last twelve months. *Profits (month)* is profit (in USD PPP) of the business over the month preceding the survey. *Range of Revenues* is the difference between the level of revenues during the worst month in terms of sales and the level of revenues during the best month in terms of sales during the past year. If the respondent reported that revenues did not fluctuate throughout the year, the range of revenues is set equal to zero. "Aggregate index" is constructed by first standardizing all outcome variables in columns (1)-(10) with respect to the control group in the relevant survey wave (subtracting the mean in control and dividing by the standard deviation of the control group), then taking their average and standardizing again with respect to the control group.

TABLE A.9: UTILIZATION OF LAND OWNED, DABI CLIENTS

	(1)	(2)	(3)	(4)	(5)	(6)
	Cultivated by the household	Share-cropping	Rented out	Mortgaged out	Other use	Rent received
Treatment	-0.956	2.249	6.780***	1.273	1.030***	47.363***
	(2.521)	(2.809)	(1.393)	(0.876)	(0.292)	(14.401)
	[0.771]	[0.527]	[0.000]	[0.185]	[0.002]	[0.011]
Observations	2087	2087	2087	2087	2087	2087
Mean in control	26.315	7.812	1.675	2.842	0.893	49.262

Notes: The table presents the treatment effects on size of land owned, disaggregated by use of the land, for eligible *Dabi* borrowers. Data comes from the midline (2016) and endline (2017) surveys. All regressions control for the baseline (2015) value of the outcome, an indicator variable for the endline survey and district (randomization strata) fixed effects. "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered it to the eligible clients. Standard errors are clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets. The dependent variable in column 1 is the size (in decimals) of land owned that is cultivated by the household, in column 2 it is the size (in decimals) of land owned that is given to another household under a share-cropping arrangement, in column 3 it is the size (in decimals) of land owned that is rented to another household – under a fixed-rent contract, in column 4 it is the size (in decimals) of land owned that is mortgaged (i.e. use rights of the land are given to another household in exchange of a loan) and in column 5 the dependent variable is the size (in decimals) of land owned that is under "other use". The dependent variable in column 6 is the monetary value (in USD PPP) of the rent received from land that is rented out (either under share-cropping or fixed-rent contract) to other households.

TABLE A.10: EFFECTS ON HOUSEHOLD SOCIOECONOMIC STATUS – DIFFERENCE BETWEEN DABI V.S. PROGOTI

	(1)	(2)	(3)	(4)	(5)	(6)
	Household income	Consumption per capita	Non-business assets value	Land owner (Yes=1)	Size of land owned	Aggregate index
Treatment	1295.54	20.69	280.10	0.08***	11.84	0.23***
	(915.72)	(91.49)	(168.50)	(0.03)	(15.32)	(0.08)
	[0.19]	[0.84]	[0.01]	[0.00]	[0.07]	[0.00]
Treatment × Progoti	-1986.02	-130.33	-154.88	-0.09**	-24.62	-0.25**
	(1204.62)	(155.85)	(326.70)	(0.03)	(28.58)	(0.10)
	[0.10]	[0.39]	[0.71]	[0.00]	[0.14]	[0.00]
Observations	5234	4938	5234	4941	5234	5234
Mean in control	14219.697	2011.444	1963.084	0.674	115.198	-0.000

Notes: The table presents the treatment effects on household socioeconomic status of eligible *Dabi* and *Progoti* borrowers. Data comes from the midline (2016) and endline (2017) surveys. All regressions control for the baseline (2015) value of the outcome, an indicator variable for the endline survey, district (strata) fixed effects, an indicator for whether the borrower has a *Progoti* loan and the interaction of the *Progoti* indicator with Treatment. "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered it to the eligible clients. "Flexible loan" is a dummy variable equal to 1 if the respondent borrowed under the new, flexible loan contract and 0 otherwise. All regressions are OLS regressions based on specification (4). Standard errors are clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets. *Household Income* the monetary value (in USD PPP) of the household members' total earnings from wage-employment over the past 12 months and the profit(s) of any household business(es) operated by the household. *Consumption per capita* is the monetary value (in USD PPP) of the total household expenditure per capita (in PPP USD) over the last twelve months divided by the household size on consumption measures). *Non-Business Assets Value* the monetary value (in USD PPP) of durable non-business assets owned by the respondent's household at the time of the survey. *Land Owner* is a dummy variable =1 if the household owns any land (excluding the homestead). *Size of Land Owned* is the amount (in decimals) of land owned by the household (excluding the homestead). "Aggregate index" is constructed by first standardizing all outcome variables in columns (1)-(5) with respect to the control group in the relevant survey wave (subtracting the mean in control and dividing by the standard deviation of the control group), then taking their average and standardizing again with respect to the control group.

TABLE A.11: EFFECTS ON DABI CLIENTS BY SURVEY WAVE: MIDLINE V.S. ENDLINE

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Panel A: ITT on Business Outcomes											
	Business owner	Business assets	Number of workers	Business hours	Owner's hours worked	Revenues (annual)	Costs (annual)	Profits (annual)	Profits (month)	Range of revenues	Aggregate index
Treatment	0.02	646.76	0.26	159.64*	101.00	38588.60***	33184.50***	1068.37	93.54	4942.80*	0.21**
	(0.03)	(899.46)	(0.31)	(93.69)	(75.02)	(12222.80)	(11073.04)	(938.90)	(80.38)	(2519.65)	(0.10)
	[0.51]	[0.48]	[0.31]	[0.12]	[0.22]	[0.00]	[0.00]	[0.36]	[0.32]	[0.11]	[0.04]
Treatment × Endline	0.02	2494.42	-0.18	-64.39	-60.20	-21099.36*	-17777.26*	38.85	6.15	-4329.17	-0.06
	(0.04)	(2225.15)	(0.67)	(109.48)	(102.84)	(11868.35)	(10103.53)	(805.57)	(79.69)	(3002.09)	(0.08)
	[0.66]	[0.34]	[0.84]	[0.52]	[0.58]	[0.09]	[0.07]	[0.97]	[0.96]	[0.21]	[0.45]
Observations	2087	2086	2087	2087	2087	2087	2087	2087	2087	2087	2087
Mean in control	0.55	3685.41	1.09	1577.29	1474.80	32561.84	26870.63	4275.95	358.72	2647.70	-0.00
Panel B: ITT on Credit Market Outcomes											
	BRAC loan		Non-BRAC loan		Transfers	Transfers or	Net borrowing	Aggregate			
	yes=1	value	yes=1	value	received	loans given	or transfers	index			
Treatment	0.067**	345.925***	-0.062**	-95.257	168.942	164.467**	297.512	0.155**			
	(0.029)	(90.456)	(0.028)	(121.565)	(312.711)	(63.550)	(344.481)	(0.059)			
	[0.069]	[0.002]	[0.052]	[0.463]	[0.612]	[0.003]	[0.450]	[0.023]			
Treatment × Endline	-0.007	-84.743	0.042	130.977	325.861	-82.751	415.655	0.033			
	(0.031)	(93.817)	(0.031)	(173.331)	(451.815)	(89.922)	(466.450)	(0.078)			
	[0.842]	[0.398]	[0.179]	[0.457]	[0.485]	[0.357]	[0.376]	[0.686]			
Observations	2168	2168	2168	2168	2168	2168	2168	2168			
Mean in control	0.571	1181.671	0.234	543.632	1449.935	165.716	3009.522	0.000			
Panel C: ITT on Household Socio-economic Status											
	Household income	PCE	Non-business assets value	Land owner (Yes=1)	Size of land owned	Aggregate index					
Treatment	1286.963	-13.685	552.095*	0.076**	11.558**	0.158**					
	(1062.978)	(127.029)	(279.930)	(0.030)	(5.136)	(0.065)					
	[0.319]	[0.926]	[0.048]	[0.019]	[0.042]	[0.041]					
Treatment × Endline	43.324	52.725	113.902	-0.001	-2.321	0.014					
	(974.739)	(161.403)	(492.473)	(0.035)	(6.167)	(0.078)					
	[0.977]	[0.698]	[0.814]	[0.985]	[0.714]	[0.872]					
Observations	2168	2085	2168	2087	2168	2168					
Mean in control	7820.156	1613.159	3433.611	0.472	37.953	-0.000					

Notes: The table presents the treatment effects on business outcomes of eligible *Dabi* borrowers. Data comes from the midline (2016) and endline (2017) surveys. All regressions control for the baseline (2015) value of the outcome, an indicator variable for the endline survey and district (randomization strata) fixed effects. "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered it to the eligible clients. Standard errors are clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets. "Aggregate index" is constructed by first standardizing all outcome variables in the previous columns with respect to the control group in the relevant survey wave (subtracting the mean in control and dividing by the standard deviation of the control group), then taking their average and standardizing again with respect to the control group. Description of the dependent variables are provided in Appendix B.

TABLE A.12: EFFECTS ON PROGOTI CLIENTS BY SURVEY WAVE: MIDLINE V.S. ENDLINE

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Panel A: ITT on Business Outcomes											
	Business owner	Business assets	Number of workers	Business hours	Owner's hours worked	Revenues (annual)	Costs (annual)	Profits (annual)	Profits (month)	Range of revenues	Aggregate index
Treatment	0.004	1395.636	0.834	42.613	33.780	7724.394	-2.32e+04	779.507	59.386	-1.85e+04	0.016
	(0.014)	(2299.377)	(0.551)	(87.179)	(67.180)	(27751.950)	(28409.115)	(1310.688)	(119.801)	(12128.446)	(0.069)
	[0.791]	[0.560]	[0.122]	[0.679]	[0.652]	[0.843]	[0.492]	[0.625]	[0.685]	[0.132]	[0.849]
Treatment × Endline	-0.016	711.144	0.483	66.655	10.128	-1797.980	20494.283	-1306.133	-136.704	21482.254	-0.003
	(0.021)	(3871.983)	(1.056)	(105.012)	(93.664)	(36120.445)	(41858.791)	(1606.117)	(147.317)	(17775.790)	(0.081)
	[0.413]	[0.866]	[0.752]	[0.511]	[0.889]	[0.976]	[0.610]	[0.420]	[0.321]	[0.094]	[0.964]
Observations	2854	2854	2854	2854	2854	2854	2854	2854	2854	2854	2854
Mean in control	0.893	20936.624	2.428	2923.813	2615.572	1.68e+05	1.69e+05	13521.567	1101.980	22956.038	0.000
Panel B: ITT on Credit Market Outcomes											
	BRAC loan		Non-BRAC loan		Transfers	Transfers or	Net borrowing	Aggregate			
	yes=1	value	yes=1	value	received	loans given	or transfers	index			
Treatment	0.031	301.000	-0.037*	315.564	-1085.442**	-27.110	-908.540	-0.035			
	(0.025)	(326.309)	(0.021)	(846.543)	(459.539)	(96.904)	(1127.705)	(0.054)			
	[0.321]	[0.423]	[0.118]	[0.827]	[0.038]**	[0.805]	[0.487]	[0.563]			
Treatment × Endline	-0.014	-81.176	-0.001	-1192.190	1011.060*	78.300	-326.325	0.000			
	(0.026)	(396.214)	(0.028)	(874.979)	(556.965)	(131.398)	(1123.078)	(0.066)			
	[0.619]	[0.837]	[0.955]	[0.097]*	[0.044]**	[0.538]	[0.765]	[1.000]			
Observations	3066	3066	3066	3066	3066	3066	3066	3066			
Mean in control	0.522	4793.960	0.227	2681.145	3277.109	391.655	10360.559	0.000			
Panel C: ITT on Household Socio-economic Status											
	Household income	PCE	Non-business assets value	Land owner (Yes=1)	Size of land owned	Aggregate index					
Treatment	-15.630	-53.025	0.473	-0.011	-31.257*	-0.051					
	(1561.751)	(176.790)	(610.359)	(0.018)	(16.312)	(0.052)					
	[0.996]	[0.788]	[1.000]	[0.561]	[0.073]*	[0.324]					
Treatment × Endline	-1251.033	-136.201	-753.134	0.011	33.374	0.003					
	(2100.279)	(228.772)	(789.489)	(0.029)	(22.621)	(0.076)					
	[0.559]	[0.531]	[0.289]	[0.654]	[0.121]	[0.963]					
Observations	3066	2853	3066	2854	3066	3066					
Mean in control	18641.784	2296.669	7954.081	0.820	168.575	-0.000					

Notes: The table presents the treatment effects on business outcomes of eligible *Dabi* borrowers. Data comes from the midline (2016) and endline (2017) surveys. All regressions control for the baseline (2015) value of the outcome, an indicator variable for the endline survey and district (randomization strata) fixed effects. "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered it to the eligible clients. Standard errors are clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets. "Aggregate index" is constructed by first standardizing all outcome variables in the previous columns with respect to the control group in the relevant survey wave (subtracting the mean in control and dividing by the standard deviation of the control group), then taking their average and standardizing again with respect to the control group. Description of the dependent variables are provided in Appendix B.

TABLE A.13: HETEROGENEITY W.R.T. EXPECTED DEMAND UNCERTAINTY, PROGOTI

	(1)	(2)	(3)	(4)	(5)
	Business owner	Revenues (annual)	Costs (annual)	Profits (annual)	Profits (month)
Treatment	0.01	49857.16*	6358.66	1110.00	26.87
	(0.01)	(27332.01)	(26279.24)	(1391.04)	(126.48)
	[0.66]	[0.16]	[0.88]	[0.50]	[0.87]
High expected demand uncertainty	-0.03	45454.81*	9390.05	1347.98	-82.16
	(0.02)	(26906.30)	(24964.04)	(1678.94)	(127.68)
Treatment × High expected demand uncertainty	-0.01	-86735.63**	-37474.92	-2008.20	-46.00
	(0.03)	(32788.90)	(30865.03)	(1759.65)	(163.53)
	[0.81]	[0.07]	[0.40]	[0.34]	[0.81]
Observations	2854	2854	2854	2854	2854
Mean in control	0.89	167910.51	168519.40	13521.57	1101.98
Treatment effect under high uncertainty	-0.01	-36878.47	-31116.25	-898.20	-19.13
	(0.02)	(21168.70)	(18380.52)	(1110.02)	(96.16)

Notes: The table presents the heterogeneity of the treatment effects on key business outcomes of eligible *Progoti* borrowers with respect to uncertainty of demand growth at baseline among local businesses. "High expected demand uncertainty" is a dummy variable = 1 if the respondent is located in a branch where the average coefficient of variation (CV) of expected sales growth among a representative sample of SMEs at baseline was high (above the sample median). All regressions control for the baseline (2015) value of the outcome, an indicator variable for the endline survey and district (randomization strata) fixed effects. "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered it to the eligible clients. Standard errors are clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets. "Treatment effect under high uncertainty" corresponds to the sum of the coefficients of "Treatment" and "Treatment × High exp. demand uncertainty". *Business Owner* is a dummy variable equal to one if the respondent owns a business. *Revenues* is the monetary value (in USD PPP) of sold products or delivered services of the business over the last twelve months. *Costs* is the monetary value (in USD PPP) of the total amount the enterprise spent on personnel expenses, machines, tools, equipment, space, transportation, electricity, fuel for machines, and total purchase of stock over the last twelve months. *Profits (annual)* is profit (in USD PPP) of the business over the last twelve months. *Profits (month)* is profit (in USD PPP) of the business over the month preceding the survey.

TABLE A.14: HETEROGENEITY W.R.T. RAIN SHOCKS, PROGOTI

	(1)	(2)	(3)	(4)	(5)
	Business owner	Revenues (annual)	Costs (annual)	Profits (annual)	Profits (month)
Treatment	0.01	-16403.50	-32538.83*	752.14	42.49
	(0.01)	(18245.00)	(17981.79)	(945.46)	(82.00)
	[0.72]	[0.53]	[0.22]	[0.60]	[0.73]
Rain shock	0.06	-11471.44	-29780.57	728.82	357.25*
	(0.05)	(37606.87)	(29658.17)	(1903.68)	(183.69)
Treatment × Rain shock	-0.02	58166.63	72147.41	-642.30	-51.71
	(0.04)	(44153.81)	(48052.30)	(1295.32)	(131.65)
	[0.95]	[0.37]	[0.26]	[0.72]	[0.80]
Observations	2854	2854	2854	2854	2854
Mean in control	0.89	167910.51	168519.40	13521.57	1101.98
Treatment effect with Rain shock	-0.01	41763.14	39608.58	109.84	-9.22
	(0.04)	(42753.32)	(41207.57)	(1337.61)	(129.87)
Rain shock effect in Treatment	0.04	46695.20	42366.84	86.52	305.54
	(0.05)	(34702.74)	(27422.90)	(1760.83)	(177.10)

Notes: The table presents the heterogeneity of the treatment effects on key business outcomes of eligible *Progoti* borrowers with respect to the likelihood of having experienced an excessive rainfall shock. Data comes from the midline (2016) and endline (2017) surveys. "Rain shock" is a dummy variable = 1 if the amount of rainfall in the months of December to May preceding the survey (2016 or 2017) was one standard deviation above rainfall in December to May over the period 1983-2015. The geographical area over which the rainfall amount was calculated corresponds to a 25 km radius around the branch where the firm is located. All regressions control for the baseline (2015) value of the outcome, an indicator variable for the endline survey, district-by-survey year fixed effects, and flexible controls for the probability of rain. "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered it to the eligible clients. Standard errors are clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Randomization inference p-values of the null hypothesis of no effect are provided in square brackets. "Treatment effect with Rain shock" corresponds to the sum of the coefficients of "Treatment" and "Treatment × Rain shock". "Rain shock effect in Treatment" corresponds to the sum of the coefficients of "Rain shock" and "Treatment × Rain shock". *Business Owner* is a dummy variable equal to one if the respondent owns a business. *Revenues* is the monetary value (in USD PPP) of sold products or delivered services of the business over the last twelve months. *Costs* is the monetary value (in USD PPP) of the total amount the enterprise spent on personnel expenses, machines, tools, equipment, space, transportation, electricity, fuel for machines, and total purchase of stock over the last twelve months. *Profits (annual)* is profit (in USD PPP) of the business over the last twelve months. *Profits (month)* is profit (in USD PPP) of the business over the month preceding the survey.

TABLE A.15: HETEROGENEITY WRT. EXPECTED DEMAND – SENSITIVITY TO OUTLIERS

	(1)	(2)	(3)	(4)	(5)
	Business owner	Revenues (annual)	Costs (annual)	Profits (annual)	Profits (month)
	Panel A: Winsorized at 99.5th percentile				
Treatment	0.01	5103.36	679.58	0.80	34.12
	(0.03)	(8483.82)	(6870.06)	(683.32)	(75.64)
	[0.78]	[0.59]	[0.94]	[1.00]	[0.69]
High expected demand uncertainty	-0.09	-12817.70	-12054.70	-1260.76	-77.05
	(0.06)	(13400.66)	(9735.66)	(827.20)	(95.84)
Treatment × High expected demand uncertainty	0.05	27427.69**	30130.12***	804.18	61.84
	(0.05)	(11227.12)	(8692.34)	(802.42)	(93.21)
	[0.40]	[0.07]	[0.01]	[0.39]	[0.51]
Observations	2087	2087	2087	2087	2087
Mean in control	0.55	32092.81	26426.55	4211.62	348.92
Treatment effect under high uncertainty	0.06	32531.05***	30809.70***	804.98*	95.96*
	(0.04)	(7310.29)	(5281.36)	(466.05)	(50.45)
	Panel B: Winsorized at 99th percentile				
Treatment	0.01	1269.67	-1088.28	49.55	22.01
	(0.03)	(6419.32)	(5089.85)	(590.86)	(55.61)
	[0.78]	[0.87]	[0.86]	[0.96]	[0.77]
High expected demand uncertainty	-0.09	-14739.19	-12041.68	-1077.98	-77.62
	(0.06)	(11121.71)	(8761.64)	(760.54)	(70.95)
Treatment × High expected demand uncertainty	0.05	25039.18***	23445.87***	609.06	68.67
	(0.05)	(8774.44)	(6967.20)	(712.85)	(65.72)
	[0.40]	[0.03]	[0.01]	[0.45]	[0.37]
Observations	2087	2087	2087	2087	2087
Mean in control	0.55	29828.31	24315.91	4074.95	332.15
Treatment effect under high uncertainty	0.06	26308.84***	22357.59***	658.62	90.69**
	(0.04)	(6489.50)	(5163.55)	(436.63)	(39.22)
	Panel C: Winsorized at 98th percentile				
Treatment	0.01	-1523.74	-2555.77	21.91	13.74
	(0.03)	(4972.73)	(4429.14)	(544.95)	(42.40)
	[0.78]	[0.80]	[0.62]	[0.97]	[0.82]
High expected demand uncertainty	-0.09	-12721.93	-10340.48	-1216.95*	-69.76
	(0.06)	(9294.11)	(7891.50)	(712.32)	(53.24)
Treatment × High expected demand uncertainty	0.05	20111.29***	19497.83***	691.74	61.95
	(0.05)	(7119.66)	(6099.94)	(661.80)	(50.09)
	[0.40]	[0.03]	[0.01]	[0.38]	[0.30]
Observations	2087	2087	2087	2087	2087
Mean in control	0.55	27657.53	22775.74	3973.29	309.77
Treatment effect under high uncertainty	0.06	18587.55***	16942.06***	713.65*	75.69**
	(0.04)	(5628.93)	(4702.22)	(411.53)	(30.81)

Notes: The table presents the heterogeneity of the treatment effects on key business outcomes of eligible Dabi borrowers with respect to the likelihood of having experienced an excessive rainfall shock. All monetary variables (i.e. dependent variables in columns 2-5) are winsorized at the 99.5th percentile in Panel A, 99th percentile in Panel B and at the 98th percentile in Panel C. We winsorize the data by setting all data points above the relevant percentile equal to that percentile, with separate cutoffs by survey round. Data comes from the midline (2016) and endline (2017) surveys. "High expected demand uncertainty" is a dummy variable = 1 if the respondent is located in a branch where the average coefficient of variation (CV) of expected sales growth among a representative sample of SMEs at baseline was high (above the sample median). All regressions control for the baseline (2015) value of the outcome and an indicator variable for the endline survey. "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered to the eligible clients. Standard errors are clustered at BRAC branch office level. In square brackets randomization inference p-values of the null hypothesis of no effect are provided. "Treatment effect under high uncertainty" corresponds to the sum of the coefficients of "Treatment" and "Treatment × High exp. demand uncertainty". (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$)

TABLE A.16: HETEROGENEITY WRT. DEMAND SHOCKS – SENSITIVITY TO OUTLIERS

	(1)	(2)	(3)	(4)	(5)
	Business owner	Revenues (annual)	Costs (annual)	Profits (annual)	Profits (month)
			Panel A: Winsorized at 99.5th percentile		
Treatment	0.03	25073.02***	21011.97***	537.37	80.36**
	(0.02)	(4692.92)	(3988.47)	(386.90)	(34.61)
	[0.30]	[0.00]	[0.00]	[0.32]	[0.09]
Rain shock	-0.01	-32408.20*	-34499.35**	-1371.97	-226.41
	(0.06)	(16744.86)	(13076.30)	(1219.54)	(140.45)
Treatment × Rain shock	-0.10**	-24874.88**	-16599.36**	-1433.41**	-121.24*
	(0.05)	(10967.63)	(7391.06)	(586.55)	(61.45)
	[0.16]	[0.06]	[0.09]	[0.07]	[0.11]
Observations	2087	2087	2087	2087	2087
Mean in control	0.55	32092.81	26426.55	4211.62	348.92
Treatment effect with Rain shock	-0.06	198.14	4412.62	-896.04	-40.88
	(0.05)	(11729.50)	(7636.46)	(577.27)	(58.56)
Rain shock effect in Treatment	-0.10*	-57283.08***	-51098.70***	-2805.38**	-347.65**
	(0.05)	(14948.31)	(12235.76)	(1212.08)	(134.89)
			Panel B: Winsorized at 99th percentile		
Treatment	0.03	18321.34***	14479.11***	494.33	73.95***
	(0.02)	(3880.72)	(3150.17)	(334.66)	(27.26)
	[0.30]	[0.00]	[0.00]	[0.31]	[0.07]
Rain shock	-0.01	-21166.62**	-25311.94***	-630.08	-227.55**
	(0.06)	(10329.79)	(8754.88)	(1007.16)	(104.93)
Treatment × Rain shock	-0.10**	-19216.50**	-13979.17***	-1370.85**	-109.91**
	(0.05)	(7970.94)	(5153.69)	(542.87)	(50.84)
	[0.16]	[0.06]	[0.05]	[0.06]	[0.09]
Observations	2087	2087	2087	2087	2087
Mean in control	0.55	29828.31	24315.91	4074.95	332.15
Treatment effect with Rain shock	-0.06	-895.16	499.94	-876.52	-35.96
	(0.05)	(8958.71)	(6178.66)	(553.47)	(50.18)
Rain shock effect in Treatment	-0.10*	-40383.13***	-39291.12***	-2000.93*	-337.46**
	(0.05)	(9386.69)	(9423.16)	(1027.58)	(104.95)
			Panel C: Winsorized at 98th percentile		
Treatment	0.03	11925.79***	10287.49***	493.72	60.93***
	(0.02)	(3342.88)	(2909.96)	(310.23)	(21.53)
	[0.30]	[0.02]	[0.02]	[0.29]	[0.07]
Rain shock	-0.01	-11388.25	-16281.27***	-138.73	-112.52
	(0.06)	(7271.72)	(6028.38)	(867.85)	(88.89)
Treatment × Rain shock	-0.10**	-14276.56**	-10584.68**	-1294.96**	-95.65**
	(0.05)	(5817.28)	(4639.01)	(504.73)	(46.23)
	[0.16]	[0.06]	[0.10]	[0.05]	[0.10]
Observations	2087	2087	2087	2087	2087
Mean in control	0.55	27657.53	22775.74	3973.29	309.77
Treatment effect with Rain shock	-0.06	-2350.77	-297.19	-801.24	-34.72
	(0.05)	(7008.41)	(5679.79)	(506.14)	(47.33)
Rain shock effect in Treatment	-0.10*	-25664.81***	-26865.95***	-1433.69	-208.17**
	(0.05)	(7041.45)	(6858.85)	(902.07)	(89.60)

Notes: The table presents the heterogeneity of the treatment effects on key business outcomes of eligible Dabi borrowers with respect to the likelihood of having experienced an excessive rainfall shock. All monetary variables (i.e. dependent variables in columns 2-5) are winsorized at the 99.5th percentile in Panel A, 99th percentile in Panel B and at the 98th percentile in Panel C. We winsorize the data by setting all data points above the relevant percentile equal to that percentile, with separate cutoffs by survey round. Data comes from the midline (2016) and endline (2017) surveys. "Rain shock" is a dummy variable = 1 if the amount of rainfall in the months of December to May preceding the survey (2016 or 2017) was one standard deviation above rainfall in December to May over the period 1983-2015. The geographical area over which the rainfall amount was calculated corresponds to a 25 km radius around the branch where the firm is located. All regressions control for the baseline (2015) value of the outcome and an indicator variable for the endline survey. "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered to the eligible clients. Standard errors are clustered at BRAC branch office level. In square brackets randomization inference p-values of the null hypothesis of no effect are provided. "Treatment effect with Rain shock" corresponds to the sum of the coefficients of "Treatment" and "Treatment × Rain shock". "Rain shock effect in Treatment" corresponds to the sum of the coefficients of "Rain shock" and "Treatment × Rain shock". (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$)

TABLE A.17: EFFECTS ON BUSINESS ASSETS, PROGOTI

	(1)	(2)	(3)	(4)	(5)	(6)
	Tools	Furniture	Machines	Vehicles	Inventories	Buildings
			Panel A: Likelihood of Having Assets			
Treatment	-0.014	0.003	0.005	-0.004	0.013	-0.036*
	(0.019)	(0.018)	(0.014)	(0.015)	(0.015)	(0.021)
	[0.545]	[0.895]	[0.778]	[0.841]	[0.470]	[0.159]
Observations	2854	2854	2854	2854	2854	2854
Mean in control	0.759	0.667	0.235	0.155	0.749	0.390
			Panel B: Value of Assets			
Treatment	-232.148	-14.942	-66.449	43.675	2087.551	-266.025
	(183.902)	(55.982)	(238.677)	(561.584)	(1319.415)	(14954.200)
	[0.278]	[0.793]	[0.825]	[0.957]	[0.219]	[0.990]
Observations	2854	2854	2854	2854	2852	2854
Mean in control	663.793	600.928	970.824	2149.535	15463.329	48299.219
			Panel C: Types of Assets			
Treatment	-0.022	0.005	0.024	-0.002		
	(0.052)	(0.064)	(0.021)	(0.014)		
	[0.719]	[0.942]	[0.368]	[0.926]		
Observations	3066	3066	3066	3066		
Mean in control	1.823	2.149	0.338	0.154		
			Panel D: Unit Value of Assets			
Treatment	-71.209	-4.224	-156.691	-986.928		
	(71.159)	(3.760)	(620.718)	(2215.447)		
	[0.868]	[0.337]	[0.853]	[0.791]		
Observations	2277	2053	849	529		
Mean in control	176.145	80.930	1873.402	8086.169		

Notes: The table presents the treatment effects on business assets of eligible *Progoti* borrowers. Data comes from the midline (2016) and endline (2017) surveys. All regressions control for the baseline (2015) value of the outcome, an indicator variable for the endline survey and district (randomization strata) fixed effects. "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered it to the eligible clients. Panel A reports estimates of the extensive margin (likelihood of owning assets of each type), Panel B on the intensive margin (monetary value of assets owned of each type). In Panel C, the dependent variable is the number of distinct types of assets owned within each asset category, in Panel D the outcome is the per unit value of assets of each type owned by the firm. Standard errors are clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets.

TABLE A.18: HETEROGENEITY W.R.T. BASELINE SOCIOECONOMIC STATUS, DABI

	(1)	(2)	(3)	(4)	(5)
	Business owner	Revenues (annual)	Costs (annual)	Profits (annual)	Profits (month)
Panel A: Land ownership					
Treatment	0.00	21787.66**	15968.68*	24.41	82.61
	(0.03)	(8916.70)	(9277.36)	(461.79)	(52.96)
	[0.93]	[0.02]	[0.10]	[0.94]	[0.10]
Treatment × Land-owner	0.05	11680.13	15925.06	2103.35*	21.74
	(0.05)	(17017.73)	(18601.05)	(1231.71)	(132.18)
	[0.35]	[0.60]	[0.52]	[0.13]	[0.89]
Observations	2087	2087	2087	2087	2087
Mean in control	0.55	32561.84	26870.63	4275.95	358.72
Treatment effect for land-owners	0.05	33467.79**	31893.74**	2127.76*	104.36
	(0.04)	(14746.78)	(14666.53)	(1173.12)	(111.22)
Panel B: Household income					
Treatment	0.04	14540.16	13491.34*	862.03	44.57
	(0.03)	(9282.85)	(8005.80)	(660.67)	(74.62)
	[0.27]	[0.12]	[0.07]	[0.18]	[0.62]
Treatment × High household income	-0.03	27872.76	22840.72	526.12	108.83
	(0.05)	(19924.75)	(18945.22)	(1278.85)	(115.27)
	[0.48]	[0.15]	[0.20]	[0.71]	[0.39]
Observations	2087	2087	2087	2087	2087
Mean in control	0.55	32561.84	26870.63	4275.95	358.72
Treatment effect for high-earners	0.01	42412.92	36332.06	1388.15	153.40
	(0.03)	(16324.06)	(15723.17)	(1116.49)	(87.44)
Treatment effect for high-earners	0.01	42412.92***	36332.06**	1388.15	153.40*
	(0.03)	(16324.06)	(15723.17)	(1116.49)	(87.44)

Notes: The table presents the heterogeneity of the treatment effects on key business outcomes of eligible *Dabi* borrowers. Data comes from the midline (2016) and endline (2017) surveys. All regressions control for the baseline (2015) value of the outcome, an indicator variable for the endline survey, district (randomization strata) fixed effects and the relevant covariate (that is interacted with the treatment indicator in each panel). "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered it to the eligible clients. Standard errors are clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets. "Land owner" is a dummy variable =1 if the respondent's household owned any land at baseline (note that for the eligible *Dabi* borrower sample, the median household owned no land so this corresponds to the sample median). "High household income" is a dummy variable =1 if the total labor income earned by members of the respondent's household at baseline was above the sample median. Description of the dependent variables are provided in Appendix B.

TABLE A.19: HETEROGENEITY W.R.T. SCHOOLING, DABI

	(1)	(2)	(3)	(4)	(5)
	Business owner	Revenues (annual)	Costs (annual)	Profits (annual)	Profits (month)
Panel A: Baseline specification					
Treatment	0.04	29458.21***	21918.29*	926.65	95.92
	(0.03)	(10970.20)	(11164.56)	(655.18)	(67.14)
	[0.17]	[0.01]	[0.06]	[0.20]	[0.17]
Treatment × High schooling	-0.03	-2509.00	4526.06	283.19	0.73
	(0.03)	(21893.17)	(19582.20)	(1187.99)	(125.36)
	[0.34]	[0.90]	[0.83]	[0.84]	[1.00]
Observations	2087	2087	2087	2087	2087
Mean in control	0.55	32561.84	26870.63	4275.95	358.72
Treatment effect for educated	0.01	26949.21	26444.35*	1209.84	96.66
	(0.03)	(16031.27)	(13787.95)	(1032.07)	(96.03)
Panel B: Controlling for Land ownership					
Treatment	0.02	24788.51*	15671.26	89.63	89.11
	(0.03)	(13347.30)	(13998.01)	(693.20)	(86.93)
	[0.60]	[0.09]	[0.30]	[0.90]	[0.31]
Treatment × High schooling	-0.03	-5951.32	648.75	-77.88	-11.84
	(0.03)	(21028.24)	(18624.62)	(1130.87)	(116.84)
	[0.28]	[0.78]	[0.97]	[0.95]	[0.94]
Treatment × Land-owner	0.05	12085.62	15813.60	2048.86*	21.36
	(0.05)	(15753.71)	(17634.86)	(1176.92)	(125.37)
	[0.33]	[0.55]	[0.49]	[0.12]	[0.89]
Observations	2087	2087	2087	2087	2087
Mean in control	0.55	32561.84	26870.63	4275.95	358.72
Treatment effect with high schooling	-0.01	18837.20	16320.01	11.75	77.27
	(0.04)	(14201.72)	(12123.16)	(766.37)	(68.99)
Panel C: Controlling for Household income					
Treatment	0.06*	17142.02	12510.08	766.35	49.65
	(0.03)	(12628.10)	(10642.96)	(850.05)	(78.64)
	[0.17]	[0.21]	[0.27]	[0.31]	[0.49]
Treatment × High schooling	-0.03	-4958.93	1969.30	209.81	-9.20
	(0.04)	(21294.17)	(19271.73)	(1139.14)	(124.22)
	[0.36]	[0.82]	[0.92]	[0.86]	[0.95]
Treatment × High household income	-0.03	27943.95	22640.73	474.82	108.12
	(0.05)	(19771.31)	(19137.38)	(1233.76)	(114.50)
	[0.49]	[0.14]	[0.19]	[0.73]	[0.41]
Observations	2087	2087	2087	2087	2087
Mean in control	0.55	32561.84	26870.63	4275.95	358.72
Treatment effect with high schooling	0.03	12183.09	14479.38	976.16	40.46
	(0.04)	(15437.73)	(14163.42)	(893.50)	(111.59)

Notes: The table presents the heterogeneity of the treatment effects on key business outcomes of eligible *Dabi* borrowers. Data comes from the midline (2016) and endline (2017) surveys. All regressions control for the baseline (2015) value of the outcome, an indicator variable for the endline survey, district (randomization strata) fixed effects and the relevant covariate (that is interacted with the treatment indicator in each panel). "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered it to the eligible clients. Standard errors are clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets. "High schooling" is a dummy variable =1 if the respondent's years of schooling at baseline was above the sample median. "Land owner" is a dummy variable =1 if the respondent's household owned any land at baseline (note that for the eligible *Dabi* borrower sample, the median household owned no land so this corresponds to the sample median). "High household income" is a dummy variable =1 if the total labor income earned by members of the respondent's household at baseline was above the sample median. Description of the dependent variables are provided in Appendix B.

TABLE A.20: HETEROGENEITY W.R.T. BASELINE SOCIO-ECONOMIC STATUS, PROGOTI

	(1)	(2)	(3)	(4)	(5)
	Business owner	Revenues (annual)	Costs (annual)	Profits (annual)	Profits (month)
Panel A: Land-ownership					
Treatment	0.01	7239.01	-9947.32	0.05	-27.51
	(0.02)	(23734.36)	(23968.51)	(1087.01)	(87.50)
	[0.74]	[0.79]	[0.73]	[1.00]	[0.78]
Treatment × Large land-owner	-0.02	-1082.98	-6520.54	267.58	44.04
	(0.02)	(38904.56)	(43248.33)	(1483.35)	(158.65)
	[0.50]	[0.98]	[0.89]	[0.86]	[0.80]
Observations	2854	2854	2854	2854	2854
Mean in control	0.89	167910.51	168519.40	13521.57	1101.98
Treatment effect for large land-owners	-0.01	6156.03	-16467.86	267.63	16.53
	(0.02)	(29560.63)	(29889.46)	(1245.00)	(131.38)
Panel B: Household income					
Treatment	-0.00	10864.61	1476.41	-950.73	-65.93
	(0.02)	(20337.92)	(19923.18)	(854.38)	(80.76)
	[0.93]	[0.61]	[0.95]	[0.16]	[0.25]
Treatment × High household income	-0.00	-9375.15	-29764.99	1946.11	102.66
	(0.02)	(40140.99)	(43815.17)	(1798.02)	(171.63)
	[0.86]	[0.82]	[0.55]	[0.24]	[0.50]
Observations	2854	2854	2854	2854	2854
Mean in control	0.89	167910.51	168519.40	13521.57	1101.98
Treatment effect for high-earners	-0.01	1489.46	-28288.58	995.38	36.73
	(0.01)	(31446.17)	(32348.75)	(1393.59)	(129.49)

Notes: The table presents the heterogeneity of the treatment effects on key business outcomes of eligible *Progoti* borrowers. Data comes from the midline (2016) and endline (2017) surveys. All regressions control for the baseline (2015) value of the outcome, an indicator variable for the endline survey, district (randomization strata) fixed effects and the relevant covariate (that is interacted with the treatment indicator in each panel). "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered it to the eligible clients. Standard errors are clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets. "Large land-owner" is a dummy variable =1 if the size of land owned by the respondent's household at baseline was greater than the sample median. "High household income" is a dummy variable =1 if the total labor income earned by members of the respondent's household at baseline was above the sample median. Description of the dependent variables are provided in Appendix B.

TABLE A.21: HETEROGENEITY W.R.T. EDUCATION, PROGOTI

	(1)	(2)	(3)	(4)	(5)
	Business owner	Revenues (annual)	Costs (annual)	Profits (annual)	Profits (month)
Panel A: Baseline specification					
Treatment	0.00	-37143.69	-48099.82*	-1379.79	-138.31
	(0.02)	(27568.88)	(24678.66)	(1179.78)	(97.25)
	[0.94]	[0.27]	[0.07]	[0.33]	[0.22]
Treatment × High schooling	-0.01	77929.19**	61937.31	2717.09*	234.65
	(0.02)	(38384.17)	(37925.80)	(1605.33)	(142.86)
	[0.69]	[0.04]	[0.10]	[0.14]	[0.14]
Observations	2854	2854	2854	2854	2854
Mean in control	0.89	167910.51	168519.40	13521.57	1101.98
Treatment effect with high schooling	-0.01	40785.51	13837.48	1337.30	96.34
	(0.02)	(25636.03)	(24750.67)	(1183.15)	(108.49)
Panel B: Controlling for Land ownership					
Treatment	0.01	-32569.84	-41409.23	-1342.72	-139.67
	(0.02)	(32701.51)	(27977.14)	(1398.65)	(114.91)
	[0.68]	[0.41]	[0.17]	[0.40]	[0.26]
Treatment × High schooling	-0.01	79998.73**	64297.83*	2774.84*	234.08
	(0.02)	(36799.80)	(37261.22)	(1561.77)	(140.23)
	[0.74]	[0.04]	[0.09]	[0.11]	[0.13]
Treatment × Large land-owner	-0.02	-12272.71	-16442.66	-190.68	3.53
	(0.02)	(37015.43)	(42476.40)	(1402.06)	(153.53)
	[0.48]	[0.73]	[0.72]	[0.89]	[0.99]
Observations	2854	2854	2854	2854	2854
Mean in control	0.89	167910.51	168519.40	13521.57	1101.98
Treatment effect with high schooling	0.00	47428.89*	22888.60	1432.12	94.42
	(0.02)	(27044.73)	(32004.64)	(1231.92)	(105.65)
Panel C: Controlling for Household income					
Treatment	0.00	-31468.89	-33429.56	-2286.23*	-191.11*
	(0.03)	(34219.26)	(32457.32)	(1239.42)	(113.12)
	[0.95]	[0.44]	[0.34]	[0.04]	[0.04]
Treatment × High schooling	-0.01	82562.90**	68067.28*	2604.26*	244.07*
	(0.02)	(38618.37)	(39105.90)	(1458.53)	(128.50)
	[0.71]	[0.03]	[0.06]	[0.09]	[0.06]
Treatment × High household income	-0.00	-17666.08	-36337.67	1691.21	79.42
	(0.02)	(39179.88)	(43239.62)	(1761.21)	(167.77)
	[0.89]	[0.67]	[0.43]	[0.31]	[0.60]
Observations	2854	2854	2854	2854	2854
Mean in control	0.89	167910.51	168519.40	13521.57	1101.98
Treatment effect with high schooling	-0.01	51094.01**	34637.72	318.03	52.97
	(0.02)	(21618.48)	(23429.74)	(1003.20)	(92.58)

Notes: The table presents the heterogeneity of the treatment effects on key business outcomes of eligible *Progoti* borrowers. Data comes from the midline (2016) and endline (2017) surveys. All regressions control for the baseline (2015) value of the outcome, an indicator variable for the endline survey, district (randomization strata) fixed effects and the relevant covariate (that is interacted with the treatment indicator in each panel). "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered it to the eligible clients. Standard errors are clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets. "High schooling" is a dummy variable =1 if the respondent's years of schooling at baseline was above the sample median. "Large land owner" is a dummy variable =1 if the size of land owned by the respondent's household at baseline was greater than the sample median. "High household income" is a dummy variable =1 if the total labor income earned by members of the respondent's household at baseline was above the sample median. Description of the dependent variables are provided in Appendix B.

TABLE A.22: BASELINE BALANCE TEST FOR SELECTION EFFECTS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Treatment	0.013	0.015	0.016	0.014	0.012	0.014	0.013	0.018	0.014
	(0.014)	(0.021)	(0.015)	(0.014)	(0.014)	(0.014)	(0.014)	(0.022)	(0.014)
	[0.468]	[0.607]	[0.394]	[0.445]	[0.504]	[0.452]	[0.470]	[0.549]	[0.451]
Treatment × Risk averse		-0.003						-0.004	
		(0.028)						(0.028)	
		[0.926]						[0.890]	
Treatment × Wants to start new business			-0.045					-0.047	
			(0.044)					(0.046)	
			[0.345]					[0.344]	
Treatment × Wants to hire new worker				-0.007				-0.001	
				(0.033)				(0.033)	
				[0.842]				[0.969]	
Treatment × Profit per worker					-0.012			-0.014	
					(0.010)			(0.010)	
					[0.228]			[0.163]	
Treatment × Entrepreneurship Index						-0.007			-0.008
						(0.010)			(0.010)
						[0.470]			[0.433]
Treatment × Size of land owned							0.011	0.013	0.011
							(0.017)	(0.017)	(0.017)
							[0.425]	[0.326]	[0.435]
Observations	3504	3504	3504	3504	3504	3504	3504	3504	3504
Mean in control	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098

Notes: The table shows the results of estimating specification (6) where the dependent variable is having taken any BRAC loan in the last 12 months for the business. The sample is limited to baseline observations. Standard errors are clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets. *Profit per Worker* is the baseline level of the profit of the business over the last twelve months divided by the number of workers (regular, casual and unpaid), including the business owner, at baseline. The variable is then standardized by subtracting the sample mean and dividing by the sample standard deviation. *Risk Averse* is a dummy variable taking the value of one if the respondent's risk aversion score is greater than or equal to the sample median (see Appendix B for further details on the risk aversion score). *Wants to Start a New Business* is a dummy variable =1 if at baseline the respondent reported that s/he or someone in the household wants to start a new business in the following twelve months. *Wants to Hire New Workers* is a dummy variable =1 if at baseline the respondent reported that s/he or someone in the household wants to hire new workers for a household business in the following twelve months. *Entrepreneurship Index* is the first principal component of the variables *Profit per Worker*, *Risk Averse*, *Wants to Start a New Business*, and *Wants to Hire New Workers*. *Size of Land Owned* is the amount of land owned by the household (excluding the homestead) at baseline, standardized by subtracting the sample mean and dividing by the sample standard deviation.

TABLE A.23: SELECTION EFFECTS, CONTROLLING FOR AGE AND SCHOOLING

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Treatment	0.003	0.023*	-0.003	-0.001	0.003	0.002	0.004	0.013	0.003
	(0.010)	(0.012)	(0.010)	(0.010)	(0.010)	(0.010)	(0.009)	(0.013)	(0.010)
	[0.748]	[0.026]	[0.784]	[0.938]	[0.795]	[0.835]	[0.689]	[0.422]	[0.750]
Treatment × Risk averse		-0.039***						-0.035**	
		(0.014)						(0.015)	
		[0.000]						[0.031]	
Treatment × Wants to start new business			0.091***					0.081***	
			(0.029)					(0.029)	
			[0.925]					[0.028]	
Treatment × Wants to hire new worker				0.047				0.038	
				(0.034)				(0.034)	
				[0.974]				[0.265]	
Treatment × Profit per worker					0.004			0.001	
					(0.007)			(0.007)	
					[0.142]			[0.876]	
Treatment × Entrepreneurship Index						0.029***			0.028***
						(0.008)			(0.008)
						[0.007]			[0.003]
Treatment × Size of land owned							0.028***	0.026***	0.025***
							(0.008)	(0.008)	(0.008)
							[0.013]	[0.011]	[0.011]
Treatment × Schooling	-0.006	-0.006	-0.007	-0.006	-0.006	-0.008	-0.009	-0.011	-0.011
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
	[0.560]	[0.524]	[0.484]	[0.531]	[0.524]	[0.424]	[0.344]	[0.264]	[0.278]
Treatment × Age	0.003	0.004	0.004	0.004	0.003	0.006	0.003	0.005	0.005
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
	[0.748]	[0.663]	[0.715]	[0.669]	[0.759]	[0.558]	[0.769]	[0.615]	[0.599]
Treatment × Age^2	0.009	0.009	0.009	0.009	0.009	0.010	0.009	0.009	0.009
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
	[0.197]	[0.186]	[0.196]	[0.195]	[0.196]	[0.181]	[0.218]	[0.189]	[0.195]
Observations	6582	6582	6582	6582	6582	6582	6582	6582	6582
Mean in control	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108

Notes: The table shows the results of estimating specification (6) where the dependent variable is having taken any BRAC loan in the last 12 months for the business. Standard errors are clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets. *Profit per Worker* is the baseline level of the profit of the business over the last twelve months divided by the number of workers (regular, casual and unpaid), including the business owner, at baseline. The variable is then standardized by subtracting the sample mean and dividing by the sample standard deviation. *Risk Averse* is a dummy variable taking the value of one if the respondent's risk aversion score is greater than or equal to the sample median (see Appendix B for further details on the risk aversion score). *Wants to Start a New Business* is a dummy variable =1 if at baseline the respondent reported that s/he or someone in the household wants to start a new business in the following twelve months. *Wants to Hire New Workers* is a dummy variable =1 if at baseline the respondent reported that s/he or someone in the household wants to hire new workers for a household business in the following twelve months. *Entrepreneurship Index* is the first principal component of the variables *Profit per Worker*, *Risk Averse*, *Wants to Start a New Business*, and *Wants to Hire New Workers*. *Size of Land Owned* is the amount of land owned by the household (excluding the homestead) at baseline, standardized by subtracting the sample mean and dividing by the sample standard deviation. All control variables are defined at baseline; for further details on their construction see Appendix B.

TABLE A.24: SELECTION EFFECTS, BY PAST BORROWING STATUS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: Past Borrowers									
Treatment	0.013	0.038**	0.013	0.015	0.018	0.018	0.019	0.026	0.018
	(0.011)	(0.016)	(0.014)	(0.015)	(0.013)	(0.013)	(0.013)	(0.018)	(0.013)
	[0.357]	[0.020]	[0.399]	[0.363]	[0.255]	[0.278]	[0.237]	[0.220]	[0.269]
Treatment × Risk averse		-0.038**						-0.033*	
		(0.018)						(0.018)	
		[0.000]						[0.098]	
Treatment × Wants to start new business			0.081**					0.072*	
			(0.038)					(0.039)	
			[0.998]					[0.133]	
Treatment × Wants to hire new worker				0.044				0.038	
				(0.040)				(0.040)	
				[1.000]				[0.378]	
Treatment × Profit per worker					0.000			-0.004	
					(0.009)			(0.009)	
					[0.991]			[0.685]	
Treatment × Entrepreneurship Index						0.026***			0.024***
						(0.009)			(0.009)
						[0.967]			[0.011]
Treatment × Size of land owned							0.031***	0.029***	0.028***
							(0.008)	(0.009)	(0.009)
							[0.367]	[0.017]	[0.008]
Observations	6582	4478	4478	4478	4478	4478	4478	4478	4478
Mean in control	0.108	0.132	0.132	0.132	0.132	0.132	0.132	0.132	0.132
Panel B: Never Borrowed									
Treatment	0.013	0.012	-0.007	-0.003	-0.001	0.001	-0.002	0.005	0.000
	(0.011)	(0.023)	(0.012)	(0.011)	(0.012)	(0.012)	(0.012)	(0.023)	(0.012)
	[0.357]	[0.393]	[0.584]	[0.788]	[0.941]	[0.969]	[0.882]	[0.865]	[0.974]
Treatment × Risk averse		-0.024						-0.022	
		(0.028)						(0.028)	
		[0.003]						[0.471]	
Treatment × Wants to start new business			0.098*					0.095*	
			(0.052)					(0.052)	
			[0.022]					[0.094]	
Treatment × Wants to hire new worker				0.029				0.018	
				(0.059)				(0.062)	
				[0.058]				[0.797]	
Treatment × Profit per worker					0.023			0.024*	
					(0.014)			(0.014)	
					[0.674]			[0.000]	
Treatment × Entrepreneurship Index						0.025*			0.025*
						(0.013)			(0.013)
						[0.380]			[0.097]
Treatment × Size of land owned							0.001	-0.003	-0.001
							(0.013)	(0.013)	(0.013)
							[0.727]	[0.842]	[0.967]
Observations	6582	2104	2104	2104	2104	2104	2104	2104	2104
Mean in control	0.108	0.056	0.056	0.056	0.056	0.056	0.056	0.056	0.056

Notes: The table shows the results of estimating specification (6) where the dependent variable is having taken any BRAC loan in the last 12 months for the business. In Panel A, the sample is restricted to SME-owners with past borrowing experience; while in Panel B the sample is restricted to SME-owners who never borrowed before. Standard errors are clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets. *Profit per Worker* is the baseline level of the profit of the business over the last twelve months divided by the number of workers (regular, casual and unpaid), including the business owner, at baseline. The variable is then standardized by subtracting the sample mean and dividing by the sample standard deviation. *Risk Averse* is a dummy variable taking the value of one if the respondent's risk aversion score is greater than or equal to the sample median (see Appendix B for further details on the risk aversion score). *Wants to Start a New Business* is a dummy variable =1 if at baseline the respondent reported that s/he or someone in the household wants to start a new business in the following twelve months. *Wants to Hire New Workers* is a dummy variable =1 if at baseline the respondent reported that s/he or someone in the household wants to hire new workers for a household business in the following twelve months. *Entrepreneurship Index* is the first principal component of the variables *Profit per Worker*, *Risk Averse*, *Wants to Start a New Business*, and *Wants to Hire New Workers*. *Size of Land Owned* is the amount of land owned by the household (excluding the homestead) at baseline, standardized by subtracting the sample mean and dividing by the sample standard deviation.

TABLE A.25: HETEROGENEITY W.R.T. BRAC LOAN NO

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Brac Loan		Business	Revenues	Costs	Profits	Profits
	Yes=1	Value	owner	(annual)	(annual)	(annual)	(month)
Panel A: *Dabi*							
Treatment	0.07**	358.45***	0.01	25969.73***	26039.85***	724.36	77.40
	(0.03)	(84.90)	(0.03)	(8236.61)	(7821.31)	(623.80)	(57.55)
	[0.05]	[0.00]	[0.60]	[0.01]	[0.00]	[0.44]	[0.34]
No. of previous BRAC loans	0.05***	89.08	0.02	-2060.90	520.08	465.67	11.47
	(0.02)	(75.95)	(0.02)	(3537.11)	(2353.73)	(291.25)	(32.60)
Treatment × No. of previous BRAC loans	0.05**	160.70	-0.02	22613.10	20493.85	1448.82	125.45
	(0.02)	(97.68)	(0.02)	(23370.59)	(23280.37)	(1624.12)	(122.05)
	[0.08]	[0.18]	[0.35]	[0.60]	[0.71]	[0.71]	[0.48]
Observations	2168	2168	2087	2087	2087	2087	2087
Mean in control	0.57	1181.67	0.55	32561.84	26870.63	4275.95	358.72
Panel B: *Progoti*							
Treatment	0.02	174.99	-0.01	9745.34	-13903.95	361.50	10.06
	(0.03)	(256.83)	(0.01)	(19898.38)	(17524.85)	(958.43)	(83.10)
	[0.58]	[0.59]	[0.61]	[0.68]	[0.51]	[0.76]	[0.93]
No. of previous BRAC loans	0.05***	591.06***	0.01	16407.36	22872.44*	1025.91	18.62
	(0.01)	(138.68)	(0.01)	(12391.17)	(11858.55)	(734.76)	(52.26)
Treatment × No. of previous BRAC loans	0.05***	395.13**	0.01	-17730.64	-21941.66	477.56	179.08*
	(0.02)	(180.15)	(0.01)	(22927.47)	(22074.59)	(1111.23)	(94.76)
	[0.03]	[0.04]	[0.28]	[0.47]	[0.37]	[0.69]	[0.08]
Observations	3066	3066	2854	2854	2854	2854	2854
Mean in control	0.52	4793.96	0.89	167910.51	168519.40	13521.57	1101.98

Notes: The table presents the heterogeneity of the treatment effects on borrowing from BRAC and key business outcomes of eligible *Dabi* (in Panel A) and *Progoti* (in Panel B) borrowers with respect to the number of previous loans taken from BRAC. *No. of previous BRAC loans* is the number of previous loans the respondent had taken from BRAC as of baseline (i.e. 2015), standardized by subtracting the sample mean and dividing by the sample median. "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered it to the eligible clients. All regressions control for the baseline (2015) value of the outcome, an indicator variable for the endline survey and district (randomization strata) fixed effects. Standard errors are clustered at the BRAC branch office level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets. In column 1, the dependent variable is a dummy =1 if the respondent had a *BRAC Loan* at midline or endline survey. In column 2, the dependent variable is the principal amount (in USD PPP) of the *BRAC Loan* the respondent had at midline or endline survey. *Business Owner* is a dummy variable equal to one if the respondent owns a business. *Revenues* is the monetary value (in USD PPP) of sold products or delivered services of the business over the last twelve months. *Costs* is the monetary value (in USD PPP) of the total amount the enterprise spent on personnel expenses, machines, tools, equipment, space, transportation, electricity, fuel for machines, and total purchase of stock over the last twelve months. *Profits (annual)* is profit (in USD PPP) of the business over the last twelve months. *Profits (month)* is profit (in USD PPP) of the business over the month preceding the survey.

TABLE A.26: SPILLOVER EFFECTS ON DABI CLIENTS' REPAYMENT BEHAVIOR

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Borrower no longer with BRAC	Classified as "Default"	Loan not fully paid in 12 months	Loan not fully by end of loan cycle	Full loan not repaid within 2 months	Full loan not repaid within 6 months	Full loan not repaid within 12 months
Panel A: Ineligible borrowers							
Treatment	-0.041	0.002	0.025	-0.002	-0.002	-0.001	-0.001
	(0.031)	(0.002)	(0.016)	(0.008)	(0.007)	(0.006)	(0.006)
	[0.314]	[0.439]	[0.176]	[0.856]	[0.857]	[0.870]	[0.852]
Observations	69801	69801	69081	69081	69081	69081	69081
Mean in control	0.545	0.039	0.149	0.055	0.047	0.041	0.037
Panel B: New-comers							
Treatment	-	0.002	0.012	0.003	0.003	0.002	0.002
	-	(0.003)	(0.009)	(0.005)	(0.004)	(0.004)	(0.004)
		[0.523]	[0.328]	[0.689]	[0.663]	[0.664]	[0.664]
Observations	-	52943	44243	44243	44243	44243	44243
Mean in control	-	0.011	0.085	0.025	0.022	0.022	0.022

Notes: The table presents the spillover effects on retention and loan repayment of ineligible *Dabi* borrowers (Panel A) and *Dabi* borrowers who joined BRAC after baseline in study branches (Panel B). Data comes from BRAC's administrative records collected at endline (2017). "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered it to the eligible clients. *Borrower no longer with BRAC* is a dummy variable taking the value of one if the client has repaid the loan and not taken out a new one (as opposed to having a current loan or having defaulted). *Default* is a dummy variable taking the value of one if the borrower was categorized by the credit officer as not having repaid the loan by the end of the loan cycle. *Loan not fully paid in 12 months* is a dummy variable taking the value of one if the borrower does not repay the full loan by the end of the loan cycle (12 months). *Loan not fully paid by the end of the loan cycle* is a dummy variable taking the value of one if the borrower does not repay the full loan within the 14th month in the treatment branches and by the 12th month in the control branches. *Full loan not repaid within 2 (6) [12] months after the end of the loan cycle* are dummy variables taking the value of one if the borrower did not repay the full loan by the second (sixth) [twelfth] month after the end of the loan cycle. Robust standard errors clustered at the branch level in parentheses (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets.

TABLE A.27: SPILLOVER EFFECTS ON PROGOTI CLIENTS' REPAYMENT BEHAVIOR

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Borrower no longer with BRAC	Classified as "Default"	Loan not fully paid in 12 months	Loan not fully by end of loan cycle	Full loan not repaid within 2 months	Full loan not repaid within 6 months	Full loan not repaid within 12 months
Panel A: Ineligible borrowers							
Treatment	0.005	0.001	0.005	0.006	0.005	0.005	0.006
	(0.015)	(0.002)	(0.014)	(0.008)	(0.007)	(0.006)	(0.006)
	[0.791]	[0.644]	[0.780]	[0.560]	[0.535]	[0.552]	[0.422]
Mean in control	0.706	0.024	0.164	0.033	0.029	0.025	0.022
Observations	9601	9601	9066	9066	9066	9066	9066
Panel B: New-comers							
Treatment	-	-0.003	0.003	-0.001	-0.002	-0.002	-0.002
	-	(0.002)	(0.007)	(0.003)	(0.003)	(0.003)	(0.003)
		[0.342]	[0.727]	[0.728]	[0.632]	[0.677]	[0.677]
Mean in control	-	0.008	0.063	0.011	0.011	0.010	0.010
Observations	-	14601	10805	10805	10805	10805	10805

Notes: The table presents the spillover effects on retention and loan repayment of ineligible *Progoti* borrowers in Panel A and on *Progoti* borrowers who joined BRAC after baseline in study branches in Panel B. Data comes from BRAC's administrative records collected at endline (2017). "Treatment" is a dummy variable equal to 1 if the respondent was based in one of the treatment branches where BRAC introduced the flexible loan contract and offered it to the eligible clients. *Borrower no longer with BRAC* is a dummy variable taking the value of one if the client has repaid the loan and not taken out a new one (as opposed to having a current loan or having defaulted). *Default* is a dummy variable taking the value of one if the borrower was categorized by the credit officer as not having repaid the loan by the end of the loan cycle. *Loan not fully paid in 12 months* is a dummy variable taking the value of one if the borrower does not repay the full loan by the end of the loan cycle (12 months). *Loan not fully paid by the end of the loan cycle* is a dummy variable taking the value of one if the borrower does not repay the full loan within the 14th month in the treatment branches and by the 12th month in the control branches. *Full loan not repaid within 2 (6) [12] months after the end of the loan cycle* are dummy variables taking the value of one if the borrower did not repay the full loan by the second (sixth) [twelfth] month after the end of the loan cycle. Robust standard errors clustered at the branch level in parentheses (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Randomization inference p-values of the null hypothesis of no effect are provided in square brackets.

A.2.1 Correlates of Take Up among Eligible Clients

In this section, we discuss differential take up of loans among borrowers who were deemed eligible for the flexible contract. There can be two dimensions of selection among them:

First, there is the group of clients who took up the flexible loan within the treatment group. Although every eligible BRAC client in the treatment branches was offered the flexible contract, not all of them accepted this offer. The take up of the flexible contract was 55% among eligible borrowers in the treatment branches, with take up being insignificantly higher among the *Dabi* (57%) relative to *Progoti* clients (53%). In Table A.28, we test for differential selection along this margin for the *Dabi* (Panel A) and *Progoti* (Panel B) clients, using the same set of correlates as in Table 9 (controlling for key correlates of risk throughout the analysis as measured at baseline). Among the *Dabi* clients, similar to our market-wide selection results, we find that borrowers who are less risk averse at baseline or score higher on the standardized entrepreneurship index are more likely to take up the flexible loan contract. We also find that the value of the transfers provided at baseline is negatively correlated with take up. The negative correlation between transfers and take up suggests repayment flexibility may increase demand (for transfers) from social networks; and borrowers more vulnerable to kinship taxes may therefore be less likely to apply for a flexible loan (see e.g., Baland et al., 2011, 2016; Jakiela and Ozier, 2016; Squires, 2021). We do not observe a significant correlation between take up and risk aversion or the entrepreneurship index for the *Progoti* clients, while there is a marginally significant negative correlation between transfers/loans given at baseline and take up, in line with kinship taxes. Moreover, *Progoti* borrowers with a higher schooling level are more likely to take up the flexible contract.

The second dimension within the eligible borrower group concerns who took up loans in the treatment versus the control group. As discussed in Section 5.3, eligible *Dabi* clients in the treated branches were 6.8 *ppt* less likely to have left BRAC by the end of the study period relative to those in the control branches. When we test for differential selection along this margin, using the same set of correlates as before, we find no significant differences (results available upon request).

TABLE A.28: CORRELATES OF TAKE UP AMONG ELIGIBLE CLIENTS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: *Dabi* Clients								
Risk averse	-0.192***						-0.199***	
	(0.070)						(0.070)	
Wants to start business		0.158					0.171	
		(0.124)					(0.122)	
Wants to hire new worker			0.021				-0.008	
			(0.205)				(0.202)	
Profit per worker				0.046			0.040	
				(0.042)			(0.041)	
Entrepreneurship Index					0.091**			0.093**
					(0.037)			(0.037)
Value of transfers or loans given						-0.271*	-0.269*	-0.277*
						(0.146)	(0.144)	(0.144)
Has a business	-0.092	-0.050	-0.054	-0.106	-0.095	-0.056	-0.140*	-0.099
	(0.066)	(0.065)	(0.067)	(0.081)	(0.066)	(0.065)	(0.082)	(0.066)
Size of land owned	0.041	0.029	0.032	0.030	0.033	0.034	0.038	0.035
	(0.041)	(0.042)	(0.042)	(0.042)	(0.041)	(0.042)	(0.041)	(0.041)
High schooling	0.045	0.059	0.051	0.048	0.055	0.050	0.047	0.052
	(0.064)	(0.065)	(0.065)	(0.065)	(0.064)	(0.065)	(0.064)	(0.064)
Observations	530	530	530	530	530	530	530	530
Mean of outcome	0.574	0.574	0.574	0.574	0.574	0.574	0.574	0.574
Panel B: *Progoti* Clients								
Risk averse	0.011						0.005	
	(0.039)						(0.040)	
Wants to start business		-0.079					-0.079	
		(0.061)					(0.061)	
Wants to hire new worker			0.010				0.019	
			(0.066)				(0.066)	
Profit per worker				-0.013			-0.013	
				(0.013)			(0.013)	
Entrepreneurship Index					-0.018			-0.016
					(0.017)			(0.017)
Value of transfers or loans given						-0.025*	-0.025*	-0.025*
						(0.015)	(0.015)	(0.015)
Size of land owned	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
High schooling	0.081**	0.080**	0.081**	0.079**	0.082**	0.078**	0.074*	0.078**
	(0.038)	(0.038)	(0.038)	(0.038)	(0.038)	(0.038)	(0.038)	(0.038)
Observations	725	725	725	725	725	725	725	725
Mean of outcome	0.530	0.530	0.530	0.530	0.530	0.530	0.530	0.530

Notes: In Panel A (B), the sample is restricted to the eligible *Dabi* (*Progoti*) clients in treatment branches who were offered the flexible loan contract. The dependent variable is a dummy equal to 1 if the respondent borrowed under the new, flexible loan contract and 0 otherwise. All regressions control for BRAC branch fixed effects. Bootstrapped standard errors are clustered at BRAC branch office level following Imbens and Kolesár (2016) (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). *Risk Averse* is a dummy variable taking the value of one if the respondent's risk aversion score is greater than or equal to the sample median (see Appendix B for further details on the risk aversion score). *Wants to Start a New Business* is a dummy variable =1 if at baseline the respondent reported that s/he or someone in the household wants to start a new business in the following twelve months. *Wants to Hire New Workers* is a dummy variable =1 if at baseline the respondent reported that s/he or someone in the household wants to hire new workers for a household business in the following twelve months. *Profit per Worker* is the baseline level of the profit of the business over the last twelve months divided by the number of workers, including the business owner, at baseline. The variable is then standardized by subtracting the sample mean and dividing by the sample standard deviation. *Entrepreneurship Index* is the first principal component of the variables *Profit per Worker*, *Risk Averse*, *Wants to Start a New Business*, and *Wants to Hire New Workers*. *Transfers or Loans Given* is the total monetary value (in USD PPP) of any cash or in-kind informal transfers and any loans that the respondent's household gave to others over the 12 months preceding the survey, standardized by subtracting the sample mean and dividing by the sample standard deviation. All control variables are defined at baseline; for further details on their construction see Appendix B.

A.2.2 Does the standard contract already entail some form of de facto flexibility?

In order to shed light on this, we used BRAC's administrative records to check if borrowers in the control group ever delayed repayments and, if so, for how long. While a few days' delay is quite common, 94% [97%] of eligible *Dabi* and 84% [94%] of eligible *Progoti* borrowers in the control group complete their scheduled repayments within 35 [40] days of the due date. The percentages are comparable if we consider the entire sample or only those loans taken before the experiment. Consistently, only 5.5% [9%] of *Dabi* [*Progoti*] borrowers declared to have had some delay in the payment of any of the installments, and, of those, 45% [52%] of *Dabi* [*Progoti*] repay within 5 days and 94% [97%] within one month. Furthermore, any late repayment comes with a notable increased interest rate. To sum up, while there may be some (minimal) de facto flexibility in BRAC's modus operandi, the extent of this flexibility is rather limited.

A.2.3 Land ownership and land transactions in Bangladesh

According to the most recent agricultural census (Bangladesh Bureau of Statistics, 2010), the average census household holds 79 decimals of land with 53% of the households being landowners, which is similar to the characteristics of our baseline *Dabi* borrowers. The changes in land ownership and land size are also broadly consistent with data on land transactions obtained from the Bangladesh Integrated Household Survey. In the surveys from 2012 and 2015, the average increase in land ownership over the survey rounds by a representative sample of Bangladeshi households was 12.9%, with the size of newly acquired land going up by a mean of 4.3 decimals. A simple back-of-the-envelope calculation implies that the flexible contract allowed treated landless *Dabi* borrowers to become landowners during a 2-year period at a rate that would normally take the average Bangladeshi household about 4 years. Alternatively, that the contract permitted treated borrowers to acquire as much land as it would take the average household 7-8 years to obtain. Available from https://doi.org/10.7910/DVN/OR6MHT (2012) and https://doi.org/10.7910/DVN/BXSYEL (2015).

A.2.4 Voucher use

TABLE A.29: DESCRIPTIVES ON VOUCHER USE

	(1)	(2)	(3)	(4)	(5)
	Mean	Std. dev.	Min	Max	Obs.
			Panel A: *Dabi*		
Use any voucher	0.571	0.496	0	1	366
Conditional on using at least one voucher:					
Use first voucher only	0.459	0.499	0	1	209
Use first and second voucher	0.541	0.499	0	1	209
Month of first voucher use	3.517	1.917	1	12	209
Conditional on using both vouchers:					
Use vouchers consecutively	0.097	0.298	0	1	113
Months between first and second voucher use	3.372	1.743	1	10	113
Use vouchers in months 1 and 2	0.018	0.132	0	1	113
Month of second voucher use	6.336	2.238	2	11	113
			Panel B: *Progoti*		
Use any voucher	0.690	0.463	0	1	423
Conditional on using at least one voucher:					
Use first voucher only	0.260	0.439	0	1	292
Use first and second voucher	0.740	0.439	0	1	292
Month of first voucher use	3.527	2.106	1	12	292
Conditional on using both vouchers:					
Use vouchers consecutively	0.218	0.413	0	1	216
Months between first and second voucher use	2.736	1.662	1	9	216
Use vouchers in months 1 and 2	0.037	0.189	0	1	216
Month of second voucher use	5.800	2.268	2	12	216

Notes: The table presents summary statistics on the use of the repayment vouchers among eligible *Dabi* and *Progoti* borrowers. The sample includes *Dabi* and *Progoti* clients in treatment branches who accepted the offer to borrow under the flexible contract. Data comes from BRAC's administrative records collected at endline (2017).

Table A.29 shows that, conditional on taking up the flexible loan, *Dabi* borrowers used the vouchers less than *Progoti* borrowers (57% versus 69%). The fact that they benefitted more from the vouchers, despite using them less, could be due to at least two possible explanations: First, the option value of having the loan may be much larger for the Dabi borrowers, which implies that the insurance effect is greater for them, with the insurance not needing to get used in many cases. Second, the Dabi effects are quite heterogenous, driven by some borrowers benefitting a lot from the flexibility, as demonstrated by Figure 4 and discussed in Section 5.4.1. Table A.29 also shows that conditional on spending a voucher, about 46% of the *Dabi* borrowers employed the first one with the remaining 54% using both. Clients that employed both vouchers were much more likely to use them some months apart. Only 9% spent the two vouchers consecutively, with the mean time elapsed between using vouchers 1 and 2 being 3.3 months ($std.dev. = 1.74$). Also, 3.5 months pass

on average before the first voucher is spent ($std.dev. = 1.92$). Among those using both vouchers, 1.8% spend them consecutively in periods 1 and 2.

A.2.5 Cost-Benefit Analysis

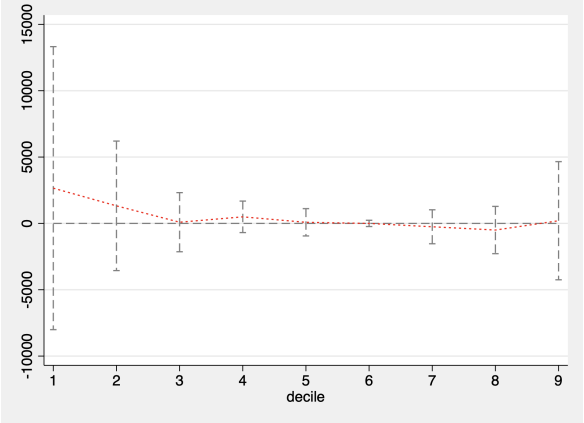
TABLE A.30: COST-BENEFIT ANALYSIS FOR DABI CLIENTS

	(1)	(2)	(3)
Social discount rate	5%	10%	22%
Cost per eligible client at year 0	51.10	51.10	51.10
Cost of foregone interest payments per client during year 1	1.11	2.22	4.88
Cost of foregone interest payments per client during year 2	1.11	2.22	4.88
Total cost per eligible client discounted at year 2	58.61	66.49	86.89
Change in household income in year 1	1329	1329	1329
Change in household income in year 2	1277	1277	1277
Total benefits	2606	2606	2606
Benefits/cost ratio	45	39	30
IRR	26.0	25.9	25.9

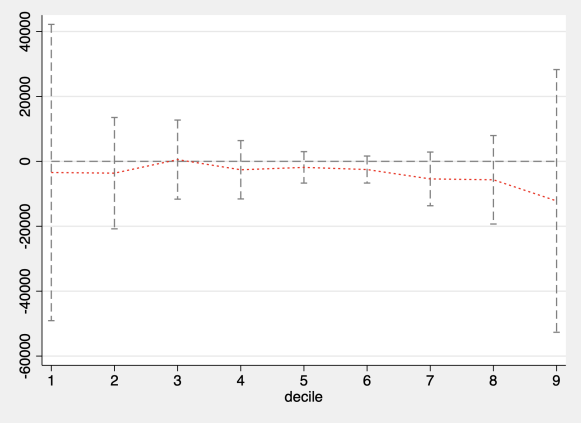
Notes: The table shows the results for the cost-benefit analysis for pilot for the eligible *Dabi* clients. The cost per eligible client in year 0 is based on the total cost of the pilot (including the *Progoti* clients) divided by the number of eligible *Dabi* clients.

FIGURE A.1: HETEROGENEITY OF TREATMENT EFFECTS AMONG PROGOTI CLIENTS

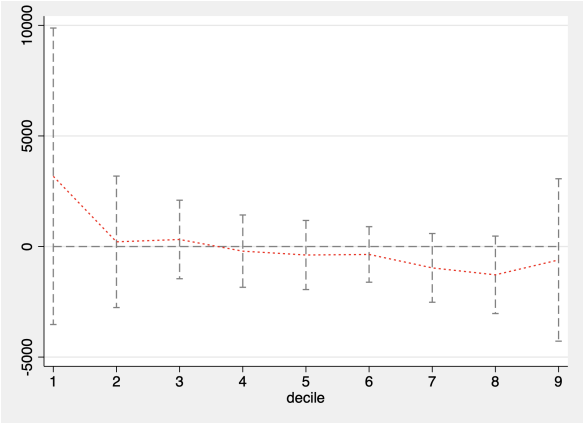
(A) BUSINESS ASSETS VALUE



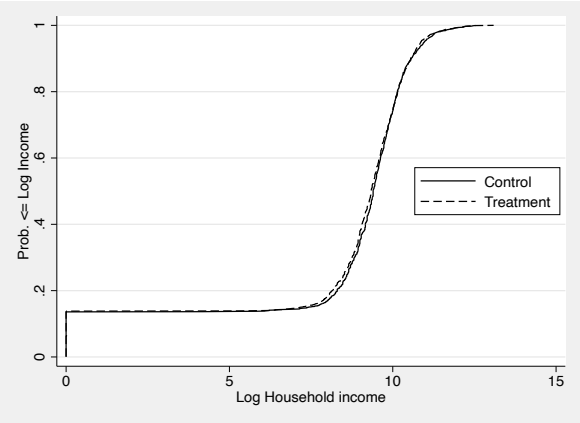
(B) BUSINESS REVENUES (ANNUAL)



(C) HOUSEHOLD INCOME (ANNUAL)

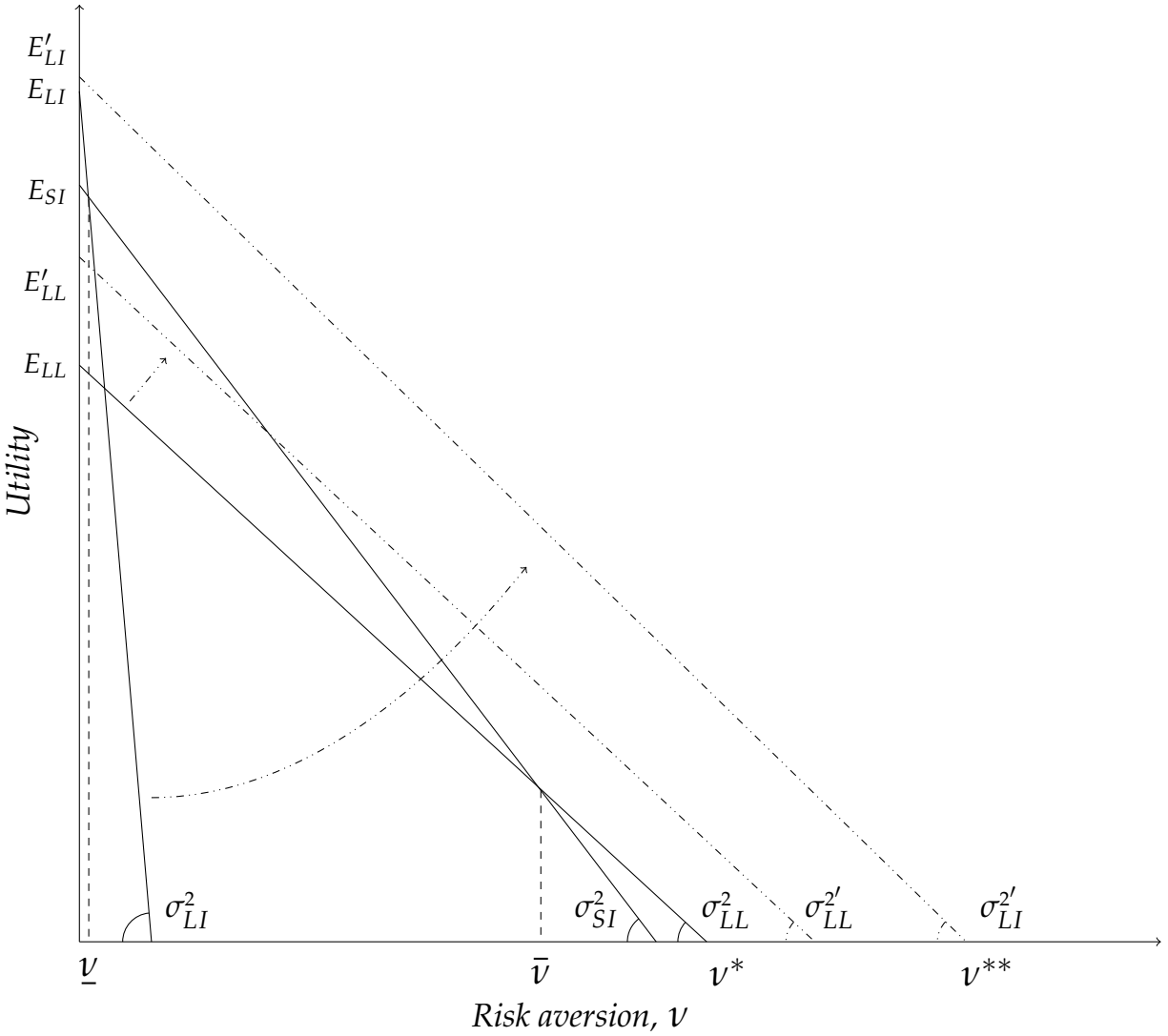


(D) CDF OF LOG HOUSEHOLD INCOME



Notes: The sample includes eligible *Progoti* borrowers. Data comes from the midline (2016) and endline (2017) surveys. Figures (a)-(c) plot quantile treatment effects estimated according to specification (5). 90% confidence intervals are based on bootstrapped (with 500 replications) standard errors clustered at the BRAC branch office level (unit of randomization). Each specification controls for the survey wave. Values are in PPP USD. Figure (d) plots the cumulative distribution function of log household income (plus 1) in the treatment and control samples.

FIGURE A.2: RISK AVERSION AND PROJECT CHOICE



Notes: The figure illustrates each project choice and the associated utility as a function of the degree of risk aversion, with the subscripts LI (SI) $[LL]$ denoting the large illiquid (small illiquid) [large liquid] project. The y-axis intercept is given by the expected value and the slope by the project variance. The solid lines represent the utility under the standard contract and the dash-dotted lines the utility when employing the vouchers.

B List of variables

- *Age* – A continuous variable corresponding to the respondent's age in years.
- *Borrower No Longer with BRAC* – A dummy variable taking the value of one if the client has repaid the loan and not taken out a new one (as opposed to having a current loan or having defaulted).
- *BRAC Loan Value* – It is a continuous variable corresponding to the amount (in USD PPP) of the loan taken from BRAC, as recorded in BRAC's administrative records.
- *Business Assets* – The monetary value (in USD PPP) of business assets (tools, machinery, furniture, vehicle, and inventories) at the time of the survey.
- *Business Hours* – Respondents were asked to report how many hours on a typical day the enterprise operates, how many days in a typical month the enterprise operates and how many months over the last twelve months the enterprise operates. The variable combines these three pieces of information to calculate the number of hours that the enterprise worked over the last twelve months.
- *Business Owner* – A dummy variable equal to one if the respondent owns a business.
- *Consumption per capita* – The monetary value (in USD PPP) of the total household expenditure per capita (in PPP USD) over the last twelve months divided by the household size. Expenditure is the sum of the household's yearly consumption on food and on non-food items. Household per capita yearly food consumption is imputed from previous week's recall. The household's non-food expenditure includes the following items: (a) imputed from previous month's recall: liquid fuel, electricity, transportation costs, cosmetics/toiletries, salary of maid, entertainment costs; (b) imputed from previous year's recall: clothes, shoes, household utensils, furniture, materials for ritual ceremonies, dowry, education costs.
- *Costs* – The monetary value (in USD PPP) of the total amount the enterprise spent on personnel expenses, machines, tools, equipment, space, transportation, electricity, fuel for machines, and total purchase of stock over the last twelve months.
- *Default* – A dummy variable taking the value of one if the client is categorized as not having repaid the loan by the end of the loan cycle.
- *Entrepreneurship Index* – It is the first principal component of the variables *Profit per Worker*, *Risk Averse*, *Wants to Start a New Business*, and *Wants to Hire New Workers*.
- *Full loan not repaid within 2 (6) [12] months after the end of the loan cycle* – A dummy variable taking the value of one if the borrower did not repay the full loan by the

second (sixth) [twelfth] month after the end of the loan cycle. For eligible clients in treatment branches, the end of the loan cycle is computed starting two months after the expected last collection date; in control branches from the expected last collection date. E.g., if the loan cycle lasted one year, in treatment branches the full loan cycle needed to be repaid by the 14th month, while in control branches by the 12th month. The variable is created by looking at the difference between the last collection date and the expected last collection date, computed using the duration of the loan and the disbursement date.

- *High expected demand uncertainty* – A dummy variable taking the value of one if the respondent is located in a BRAC branch where the average coefficient of variation (CV) of expected sales growth among the representative sample of SMEs at baseline was high (above the sample median). Respondents in the SME sample were asked to report the probabilities that they assign to the following events occurring in the next 2 years: (i) their sales will grow by at least 20%, (ii) their sales will grow by 0-20%, (iii) their sales will remain unchanged, (iv) their sales will be lower by 0-20%, (v) their sales will decrease by more than 20% in the next two years. For (i) and (iv), we impute the expected growth rate to be $\pm 40\%$. Based on this informaton, we calculate the CV of expected sales growth for each individual SME-owner as the ratio of the standard deviation divided by the mean expected demand growth rate. We then take the average CV within a branch at baseline. Branches with above-median average CV are classified as *high expected demand uncertainty* branches.

- *Household Income* – The monetary value (in USD PPP) of the household members' total earnings from wage-employment over the past 12 months and the profit(s) of any household business(es) operated by the household.

- *Household Size* – It is a continuous variable corresponding to the number of respondent's household members.

- *Land Owner* – A dummy variable taking the value of one if the household owns any land (excluding the homestead).

- *Net Borrowing or Transfers* – The monetary value (in USD PPP) of net borrowing (loans borrowed minus loans lent) and net transfers (transfers received minus transfers given) combined.

- *Non-BRAC Loan* – A dummy variable taking the value of one if the respondent or anyone in the household has ever taken out any loans from other MFIs than BRAC, informal money-lenders or relatives and friends over the last twelve months.

- *Non-BRAC Loan Value* – The monetary value (in USD PPP) of all formal and informal loans taken from other lenders (banks, MFIs other than BRAC, informal moneylenders or relatives and friends) during the past 12 months.
- *Non-Business Assets Value* – The monetary value (in USD PPP) of durable non-business assets owned by the respondent's household at the time of the survey.
- *Number of Workers* – Number of workers (other than household members) who work in the business on a typical working day.
- *Owner's Business Hours* – Respondents were asked to report how many hours they worked for the business in a typical day, how many days they worked in a typical month, and how many months they worked over the last twelve months. The variable combines these three pieces of information to calculate the number of hours that the respondent said she worked in the business over the last twelve months.
- *Patience* – Respondents were asked to make hypothetical choices about timing of receiving different sums of money. Example of this are "Would you rather choose to receive 500 TAKAs tomorrow or [equal or higher values] TAKAs in one month?". *Patience* ranges between 1 and 7 with 1 indicating low patience (i.e. high discount rate) and 7 indicating high patience (low discount rate).
- *Profits (annual)* – Respondents were asked what was the total profit of the business over the last twelve months.
- *Profits (month)* – Respondents were asked what was the total profit of the business over the last month.
- *Profit per Worker (at baseline)* – the baseline level of the profit of the business over the last twelve months divided by the number of workers, including the business owner, at baseline. The variable is then standardized by subtracting the sample mean and dividing by the sample standard deviation.
- *Rain shock* – A dummy variable taking the value of one if the amount of rainfall in the months of December to May preceding the midline or endline survey (2016 or 2017) was one standard deviation above rainfall in December to May over the period 1983-2015. The geographical area over which the rainfall amount was calculated corresponds to a 25 km radius around the branch where the firm is located.
- *Range of Revenues* – Respondents were asked if their sales varied throughout the year. If they said 'Yes', they were asked to report the worst month in terms of sales and their level of revenues during this month; and which was the best month and their level of revenues during that month. Based on this information, we calculate the

range of revenues as the value of sales in the highest month minus the value of sales in the lowest month. If they said 'No', the range of revenues is set equal to zero.

- *Risk Averse* – A dummy variable taking the value of one if the respondent's risk aversion is greater than or equal to the sample median at baseline. For the eligible *Dabi* borrower sample, this corresponds to the highest risk aversion score so *Risk Averse* is equal to 1 if the respondent always prefers the safe option, no matter how high the expected value of the lottery is.

- *Risk Aversion* – Respondents were asked to make a hypothetical choice about getting a sure amount of money (500 TAKAs) or enter a lottery where with 50% probability they get 0 and with 50% probability they get an amount $y \geq 1000$ TAKAs. This is repeated six times: each time the amount won in the lottery increases by 500 TAKAs. *Risk Aversion* ranges between 0 and 6. It is equal to 0 for respondents who choose the lottery in the first choice (when expected value of the safe option and the lottery are equal), 1 for respondents who choose the lottery in the second choice but not in the first choice, 2 for respondents who choose the lottery in the third but not in the second or first choice etc.

- *Revenues* – The monetary value (in USD PPP) of sold products or delivered services of the business over the last twelve months.

- *Schooling* – It is a continuous variable corresponding to the number of years of schooling completed by the respondent.

- *Sector: Agriculture-related* – equal to one if the respondent owns an agriculture-related business (food-processing, livestock rearing or fish-farming), 0 otherwise.

- *Sector: Retail* – equal to one if the respondent owns a business in the retail sector (grocery, hardware, clothing, wholesaler or other retail shop), 0 otherwise.

- *Size of Land Owned* – The size of land owned by the respondent's household (in decimals) summing over amount of owned land that is cultivated by the household, used as pond, mortgaged out, rented out, or given for production sharing.

- *Transfers or Loans Given* – The monetary value (in USD PPP) of any cash or in-kind informal transfers and any loans that the respondent's household gave to others over the last 12 months.

- *Transfers Received* – The monetary value (in USD PPP) of any cash or in-kind informal transfers that the respondent's household received over the last 12 months.

- *Wants to Hire New Workers* – A dummy variable taking the value of one if the respondent or someone in the household wants to hire new workers in the following twelve months.
- *Wants to Start a New Business* – A dummy variable taking the value of one if the respondent or someone in the household wants to start a new business in the following twelve months.