

## Microfinance

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# Abstract

Microfinance has become a widely used tool to provide credit to areas and populations that traditionally lack access to conventional banking services. Originating as a poverty alleviation mechanism, microfinance has grown in scope and design as a larger means of improving financial inclusion. Despite the increase in access for new borrowers, much of the existing evidence has failed to find transformational effects on key outcomes such as profits and income. However, results are subject to significant variation across geographies, programme design and beneficiaries, and the heterogeneous effects do lead to significant gains for certain populations. The incentives given to borrowers to encourage on-time repayment, the timing of repayments, and the flexibility of borrowers' contracts all have an impact on both business outcomes and loan default rates. More recently, there is a growing body of literature looking at alternatives to loans, such as asset-based microfinance, that also show promise. Yet, as new innovations to microfinance are adapted around the world, further research is needed to explore which adaptations prove effective, in which contexts, and for whom.

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# Summary

Academic research has deepened our collective understanding of the benefits and challenges of microfinance. New models of lending have been developed and the more nuanced elements of microfinance have added to the accumulated pool of knowledge. In this review, we highlight key contributions to that work, and summarise the state of knowledge.

While evaluations of earlier microfinance interventions acknowledge improvements in borrowing and investment, they convene around a lack of transformational impact around important outcomes such as business profits and labour supply. However, the demand- and supply-side barriers in studying the causal effects of microfinance that were identified in early evaluations have led to more creative assessments around their features and benefits. Reviews of such work have highlighted significant heterogeneity in impacts, based on key indicators such as gender and prior business experience of entrepreneurs.

Group lending was a prominent feature in early microfinance interventions, designed to mitigate adverse selection and moral hazard through joint liability for borrowers. However, empirical evidence has found joint liability to not be a prerequisite for high repayment rates compared to alternative incentives for borrowers.

Incentives for borrowers have been proven useful in improving repayment and default rates. Making access to future loans conditional on successful repayment of previous loans, for example, has been shown to increase repayment and reduce risky behaviour of borrowers.

Microfinance loans are subject to intra-household dynamics, and interventions targeting women specifically need to be sensitive to gender norms and inequalities that favour aggregation of resources into male hands.

Frequent repayment periods are often desired by microfinance institutions for their assumed benefit of providing financial discipline for borrowers. Following the evidence, however, highlights that spacing out repayments doesn't increase default rates, and allowing sensitivity to seasonal liquidity constraints can improve outcomes for borrowers.

Likewise, flexibility in contracting and repayment timelines can yield significant benefits for borrowers in terms of profits and income. Instituting 'grace periods' or allowing short-term deferrals in borrowers' repayment plans allows them to better allocate loans towards bulky investments or in case of external shocks.

Asset-based microfinance shows promise in yielding high returns across settings. Borrowers are able to acquire more expensive assets that can be used immediately compared to traditional microfinance loans, with built-in collateral for microfinance institutions in the assets provided.

At a broader macroeconomic level, microfinance can have positive impacts on wages and consumption; although the long-run impacts are small on average, the vast majority of the population experiences welfare gains, including poor and marginal entrepreneurs.

Looking ahead, microfinance is an ever-expanding field that is significantly heterogenous across programme design, contracting, contexts, and beneficiaries. Further research is needed to explore which adaptations prove effective, in which contexts, and for whom.

This review will be updated as new information becomes available. Our hope is that by facilitating a dialogue between governments, practitioners, and researchers, these reviews will generate new research that helps fill knowledge gaps. The latest version of this VoxDevLit can be found [here](#).

# I Introduction

Fifteen years ago, the Norwegian Nobel Committee awarded the Nobel Peace Prize to Muhammad Yunus and the Grameen Bank for their work in providing microcredit. The Committee declared, in doing so, that microcredit “must play a major part” in the fight against poverty.<sup>1</sup> The period since that momentous occasion has been transformational for research on microfinance; since the 2006 award, a large body of academic work has deepened our collective understanding of every aspect on the topic.

In this VoxDevLit, we review some of the key contributions in that work. In doing so, we focus throughout on microcredit, leaving for another day the other various forms of microfinance (in particular, microsavings, microinsurance, and microequity). This review comprises six sections. In Section 2, we discuss the ‘first generation’ of microcredit field experiments, with an emphasis both on the headline results as well as the findings of heterogeneous treatment effects. Section 3 seeks to ‘unpack’ some of the key features of the classic microcredit model; we respectively consider results on: (i) group lending, (ii) dynamic incentives, (iii) targeting of female borrowers, (iv) timing of loans and repayment, (v) repayment flexibility and inflexibility, and (vi) asset-based microfinance. Section 4 focuses on the role of microfinance institutions, and Section 5 discusses the general equilibrium impacts of microcredit. We conclude in Section 6 with some general lessons and some thoughts around directions for future research.

Throughout this review, we use the term ‘microfinance’ to refer to the provision of formal financial services to poor and low-income individuals, as well as other people systematically excluded from the financial system (CGAP 2012). While microfinance is often targeted at microentrepreneurs, it is also commonly used for non-business purposes, such as consumption smoothing or for financing household expenses. Microfinance is a broad concept; in this review, we focus throughout on microcredit, leaving for another day the other various forms of microfinance (in particular, microsavings, microinsurance, and microequity). There are a range of institutions that provide microcredit, including non-government organisations (NGOs), non-bank microfinance companies, microfinance banks, financial cooperatives, rural banks, as well as state-owned institutions.<sup>2</sup> In this review, we do not cover lending services that are built upon mobile money platforms provided by telecommunications companies (such as Safaricom or M-PESA in Kenya), which are covered in the associated VoxDevLit on [mobile money](#). Mobile money is different from the loans that we discuss in this review in many ways. Specifically, it often sits outside the formal banking system since the accounts are linked to a phone number rather than to a bank account. Moreover, in most countries mobile money operates under a different regulatory framework than lending institutions. Mobile money loans are also quite different from the programs that we discuss here in terms of application and decision process, scale, and duration.<sup>3 4</sup>

This is the second release of the VoxDevLit on microfinance; as a dynamic literature review, this document will be updated on a regular basis as this exciting body of academic work continues to evolve. We look forward to readers’ feedback on the review, and to ongoing discussions on this fascinating topic. The latest version of this review can be found at <https://voxdev.org/voxdevlit/microfinance>.

1 See <https://www.nobelprize.org/prizes/peace/2006/press-release/>.

2 See CGAP (2012) for a description of the different providers of microfinance services, and a detailed analysis of the regulation of the different types of institution.

3 Mobile money loans are often disbursed instantly, and without the close personal contact between lender and borrower that is one of the distinguishing characteristics of traditional microcredit. They are also typically very small in scale (as little as a few dollars in loan amount), and with a very short duration (most are due within a month, and often after only a week or two). The lending decision process is also quite different to that used by traditional MFIs, with decisions often being based on credit scoring rules or algorithms using administrative data on the applicant’s phone usage, call and SMS logs, or contact and network data.

4 Nonetheless, there are undoubtedly conceptual ideas that are relevant to the design of both types of lending, and – in the spirit of VoxDev dynamic literature reviews – we will continue to update the two pieces in line with the fast-moving changes in the industry and the evolving regulatory environment.

## II First-generation microcredit RCTs

In this section, we review randomised controlled trials (RCTs) that provide causal evidence on the impacts of microcredit programmes, the extent to which microcredit functions as a tool for poverty alleviation, and whether microcredit affects different subsets of borrowers more than others. The findings from these studies provide evidence on whether microfinance is an effective development tool and offer important policy implications for designing and targeting microcredit products.

### IIA The impact of microcredit: Evidence from seven randomised evaluations

It is challenging to identify the causal impact of microcredit because of selection biases on both the demand and supply sides (Banerjee et al. 2015a). On the demand side, people who choose to borrow are likely to differ from non-borrowers, including in terms of characteristics that cannot be controlled for in empirical analyses (e.g. the quality of one's business or idea). On the supply side, lenders may select certain regions or markets to enter and certain customers to approve, and those selection criteria are usually not transparent to researchers. These measurement challenges have provided motivation for the large number of randomised evaluations of microcredit programmes in recent years. Here we review seven RCTs that rolled out microcredit products in a variety of contexts and countries (Karlan and Zinman 2011, Angelucci et al. 2015, Attanasio et al. 2015, Augsburg et al. 2015, Banerjee et al. 2015c, Crépon et al. 2015, and Tarozzi et al. 2015). We first summarise the features of different lending programmes and randomisation methods, and then discuss their main findings.

#### *Lender and study attributes*

The seven studies that we consider in this section are summarised in Table 1 (extracted from Meager (2019)). Those studies cover microcredit expansions in seven different countries between 2003 and 2009: Bosnia, Ethiopia, India, Mexico, Mongolia, Morocco, and the Philippines. The studies take place in both rural and urban settings. The average loan term ranges from four months (Mexico) to 16 months (Morocco), and loan interest rates were substantially lower than market interest rates in all studies except for Mexico, which offers the highest interest rate at 100% APR. The timing of follow-up surveys ranged between 14 months (Bosnia) to 40 months (India).

The classic microcredit model was developed by the Grameen Bank – the first formal microfinance institution ('MFI'), with origins in rural Bangladesh. Group-based lending is one of the most prominent and novel features of the classic microcredit model, where a group self-selects its members (normally targeting women) who are then given incentives to screen and monitor each other. Repayment is incentivised not only by joint liability and peer pressure, but also by dynamic incentives where future loans are more likely to be offered to those with good repayment performance. Borrowers are often encouraged to use loans for self-employment activities (as opposed to consumption or refinancing a more expensive loan).<sup>5</sup> The microcredit programmes studied here have many features in common with the classic model. First, among the seven RCTs, five are joint-liability loans (Ethiopia, India, Mexico, Mongolia, and Morocco), although the Mexican study does not require group members to repay defaulting loans but encourages 'solidarity pooling'. Second, all loan programmes offer dynamic incentives, where incentives to repay are generated by offering better terms on subsequent loans. Third, five of the seven studies encourage microenterprise

5 However, money is fungible and verifying the use of loans is often difficult. In practice, microcredits are also often used for home improvements (which may be 'lumpy' and hence challenging to save up for) and other consumption purposes. See, for example, Johnston and Morduch (2008), Kaboski and Townsend (2012), and Breza and Kinnan (2020). In some cases, microcredit is explicitly linked to purchasing a particular durable asset, such as bednets, latrines, or cookstoves. See, for example, Devoto et al. (2012), Tarozzi et al. (2014), Ben-Yishay et al. (2017), and Berkouwer and Dean (2020).

investments by either labelling their loans as ‘business loans’ (Mongolia)<sup>6</sup>, requiring business proposals (Bosnia, Ethiopia, Philippines), or requiring borrowers already to have a non-agricultural business (Morocco). Only the Indian and Mexican studies do not require or verify business activities or plans. The main divergence from the Grameen Bank model is that the Grameen model generally targets landless and asset-poor women, while only three studies here (India, Mexico, Mongolia) targeted women, and only Mongolia and Ethiopia explicitly targeted households below poverty thresholds.

**Table 1** Lender and Study Attributes by Country

Country	Bosnia and Herzegovina	Ethiopia	India	Mexico	Mongolia	Morocco	The Philippines
<b>Study Citation</b>	Augsburg et al. (2015)	Tarozzi, Desai and Johnson (2015)	Bannerjee, Duflo, Glennerster and Kinnan (2015)	Angelucci, Karlan and Zinman (2015)	Attanasio et al. (2015)	Crépon et al. (2015)	Karlan and Zinman (2011)
<b>Treatment</b>	Lend to marginally rejected borrowers	Open branches	Open branches	Open branches promote loans	Open branches target likely borrowers	Open branches	Lend to marginal applicants
<b>Randomisation Level</b>	Individual	Community	Community	Community	Community	Community	Individual
<b>Urban or Rural</b>	Both	Rural	Urban	Both	Rural	Rural	Urban
<b>Target Women?</b>	No	No	Yes	Yes	Yes	No	No
<b>MFI already operates locally</b>	Yes	No	No	No	No	No	Yes
<b>Microloan Liability type</b>	Individual	Group	Group	Group	Both	Group	Individual
<b>Collateralised?</b>	Yes	Yes	No	No	Yes	Yes	No
<b>Any other MFIs competing?</b>	Yes	No	Yes	Yes	Yes	No	Yes
<b>Household panel?</b>	Yes	No	NO	Partial	Yes	Yes	No
<b>Interest Rate (intended on average)</b>	22% APR	12% APR	24% APR	100% APR	24% APR	13.5% APR	63% APR
<b>Sampling Frame</b>	Marginal applications	Random sample	Households with at least one woman age 18-55 of stable residence	Women ages 18-60 who own businesses or wish to start them	Women who registered interest in loans and met eligibility criteria	Random sample plus likely borrowers	Marginal applicants
<b>Study duration</b>	14 months	36 months	40 months	16 months	19 months	24 months	36 months

Source: Meager (2019).

A key challenge of randomised evaluations of microcredit is that it is only feasible to randomise in places where microcredit is expanding into new markets or is expanding to new borrowers in existing locations. The studies thus provide information on ‘marginal’ or ‘complier’ populations of borrowers affected by

<sup>6</sup> However, in many cases, even loans labeled as ‘business loans’ were used for consumption purposes.

expansions and say nothing about the impact on long-time, 'infra-marginal' or 'always taker' borrowers (Banerjee et al. 2015c, Morduch 2020). The RCTs estimate the impact of expanding microcredit (which is often a relevant policy question), but they do not address whether microcredit has, in general, raised incomes or reduced poverty.

Another key challenge of randomised evaluations of microcredit programmes is the lack of statistical power because the loan take-up rates are typically low. Five of the seven evaluations (excluding India and Ethiopia) address this by restricting their sampling frames to individuals who are more likely to accept microcredit if treated. Those are individuals who had either: (i) indicated (pre-randomisation) that they have a business or are interested in starting one (as was the case in Mexico and Morocco, which had take-up rates of 19% and 17%, respectively), (ii) mentioned in a survey that they are interested in borrowing (as done in Mongolia, where take-up was 50%, or (iii) those who submitted an application for a loan (as done in Bosnia and the Philippines, where take-up was close to 100%). The Indian study restricted its sample to those assessed to be 'likely' borrowers, mostly those who had a working-age woman in the household and had lived in the area for several years.

In terms of experimental design, the seven studies fall into two types of RCTs: those that randomised at the individual level (Bosnia and the Philippines) and those that randomised at the community level (all other studies). Randomising at the community level means that treatment status was randomly allocated to half of the neighbourhoods in the study sample, and microcredit was then offered, either via an information campaign or via a microcredit branch opening in the neighbourhood, to eligible individuals within those neighbourhoods. These individuals may or may not have actually taken a loan. The main advantage of this approach is that it captures treatment effects at the community level, which internalises any spillovers or general equilibrium effects that occur within the neighbourhood.<sup>7</sup> In contrast, individual-level randomisation does not capture these spillovers. However, it is easier to create a sample of people who are very likely to take up credit and therefore increase statistical power. For example, the Bosnian and Filipino studies randomised treatment at the individual level and restricted their sampling frame to people who submitted applications for credit but who would previously have been on the cusp of rejection (whether due to not having sufficient collateral, a weak business proposal, or an erratic repayment history – in other words, marginal borrowers). This strategy makes the RCT feasible, but it limits estimation to the impact on people who the lenders would have rejected for seeming too risky or unlikely to succeed. Because all individuals had indicated that they wanted a loan, take up was close to 100% for both studies. Combining the two levels of randomisation by varying the treatment intensity across communities and then randomising offers within communities could be an interesting avenue for future work.<sup>8</sup>

### ***Findings on the impact of microcredit***

The evaluation results suggest several main findings. First, although access to microcredit leads to an increase in borrowing, business creation, and investment, most studies have found that this does not translate into increases in profit, income, labour supply, and **average** consumption, at least over the time horizon of one to three years post-intervention. There is also no robust evidence of gains in social indicators, such as education and health. Microcredit expansion, therefore, only had modestly positive impacts on beneficiaries, with very little evidence of transformative effects. This finding echoes earlier non-randomised evaluations (Morduch 1999). On the other hand, the studies also find little or no evidence of harmful effects, even under very high interest rates (as in Mexico).

Second, while the studies in these settings show that microcredit did not on average pull borrowers out of poverty in the short run, the evidence does suggest that it is a powerful tool for changing occupational choices. In Morocco, for example, there was a significant increase in self-employment income, but no net

7 However, this approach will not capture spillovers that occur on larger geographical scales, such as entire cities which nest both treatment and control neighbourhoods. Moreover, the relatively small first stage in many RCTs makes detectable equilibrium effects on outcomes such as wages and interest rates relatively unlikely. See Section 5 for a further discussion of equilibrium effects.

8 See, for example, Duflo and Saez (2003) and Crépon et al. (2013).

impact on total labour income or consumption. This appears to be driven by a loss in wage income, which was large enough to offset the gains in self-employment income.

There is also evidence that access to microcredit improves risk-management choices for households. In Morocco, the cheap credit enabled households to access lumpy investments such as livestock (acting as a form of self-insurance in this context) which can substitute for other risk management strategies such as income diversification through day labour. In the Philippines, there is evidence that microcredit was a preferred substitute for formal insurance as well as a complement to informal risk sharing.

Third, while many of the null results reflect a lack of statistical power, the point estimates in many cases suggest magnitudes of effects that are economically meaningful. This means that while we cannot rule out zero effects, we also cannot rule out large effects. More precision is needed, perhaps through larger sample sizes, better predictions of take-up, and meta-analysis (see the next sub-section).

Fourth, the RCTs are particular to the social and cultural contexts that shape borrowing and consumption, as shown by Morvant-Roux et al. (2014) who use a qualitative study to argue that aversion to debt undermined microcredit in the Morocco study. Similarly, Cai et al. (2020) show the importance of context in an RCT of village banks in China. There, access to microcredit increased incomes by 46% and reduced poverty by 17%. They speculate that their findings are far more positive than the RCTs described above because: (a) the programmes targeted particularly poor regions, (b) the villages started with far less access to formal finance than in the RCTs described above, (c) returns to off-farm employment were high but limited by liquidity, and (d) the microcredit contracts charged low interest rates and provided borrowers substantial time to invest before having to repay.

Fifth, the underwhelming evidence of impact leads to a puzzle that has received insufficient attention: why has demand for microcredit remained strong despite the findings of these impact studies? One reason is that the impact studies reviewed here focus on impacts of “productive” uses of credit (measured by profit rates, annualised income, and annualised consumption); this focus follows the claims of microfinance pioneers like Muhammad Yunus, who based their case for microfinance on its ability to increase profit from small business and thereby to raise yearly income and yearly consumption. Borrowers, however, may take a wider view of household finance. Evidence shows that many instead use microcredit to smooth consumption and to finance large, lumpy purchases like consumer durables or home improvements (which can be hard to save for due to their scale and lumpiness). See, for example, Johnston and Morduch (2008), Kaboski and Townsend (2012), Breza and Kinnan (2020), and Lane (2022).<sup>9</sup> Potential gains from microcredit might then be seen in changes in the timing and composition of spending during the year rather than annual averages.

Loeser (2022) addresses the impact/demand puzzle with estimates of microcredit interest rate elasticities in Mexico. The estimates allow Loeser to estimate consumer surplus from microcredit by evaluating how much borrowers substitute away from microcredit as interest rates rise (or increase their demand for microcredit when interest rates fall). This measure of value is based on borrowers’ willingness to pay for access to microcredit, rather than the direct measures of causal impacts estimated by RCTs. With this approach, Loeser finds that welfare gains from each unit of lending are small, but, due to the wide scale of microcredit in Mexico, the aggregate welfare gains from borrowing are large. The analysis comes with caveats (some borrowers may be trapped in debt and desperate to stay afloat, for example, so their willingness to pay for more loans does not neatly map into impact), but it offers a perspective in which consumer sovereignty and the fungibility of money are taken seriously as elements that make access to finance valuable.

<sup>9</sup> In some cases, microcredit is explicitly linked to purchasing a particular durable asset, such as bednets, latrines, or cookstoves. See, for example, Devoto et al. (2012), Tarozzi et al. (2014), Ben-Yishay et al. (2017), and Berkouwer and Dean (2020).



Sixth, ultimately policymakers look to benefit-cost calculations when assessing potential interventions. When looking only at benefits, the RCTs deliver estimates that are small but positive, with relatively large standard errors. Those underwhelming numbers may nevertheless yield relatively favourable benefit-cost estimates. As discussed below, the median subsidies found by Cull et al. (2018) are also relatively low. As a result, Cull et al (2018, Table 7) show back-of-the envelope calculations which suggest that the benefit-cost calculus for microcredit is surprisingly positive, especially when compared to estimates for expensive anti-poverty programs like graduation/ultra poor programs (Banerjee et al. 2015b, Bandiera et al. 2017, Balboni et al. 2020). The calculations are only suggestive, however, given the size of standard errors on the results from the RCTs and the need for assumptions about the longevity of impacts.

Finally, in most of the seven first-generation RCTs there is limited analysis of the heterogeneity of treatment effects, in which there can be potential winners and losers of microcredit expansion. There is some suggestive evidence that the programme impact on business profit is much bigger in the right tail of the distribution (Morocco and India) and that there is significant negative impact on adolescents' education among lower educated households (Bosnia). More rigorous analysis of heterogeneity is needed for evaluating the welfare effects of microcredit, designing policies, and targeting the right groups of beneficiaries. We discuss some recent developments in the next sub-section.

## IIB Heterogeneous effects

Although there is little evidence of transformative effects of microcredit on the average borrower, the impact can be heterogeneous across different types of borrowers. Understanding effect heterogeneity is important because it can help policymakers target promising borrowers and improve the overall welfare impact of lending. This leads to three recent papers using different methodologies to identify the heterogeneity of microcredit programmes along various dimensions.

The seven randomised evaluations reviewed in the previous section study microcredit expansions in seven countries with eight different lenders. Taking advantage of the heterogeneous social and economic contexts offered in those papers, Meager (2019) uses Bayesian hierarchical models to aggregate the evidence and estimate the heterogeneity in effects across the seven studies. The aggregate picture broadly mirrors the underwhelming effects described in the previous section, but heterogeneity is present. Interestingly, she finds that microcredit typically has null impacts on business profits if the entrepreneur does not have any previous business experience. In contrast, entrepreneurs who had started business operations before the microcredit expansion experience significantly larger treatment effects than others. However, while this effect is significant on average, it varies widely across the seven studies.

One explanation for this heterogeneity is that, since the cost of capital is high prior to the introduction of microcredit, those who select into entrepreneurship without microcredit may have business opportunities with relatively higher returns. Alternatively, it may also be driven by those businesses enjoying a 'first-mover' advantage, or because of advantages from accumulated business experience. Another possibility is that, if microenterprise start-up costs are important, the size of standard microcredit loans might be inadequate for many clients to start new businesses – but may suffice to help clients to expand existing businesses. Directly comparing outcomes of entrepreneurs with and without prior business cannot pin down the true explanation. To more rigorously test the heterogeneity impact of microcredit by previous business experience and mechanisms of that effect, Banerjee et al. (2019) extend the India study (Banerjee et al. 2015c) and estimate the long-run heterogeneous effects of the microcredit intervention six years after the programme. They define the pre-existing business owners as 'gung-ho entrepreneurs' (GEs), while the rest of the sample is a mix of consumption borrowers and 'reluctant entrepreneurs' (REs) who won't start a business without the cheap credit. While the long-term programme impacts are much larger and more significant than the effects documented in the previous study, they are primarily driven by the GE sub-sample. Specifically, six years after the initial microcredit expansion, the GEs demonstrate large positive treatment effects: treated GEs have 35% more assets and generate double the amount of revenue

compared with control GEs. The treatment effects for REs actually appear negative, which is driven not by negative effects on borrowers, but by the fact that microcredit led to the opening of more marginal, lower-profit businesses.

The two studies discussed above suggest an important type of heterogeneous impact of microcredit programmes: although the average impact is limited, it can indeed facilitate business growth for entrepreneurs with low wealth but with some business talent (as proxied by ownership of a business when cheap credit is unavailable). Another important factor to look at is gender; many microcredit programmes focus on female entrepreneurs, and it is interesting to test whether such programmes actually generate larger impacts for women. Using a randomised experiment in Uganda, Fiala (2018) randomly offers credit and/or business training to both male and female entrepreneurs, and finds large effects on profits and sales for male-owned enterprises that were offered loans, while neither treatment has an impact on female entrepreneurs. The results thus indicate that credit-constrained men – a sample that is not targeted by traditional microcredit lenders – can benefit substantially from microcredit.<sup>10</sup>

More work is needed to fully explore the heterogeneous effects of microcredit programmes. For example, Meager (2019) provides suggestive evidence that the microcredit impact varies by features of loan contracts, such as interest rates and loan size. As a result, future work to identify the causal effects of household experiences and loan contract terms on microcredit impact is promising.<sup>11</sup> An additional dimension of heterogeneity is to what extent, and by whom, heterogeneity is predictable. We discuss this topic below in Section 3.

### III Unpacking features of the classic microcredit model

In this section, we discuss recent literature that seeks to unpack some of the most important and distinct features of the classic microcredit model.

#### IIIA Group lending

Group lending is one of the most distinctive features of the classic microcredit model. In such arrangements, loans are typically made to individuals, but there is joint liability within a small group. Early theoretical work demonstrated the benefits of joint-liability group lending in mitigating the problems of adverse selection and moral hazard for MFIs, by providing peer screening, monitoring, and an enforcement mechanism that exploits local information (Stiglitz 1990, Varian 1990, Besley and Coate 1995, Ghatak and Guinnane 1999, Ghatak 2000). Initial empirical studies provided suggestive correlations that were consistent with this; for example, Cull et al. (2007) use data from 124 lenders collected by the Microfinance Information Exchange (MIX) and find that lenders using group lending methods faced lower levels of default. Giné et al. (2010) took the empirical analysis a step further, by implementing ‘microfinance games’: framed field experiments with microenterprise owners in Peru. They find that, consistent with the theory, joint

10 Early work suggests that most of the difference in the return to finance can be explained by women investing in industries with lower growth potential or high competition. See, for instance, Klapper and Parker (2011) for a review.

11 Recent work by Crépon et al. (2020) use an experiment in Egypt to explore the relative importance of “heterogeneity of microentrepreneur type” compared to “heterogeneity of capital support provided” (loan, in-kind, or cash grant). Using quantile regressions, they find that impacts of all three treatments are concentrated at the top of the distribution, with evidence that individual heterogeneity is more important than heterogeneity in the form of capital provided. The authors suggest that advances in targeting are at least as important as changing the design of financial products.

liability did increase loan repayment rates. Related lab evidence was provided by Fischer (2013), who found that some individuals ‘free ride’ on their partners’ insurance when part of a joint liability group, with the problem particularly severe in environments where there was imperfect information (where fellow group members were only aware of the final outcome of the investment). Further lab evidence on potential negative consequences of joint liability (in terms of excessive peer punishment) is provided by Czura (2015) and Czura et al. (2020).

Giné and Karlan (2014) provide one of the first major pieces of evidence from a large field experiment. They conducted two RCTs with a large bank in the Philippines, with the aim of evaluating the efficacy of group liability microcredit (relative to individual liability) on the monitoring and enforcement of loans. In the first experiment, half of the bank’s existing group-lending centres were randomly converted to individual liability (while maintaining all other logistical features of group lending, such as sharing of a common meeting location and payment methods). The design also allowed them to separate selection from moral hazard, since clients had already been screened for group loans, and what was being tested was whether – after peer screening – group liability had any additional effect on the mitigation of moral hazard through improved monitoring or enforcement. Note that this also limits policy interpretation, since individuals selected under group liability may be different (for example, more likely to repay) to those that would have hypothetically been selected under an individual liability product. For this reason, the authors also conduct a second RCT with members who joined the programme after the bank’s removal of the joint liability clause, as the bank expanded into new areas. In the second trial, villages were randomly offered group liability, individual liability, or phased-in individual liability (which started with joint liability and then converted to individual liability after successful completion of one loan cycle). The second experiment therefore combines selection, monitoring, and enforcement, and is less precise in testing mechanisms but more policy relevant.

From the first experiment, using data collected over three years, the authors find no change in repayment rates for borrowers who had their loans converted to individual liability, and find that it did not administratively cost more for the bank to implement individual liability. From the second experiment, the authors also do not find any differences in repayment rates, but do find that credit officers are less likely to create groups under individual liability, and qualitative evidence suggests that this was driven by an unwillingness to extend credit without guarantors. The authors discuss whether their finding of no deterioration in default rates under individual liability contradicts the theoretical predictions of adverse selection from earlier models. They argue that – even without joint liability – groups nonetheless leveraged sufficient social capital to ensure good repayment. This “peer pressure without legal pressure” can come about from a range of other features, such as public repayments, increasing loan sizes, and frequent instalments (discussed below).

Further empirical evidence comes from the previously mentioned field experiment of Attanasio et al. (2015), where villages in Mongolia were randomly assigned to group loans, individual loans, or no loans. Importantly, neither the group nor the individual lending programmes included mandatory public repayment meetings (as opposed to the aforementioned experiment by Giné and Karlan, where individual liability lending still contained ‘group lending features’). The authors also find no evidence of any difference in default rate.<sup>12</sup>

While many microfinance institutions have moved towards individual-liability loans, others continue to use explicit joint liability or other aspects of the group lending model that leverage peer pressure. Further, there continues to be interesting work on the impacts of this most quintessential feature of microcredit. For example, Attanasio et al. (2019) show (theoretically and empirically) that in general when investment risk is higher – as measured by a high average variance of subjective risk perceptions – the probability of taking up a loan is significantly lower. The authors provide evidence that joint-liability loans (compared

<sup>12</sup> Mahmud (2020) provides contrasting evidence from Pakistan: she uses an instrumental variables strategy to show that an MFI experienced improved repayment rates after shifting from an individual-liability to a joint-liability product.

to individual-liability loans) can reduce this discouraging effect of project risk on loan take up, and that risk-averse borrowers may value the insurance aspect of joint-liability microcredit contracts.<sup>13</sup> The authors conclude with a note of caution that a continuation of the trend towards liability individualisation may be beneficial to less risk-averse borrowers but may exclude some more risk-averse borrowers from the market for formal financial services, and preclude the financing of productive activities.

### IIIB Dynamic incentives

In the previous sub-section, we noted the surprising empirical result from the experimental literature: moving to individual-liability lending does not appear to have a significant effect on the default rates of clients. This comes in spite of a number of influential theoretical papers that have demonstrated the benefits of group lending in terms of mitigating adverse selection and moral hazard. One way of reconciling these results is in the fact that while many MFIs have moved away from explicit joint liability, many retained the group lending features that leveraged social capital and other incentives to maintain high repayments (de Quidt et al. 2016).<sup>14</sup> One of the most commonly cited features that was retained was ‘dynamic incentives’, which we discuss in this section.

Dynamic incentives refer to the process of ‘incremental lending’: providing initial small loans, with access to larger loans (and potentially better loan terms, in some settings) conditional on good repayment behaviour, with exclusion from future loans otherwise. The theoretical literature has long argued about the benefits of dynamic incentives for maintaining high repayment rates (Besley 1995).<sup>15</sup> However, with the proliferation of MFIs and increased competition, the power of dynamic incentives is called into question, particularly in urban areas with high mobility of populations (Morduch 1999).<sup>16</sup>

Giné et al. (2010) explicitly tested the impact of dynamic incentives in their framed field experiment with Peruvian microentrepreneurs. In it, they find that adding dynamic incentives to any loan contract does decrease the rate of default. Moving from the lab to the field, Giné et al. (2012) use an experiment to explore an intervention (fingerprint identification) that improved the lending bank’s ability to implement dynamic repayment incentives, allowing it to withhold future loans from past defaulters while rewarding good borrowers with better loan terms. This paper was written around the time of the microfinance crisis in Andhra Pradesh, India, in 2011, after which client protection was high on the policy agenda with increasing calls for MFIs to participate in credit bureaus. For credit bureaus to function effectively, one needs to be

13 Ahlin and Debrah (2022) provide further theoretical insights on the importance of project risk in joint-liability microcredit. They focus on ‘covariate risk’ (the extent to which the returns of different borrowers are correlated), which may partially or completely undo the benefits of group lending (Ghatak, 2000). Borrowers in the same group typically face many of the same aggregate economic conditions, especially in agricultural settings. The authors show that correlated risk reduces the effectiveness of joint liability, lowering the lender’s ability to improve risk-pricing and borrower outreach via group lending. They then suggest this as one explanation for what they argue is the failure of MFIs to reach farmers, and the existence of dedicated agricultural banks.

14 de Quidt, Fetzer and Ghatak (2018a) provide a further discussion of the decline of group lending, linking it with the increase in commercialisation of the microfinance sector, which we focus on in our broader discussion of microfinance institutions in section 3.

15 In theory, for the threat of contract termination to incentivise repayment requires the present value of future borrowing to exceed the value of the repayment today. Intriguingly, as shown by Bulow and Rogoff (1989), this is not easy to satisfy. Theoretical models of microcredit that assume all repayment incentives are dynamic typically rely on some combination of saving constraints, high returns to borrowing (most likely higher than those discussed in Section 2), and/or rapidly improving loan terms. In reality, dynamic incentives work in parallel to other motives discussed in this section.

16 de Quidt et al. (2018b) show that if lending depends on dynamic incentives, when there is no mechanism for information sharing information between lenders, a perfectly competitive credit market still involves some credit rationing. The role of microcredit bureaus, which are emerging in some countries such as Pakistan, remains an understudied topic.

able to identify individuals with reasonable certainty. In their experiment, Giné et al. (2012) randomise fingerprinting of loan applications in Malawi to test the impact of improved personal identification. The authors also develop a theoretical model that demonstrates how dynamic incentives (specifically, the ability to deny credit in later periods based on prior repayment performance) can reduce both adverse selection and moral hazard. Data from their field experiment demonstrated that fingerprinting led to substantially higher repayment rates for the sub-group of borrowers with the highest ex-ante default risk (based on a credit score prior to the experiment). The authors suggest that fingerprinting, by improving personal identification, enhanced the credibility of the lender's dynamic incentive. They also find that fingerprinting led farmers to choose smaller loan sizes (i.e. a reduction in adverse selection), and that high-default-risk farmers who were fingerprinted also diverted fewer inputs away from the crop that they were supposed to be farming (i.e. a reduction in moral hazard).

A related paper is the consumer credit experiment of Karlan and Zinman (2009) in South Africa. While Giné et al. (2012) had manipulated the credibility of dynamic incentives, Karlan and Zinman (2009) informed borrowers of the existence of dynamic incentives using a field experiment with a major South African lender. The authors randomised 58,000 direct mail offers to former clients while varying interest rates and dynamic incentives. Their particular dynamic incentive involved making the interest rate on future loans conditional on the repayment behaviour on the current loan. They find that clients offered dynamic incentives defaulted an estimated 13 to 21% less than those who were not.

### IIIC Targeting female borrowers

As discussed earlier in this review, informal pressure has been an important aspect of any discussion of microcredit; indeed, the traditional group-lending model is one that relies heavily on informal community pressure as a way of ensuring loan repayment. In recent years, however, the empirical literature has gone further: testing how sharing norms may limit the efficacy of credit for borrowers by acting as an informal tax on the capital that loan products provide. Specifically, several recent papers emphasise the importance of intra-household sharing norms and, in particular, show novel ways in which financial products can help women to protect their personal wealth.

The recent work of Bernhardt et al. (2019) is a key contribution for thinking about returns to capital and sharing norms. Bernhardt et al. re-analyse data from three earlier experiments: the RCT of Field et al. (2013) (which we summarise below), as well as the 'capital drop' experiments of de Mel et al. (2008) and Fafchamps et al. (2014). Each of the three papers found stronger average effects for male-owned enterprises than for female-owned. In each case, Bernhardt et al. show important effect heterogeneity among the group of female respondents, comparing those in single-enterprise households with those in multiple-enterprise households. As the authors explain, "when both male and female entrepreneurs are present, households direct more capital toward male relative to female-owned investment opportunities". Similarly, Fiala (2018) re-analyses results from a two-year follow-up survey on a field experiment that provided loans, grants, and training to microenterprise owners in Uganda. Fiala shows important effect heterogeneity by behaviour in a 'hiding game' played with respondents, arguing that this is "consistent with women having little control over resources, and so hiding money is the only way to retain control".<sup>17</sup>

This key insight – that microcredit might have important impact heterogeneity based on intra-household norms – resonates with two recent experiments on the design of financial products. Field et al. (2019) randomly varied whether wages paid to women in rural India from the National Rural Employment Guarantee Scheme were deposited into a woman's personal bank account or into the account of the male

17 A separate literature considers such 'hiding games' in a variety of contexts. This is not the focus of the current review, but the interested reader should consult, for example, Jakiela and Ozier (2016), Schaner (2015) and Squires (2018). Similar findings have been documented in qualitative studies; for example, Friedson-Ridenor and Pierotti (2019) find that women in urban Ghana hide their income and business growth in order to reinforce their husbands' role as the primary providers.

household head. The authors find that women who received pay into their personal account increased their labour supply – both in public and private sectors – and that their husbands reported fewer social costs to having a wife who works. While not a microcredit experiment as such, this paper is nonetheless highly relevant to the design of financial products, showing that innovation in financial design can help to empower women in low-income contexts.

Riley (2022) takes these ideas to the domain of microcredit. Riley reports results from an experiment involving 3,000 female clients of BRAC in Uganda, in which some respondents were randomly assigned to receive their microcredit lump sum in a mobile account, whereas others received the lump sum in cash.<sup>18</sup> Eight months after dispersal, Riley finds that women who received the lump sum in a mobile account had, on average, 15% higher profits and 11% more business capital. Further, she shows significant heterogeneity by an index of baseline sharing pressure, such that those who were subject at baseline to greater family sharing pressures enjoyed significantly larger benefits from the disbursement into a mobile account.<sup>19</sup>

### IIID Timing of loan and repayment

Another prominent feature of the classic microcredit model is the required frequency of repayments. Compared to most loan products around the world, microcredit loans are characterised by very high-frequency repayment requirements – with repayment biweekly or even weekly quite common. Despite their higher transaction costs, many MFIs have traditionally made strong claims about the benefits of regular repayment schedules, often framed in terms of inculcating ‘fiscal discipline’ for borrowers and maintaining high repayment rates. For example, regular repayments are hypothesised to benefit the ‘screening out’ of undisciplined borrowers because loan officers and peer groups get an early warning from those borrowers about potential future problems. Frequent repayment of small sums can also help borrowers make their payments without needing to accumulate large sums of cash at home, which can be difficult due to sharing pressure (discussed above) or self-control issues (discussed below).

Fischer and Ghatak (2016) take a closer look at the theoretical underpinnings of high-frequency repayment. Their starting point is that “the pervasive belief among practitioners that frequent repayment is critical in achieving high repayment rates is puzzling. Classically rational individuals should benefit from more flexible repayment schedules, and less frequent repayment should increase neither default nor delinquency”. The authors propose a theoretical explanation for the purported benefit of fiscal discipline using the concept of ‘present bias preferences’. Intuitively, when borrowers are present biased, the immediate gain to defaulting on any large repayment is subject to significant temptation. When these payments are spread out, the instantaneous repayment burden at any time is smaller and less subject to temptation. But the authors highlight a trade-off: frequent repayment means that at the time of the first payment, the rewards (access to future credit) are further away from the repayment decision, and thus more heavily discounted.<sup>20</sup>

The theoretical literature highlights the ambiguous effect of repayment frequency. Field and Pande (2008) set out with the empirical question: do lower-frequency payments affect the probability of loan default? The authors implement a field experiment in urban India with one hundred groups, each consisting of

18 Riley also tests a third arm in which respondents received the lump sum in cash and also had a mobile account provided; she finds no significant effect of this treatment relative to receiving the lump sum in cash.

19 More generally, these insights resonate with earlier results on the importance of social pressure for explaining borrowing behaviour. For example, Baland et al. (2011) study credit cooperatives in Cameroon; they find that 19% of loans taken are fully collateralised by savings held with the same institution, and rationalise this behaviour as a form of ‘pretending to be poor’ to avoid sharing pressure from friends and relatives. Similarly, Aker et al. (2016) run a field experiment to test the effect of mobile phone disbursement of cash transfers in Niger; the authors suggest that using mobile transfers may improve intra-household bargaining power for women.

20 Jain and Mansuri (2003) consider an alternative explanation of high-frequency repayments: that tight repayment schedules force MFI clients to borrow from informal lenders in order to meet these regular payments, and that the MFI essentially relies on these informal lenders’ superior monitoring technology.

ten first-time borrowers. Each group was randomly assigned to either a weekly or monthly repayment schedule (after group formation had been completed and clients approved for the loan). The headline result is that switching from weekly to monthly instalments did not affect client repayment capacity, with delinquency rates low and not significantly different across clients on weekly and monthly repayment schedules. The authors argue that switching to lower frequency repayment schedules could allow MFIs to save dramatically on the transaction costs of instalment collection while facing no additional default risk. (In a later study, Field, Pande, and co-authors also make an important contribution in exploring a related but distinct form of flexibility ('repayment grace periods'); we discuss this in the next sub-section.)

Another important aspect of 'timing' is the timing of disbursement of the loan principal. As highlighted by Morduch (1999), one implication of the classic model is that, since repayment begins before any feasible investment of the funds bears fruit, the classic microcredit contract appears to be inappropriate for households without a diversified and steady income stream (against which MFIs are implicitly lending), particularly for households exposed to highly seasonal occupations such as agriculture. A recent field experiment by Burke et al. (2019) sheds light on this. The authors demonstrate that lack of access to credit for farmers limits their ability to deal with large and regular fluctuations in local grain prices over time, which often forces farmers to "sell low and buy high". The authors document that grain prices regularly rise by 25 to 40% between the harvest and lean seasons, and often by more than 50% in isolated markets.<sup>21</sup> Their starting point is the seemingly puzzling behaviour of many farmers, who – despite having access to relatively cheap storage facilities – tend to sell their crops immediately after harvest (when prices are low) and then, several months later during the lean season, return to the market as customers once prices have risen. The authors posit that financial market imperfections contribute to the apparent inability to exploit this arbitrage opportunity, and having to sell grain at low post-harvest prices in order to meet urgent cash needs (e.g. to pay school fees), then buying it back a few months later at higher prices to meet consumption needs. In essence, households use the grain market as a high-interest lender of last resort. The authors work with a local agricultural NGO and randomly offer some smallholder maize farmers a loan at harvest. They found that farmers offered the harvest-time loan sold significantly less maize in the period immediately following harvest, which led to a large increase in revenues for households. Other evidence on the interaction between liquidity constraints, seasonality, and credit timing is provided by Shonchoy (2014), Casaburi and Willis (2018), Fink et al. (2020) and Beaman et al. (2020).

### IIIE Repayment flexibility and inflexibility

Standard microcredit contracts typically require regular repayments at a fixed frequency – usually beginning shortly after the initial disbursement of the lump sum. As we noted in the previous sub-section, it is not difficult to see why such contracts might be attractive to lenders: by requiring their clients to commit to a regular repayment schedule, lenders may feel more confident that they are attracting responsible borrowers and encouraging those borrowers to be more faithful as clients. However, it is not at all clear that such contractual inflexibility is helpful for borrowers; indeed, it may be that contracts can help borrowers by incorporating some option for repayment flexibility.

The seminal paper on this issue is the work of Field et al. (2013). Field et al. worked with a sample of 845 women in low-income urban neighbourhoods in Kolkata who received microloans ranging in size from about US\$ 90 to 225 to be repaid fortnightly over a total of 44 weeks. The authors randomised these clients into two groups: a control group, who were obliged to start their repayments two weeks after disbursement, and a treatment group, who were obliged to start repaying only after a two-month 'grace period'. This grace period generates substantial and sustained benefits for clients. In the short run, microenterprise investment among the treatment group was about 6% higher than in the control group. In a long-run follow-up conducted nearly three years after disbursement, treated clients enjoyed significantly higher business profits (a 41% increase in weekly profits) and greater monthly household income (an

<sup>21</sup> Using price data from almost 1200 retail markets in 32 countries in Sub-Saharan Africa, Cardell and Michelson (2022) emphasise that this is not a universal phenomenon – maize prices do not always rise after the harvest.

increase of about 20%). Field et al. interpret their results as showing that the grace period allowed clients to accumulate a larger initial lump sum, and therefore facilitated investment in higher-return lumpy assets. The authors find important heterogeneity in their estimated profit impacts: effects are larger for the most risk-averse clients and for those with fewer means of dealing with short-term liquidity needs (proxied here by respondents having a chronically sick member of their household). It is worth noting, however, that the authors also find higher default rates among the treated group: specifically, about 9% of clients in the treatment group had failed to repay 24 weeks after the loan was due, compared to only 2% in the control group.

Battaglia et al. (2018) present an innovative variation on the idea of a grace period: they allow the grace period to be taken at a time of the client's choosing. This allows the authors to distinguish between the two main advantages that repayment flexibility might confer, namely: (i) flexibility can help to ease credit constraints (by allowing clients additional time to repay, and thus providing an opportunity to accumulate a larger lump sum – as in the work of Field et al. (2013)), and/or (ii) flexibility can offer implicit insurance (by allowing clients to defer repayment if facing an adverse shock). To distinguish these mechanisms, Battaglia et al. conduct a field experiment among clients of BRAC in Bangladesh. Clients in the control group received a loan to be repaid over a 12-month cycle, with monthly instalments of equal size. Clients in the treatment group were provided with two vouchers to be used at times of the clients' choosing. Each voucher, when used, would allow a client to defer one month's repayment (thus extending the total loan cycle). As the authors explain, this provides clients with a direct choice between accumulating a larger lump sum (specifically, by using the two vouchers in the first two months), and enjoying implicit insurance (by holding the vouchers, to be used if negative shocks were to strike).

Battaglia et al. find strong evidence for the second of these motives, as well as substantial overall benefits from the vouchers as a consequence. Specifically, voucher usage is indeed dispersed over the loan cycle: only about 2% of clients use the vouchers in months one and two, and 40% of clients do not use any voucher at all, despite having taken up the flexible contract. On average, treated clients have business assets worth 51% more than those of the control group. As the authors explain, those treated clients “generate 87% more revenues, have 25% larger profits, and experience 80% higher sales volatility”. Impacts are concentrated among poorer borrowers on traditional (uncollateralised) contracts, which have an average loan size of about US\$ 275. Unlike Field et al. – and consistent with the implicit insurance provided by the flexible vouchers – Battaglia et al. find that their treated clients have a lower probability of default.

In related work, Barboni and Agarwal (2023) report results from a field experiment in Uttar Pradesh, India, conducted with a group of (mostly male) borrowers who had just applied for their first individual loan (having previously participated in joint-liability products). Clients in the control group were offered a 24-month fixed-repayment loan for about US\$ 500, with an interest rate of 24%. In the treatment group, clients were allowed to choose between that standard contract and a contract with additional flexibility. Specifically, the flexible contract was offered at an interest rate of 26% and included an option to exercise a ‘repayment holiday’ of three consecutive months.<sup>22</sup> Upon taking the repayment holiday, the monthly repayment obligations would be re-calculated to ensure that the contract's end date was not affected. As the authors explain, their flexible contract “can be thought of as a ‘line of credit’ available to borrowers”.<sup>23</sup> Barboni and Agarwal have three key results. First, they find no difference in the probability of late repayment, but a large and significant increase (from 30% to about 40%) in the probability of having repaid

22 The contract was designed such that respondents could use one repayment holiday in the first year and one in the second; in practice, technical problems prevented repayment holidays being used in the second year.

23 Lane (2022) directly explores the benefits of a line of credit that helps households in Bangladesh cope with shocks. He finds that a loan product that guarantees credit access to agricultural households following a flood increases their welfare through two channels: an ex-ante insurance effect, whereby households increase investments in risky but profitable production; and an ex-post effect, whereby they use the loan to smooth consumption. Also see Aragón, Karaivanov, and Krishnaswamy (2020) for evidence of positive effects from credit lines to street vendors in India.



the loan early. Second, the authors find an improvement in several measures of business performance, including in sales and profits. Finally, the authors are able to describe carefully the characteristics that predict opting into the more flexible contract: groups that are more likely to opt for flexibility are “time-consistent borrowers, those who have an appetite for risk, those who report being more worried about future expenses, but also those who report giving financial advice to others”.

The previous two papers found that offering flexible-repayment loans to existing borrowers led to improved business performance and loan repayment. In a recent paper, Brune et al. (2022) provide a different perspective, by exploring the established microlender practice of offering rigid contracts to first-time borrowers. They partnered with a Colombian lender that offered first-time borrowers a flexible loan that permitted delaying up to three monthly repayments. A group of prospective borrowers was offered and disbursed the flexible credit, another was offered the standard credit but then surprised with the flexible credit at disbursement, and one last group of borrowers was offered and disbursed the standard rigid credit. This design allowed the authors to test both for selection effects as well as contract effects on choices and outcomes after borrowing (in a similar spirit to the aforementioned work of Karlan and Zinman 2009). The paper finds no differences in the take-up rates, characteristics, or outcomes of the group that was offered and disbursed flexible credit compared to the group that was offered the standard contract but then had flexible credit disbursed. The authors argue that the lack of selection effects suggests only a small share of profitable entrepreneurs would reject the standard contract but accept the flexible contract. In addition, they find that flexibility increases default among first-time borrowers, which offers a cautionary tale about providing flexibility to inexperienced borrowers. The evidence thus aligns with the established microlender practice of offering rigid contracts to first-time borrowers. Interestingly, the authors report that the lender later introduced a modified version of the flexible loan for non-study clients, but that only credit officers (and not clients) decided when to use a pass (and clients were not made aware of this feature ahead of time). They report that pass use thus became merely a tool for credit officers to adjust default and pursue enforcement and refinancing when needed.

Continuing on the theme of ex-post flexibility for defaulting clients, Fiorin et al. (2022) explore how borrowers respond to a debt moratorium. Debt moratoria allow borrowers to postpone loan payments and are frequently used to soften the impact of economic crises, even in contexts where forbearance is not mandated. However, one concern is that moratoria might give rise to moral hazard, by changing borrower beliefs about credit enforcement and the likelihood of future relief. The authors partner with a large consumer lender in India to issue randomised debt forbearance offers to a nationwide sample of borrowers. In the experiment, borrowers receive identical forbearance offers that are presented either as an act of generosity by the lender or as the result of government regulation. They find that delinquent borrowers who are offered a debt moratorium by their lender are 4 percentage points less likely to default on their loan, while forbearance has no effect on repayment if it is granted by the regulator. Borrowers receiving forbearance offers from their lender are also more likely to do future business with the lender: in a follow-up experiment they find that demand for a non-credit product offered by the lender is 10 percentage points higher among customers who were offered repayment flexibility by the lender than among customers who received a moratorium offer presented as an initiative of the regulator. Overall, their results suggest that, rather than generating moral hazard, repayment flexibility through debt forbearance can improve loan repayment and strengthen banking relationships.

We have seen evidence that payment flexibility can be beneficial in some circumstances, such as for graduated borrowers who may value contractual innovations that allow them to better match their loan repayments to their underlying income flows and liquidity requirements.<sup>24</sup> On the other hand, as discussed

24 A recent literature has explored a more direct way of linking loan repayments to incomes (compared to the use of grace periods), through ‘equity-like’ contracts with performance-contingent repayments. While revenue-sharing contracts have been studied extensively in the literature on sharecropping (Stiglitz and Weiss 1981, Burchardi et al. 2019), along with the various challenges related to costly state verification, adverse selection and moral hazard (Stiglitz 1975, Townsend 1979), there is a need for more conceptual work and research outside of agricultural settings (De Mel et al. 2019). Fischer (2013) uses a lab-in-the-field experiment to

in Brune et al. (2022), a rigid repayment structure may help other borrowers in fostering discipline in the face of temptations or procrastination. There is evidence that such fiscal discipline can be important for some clients due to its implicit commitment value: regular repayments of small sums can help such clients in the accumulation of a valuable lump sum (see, for example, Rutherford 2000, Collins et al. 2009, Morduch 2010, Bauer et al. 2012, and Afzal et al. 2018). The trade-off between these objectives – and the question of which innovations to offer, when, and to whom – remains an important open area of research in contract design.<sup>25</sup>

### IIIF Asset-based microfinance

Several recent studies consider variations on ‘asset-based microfinance’, referring to financial products that are explicitly tied to investment in a specific asset. It is now well-established, through a body of experimental field work, that the returns to providing appropriate fixed assets to microenterprises are high and sustained. This is true of urban microenterprises (see, for example, De Mel et al. 2008, De Mel et al. 2012, Fafchamps et al. 2014, and Hussam et al. 2020), and of asset transfers in rural agricultural settings (see, for example, Banerjee et al. 2015b, Bandiera et al. 2017, and Balboni et al. 2020).<sup>26</sup>

It remains a very open question, however, whether high returns can also be achieved through credit products; if so, this could open exciting possibilities for providing large fixed assets in a way that is financially sustainable for microfinance institutions. A few recent papers consider this kind of asset-based microfinance.

Jack et al. (2019) work with a Kenyan dairy savings and credit cooperative making loans to farmers for the purchase of large water tanks. The cooperative’s standard credit contract requires clients to have deposits with the cooperative worth one-third of the value of the loan; this acts as collateral for one-third of the loan, with the remaining two-thirds secured by guarantors (either through savings or shares held in the cooperative). This contract has a take-up rate of only about 2%. Jack et al. randomly offer some borrowers the opportunity instead to take a contract in which 96% of the value of the loan is collateralised through the water tank itself (with the remaining 4% being a standard deposit requirement). The authors find that this innovation massively increases take-up from about 2% to about 40% and conclude that, under the standard contract, “95% of potential tank purchasers would have been prevented from purchasing tanks due to credit constraints”. The authors find an increase in average late balances, but with a very small magnitude (less than 1% of the total loan value).

The results of Jack et al. suggest exciting possibilities for contractual innovations that tie loans more directly to the purchase of investment assets. Specifically, the key result indicates that asset collateralisation may make it viable for lenders to extend larger loans to credit-constrained borrowers. This basic result aligns with earlier quasi-experimental research; in particular, Assuncao et al. (2014) study a 2004 Brazilian legal

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overlay profit-sharing on top of joint liability credit arrangements, and finds that the inclusion of equity-like features can incentivise higher risk-return investments, especially for the most risk-averse borrowers. However, De Mel et al. (2019) highlight the difficulties of implementing micro-equity investments (that involve taking an actual ownership share in microenterprises) in environments with weak contract enforcement, using a proof-of-concept study in Sri Lanka and a novel self-liquidating, quasi-equity contract. Cordaro et al. (2022) take a different approach, implementing ‘equity-like’ contracts with performance-contingent repayments, but in which there is no formal ownership shares in the microenterprises (the sharing is in the revenue stream, which is observable in their setting due to them working within the supply chain of a large multinational food company in Kenya to finance productive assets for their micro-distributors).

25 In recent work, for example, Afzal et al. (2021) offer a commitment finance contract, which they cross-randomise with a series of behavioural ‘add-ons’ (specifically, repayment reminders to the client and to a close peer, and variations that both add flexibility and add additional penalties for contractual default). The authors find no additional demand for these contractual add-ons.

26 For contrasting evidence, see Bauchet, Morduch, and Ravi (2015), who study an ultra-poor programme in Andhra Pradesh and find “no lasting net impact on income or asset accumulation”.

reform that made it easier for borrowers to sell cars that had been repossessed as collateral for failed auto loans. Assuncao et al. find that the reform “expanded credit to riskier, self-employed borrowers who purchased newer, more expensive cars” – but that it also increased loan delinquency and default.

Following these insights, Bari et al. (2021) partnered with a Pakistani MFI to offer asset-based financing to graduated microenterprise borrowers in and around Lahore. The MFI randomly offered some borrowers a contract to purchase a fixed asset for their business. Repayments were made over 18 months, using a ‘hire-purchase’ arrangement where, as in Jack et al. (2016), the asset served as collateral for the loan. This allows the MFI to make much larger loans than would otherwise be commercially feasible in such a context. Specifically, the MFI agreed to finance assets worth up to US\$ 1,900 per borrower: around four times the size of the MFI’s maximum standard loan. The authors observe high take-up rates and find large and significant increases in business assets, business profits, household income, and household consumption.

Interestingly, Bari et al. find that their results are very stable over time: the authors conduct follow-up surveys at three, six, 12, 18, and 24 months, and find essentially the same treatment effects across each follow-up wave. Viewed through the lens of a standard household intertemporal optimisation framework, this poses something of a mystery: given that household returns to microenterprise capital investments are high, why does the control group not simply accumulate capital through small incremental investments each period? To answer that question, Bari et al. build and calibrate a dynamic structural model in which household enterprises face a ‘dual-asset conundrum’: they can hold wealth either in a low-return liquid asset or in a high-return fixed asset that has large non-convex adjustment costs. (Specifically, following Field et al. (2013), Bari et al. require that, if the household is to invest in fixed capital, it must make a large investment: “a household cannot buy or sell a rickshaw one wheel at a time”.<sup>27</sup>) The authors’ calibration results imply an important role for such costs; this implies that – at least for graduated borrowers – there may be substantial welfare gains through microfinance contracts that provide a large collateralised asset, rather than contracts that seek to encourage enterprises to accumulate such assets through incremental increases in wealth.

In both Jack et al. (2019) and Bari et al. (2021), the asset that is financed is the same asset that serves as collateral. Of course, this need not be the case: in many contexts, it is possible to finance the purchase of one asset by pledging a different asset as collateral. This is a theme explored by Carney et al. (2022), in the same setting as the earlier work in Jack et al. (2019). Carney et al. run an experiment with Kenyan dairy farmers, in which they randomly offer farmers either a ‘Same-Asset Collateralised Loan’ (SACL) or an ‘Other-Asset Collateralised Loan’ (OACL); the former refers to the asset being financed, whereas the latter relates to some assets that the household already owns. These loans are provided to purchase either a milk can, a cow sprayer, cooking pots, or a large thermos (each having a market value of approximately US\$30). The authors find a large and significant increase in the average willingness to pay for a new item under SACL relative to OACL (specifically, a difference of about 15%) – though they find no difference in default rates between the two types of loan. The authors interpret these results in terms of (i) an endowment effect over the assets (such that borrowers are more concerned about the prospect of repossession of assets they already own than assets they are considering purchasing), coupled with (ii) naivete about their likely future attachment to the new asset. The results imply that there is likely to be underinvestment in goods that are difficult to use as collateral.

One response to this problem is for lenders and policymakers to seek out innovative alternative methods for collateralisation. This is a theme explored in a recent paper by Gertler et al. (2021), who test the potential for ‘digital collateralisation’ – in which repayment failures trigger ‘lock-out’ from an asset, rather than physical repossession. Gertler et al. run a field experiment with a Ugandan pay-as-you-go lender, whose existing business model involves such a lock-out technology. Gertler et al. randomly assigned respondents into a control group (who did not receive a loan offer), a ‘Secured’ treatment group (who were offered a loan in return for agreeing to digital collateral) and an ‘Unsecured’ treatment group (who

27 For earlier models of capital lumpiness and microfinance, see, for example, Banerjee et al. (2015a) and Besley et al. (1993).

were offered the same loan, but without requirement for collateralisation). Among those agreeing to the ‘Secured’ treatment, the authors randomly informed some that they would receive the loan without the collateral requirement: this ‘Surprise Unsecured’ treatment allows for the separate identification of selection effects from moral hazard effects (following the design in Karlan and Zinman 2009). The authors find that (i) take-up was about six percentage points lower for customers offered the secured loan, (ii) but average repayment increased by 11 percentage points under the secured loans (approximately two-thirds of which was attributable to moral hazard; one-third to adverse selection). As Gertler et al. conclude, “digital collateral increases the share of customers to whom a company can profitably offer loans”.<sup>28</sup>

Interestingly – and echoing the ‘SACL/OACL’ distinction in Carney et al. (2022) – the prospects for digital collateralisation are not limited to contexts in which the loan finances the lockable asset. Indeed, Gertler et al. study a loan product that provides for payment of school fees – which is collateralised through lock-out through solar-home systems that the households already own. Of course, as in any context in which a borrower provides collateral, lenders and regulators in this space need to be cognisant of potential hardships that defaulting borrowers face – both hardships triggering default and hardships caused by lock-out.<sup>29</sup> This is a point considered by Gertler et al. – who argue, through a theoretical model, that “an intermediate degree of lockout can be welfare maximising”.<sup>30</sup>

## IV The role of microfinance institutions

Commercialisation of microfinance institutions (MFIs) has long been a contentious issue.<sup>31</sup> For many people, the idea of using ‘market principles’ for the management of MFIs compromises the original idea of microfinance as a poverty reduction strategy. For others, it is the only sustainable path forward for the industry, with the often-heard ‘win-win’ proposition that by adopting commercial principles and practices MFIs can do more to reduce poverty.<sup>32</sup> One justification is that, by moving away from subsidy dependence, institutions will be able to grow beyond the limits of donor budgets, expanding their outreach to serve more people; but to be able to reach equity investors and disburse profits to shareholders, MFIs need to become fully regulated, commercial businesses. For those concerned about ‘mission drift’, the involvement of profit-driven shareholders limits social objectives.

A number of studies have explored the impact of MFI commercialisation. For example, de Quidt et al. (2018a) show that commercialisation leads to a decrease in joint-liability loans.<sup>33</sup> In this section, we begin by discussing the reality on the ground: how much of the microfinance sector continues to rely on subsidies?

28 See also Alibhai et al (2022), who use psychometric scoring to substitute for collateral in assessing eligibility for loans of up to US\$7,500 in Ethiopia; the authors argue that such scoring highlights “the potential for using innovative technologies to extend entrepreneurial finance to underserved markets”.

29 For example, Waldron and Swindon (2018) describe the humiliation of one Ugandan client who lost access to electricity for non-payment of a PAYGO solar loan. Similarly, Corkery and Silver-Greenberg (2014) describe the consequences of lock-out for a subprime auto borrower in the United States.

30 As the authors explain, “Stronger lockout destroys more surplus (i.e., household utility) when it is employed, which can offset the welfare gains of the credit expansion”

31 See Armendáriz and Morduch (2010) for an extensive discussion of MFI commercialisation and regulation.

32 Further, some argue that pursuing a “double bottom line” may actually lead to confusion and under-performance from multitasking problems. Karlan et al. (2018) provide some evidence for this. They worked with two for-profit social enterprises to incorporate a poverty measurement tool into their loan screening process and found that this targeting actually backfired, with no significant effect on reaching poorer borrowers, and actually lower-performing loans.

33 The same authors also explore theoretically the impact of market structure on borrower welfare (de Quidt et al. 2018b). Focusing on the role of competition, McIntosh and Wydick (2005) find evidence that competition exacerbates asymmetric information problems over borrower indebtedness, making poorer borrowers worse off. Baraton and Léon (2020) find that competition with commercial banks can impact the intensive margin, with MFIs offering borrowers larger loans and/or lower collateral requirements.

The question of subsidies is critical when it comes to microfinance policy. In particular, how do we weigh the potential benefits of microcredit with its cost? Can we compare this cost-benefit ratio to other prominent interventions (such as cash transfers or vocational training programmes)? In this piece, we have primarily concerned ourselves with investigating the benefits of microcredit, which reflects the focus of most of the academic literature. Cull et al. (2018) address the other side of the ‘benefit-cost conversation’, using data from 1,335 MFIs between 2005 and 2009, jointly serving 80.1 million borrowers. They find that the costs of making small loans to poorer clients are high, with subsidies often necessary to deliver services when revenues do not cover costs. The authors use a method that accounts for the opportunity costs of all forms of subsidies (donated equity, borrowing at below market rates, and in-kind subsidies such as donated equipment, training, or labour). They find that the median institution receives five cents of subsidy per dollar lent and US\$ 51 of subsidy per borrower (in PPP-adjusted terms). The relatively low levels of median subsidy suggest that even modest benefits of microcredit could yield impressive cost-benefit ratios. The distribution of subsidies is highly skewed, however, with an average subsidy of 13 cents per dollar lent and average subsidy per borrower of \$248. The data also show that subsidies per borrower are substantially higher for commercial microfinance banks and some non-bank financial institutions that make relatively large loans. MFIs that are organised as NGOs, catering to the poorest borrowers, generally relied less on subsidies. Overall, the results challenge the narrative that subsidies are initially helpful but will naturally disappear over time. The authors conclude that the long-standing debate about subsidies and commercialisation, which generally argues against the continued use of subsidies, appears to be out of alignment with realities on the ground. They suggest a transparent conversation about the uses and patterns of subsidies to understand how they can be used optimally. Another lesson we can draw is the importance of pursuing new ways to change the cost structure of MFIs, particularly with digital payments and innovations like mobile money, which have the potential to dramatically change business models (Suri 2023).

Next, we move to thinking more deeply about one of the main components of the cost of doing microfinance: staff. In what remains such a labour-intensive sector, it is critical to think about the mechanics of how loan officers select clients, disburse loans, and how they are incentivised, with clear implications both for MFI repayment rates as well as the economic and social impacts for borrowers. Maitra et al. (2017) begin with the hypothesis that the failure of the traditional group-based microfinance product to increase borrower incomes (as discussed in Section 2A of this piece) was due to MFIs’ inability to successfully screen out unproductive borrowers.

The authors propose what they call ‘trader-agent intermediated lending’ (TRAIL), in which the bank delegates borrower selection to an agent chosen from informal traders and lenders in the community. Their hypothesis is that, if agents earn commission based on interest paid by recommended clients, this incentivises them to select borrowers who are less likely to default. Results suggest that the TRAIL model had large positive impacts: a 27% increase in the production of the leading cash crop and a 22% increase in farmer incomes. They also find that farmers selected by TRAIL agents were more ‘able’ than those self-selected into the group-based model.

In a similar vein to Maitra et al. (2017), Hussam et al. (2020) explore the importance of selection and heterogeneous returns to capital, albeit not directly in a microcredit context. Specifically, they explore the impact of community screening for productive borrowers in Maharashtra, India. The authors ask local entrepreneurs in the community to rank their peers on metrics of business profitability and growth potential. There is an incentive for participants to rank their peers honestly in the form of rewards for accurate reports. To assess the validity of their reports, they randomly distributed cash grants to some entrepreneurs. The authors find that the information provided by community members is highly predictive of the marginal returns to capital: entrepreneurs ranked in the highest tercile earned returns that were three times the average return in the overall sample. Community ranking also outperformed a machine learning tool built using entrepreneur characteristics, implying that peer reports are predictive over and above observable traits.<sup>34</sup>

34 Hussam et al (2020) also find that borrowers themselves can predict their returns to capital, a result also shown, in a different context (agricultural loans in Mali) by Beaman et al (2020). Banerjee et al (2019) similarly show that

Similarly, Rigol and Roth (2021) conduct a novel field experiment with a large Chilean lender, to test whether organisational incentives for loan officers can hinder the graduation of promising borrowers. Specifically, the partner institution had recently introduced a separate graduation loan portfolio – implemented by different loan officers to the standard product, in a separate part of the organisation (with a separate management hierarchy). Under the status quo, loan officers were able to endorse lenders to move to the graduation portfolio. However, in doing so, loan officers risked losing compensation – because their remuneration depended upon the size and performance of their loan portfolio. Rigol and Roth study the sequential roll-out of two changes in loan officer compensation schemes.<sup>35</sup> The first change (‘mitigation’) counted graduated borrowers as if they remained part of the recommending loan officer’s portfolio, for the first six months. The second change (‘recognition’) provided rewards if graduated borrowers subsequently performed well (and retained the ‘mitigation’ reform). The authors find that the reforms caused an increase in graduation endorsements of about 5% for the ‘mitigation’ reform (1.1 additional endorsements) and then an additional 6% for the ‘recognition’ reform (making a combined increase of 2.1 additional endorsements: an increase of about 11%). Further, the authors show that loan officer endorsements are predictive of repayment behaviour (both in the standard joint-liability portfolio and in the graduation portfolio) – and that this result holds even after controlling for a vector of observable characteristics. The authors estimate that the combined effect of the ‘mitigation’ and ‘recognition’ schemes was to increase by 34% the net present value of graduation loans to endorsed borrowers – implying that strategic behaviour by loan officers is an important impediment to borrower graduation.

In recent related work, Bryan et al. (2022) run a novel experiment in Egypt, in which a large lender selected a sample of client firms that it believed might benefit from a larger loan; among this group, a control group had their loan size doubled, whereas a treatment group had their loan size quadrupled (with the treatment group offered, on average, 50% longer to repay). In comparing these groups, the authors find “mostly null average impacts of the larger loans, but important heterogeneity in treatment effects, along with strong evidence of misallocation”. The authors only discover this heterogeneity by including a combination of clients’ psychometric and cognitive data (that is, more standard data about business performance or client demographics does not suffice); this suggests that such psychometric data may be particularly important for lenders seeking to identify high-potential clients.

The findings of this set of papers (that is, Maitra et al. 2017, Hussam et al. 2020, Roth and Rigol 2021, Bryan et al. 2022) contrast with those of Vera-Cossio (2020), who finds that, in Thailand, community-allocated credit does not appear to flow to those who are needier, those who have higher total factor productivity (TFP), or those who appear to be most credit-worthy. Instead, credit appears to flow to households who are connected to members of the village council. A possible explanation for the difference between the West Bengal and Maharashtra findings of relatively efficient targeting and the Thai finding of elite capture is that in the Thai context there is little or no incentive of those allocating capital to ensure it flows to those with high returns. In a related paper, Maitra et al. (2020) show that allowing politicians rather than traders to allocate credit harms efficiency, partly due to changes in selection and partly due to changes in assistance given to borrowers by the intermediaries. Exploring ways to feasibly align lender incentives with the goals of efficiency and equity is an important area for further research.

Earlier in this piece, we discussed the theory and evidence for how the group-based lending model (including features that leverage social capital over and above joint liability, such as group meetings and public repayment) can theoretically lead to positive selection. ‘Positive’ was generally taken to mean ‘low risk of default’, and – regardless of the muted impacts of microcredit on downstream borrower outcomes – there is no doubt that the microcredit business model has been tremendously successful at getting

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“gung ho” borrowers appear to be aware of their high returns, investing both the microloan and additional credit from informal sources into their business, while non-gung ho individuals do not channel microcredit into their businesses.

35 These changes were rolled out for all loan officers – so Rigol and Roth randomise the timing of when different loan officers are asked to make graduation recommendations.

loans to the poorest borrowers and maintaining high repayment rates. However, given the findings in the literature that we have discussed in this piece as well as the debates around the economic impacts of microcredit for borrowers, these last two papers contribute to an exciting new strand of the literature that explores selection based on borrower productivity and thinks explicitly about microenterprise performance (potentially opening up new areas of microfinance product design, tailored at high-potential microentrepreneurs). In a sense, it brings us back to the apparent puzzle: why do we see high returns to microenterprises from capital grant studies, but not from microcredit impact evaluations? There are many possible explanations for this, and we have touched on the possible impact of relaxing contractual structures, but these last two papers open up an interesting frontier of thinking about selection and borrower productivity. More generally, understanding loan officer incentives and their interaction with borrowers is particularly important in a post-COVID-19 world where we may see large-scale defaults to microloans (after the expiry of widespread debt moratoria). In such an environment, understanding the incentives for loan officers is of critical importance for the welfare of the poorest borrowers (Malik et al. 2020).

## V The general equilibrium impacts of microcredit

While the impacts of microcredit on borrowers are well understood, few studies have tackled the general equilibrium (GE) impacts of microcredit programmes. There are at least three channels through which microcredit programmes might have multiplier effects (Breza and Kinnan 2020). First, if the impacts of microcredit on business outcomes grow over time (Banerjee et al. 2019), microcredit may stimulate firm investment and demand for labour. This may further lead to reductions in savings and higher interest rates, affecting the entry of new firms and the aggregate capital stock, and placing upward pressure on wages. Second, microcredit may increase aggregate demand because many borrowers use microcredit as a consumption loan (Kaboski and Townsend 2012, Tarozzi et al. 2015).<sup>36</sup> Third, microcredit access may cause households to reduce precautionary savings and increase consumption (Kaboski and Townsend 2011). Estimating the GE effects of microcredit can generate important implications for policymakers regarding microcredit provision and targeting.

A recent wave of papers uses quasi-experiments and RCTs to measure the GE effects of microcredit. For example, Kaboski and Townsend (2012) find that Thailand's 'Million Baht Village Fund' programme, which injected more than US\$ 25,000 into villages for lending, has large impacts on consumption and wages. Fink et al. (2020) carry out a study in Zambia and show that access to lean-season credit increased consumption and village-level wages. Similarly, as noted earlier, Burke et al. (2019) show that providing access to credit to farmers in Kenya during harvest time affects local prices through helping farmers delay grain sales. In a recent working paper, Breza and Kinnan (2020) study a major lending shock in India: the Andhra Pradesh crisis, during which more than US\$ 1 billion in credit was wiped out. To measure the causal impacts of credit reduction, they take advantage of the variation in the balance sheet exposure of each lender to loans in the affected state before the crisis. They find that the crisis did impact other districts of India through its effect on the balance sheets of lenders. In areas exposed, a majority of microcredit disappeared. The large negative credit shock significantly decreased daily wages, household wage earnings, and consumption.

Using RCTs to identify GE effects is challenging because it requires large-scale credit shocks at the level of entire markets. Moreover, it is hard to evaluate the macroeconomic effects of economy-wide

36 It is also possible that microcredit may affect non-borrowers indirectly through spillovers that do not take the form of equilibrium effects. One such possibility is microcredit borrowers' firms taking business from non-borrowers' firms. However, the evidence on distributional effects on microcredit in intent-to-treat studies has not found evidence of business stealing or other such spillovers (Banerjee, Duflo, Glennerster and Kinnan 2015c; Angelucci, Karlan and Zinman 2015; Banerjee, Breza, Duflo, and Kinnan 2019). A different form of spillover effect is, however, shown in Banerjee, Breza, Chandrasekhar, Duflo, Jackson and Kinnan (2021) who show that access to microfinance appears to weaken social networks in two settings in India, resulting in reduced access to informal insurance those unlikely to borrow. [See also Cai (2021) for the impacts of microcredit on risk sharing].

microcredit using existing data. Buera et al. (2020) study the short-run and long-run aggregate impacts of microcredit using a model of entrepreneurship and financial frictions. The model is disciplined and validated using two micro evaluations of microcredit programmes (Kaboski and Townsend 2012, Banerjee et al. 2015c). The authors then use the model to simulate and quantify microcredit impacts on several key macroeconomic measures of development, including output, capital, TFP, wages, and interest rates. They find that the general equilibrium effects differ substantially from the partial equilibrium impacts. In partial equilibrium, microcredit increases income and capital because it allows more people to invest, but it lowers TFP because of the entry of low productivity entrepreneurs. In general equilibrium, both wages and interest rates increase in the short run because of the rising demand for capital driven by microcredit. In the long run, the provision of microcredit lowers saving and the interest rate rises. This together with higher wages lead to only a small increase in the number of entrepreneurs. However, the average quality of entrepreneurs and the efficiency of capital allocation both improve. Consequently, the higher capital and lower TFP offset each other in the longer term, leading to a negligible impact of microcredit on output. Although the long-run GE effect is small, the vast majority of the population does benefit from microcredit, and the welfare gain is larger for the poor and marginal entrepreneurs.

## VI Conclusions and directions for future research

It is tempting in writing the conclusion of a review piece on microfinance to reach for a ‘grand unified theory’ of lending, or even to suggest some ideal kind of microcredit contract. However, if there is any single lesson to come from the exciting recent proliferation of microfinance research, it is that microfinance is an extremely heterogeneous field: the design of microcredit contracts involves many degrees of freedom, and different kinds of borrowers are likely to value microfinance for very different reasons. In this regard, it is striking that the first generation of microfinance RCTs were able to test a relatively homogeneous ‘standard’ form of microfinance contract, used in many different settings around the world; if anything, this fact – coupled with the recent design innovations tested in the literature – suggests that microfinance institutions may be ‘under-experimenting’ in the way that they design and implement their products. For this reason, recent innovations in adaptive experimental design might prove particularly fruitful when applied to the design of microfinance products (see, for example, Kasy and Sautmann (2020) and Caria et al. (2020)).

Nonetheless, it is certainly possible to summarise some general lessons – even if these must fall far short of any grand unified theory or design. On our reading of the recent literature, the key lessons are these:

- i. The ‘traditional’ model of microcredit does not have transformative effects on its borrower pool, though that class of contract may nonetheless be valued by microfinance clients for its provision of liquidity and its implicit insurance. Further, it may be possible to find substantial sub-groups for whom that kind of contract is valuable; in particular, for example, it may be valuable for clients with prior business experience.
- ii. For many clients, a key attraction of microcredit is the opportunity to accumulate a lump sum. For this reason, microcredit contracts with an initial ‘grace period’ are likely to be valuable in a wide variety of contexts. For graduated borrowers, at least, it may be that existing microfinance contracts are simply too small; ‘strongly backing’ such borrowers with contracts that provide for much larger lump sums may be a very useful innovation. Asset-based microfinance is one promising method by which a microfinance institution might viably do this.
- iii. Given the evidence that microcredit effects are heterogenous across borrowers and that different contractual forms can work in different contexts, an open research question is how microcredit can become more flexible/tailored while retaining the advantages of its more basic forms – such as transparency, simplicity, the ability to keep costs low through group disbursement and collection, and the harnessing of social capital to promote repayment.



- iv. Microcredit contracts must often be understood in the context of intra-household pressures. For this reason, contracts that allow clients greater autonomy over the use of the lump sum – in particular, contracts designed for women – may prove particularly beneficial.
- v. Different microcredit contracts clearly have different uses for different borrowers – in particular, some microcredit provides for business expansion, while much goes to consumption. There may be valuable contractual innovations in designing microfinance products that more effectively provide for business investment – and conversely, other products that more directly serve a consumption need (for example, products that are intuitive to the borrower and that incorporate appropriate consumer protection).

For all of these reasons, the optimal design of microfinance contracts is likely to remain an important challenge for many years to come, for policymakers, for microfinance institutions, and for academic researchers.

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