Getting capital to Microenterprises:
What do we know about why and how?[i]

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Key Insights

1. On average, returns to capital injections are higher than typical lending rates of micro lenders.

2. There is scope for risk-sharing capital contracts, if feasible designs can be identifiedThere is scope for risk-sharing capital contracts, if feasible designs can be identified

3. There is significant heterogeneity in these returns, with returns to male-owned enterprises, at least in some contexts, higher than those of female-owned enterprises. But there is also idiosyncratic heterogeneity that the communities of entrepreneurs understand well.

Recent research illuminates the opportunity to increase incomes of microenterprise owners through the provision of capital. Experiments providing capital grants to randomly selected subsets of enterprises show that the average increase in earnings following receipt of a grant is much higher than the interest rates charged by micro lenders. But there is important heterogeneity in the returns. Moreover, results from experiments on loans made through traditional microcredit contracts are disappointing. Research implementing tweaks to microcredit contracts and eliciting information from entrepreneurial communities on potential returns from investments shows some promise in overcoming these issues. Ongoing work on microequity contracts also offers hope for contracts that provide some risk-sharing, allowing entrepreneurs to make riskier investments.

I. Introduction

Finance has long been viewed by researchers and entrepreneurs alike as the most important constraint to microenterprises in low- and middle-income countries. As a result, the literature on constraints to capital is more established and extensive than that on most other constraints. In seminal work, Rajan and Zingales (1998) show that sectors that are capital intensive are under-represented in countries with less-developed capital markets. They show that in such countries, sectors that rely more on external finance grow more slowly and have lower rates of entry. This is a clever identification of the effect of financial constraints across a large number of high- and middle-income countries.[1]

In most low-income countries, the majority of people employed in urban economies work in enterprises with fewer than five employees. A large share of these are owners of the enterprises, often working by themselves or employing only unpaid workers from their immediate family. Recent research provides evidence on both the opportunities and limitations of providing capital to urban microenterprises. In several contexts, research has shown that the profits of such enterprises increase substantially following investments of capital. The returns have been found to exceed the interest rates charged by microlenders. That is the positive side of the story. But the data also show that capital injections alone are not enough to generate sustained growth of enterprises.

In other words, capital can raise the level of the business, but not the rate of growth. Moreover, the evidence indicates that standard microcredit models do not lead to changes even in the level of enterprise profits.

We continue to learn as new evidence is generated, and this note offers a snapshot of the state of knowledge at the time of writing. The most compelling recent research on capital and microenterprises uses an experimental methodology. The state of the research on capital in microenterprises can be summarised as follows. Evidence from several experiments assigning grants to randomly selected enterprises indicates that the marginal return to capital is high, on average, for these enterprises. In contrast, randomised experiments providing standard loans to microenterprises show little or no effect of loans on enterprise profitability or sales. Recent work attempting to reconcile these somewhat conflicting results suggests that enterprise owners taking loans choose safer, lower-return investments. The terms of the loan contract (Fischer 2013; Field et al. 2013) lead them to avoid riskier, higher-return investments. Ongoing work explores contracts that involve more risk-sharing, using equity or state-dependent debt payments. There are fewer studies on the effect of capital injections in larger firms. There are a couple of notable exception to this, which we discuss below.

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[1]The sample used by Rajan and Zingales is limited by the availability of data on accounting standards, and hence excludes the lowest-income countries.

II. Capital Injections through Grants

The first randomised control trial examining the effect of capital on firms was conducted by De Mel et al. (2008). Working in Sri Lanka, they distributed grants of 100 or 200 USD to a random subset of a sample of microenterprises. The grants allow them to isolate a shock to the supply of capital that is independent of any other characteristic of the firm. [2] Using this supply shock, they estimate that enterprises have average returns of 5-6% per month, representing annual returns of more than 60%. In De Mel et al. (2012), the authors report on a longer-term follow-up of the enterprises, showing that the returns on the initial grants are sustained five to six years later. Fafchamps et al. (2014) replicate the experiment in Ghana, again finding that marginal returns significantly exceed loan rates. In a similar experiment in Mexico, McKenzie and Woodruff (2008) find average returns of 20-30% per month.

An additional notable finding from these studies is that capital has a much more positive effect in male-owned enterprises than in female-owned enterprises. De Mel et al. (2008) estimate that marginal returns are near zero in female-owned enterprises while they are almost twice the full sample average in male-owned businesses. Fafchamps et al. (2014) find similar results for cash grants, but find positive returns in female-owned businesses for grants made in-kind (that is, through the purchase of assets for the business directly). De Mel et al. (2009) examine the results for female-owned business in Sri Lanka more closely, finding evidence of positive returns for female-owned businesses in households where women have more say in decision-making, and higher returns in sectors in which both males and females work, such as retail.

McKenzie (2017) provided much larger grants to so-mewhat larger enterprises in Nigeria, in an experiment designed around a business plan competition (YouWiN!) conducted by the Nigerian government with the support of the UK Department for International Development and the World Bank. The business plans submitted by applicants were rated by judges, with the 475 entrants rated highest nationally or in their region declared winners and awarded a grant of US$50,000. Another 1,841 entrants rated just below this highest group were "semi-finalists", and 729 of these were randomly selected to also receive the grant. The random allocation of grants within the group of semi-finalists allowed McKenzie to assess the impact of a substantial relaxation of the credit constraint conditional on being good, but not great, in the eyes of the judges.[3]

Since the competition attracted both existing businesses and proposed new ventures, the results are differentiated into these two groups. McKenzie's discussion focuses more on employment than on the effect of the grants on profit. Among start-ups, receipt of the grant led to a 37 percentage point increase in the likelihood of having a business three years later, and a 23 percentage point increase in the likelihood of having a business employing 10 or more workers. Among existing businesses, grant winners were 20 percentage points more likely to be in business, and 21 percentage points more likely to have 10 or more employees, three years later. This implies a cost per job created of US$9,600. McKenzie notes that measured profits are extremely noisy, so it is difficult to estimate the marginal returns on the grants. The regressions for both new and existing businesses show significant effects on profits only in the second follow-up survey, with the return a little under 1% per month for both groups. It is likely that these returns are lower than the interest rates

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[2]Nevertheless, the grant is not a perfectly clean injection of capital into the enterprise, because owners may either use their own resources to make complementary investments or de-capitalise the investment, for example by drawing down inventories. De Mel et al. also show that owners respond by increasing the hours they work in the enterprise, at least in the short run.

[3]McKenzie's design also allows him to ask whether judges can predict which firms will grow faster, conditional on receiving the grant. We return to this comparison below.

that these sorts of firms would pay. Given the uniqueness of the very large grants provided, it is hard to know how to generalise the results apart from the estimated returns to capital they generate. It seems

likely that the employment outcomes, for example, would have been smaller if the capital had been provided as loans rather than grants.

III. Capital Injections through Loans

Banerjee et al. (2015a) review six experiments randomising access to micro loans. The six studies use one of two different designs, and the specific design affects how we should interpret the results. Each of the six experiments plays on one of two margins. Some randomise access to credit at the neighbourhood or village level (Angelucci et al. 2015; Attanasio et al. 2015; Banerjee et al. 2015b; Crépon et al. 2015; Tarozzi et al. 2015), whereas others randomise credit to marginal clients within all neighbourhoods or lender branches (Karlan and Zinman 2011; Augsburg et al. 2015) using credit scores to identify the relevant sample. It is important to appreciate that, in both of these designs, we are learning about the effects of expanding microfinance beyond its current penetration rate; we are not learning about the effect of microfinance on *previously existing* borrowers.

Karlan and Zinman (2010) sort applicants to their partner microfinance institution (MFI) according to their credit score. Applicants with a score of 60 or above are all offered loans; those with a score below 35 are all denied loans; and those with a score between 35 and 59 are randomly sorted into one group that is offered a loan and another that is not. This implies that we can learn about the effect of loans for borrowers with credit scores between 35 and 59, but we can learn nothing about the effect of loans for borrowers with credit scores above 60, where the effect of credit could well be different (and perhaps larger). Similarly, although Banerjee et al. (2015b) randomise at the neighbourhood level, around 18% of households in their control neigh-

bourhoods obtain a micro loan around the time of their experiment. The fact that the percentage in the treatment neighbourhoods (around 27%) is larger allows the researchers to estimate the effect of microcredit on various outcomes. But this effect is estimated on the 9% of households that are marginal borrowers - i.e., those who would not borrow in the control neighbourhoods but do in the treatment neighbourhoods. The effects on the sample affected by the experiment may well be different from the average effect across all borrowers.

With these caveats in mind, the experiments show that credit has a limited effect on the growth of microenterprises. With regard to enterprise outcomes, Banerjee et al. (2015a) summarise the results of the six studies as follows:

"the lack of transformative effects is not for lack of trying in the sense of investment in business growth. There is pretty strong evidence that businesses expand, though the extent of expansion may be limited, and there are hints (eyeballing the pattern of positive coefficients across studies) that profits increase."

These findings are underwhelming in light of the much larger returns to capital found in experiments providing capital shocks through grants. Meager (2018) analyses the six studies reviewed by Banerjee et al. (2015a) and Karlan and Zinman (2010) in a synthetic manner using Bayesian hierarchical analysis. She summarises in her abstract that "[...] the impact on household business [...] is unlikely to be transformative and may even be negligible".

IV. Bridging the Gap: Grace Periods and Selection

What might explain the different outcomes of grants and loans? Where loans are made with the group-lending model, Fischer (2013) suggests that group members might pressure others in the group to make lower-risk investments that also bring lower returns. But many microlenders, including some of those in the studies summarised by Banerjee et al. (2015a), now make individual loans.

Field et al. (2013) suggest a different reason why borrowers may make investments that are sub-optimally risky. Most MFIs require borrowers to start repaying loans a week or two after the loan is dispersed, and the authors posit that this requirement for rapid repayment might limit the types of investment that entrepreneurs are willing to make. For example, they may look for investments that will quickly generate the additional revenue required to make loan payments, but that may not offer the highest return. Field et al. test this hypothesis by offering a randomly selected group of borrowers the opportunity to delay the first payment for two months. Their data show that the grace period leads the entrepreneurs to make higher-return investments. They also show that these investments are higher-risk and lead to much higher default rates among borrowers. A structural model suggests that the contract with the grace period would not be profitable for the lender, even though the social returns to that contract exceed the social returns to the standard contract.

There are vast numbers of microenterprises in any urban or peri-urban area of lower-income countries, and it is safe to assume that these enterprises vary in their potential. If lenders were able to identify those with better investment opportunities, perhaps they could design more risk-tolerant products for that subset of borrowers. It is not immediately obvious how to distinguish such enterprises, however, particularly as few employ formal accounting or even keep any written records. In this context, Hussam

et al. (2017) design a very clever experiment that allows them to ask whether peers have information about which businesses are most likely to succeed and, if so, whether we can extract that information in an unbiased manner. Tapping into peer networks, of course, has a long heritage in development entrepreneurship. The approach was integral to the group-lending model developed by Yunus with Grameen Bank (Yunus 1989). Hussam et al. (2017) carry out a project in Amravati, India that follows in this tradition. While they work with samples of subsistence businesses, their approach may have applications to more dynamic firms as well. The authors begin by dividing their sample into groups of five owners. They then ask each owner a series of questions about the characteristics of the other members of their group, including questions on education level, enterprise profits and, most importantly, how much profits would increase if they invested an additional 100 USD in the business. The design incorporates random cash grants that allow the researchers to estimate the actual marginal returns to capital in the same sample of enterprises. Although we should not necessarily expect peers to be able to predict the marginal returns of other enterprises, Hussam et al. provide clear evidence that they are able to do so - enterprises ranked in the lower tercile of expected returns ex ante show no gain in profits after receiving the cash grant, while those in the top tercile of ex ante expected gains show an increase in monthly profits of more than 20% of the value of the grant. They also show that when peers know that their evaluations will affect who receives the grants, their reports are biased in favour of family and friends. Hussam et al. implement incentives for truthful reporting that, under certain conditions, do produce less biased and more accurate reports. Whether the conditions necessary for truthful reporting can be met in practice is unclear, but the work at least shows that peers have valuable information.

Hussam et al. then compare the prediction of peers to predictions based on "hard" data from baseline surveys conducted with the entrepreneurs themselves[4]. They find that information from peers ("soft" data) has predictive power above and beyond any predictions that can be gleaned from the hard data. When comparing predictions from machine learning models with those of peers, they find that machine-learning predictions can also help to isolate the ow-ners with higher marginal investment returns (those in the highest tercile of predicted returns realise monthly returns of 18% in the grants experiment). But the soft information of peers has predictive power even after controlling for the baseline survey responses. Peers have sustained personal interactions with those they are judging, and the findings suggest that this may be crucial to the ability of judges to add value.

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[4]Fafchamps and Woodruff (2017) and McKenzie and Sansone (2017) similarly compare predictions of business plan competition panels with results from regressions or machine-learning algorithms

V. Equity Investment Models

Both grace period loans and community information show promise in bridging the gap between the high returns to investment found in the grant experiments and the lack of a similar effect found in the microcredit experiments. But underlying the lack of appeal to lenders of the grace period loans is the fact that lenders suffer the downside when the investments fail, but do not capture the upside when the investments are successful. The obvious solution to this is some sort of equity contract that allows some risk-sharing (and reward-sharing) by the investor. There are challenges with microequity contracts, however, given the lack of rigorous accounting and auditing standards and the lack of standard exit strategies for investors in these small firms. De Mel et al. (2018) report on a failed microequity experiment in Sri Lanka. Several other microequity experiments are ongoing in Pakistan, Kenya and Indonesia, though as yet there are no results from these studies.

Angel investors providing equity are active in many lower-income countries. However, the networks of such investors are informal and, as far as we are aware, there has been no analysis of their outcomes. Angel and venture investors provide a combination of capital, personalised mentoring and other inputs. Identifying the effects of these contributions on firm growth is particularly challenging because these investors combine careful selection of enterprises with post-selection interventions. Research that credibly separates the selection effect from the investment effect is rare. One interesting attempt to isolate the investment and mentoring effects, albeit using data from the United States, is reported on by Kerr et al. (2011). The researchers use data from internal records of two angel investor groups in southern California and Boston. The two groups use similar methods to select investees, with entrepreneurs making presentations in the presence of many angel investors who are members. The records of Tech Coast Investors, the Californian group, include internal discussions on each of these "pitches" showing the level of support for each pitch. Kerr et al. show that for the majority (64%) of the ideas pitched to the group, no investor is interested. The data also show that the probability of receiving funding jumps significantly after 20 angels express an interest in funding the venture - while 38% of ventures with interest expressed by between 20 and 24 angles receive funding, only 17% of those with interest expressed by between 15 and 19 angels receive funding. Kerr et al. use this discrete jump in funding rates to compare the trajectories of 46 enterprises that were supported by 20-34 angels with 41 that were supported by 10-19 angels with much lower rates of funding. A similar discontinuity is used to split the 43 pitches to the Boston angel group that were close to a funding threshold. The logic behind this "regression discontinuity" approach is that the pitches falling just above or below the chosen thresholds are likely to be similar in potential but very different in terms of the likelihood of receiving angel support. They will therefore differ in outcomes only (or at least mainly) because the group just above the cutoff received funding and related assistance from the angel group at much higher rates than the group just below.

The analysis by Kerr et al. shows that these two US angel investor groups have an important impact on the trajectory of enterprises. Data from four years after the funding decisions reveal that those receiving funding are over 20% more likely to have survived, and over 16% more likely to have either had a successful exit or have grown to at least 75 employees. We are unaware of any similar research in lower-income economies.

VI. Conclusion

Prior to the experimental work reviewed here, researchers had very diverse opinions on the likely returns to capital in microenterprises. Some believed that such enterprises faced severe credit constraints, and so the returns were likely high. Others viewed the entrepreneurs as driven to self-employment by necessity rather than choice, and hence as having limited ability to scale up or to realise high returns from capital injections. The experiments paint a nuanced picture that can be summarised as follows:

- On average, returns to capital injections are higher than typical lending rates of micro lenders.

- There is significant heterogeneity in these returns, with returns to male-owned enterprises, at least in some contexts, higher than those of female-owned enterprises. But there is also idiosyncratic heterogeneity that the communities of entrepreneurs understand well.

- There is scope for risk-sharing capital contracts, if feasible designs can be identified.

What we have learned, and what we now realise that we do not understand, provide the motivation for further work on the topic.

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