Household Matters: Revisiting the Returns to Capital among Female Micro-entrepreneurs[*]

Arielle Bernhardt (Harvard)   Erica Field (Duke)   Rohini Pande (Harvard)
Natalia Rigol (Harvard)

August 13, 2017

Abstract

Several field experiments find positive returns to grants for male and not female micro-entrepreneurs. But these analyses overlook that female entrepreneurs often reside with a male business owner. Using data from randomized trials in India, Sri Lanka and Ghana, we show that the gender gap in microenterprise performance is not due to a gap in aptitude. Instead, low average returns of female-run enterprises reflects the fact that women's capital is typically invested into their husband's enterprise. Household-level income gains are equivalent regardless of the grant or loan recipient's gender.

1 Introduction

Several studies, such as the seminal work by de Mel et al. (2008) in Sri Lanka, show that relaxing capital constraints of micro-entrepreneurs in developing countries leads to substantial profit gains. This finding indicates both that microenterprises have high returns to capital and that micro-entrepreneurs are poised to take advantage of investment opportunities when provided with the resources to do so.

An important auxiliary finding, which has been replicated in other settings, is that male *but not* female-operated enterprises benefit from access to business grants (see Table 1; Blattman et al. (2014) is one exception). A common explanation for this finding is that female-run enterprises have low returns to capital or, alternatively, that women are less able to make sound enterprise investments when the opportunity arises.[1] This, in turn, has led some to ask whether credit programs for the poor, such as microfinance, should direct loans to men rather than women.[2]

In this paper, we propose and evaluate an alternative explanation for the observed gender gap: women invest grants and loans in high-return enterprises within their household, but these enterprises are very often not their own. More broadly, we provide evidence that men and women make business decisions in the context of available opportunities and constraints within their household and not simply their own enterprise. Returns to grants and loans should, therefore, be viewed through the lens of household-level – and not individual-level – investment decisions. Using data from randomized capital shock studies in India, Sri Lanka, and Ghana, we apply this framework to show that measuring returns through enterprise outcomes, as is standard in this literature, fails to accurately capture intervention impacts on household economic outcomes.

Our approach is motivated by a simple observation: female entrepreneurs often have access to multiple investment opportunities in their household. Among the Indian, Sri Lankan, and Ghanaian entrepreneurs in our samples, the share of females who live with another business owner at baseline ranges from 41% to over 50%. In contrast, less than a third of male entrepreneurs live with a second enterprise owner.[3]

We study the relationship between household- and individual-level investment decisions by measuring the effect of increased financial access for one household member on *all* sources of income in a household. We first consider investment responses among participants of a field experiment we conducted with microfinance clients in Kolkata, India (the primary results of which are reported in Field et al. (2013)) and among the participants of a randomized grant

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[1] In de Mel et al. (2009), the authors find suggestive evidence that both sectoral composition and spousal capture constrain Sri Lankan female micro-entrepreneurs' investment decisions.

[2] de Mel et al. (2009), for instance, write that there is " an economic efficiency argument for directing more resources towards [male-owned firms]."

[3] The share of male entrepreneurs in multiple-business households in the India sample – 54% – is excluded from this statistic. The India sample is limited to households that contain a female microfinance client, so this share is likely to be much higher than in the general population of male entrepreneurs.

experiment conducted by de Mel et al. (2008) in Sri Lanka. In the India experiment, we randomly assigned female microfinance clients to either the classic microfinance contract or to one that eases liquidity constraints by providing a grace period before the first repayment. In the de Mel et al. (2008) Sri Lanka study, the authors randomly assigned a sample of male and female micro-entrepreneurs to either cash or in-kind grants, or to a no-grant control group. Using income data from both samples, we are able to compare enterprise-level and household investment responses to an exogenous change in liquidity constraints granted to a single entrepreneur.

Results are striking: at the enterprise level, we replicate the main finding from de Mel et al. (2008) and other grant studies – on average, treatment has no effect on female-enterprise profits in either the India or Sri Lanka samples. Yet, household-level measures clearly demonstrate that these female micro-entrepreneurs make high-return investments. In the Field et al. (2013) study, we collected information on profits for all household enterprises. We find that female borrowers' household profits increase by 20–29% relative to the control group. de Mel et al. (2008) collected household income data but not profit data for other household enterprises. We observe a significant rise in household income among the full sample of households in which female entrepreneurs receive a positive liquidity shock.

These results show that previous estimates of female entrepreneurs' returns to capital are low in part because women frequently use the capital shock to invest in businesses that are not their own. We corroborate this result by analyzing how treatment impact varies with household occupation composition. Here we use data from the India and Sri Lanka samples, as well as the sample of participants in Fafchamps et al. (2014)'s randomized cash and in-kind grant experiment among male and female micro-entrepreneurs in Ghana.[4] In all three samples, we classify households with a female micro-entrepreneur by the number of business owners. We then re-estimate enterprise returns to capital shocks separately for each household type.

Household occupation composition matters: In the India sample, the grace period contract leads to a 70-81% increase in profits for women who are the sole household business owner. On the other hand, when there are multiple entrepreneurs in the household, the grace period has no effect on the female borrower's enterprise outcomes. But, as reflected in the household-level results, profits for male-owned enterprises are significantly higher in these multiple enterprise households. Put differently, while investment responses to improved liquidity differ by household type, the data show equally high returns to the enterprise that sees investment. We infer this by comparing male entrepreneurs' profits to the profits of females who are the sole household entrepreneur and find that they are statistically indistinguishable. In the Sri Lanka sample, we similarly find that among female micro-entrepreneurs who report no other household business owners, grants lead to a statistically significant 7% increase in profits. Lastly, we can't reject that returns to in-kind

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[4]Fafchamps et al. (2014) do not collect household income data or profit data for other household enterprises, so we omit their sample from the first part of the analysis.

grants for women who are the sole household enterprise owner in the Fafchamps et al. (2014) sample are equal to returns for men who are members of multiple-enterprise households.[5]

The main contribution of this paper is to demonstrate that endogenous household investment decisions impact observed profitability of household enterprises. In studying enterprise behavior through the lens of household decision-making, our approach is consistent with the large literature that has sought to understand the efficiency of individual farmers' input decisions within the context of agricultural household models (see, for instance, Benjamin (1992) and Udry (1996)). And, within the agricultural literature, our results are in line with recent evidence that the perceived misallocation of capital across smallholder farms is explained in part by farmers' endogenous investment decisions over plots with unobserved (to the researcher) heterogeneity in land quality (Gollin and Udry, 2017).

This paper also reconciles results from the enterprise grant studies described here with results from recent evaluations of cash transfers and microfinance, which estimate returns at the household level and find that gender of the recipient is irrelevant (see Haushofer and Shapiro (2016); Fiala (2014) and Benhassine et al. (2015) for examples from the cash-transfer literature, and Augsburg et al. (2015) and Kevane and Wydick (2001) for examples from the microcredit literature).

Our findings highlight the importance of taking households' entire portfolio of investment opportunities into consideration when studying microenterprise behavior. These results also raise important research questions: how do households choose the number of businesses to operate and who will manage them? And, are household investment decisions efficient?

Across all three samples, households invest in male- and not female-owned enterprises when there is opportunity to do so. The existence of multiple household enterprises with disparate returns is consistent with a model of collective household bargaining in a setting where investment decisions are efficient subject to constraints imposed by incomplete credit and insurance markets.[6] Conversely, our results could also be explained by models of non-cooperative household bargaining, where spousal capture induces inefficiency.

Our study is not designed to identify mechanisms underlying women's occupational choice and household investments. However, in Section 3 we discuss suggestive evidence from the Fafchamps et al. (2014) data that, when there are multiple enterprises within a household, grants are invested in the higher return (male) activity. That said, we also find that women in the India sample who are the sole entrepreneur in their household – i.e. women for whom we see positive impact on profits from the capital shock – score significantly higher along measures of empowerment at baseline (a detailed description of the nature of household enterprises in the India sample is in Section

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[5]As in the Fafchamps et al. (2014) paper, cash grant results are weaker but point in the same direction.
[6]The fact that a household chooses to operate multiple enterprises with differing returns is consistent with a model where diversification across enterprises provides insurance.

2). That empowerment is correlated with household enterprise composition suggests household investments may not be efficient. These findings complement the growing empirical literature that seeks to shed light on how individuals' relative bargaining power influences their investment decisions (see, for instance, Fiala (2017) and Schaner (2015); de Mel et al. (2009) and Fafchamps et al. (2014) also investigate spousal capture in the Sri Lanka and Ghana studies). Disentangling the role of household optimization and of intra-household bargaining in determining first individuals' occupational choice and, later, investments *given* these earlier employment decisions is an important area for future research.

The remainder of the paper is organized as follows: Section 2 uses the Field et al. (2013) sample to describe the nature of households enterprises and then demonstrates how level of aggregation influences estimated returns to capital. Section 3 describes comparable results for the de Mel et al. (2008) and Fafchamps et al. (2014) samples, and Section 4 concludes.

2   The Nature of Household Enterprises and Investment Choices: Evidence from Field et al. (2013)

Levels of entrepreneurship are typically high for poor urban households; moreover, these households undertake significant diversification of economic activity (Banerjee and Duflo, 2007). Using data from the Field et al. (2013) field experiment, we describe some salient features of household enterprise composition for a sample of poor urban households. We then examine how household enterprise composition influences a household's investment responses to relaxed liquidity constraints for female entrepreneurs.
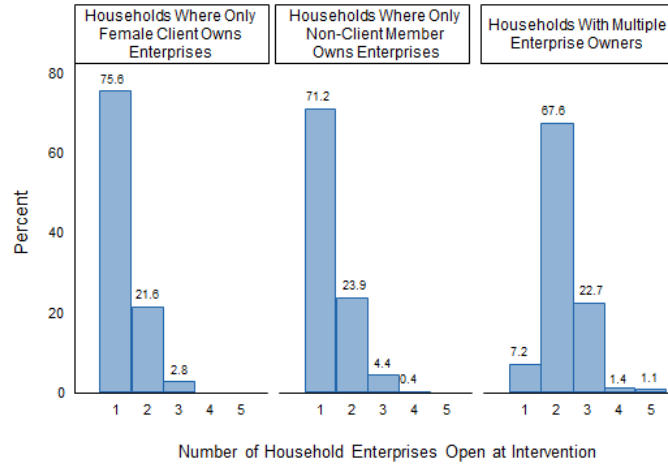
2.1   The Nature of Household Enterprises

The experiment reported in Field et al. (2013) was conducted in 2007 in Kolkata, India in partnership with a microfinance institution, Village Financial Services Private, Ltd. (VFS). Inclusion criteria for selection into the study were that a client must be a woman aged between 18 and 55 and reside in a household with at least one income-generating activity in the form of an enterprise. VFS gives out individual-liability loans but clients are organized into groups for repayment meetings. Among clients in our sample, loans ranged from Rs. 4,000 – Rs. 10,000 (90 – 225 USD at the 2007 exchange rate). In the sample of Kolkata-based clients in Field et al. (2013), the average household owns 1.7 enterprises and 38.5% have multiple entrepreneurs.

We group households according to the following categories: (1) only the female client owns an enterprise (30% of the sample); (2) only non-client household members own enterprises (31.5% of the sample); or, (3) both the client and non-client household member(s) own enterprises (38.5% of the sample). At least one fifth of households in each category have multiple enterprises (either because there are multiple owners or because one owner has more than one business). And, in households with multiple micro-entrepreneurs, one quarter have three or more enterprises (see

Figure 1, below).[7]

Figure 1: Number of Enterprise Owners by Household Type

Two key patterns in household economic activity emerge: First, our categorization closely maps to the gender composition of enterprise ownership. In 97.6% of households with multiple entrepreneurs, the non-client entrepreneur is the client's spouse or another male household member. In households in which the client does not own an enterprise, enterprises are exclusively operated by men (by construction, client-only households have only female-operated enterprises).

Second, while there are stark differences between female-run enterprises in multiple- and single-enterprise households, male-run enterprises are almost identical across household types. Male micro-entrepreneurs report average weekly profits of between Rs. 1625 and Rs. 1430 in multiple- and single-enterprise households, respectively. Similarly, household enterprise composition does not affect male micro-entrepreneurs' industry choice: across household types, men predominantly operate in the retail sector. In contrast, for female micro-entrepreneurs, the presence of a second entrepreneur is associated with significantly lower profits and a different sector choice. In multiple-enterprise households, female micro-entrepreneurs report average weekly profits of Rs. 357 and the modal enterprise is piece-rate stitching. These women's profits amount to only 22% of what their spouse or other male household micro-entrepreneur earns. Yet, when a woman is the sole enterprise owner in the household, her average weekly profits are 1.5 times larger and, like male entrepreneurs, she predominantly chooses to operate in the retail sector. The link between a

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[7]Categorization of households is based on retrospective data gathered at the three-year follow-up. At that time, we collected data on all household enterprises that were open at baseline or that had been opened in the interim period between surveys. We classify households according to investment opportunities available over the course of the three-year period: thus, if a female client was the sole entrepreneur at the time of intervention, but another household member later opened a enterprise, the household would be classified as having multiple enterprises. If an enterprise was open at baseline, or opened between baseline and follow-up, but had closed by the time of the follow-up survey, profits are coded as 0 Rs.

gender gap in profits and sectoral choice is also noted by de Mel et al. (2009). Women who are the sole household entrepreneur also differ along several dimensions associated with empowerment. In Appendix Table A2, we show that women in this group are significantly older, have more education, less likely to refer to themselves as a housewife, and score higher on an empowerment index composed of measures of mobility and financial independence.

2.2 Experimental design and estimation strategy

Between March and December 2007, 169 newly formed five-member loan groups were randomly assigned to one of two repayment schedules: 85 groups received the standard contract, in which the first loan repayment was due two weeks after loan disbursal and installments were due every two weeks after that. The remaining 84 groups received a contract that featured a two-month grace period before the first loan installment. All other contract features were identical across the two groups.[8] In 2010, nearly three years after loan disbursement, we surveyed every enterprise owner within the household and collected data on long-run enterprise-level profits and household-level income.

VFS offers credit only to women, not all of whom are entrepreneurs. Thus, to make our sample comparable to the study samples for the enterprise grant experiments listed in Table 1, we exclude households in which the client did not operate an enterprise. Appendix Table A1 shows that treatment and control groups remain balanced after this sample restriction. Loan contract randomization allows us to estimate the causal impact on profit and income of relaxing credit constraints via the grace period contract. We estimate profits using responses to the following question: "Can you please tell us the average weekly profit you have now or had when your enterprise was last operational?" Following de Mel et al. (2008), if a client runs multiple household enterprises, we report (in column 1) the profits of the largest enterprise she owned in 2007. To measure the treatment effect on the clients' enterprises, we follow de Mel et al. (2008) and estimate the following enterprise-level regression:

$$Y_{fhg} = \alpha_1 + \beta_1 G_g + B_g + \gamma_1 X_{hg} + \mu_{fhg} \tag{1}$$

where Y_{fhg} are the enterprise profits of client f who lives in household h and belongs to microfinance group g. The omitted group consists of clients that operate in households assigned to the standard contract. Standard errors are clustered at the group-level. G_g is an dummy variable that equals one if the group was assigned to the grace period contract and B_g is a indicator of the stratification batch. No respondents dropped out of our experiment, so β_1 is the average

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[8]In particular, after the first installment was paid, groups met with loan officers and repaid every two weeks, the full loan had to be repaid within 44 weeks, and all borrowers faced the same interest rate charges. For a comprehensive discussion of the control and treatment groups' relative interest rates, see Field et al. (2013). Groups were randomized into treatment or control in batches of 20 groups and were informed of their treatment status after group formation and loan approval, but prior to loan disbursement.

treatment effect of being assigned the grace period contract. Table 2, Panels A and B report estimates without and with the controls (X_{hg}; we use the same controls as in Field et al. (2013) and these are listed in Appendix Table A1). To address noise in survey responses to questions that require a high level of aggregation, we trim enterprise and income outcomes such that the top 0.5% of the distribution is omitted from the analysis.

Following Field et al. (2013), we also estimate the following household model:

$$Y_{hg} = \alpha_2 + \beta_2 G_g + B_g + \gamma_2 X_{hg} + \mu_{hg} \tag{2}$$

Unlike in equation (1), here we aggregate enterprise profits across all household enterprises. β_2 is the average treatment effect of being assigned the grace period contract *on all household enterprises combined* .

2.3 Enterprise Classification and Returns in the India Sample

Consistent with findings from cash or in-kind grant studies, column (1) of Table 2 shows that the average treatment effect of the grace period contract on self-reported weekly profits for female loan recipients is not different from zero (equation 1). But, when we estimate effects at the household level (equation 2), results show that the grace period increases average weekly profits by 43–48% of the control mean (column 2). Household-level increases in profits are more than three-fold client-level estimates. This suggests that the average client largely invests her loan in other household enterprises.

Next, we turn to the intra-household dynamics underlying observed differences in household- and client-level responses to the liquidity shock. To do so, we examine enterprise-level profits but distinguish between households in which only the female client operates an enterprise and those in which the female client and other members operate enterprises.[9] A clear pattern emerges. While we observe no change in profits for female clients in households with multiple entrepreneurs (column 4), this seems to be because loans are invested in another household enterprise: as shown in column (5), the profits of husbands' and other household members' enterprises increase by 44–50% in response to the grace period. Meanwhile, we observe strikingly large treatment effects when women are the sole household enterprise owner: weekly profits for female entrepreneurs in this group are 70–81% higher than those of women in the control group (column 3). The treatment impact for women in this group also reduces the gender gap in profits: the level increase in profits for female entrepreneurs in single-enterprise households is statistically indistinguishable from the level increase in profits for non-client entrepreneurs (who are almost all male) in multiple-enterprise households (comparison of columns 3 and 5).

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[9]This method of aggregation differs from column (1), where we followed the protocol of other studies and report profits of the client's largest enterprise. In columns (3)–(5), we aggregate profits across all of the enterprises that a client operates. This method is consistent with the argument of the paper that, rather than selecting one enterprise to survey, studies should be surveying all household enterprises.

Estimates of effects on household income (columns 6 and 7) are noisy but comparable: treatment increases income by 20–29% for both household types. With the inclusion of controls, the income effect is significant at the 10% level for households in which the client is the sole enterprise owner and at the 5% level for households with multiple enterprise owners.

3 Comparison with Sri Lanka and Ghana microenterprise grant experiments

To evaluate the generalizability of our findings from India, we undertake a parallel analysis for the de Mel et al. (2008) and Fafchamps et al. (2014) samples from Sri Lanka and Ghana, where the nature of treatment – provision of cash or in-kind grants to micro-entrepreneurs – is different from variation in loan contract.

3.1 Enterprise classification and returns in the Sri Lanka sample

We begin with the de Mel et al. (2008) sample. In 2005, the authors identified a sample of 617 male and female micro-entrepreneurs in Sri Lanka who were self-employed, of working age, and had no paid employees.[10] A randomly assigned subset of these microenterprise owners were either offered unconditional cash grants or offered in-kind grants for enterprise equipment or inventories. Grant size was also randomized and grants were worth approximately USD 100 or USD 200. The authors conducted eight rounds of follow-up surveys over roughly two years.

Table 3 reports treatment effects on female-operated enterprises in the Sri Lanka sample. Column (1) replicates the authors' finding: the average treatment effect for female-operated enterprises is indistinguishable from zero.[11] Next, as we did with the Field et al. (2013) sample, we classify women in the Sri Lanka sample according to household investment opportunities.[12] We first consider the subset of female micro-entrepreneurs living in households with no other self-employed member. These women – whose household investment opportunities are limited to their own enterprise – reap significant benefits from the grants and their real profits increase by 30.1% of the control mean (column 2). This increase is statistically significant at the 10% level.

Are women with other self-employed household members re-allocating their grants to other household enterprises, as we observe in the Kolkata sample? While de Mel et al. (2008) did not include a detailed financial activity module for other household enterprises, they do collect monthly household income data. In column (3) we report a significant and large treatment

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[10]The authors excluded enterprises that were directly affected by the 2004 tsunami from their main analysis, which left them with a sample of 408 enterprises.

[11]We use the authors' publicly available data and follow their method of analysis, including specification and data transformations. As such, we pool across cash and in-kind treatments and across survey rounds. Also following the authors, we trim outlying profit observations, eliminating the top 0.5% of absolute and percentage changes from one survey round to the next. Point estimates in column (1) of Table 3 identically replicate those in column (2) of Table V in de Mel et al. (2008) (though the authors include the full sample and interact gender with treatment amount, while we restrict the sample to female enterprise owners).

[12]Appendix Note A3 describes our method for categorizing women in the Sri Lanka sample.

effect on the log of total monthly household income for female entrepreneurs: households in the treatment group earn on average 8% higher income than households in the control group.[13]

3.2 Enterprise Classification and Returns in the Ghana Sample

Our analysis of the Kolkata and Sri Lanka data demonstrates that women make high-return investments with their capital shocks. But we cannot determine based on data from these experiments whether their investments are *optimal*. It is possible, for instance, that a woman's own enterprise would have had higher returns, but spousal pressure leads her to hand over the capital to other household enterprises.

In the Ghana sample, we exploit the "stickiness" of in-kind grants to assess returns for female enterprises when other household members are less able to liquidate.[14] We present results in Table 4. As with the de Mel et al. (2008) data, we first create a measure for whether a study participant is the only self-employed member of their household. This measure is interacted with the study participant's gender and with whether the participant was assigned to a treatment (in-kind or cash grants) or to the control group. The omitted group are male enterprise owners in the control group. At the bottom of the table we provide the p-values from an F-test that compares the returns for female entrepreneurs in single-enterprise households to the returns for male entrepreneurs in multiple-enterprise households. The p-values of columns (1) and (2) show that we cannot reject equality between returns to the grant for these two single-enterprise household groups. The second set of p-values are for a comparison of the returns of female- and male-run enterprises in households with multiple entrepreneurs. As shown in column (1), we find that treatment leads to significantly lower returns for women than men in multiple-enterprise households. Estimates of the impact of cash grants are in the same direction but more noisy.

If the assumption of "stickiness" holds, then comparing the returns across female and male enterprises that received in-kind grants and live in multiple-enterprise households gives us an estimate of the difference in returns to capital between female and male enterprises within the same household.[15] We find that male enterprises have significantly higher returns than female enterprises. This result suggest that households do invest the grants in their higher return opportunity.

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[13]In unreported regressions, we separately estimate effects on household income for female micro-entrepreneurs in the de Mel et al. (2008) sample who live with another self-employed person and for those who are the sole entrepreneurs in their household. While the regressions are under powered, both groups report an increase in total monthly household income: women with no other self-employed household member report an increase in household income of 5% and women with other self-employed members report an increase of 8%. In the Field et al. (2013) sample we observe significant increases in household income for all household categories.

[14]Though the de Mel et al. (2008) Sri Lanka experiment included both cash and in-kind grants, the randomization is not stratified on gender and, as the authors note in Fafchamps et al. (2014), the Sri Lanka sample is not large enough to have power to explore differential impacts of cash vs. in-kind grants along gender lines.

[15]We also need to assume that male enterprise owners in multiple-enterprise households who are eligible for the Fafchamps et al. (2014) study do not differ in a meaningful way from male enterprise owners who live with the female enterprise owners eligible for this study.

4 Conclusion

Structural transformation and economic development in low-income countries is accompanied by a transition from agriculture to informal self-employment. As households take the first step in this direction and engage in informal self-employment, they typically diversify income-generating activities among members (Banerjee and Duflo, 2007), often through investment in multiple microenterprises: for instance, a wife and her daughter-in-law might work as seamstresses at home, while her husband fixes bicycles on the roadside. A growing experimental literature in development economics seeks to identify interventions (such as microfinance, business grants, skills training, cash transfers, and others) with the most potential to advance households' progress out of poverty.

Randomized evaluations in several countries have yielded evidence that easing the liquidity constraints of micro-entrepreneurs results in higher profits for male-operated but not for female-operated micro-enterprises. So, what happens to the money given to female entrepreneurs? And, does this reflect female entrepreneurs' low ability to benefit from increase liquidity?

In this paper, we present a framework that sheds light on these questions. We show that accounting for the multiplicity of investment opportunities within a household significantly affects the estimated returns to capital for women. When returns to capital are measured only at the enterprise-level, investment responses by female micro-entrepreneurs can be easily overlooked. By classifying women in the sample of female microfinance clients in Kolkata by household type, we show that relaxing liquidity constraints for single-enterprise households leads to very large increases in female entrepreneurs' profits. The estimated returns to capital among this subset of female enterprise owners are of equal magnitude to those of male enterprise owners in our sample. Similarly, when we analyze returns to business grants among micro-entrepreneurs in the de Mel et al. (2008) study, we see that when women are the sole self-employed person in their household there are large treatment effects, though female-run enterprises demonstrated no returns to the grant on average.

Our findings suggest that female entrepreneurs are as capable as male entrepreneurs of making sound investment decisions. As such, while there may be household-level returns to interventions that aim to improve women's business skills, such programs are unlikely to have a significant impact on women's level of profits. Research and policies that further our understanding of female entrepreneurs' sectoral choice and investment constraints hold more promise for closing the gender gap in microenterprise returns.

References

Augsburg, B., R. de Haas, H. Harmgart, and C. Meghir (2015, January). The impacts of microcredit: Evidence from bosnia and herzegovina. *American Economic Journal: Applied Economics 7*(1), 183–203.

Banerjee, A. V. and E. Duflo (2007). The economic lives of the poor. *The journal of economic perspectives: a journal of the American Economic Association 21*(1), 141.

Benhassine, N., F. Devoto, E. Duflo, P. Dupas, and V. Pouliquen (2015, August). Turning a shove into a nudge? a "labeled cash transfer" for education. *American Economic Journal: Economic Policy 7*(3), 86–125.

Benjamin, D. (1992, March). Household Composition, Labor Markets, and Labor Demand: Testing for Separation in Agricultural Household Models. *Econometrica 60*(2), 287–322.

Berge, L. I. O., K. Bjorvatn, and B. Tungodden (2015, April). Human and financial capital for microenterprise development: Evidence from a field and lab experiment. *Manage. Sci. 61*(4), 707–722.

Blattman, C., N. Fiala, and S. Martinez (2014). Generating Skilled Self-Employment in Developing Countries: Experimental Evidence from Uganda. *The Quarterly Journal of Economics 129*(2), 697–752.

de Mel, S., D. McKenzie, and C. Woodruff (2008). Returns to capital in microenterprises: evidence from a field experiment. *The Quarterly Journal of Economics 123*(4), 1329–1372.

de Mel, S., D. McKenzie, and C. Woodruff (2009, July). Are women more credit constrained? experimental evidence on gender and microenterprise returns. *American Economic Journal: Applied Economics 1*(3).

Fafchamps, M., D. McKenzie, S. Quinn, and C. Woodruff (2014). Female microenterprises and the fly-paper effect: Evidence from a randomized experiment in ghana. *Journal of Development Economics*.

Fiala, N. (2014). Can microenterprises grow? results from a loans, grants and training experiment in uganda. *Unpublished Working Paper*.

Fiala, N. (2017). Business is tough, but family is worse: Household bargaining and investment in microenterprises in uganda. *Unpublished Working Paper*.

Field, E., R. Pande, J. Papp, and N. Rigol (2013). Does the Classic Microfinance Model Discourage Entrepreneurship Among the Poor? Experimental Evidence from India. *American Economic Review 103*(6), 2196–2226.

Gollin, D. and C. Udry (2017). Heterogeneity, Measurement Error, and Misallocation: Evidence from African Agriculture. *Working Paper*.

Haushofer, J. and J. Shapiro (2016). The short-term impact of unconditional cash transfers to the poor: Evidence from kenya. *Quarterly Journal of Economics 131*(4).

Kevane, M. and B. Wydick (2001, July). Microenterprise lending to female entrepreneurs: Sacrificing economic growth for poverty alleviation? *World Development 29*.

McKenzie, D. J. (2015). Identifying and spurring high-growth entrepreneurship: experimental evidence from a business plan competition. *Policy Research Working Paper 7391*.

Schaner, S. (2015). Do Opposites Detract? Intrahousehold Preference Heterogeneity and Inefficient Strategic Savings. *American Economic Journal: Applied Economics 7(2)*, 135–174.

Udry, C. (1996). Gender, Agricultural Production and the Theory of the Household . *Journal of Political Economy 104*(5), 1010–1046.

Table 1: Enterprise Profits in the Literature on the Impact of Unconditional Cash or In-Kind Grants

Paper	Study Location	Treatment	Impact on Profits of Enterprise, by Gender	
			Impact on male-led enterprises (average profits, % increase over the control group)	Impact on female-led enterprises (average profits, % increase over the control group)
No Impact on Profits of Female-led Enterprises				
Berge, L., Bjorvatn, K. and B. Tungodden (2015).	Tanzania	Unconditional business grants	No impact on profits.	No impact on profits.
de Mel, S., McKenzie, D., and C. Woodruff (2008) and (2009).	Sri Lanka	Unconditional business grants or in-kind grants for business equipment/ inventories.	Profits increase by about 9% of grant amount.	No increase in profits on average.
Fafchamps, M., McKenzie, D., Quinn, S. and C. Woodruff (2014).	Ghana	Unconditional business grants or in-kind grants for business equipment/ inventories.	In-kind grants lead to 30-60% increase in profits.	No increase in profits on average.
Fiala, N. (2014).	Uganda	Unconditional business grants or loans.	Loans + training lead to 54% increase in profits. No impact on profits from the grant treatment.	No impact on profits from any of the interventions.
McKenzie, M. (2015).	Nigeria	Unconditional business grants.	0.16 standard deviation increase in score for aggregate index of profit and sales outcomes.	No impact on profit and sales index.
Positive Impact on Profits of Female-led Enterprises				
Blattman, C., Fiala, N. and S. Martinez (2014).	Uganda	Unconditional business grants	Profits increase by roughly 30% after 2 years and stay at this level after 4 years.	No increase in profits after 2 years, but 73% increase after 4 years. At 4 years, the level increase in profits is the same for women and men.

Note: None of the papers cited in Table 1 report impact of the treatment on household income.

Table 2: Enterprise Profits and Household Income in India

	Weekly Enterprise Profits (Rs.)					Log Household Monthly Income(Rs.)	
	All Households		Households where Female is Sole Enterprise Owner	Households with Multiple Enterprise Owners			
	Female's Largest Enterprise	All Household Enterprises	Female's Enterprises	Female's Enterprises	Husband's and Other Household Members' Enterprises	Households where Female is Sole Enterprise Owner	Households with Multiple Enterprise Owners
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: No Controls							
Grace Period Treatment	130.55	593.79**	382.39**	-27.03	820.50**	0.21	0.21
	[98.67]	[234.25]	[179.70]	[63.75]	[322.81]	[0.13]	[0.14]
Panel B: With Controls							
Grace Period Treatment	167.01	663.78***	446.14**	-39.60	709.50**	0.20*	0.29**
	[103.17]	[216.96]	[211.30]	[64.14]	[288.02]	[0.12]	[0.13]
Control Mean	401.08	1387.35	549.73	356.51	1625.44	9.02	9.41
Observations	473	474	212	260	257	208	255

Notes: * significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level.

(1) The outcome variable in columns 1-6 is "Can you please tell us the average weekly profit you have now or when your business was last operational?". If the business was closed at the time of the follow-up survey, profits are coded as 0. The outcome variable in columns 7 and 8 is the log of total household income over the previous 30 days.

(2) Regressions include stratification fixed effects and standard errors are clustered by loan group. Regressions in Panel B also include all controls presented in Appendix Table 2. In cases where a control variable is missing, its value is set to zero and a dummy is included for whether the variable is missing.

(3) To address noise in survey responses to questions that require a high level of aggregation, profit and income variables are trimmed such that the top 0.5% of the distribution are omitted from analysis.

(4) Number of observations differ between columns because of trimming: Each outcome variable is trimmed at the enterprise level and trimming occurs separately for the female client, spouse, and other household member distributions. For columns 2, 7 and 8, trimmed enterprise-level distributions are then summed across enterprises in the household. The household-level observation is thus included in the analysis if either the client or the other entrepreneur is within the bottom 99.5% of their respective distributions.

(5) Female entreprise refers to the enterprise of the VFS client. There are multiple female enterprise owners in only 2.4% of households. Those households are classified as multiple-enterprise households and the profits of female enterprise owners who are not the VFS client are excluded from columns 1 and 4, but included in columns 2 and 5.

Table 3: Enterprise Profits and Household Income in Sri Lanka

	Real Monthly Profits (LKR)		Log Real Monthly Household Income (LKR)
	All Female Enterprise Owners	Female Enterprise Owners in Households with No Other Self-Employed Persons	All Female Enterprise Owners
	(1)	(2)	(3)
Treatment Amount	-0.16	7.12*	0.08*
	[2.82]	[3.63]	[0.04]
Control Mean	28.52	23.67	28.52
	[23.78]	[18.39]	[23.78]
Sample	1,529	573	1,422
Enterprise-Period Observations	182	69	182

Notes: * significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level.

The following notes are taken from DMW:

(1) The outcome variable in columns 1 and 2 is What was the total income the business earned during [month] after paying all expenses including wages of employees, but not including any income you paid yourself. That is, what were the profits of your business during [month]?; the coefficients in columns 1 and 2 show the effect on the outcome variable of a 100 rupee increase in the capital stock. The outcome variable in column 3 is the log of responses to the question How much is your total monthly household income now?.

(2) The sample for column 2 consists of households with female entrepreneurs and no other self-employed person. The sample in columns 1 and 3 includes all female enterprise operators. Following the authors' protocol, the samples in all columns exclude 20 enterprises which respondents reported were jointly operated, or where the identity of the owner changed in at least one survey round.

(3) The authors collected data via nine quarterly surveys, from March 2005 through March 2007. (Household income data is missing for wave 6). Both outcomes were measured monthly. The regression specification is identical to that reported in DMW, though they do not report the household income outcome. Following the authors' instructions for the specification: Profits and household income (collected in Sri Lankan Rupees) are deflated by the Sri Lankan CPI to reflect March 2005 price levels. Profit and income regressions include enterprise and survey wave fixed effects. Standard errors are clustered at the enterprise level and are shown in parentheses.

Table 4: Returns by Household Type and Gender in Ghana

Treatment:	Real Monthly Profits (Cedi)	
	In-kind (1)	Cash (2)
Treatment	-24.531 [23.582]	-11.427 [27.085]
Treatment × Multiple Enterprises	104.274** [50.352]	20.536 [39.212]
Treatment × Female	71.015** [29.274]	17.987 [27.746]
Treatment × Multiple Enterprises × Female	-133.111** [54.702]	-17.321 [42.068]
Control Mean	114.07 [147.34]	114.07 [147.34]
p-value: Treatment × Multiple Enterprises = Treatment × Female	0.490	0.932
p-value: Treatment × Multiple Enterprises = Treatment × Female + Treatment × Multiple Enterprises × Female	0.074	0.759
Enterprise-Period Observations	2,872	2,864
Number of Enterprises	604	607

Notes: * significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level.
All estimation includes enterprise and survey wave fixed effects which vary by category. *Multiple Enterprises* is a dummy variable that is equal to one if the surveyed enterprise is operated by the respondent alone and at least one other person in the household is self-employed. In columns 1, the cash treatment sample is excluded. In columns 2, the in-kind treatment sample is excluded.

Appendix Table A1: Balance Check

	Households With Multiple Enterprise Owners		Households Where Only Female Client Owns Enterprises	
	Means of Control	Grace Period Effect	Means of Control	Grace Period Effect
	(1)	(2)	(3)	(4)
Age	34.03	-1.52	35.46	0.15
	[7.32]	(0.95)	[8.22]	(1.15)
Married	0.96	-0.03	0.88	-0.09*
	[0.19]	(0.03)	[0.33]	(0.05)
Muslim	0.01	0.02	0.02	0.00
	[0.08]	(0.02)	[0.14]	(0.02)
Household Size	4.15	0.22	3.98	-0.22
	[1.39]	(0.17)	[1.45]	(0.15)
Household Shock	0.75	0.03	0.79	-0.01
	[0.44]	(0.07)	[0.41]	(0.07)
No Drain in Neighborhood	0.16	-0.07	0.11	-0.03
	[0.37]	(0.06)	[0.31]	(0.05)
Has Financial Control	0.84	-0.03	0.89	-0.04
	[0.37]	(0.06)	[0.31]	(0.06)
Years of Education	6.45	-0.67	6.98	0.05
	[3.36]	(0.48)	[3.57]	(0.54)
Is a Homeowner	0.83	-0.03	0.76	0.07
	[0.37]	(0.05)	[0.43]	(0.06)
Number of Household Businesses	2.27	0.00	1.24	0.07
	[0.57]	(0.07)	[0.47]	(0.07)
Loan Amount 4,000 (Rs.)	0.02	-0.01	0.01	0.00
	[0.15]	(0.02)	[0.10]	(0.01)
Loan Amount 5,000 (Rs.)	0.05	-0.03	0.03	0.01
	[0.22]	(0.03)	[0.17]	(0.03)
Loan Amount 6,000 (Rs.)	0.30	-0.04	0.30	-0.11*
	[0.46]	(0.06)	[0.46]	(0.07)
Loan Amount 8,000 (Rs.)	0.58	-0.00	0.58	0.03
	[0.50]	(0.07)	[0.50]	(0.08)
Loan Amount 9,000 (Rs.)	0.00	0.00	0.00	0.02
	[0.00]	(0.00)	[0.00]	(0.02)
Loan Amount 10,000 (Rs.)	0.05	0.08**	0.09	0.05
	[0.22]	(0.04)	[0.28]	(0.05)
χ^2		22.18	17.07	
Joint Test- Prob > χ^2		0.02	0.31	

Notes: * significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level.

(1) All data are from baseline survey. Columns 1 and 3 report means with standard deviations in brackets. Columns 2 and 4 report the test of differences of means between the referenced control and treatment group. We control for batch dummies and cluster standard errors by loan group.

(2) Joint test is the Chi-Sq. Statistic, which is computed by jointly estimating a system of seemingly unrelated regressions where the explanatory variable is a dummy for grace period and where standard errors are adjusted for within loan group correlation. The regressions include stratification dummies.

(3) Household shock: a dummy for birth, death, or heavy rain or flood within the past 30 days.

(4) Has Financial Control: Whether client answered "yes" to the following question: "If a close relative, such as your parent or sibling, fell sick and needed money, would you be able to lend money to that relative, if you had the extra money?"

(5) Number of Household Businesses: Total number of businesses that female and male household members reported operating at baseline, excluding businesses formed within either 30 days prior to or after loan group formation.

Table 5: Appendix Table A2: Differences at Baseline Between Clients in Multiple- and Single-Enterprise Households in the India Sample

| | Multiple Enterprise Household | | Female Enterprise Only Household | | |
| | Mean | St. Dev. | Coeff. | St. Err. | N |
	(1)	(2)	(3)	(4)	(5)
Age	33.276	7.504	2.016***	0.756	474
Married	0.946	0.226	-0.116***	0.028	474
Literate	0.847	0.361	0.050	0.030	474
Muslim	0.015	0.123	0.002	0.013	474
Household Size	4.234	1.331	-0.429***	0.116	474
Experienced Shock	0.651	0.477	-0.062	0.047	474
Has Savings Account	0.303	0.460	0.049	0.040	474
Wage Earner	0.088	0.284	0.076**	0.032	474
Business Employed	0.594	0.492	-0.020	0.051	474
Has Business	0.835	0.372	-0.121***	0.040	474
Financial Control	0.824	0.382	0.035	0.038	474
Homeowner	0.824	0.382	-0.042	0.042	474
Discount Rate	19.320	11.448	-1.202	1.138	474
Risk Index	0.102	2.460	-0.199	0.257	451
Years Education	6.195	3.569	0.810**	0.353	474
Housewife	0.211	0.409	-0.058*	0.033	474
Empowerment Index	-0.078	1.103	0.238**	0.104	474

* $p \leq 0.10$, ** $p \leq 0.05$, *** $p \leq 0.01$. Notes: The Empowerment Index is a standardized principal-component analysis index with the following components: client is responsible for keeping money safe in the household; client does not need to ask permission for household expenditures; client can help a close relative with money; client has a separate bank account from her husband; number of times in the past 7 days that the client took the bus.

Appendix Note A3: Description of Analysis using de Mel et al. (2008) Data

de Mel et al. (2008) offer unconditional cash grants or in-kind business grants worth roughly USD 100 - 200 to a sample of male and female entrepreneurs in Sri Lanka. Our analysis uses data collected through the authors nine quarterly enterprise surveys and three household surveys, conducted from March 2005 through March 2007. Study participants were awarded grants after the first and third round of surveys.[16] 190 female enterprise operators are surveyed at baseline and are included in the authors analysis. We classify these female entrepreneur according to investment opportunities available to them within the household: In the three household surveys (conducted at Rounds 1, 5, and 9), respondents are asked to describe the employment activities of all other household members.[17] Female entrepreneurs who report that another household member is engaged in self-employment activities in any of the three survey rounds are considered to have other investment opportunities in the household. Seventy three women reported in all three survey rounds that no other household member was involved in self-employment activities - this is the sample of women for whom we present results on the impact of the grants on profits in Table 3, column 2.[18]

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[16]See de Mel et al. (2008) for a detailed description of their experiment and data collected.

[17]Respondents are asked, "What activities is [household member] involved in at the present?" as question Q.12 in Round 1 and question H.6 in Rounds 5 and 9. "Self-economic activities" is one of eleven response options for this question.

[18]The sample in Table 3 differs slightly because, following de Mel et al. (2008)s inclusion criteria, women without at least three rounds of enterprise survey follow-up data are excluded from analysis.