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Household Matters: Revisiting the Returns to Capital among Female Microentrepreneurs†

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Multiple field experiments report positive financial returns to capital shocks for male and not female microentrepreneurs. But these analyses overlook the fact that female entrepreneurs often reside with male entrepreneurs. Using data from experiments in India, Sri Lanka, and Ghana, we show that the observed gender gap in microenterprise responses does not reflect lower returns on investment, when measured at the household level. Instead, the absence of a profit response among female-run enterprises reflects the fact that women's capital is typically invested into their husband's enterprise. We cannot reject equivalence of household-level income gains for male and female capital shock recipients. (*JEL* G31, J16, L25, L26, O12, O16)

Empirical studies in developing countries have repeatedly shown that relaxing microentrepreneurs' capital constraints through access to grants results in substantial profit gains. This finding demonstrates that microentrepreneurs have high returns to capital and are poised to take advantage of investment opportunities when provided with the resources to do so.

An important auxiliary finding, which was first established by de Mel, McKenzie, and Woodruff (2008) in Sri Lanka, and has been replicated in several other settings, is that male *but not* female-operated enterprises benefit from access to cash grants (see Table 1; Blattman, Fiala, and Martinez 2014 is one exception).[1] Existing explanations for the observed gender gap include that women's profits or working capital are vulnerable to expropriation (de Mel, McKenzie, and Woodruff 2009; Jakiela and Ozier 2016; Fiala 2018); women are less committed to growing their enterprises or are more impatient (Klapper and Parker 2011, Fafchamps et al. 2014); and that

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[1] Studies listed in Table 1 were identified through a keyword search of papers published between 2009 and 2018 in nine general interest and development economics journals. In addition, we reviewed all papers which cite de Mel, McKenzie, and Woodruff (2008). See notes to Table 1 for further details.

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, percent increase over the control group)	Impact on profits of enterprise, by gender: Impact on female-led enterprises (average profits, percent increase over the control group)
No impact on profits of female-led enterprises				
Berge, Bjorvatn, and Tungodden (2015)	Tanzania	Unconditional business grants	No increase in profits on average	No increase in profits on average
de Mel, McKenzie, and Woodruff (2008, 2009, 2012)	Sri Lanka	Unconditional business grants or in-kind grants for business equipment/inventories	Short term (2 years): profits increase by about 9% of grant amount Long term (5 years): 6–12% increase in profits persists	Short term (2 years): no increase in profits on average Long term (5 years): no increase in profits on average over 5 years later
Fafchamps et al. (2013)	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 (2017)	Uganda	Unconditional business grants or loans, subset offered business training	Treatment of loans + training leads to 54% increase in profits. No increase in profits on average from the grant-only treatment.	No increase in profits on average from any of the treatment arms
McKenzie (2017)	Nigeria	Unconditional business grants	0.16 standard deviation increase in score for aggregate index of profit and sales outcomes	No increase in score for aggregate index of profit and sales outcomes
Positive impact on profits of female-led enterprises				
Blattman, Fiala, and Martinez (2014)	Uganda	Unconditional business grants	Profits increase by roughly 30% after 2 years and stay at this level of increase after 4 years	No increase in profits after 2 years, but 73% increase after 4 years. At 4 years, the increase in profits on average is the same for women and men.

Notes: Studies listed in Table 1 were identified through a keyword search of papers published during the period 2009–2018 in the following journals: *American Economic Journal: Applied Economics*, *American Economic Journal: Economic Policy*, *American Economic Review*, *Econometrica*, *Journal of Development Economics*, *Journal of Political Economy*, *Review of Economics and Statistics*, *Review of Economic Studies*, and *Quarterly Journal of Economics*. Among these, we identified studies that assess the returns to capital of microentrepreneurs using the search terms *enterprise*, *gender*, *female*, and *grant*. In addition, we reviewed all papers that cite de Mel, McKenzie, and Woodruff (2008). Within this set of papers, we identified studies which (i) are field experiments in low-income countries; (ii) include a cash or in-kind grant-only treatment arm; (iii) randomize at the individual or household level and sample both men and women; and (iv) include as eligibility criteria that participants currently own, or plan to open, an enterprise.

Key Words: enterprise, entrepreneur, gender, female, returns, capital, grant

women sort into less profitable business sectors because of unequal labor market access or a preference for flexibility (Emran, Morshed, and Stiglitz 2011; Berge and Pires 2015).

In this paper, we propose and evaluate an alternative explanation for low observed returns to female relative to male entrepreneurs: both men and women invest grants and loans into high-return enterprises within their household, but these enterprises are more often male-owned than female-owned. This gives rise to large differences between returns to capital measured at the household versus enterprise level. Put differently, we provide evidence that men and women make investments in the context of available opportunities within their household and not simply their own enterprise.

Returns to grants and loans should therefore be viewed through the lens of household-level—not enterprise-level—decision-making. Using data from randomized loan and grant studies in India, Sri Lanka, and Ghana, we apply this framework to show that measuring returns through enterprise-level outcomes, as is standard in this literature, fails to capture intervention impacts on household economic outcomes.

Our approach is motivated by the observation that entrepreneurs in developing countries often have access to multiple investment opportunities within their household, and female more so than male entrepreneurs. Not only are levels of entrepreneurship typically high for poor urban households, these households also undertake significant diversification of economic activity (Banerjee and Duflo 2007). Across our three study samples, between two-fifths and three-fifths of female entrepreneurs reside with another enterprise owner at baseline. But, because female labor force participation tends to be well below that of men, there is a gender imbalance in entrepreneurs' range of household investment opportunities. In the Ghana and Sri Lanka samples, female enterprise owners are at least 1.5 times as likely as male enterprise owners to live with a second self-employed person.[2]

We study the relationship between household investment opportunities and individual investment decisions by measuring the impact of reducing capital constraints for one household member on *all* sources of income in a household. We consider investment responses among participants of a field experiment with microfinance clients in India conducted by Field et al. (2013) and among participants of two randomized grant experiments conducted by de Mel, McKenzie, and Woodruff (2008) in Sri Lanka and Fafchamps et al. (2014) in Ghana. In the India study, female microfinance groups were randomly assigned to either the classic microfinance contract or to one that eases capital constraints by providing a grace period before the first repayment. In the Sri Lanka and Ghana studies, male and female microentrepreneurs were randomly assigned to receive either cash or in-kind grants, or to a no-grant control group.

Using measures of profits and income, we compare enterprise-level and household-level estimates of treatment impact. Enterprise-level results for India replicate what was previously shown for Sri Lanka, Ghana, and in other settings: on average, treatment has no effect on women's enterprise profits. Yet, household-level measures reveal that both female and male capital shock recipients do, in fact, make high-return investments. In India and Sri Lanka, we observe a statistically significant rise in household income for female entrepreneurs who receive a positive capital shock (household income data was not collected in Ghana).[3]

The discrepancy between enterprise- and household-level estimates of female entrepreneurs' returns to capital suggests that women frequently use their loans or grants to invest in household enterprises that they do not own. We corroborate this observation by analyzing how treatment impact varies with household enterprise ownership structure: we directly assess how treatment impacts the profits of

[2] In our India sample, roughly the same share of female and male entrepreneurs report a second self-employed person in the household. This share is likely much higher than it is for the general population of male entrepreneurs, since the India sample is limited to households with a female microfinance client.

[3] The India study collected information on household income and on profits for all household enterprises. The Sri Lanka study collected household income data but not profit data for other household enterprises. The Ghana study did not collect data on either.

household enterprises not owned by the female capital shock recipient and whether the presence of other self-employed persons in the household is itself predictive of women's own enterprise-level returns. To conduct this analysis, we classify households with a female entrepreneur into two categories: (i) single-enterprise households, in which only the female owns an enterprise, and (ii) multiple-enterprise households, in which both the female and at least one additional person own an enterprise.

Here, we first show that capital directed toward female entrepreneurs is often allocated to other household enterprises. In multiple-enterprise households in the India sample, treatment has no impact on the female grace period loan recipient's enterprises, but has a large impact on the profits of enterprises owned by *other* household members. Meanwhile, in single-enterprise households, the grace period has a substantial impact on women's enterprise profits. Similarly, in the Sri Lanka and Ghana samples, we see higher enterprise-level returns for female entrepreneurs in single- versus multiple-enterprise households.

Finally, we ask whether male entrepreneurs in multiple-enterprise households are as likely as women to direct capital toward other household businesses. We find instead that there are gendered differences in the allocation of capital across household enterprises when both male and female entrepreneurs are present. We conclude by discussing suggestive evidence for two possible classes of explanations for this observed pattern of household investment behavior. First, our findings may reflect gendered sorting into relatively low-return entrepreneurial activities. For instance, gender norms over wives' relative earnings may constrain women's enterprise sector choice and subsequent investments, depending upon their spouse's own earning potential. Alternatively, gender norms which directly limit women's market engagement, such as those related to the division of childcare and household responsibilities or to women's mobility, may lead women to sort into home-based but less profitable enterprise activities. A second possible explanation is that women face greater risk than men of having revenue streams expropriated by other household members.

The distinction between these two classes of explanations has implications for whether we interpret the gendered pattern of investment response to capital shocks as evidence of misallocation of capital and for how we expect specific policy changes to impact the relative profitability of male versus female enterprises. We find suggestive evidence consistent with gendered sorting into high- and low-return enterprise sectors due to a norm over spouses' relative earnings, though we caution that our ability to provide definitive evidence in favor of any one explanation is limited.

This paper's main contribution is to demonstrate that endogenous household investment decisions can impact the observed profitability of household enterprises. From a measurement perspective, this highlights the importance of considering households' entire portfolio of investment opportunities when studying microenterprise behavior. Our approach of studying enterprise behavior through the lens of household decision-making is consistent with the large literature that has sought to understand individual farmers' input decisions within the context of agricultural household models (see, for instance, Benjamin 1992 and Udry 1996). In demonstrating that estimates of entrepreneurs' returns to capital are sensitive to the level of aggregation, this paper reconciles results from the enterprise grant studies described here with results from recent evaluations of cash transfers and microfinance. These evaluations estimate returns at the household level and find that gender of the recipient is irrelevant for household outcomes (see Haushofer and Shapiro 2016, Fiala 2018, Benhassine et al. 2015, and Bandiera et al. 2017 for examples from the cash-transfer literature, and see Augsburg et al. 2015 and Kevane and Wydick 2001 for examples from the microcredit literature).

Our exploration of potential mechanisms also builds upon previous work in the enterprise grant literature that studies the relationship between female entrepreneurs' business decisions and intra-household constraints imposed by inefficient bargaining or household production. In particular, our results on how female returns vary with household enterprise composition offer additional context for understanding de Mel, McKenzie, and Woodruff's (2009) findings on the role of women's bargaining power. Disentangling the role of household optimization and of intra-household bargaining in determining individuals' occupational choice and, later, investments given these earlier employment decisions, is an important area for future research.

I. Description of the India, Sri Lanka, and Ghana Studies

We summarize here the experimental design and sample of the three studies we consider. More detailed descriptions can be found in the source papers.

A. *India*

Experimental Design.—In 2007, Field et al. (2013) selected a sample of women from low-income neighborhoods of Kolkata to receive individual-liability loans that ranged from Rs 4,000 to Rs 10,000 (US$90 to US$225 at the 2007 exchange rate). Study participants were 18–55 years old and resided in a household with at least one enterprise owner. These women were organized into 169 five-member groups for repayment meetings. Of these, a randomly selected subset of client groups (the control arm) 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 treatment client groups received a contract that featured a two-month grace period before the first loan installment. All other contract features were held constant. Field et al. (2013) show that clients who received the grace period contract used the reduction in liquidity constraints to increase their capital stocks.

Data and Sample.—To assess the returns to female-owned enterprises, we restrict our sample to the 474 households that include at least one female entrepreneur (the microfinance institution requires only that at least one household member owns an enterprise, not that the female client does so). Online Appendix Table A1 shows that treatment and control groups remain balanced after this sample restriction.

Our analysis is based on baseline and three-year follow-up survey data. To gather a complete profile of investment opportunities available to study clients, we surveyed every household entrepreneur about their own enterprise profits. We trim enterprise and income outcomes to exclude the top 0.5 percent of each distribution. We consider all investment opportunities available over the three-year period: if an enterprise was open at baseline or opened between baseline and follow-up, but closed before the follow-up survey, the enterprise is included in analysis and profits are coded as zero. Similarly, if a female client was the sole entrepreneur at the time of intervention, but another household member later opened an enterprise, the household is classified as having multiple enterprise owners. Fifty-six percent of clients live in multiple-enterprise households.

B. *Sri Lanka*

Experimental Design.—In 2005, de Mel, McKenzie, and Woodruff (2008) identified a sample of male and female microentrepreneurs in three districts of Sri Lanka. Study participants were self-employed; 20–65 years old; owned US$1,000 or less in business capital; and had no paid employees. A randomly assigned subset of enterprise owners were offered either unconditional cash grants or in-kind grants for enterprise equipment or inventories. Participants who were offered in-kind grants could decide which goods were purchased. Grant size was also randomized and grants were worth either 10,000 LKR (approximately US$100) or 20,000 LKR.

Data and Sample.—The de Mel, McKenzie, and Woodruff (2008) analysis sample is composed of 202 male and 182 female entrepreneurs. We use data collected by the authors through nine quarterly surveys conducted between March 2005 and March 2007. Study participants were awarded grants after the first and third round of surveys. In each survey round, respondents were asked about the profits of their largest enterprise and about their household's income.

The authors collected enterprise profit data for only the study participant and not for other additional household entrepreneurs. However, in three of the nine survey rounds, study participants were asked to describe the employment status of all household members. Female entrepreneurs who reported that another household member was engaged in self-employment activities in any of the three survey rounds are considered to live in a multiple-enterprise household. Sixty-one percent of female study participants are members of multiple-enterprise households.

Following the authors, we trim outlying profit observations, eliminating the top 0.5 percent of absolute and percentage changes from one survey round to the next. We also exclude the 20 enterprises which were jointly operated, or where owner identity changed in at least one survey round. Online Appendix Table A2 shows that treatment and control groups are balanced across household type.

C. *Ghana*

Experimental Design.—The experimental design and sample selection criteria of the Ghana study closely follow that of the Sri Lanka study. Fafchamps et al. (2014) identified a sample of self-employed individuals in Accra who were aged 20–55, worked 30 or more hours per week, and whose enterprise had no paid employees and no motorized vehicle. Participants were randomly assigned to a control group or to either a cash or an in-kind grant treatment group, with grants worth 150 Ghanaian cedis (approximately US$120 at the time of baseline). As in the Sri Lanka study, in-kind grant winners chose which goods were purchased with the in-kind transfer amount.

Data and Sample.—The Ghana sample includes 479 female and 314 male entrepreneurs. The authors conducted two pre-treatment surveys and four additional quarterly surveys between October 2008 and February 2010. Treatment enterprises were randomly assigned to receive the grant after the second, third, or fourth survey.

At every survey round, respondents reported on profits of their own enterprises. The authors do not collect profits data from household entrepreneurs not targeted for the grant. Study participants are asked, however, about the employment status of other household members. Forty percent of female grantees reported that another household member was engaged in self-employment in at least one survey round and are classified as residing in multiple-enterprise households. Online Appendix Table A3 shows that treatment and control groups are balanced across household type.

II. Empirical Strategy

Randomization of the loan contract (in the India study) and enterprise grants (in the Sri Lanka and Ghana studies) allow us to estimate the causal impact of a capital shock on enterprise profits and household income.

India.—We estimate the following enterprise-level regression:

$$Y_{ihg} = \beta_0 + \beta_1 G_g + B_g + \gamma_1 X_{hg} + \mu_{ihg}, \tag{1}$$

where Y_{ihg} are the weekly enterprise profits of client i who lives in household h and belongs to microfinance group g. Standard errors are clustered at the group-level. The variable G_g is an indicator that equals one if the group was assigned to the grace period contract; B_g is an indicator of the stratification batch and X_{hg} is a vector of controls (listed in online Appendix Table A1). The term β_1 is the average treatment effect of being assigned to the grace period contract.

Following Field et al. (2013), we also estimate the above model with total household income and aggregate household enterprise profits (profits summed across all household enterprises) as outcomes. In the latter case, β_1 is the average treatment effect of being assigned to the grace period contract *on all household enterprises combined*. We cannot estimate a comparable aggregate profit regression for the Sri Lanka and Ghana samples as neither study collected profit data for enterprises owned by other household members.

Sri Lanka.—Following de Mel, McKenzie, and Woodruff's (2008) methodology, including specification and data transformations, we pool across cash and in-kind treatments and estimate the following enterprise-level regression:[4]

$$Y_{it} = \theta_0 + \theta_1 \mathit{Treatment}_{it} + \sum_{t=2}^{9} \delta_t + \gamma_i + \epsilon_{it}, \tag{2}$$

[4] We use the authors' publicly available dataset and regression code to replicate their published results and adapt their code to produce the additional results in this paper.

where $Treatment_{it}$ indicates the grant amount that entrepreneur i receives in wave t and Y_{it} are her monthly enterprise profits or total monthly household income.[5] Here, δ_t are survey wave fixed effects and γ_i are enterprise fixed effects. Standard errors are clustered at enterprise level.

Ghana.—Following Fafchamps et al.'s (2014) preferred specification and data transformations, we separately analyze the effects of the cash and in-kind grants and estimate

$$Y_{it} = \psi + \eta_0 M_{it} + \eta_1 E_{it} + \sum_{t=2}^{6} \delta_t + \gamma_i + \epsilon_{it}, \tag{3}$$

where M_{it} (cash) and E_{it} (in-kind) indicate whether entrepreneur i received a grant treatment in wave t. As before, Y_{it} are monthly enterprise profits, δ_t are survey wave fixed effects, and γ_i are enterprise fixed effects.[6] Standard errors are clustered at the enterprise level. As reported in Fafchamps et al. (2014), the cash grant treatment has no impact on either male or female enterprises. For simplicity, we do not report the coefficient η_0 in the main tables. (Online Appendix Tables A7 and A8 reproduce the Ghana results but also include the coefficients for the cash grant treatment.)

III. Results

Our analysis seeks to understand whether and how endogenous household enterprise composition—how many enterprises are owned and by whom—impacts the observed profitability of women's enterprises. We investigate this relationship in several steps, where each result motivates the subsequent component of our analysis.

We begin by comparing enterprise-level and household-level estimates of the impact of the grace period and business grant treatments for female entrepreneurs.

A. *Enterprise-Level and Household-Level Estimates of Female Entrepreneurs' Returns to Capital*

Panel A of Table 2 analyzes impacts of the grace period treatment for the India sample. Column 1 shows that the average treatment effect of the grace period contract on self-reported weekly profits for women is not different from zero (equation (1)). This result is consistent with findings from the enterprise grant studies cited in Table 1 and from the Sri Lanka and Ghana experiments re-analyzed in this paper. But, when we estimate the aggregate treatment impact on all household enterprises (column 2), results show that the treatment increases combined average weekly profits by 48 percent. The average aggregate household increase in profits is more than three-fold women's average enterprise-level increase in profits and this difference is statistically significant at the 5 percent level (column 4). Impacts on household

[5] We maintain the authors' heuristic and divide the treatment amount and outcomes by 100. The coefficient θ_1 is interpreted as the effect of a 100 rupee increase in capital stock.

[6] The authors estimate both an individual fixed effects model and an OLS model. For brevity, we only report the fixed effects model. OLS results are qualitatively similar and are available upon request.

Table 2—Enterprise Profits and Household Income in India and Sri Lanka

	Female enterprise profits (1)	All household enterprise profits (2)	log household monthly income (3)	Differences in treatment effects (col. 2 versus col. 1) (4)
Panel A. India				
β_1: Treatment indicator	167.01	671.58	0.25	491.70
	(103.17)	(218.27)	(0.09)	(231.14)
Control mean	401.08	1,387.35	9.24	
	[949.75]	[1,740.73]	[0.92]	
Number of enterprises	473	473	463	
Panel B. Sri Lanka				
θ_1: Treatment amount	−0.16		0.08	
	(2.82)		(0.04)	
Control mean	37.17		9.13	
	[38.75]		[0.65]	
Number of enterprises	182		182	
Enterprise-period observations	1,529		1,422	

Notes: Panel A (India Data): (i) The outcome variable in columns 1 and 2 of panel A is derived from the survey question "Can you please tell us the average weekly profit you have now? By 'profits', I mean the income you receive from sales after subtracting the costs (raw materials, wages to employees, etc.) of producing the items or services." For comparability with Sri Lanka results, in column 1 we follow the de Mel, McKenzie, and Woodruff (2008) method for measuring enterprise profits: if a client runs multiple enterprises, we report the profits of the largest enterprise she owned at baseline. In column 2, the outcome variable is the total household profits when we aggregate across all household enterprises. The outcome variable in column 3 of panel A is the log responses to the question "What was your total household income over the previous 30 days?" The units are Indian rupees. In column 3, 11 observations are lost because households reported 0 total household income. (ii) Regressions in panel A are presented in equation (1) in the paper. They include stratification fixed effects and standard errors are clustered by loan group. The regressions also include all controls presented in online Appendix Table A1. 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. (iii) To test for the equivalence of treatment effects at the enterprise versus household level, we use a SUR regression. We stack the datasets and create a variable that measures profits at the enterprise level or household. We create an indicator variable that takes the value 1 if the outcome is measured at the level of the enterprise and 0 if it is measured at the level of the household. We expand the regression specification in equation (1) by including as additional explanatory variables an interaction term between treatment and whether the outcome is measured at the household level. We also include the household-level indicator variable as an additional variable. Column 4 of panel A shows the coefficient on the interaction term between the treatment indicator and household indicator. Panel B (Sri Lanka data): (iv) The outcome variable in column 1 of panel B is derived from the survey question "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 units are Sri Lankan rupees. The coefficient in column 1 is interpreted as the effect on the outcome variable of a 100 Sri Lankan rupee increase in the capital stock shock. The outcome variable in column 3 of panel B is the log of responses to the question "How much is your total monthly household income now?" The sample in columns 1 and 3 is limited to sampled female enterprises. The authors do not collect the data necessary to reproduce column 2 of panel A. (v) We run the regressions in panel B using the authors' original code (equation (2) in this paper). Regressions include enterprise and survey wave fixed effects. Standard errors are clustered at the enterprise level and are shown in parentheses. (vi) See the online Appendix for detailed descriptions of the outcome variables, data source, the sample, and the regression in each column.

income (column 3) are similarly large: treatment results in household income gains of 25 percent of the control group mean. The results on household profit and income gains are statistically significant at the 1 percent level.

Panel B of Table 2 reports treatment effects of the business grants for female entrepreneurs and their households in the Sri Lanka sample. Column 1 replicates the authors' original finding that the average treatment effect of receiving a grant on female enterprise profits is not different from zero. But, consistent with India results (panel A), we find a statistically significant treatment effect on log monthly household income (column 3): households of treated women earn on average 8 percent higher aggregate income than their counterpart control households and this finding is statistically significant at the 10 percent level.

Household-level estimates of the returns to capital for female enterprises in India and Sri Lanka show that women put their loans and grants toward productive use. The large disparity between female enterprise- and household-level returns suggests that women are often investing in *other* household members' enterprises. Motivated by this finding, we next directly assess how treatment impacts the profits of household enterprises not owned by the female capital shock recipient and whether the presence of other self-employed persons in the household is itself predictive of women's own enterprise-level returns.

For the remaining analysis, we split each study sample by household type: (i) single-enterprise households, where the loan or grant recipient is the only self-employed household member, and (ii) multiple-enterprise households, where at least one other household member is self-employed.

B. *Are Women's Loans and Grants Invested in Other Household Enterprises?*

In Table 3, we provide direct evidence for the India sample that women's capital is consistently invested into high-return enterprises, but that these enterprises are often owned by other household members. Column 1 (panel A) shows that, for women in multiple-enterprise households, the grace period treatment has no impact on these women's own enterprise profits. But, in column 2, we show that other household members' enterprises see a 44 percent increase in profits over the control group and this estimate is statistically significant at the 5 percent level.

Treatment impacts for women in single-enterprise households differ substantially from those for women in multiple-enterprise households. When women reside in households in which their enterprise represents the only household investment opportunity, capital shocks directed to them lead to large and statistically significant increases in their enterprise profits (column 3). For the India sample, women's weekly profits in single-enterprise households increase by 81 percent relative to the control group. As shown in column 4, we can reject equal returns for women in multiple- and single-enterprise households (both the treatment level effect and the test for difference are statistically significant at the 5 percent level).

For the Sri Lanka and Ghana studies, we do not have data on other household entrepreneurs' profits and so we cannot directly check whether the same pattern of investment response exists in those settings. However, consistent with the idea that resources available to women are invested in other household members' enterprises when there is opportunity to do so, the grant treatment has no impact on women's business profits in multiple-enterprise households in Sri Lanka (panel B, column 1) and a moderate impact in Ghana (panel C, column 1).[7] Meanwhile, monthly profits of female entrepreneurs in single-enterprise households increase by 21.8 percent in Sri Lanka (panel B, column 3) and 43.3 percent

[7] Online Appendix Tables A7 and A8 replicate Tables 3 and 4, respectively, but include coefficients for the Ghana cash grant treatment.

TABLE 3—FEMALE ENTERPRISE PROFITS BY HOUSEHOLD TYPE IN INDIA, SRI LANKA, AND GHANA

	Households with multiple enterprise owners		Households with single enterprise owner	
	Female (1)	Other household members (2)	Female (3)	Differences in treatment effects (col. 3 versus col. 1) (4)
Panel A. India				
β_1: Treatment indicator	−39.60	709.50	446.14	447.09
	(64.14)	(288.02)	(211.30)	(188.42)
Control mean	356.51	1,625.44	549.73	
	[596.03]	[1,717.80]	[980.47]	
Number of enterprises	260	257	212	
Panel B. Sri Lanka				
θ_1: Treatment amount	−4.84		6.88	11.72
	(3.76)		(3.58)	(5.17)
Control mean	41.55		31.59	
	[42.56]		[32.48]	
Number of enterprises	111		71	
Enterprise-period observations	938		591	
Panel C. Ghana				
η_1: Treatment indicator	22.95		43.28	25.86
	(12.68)		(20.50)	(23.70)
Control mean	75.06		100.06	
	[76.02]		[131.03]	
Number of enterprises	191		287	
Enterprise-period observations	1,062		1,566	

Notes: Panel A (India data) and panel B (Sri Lanka data): (i) The question and unit that defines the outcome variables in columns 1–3 of panels A and B are defined in Table 2 (notes (i)and (iv)). The regression specifications are described in notes (ii) and (v) of Table 2. In column 1, we report the profits of the female enterprise in households with multiple enterprise owners. In column 2, we report the profits of all other household businesses (excluding the profits of the targeted female enterprise). In column 3, we report the profits of the female enterprise in households in which the targeted recipient is the sole enterprise owner in her household. In panel A, profits are aggregated across all the enterprises of the entrepreneur listed in the column title. The equivalent measure cannot be constructed for the Sri Lanka and Ghana sample as the authors did not collect information on non-targeted businesses. For a detailed description of a sole/multiple female enterprise owner household in each of the samples, see Section IB. Panel C (Ghana data): (ii) The outcome variable in panel C is derived from the question "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 units in panel C are cedis. (iii) Regressions in panel C are created using the authors' original code (equation (3) in this paper). They include enterprise and survey wave fixed effects. Standard errors are clustered at the enterprise level and are shown in parentheses. Although the cash grant coefficient is included in the regressions, it is omitted from the tables for simplicity. See Section II for further explanation. The sample in this table is limited to sampled female entrepreneurs. (iv) Column 4 shows the coefficient on the interaction term between the treatment indicator and a dummy for single enterprise household. Following the regression specifications described in each of the samples, we regress profits on the interaction term, as well as the levels. In panels B and C, the firm fixed effect absorbs the level effect. (v) See the online Appendix for detailed descriptions of the outcome variables, data source, the sample, and the regression in each column.

in Ghana (panel C, column 3). These findings are statistically significant at the 10 percent level (Sri Lanka) and 5 percent level (Ghana). The gap in returns for women in single- versus multiple-enterprise households is large in magnitude for all three samples but the difference is measured with statistical significance only for the India and Sri Lanka samples (column 4).

C. *How Large are Returns to Capital when Loans and Grants are Invested in Female Enterprises?*

Results in Table 3 demonstrate that the grace period loan and grant treatments generate substantial profit gains for women in single-enterprise households. This leads us to ask: does the gender gap in returns persist for this subset of female entrepreneurs? In other words, does the gender gap in enterprise returns persist when women's capital is invested in their own enterprises, and not diverted to other household businesses?

In online Appendix Table A4, we compare returns for male entrepreneurs to those of female entrepreneurs in single-enterprise households. To do this, we regress enterprise profits on the interaction between treatment and an indicator variable for being a female in a single-enterprise household.[8] In Sri Lanka, we observe no difference in returns between female and male enterprises. In Ghana, women's returns are 22 percent lower than men's returns, but this difference is not statistically significant. In India, the magnitude of the difference in returns is large, but again we cannot reject that increases in profits are the same for men and women.

It is useful to take stock at this point. Our analysis seeks to understand whether accounting for entrepreneurs' full set of household investment opportunities can explain why and when a gender gap in enterprise returns is observed. We have shown that men and women in single-enterprise households are equally likely to own high-return businesses and make productive use of loans and grants. This implies that the gender gap in estimated returns is driven by women in multiple-enterprise households, for whom we observe zero enterprise returns on average. In the remainder of the paper, we investigate entrepreneurs' investment decisions within these multiple-enterprise households.

D. *Are Women More Likely Than Men to Invest Capital in Other Household Enterprises?*

Our findings on enterprise returns in India suggest a gender imbalance in the intra-household allocation of capital in multiple-enterprise households: capital in these households is more often than not invested in male-owned businesses (Table 3). We now consider both men and women's returns within multiple-enterprise households in each of the three study samples and show that this result holds more generally: relative to men, women are more likely to invest loans or grants assigned to them into other household members' enterprises. For the Sri Lanka and Ghana samples, we cannot directly trace out the impact of capital assigned to one entrepreneur on other household enterprises. That said, the Sri Lanka and Ghana studies offer a different empirical opportunity: since they targeted both male and female entrepreneurs (whereas the India study only targeted female clients), we can directly compare recipients' investment responses when grants are assigned to male versus female enterprise owners.

[8] We include male entrepreneurs in both single- and multiple-enterprise households to allow for comparison with results from the grant studies cited in Table 1.

For the analysis in Table 4, we limit each of the study samples to entrepreneurs who reside in multiple-enterprise households. We regress enterprise profits on the treatment variable and an interaction of treatment with an indicator for whether the study entrepreneur is female. In India, where all household entrepreneurs are surveyed but where only female entrepreneurs are targeted for loans, the female indicator is equal to one if the entrepreneur is the female client. The female indicator is equal to zero when the entrepreneur is another business owner in her household. (In 97.5 percent of multiple-enterprise households in India, enterprises not owned by the female client are owned by men.) In Sri Lanka and Ghana, where entrepreneurs of both genders are sampled but where only the sampled entrepreneur is surveyed, the female indicator is equal to one if that entrepreneur is a woman. In India (column 1), we also include the female client indicator as a separate variable; in Sri Lanka (column 2) and Ghana (column 3), the female indicator is absorbed by enterprise-owner fixed effects.[9,10]

The large positive coefficient on the treatment variable in all three samples demonstrates that men in multiple-enterprise households have high returns to capital. In contrast, the coefficient on the interaction term is negative in all three samples and, in India and Sri Lanka, the magnitude of the coefficient implies that women in multiple-enterprise households have zero returns to capital at the enterprise level. Yet female entrepreneurs in multiple-enterprise households are, in fact, making high-return investments. In online Appendix Table A6, we compare treatment impacts on household income for male versus female entrepreneurs from multiple-enterprise households in Sri Lanka (where we have household income data for both male and female capital shock recipients). The magnitude of the difference is not zero, but we cannot reject equality of treatment impacts for men and women.

Together, results for India, Sri Lanka, and Ghana suggest that more capital is allocated toward male- than female-owned enterprises in multiple-enterprise households. We turn in Section IV to a discussion of possible explanations for this household investment behavior.

IV. Discussion

Our analysis shows that endogenous household enterprise composition is an important determinant of women's investment response to a capital shock and, consequently, of the observed profitability of women's enterprises. Returns to capital are higher for female entrepreneurs when measured at the household rather than the enterprise level, and women in single-enterprise households exhibit much larger gains from capital shocks than do women in multiple-enterprise households. When women are the sole household enterprise owner—or, put differently, when their enterprise offers the only household investment opportunity—they put capital shocks toward productive investments in their own businesses. But, when both male

[9] The India results in Table 4 reproduce those shown in Table 3 (comparison of columns 1 and 2) and are included here for comparison purposes with the Sri Lanka and Ghana results. The Sri Lanka and Ghana samples in Table 4 include the sample of women in multiple-enterprise households from Table 3 (column 1) and, in addition, include the sample of male study participants in multiple-enterprise households.

[10] See the online Appendix for a detailed description of the regressions shown in Table 4.

Table 4—Comparison of Male and Female Enterprise Profits in Multiple Enterprise Households in India, Sri Lanka, and Ghana

	Households with multiple enterprises		
	Enterprise profits (1)	Enterprise profits (2)	Enterprise profits (3)
Panel A. India			
Treatment indicator × female client	−967.88		
	(338.32)		
Treatment indicator	823.08		
	(285.59)		
Female client†	−1,271.05		
	(145.46)		
Panel B. Sri Lanka			
Treatment amount × female		−17.96	
		(5.32)	
Treatment amount		13.12	
		(3.77)	
Panel C. Ghana			
Treatment indicator × female			−50.63
			(46.74)
Treatment indicator			73.58
			(44.99)
Control mean	1,625.44	65.44	151.13
	[1,717.80]	[44.06]	[292.72]
Number of enterprises	517	191	268
Enterprise-period observations	517	1,627	1,485

Notes: † The Female indicator variable is absorbed by enterprise fixed effects in the Sri Lanka and Ghana regressions. (i) The question and unit that defines the outcome variables in columns 1, 2, and 3 are defined in Table 2, note (i), Table 2, note (iv), and Table 3, note (ii), respectively. (ii) We report regressions where the unit of observation is enterprise and the sample is limited to enterprises operated in multiple-enterprise households. The outcome variable of interest in enterprise profits. For the India sample, the female indicator equals 1 if the enterprise is owned/operated by the female client and equals zero if the enterprise is operated by other household members (in 97.5 percent of multiple enterprise households in India, the enterprises of other household members are operated by male entrepreneurs). In the Ghana and Sri Lanka samples, the female dummy = 1 if the enterprise is operated by a female grant recipient and equals 0 if it is operated by a male grant recipient. (iii) The enterprise-level regressions reported in this table are expanded versions of regressions described in Table 2, note (ii) (for column 1); Table 2, note (v) (column 2); and Table 3, note (iii) (column 3). Specifically, we expand the regression specification by including as additional explanatory variables an interaction term between treatment and female. In India, we also include the female indicator variable as an additional variable. In Sri Lanka and Ghana regressions the latter is absorbed by the enterprise fixed effect in Sri Lanka. (iv) See the online Appendix for detailed descriptions of the outcome variables, data source, the sample, and the regression in each column.

and female entrepreneurs are present, households direct more capital toward male- relative to female-owned investment opportunities.

In this section, we discuss two classes of explanations which could underlie these gendered patterns of investment behavior. We caution that the India, Sri Lanka, and Ghana studies randomized access to loans or grants taking household enterprise composition—the number of enterprises, gender of owners, and business sectors—as given. We therefore cannot fully rule out any explanation for household investment behavior without strong assumptions about the comparability of subsamples.

We first consider explanations that relate to differential sorting across enterprise sectors by gender. For instance, sorting could occur because of gender norms over spouses' relative earnings. Women may systematically select into lower-return business sectors because gender norms dictate that men control "more profitable" enterprises, possibly because they are expected to earn more income than their wives (see Bertrand, Kamenica, and Pan 2015 and Murray-Close and Heggeness 2018 for evidence of this norm among spouses in the United States). This mechanism would imply that the gender of the enterprise owner is endogenous to the enterprise's growth potential.

Patterns of earnings and occupational choice across spouses in the India sample offer suggestive evidence consistent with the presence of a norm over the spouse's relative earnings (Table 5).[11] First, in 89 percent of households, husbands earn more than their wives. Among households in which the female earns more, two-thirds of women report that their husband is temporarily unemployed, primarily due to illness. A relative earnings norm implies that women whose spouses have low earning potential (relative to other men) would be more likely to themselves sort into even lower-return activities. Consistent with this, the wage income of husbands in single-enterprise households is roughly double the business income of husbands in multiple-enterprise households. Similarly, we also observe differences in enterprise-sector choice among women: female entrepreneurs in single-enterprise households are 23 percent more likely to select into high-return retail activities (and, correspondingly, 20 percent less likely to select into home-based but low-return piece-rate activities).

Women may also sort into low-return enterprise sectors because of gendered roles in household production or economic activity. For instance, the norm that women serve as primary care-givers for children may lead them to select into lower-return, home-based enterprises. This observation is made by de Mel, McKenzie, and Woodruff (2009) and Berge and Pires (2015), among others. Our evidence from the India sample provides mixed support for this explanation. Relative to female entrepreneurs in multiple-enterprise households, those in single-enterprise households are less likely to be constrained by child care: they are, on average, two years older and 9 percent less likely to have children under 6. But, time-use data for women in the control sample shows that female entrepreneurs in multiple- and single-enterprise households report an equal number of hours spent on enterprise activity versus on household work and child care. Moreover, single- and multiple-enterprise household women are equally likely to report that they selected into entrepreneurship (over wage employment) because it provides them with flexibility to manage household duties.

A second explanation for women's relatively low returns to capital in multiple-enterprise households is that these women's resources are especially vulnerable to expropriation by other household members. Low bargaining power, combined with intra-household differences in investment preferences, may prevent female entrepreneurs in multiple-enterprise households from exerting control over investments in their businesses. Expropriation could happen at the input stage (husbands take over women's capital) and/or the output stage (husbands take profits

[11] We consider only the India sample since the Ghana and Sri Lanka samples are too small to examine differences by household type. Those studies leverage repeated rounds of survey data collection to be sufficiently powered to estimate marginal returns among a small sample of respondents. But, for this exercise, we are using only baseline data.

Table 5—Differences in Demographics and Earnings Composition By Household Type in India

	Households with multiple enterprise owners	Households where only female client owns enterprises
	Mean	Difference
	(1)	(2)
Panel A. Household characteristics		
Client is married	0.95	−0.11
	[0.23]	(0.03)
Client is Muslim	0.02	0.00
	[0.12]	(0.01)
Client's age	33.28	2.12
	[7.50]	(0.75)
Husband's age	40.17	2.42
	[8.66]	(1.00)
Client's years of education	6.20	0.83
	[3.57]	(0.35)
Husband's years of education	6.47	1.86
	[3.72]	(0.38)
Household size	4.23	−0.42
	[1.33]	(0.11)
Client has a child under 6	0.34	−0.09
	[0.47]	(0.04)
Client's empowerment score	−0.14	0.39
	[1.47]	(0.18)
Number of times client took bus in past week	1.39	0.63
	[4.28]	(0.52)
Number of household enterprises	2.27	−0.98
	[0.60]	(0.05)
Number of wage earners	0.67	0.84
	[1.08]	(0.11)
Panel B. Client's sector selection and place of work		
Piece rate sector	0.53	−0.20
	[0.50]	(0.05)
Manufacturing final goods sector	0.10	0.03
	[0.30]	(0.03)
Retail non-perishables sector	0.28	0.23
	[0.45]	(0.05)
Retail perishables sector	0.05	0.03
	[0.22]	(0.02)
Services sector	0.11	0.04
	[0.32]	(0.03)
Client works at home	0.70	−0.16
	[0.46]	(0.05)
Reason for enterprise is flexibility	0.23	−0.01
	[0.42]	(0.04)

(*Continued*)

from women's enterprises, limiting re-investments in, and the growth of, these enterprises). Alternatively, anticipating that their profits will be expropriated, women may voluntarily hand over their resources to their husbands (possibly because doing so would strengthen their bargaining position).

Though it's impossible to fully rule-out expropriation as a contributing channel, our analysis provides suggestive evidence that capture is not the primary mechanism

TABLE 5—DIFFERENCES IN DEMOGRAPHICS AND EARNINGS COMPOSITION BY HOUSEHOLD TYPE IN INDIA (*Continued*)

	Households with multiple enterprise owners	Households where only female client owns enterprises
	Mean	Difference
	(1)	(2)
Panel C. Earnings composition and client's time use in control group households		
Minutes spent on enterprise yesterday	165.14	−33.68
	[201.52]	(28.25)
Minutes spent on HH chores and children yesterday	206.90	12.18
	[182.97]	(20.03)
Total HH wage income and enterprise profits	3,383.01	2,287.85
	[2,684.15]	(541.58)
Client's enterprise profits	356.51	216.88
	[596.03]	(106.56)
Spouse's enterprise profits	1,912.10	−1,883.49
	[3,227.27]	(268.08)
HH wage income	1,434.78	3,773.53
	[2,251.02]	(523.13)
Client earns more than spouse	0.11	0.01
	[0.31]	(0.04)

Notes: (i) Data in panels A and B comes from the baseline survey. Data in panel C comes from the follow-up survey (2010) and limits the sample to the control group. (ii) The panel called "Client's sector selection and place of work" enumerates the proportion of businesses run by the female borrowers that come from each sector. Because sometimes the female borrower operates multiple enterprises, the proportion across all sectors is greater than 1. (iii) In column 1, we limit the sample households in which the borrower lives with at least one other enterprise owner. Column 2 reports the test of differences in the means of the characteristics between households in which there are multiple enterprise owners and households in which the female borrower is the only enterprise owner. The regressions include strata fixed effects and standard errors are clustered by loan group. (iv) See the online Appendix for detailed descriptions of the outcome variables, data source, the sample, and the regression in each column.

behind the gender imbalance in allocation of capital in multiple-enterprise households. First, if expropriation were the main underlying cause for female entrepreneurs' low profits, then women would likely face this spousal capture even when they are the sole self-employed household member. Of course, it could again be that the same demographic characteristics that are predictive of being a woman in a single enterprise household—being older, more educated, and with older children—influence empowerment and therefore the ability to prevent expropriation. Indeed, Table 5 shows that female entrepreneurs in single-enterprise households have higher levels of empowerment, as reflected in an index of decision-making power within the household. However, while household enterprise composition is a statistically significant predictor of women's enterprise returns across all three samples, indicators of women's empowerment do not have consistent predictive power. In India and Ghana, there is no statistically significant relationship between returns and measures of female empowerment. In Sri Lanka, de Mel, McKenzie, and Woodruff (2009) show that female empowerment (as measured by an index of decision-making power and self-reported cooperation with spouse) does predict women's returns. But, in our re-analysis of the Sri Lanka data, we find that household enterprise composition remains a statistically significant predictor of women's returns—even after controlling for de Mel, McKenzie, and Woodruff's (2009) measures of female empowerment.[12]

Rigorously unpacking these mechanisms is a fruitful avenue for future research into female entrepreneurship in developing countries. These questions are especially important because the distinction between the sorting and expropriation explanations has implications for whether we interpret the gendered pattern of profit response to capital shocks as evidence of misallocation of household investment. Only the expropriation explanation, in which households systematically divert investment away from female-operated enterprises, implies resource misallocation. On the other hand, evidence in favor of a norms-based explanation would imply that current levels of investment in female enterprises are efficient. It would also imply that policies meant to encourage female entrepreneurs to migrate to higher-return enterprise sectors should aim to effect change in gender norms.

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