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Childcare Matters: Female Business Owners and the Baby-Profit Gap *

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Abstract

The previous literature documents that female-owned businesses are less profitable than male-owned businesses, including micro-enterprises that make up the majority of firms in developing countries. In this paper, we uncover an overlooked gendered constraint for these businesses: childcare. We collect field data through unannounced visits to a sample of micro-entrepreneurs in select areas of Uganda, combining surveys of business owners and real customers, as well as purchases by confederate buyers (i.e., mystery shoppers). We document that childcare duties in businesses are highly gendered: 37% of female owners bring small children to work, compared with 0% of men. Childcare duties are correlated with a "baby-profit gap," as businesses where children are present earn 48% lower profits than even other female-owned businesses where a child is not present. Using our rich data, we analyze potential reasons why childcare obligations may affect profits. We find that prices, product quality, and other explanations are not robustly correlated with the presence of a baby. However, we find that women with children in the store are more likely to run out of stock than both men and women who do not have children in the store. While we caution that our analysis is not causal, we consistently find that childcare duties are associated with profitability and may relate to the wider gender gap in business performance.

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1 Introduction

Small firms are important contributors to both employment and overall economic output in developing countries, constituting up to 40% of GDP (World Bank, 2020*b*). Most of these small firms worldwide have fewer than 10 employees and are based in developing countries, but the specific constraints faced by such firms have been understudied in the organizations literature (McKenzie and Woodruff, 2017; Anderson, Chandy and Zia, 2018). A growing literature focuses on improving business performance in developing countries – for example, by relieving capital constraints or offering business training programs, among other measures– but these interventions have typically led to an increase in performance for male-owned, but not female-owned, businesses (De Mel, McKenzie and Woodruff, 2009*b*; Fafchamps et al., 2014; Berge, Bjorvatn and Tungodden, 2015).

The gendered effect of these interventions on small business performance suggests that female business owners face unique constraints that do not affect men to the same extent, ultimately creating gendered inequality in business performance (Doering and Liu, 2019; World Bank, 2012). This effect reflects a larger performance gap for women in developing countries that is not clearly understood (Nix, Gamberoni and Heath, 2015; Hardy and Kagy, 2018). As women represent nearly a third of all business owners worldwide, and often more in developing countries, identifying interventions to improve performance may affect their overall economic output and growth (World Bank, 2020*a*).

One potential constraint on the profitability of female-owned businesses might be childcare. Previous literature has shown that in developed countries, childcare duties affect the performance of women as both employees and managers (Correll, Benard and Paik, 2007; England et al., 2016; Leibbrandt and List, 2014; Sherman, 2019). Similarly, women are more likely to manage a high-earning business in countries that have better childcare available (Thébaud, 2015). However, establishing the presence of childcare constraints within indi-

vidual businesses is difficult due to data limitations. Family characteristics and childcare obligations are not recorded in large-scale surveys of firms, for example. Childcare obligations are also highly gendered and difficult to separate from other gendered structural factors that may be associated with profits or other measures of performance.

We fill this gap by contributing new microdata on firm operations. We focus on a sample of drugstores in Uganda that sell primarily (but not exclusively) antimalarial drugs. We test whether (1) childcare duties are a constraint faced by these businesses, and (2) whether owners who brought their children to work earn lower profits on average. We provide descriptive evidence from a dataset with a rich set of business-related variables. We combine three datasets capturing firm operations: vendor surveys, visits to stores by confederate buyers (also known as "mystery shoppers"), and surveys of real customers. We directly measure childcare duties by documenting whether a "small baby" (i.e., a child under 2) was present during a vendor survey. This data overcomes issues of bias in self-reporting regarding childcare. We focus exclusively on childcare for infants (early childhood). We objectively measure firm operations by using outcomes of unannounced visits to stores by confederate buyers, validated by other surveys of customers. Because male and female owners differ across a large number of factors that might be correlated with profits, we focus on comparing female owners with a baby in their store to female owners without a baby in their store. Although we lack exogenous variation in the presence of a child, these groups are more comparable and are similar on many characteristics. We find that childcare duties are significantly and consistently associated with lower profits, what we coin the "baby-profit gap."

We make three main contributions. First, we are the first to document that many entrepreneurs in developing countries bring small children to work with them in their store and that this constraint is gendered. In our sample of owners, 37% of female owners bring their babies to work, compared with 0% of men ($p<0.01$). This disparity alone indicates

that childcare is a substantial and gendered obligation for female entrepreneurs.

Second, we provide new evidence that the presence of an infant in the store is correlated with business profitability, suggesting that childcare responsibilities may be an important constraint underlying the lower profitability of female-owned firms. While male-owned businesses make 2.5 times the profits of female-owned businesses, we provide descriptive evidence that female-owned businesses make even lower profits when the owner has childcare obligations. The profitability of stores run by women who bring a child to work is 48% lower than for other women ($p<0.01$) –the "baby-profit gap." We caution that our research design does not allow us to make causal conclusions. Childcare duties and business performance likely reinforce each other. Institutional and infrastructure constraints, specifically in low-resource settings, might reduce women's options to outsource childcare. These constraints at the micro level could create a cycle in which poor firm performance might hurt financial stability and childcare options, leading women to then bring their children to work. Our paper provides evidence for one part of that cycle. We interpret our findings as suggesting that childcare constraints are a potential source of profit disparities between men and women.

Third, we use our rich data to test for mechanisms and possible operations differences that may help explain our results. Using confederate buyer visits, we find that stockouts –also known as inventory shortages– may contribute to the baby-profit gap. Female-owned stores with a baby present were out of stock of all antimalarial drugs during 13.3% of confederate buyer visits, compared with 5.3% in female-owned stores without a baby present. In this context, restocking is time-consuming –among other things, business owners typically need to travel to the wholesaler to refill stocks, which might be more difficult while taking care of a baby. Our data is inconsistent with other explanations such as price setting, distractibility, cognitive ability, or customer-side discrimination, though we can not formally refute them. Understanding constraints such as childcare will allow for better cognizance on how to improve the profitability of female-owned businesses, reduce the gender gap between

business owners, and ultimately contribute to higher profits and growth.

2 The Gender Gap in Profitability and Childcare Constraints

2.1 The gender gap in profitability for micro-enterprises in developing countries

Female business owners earn less than male business owners on average, in both developed and developing countries (De Mel, McKenzie and Woodruff, 2009*a*; Guzman and Kacperczyk, 2019; Doering and Liu, 2019; Hardy and Kagy, 2018). There are many reasons why women earn less. The main driver of the gap is that women tend to start businesses in less profitable sectors than men (Petersen and Morgan, 1995). But even when women start a business within the same industry, they earn less on average. Women often start businesses with less human, social, and financial capital (Guzman and Kacperczyk, 2019). Interventions targeting micro-enterprises, often by providing financial capital or business training, have increased business performance for men, but not women (De Mel, McKenzie and Woodruff, 2009*b*; Fafchamps et al., 2014; Berge, Bjorvatn and Tungodden, 2015; Fiala, 2018). This gendered effect of intervention suggests that there are additional barriers for women. We argue that gendered constraints at home might translate into gendered business performance, especially in developing countries, where family and business operations generally intersect.

2.2 The intersection of family and business operations

Worldwide, women often shoulder a disproportionate burden of childcare responsibilities. This gender gap comes from overlapping biological, institutional, and social constraints that may be more stringent in developing countries. For example, high fertility rates in conjunc-

tion with a lack of access to clean water and reliable electricity may result in conditions where women spend a substantial amount of time breastfeeding. Alternatives like formula or pumping milk may not be appropriate or affordable in all settings. Recent work has found that in areas with unsafe water supply, formula can increase infant mortality (Anttila-Hughes et al., 2018). Pumping typically requires storage capacity like a refrigerator and consistent electricity access, infrastructure that is less common in developing country settings. As a result, infants need to be close to their mothers for frequent feedings; for example, for the first year of life, infants need to feed approximately 8-12 times per day. Even if other childcare arrangements were available or affordable, the practical lack of breastfeeding alternatives may limit women's options to outsource childcare.

In addition to these issues, social norms may encourage women to take care of the family and children of all ages (Doering and Thébaud, 2017; Ranganathan and Pedulla, 2020). For example, it is well documented that women spend more time providing childcare, as well as other household chores, in a variety of contexts (Sayer, Bianchi and Robinson, 2004). These norms reduce female labor force participation and also likely contribute to decreased female educational attainment, instead encouraging women to devote time to unpaid labor within the household (Kelly et al., 2014). As a result, household income is predominantly composed of male income, an equilibrium that results in household decision making that more closely reflects male rather than female preferences (Lundberg, Pollak and Wales, 1997).

Social norms and associated constraints may directly affect business operations because the prevalence of informal markets creates an environment with little distinction between work and family life (Jayachandran, 2020). Inequality at home may then translate into inequality in the workplace. Physically, business owners may run the business out of their home (Doering and Liu, 2019). The boundaries between home and business can be so porous that the capital of female-run businesses might be spent for household purposes (Fafchamps et al., 2014) or even invested into the husband's business (Bernhardt et al.,

2019). Interventions targeting women at home might have benefits for their productivity at work. A recent intervention that focused on young women's empowerment in Uganda showed increases in micro-enterprise entrepreneurship, consistent with micro-enterprises as an attractive way for women to meet their obligations at home while increasing income (Bandiera et al., 2020). Previous research has not identified the frequency with which female entrepreneurs bring their children with them to work, potentially contributing to a gender gap in performance.

2.3 How the presence of a baby could affect business performance

There are at least four broad reasons why the presence of children at work may be correlated with firm operations and profitability, ultimately contributing to observed profit gaps between men and women.

First, children may affect the number of hours that a business is open by either changing labor force attachment (hours worked) or else inducing closures (due to a child's illness, for example). Ranganathan and Pedulla (2020) find that providing childcare to employees is associated with increased labor force attachment in India; it seems plausible that a similar result could hold for owners. Second, women with a baby in their store may be distracted or unable to adequately perform daily business tasks due to their need to supervise young children, such as cleaning or stock purchases. Taking care of a child may restrict time available to clean the store or make it harder to travel to make purchases.[1]

A third possible reason for the gap is that customers may prefer to patronize stores without children present, potentially due to inadequate firm operations. A nascent literature in developing countries looks at the effect of demand-side constraints on the gender profit gap (Hardy and Kagy, 2018; Delecourt and Ng, 2020). Evidence from developed countries

[1]In this context, restocking inventory often requires the business owner to travel to the wholesaler, and delivery services are not common.

also shows that mothers may suffer from discrimination, either from buyers or other lenders (Correll, Benard and Paik, 2007; Budig and Hodges, 2010). Finally, it is possible that selection is driving the association between the presence of a child and business performance. For example, women with a baby in their stores might already be the most cash- or credit-constrained.

3 Research Setting: Drugstores in Uganda

Small firms in Uganda constitute up to 90% of private-sector production and employ 2.5 million people (Financial Sector Deepening Africa, 2015). The respondents in our sample are owners of drugstores in Uganda, a collective term we use to include pharmacies, clinics, and drug shops.[2] These drugstores are reported by caregivers as the primary source of care for malaria, which is endemic throughout Uganda and a leading cause of morbidity and mortality.[3] These stores also sell other types of medicines, such as painkillers. Thus, identifying constraints affecting firm performance is important for both firm growth and public health. This setting is appropriate for studying the role of childcare constraints among business owners for several reasons.

First, similar to other developing countries, female self-employment rates are high. While women represent close to 48% of the Ugandan labor force (World Bank, 2018), 72% of owners in our sample are female.

Second, in conjunction with high levels of female self-employment, there is a substantial unmet need for formal childcare (see Appendix C). Uganda has one of the highest fertility rates in the world; the total fertility rate is 5.4 children per woman. Using data from the Ugandan Demographic and Health Survey (DHS, 2016), we graph the link between a woman's

[2]Pharmacies are typically larger and more formal establishments than either clinics or drugstores, and are operated by a certified pharmacist. Pharmacies constitute only 7.5% of the sample.
[3]Antimalarial drugs are 98% effective if taken promptly (Baird, 2005).

age and her likelihood of having a child in Appendix Figure A1. At age 20, 60% of women have had a child; by age 30, the likelihood of having a child is close to 100%. Together with a median duration of breastfeeding per child of 19.8 months (DHS, 2016), these figures imply that on average, mothers in Uganda breastfeed over 8 years ($5.4 * 19.8 \approx 107$ months).

Third, the context allows us to link childcare obligations with firm performance. The majority of stores are small with one or two employees that typically sell a limited number of products (i.e., antimalarials, painkillers). Therefore, there is a strong correlation between owner effort and output; any constraint that the business owner faces is likely to directly impact profitability. In addition, the focus on a relatively homogeneous industry allows us to account for potentially confounding factors, such as cost structures.

Finally, demand-side discrimination in this industry is limited by the context. The time-sensitive nature of medicines provides an incentive for patients to pick the most convenient store to get their drugs, rather than choose based upon vendor characteristics. In interviews with real customers, convenience is the most commonly cited reason for choosing that outlet. Antimalarial drugs are also not a gendered product; they are bought by both male and female customers.

4 Data

Data for this paper were collected as part of a separate, randomized audit study by Fitzpatrick (2020) on antimalarial drug quality in private-sector outlets in Uganda. It combined surveys of vendors and real customers with purchases by confederate buyers at the same set of drugstores (N = 452). Here, our primary analysis uses responses to the drug vendor survey at 110 drugstores where the respondent was both a woman and the owner. We provide additional details on how the analysis sample was created in Appendix Table A1 with additional information on sampling in Appendix B. We compare our analysis sample against

the larger sample in Appendix Table A2. A timeline of data collection activities in Appendix Figure A2.

One limitation of our data is that, similar to other surveys of business operations, we do not have details on family characteristics or childcare obligations. Instead, we use a straightforward, objective measure of childcare obligations: whether the enumerator recorded that there was a "small baby" in the store during the vendor survey, typically an infant or toddler.

Accurately measuring the profits of these small enterprises is challenging. Owners may not follow standard accounting practices or regularly track sales. For those in the informal sector, disclosure of profits may also be sensitive, leading to non-response. We follow De Mel, McKenzie and Woodruff (2009*a*) and measure profits through direct elicitation of revenues, costs, and profits (also see Appendix B.2).

We combine our vendor survey with objective measures of antimalarial drug prices and quality collected during confederate buyer purchases. Prior to the vendor survey, pairs of confederate buyers visited each drugstore, bargained, and purchased an antimalarial drug according to a randomly assigned script.[4] Immediately following the visit, the buyers completed a short survey recording information on prices and owner behavior during the transaction (N = 933). We restrict our analysis to the 219 purchases at the 110 female-owned firms with a complete vendor survey and reported profits. Purchases were later inspected to form our quality measures. In particular, we measured whether the drug was "diverted" (i.e., likely stolen from a public health facility), whether the dosage was correct, or the drug was expired. We also screened all purchases using a handheld spectrometer to test if drugs were counterfeit or substandard. Failing samples were then sent for additional testing. Because all drugs were determined to be of high chemical quality, we omit this outcome.

[4]The scripts focused on either malaria or a specific medicine. Transaction differences as a result of the randomly assigned scripts are presented in Fitzpatrick (2020).

At approximately the same time as the vendor survey, we surveyed 867 real customers at the same stores. Real customers were interviewed out of sight of the dispenser as they were leaving the store. Our analysis uses the 235 customers at the stores in the analysis sample (i.e., those at stores with female owners). The real customer survey contained information about customers' purchases, such as the total amount paid and the items they bought. All survey procedures were validated during a pilot in a separate study area, audited and carefully monitored by supervisors. Fieldwork took place from May-August 2013.

4.1 Summary statistics

We first document that childcare duties are concentrated among female owners, and that female owners also make lower profits than male owners. During our in-person outlet survey, 37% of the female owners had a baby with them in the store, compared with 0% of male owners. These data show that childcare duties are highly gendered.

Next, we replicate the gender profit gap using our data. Mean monthly profits (in 1000's) for female owners is 236 UGX (SD=312 UGX), compared with 598 UGX (SD=881 UGX) for male owners ($p<0.001$). The mean of log profits also differs by gender ($p<0.001$). The male distribution is a rightward shift of the female distribution, with approximately the same variance (see Figure 1).

[Figure 1 about here.]

However, men and women differ in ways other than gender that may also affect childcare duties and profits (see Appendix Table A3). Overall, it is hard to separate the effects of gender, and childcare duties specifically, with business characteristics and profitability.

Therefore, we estimate whether childcare duties are correlated with firm performance by comparing two groups of owners who are more comparable on observable characteristics: women who have a baby in their store ("Yes-Baby") and women who do not ("No-Baby").

By restricting our comparison groups to women only, we hold constant societal constraints affecting firm performance, allowing us to reduce confounded factors. Given that the likelihood of having a baby by age 30 is close to 100% (see Appendix Figure A1), it is likely that almost all women in our sample are mothers. The main difference between the groups is unlikely to be motherhood, but rather the age of the youngest child. This aspect of the setting potentially reduces issues of reverse causality because childcare options for infants and toddlers are limited primarily due to the lack of alternatives to breastfeeding (Section 2.2).

Panel A of Table 1 highlights that women with a baby in their store report lower profits. Moreover, the magnitude of raw differences are large: women without a baby earn 85% higher profits. Figure 2 depicts the distribution of log profits disaggregated by whether or not there was a baby in the store, showing that this relationship is not driven by outlying values. To our knowledge, we are the first to document this stark contrast in profitability between female business owners based on the presence of a child at their store. While measurement error may be a concern for self-reported profits, business assets are also statistically different (1.7 and 1.3, respectively). Costs and sales are also different, suggesting that No-Baby women operate at a larger scale than Yes-Baby women.

While we lack plausibly exogenous variation in whether or not a woman has a child at her store, there are several aspects of the setting that make this a reasonable comparison. First, as panels B and C of Table 1 show, these two groups have similar observable characteristics. Notably, women with and without a baby in the store report roughly equivalent levels of borrowing and access to credit, suggesting that lender discrimination, even based on firm age or other non-gendered motives, is not a an underlying cause of observed profit differences.

[Table 1 about here.]

[Figure 2 about here.]

Second, background characteristics of Yes-Baby and No-Baby women are similar (see Panel B of Table 1). Two exceptions stand out from this table: women with a baby are on average 6 years older, with 3.6 more years of experience, statistically significant but related differences. There is, however, substantial overlap in the age distributions (see Appendix Figure A3); both groups have the same minimum age (21) although older women are less likely to have a child in the store. While profits tend to rise with both age and experience, the age-profit gradient is approximately the same between the two groups, suggesting that age differences alone cannot explain the profit gap (see Figure 3). We account for these differences empirically in the analysis.

[Figure 3 about here.]

According to a wide range of other characteristics, however, Yes-Baby women are similar to No-Baby women. Among all female owners, operating a drugstore is their primary business. Women work on average over 13 hours a day in their shop, 6 days a week. These averages suggest that these two groups have similar labor-force attachment. These groups are statistically similar in terms of owner characteristics that measure industry-specific competency, such as legal qualifications or knowledge of malaria, as well as more general managerial skills such as cognitive ability (measured by a Raven's matrix and scores on two math problems) or time spent at their store. Store variables are also similar (see Panel C). Although firms with No-Baby women are older, other characteristics are more similar. Establishment type (drug shop, clinic, or pharmacy), inventory, type of products sold, number of employees, and customers are not statistically different between the two groups. We control for age and other potential confounding characteristics in our multivariate regression analyses.

4.2 Estimation strategy

We use a multivariate regression framework to measure the effect of having a baby on log profits controlling for key observable characteristics. We estimate:

$$Ln(Profits)_i = \alpha + \beta_1 * SmallBaby_i + \delta' X + \gamma_d + \epsilon_{i,d} \quad (1)$$

where Ln(Profits) is natural log of imputed profits for store i. To account for characteristics potentially correlated with either childcare duties or profits, we successively include a wide variety of variables X that are posited in the literature as potential explanations affecting profits, such as resources, business-level variables, and owner-level characteristics. We include district fixed effects d to account for market heterogeneity. We use robust standard errors throughout our analysis.

5 Results

Our main result is that, after controlling for a wide range of characteristics, there is a negative correlation between the presence of a baby in the store and business profitability. Specifically, the estimate of β_1 indicates an average decrease of profits by 47% in our preferred specification. We first estimate the unconditional correlation of the presence of a baby on profitability in model (1) of Table 2, finding that the presence of a baby in the store is associated with 44% lower profits. In model (2), we add variables to control for business characteristics and the operating environment: female labor force attachment (hours worked per day), business resources, including inventory and access to credit, business scale, business age, as well as establishment type (i.e., drug shop, clinic, or pharmacy). With these controls, we similarly find a large, negative, and statistically significant association between the presence of a baby and profitability.

[Table 2 about here.]

In model (3) presented in Table 2, we add controls for human capital and other individual characteristics: age, years of experience, legal qualifications, and score on knowledge tests about medicines as well as cognitive ability index. Including these controls does not substantially change the correlation between childcare duties and profits. It could, however, still be that Yes-Baby and No-Baby women have stores located in different types of markets. Therefore, in model (4) –our fully saturated model– we add geographic (district) fixed effects. The correlation between children at the outlet and profits remains significant and of approximately the same magnitude (48%). Using the method of Oster (2019), we estimate that the remaining bias is likely to be small.[5] Results are robust using the sample of female respondents, suggesting that childcare duties of the worker, not owner characteristics, are correlated with profits (see Appendix Table A4).

How much of the gender profit gap might be related to childcare duties? Using a Blinder-Oaxaca decomposition, we estimate that the presence of a baby in the outlet can explain 47%-57% of the gap in log profits, depending on the model. Therefore, the correlation between childcare duties and profits is large in magnitude as well. Our analysis suggests that the "baby-profit gap" contributes to gender profit disparities observed in the previous literature.

5.1 Mechanisms for the baby-profit gap

Why would children in the outlet potentially affect performance? We use our rich data to consider five overlapping plausible explanations: (1) Children reduce working hours; (2) Children distract owner cognitively; (3) Customers prefer outlets without children; (4) Owners

[5]Assuming that the maximum R-squared in a regression inclusive of the unobservable factors is 0.6, the estimate of the unbiased treatment effect is -0.48, which is nearly identical to our specification in Column 4. Increasing the maximum R-squared to 0.8, our estimate is still -0.50. These bounds are similarly not sensitive to a range of assumed values of δ, the ratio of selection between observed and unobserved factors.

with childcare duties are more likely in less profitable markets; and (5) Children change store management practices or operations such as product stock, price, or quality. We provide additional explanations about these mechanisms in Appendix D.

Our data is inconsistent with the first four explanations. The first two explanations are largely rejected by comparing observable characteristics (see Table 1). Our data is also inconsistent with women with a baby in the store having different customer demographics than women without a baby, potentially due to customer discrimination or preferences. However, we caution that it is not possible to conclude whether there is discrimination using purely observational data (Delecourt and Ng, 2020). The fourth plausible explanation that we consider is that Yes-Baby firms are more likely to operate in different markets than No-Baby firms. Systematically different markets could be an important omitted factor. However, we find in market-level regressions that Yes-Baby and No-Baby women operate in similar markets (Table A5).

Finally, we consider whether the presence of a child in the store is correlated with specific store management practices or operations that would plausibly lower profits. To objectively measure operations, we use data from antimalarial drug purchases collected by confederate buyers at the same set of outlets (see Panel C of Table 3). First, confederate buyers are 8.8 percentage points more likely to complete a sale at outlets without a baby present (93.6% compared with 84.8%; $p = 0.063$). This gap is correlated by a statistically significant increase in stockouts of all antimalarial drugs. While female owners without a baby report being completely out of stock during 5.7% of all confederate buyer attempts, female owners with a baby are out of stock of all antimalarial drugs during 13.9% of attempts. In contrast, male owners report a stockout during 3.3% of unannounced confederate buyer purchases.

We note that childcare duties are however not correlated with the likelihood that the sale would be refused, for example, if the dispenser required the confederate buyer to take a malaria diagnostic test prior to dispensing. Price and measures of quality, such as the

likelihood of receiving a diverted or expired drug, or a drug of the correct dosage, are approximately the same between the two groups.

[Table 3 about here.]

These results suggest that stockouts may be one explanation for the relationship between the presence of a baby and profitability. In model (1) of Table 4, the unconditional effect of being out of stock is very large and significantly negatively correlated with profits. Controlling for the presence of a baby and for geographic fixed effects, we estimate that being out of stock during an attempted confederate buyer purchase decreases reported monthly profits by 74.8% (exponentiated coefficient reported; $p<0.05$, in model (4) of Table 4). The profit distribution of outlets without a stockout is a clear rightward shift for the profit distribution of outlets with a stockout (see Figure 4).

Why would owners not replenish their stocks? First, although all stores sell antimalarial drugs, they also make profits from selling other types of products. Vendors report that the previous day, 25% of customers purchased an antimalarial drug. Second, vendors may face credit constraints and face periods when they are unable to afford more stock. Third, stocking in this context is time-consuming. Business owners cannot simply refill by making a phone call or ordering online. Instead, restocking typically involves traveling to a wholesale pharmacy, which may take several hours and require shutting down the store during that time. Business owners therefore face a trade-off: they can either stay open with minimal stock, or they can close their shop and travel to restock. Alternatively, owners could pay additional fees and have stock delivered, lowering profits. The presence of a baby may make travel more difficult; thus business owners are induced to choose to stay open with minimal product offering instead of traveling to restock.

[Figure 4 about here.]

[Table 4 about here.]

The large magnitude of our effects linking stockouts to decreased profitability is in line with the literature in marketing and operations research. Consumers are much more likely to switch stores when they experience a stockout in both the short and long run (Fitzsimons, 2000; Anderson, Fitzsimons and Simester, 2006). Consumers may also decide not to make any purchase at all, lowering potential profits on secondary products as well (Schary and Christopher, 1979).

There are two reasons why childcare duties may be associated with stockouts. First, childcare for children may reduce the time available to check and monitor inventory. Although women with children in their outlet are only 3 percentage points less likely to keep business records, there may be less informal stock monitoring that our data cannot detect. However, survey evidence suggests that vendors are aware when stockouts happen. Yes-Baby Women are 15 percentage points (from a No-Baby average of 47%) more likely to report that they wait until stock is out before restocking. Frequent stockouts may also create a cycle that makes it more difficult for vendors to sell the goods they do have in stock, lowering their ability to replenish supplies for out-of-stock items. Yes-Baby women are 14 percentage points more likely to report that they purchase stock when they can afford to (compared with 40% of No-Baby women). However, these differences are not statistically significant at conventional levels.

Second, children may make it more difficult to travel and buy more stock, adding to the time costs involved in stocking. Breastfeeding may tether a woman to the store. Bringing children along to do errands likely requires additional time and effort. Regardless of the reason, stockouts observed by confederate buyers are consistent with survey responses. For example, Yes-Baby women report purchasing stock nearly three fewer times than No-Baby women in the past six months (Table A7).

Our analysis is consistent with stockouts as one plausible explanation why the presence of a baby in the store may lower profits for female business owners. We note that there may

be other factors correlated with childcare duties that could also be correlated with stockouts and profits, which may also contribute to explain the baby-profit gap.

6 Discussion and Conclusion

In this paper, we investigate whether childcare constraints can explain part of the gender gap in profits. We show that this gendered constraint affects 37% of female owners but 0% of male owners. While we caution that we cannot control for all differences that are correlated with childcare duties that may also affect profits, we provide descriptive evidence that bringing a child to work is associated with 48% lower profits, a phenomenon we coin the "baby-profit gap." Further analysis suggests that stockouts are a possible mechanism contributing to the gap. Given that the private sector is the most usual source of care for common ailments such as malaria, identifying ways to ensure that these small businesses thrive and stay in business also plays an important role in public health.

We note that we do not estimate *lifetime* profitability of the firm, but rather the profitability observed at one point in time. Very early childhood is the neediest time in a child's life. However, given the high rates of fertility in this context, it is likely that women may have small children with them in the store for a relatively long period of time. An earnings gap during this period could have huge effects on mother and child outcomes in a low-income country such as Uganda. The large earnings gap during this period could dramatically affect access to basic needs.

We acknowledge that we cannot eliminate other potential factors and caution that these suggestive correlations do not reflect a causal relationship. However, our results are consistent with the observation that family obligations are important for small business performance (Jayachandran, 2020). As a result, information on families, and particularly children, should be collected as part of surveys and interventions focused on improving business operations

and profits in developing countries.

While results may not be applicable to all settings, this study is the first of its kind to show that childcare obligations are related to management practices and ultimately profits. We hope that it will help shed light on an important topic in the organizations literature and lay the foundation to motivate future work –perhaps experimental– to more cleanly establish causality and mechanisms. Our work is a first step to more broadly understand the unique constraints affecting small micro-enterprises that form the majority of businesses in developing countries.

We believe that in spite of the limitations of our paper, it contributes to better answering a question of major economic, managerial, and policy significance. Childcare responsibilities may be an important mechanism underlying women's lower representation among business owners and lower profitability of their firms. We also believe that it is important to study organizations in developing contexts, particularly in sub-Saharan Africa. Most of the world population lives in developing or emerging markets. In these contexts, formal labor market opportunities are scarce and people often rely on self-employment to earn a living (Babbitt, Brown and Mazaheri, 2015). An additional characteristic of developing countries is the often exacerbated gender inequality, especially in light of cultural norms (Jayachandran, 2015). For women in many developing countries, the pattern of low empowerment on multiple dimensions (economic, social, and political) tends to create a vicious cycle that makes it difficult to break from their dependence on men (Bandiera et al., 2020). Our paper represents one example of such interdependence across domains of women's empowerment and emphasizes the relationship between childcare constraints and lower business performance.

Overall, our results suggest that gender inequality in the workplace stems from inequality outside of the workplace. At a broader social level, women are primarily responsible for childcare duties, even if they also work full-time. In contrast, men who work full-time are not similarly responsible for childcare. This norm may partly explain why women earn lower

profits than men. While we are careful to note that women should not be barred from bringing children to their workplace, our results indicate that female owners work similar hours to male owners but make lower profits. Our results suggest that there may be a role for interventions to minimize these disparities. While providing affordable childcare could be an option, simpler interventions targeting female-owned businesses to improve their operations could lead to improvements for businesses or the broader market. Improving stocking practices seems plausible and supported by our analysis. Our study shows that male and female business owners face different family constraints that have ripple effects in terms of business profitability and may contribute to overall profit inequality.

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Table 1: Balancing table (survey of owners)

	—-No Baby—-		—-Baby—-		Difference	P-Value
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Profit Variables						
Monthly profits (1000 UGX)	301.893	(363.227)	163.366	(161.869)	-138.527	0.007***
Ln monthly profits	4.081	(1.297)	3.639	(1.076)	-0.442	0.057*
Total monthly costs (1000 UGX)	523.654	(743.264)	303.250	(385.163)	-220.404	0.046**
Ln total monthly costs	12.489	(1.247)	11.972	(1.195)	-0.517	0.035**
Total monthly sales (1000 UGX)	795.581	(943.426)	491.950	(529.122)	-303.631	0.034**
Ln total monthly sales	5.142	(1.190)	4.719	(1.068)	-0.423	0.059*
Business assets (count)	1.667	(1.107)	1.317	(0.850)	-0.350	0.066*
Borrowed in past year for outlet (Y/N)	0.235	(0.427)	0.220	(0.419)	-0.016	0.850
Access to credit (Y/N)	0.841	(0.369)	0.780	(0.419)	-0.060	0.448
Panel B: Owner Variables	(1)	(2)	(3)	(4)	(5)	(6)
Small baby in outlet	0.000	(0.000)	1.000	(0.000)	1.000	
Age (years)	35.826	(11.836)	29.902	(6.629)	-5.924	0.001***
Experience (years)	10.603	(10.413)	7.010	(5.920)	-3.593	0.024**
Legally qualified (Y/N)	0.609	(0.492)	0.463	(0.505)	-0.145	0.143
Knows first-line antimalarial (Y/N)	0.838	(0.371)	0.829	(0.381)	-0.009	0.904
Score on malaria test (Pct)	0.826	(0.220)	0.813	(0.215)	-0.013	0.760
Cognitive ability index	-0.240	(1.336)	-0.334	(1.278)	-0.094	0.714
Has another job	0.290	(0.457)	0.268	(0.449)	-0.022	0.809
Lives at outlet	0.130	(0.339)	0.125	(0.335)	-0.005	0.935
Num. days worked	6.239	(1.292)	5.974	(1.755)	-0.264	0.413
Hrs worked per day	13.116	(4.919)	13.350	(4.980)	0.234	0.812
Educ: Aide	0.333	(0.475)	0.463	(0.505)	0.130	0.184
Educ: Student	0.362	(0.484)	0.390	(0.494)	0.028	0.773
Educ: Nurse	0.246	(0.434)	0.146	(0.358)	-0.100	0.193
Educ: Pharmacist/Dr	0.029	(0.169)	0.000	(0.000)	-0.029	0.158
Panel C: Store Variables	(1)	(2)	(3)	(4)	(5)	(6)
Drug shop	0.754	(0.434)	0.780	(0.419)	0.027	0.749
Clinic	0.232	(0.425)	0.195	(0.401)	-0.037	0.650
Pharmacy	0.014	(0.120)	0.024	(0.156)	0.010	0.727
Age of business (years)	6.398	(5.805)	4.498	(4.877)	-1.900	0.069*
Keeps records	0.859	(0.350)	0.816	(0.393)	-0.044	0.574
Num. antimalarials typically sold	4.058	(2.189)	4.025	(2.348)	-0.033	0.942
Avg. price antimalarials	2.705	(1.021)	2.859	(1.086)	0.154	0.487
Times stock on credit	0.783	(2.202)	0.756	(2.047)	-0.027	0.949
Outlet sells malaria tests (Y/N)	0.435	(0.499)	0.366	(0.488)	-0.069	0.478
Sole employee at outlet	0.609	(0.492)	0.725	(0.452)	0.116	0.212
Business currently has debt	0.246	(0.434)	0.268	(0.449)	0.022	0.802
Num. customers prev. day	16.464	(14.016)	13.805	(15.794)	-2.659	0.375
Parish HHI, all customers	0.185	(0.220)	0.202	(0.162)	0.017	0.642
Observations	69		41		110	

Notes: Sample is female shop owners disaggregated by whether or not there was a baby in the outlet. Vendors for whom profits are not available are excluded. Standard deviations in parentheses. "Experience" refers to years of experience in their current line of work. "Legally qualified" is whether the respondent is legally qualified to dispense medicine and is based on highest education level, years of experience, and type of establishment. "Score on malaria transmission test" is the respondent's percent of correct answers to six questions on a standard measure of malaria transmission. "Cognitive ability index" is a PCA index of four variables related to cognitive ability from the sample of all firms. "Num. days worked" is the reported number of days the respondent worked in the past week. "Keeps records" is self-reported variable of whether the respondent keeps regular business records of sales. "Outlet sells malaria tests" includes either rapid diagnostic tests (RDTs) or blood microscopy or both. "Parish HHI, all customers" is the Hirfindahl-Hirshman Index at the parish level calculated by taking the sum of squared market shares for all shops in the parish. Column 5 presents the difference between columns 1 and 3, and Column 6 presents results from a t-test of differences using robust standard errors. $*p < 0.10, **p < 0.05, ***p < 0.01$.

Table 2: Profits by baby Status Among Female Owners

Dependent variable	**Ln Profits** (1)	**Ln Profits** (2)	**Ln Profits** (3)	**Ln Profits** (4)
Small baby in outlet	-0.442*	-0.379*	-0.531**	-0.476**
	(0.229)	(0.224)	(0.243)	(0.224)
Hrs worked per day		-0.001	0.017	0.019
		(0.025)	(0.027)	(0.025)
Num. times buy stock on credit		-0.007	0.022	0.067
		(0.047)	(0.056)	(0.053)
Num. antimalarials typically sold		0.228***	0.183***	0.149**
		(0.078)	(0.067)	(0.067)
Sole employee at outlet		-0.227	-0.170	-0.022
		(0.251)	(0.283)	(0.231)
Age of business (years)		-0.007	0.021	0.036
		(0.061)	(0.065)	(0.065)
Age of business-squared		0.001	-0.000	-0.000
		(0.002)	(0.002)	(0.003)
Age (years)			-0.012	0.018
			(0.077)	(0.083)
Age-squared			-0.000	-0.000
			(0.001)	(0.001)
Experience (years)			0.039	-0.003
			(0.049)	(0.051)
Experience-squared			-0.001	-0.000
			(0.001)	(0.001)
Legally qualified (Y/N)			0.673	0.606
			(0.567)	(0.509)
Educ: Aide			0.370	0.420
			(0.875)	(0.604)
Educ: Student			0.245	0.261
			(0.699)	(0.379)
Educ: Nurse			-0.212	-0.120
			(0.695)	(0.373)
Educ: Other			-0.542	-0.575
			(1.089)	(1.028)
Knows first-line antimalarial (Y/N)			-0.033	-0.055
			(0.305)	(0.300)
Score on malaria test (Pct)			1.579**	1.378**
			(0.702)	(0.676)
Cognitive ability index			-0.046	-0.067
			(0.079)	(0.073)
District Fixed Effects	No	No	No	Yes
Establishment Type	No	Yes	Yes	Yes
Observations	110	110	110	110
R^2	0.030	0.341	0.452	0.549
Mean Dep., Control	3.916	3.916	3.916	3.916

The outcome variable in all regressions is the log of monthly imputed profits. Sample in above regression include all female owners. Sample size varies slightly across columns due to missing values for some variables. is calculated by taking the price average of all antimalarials purchased during mystery shopping at that outlet. Column 5 has a district fixed effect. All independent variables are taken from the vendor survey. refer to years of experience in their current line of work. Legally qualified is whether the respondent is legally qualified to dispense medicine and is based upon responses to highest education level attained, years of experience and type of establishment. Score on malaria transmission test is the respondent's percent of six questions correct on a standard measure of malaria transmission. Cognitive ability index is a PCA index of 4 variables related to cognitive ability. Columns including age, years of experience, and business age also include the square of those variables. Robust standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01

Table 3: Surveys of real customers and confederate buyer visits

	—-No Baby Present—-		—-Baby Present—-		Difference	PValue
Panel A: Real Customer Demographics (N=235)	(1)	(2)	(3)	(4)	(5)	(6)
Female customer	0.490	(0.502)	0.463	(0.502)	-0.027	0.664
Buying for self	0.576	(0.496)	0.538	(0.502)	-0.039	0.588
Buying for child	0.152	(0.361)	0.175	(0.382)	0.023	0.683
Bought full dosage	0.823	(0.383)	0.786	(0.413)	-0.037	0.587
Return customer	0.800	(0.401)	0.848	(0.361)	0.048	0.365
Distance (min walk)	24.151	(34.263)	25.178	(24.906)	1.027	0.809
Malaria literacy score	0.718	(0.218)	0.685	(0.260)	-0.032	0.391
Monthly income (1000 UGX)	270.537	(324.604)	219.730	(295.075)	-50.808	0.310
Price of primary item (UGX)	3,001.316	(3,277.295)	2,707.407	(2,872.750)	-293.908	0.548
Total bill (UGX)	3,176.974	(3,228.566)	2,838.271	(3,067.636)	-338.702	0.497
Successfully bargained	0.438	(0.498)	0.450	(0.501)	0.012	0.893
Panel B: Reasons for Choosing Outlet (N=235)	(1)	(2)	(3)	(4)	(5)	(6)
Convenience	0.669	(0.472)	0.683	(0.468)	0.014	0.828
Cheap prices	0.221	(0.416)	0.207	(0.408)	-0.013	0.819
Fast service	0.377	(0.486)	0.439	(0.499)	0.062	0.430
Customer care	0.403	(0.492)	0.390	(0.491)	-0.012	0.861
Product choice	0.156	(0.364)	0.110	(0.315)	-0.046	0.330
Staff	0.305	(0.462)	0.317	(0.468)	0.012	0.872
Panel C: Confederate Buyer Visits (N=219)						
No Drug in Stock	0.057	(0.233)	0.139	(0.348)	0.082	0.084*
Sale Completed	0.936	(0.246)	0.848	(0.361)	-0.088	0.063*
Vendor Refused Sale	0.007	(0.085)	0.013	(0.113)	0.006	0.634
Z-Price index	-0.213	(0.662)	-0.164	(0.772)	0.049	0.351
Price rec. prod (UGX)	8,352.272	(3,422.946)	8,452.941	(3,814.328)	100.668	0.455
Price offer (UGX)	8,114.504	(3,103.078)	8,489.552	(3,775.284)	375.048	0.218
Price paid (UGX)	7,145.038	(2,766.898)	7,328.358	(3,058.213)	183.320	0.424
Advised Malaria Test	0.343	(0.476)	0.253	(0.438)	-0.090	0.184
Diverted drug	0.122	(0.329)	0.119	(0.327)	-0.003	0.651
Expired drug	0.122	(0.329)	0.104	(0.308)	-0.018	0.907
Correct dosage	0.938	(0.242)	0.896	(0.308)	-0.042	0.715

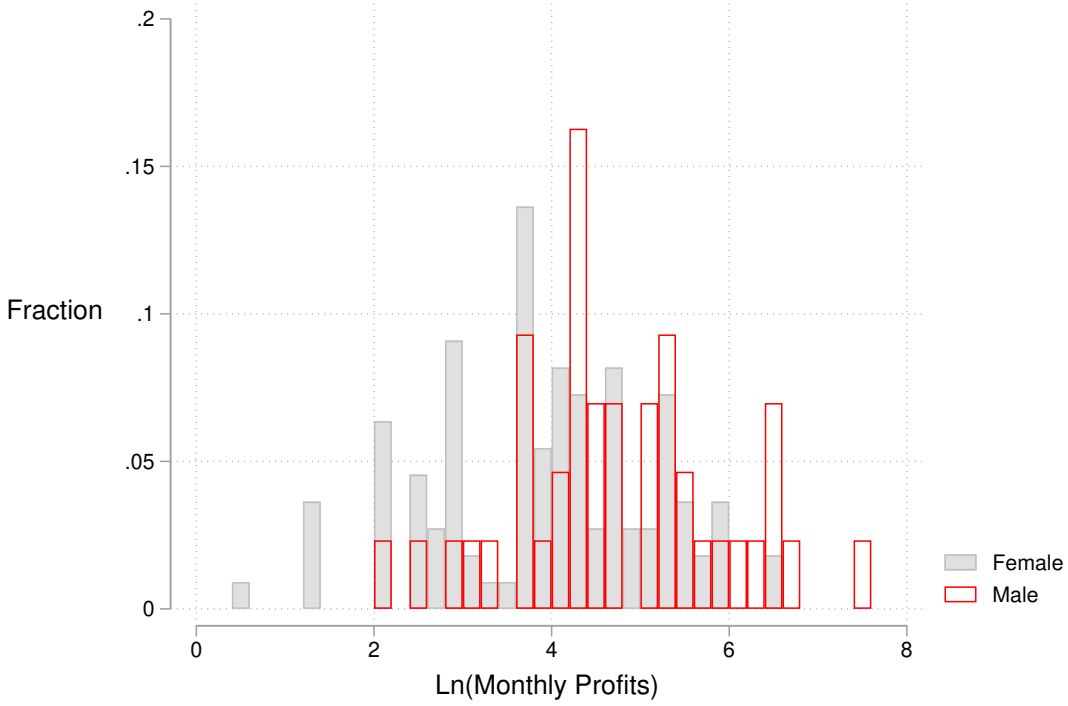
Notes: Sample is female shop owners who completed a vendor survey disaggregated by whether or not there was a baby in the outlet. Vendors for whom profits are not available are excluded. Panels A and B present averages from 235 real customer surveys at 110 outlets; Panel C presents averages from 219 confederate buyer visits at 110 outlets. Price variables are conditional on making a purchase (N = 198) and are reported in UGX. Columns 1 and 3 present means and columns 2 and 4 present standard deviations in parentheses. Column 5 presents the difference between columns 1 and 3, and presents results from a t-test of differences using robust standard errors clustered at the outlet level. The t-test in Panel C is adjusted for the data collection strategy (randomly assigned script, visit order, confederate buyer, and district fixed effects). $*p < 0.10, **p < 0.05, ***p < 0.01$.

Table 4: Running out of stock is associated with lower profits

	(1) Ln monthly profits	(2) Ln monthly profits	(3) Ln monthly profits	(4) Ln monthly profits
Ever Drug Stockout	−0.889**	−0.847**	−0.950**	−0.685*
	(0.419)	(0.407)	(0.418)	(0.366)
Small baby in outlet		−0.473*	−0.559**	−0.458**
		(0.243)	(0.246)	(0.217)
Avg. price antimalarials			−0.074	−0.207*
			(0.110)	(0.118)
District Fixed Effects	No	No	No	Yes
Observations	110	110	102	102
R^2	0.439	0.467	0.495	0.586

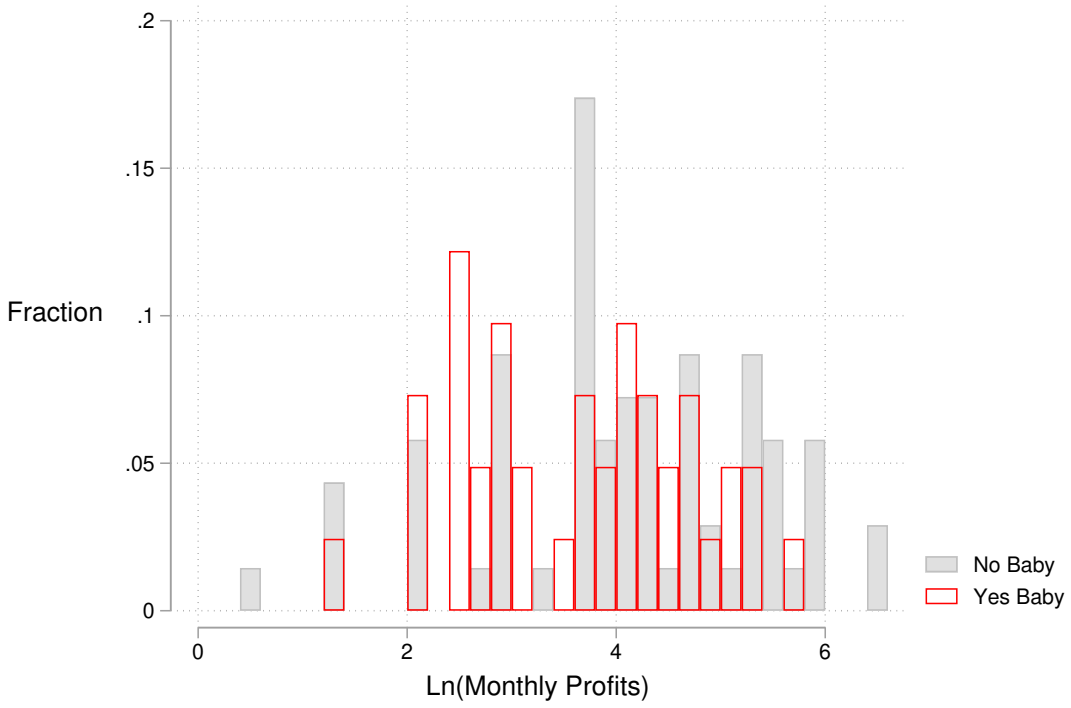
Notes: Each observation is an attempted purchase at a drugstore with a female owner and a completed survey. The dependent variable in all regressions is the owner's imputed profits. All columns include controls for random assignment, visit order, patient, and confederate buyer; columns also include controls for hours worked, number of drugs listed on vendor inventory, number of times purchasing stock on credit, establishment type, whether the vendor was legally qualified to dispense medicines, whether she knows the first-line treatment for malaria, a score of a test on malaria transmission, and a cognitive ability index, and categories of education attainment, vendor years of experience, age, and firm age (including the square). Column 4 also includes a district fixed effect. Robust standard errors in parentheses, clustered at the store level. $***p < 0.01, **p < 0.05, *p < 0.1$

Figure 1: Female business owners earn less than male business owners



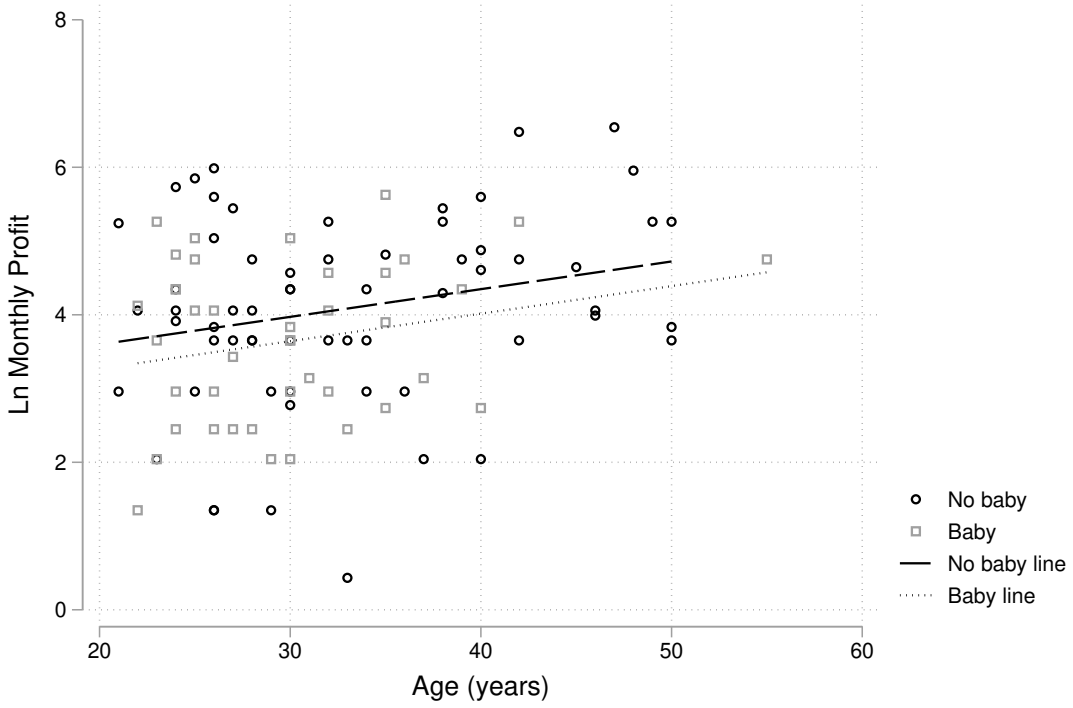
Notes: Above is the histogram of ln profits disaggregated by the sex of the owner.

Figure 2: Female business owners who bring a baby to work make less than the rest of the women



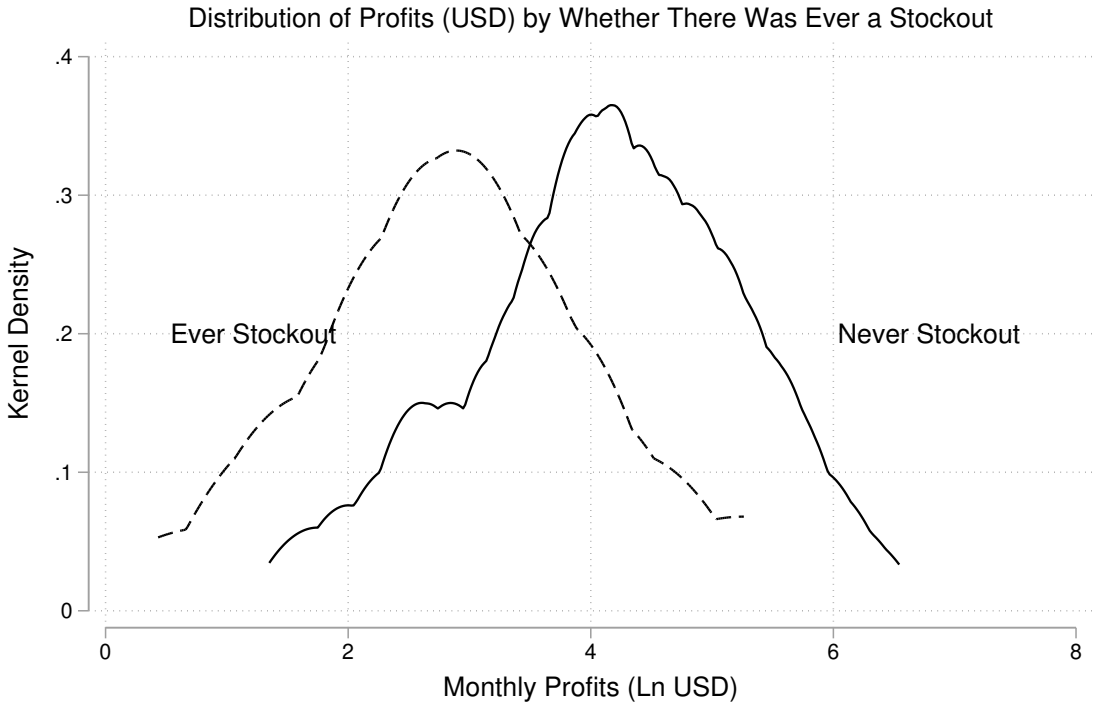
Notes: Above is the histogram of ln profits disaggregated by whether or not the female owner had a baby in the store during the vendor survey.

Figure 3: The relationship between age and performance for women with and without a baby in their store



Notes: Above is the scatterplot of age and monthly profits for the two groups of interest (women with and without a baby in the store). The OLS regression line for each group is added, where the darker line represents the linear relationship. The p-value on the null hypothesis that the slopes are equal is 0.364.

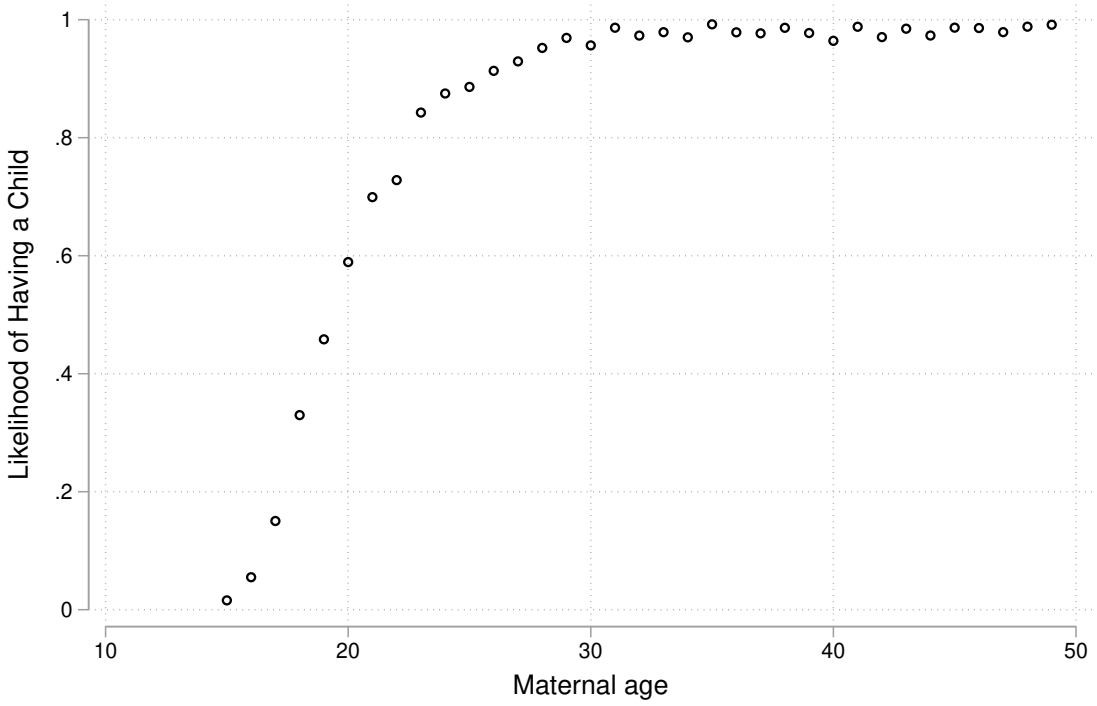
Figure 4: Distribution of profits, by whether there was ever a stockout



Notes: This graph depicts the distributions of the log of monthly USD profits by whether or not the vendor was ever out of stock of all antimalarial drugs during the confederate buyer purchase. Sample restricted to all female owners. The Kolmogorov-Smirnov test of density equality rejects the null (p = 0.000***).

Appendix

Figure A1: The likelihood for a 30-year-old Ugandan woman to be a mother is close to 100%



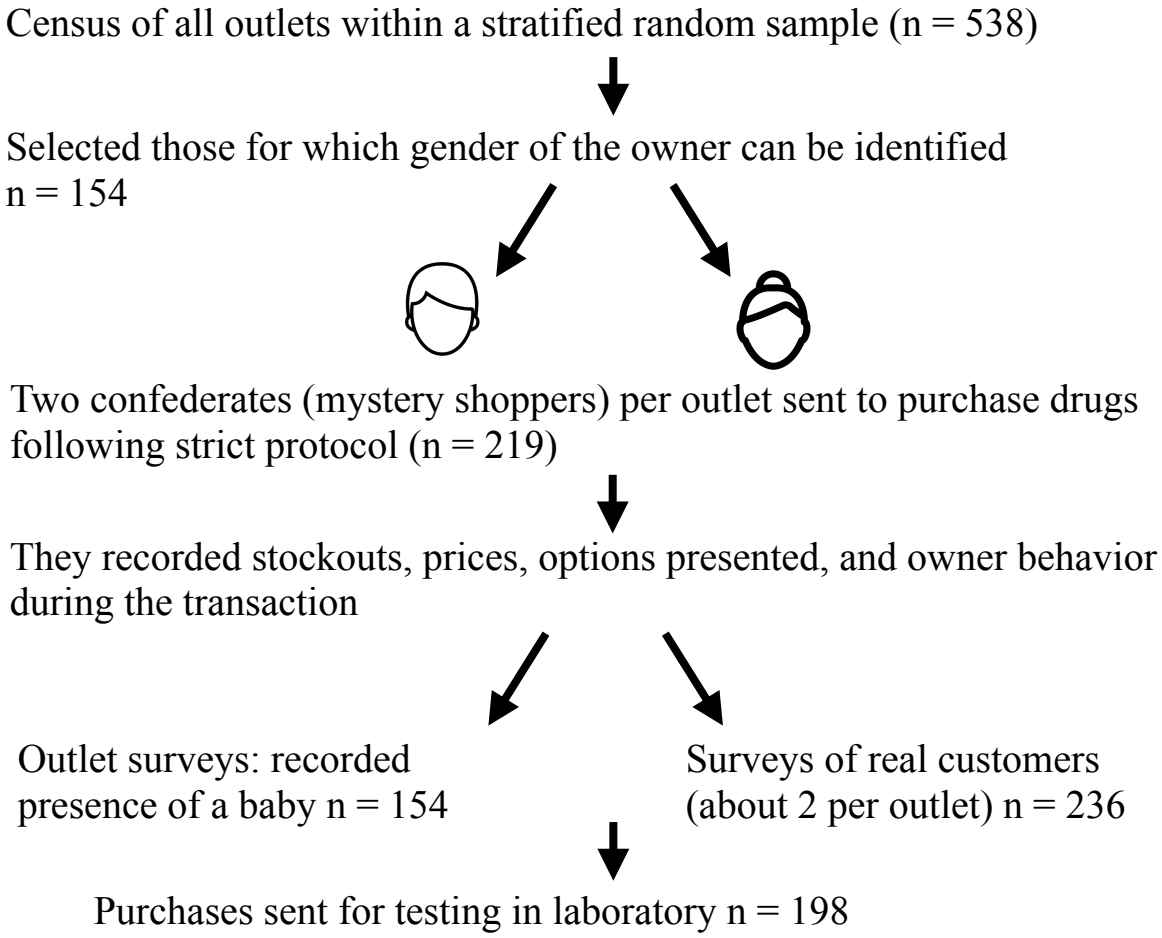
Notes: Weighted averages of the likelihood that a woman in Uganda has ever had a child, by age of woman DHS (2016).

Table A1: Number of observations in the analysis samples

Dataset	All owners	Female owners	Yes-baby owners
Survey of owners	154	110	41
Survey of real customers	303	236	82
Confederate buyer visits	352	258	95
Market-level data	78	-	-

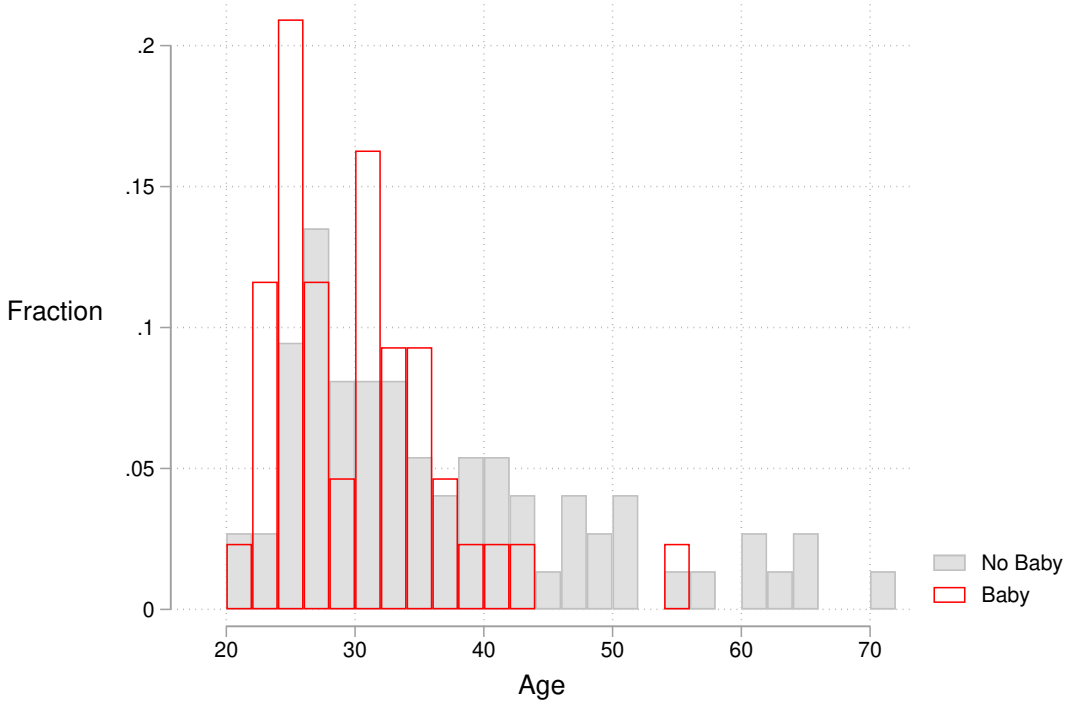
Notes: 538 vendors were identified during the census, and 452 surveys were completed, of which 161 respondents were the owner and 154 respondents were the owner and reported their profits. Above are sample sizes of all owners (Column 1), female owners (Column 2), and female owners with a baby in their store (Column 3). The respondent to the survey was not necessarily the owner of the outlet, but rather the dispenser.

Figure A2: Timeline for the data collection



Notes: 538 vendors were identified during the census, and 452 surveys were completed, of which 154 for which the gender of the owner was identified and profits were reported. There were 219 attempts at drug purchases in the analysis sample. Of those visits, 198 resulted in a successful purchase. All confederate buyers' visits occurred prior to the outlet surveys and the real customer surveys; outlet surveys and real customer surveys happened approximately concurrently, with the majority of outlet surveys happening prior to interviews with real customers.

Figure A3: Histogram of the presence of a baby by age



Notes: Above are the histograms of age for both female owners with and without a baby in their store.

Table A2: Sample selection & external validity

	(1)	(2)	(3)
		—-Respondents with reported profits——	
	All Respondents (N = 452)	All Owners (N = 309)	All Female Owners (N = 110)
Panel A: Profit Variables	(1)	(2)	(3)
Ln(Profits)	4.749	4.151	3.916
Ln(Total Costs)	13.033	12.512	12.296
Ln(Total Sales)	5.711	5.204	4.985
Num. Assets	2.027	1.706	1.536
Ever Borrow	0.175	0.243	0.229
Could Get Loan	0.862	0.836	0.818
Panel B: Vendor Variables			
Small Baby	0.166	0.268	0.373
Age	30.149	35.111	33.618
Years of Experience	6.200	9.454	9.252
Qualified Person	0.357	0.566	0.555
Knows First-Line	0.845	0.861	0.835
Malaria Score	0.808	0.839	0.821
Cognitive Index	0.000	-0.232	-0.275
Has Another Job	0.186	0.346	0.282
Lives at Outlet	0.056	0.099	0.128
Days Worked	6.201	6.094	6.142
Hours Worked	12.545	12.539	13.202
Panel C: Business Variables			
Drug Shop	0.493	0.699	0.764
Clinic	0.431	0.281	0.218
Pharmacy	0.075	0.020	0.018
Business Age	5.977	5.968	5.683
Keep Records	0.895	0.875	0.843
Number of Drugs Listed	4.924	4.296	4.046
Average Drug Price	2.997	2.823	2.758
Test for Malaria	0.540	0.516	0.409
Sole Employee	0.303	0.568	0.651
Any Debt	0.207	0.270	0.255
Number of Customers	21.802	16.197	15.473
HHI Parish	0.141	0.179	0.191

Sample is all respondents (Column 1), all owners who reported profits (Column 2) and female owners who reported profits. Some respondents in Column 1 are missing profit, sales, and cost variables. "Experience" refer to years of experience in their current line of work. "Legally qualified" is whether the respondent is legally qualified to dispense medicine and is based on responses to highest education level, years of experience, and type of establishment. "Score on malaria transmission test" is the respondent's percent of correct answers to six questions on a standard measure of malaria transmission. "Cognitive ability index"is a PCA index of four variables related to cognitive ability. "Num. days worked" is the reported number of days the respondent worked in the past week. "Keeps records" is self-reported variable of whether the respondent keeps regular business records of sales. "Outlet sells malaria tests" includes either rapid diagnostic tests (RDTs) or blood microscopy or both."Parish HHI, all customers" is the HirfindahlHirshman Index at the parish level calculated by taking the sum of squared market shares for all shops in the parish.

Table A3: Comparison of male and female owner characteristics (survey of owners)

	—-Female—-		—-Male—-		Difference	P-Value
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Profit Variables						
Monthly profits (1000 UGX)	250.260	(310.564)	597.712	(881.581)	347.452	0.012**
Ln monthly profits	3.916	(1.233)	4.752	(1.185)	0.836	0.000***
Total monthly costs (1000 UGX)	441.260	(640.338)	860.777	(1,664.872)	419.517	0.109
Ln total monthly costs	12.296	(1.248)	13.050	(1.046)	0.754	0.000***
Total monthly sales (1000 UGX)	683.125	(825.268)	1,475.238	(2,456.329)	792.113	0.042**
Ln total monthly sales	4.985	(1.159)	5.766	(1.053)	0.781	0.000***
Business assets (count)	1.536	(1.029)	2.140	(1.207)	0.603	0.004***
Borrowed in past year for outlet (Y/N)	0.229	(0.422)	0.279	(0.454)	0.050	0.535
Access to credit (Y/N)	0.818	(0.387)	0.881	(0.328)	0.063	0.316
Panel B: Owner Variables	(1)	(2)	(3)	(4)	(5)	(6)
Small baby in outlet	0.373	(0.486)	0.000	(0.000)	-0.373	0.000***
Age (years)	33.618	(10.573)	38.930	(11.251)	5.312	0.008***
Experience (years)	9.252	(9.127)	9.969	(7.778)	0.717	0.626
Legally qualified (Y/N)	0.555	(0.499)	0.595	(0.497)	0.041	0.652
Knows first-line antimalarial (Y/N)	0.835	(0.373)	0.929	(0.261)	0.094	0.083*
Score on malaria test (Pct)	0.821	(0.217)	0.885	(0.213)	0.064	0.102
Cognitive ability index	-0.275	(1.310)	-0.120	(1.232)	0.155	0.496
Has another job	0.282	(0.452)	0.512	(0.506)	0.230	0.010***
Lives at outlet	0.128	(0.336)	0.023	(0.152)	-0.105	0.009***
Num. days worked	6.142	(1.476)	5.977	(1.596)	-0.165	0.559
Hrs worked per day	13.202	(4.919)	10.860	(3.913)	-2.341	0.002***
Panel C: Store Variables	(1)	(2)	(3)	(4)	(5)	(6)
Drug shop	0.764	(0.427)	0.535	(0.505)	-0.229	0.009***
Clinic	0.218	(0.415)	0.442	(0.502)	0.224	0.010**
Pharmacy	0.018	(0.134)	0.023	(0.152)	0.005	0.848
Age of business (years)	5.683	(5.529)	6.690	(7.114)	1.006	0.404
Keeps records	0.843	(0.365)	0.952	(0.216)	0.109	0.028**
Num. antimalarials typically sold	4.046	(2.238)	4.930	(2.694)	0.884	0.057*
Avg. price antimalarials	2.758	(1.041)	2.994	(0.921)	0.236	0.191
Num. times buy stock on credit	0.773	(2.136)	2.047	(4.806)	1.274	0.095*
Outlet sells malaria tests (Y/N)	0.409	(0.494)	0.791	(0.412)	0.382	0.000***
Sole employee at outlet	0.651	(0.479)	0.333	(0.478)	-0.318	0.000***
Business currently has debt	0.255	(0.438)	0.310	(0.468)	0.055	0.509
Num. customers prev. day	15.473	(14.689)	18.095	(23.413)	2.623	0.498
Parish HHI, all customers	0.191	(0.199)	0.147	(0.116)	-0.044	0.089*

Notes: Sample is shop owners disaggregated by gender. Vendors for whom profits are not available are excluded. Standard deviations in parentheses. "Experience" refer to years of experience in their current line of work. "Legally qualified" is whether the respondent is legally qualified to dispense medicine and is based on responses to highest education level, years of experience, and type of establishment. "Score on malaria transmission test" is the respondent's percent of correct answers to six questions on a standard measure of malaria transmission. "Cognitive ability index" is a PCA index of four variables related to cognitive ability from the sample of all firms. "Num. days worked" is the reported number of days the respondent worked in the past week. "Keeps records" is self-reported variable of whether the respondent keeps regular business records of sales. "Outlet sells malaria tests" includes either rapid diagnostic tests (RDTs) or blood microscopy or both."Parish HHI, all customers" is the Hirfindahl-Hirshman Index at the parish level calculated by taking the sum of squared market shares for all shops in the parish. Column 5 presents the difference between columns 1 and 3, and Column 6 presents results from a t-test of differences using robust standard errors. $*p < 0.10, **p < 0.05, ***p < 0.01$.

Table A4: Profits by presence of a baby among all female survey respondents

Dependent variable	**Ln Profits** (1)	**Ln Profits** (2)	**Ln Profits** (3)	**Ln Profits** (4)
Small baby in outlet	-0.794***	-0.317**	-0.357**	-0.374**
	(0.164)	(0.154)	(0.156)	(0.145)
Hrs worked per day		0.004	0.015	0.020
		(0.017)	(0.017)	(0.016)
Num. times buy stock on credit		-0.007	-0.000	0.014
		(0.035)	(0.036)	(0.032)
Num. antimalarials typically sold		0.199***	0.186***	0.151***
		(0.039)	(0.038)	(0.037)
Sole employee at outlet		-0.398**	-0.437***	-0.349**
		(0.155)	(0.154)	(0.148)
Age of business (years)		0.041	0.058*	0.062*
		(0.034)	(0.034)	(0.033)
Age of business-squared		-0.001	-0.002	-0.002
		(0.001)	(0.001)	(0.001)
Age (years)			0.122**	0.109**
			(0.055)	(0.052)
Age-squared			-0.002**	-0.002**
			(0.001)	(0.001)
Experience (years)			-0.054	-0.054
			(0.038)	(0.036)
Experience-squared			0.002*	0.002*
			(0.001)	(0.001)
Legally qualified (Y/N)			0.237	0.251
			(0.251)	(0.255)
Knows first-line antimalarial (Y/N)			0.237	0.255
			(0.169)	(0.163)
Score on malaria test (Pct)			0.573**	0.636**
			(0.276)	(0.267)
Cognitive ability index			-0.049	-0.055
			(0.048)	(0.048)
Educ: Aide			-0.104	-0.155
			(0.578)	(0.509)
Educ: Student			0.008	-0.015
			(0.534)	(0.460)
Educ: Nurse			-0.250	-0.216
			(0.543)	(0.470)
Educ: Pharmacist/Dr			0.000	0.000
			(.)	(.)
Educ: Other			-1.077	-1.114*
			(0.702)	(0.659)
District Fixed Effects	No	No	No	Yes
Establishment Type	No	Yes	Yes	Yes
Observations	305	300	297	297
R^2	0.054	0.435	0.455	0.498
Mean Dep., Control	4.510	4.493	4.464	4.464

The outcome variable in all regressions is the log of monthly imputed profits. Sample in above regression include all female respondents to the vendor survey. Sample size varies slightly across columns due to missing values for some variables. is calculated by taking the price average of all antimalarials purchased during mystery shopping at that outlet. Column 5 has a district fixed effect. All independent variables are taken from the vendor survey. refer to years of experience in their current line of work. Legally qualified is whether the respondent is legally qualified to dispense medicine and is based upon responses to highest education level attained, years of experience and type of establishment. Score on malaria transmission test is the respondent's percent of six questions correct on a standard measure of malaria transmission. Cognitive ability index is a PCA index of 4 variables related to cognitive ability. Columns including age, years of experience, and business age also include the square of those variables. Robust standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

Table A5: No systematic difference by market with presence of baby

	|—-Level Profits (1000 UGX)—|			|—-Log Profits—|		
	(1)	(2)	(3)	(4)	(5)	(6)
% owners w/ small babies	−49.202	−14.111	−74.155	−0.385	−0.258	−0.167
	(49.619)	(52.145)	(137.438)	(0.337)	(0.297)	(0.260)
% male owners	603.970	190.712	645.941*	0.715	0.154	0.306
	(395.444)	(175.374)	(353.972)	(0.506)	(0.379)	(0.373)
Mkt Avg customers		2.507	18.432		0.021**	0.014*
		(1.633)	(14.027)		(0.008)	(0.007)
Mkt Avg drug price		21.882	−58.494		0.097	−0.058
		(23.460)	(76.305)		(0.134)	(0.172)
Parish HHI		−56.144	124.062		−0.466	0.096
		(99.182)	(154.031)		(0.397)	(0.476)
% Drug shop		−169.291*	140.184		−0.696***	−0.445**
		(100.276)	(243.512)		(0.259)	(0.217)
Avg num outlets		8.810			0.041	0.026
		(9.410)			(0.027)	(0.023)
District Fixed Effects	No	No	Yes	No	No	Yes
Observations	78	71	73	77	71	71
R^2	0.128	0.289	0.338	0.079	0.465	0.556

Notes: Above are village-level averages. The outcome variable in all regressions is the level of imputed profits (columns 1-3) or the log of imputed profits (columns 4-6). Robust standard errors in parentheses $***p < 0.01, **p < 0.05, *p < 0.1$

Table A6: The effect of a small baby on stockouts

	(1) No Drug in Stock	(2) No Drug in Stock	(3) No Drug in Stock	(4) No Drug in Stock
Small baby in outlet	0.085*	0.089*	0.077	0.072
	(0.049)	(0.050)	(0.049)	(0.054)
Vendor Controls	No	Yes	No	Yes
Store Controls	No	No	Yes	Yes
Observations	219	219	219	219
R^2	0.156	0.235	0.173	0.260

Notes: Each observation is an attempted purchase at drugstores with a female owner and a completed survey. The dependent variable in all regressions is whether or not the vendor reported to the confederate buyer that they were out of stock of all antimalarial drugs. Presence of a baby was observed during the owner survey. All columns include controls from confederate buyer data for random assignment, visit order, patient, confederate buyer, and district fixed effects. Column 2 includes vendor-level variables (hours worked; whether the vendor was legally qualified to dispense medicines; whether they know the first-line treatment for malaria; a score of a test on malaria transmission; a cognitive ability index; and categories of education attainment, vendor years of experience, age, and the square of experience and age). Column 3 includes store-level variables (number of drugs listed on vendor inventory, the number of times purchasing stock on credit, establishment type, firm age, firm age-squared). P-value for the coefficient on small baby is 0.124 in Column 3. Column 4 includes both (p-value is 0.180). Robust standard errors in parentheses, clustered at the store level. $***p < 0.01, **p < 0.05, *p < 0.1$

Table A7: Comparison of stocking practices by presence of a baby

	(1)	(2)	(3)	(4)	(5)	(6)
Variable	No Baby		Small Baby		Diff.	P-Value
Buy stock when run out	0.464	(0.502)	0.610	(0.494)	0.146	0.139
Buy when expired	0.159	(0.369)	0.098	(0.300)	-0.062	0.340
Buy stock fixed schedule	0.232	(0.425)	0.317	(0.471)	0.085	0.343
Buy stock when afford	0.391	(0.492)	0.537	(0.505)	0.145	0.143
Buy when stock is low	0.681	(0.469)	0.805	(0.401)	0.124	0.145
Buy when customer asks	0.197	(0.401)	0.243	(0.435)	0.046	0.595
Num. times buy stock	24.377	(29.426)	20.024	(28.834)	-4.352	0.449
Num. times buy stock on credit	0.783	(2.202)	0.756	(2.047)	-0.027	0.949
Observations	69		41		110	

Above are averages of variables collected during the vendor survey on stocking practices disaggregated by stores that do or do not have a small baby in them.

Table A8: Comparison of visit and business characteristics by stockout

	—-No Stockout—-		—-Stockout—-		Difference	P-Value
	(1)	(2)	(3)	(4)	(5)	(6)
Visit was before noon	0.184	(0.388)	0.053	(0.229)	-0.145	0.008***
Visit was between 12 and 5pm	0.664	(0.474)	0.737	(0.452)	0.060	0.598
Visit was after 5pm	0.152	(0.360)	0.211	(0.419)	0.085	0.387
Visit occurred on a weekend	0.457	(0.499)	0.316	(0.478)	-0.119	0.369
Sole employee at outlet	0.659	(0.475)	0.789	(0.419)	0.049	0.530
Keeps records	0.837	(0.370)	0.947	(0.229)	0.085	0.282
Cognitive ability index	-0.266	(1.285)	-0.383	(1.414)	-0.147	0.613
Hrs worked per day	12.910	(4.975)	14.579	(5.399)	1.802	0.157
Legally qualified (Y/N)	0.560	(0.497)	0.263	(0.452)	-0.248	0.023**
Avg. price antimalarials	2.694	(1.016)	2.112	(1.364)	-0.162	0.654
Business Age	6.159	(5.797)	6.237	(7.319)	-0.129	0.949
Borrowed in past year for outlet (Y/N)	0.233	(0.424)	0.105	(0.315)	-0.111	0.219
Access to credit (Y/N)	0.849	(0.359)	0.632	(0.496)	-0.169	0.149

Notes: Sample is all visits by confederate buyers, disaggregated by whether or not there was a stockout of all antimalarial drugs during the time of the confederate buyer purchase. Standard deviations in parentheses. "Experience" refer to years of experience in their current line of work. "Legally qualified" is whether the respondent is legally qualified to dispense medicine and is based on responses to highest education level, years of experience, and type of establishment. "Score on malaria transmission test" is the respondent's percent of correct answers to six questions on a standard measure of malaria transmission. "Cognitive ability index" is a PCA index of four variables related to cognitive ability from the sample of all firms. "Num. days worked" is the reported number of days the respondent worked in the past week. "Keeps records" is self-reported variable of whether the respondent keeps regular business records of sales. "Outlet sells malaria tests" includes either rapid diagnostic tests (RDTs) or blood microscopy or both."Parish HHI, all customers" is the Hirfindahl-Hirshman Index at the parish level calculated by taking the sum of squared market shares for all shops in the parish. Column 5 presents the difference between columns 1 and 3, and Column 6 presents results from a t-test of differences using robust standard errors clustered at the outlet level and controlling for a district fixed effects. $*p < 0.10, **p < 0.05, ***p < 0.01$.

A Sample Construction and Vendor Survey

The analysis sample is the subset of female owner respondents to the vendor survey of Fitzpatrick (2020), which was designed to collect data from a representative sample of outlets. First, the team conducted a census of all antimalarial drugstores within a stratified random sample of 45 parishes in five districts in Uganda; these districts are spread across three of the four regions of Uganda. All drugstores found during the census were targeted for inclusion in the study. Because one of the stratification cells is the parish comprising the district town, our sample is mostly urban.

Enumerators approached each of the 538 outlets found during the census and administered a vendor survey. The survey covered topics including the respondent's demographics, business operations, cognitive ability, and knowledge of their industry.[6] A survey was completed at 90% of stores (N = 452). Of those 452 stores, the surveyors were able to record profits at 409 stores. The survey respondent was selected to be someone regularly dispensing medicines and who was knowledgeable about day-to-day business activities. As a result, the owner is not always the respondent who completed the survey. We restrict our analysis to the sample of owners who answered the survey, which are typically smaller and less profitable businesses where the owner is involved in day-to-day activities (see Table A2 in Appendix). It is therefore important to note that our main results focus on the smallest businesses of the sample. These smaller businesses likely also face a myriad of other disadvantages. We restrict our analysis to the stores which provided a value of profits, and for which owner's gender could be determined (N = 154); in our primary specifications we restrict to the subsample where the owner was female (N = 110). However, our main results are robust to specifications including the full sample of all outlets as we show in Table 5. Our data come

[6]Cognitive ability was proxied by a module on memory and recall as well as two math questions where higher values indicate higher cognitive ability. Knowledge of industry was proxied by questions about antimalarial drugs and malarial transmission.

from different datasets, each with different number of observations, which leads the sample size to shift across tables and models. To provide additional clarity to the reader, Appendix Table A1 in the appendix breaks down the number of observations per dataset.

B Measurement

B.1 Measures of Childcare Duties

Enumerators were instructed to include infants and toddlers rather than school-age children. When the data were collected, older children were in school, and Uganda has universal primary education, with a school year that runs from February to December. If older children were included, the baby-profit gap would be an underestimate of the true effect of childcare duties on profits because older children need less care and so would be less of a burden during the workday. While this measure of obligations may have some error due to time-varying needs for childcare, it is likely to accurately reflect the day-to-day operations of small outlets. The vendor survey took nearly an hour to complete, and because the majority of outlets are physically small, it is unlikely that an enumerator would not see a baby. While we conjecture that the vendor is likely the mother of the small baby, we do not have conclusive data and so do not use the term "mother" in the main text. We did not collect information on whether there were multiple children at the outlet. In consultation with the local field staff, who were familiar with the context, we decided to include a variable to record the presence of a baby to help us match the dispenser across time. It was understood that babies present in the store were typically there every day, which could help us identify the business over time. All survey procedures were validated during a pilot in a separate study area, audited and carefully monitored by supervisors.

B.2 Measures of business performance

First, respondents were asked for the total value of all drugs that they had in stock. Next, they were directly asked (in sequence) their total sales, costs, and profits for the previous month. The surveyor then compared the difference between sales and costs against the profit figure. If they were not approximately the same, the surveyor asked the respondent to clarify all three figures (sales, costs, and profits). If respondents did not want, or were not able, to state a precise figure, they reported sales, costs, or profits within ranges established during piloting. The profit variable used in the main analysis is created by first taking the revised profits variable, then the initially reported profits variable, if the respondent did not revise. If respondents reported a range, we assumed that the profit amount would be the midpoint of the range. Similar procedures were followed for total costs and total sales. The distribution of profits is heavily right-skewed, so we primarily consider a log specification. We report all financial measures in 2013 UGX. The exchange rate at the time was 1 USD = 2,593 UGX.

C Additional details about childcare in Uganda

Reliable data on the number of daycare facilities is rare and difficult to find. Only 17% of families in select districts of Uganda report using childcare facilities; half of them report using government-provided childcare (Oxfam, 2016). The low use of childcare facilities might be due to the cost-prohibitive nature of formal, non-government childcare. The monthly cost of childcare (about 1,200,000 Ugandan shillings, or UGX) represents more than twice the median household income in Uganda (about 416,000 UGX), and approximately four times the mean monthly profits of women without children in their stores.

D Additional details about potential mechanisms for the baby-profit gap

In this appendix section, we go over additional details about potential mechanisms.

- Children reduce working hours: The absolute magnitude of the unadjusted difference between women with and women without a baby in their store is small in terms of days worked (0.26 days). Moreover, women with a baby in the outlet report working *longer* hours per day (13.4 compared with 13.1); these averages are not statistically significant either. Thus, labor force attachment is roughly equal and inconsistent with observed profit gaps.

- Children distract owner cognitively: Women score approximately the same on an index of cognitive ability, although the average score is lower than that of men.[7] Because respondents took this test in conditions similar to when they run their store, our results suggest that distraction is not a primary mechanism.

- Customers prefer outlets without children: Although not statistically significant, female owners with babies on site have two fewer customers per day (16%) than female owners without babies on site (Panel C of Table 1). However, the data do not support this channel. In Panel A of Table 3, we show that customer demographics –such as gender, malaria literacy score, monthly income, or distance traveled to come to the store– are similar. Furthermore, in Panel B we show that customers report picking the most convenient location for their purchase, rather than owner characteristics, further evidence that customer discrimination or preferences are not strongly related to the baby-profit gap. However, we caution that we are limited by a small sample size and that sample selection could be driving our results.

[7]This PCA index is composed of two math questions and a memory task. It is standardized to be zero in the sample of all vendor surveys, with higher numbers indicating higher cognitive ability.

- Children change store management practices or operations such as product stock, price, or quality: In Appendix Table A6, we show that the magnitude of this difference is robust to inclusion of a large list of both vendor and store control variables, although statistical significance falls slightly due to low statistical power. The profit distribution of outlets without a stockout is a clear rightward shift for the profit distribution of outlets with a stockout (see Figure 4). Results are similar when using one observation per store and examining whether the outlet was out of stock during any confederate buyer visit attempt (not shown). These results are consistent with our survey results; owners who are more likely to experience a stockout (women with a baby) also report two fewer customers per day than women without a baby at work, although this gap is not statistically different (Panel C in Table 1). Similarly, respondents at outlets with a stockout report four fewer total stock purchases in the past six months, are 14 percentage points more likely to report that they wait to purchase stock until they run out (see Appendix Table A7). Stockouts may reflect underlying issues in credit markets that may disproportionately affect women; for example, stockouts may be a symptom of discriminatory lending practices or reflect that younger businesses are less likely to be able to purchase stock on credit. However, in our data, childcare obligations are not strongly related to access to credit. The likelihood of purchasing stock on credit, and access to credit variables, in Table 1 are similar in both groups. Owners typically do not purchase stock on credit; the mean number of stock orders placed on credit in the past six months is 0.7, with a large mass at zero. Averages do not differ by women with and without a baby in the store. In terms of lender discrimination, it is very likely that all female business owners are also mothers. It would be surprising if lenders would be discriminating against women with very young children compared with those with slightly older children.

- In addition, in Appendix Table A8 we compare the characteristics of outlets that do

and do not have stockouts, finding that owners who are legally qualified to dispense medicines are 8 percentage points more likely to report a stockout; legal qualifications are also correlated with profits and bringing a child to work. While legal qualifications is not a statistically significant covariate in Column 4 of Table 2, for example, we acknowledge that there may be mechanisms other than stockouts contributing to the baby-profit gap.

References

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