

Childcare, Labor Supply, and Business Development: Experimental Evidence from Uganda[†]

By KJETIL BJORVATN, DENISE FERRIS, SELIM GULESCI, ARNE NASGOWITZ,
VINCENT SOMVILLE, AND LORE VANDEWALLE*

We randomly offered a childcare subsidy, an equivalent cash grant, or both to mothers of three-to-five-year-old children. The childcare subsidy substantially increased the labor supply and earnings of single mothers, highlighting the importance of time constraints for them. Among couples, childcare did not affect mothers' labor market outcomes but instead increased fathers' salaried employment. At the household level, childcare led to higher income and consumption and improved child development. Cash grants positively affected mothers' labor supply and income irrespective of the household structure, suggesting the general importance of credit constraints for women's business development. (JEL H24, J13, J16, J22, J31, O12)

Access to childcare has been critical in increasing women's labor supply in many high-income countries (Gelbach 2002; Baker, Gruber, and Milligan 2008; Goldin 2021), but we have limited evidence from low-income settings. Furthermore, we know little about how access to childcare affects other household members' labor supply and earnings (Evans, Jakiela, and Knauer 2021). To shed light on these questions, we implemented a field experiment in Uganda to study the causal effect of subsidized childcare on household members' labor market outcomes, earnings, family well-being, and child development. In Uganda, as in many other low-income countries, women bear the brunt of household chores (Jayachandran 2021), regularly

*Bjorvatn: Department of Economics, NHH Norwegian School of Economics and Center for Applied Research at NHH (email: kjetil.bjorvatn@nhh.no); Ferris: BRAC Uganda (email: dnferris@gmail.com); Gulesci: Trinity College Dublin (email: gulescis@tcd.ie); Nasgowitz: Centre for Applied Research at NHH (email: arne.nasgowitz@snf.no); Somville: Department of Economics, NHH Norwegian School of Economics (email: vincent.somville@nhh.no); Vandewalle: KU Leuven and Geneva Graduate Institute (email: lore.vandewalle@kuleuven.be). Seema Jayachandran was coeditor for this article. We thank three anonymous referees for suggestions that considerably improved the article. We gratefully acknowledge the financial support of the German Institute of Labor Economics's Growth, Gender, and Labour Markets in Low-Income Countries (IZA-G²LM) research initiative (GA-5-544), the Research Council of Norway (274557 and 262675), and the Private Enterprise Development in Low-Income Countries (PEDL) program (MRG 5491). We have benefited from discussions with Oriana Bandiera, Anne Fitzpatrick, Katrine Løken, Sara Lowes, Andreas Madestam, Alice Mesnard, David McKenzie, Rohini Pande, and Eric Verhoogen, and from comments by participants at various seminars and conferences. Thanks also to Akshay Moorthy, Benjamin Bjorvatn Øien, and Marte Sigvaldsen for their excellent research assistance and to Save the Children for sharing the International Development and Early Learning Assessment (IDELA) tool. The study was preregistered at the American Economic Association Randomized Controlled Trials registry (ID AEARCTR-0004490) and obtained the approval of the NHH Institutional Review Board (04/19) and the Bocconi University Ethics Committee (73860-3 and 3913-8).

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combine work with childcare (Delecourt and Fitzpatrick 2021), and are more likely to be self-employed (Bonnet, Vanek, and Chen 2019). As entrepreneurs, women's labor supply may be constrained not only by lack of time but also by lack of access to capital.

To study the importance of time versus credit constraints, we randomly assigned mothers of a three-to-five-year-old child to one of four groups. The first group was offered free childcare in a nearby childcare center of choice. The childcare treatment covered all costs for full-day attendance for the duration of one year.¹ The second group was offered a cash grant of a value equal to the cost of the childcare treatment. The cash grant was unconditional but labeled as a business grant and transferred directly to the women. The third group was offered both free childcare and the cash grant, to explore potential complementarities. A final group of women remained as the control group. This design allows us to assess the relative importance of time and credit constraints for labor market outcomes and the cost-effectiveness of subsidized childcare. We surveyed the participants at baseline and approximately one year later to measure their labor supply and earnings and those of the other household members. We also collected information on family well-being and child development indicators for the "target child"—i.e., the child eligible for the childcare treatment.

The childcare subsidy led to a large increase in the take-up of childcare services, with a 150 percent increase in the enrollment rates in full-day care relative to the control group. We find that free childcare did not significantly affect mothers' income or labor supply. However, these average effects mask important heterogeneity in household structure. At baseline, about a third of our sample consisted of single mothers. Among them, the childcare subsidy substantially increased labor supply, business development, and income. In particular, single mothers offered the childcare subsidy were 29 percent more likely to be employed and generated 45 percent more income, with both effects being driven by self-employment. These findings highlight the importance of a binding time constraint for single mothers. Once they have access to free childcare, they can work more in their businesses and generate more profits. On the other hand, among couples, we find no effect of the childcare subsidy on mothers' labor market outcomes. Instead, we find that childcare increased the fathers' likelihood to be working for a wage. This reallocation of time could be driven by the high gender gap in wages that characterizes the Ugandan labor market, which implies higher returns for men on average.

The cash transfers increased maternal labor supply and earnings. Mothers who received cash were 27 percent more likely to be employed on average. This was driven by self-employment, whereby mothers who received cash transfers were 61 percent more likely to be self-employed and generated 37 percent more profits from their businesses. Moreover, cash transfers similarly affected the labor market outcomes of single mothers and mothers in a couple. This suggests that limited access to capital is a general constraint for women's labor market outcomes in the Ugandan context. The

¹While private childcare services exist in urban and peri-urban regions of Uganda, these are typically not accessible to the poor or are limited to a program that runs only in the morning. Most of the childcare centers in our sample were preschool nurseries with lessons during the morning hours and (supervised) play or rest time in the afternoon. As such, our childcare intervention can be interpreted as providing subsidized access to preschool education.

cash treatments did not affect fathers' labor supply, potentially because the grants were offered to mothers and framed as support for their income-generating activities. We also do not find evidence of any complementarity between the cash grant and the childcare subsidy: Receiving both had similar effects as receiving the cash transfer alone.

In terms of family well-being, we find that the childcare subsidy improved household socioeconomic conditions, captured by increased household income and consumption. Moreover, childcare improved children's development, driven by early literacy and motor skills. Meanwhile, cash grants had a similar effect on household income and consumption. Finally, we estimate the treatment effects on the prevalence of domestic violence, as reported by the mothers. We find that offering childcare did not have any significant impact on intimate-partner violence, while the cash grants led to an increase in the prevalence of reported physical violence between partners.

Our study contributes to the research on the effects of childcare on labor supply and income. Evidence from middle- and high-income countries shows that childcare typically positively impacts mothers' employment,² with some evidence that the effects can be particularly important for single mothers (e.g., Gelbach 2002). Some recent studies from India (Nandi et al. 2020) and sub-Saharan Africa (Martinez, Naudeau, and Pereira 2017; Ajayi, Dao, and Koussoube 2022; Donald, Lowes, and Vaillant 2024) study the effects of introducing new, community-based childcare facilities, generally finding positive effects on mothers' labor supply. In contrast, we look at the effects of subsidizing access to existing preschool facilities. Fewer studies analyze the impact on fathers. Studies in high-income countries typically find that childcare has limited effect on fathers' labor supply, as fathers are likely to work full-time already (e.g., Eckhoff Andresen, and Havnes 2019; Brewer et al. 2022). The effect may differ in low-income contexts due to the interplay of gender-segmented labor markets and household composition. The focus on other household members and the family as a whole—on which there is little evidence from low-income contexts (Evans, Jakiela, and Knauer 2021)—is a key contribution of this paper.³ Another contribution is the inclusion of cash transfers as a separate treatment arm at a cost equivalent to the childcare subsidy. This allows us to assess the relative importance of access to childcare versus capital on labor market outcomes and the cost-effectiveness of subsidizing access to existing childcare services.

Our experimental design also allows us to speak to the literature on the effectiveness of interventions aimed to promote small and medium enterprises. The literature on business development in low-income countries has focused mainly on the importance of financial and human capital constraints (McKenzie and Woodruff 2013; Banerjee, Karlan, and Zinman 2015). An important contribution of our study is also

²See Berger and Black (1992); Gelbach (2002); Berlinski and Galiani (2007); Baker, Gruber, and Milligan (2008); Berlinski, Galiani, and Gertler (2009); Havnes and Mogstad (2011a); Paes de Barros et al. (2011); Rosero and Oosterbeek (2011); Bettendorf, Jongen, and Muller (2015); Givord and Marbot (2015); Nollenberger and Rodríguez-Planas (2015); Bauernschuster, Hener, and Rainer (2016); Bick (2016); Jain (2016); Martínez A. and Peticar (2017); Olivetti and Petrongolo (2017); Clark et al. (2019); Eckhoff Andresen and Havnes (2019); Hojman and López Bóo (2019); and Attanasio et al. (2022), among others.

³To the best of our knowledge, the only exception is Donald, Lowes, and Vaillant (2024), who find positive effects of childcare on fathers' commercial activities in rural areas of the Democratic Republic of the Congo.

considering time constraints. Previous work has shown that male-owned enterprises benefit more from financial support and training programs than businesses owned by women (de Mel, McKenzie, and Woodruff 2008; Fafchamps et al. 2014; Berge, Bjorvatn, and Tungodden 2015; Fiala 2018). One potential explanation is that women face more severe time constraints arising from domestic work and care obligations (Delecourt and Fitzpatrick 2021; Le Barbanchon, Rathelot, and Roulet 2021). Our experiment's factorial design allows us to test separately for the importance of time and credit constraints in explaining the development of women-led businesses. We find that in the Ugandan context, credit constraints are binding for the average woman, while time constraints are important for particular subgroups such as single mothers. Moreover, our findings complement previous work on enterprise growth in developing countries (e.g., Bernhardt et al. 2019) by demonstrating the importance of evaluating returns to childcare at the household rather than at the individual level.⁴

Finally, the paper complements growing evidence on the role of childcare services in promoting child development. Most of this evidence is from high-income countries and, in general, shows that the impact is particularly strong for children in families with low socioeconomic status.⁵ The more limited evidence in low- and middle-income countries shows that effects are not always positive and highlights the quality of childcare and the recipient's economic status as important mediators.⁶ Given the existing evidence, it is not trivial that access to existing childcare services in Uganda will benefit children. Furthermore, given the cost of childcare, it is plausible that a better outcome could be achieved through simple cash transfers. We contribute to this literature in two ways: by providing causal evidence on the effects of receiving full-time childcare on child development in Uganda and by comparing childcare with that of an equivalent cash grant.

I. Empirical Design and Data

A. *Experimental Design*

Our experiment is designed to understand the effects of childcare and cash transfers on labor supply and income. As in many low-income countries, both the labor market and domestic work are highly gender-segmented in Uganda. In the labor market, women are more likely to be involved in self-employment, and men in wage

⁴Bernhardt et al. (2019, 142) show that returns to cash grants should be evaluated at the household rather than at the enterprise level as "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." Our findings demonstrate that this is also true for childcare subsidies. Evaluating the returns to childcare by only focusing on mothers' labor outcomes would be misleading.

⁵For evidence from high-income countries, see Baker, Gruber, and Milligan (2008); Cascio (2009); Havnes and Mogstad (2011, 2015); Cornelissen et al. (2018); Felfe and Lalive (2018); van Huizen and Plantenga (2018); and Duncan et al. (2023).

⁶For evidence from low- and middle-income countries, see Behrman, Cheng, and Todd (2004); Mwaura, Sylva, and Malmberg (2008); Berlinski, Galiani, and Gertler (2009); Engle et al. (2011); Bernal and Fernández (2013); Dowd et al. (2016); Bouguen et al. (2018); Bietenbeck, Ericsson, and Wamalwa (2019); Dean and Jayachandran (2020); Ajayi, Dao, and Koussoubé (2022); Attanasio et al. (2022); Jakiela et al. (2023); Andrew et al. (2024); and Donald, Lowes, and Vaillant (2024).

employment.⁷ At home, Ugandan women carry out more domestic work than men, but men contribute substantially as well. According to a recent national time-use survey, women spend about seven hours per day doing unpaid care work, compared to an average of five hours per day for men (Uganda Bureau of Statistics 2019). Therefore, we document the treatment effects on mothers as well as other household members, such as the father, and for other income sources, such as wage labor.

Since women are more likely to be engaged in self-employment in our context, in order to understand the effects of childcare on women's labor market outcomes, we primarily focus on business development. Capital and labor are two key inputs of production in any business. Entrepreneurs may be unable to invest in capital due to credit constraints, while their labor supply may be constrained by domestic duties. Moreover, there may be important complementarities between capital and labor. For instance, a lack of access to capital may severely limit the returns to childcare, as the marginal product of labor may be low. Similarly, the returns to an increase in capital may be contingent on the entrepreneur having access to childcare, allowing her to work more hours in her business and be more productive during those hours. Similar arguments may apply to wage labor. We expect childcare to increase labor supply by alleviating a time constraint, and cash transfers by improving access to capital. The cash transfers can also help facilitate investments in costly job search (e.g., Abebe et al. 2020 show that providing a transport subsidy to job seekers in Ethiopia increased their likelihood of finding a job).

To shed light on these mechanisms, we designed and implemented a randomized controlled trial with four treatment arms: T1, a childcare treatment that primarily targets the time constraint; T2, a cash treatment that primarily targets the capital constraint; T3, a combined treatment, offering both childcare and cash, which explores any potential complementarity between the treatments; and C, a control group with no intervention.

The childcare intervention offered free, full-day childcare for one year. While private childcare services exist in urban and peri-urban regions of Uganda, these are typically not accessible to the poor or are limited to a program that runs only in the morning. Given that more than 40 percent of Ugandan households have a three-to-five-year-old child (according to our own calculations using the Uganda Demographic and Health Survey 2016), there is a potentially large unmet demand for better access to childcare services.

The childcare treatment offered to enroll one child aged three to five in a nearby childcare center chosen by the mother.⁸ Most of these centers were preschool nurseries with lessons during the morning hours and (supervised) play or rest time in the afternoon. As such, the treatment effects can be interpreted as the effect of providing access to free preschool education. The childcare subsidy covered the tuition

⁷ According to the 2018–2019 wave of the Uganda National Panel Survey (Uganda Bureau of Statistics 2018), within our study districts, 12 percent of women (of the same age range as the participants in our sample) were in wage employment and 21 percent were self-employed. For males, the corresponding rates were 32 percent for wage labor and 25 percent for self-employment.

⁸ It could not be a boarding school, and the parents had to take care of the transportation if the center was not within walking distance. Apart from these, there were no further constraints, and the parents could choose the center offering the best service according to them.

for full-day attendance, breakfast and lunch. The total cost was on average UGX 411,752 (equivalent to US\$111.2, or US\$333 at purchasing power parity) per year. We assisted with the enrollment of children and paid the centers directly at the start of each trimester (in line with their requirements).

The cash grant was delivered to the mothers in the form of mobile money and labeled as a business grant. The cash transfers were made at the same time the childcare fees were paid to the childcare centers (three installments, one each trimester), the value of the transfers being equal to the average cost of childcare within the district. The total cost of the cash transfer was on average UGX 424,322 (US\$114.6) per year.

The sample for the study was selected from three districts in Western Uganda (Kasese, Kyenjojo, and Kabarole), three districts in central Uganda (Mukono, Masaka, and Mityana) and three districts in Eastern Uganda (Mbale, Iganga, and Jinja). In these districts, using the official lists of registered childcare centers, we identified 454 communities containing at least one childcare center. To identify eligible households, we conducted a census of each of these communities. Households had to satisfy three criteria to be part of the study: (i) The household should have one (and only one) child in the age range of 3 to 5 (we refer to this child as the “target child”), (ii) the female caregiver should be present within the household (mother or grandmother), and (iii) the target child should not already be attending full-time childcare (but we allowed for children attending part-time childcare).⁹ We also wanted to have a sufficiently large group of households without a younger child (less than three years old). To that end, we restricted the study sample to communities that have at least three households that satisfy the additional criteria of not having a younger child (and at least one household that has one or more younger siblings).¹⁰ There were no constraints on the number of elder children. From the list of eligible communities and households, we randomly selected 1,496 households across 389 communities to participate in the baseline survey.

We collaborated with BRAC Uganda on collecting the data and with Dyadic Research Impact on implementing the interventions. The baseline surveys were conducted in November and December 2018. We then randomized the sample into the four treatment arms. Randomization was conducted at the individual level and blocked by (i) district, (ii) whether the target child had younger siblings or not, (iii) whether the target child attended any (part-time) childcare or not, (iv) the female caregiver’s main occupation (self-employed, wage employed, or unemployed), and (v) whether the female caregiver was the child’s mother (versus grandmother).¹¹ The interventions covered the 2019 school year, which began in February and ended in late November. A short-term follow-up survey was conducted in July–August 2019, and a long-term

⁹In the census sample, 49 percent of the households have a child aged 3 to 5, and 39 percent of the households have exactly 1 child in that age range (note that this is close to our calculations using the Uganda Demographic and Health Survey 2016). Of those, the mother was absent in 3 percent of the households, and 23.5 percent of the target children were already enrolled in full-time daycare.

¹⁰This criteria led us to drop an additional 2.5 percent of the census households.

¹¹Of the 1,496 households that took part in the baseline survey, 363 were randomly allocated to T1, 364 to T2, 357 to T3, and 412 to C. These are not symmetric groupings, because the number of observations differed across strata and it was not always divisible by four.

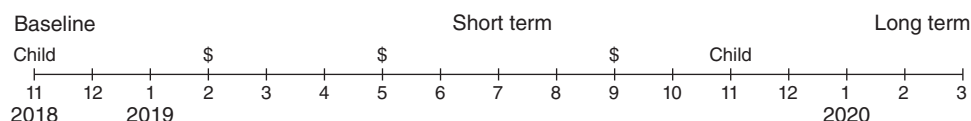


FIGURE 1. PROJECT TIMELINE

Notes: The numbers below the tick marks indicate the month of the year. We indicate the three household surveys (Baseline, Short term, and Long term), the two child development surveys (Child), and the timing of the cash transfers (\$).

follow-up survey in November–December 2019 for children and in February 2020 for households. Figure 1 summarizes the timeline of the project.

The household surveys were answered by the primary female caregiver of the target child. At baseline and at the long-term follow-up, we collected information on the labor supply and business activities of the respondent and other household members, on the demographic and socioeconomic characteristics of all the household members, and on the respondent's well-being. During the short-term follow-up, we collected information on only a subset of indicators in order to track some potential short-run changes.

The child survey was based on the International Development and Early Learning Assessment (IDELA), as developed by Save the Children. The tool consists of a set of questions and tests aimed at measuring the level of competency that children possess across four domains: motor skills, early literacy, early numeracy, and socioemotional skills. We chose the IDELA because that tool is tailored to the age of the children targeted by our study, covers the most important domains of child development, and has been translated and tested for use in Uganda (Pisani, Borisova, and Dowd 2018; Halpin et al. 2019).

We registered a preanalysis plan with the American Economic Association's registry for randomized control trials (Bjorvatn et al. 2019). It details the power calculations, sampling, research design, baseline balance checks, outcome variables, heterogeneity, and correction for attrition. Supplemental Appendix D provides a link to the plan and identifies any deviations from the plan.

B. Baseline Characteristics

Table 1 and Supplemental Appendix Table A.2 present descriptive statistics on the study participants from the baseline survey. In 87 percent of the households, the respondent was the target child's mother (as opposed to the grandmother). Throughout the paper, we refer to the female respondent as the *mother*. The average mother was 35 years old and lived in a household with five members.¹² Her partner (i.e., the father or stepfather of the target child) was listed as being part of the household for 68 percent of the families. We will refer to the partner of the mother as the *father* in what follows. The average child was 3.6 years old at baseline, and half of

¹²Summary statistics from the nationally representative Demographic and Health Survey (2016) provide similar numbers: On average, adult Ugandan women are 37 years old and live in households with 4.7 members.

TABLE 1—BASELINE DESCRIPTIVES AND BALANCE

	Control mean (SD) (1)	Mean difference		
		Childcare versus control (2)	Cash versus control (3)	Childcare and cash versus control (4)
Respondent is target child's mother	0.873 (0.333)	0.030 (0.023)	0.025 (0.024)	0.034 (0.023)
Mother's age	34.540 (10.381)	−0.253 (0.781)	−0.415 (0.755)	−0.875 (0.754)
Household size	5.362 (2.172)	−0.079 (0.154)	−0.069 (0.155)	−0.036 (0.159)
Single-mother household	0.323 (0.468)	−0.062 (0.034)	0.014 (0.035)	0.013 (0.035)
Target child has younger sibling	0.286 (0.452)	−0.014 (0.033)	−0.018 (0.033)	−0.012 (0.034)
Target child is a boy	0.500 (0.501)	0.021 (0.037)	−0.029 (0.037)	0.031 (0.037)
Target child's age	3.627 (0.742)	−0.063 (0.055)	−0.028 (0.054)	−0.076 (0.056)
Child development score (IDELA)	0.005 (0.993)	−0.139 (0.076)	−0.116 (0.076)	−0.103 (0.074)
Total household income	108.892 (215.452)	−17.586 (16.491)	7.047 (18.744)	21.302 (28.068)
Mother is self-employed	0.325 (0.469)	−0.025 (0.034)	−0.009 (0.035)	−0.019 (0.035)
Mother's hours in self-employment	73.743 (128.325)	−4.238 (9.540)	−1.121 (9.559)	−1.408 (9.620)
Mother is wage employed	0.116 (0.321)	0.010 (0.024)	0.035 (0.025)	0.012 (0.024)
Mother's hours in wage employment	17.542 (61.120)	−0.262 (4.348)	11.167 (5.501)	2.781 (4.854)
Father is self-employed	0.159 (0.366)	0.002 (0.027)	0.004 (0.027)	0.013 (0.028)
Father's hours in self-employment	47.766 (119.649)	−3.461 (8.751)	2.932 (9.133)	1.363 (8.858)
Father is wage employed	0.387 (0.488)	−0.046 (0.042)	−0.031 (0.044)	−0.084 (0.043)
Father's hours in wage employment	86.848 (135.449)	−6.355 (11.822)	3.113 (12.795)	−7.054 (12.702)

Notes: Column 1 gives the mean and the standard deviation of observations in the control group; columns 2, 3, and 4 report the differences between the control group and the childcare only, cash only, and combined arms, respectively. These differences are obtained by regressing each variable on the treatment indicators. All monetary values are in thousands of Ugandan shillings and are winsorized at the top ninety-ninth percentile.

them were boys. In about three-quarters of the households, the target child was the youngest child in the household.

In terms of labor market outcomes, we see in Table 1 that self-employment constituted a larger share of mothers' labor hours compared to wage employment, while for fathers it was the opposite. At baseline, 33 percent of the mothers in our sample were self-employed, while only 12 percent were working for a wage. In contrast, 16 percent of fathers were self-employed, while 39 percent were working for a wage. We see a similar pattern on the intensive margin of their labor supply: On

average, mothers spent 74 hours in self-employment and 18 hours in wage labor, while fathers spent 48 hours in self-employment and 87 hours in wage labor. This confirms the gender-segmented nature of the labor market in Uganda as discussed in Section IA.

We measure income from self-employment as business profits over the past month and wages as the total wages received over the same time period. Total income is the sum of wages earned and business profits.^{13, 14} Household income, which averaged UGX 109,000 per month, is measured as the sum of profits from household businesses and income earned from wage labor by the household members.

Table 1 and Supplemental Appendix Table A.2 also provide balance tests, comparing the sample of non-attriters (i.e., households still in the sample at the time of the follow-up survey) by treatment status. Columns 2–4 present the standard difference between the control and the three treatment arms. Fewer than 5 percent of the pairwise mean comparisons are statistically significantly different, which could have occurred through random chance. Moreover, all the normalized differences (Imbens and Wooldridge 2009) are smaller than one-fourth of the combined sample variation.¹⁵ Hence, we conclude that the randomization was successful in achieving baseline balancing in key observable characteristics and that the control group therefore constitutes a valid counterfactual for the treatment groups.

C. Estimation Strategy

We estimate the treatment effects using the following model:

$$(1) \quad y_{i1} = \alpha + \sum_{k=1}^3 \beta^k T_i^k + \lambda y_{i0} + \Gamma_{i0} + \varepsilon_{i1},$$

where y_{i1} is the outcome of interest for respondent i at the follow-up (period 1); y_{i0} is the baseline level of the outcome (period 0)¹⁶; $T_i^k = 1$ if the respondent is in the following treatment group: (i) childcare only ($k = 1$), (ii) cash only ($k = 2$), or (iii) childcare and cash ($k = 3$); and Γ_{i0} are indicators for the five variables on which we stratified our randomization. In this specification, the β^k correspond to intention-to-treat (ITT) estimates. Under the assumption that the control observations constitute a valid counterfactual for each treatment group, β^k identifies the

¹³ We focus on income from self-employment and wage labor, as they are the most important sources of income generation in the peri-urban context of our study. Few households in our sample have income from farming (20 percent in the control group) or from livestock rearing (18 percent in the control group). As these are household activities, we cannot attribute those to the child's mother or father.

¹⁴ In case the respondent was unsure about the level of profits, we asked them to estimate these using intervals. In particular, they were asked if the profits were higher than X where X = median level of profits at baseline; if they said "Yes" ("No"), they were then asked if the level was higher than X where X = seventy-fifth (twenty-fifth) percentile of profits at baseline; followed by the 62.5th or 12.5th percentiles from the baseline. We impute missing values using the midpoint of the relevant interval in which they finished.

¹⁵ The columns 2–4 in Supplemental Appendix Table A.1 report the normalized differences for variables in Table 1.

¹⁶ If information on the baseline level of the outcome is missing due to nonresponse for a specific question, we impute the missing value at baseline with the sample mean and we control for this using a dummy indicating the observation has been imputed.

causal effect of the offer of childcare (β^1), cash (β^2), or both (β^3). Throughout the paper, monetary values are expressed in thousands of Ugandan shillings and are winsorized at the ninety-ninth percentile. We detail the construction of all outcome variables in Supplemental Appendix E.

The treatments were randomized at the individual level. Hence, we do not cluster the standard errors, but they are robust to heteroscedasticity.¹⁷ We group outcomes that test the same hypothesis in families and correct the p -values to account for multiple hypotheses testing using the procedure proposed by Benjamini, Krieger, and Yekutieli (2006). This allows us to control the *false discovery rate* within families of outcome variables. We correct the p -values by treatment arm and group the outcomes into families as specified in the table notes. The p -values are reported in Supplemental Appendix C.¹⁸

We test for differential attrition in Supplemental Appendix Table A.3. For the household survey, the attrition rate was 8 percent among the control group and between 4 and 5 percent among the 3 treatment arms. The difference in attrition between the childcare arm and the childcare and cash arm relative to the control group is statistically significant, but not for the cash-only versus control arm. There is no differential attrition across the three treatment arms, as can be seen from the p -values in the bottom panel of the table. For the child survey, the attrition rate was 10 percent among the control group, and this was lower by 4 percentage points (pp) for the childcare arm and by 3 pp for the cash and combined arms. Due to the differential attrition rate in the control group relative to the treatment groups, we assess the sensitivity of our findings with respect to attrition throughout the analysis. To do so, we follow two methods. First, as prespecified in our preanalysis plan, we follow Kling, Liebman, and Katz (2007) and Fairlie, Karlan, and Zinman (2015) and calculate the lower- and upper-bound estimates that adjust for differential nonresponse rates in the treatment groups relative to the control.¹⁹ Second, we calculate Lee bounds. We report the results in Supplemental Appendix B.

D. Take-up

Before presenting the treatment effects of the interventions, we confirm that the childcare treatment led to an increase in the enrollment of the targeted children in childcare. Column 1 in Table 2 indicates a 15 pp increase in the likelihood that the target child is enrolled in any childcare among the childcare treatment groups. This corresponds to an increase of around 18 percent relative to the control group where

¹⁷ Supplemental Appendix C shows that our results are robust to clustering the standard errors at the community level.

¹⁸ In Supplemental Appendix C we also provide randomization inference p -values for the treatment effects estimated in the main tables, these are close to the standard p -values.

¹⁹ In particular, we calculate the upper bounds by imputing the mean among the treated plus 0.1 (or 0.2) standard deviations (SD) to the nonresponders in the treatment group. For the control group, we impute using the mean among the control minus 0.1 (or 0.2) SD. To calculate the lower bounds, we follow the opposite procedure. For the treatment group, we take the mean minus 0.1 (or 0.2) SD and for the control we take the mean plus 0.1 (or 0.2) SD. We then re-estimate the treatment effects.

TABLE 2—EFFECTS ON CHILDCARE ENROLLMENT

	Any childcare (1)	Full-day childcare (2)
Childcare	0.15 (0.02)	0.48 (0.03)
Cash	0.07 (0.02)	0.07 (0.03)
Childcare and cash	0.14 (0.02)	0.50 (0.03)
<i>p</i> -value (equal treatment effects)		
Childcare = cash	0.000	0.000
Childcare = childcare and cash	0.463	0.571
Cash = childcare and cash	0.001	0.000
Childcare and cash = childcare + cash	0.003	0.254
Mean control	0.82	0.34
Observations	1,428	1,428

Notes: In columns 1–2 the dependent variables are dummies indicating the child is enrolled in any childcare, or in full-day childcare, respectively. All regressions control for the baseline level of the outcome variable and the randomization strata: district indicators, an indicator for whether the target child has younger siblings, whether the target child was already attending childcare at baseline, whether the respondent was self-employed at baseline and the corresponding indicator for being wage employed, and whether the respondent was the birth mother of the target child. Robust standard errors are reported in parentheses.

82 percent of the children were enrolled in any childcare.²⁰ The effect of the combined treatment (childcare and cash) is 14 pp (17 percent relative to the control) and statistically not different from the childcare treatment. The cash transfer also increased enrollment in any childcare by 7 pp—this effect is significantly smaller than the effects in the treatment arms that include childcare (p -value < 0.01). Column 2 shows the treatment effects on enrollment in full-day childcare. In the control group, 34 percent of the children were enrolled in full-day care. This proportion is approximately 50 pp larger in the childcare treatments, which corresponds to a 150 percent increase in full-day childcare enrollment relative to the control group. In contrast, the cash treatment led to a 7 pp (21 percent relative to the control) increase, which is significantly smaller than the effects of the childcare treatments (p -value < 0.01).

Overall, the findings in Table 2 demonstrate that all treatments increased the enrollment rates in full-day childcare among the targeted children, but the increase was significantly greater in the groups assigned to the childcare subsidy in comparison to those assigned to the cash transfer.²¹ One important finding from the research on childcare interventions is that full-time programs generally have stronger effects

²⁰We see similar enrollment rates among children of this age range in other data from this region. For example, in Supplemental Appendix Figure A.1, we compare the school enrollment rates of the children in our control group with children residing in the same districts using the 2018–2019 wave of the Uganda LSMS (Uganda Bureau of Statistics 2018). Among our control group, enrollment rates in any type of school are 80 percent and 83 percent among children aged 3 or 4 at baseline, while in the LSMS sample the corresponding rates are 78 percent and 81 percent, respectively. Among the children aged 5 at baseline, enrollment rates are above 90 percent in both samples.

²¹Supplemental Appendix Tables B.1 and B.2 provide the lower and upper attrition bounds, and Table B.3 the Lee bounds for the findings in Table 2. Overall, the results are robust to alternative assumptions about the attritors.

than part-time programs (van Huizen and Plantenga 2018; Brewer et al. 2022), and it is therefore important to note the strong effects on full-day enrollment. Nevertheless, we observe that the recipients of cash grants increase their child's enrollment in childcare to some extent, primarily in half-day programs. This is also confirmed by additional evidence from the follow-up survey. When we presented an open question—"What did you use the cash transfer for?"—65 percent of the respondents in the cash group said they used it at least partly to cover childcare expenditures. This could reflect a latent demand for childcare that may be subject to liquidity constraints. It could also be that the cash grant increases the opportunity cost of time by increasing labor productivity and, thereby, the attractiveness of childcare services.

We also estimate the treatment effects on older siblings' school enrollment and attendance (children aged 7–18). As we show in Supplemental Appendix Table A.4, there are no significant effects on enrollment rates, but we find some significant effects on their attendance. In particular, the childcare and cash treatment decreased the number of school days missed by older siblings during the last school term by four days, corresponding to a 38 percent decrease relative to the control mean of ten days. The effect is driven by both sisters (three days) and brothers (two days). The other two treatments, childcare alone and cash alone, do not significantly impact the school attendance of older siblings compared to the control group. We conclude that the increased enrollment by the target children caused by the childcare treatments did not come at the expense of the enrollment of their siblings. This reinforces our confidence that these treatments freed up the parents' time.

II. Effects on Labor Supply and Business Development

Our main research questions are whether subsidizing childcare increases labor supply and income, and how this compares to a similar-sized cash grant. We hypothesize that access to childcare can alleviate a time constraint. If this is a relevant constraint for mothers, it should lead to an increase in their labor supply and income. On the other hand, a cash grant can reduce a credit constraint, which can lead to business development. We first discuss the impact on mothers before turning to fathers. All the results are based on the long-term follow-up survey that was conducted approximately one year after the interventions started.

A. Mothers

Table 3 provides the treatment effects on mothers' income and labor supply. For both outcomes, we report total effects as well as effects by occupation (self-employment versus wage labor). The first column of the table displays effects on profits generated by the mother from any businesses she was operating during the past month. We find that the childcare treatment increased monthly business profits by UGX 7,000, which is a 27 percent increase relative to the control group. The cash transfer led to a UGX 9,000 (37 percent relative to the control) increase. While the effect of the childcare subsidy is imprecisely estimated, it is also not significantly different from the effect of the cash transfer (p -value = 0.640). As we will see later on, the positive yet imprecisely estimated effects of the childcare treatment mask

TABLE 3—EFFECTS ON MOTHERS

	Income			Labor supply					
	Self-emp.		Total income	Self-emp.		Wage		Total	
	profits (1)	Wage (2)		> 0 (4)	Hours (5)	> 0 (6)	Hours (7)	> 0 (8)	Hours (9)
Childcare	6.65 (4.74)	−3.83 (3.41)	3.37 (6.04)	0.02 (0.03)	2.61 (10.31)	−0.02 (0.03)	−6.83 (5.58)	0.01 (0.04)	−4.24 (10.93)
Cash	9.00 (4.56)	−7.26 (3.30)	2.51 (5.86)	0.19 (0.03)	39.73 (10.98)	−0.04 (0.03)	−10.51 (5.54)	0.13 (0.04)	31.31 (11.44)
Childcare and cash	16.06 (4.91)	−9.67 (3.11)	7.65 (6.15)	0.16 (0.03)	36.10 (11.03)	−0.05 (0.02)	−16.28 (5.08)	0.09 (0.04)	20.39 (11.42)
<i>p</i> -value (equal treatment effects)									
Childcare = cash	0.640	0.311	0.891	0.000	0.001	0.540	0.503	0.001	0.003
Childcare = childcare and cash	0.083	0.071	0.520	0.000	0.003	0.219	0.059	0.017	0.036
Cash = childcare and cash	0.176	0.433	0.421	0.389	0.762	0.546	0.245	0.370	0.373
Childcare and cash = childcare + cash	0.954	0.757	0.842	0.253	0.693	0.797	0.888	0.424	0.684
Mean control	24.27	19.34	45.1	0.31	81.76	0.17	30.58	0.47	112.34
Observations	1,414	1,414	1,414	1,414	1,414	1,414	1,414	1,414	1,414

Notes: The dependent variables measure profits earned through self-employment (column 1); income earned through wage labor (column 2) and the sum of wages and profits (column 3); labor supply in wage labor, in self-employment, and in total at the extensive (columns 4, 6, and 8) and intensive (columns 5, 7, and 9) margins. All monetary values are in thousands of Ugandan shillings and are winsorized at the top ninety-ninth percentile. We include the same control variables as in Table 2. Robust standard errors are reported in parentheses.

a high degree of heterogeneity, driven by single mothers. Mothers who received both the childcare subsidy and the cash transfer increased their business profits by UGX 16,000 (66 percent relative to the control). This effect is significantly larger than the effect of the childcare subsidy alone (p -value = 0.083) but not significantly different from the effect of the cash transfer alone (p -value = 0.176).²²

In the second column, we find that all three treatments partly crowded out wage income, although the effects are only precisely estimated for the cash and the childcare and cash treatments. In particular, the childcare subsidy led to an estimated UGX 4,000 fall in wage earnings, while the cash transfer and the combined treatment reduced wage income by UGX 7,000 and UGX 10,000, respectively. The total effect on income, displayed in column 3, is positive but statistically insignificant for all three treatments. Our results suggest that mothers prefer to be engaged in self-employment rather than wage employment. This is consistent with gender norms (e.g., Jayachandran 2020, 2021) and flexibility of self-employment (Bandiera et al. 2022; Ho, Jalota, and Karandikar 2023; Zipfel 2023) shaping women's occupational choices.

²² Since reported business profits are notoriously noisy, in Supplemental Appendix Table A.5, we also estimate the effects on business revenues as an alternative measure of business income. We find that all three treatments led to a significant increase in the mother's revenues from self-employment, ranging from UGX 42,000 to 63,000 compared to a control group mean of UGX 90,000, and we fail to reject the null of equality of treatment effects on revenues across the three treatment arms.

Turning to the drivers of income changes, we look at labor supply at the extensive and intensive margin in Table 3, and at investments in business assets and the recruitment of employees in Supplemental Appendix Table A.5. On average, the childcare treatment did not significantly alter mothers' working hours, productive assets, or the number of employees.²³ On the other hand, we find that the cash transfers increased mothers' labor supply as well as their investments in business capital and labor. Mothers receiving cash transfers were 9 to 13 pp more likely to be employed (compared to a control group average of 47 percent) and worked 21 to 31 hours longer per month (compared to 112 hours in the control group). They were also 6 to 7 pp more likely to buy business assets, and the value of these assets was more than UGX 5,000 higher, amounting to at least a doubling compared to the control group mean. Mothers who received cash were also 6 to 7 pp more likely to employ at least one worker, which is a 10 percent increase compared to the control group.

Throughout the paper, we check for any complementarities between the childcare and cash transfer treatments by testing whether the treatment effect of the childcare and cash arm is equal to the sum of the treatment effects of the single-arm treatments. The *p*-value associated with this test is reported in the lower panel of the corresponding tables. In Table 3, we find no evidence of complementarities between access to childcare and cash transfers for mothers' labor market outcomes.²⁴

To sum up, we find that the childcare subsidy did not lead to significant increases in mothers' earnings or labor supply on average. This suggests that for the average mother in our sample, time constraints were not critical in limiting their labor market outcomes. On the other hand, access to capital seems to be key for increasing mothers' earnings from self-employment and their labor supply. This implies that credit constraints are binding for the average mother in our sample, limiting their labor supply and business profits.²⁵

While the childcare subsidy did not have any significant effect on mothers' labor on average, this could mask substantial heterogeneity. In particular, one dimension that is likely to be key is the composition of the household and the presence of other working-age household members. At baseline, 32 percent of our sample was comprised of single mothers, while 68 percent had a partner. While it may be more profitable for a couple to allocate the freed-up time to the partner, this is not an option for single mothers. When we assess the heterogeneity of the treatment effects on mothers with respect to this dimension, we find evidence of substantial heterogeneity. The full regression results are presented in Supplemental Appendix Table A.8, while Figure 2 graphically summarizes the impact of the childcare subsidy on mothers who lived

²³ In addition, childcare did not lead to the creation of new or the closure of old businesses (Supplemental Appendix Table A.6). This suggests that mothers stayed in the same occupations. Consistent with this, we do not find effects on the operating time of the business nor on the travel time to the business (Supplemental Appendix Table A.7).

²⁴ Supplemental Appendix Tables B.4 and B.5 provide the lower and upper attrition bounds and Supplemental Appendix Table B.6 the Lee bounds for the findings in Table 3. Overall, our findings are robust to alternative methods of adjusting for attrition. The only exception is the effect of cash transfers on business profits, for which we lose significance when we calculate Lee bounds.

²⁵ Our finding that cash grants positively impact mothers' business earnings is in line with Blattman, Fiala, and Martinez (2014), who study similarly labeled cash grants.

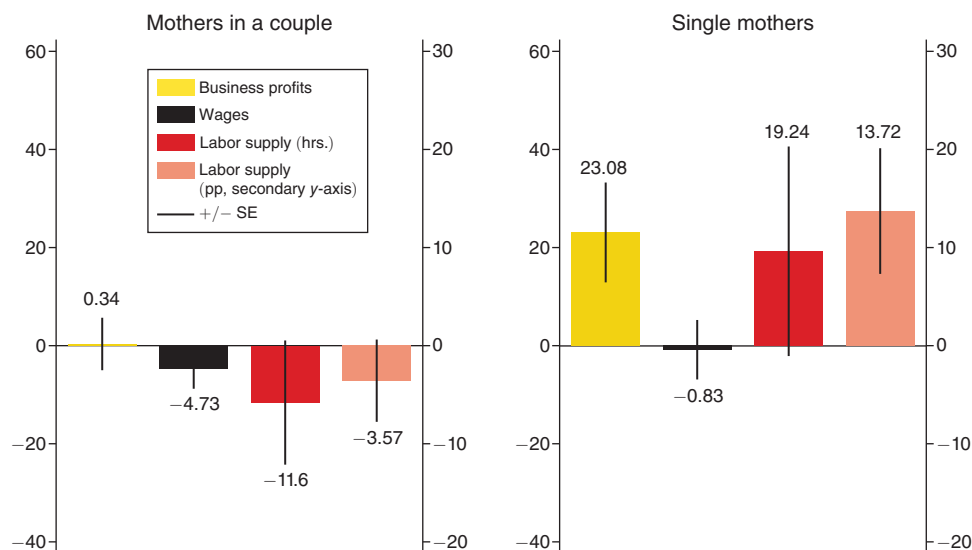


FIGURE 2. THE IMPACT OF CHILDCARE BY FAMILY COMPOSITION

Note: The bars and labels show the mean effect sizes, with amounts in thousands of Ugandan shillings and hours on the primary y-axis, and percentage points on the secondary y-axis.

with their partner at baseline (left panel) versus single mothers (right panel). The left axis indicates income (in UGX 1,000) and labor supply at the intensive margin (in hours per month), and the right axis indicates labor supply at the extensive margin (percent of working mothers).

Figure 2 demonstrates that while the childcare subsidy does not impact the labor supply and income of mothers in a couple, the effects are large among single mothers: Their labor supply and profits from self-employment increased substantially. In particular, the proportion of self-employed increased by 13 pp (from 30 to 43 percent) and business profits by UGX 23,000 per month (compared to a control mean of UGX 24,000) among single mothers. The effects carry through to total income and the extensive margin of labor supply: The childcare treatment increased single mothers' total labor income by UGX 23,000 (45 percent relative to the control mean) and their likelihood to be working (in either self-employment or wage employment) by 14 pp (29 percent relative to the control group). On the other hand, the childcare subsidy had no impact on mothers' labor supply or income when a partner was present.²⁶

²⁶The regression results in Supplemental Appendix Table A.8 confirm that the differences in effects between the two groups are statistically significant, i.e., the interaction effects between the childcare treatment and the mother being single are positive and significant, although they are not robust to adjusting for multiple hypotheses testing. Note that the presence of the father was one of the dimensions that we prespecified for heterogeneity analysis. Supplemental Appendix Tables A.9, A.10, and A.11 show the heterogeneous effects for the other prespecified dimensions: the presence of a younger child, the child's age, and the child's gender. The point estimates of the interaction effects are sizable for some of these dimensions but not statistically significant.

This evidence is consistent with our interpretation that the childcare subsidy alleviated time constraints. When a father is present, additional time may be used by either parent. For single mothers, such a reallocation is not an option, leading them to increase their own labor supply, which in our context is driven by self-employment.²⁷ Furthermore, the magnitude of the effects suggests that single mothers may have become more productive in their businesses. In the control group, the average single mother worked 75 hours and earned UGX 24,000, so her average hourly earnings was UGX 320. When provided childcare, the average single mother worked $75 + 36 = 111$ hours and earned $UGX\ 24,000 + 23,000 = 47,000$, corresponding to hourly earnings of UGX 420. Assuming a concave production function with diminishing marginal productivity of labor, the higher hourly earnings for single mothers in the treatment group relative to single mothers in the control group (i.e., $0.42 > 0.32$) indicates that single mothers become more productive when they receive a childcare subsidy. This suggests that the time constraint may have implications both in terms of the quantity (affecting the number of hours at work) as well as the quality of labor supply (affecting productivity at work).²⁸

B. Fathers

In the preceding section, we find that the effect of the childcare subsidy depends on the family composition—in particular, on the presence of a father. In Table 4, we report the treatment effects on fathers. For this analysis, the sample is restricted to households where a father was present at baseline. We find that the childcare subsidy led to a significant increase in fathers' total labor income by UGX 23,000. This corresponds to a 23 percent increase relative to the earnings of the average father in the control group. While the coefficients on income from self-employment and wage labor are both positive and imprecisely estimated, the latter seems to be driving the effect on income. Fathers receive UGX 14,500 (19 percent) more in wages than those in the control group.

In terms of labor supply, we find a significant increase in fathers' likelihood to be in wage employment. On the extensive margin, fathers in the childcare arm were 10 pp more likely to be working for a wage, which is a 26 percent increase compared to the control group, where 38 percent of the fathers were in salaried employment. On the intensive margin, fathers in the childcare arm spent 21 hours (21 percent) more time working for a wage, although this is imprecisely estimated. The effect on fathers' total labor supply is attenuated by a slight decrease in time spent in self-employment, but it is still positive. Consistent with the increase in fathers' income being driven by changes in wage employment, we do not observe a

²⁷ The evidence is also consistent with a scenario in which single mothers are less credit constrained than mothers living with a partner, but our data do not support this hypothesis. We asked all mothers at baseline if they would be able to borrow UGX 300,000 for the next six months: 65 percent of single mothers said no, while only 57 percent of mothers who live with their partner said no. The difference is statistically significant ($p = 0.004$).

²⁸ In line with this, Delecourt and Fitzpatrick (2021) provide evidence that in Uganda, female business owners who take their children to work have lower profitability than other female-owned businesses where a child is not present, and Banerjee and Mullainathan (2008) theoretically show that limited attention (e.g., due to the presence of children) can reduce productivity.

TABLE 4—EFFECTS ON FATHERS

	Income			Labor supply					
				Self-emp.		Wage		Total	
	Self-emp. profits (1)	Wage (2)	Total income (3)	> 0 (4)	Hours (5)	> 0 (6)	Hours (7)	> 0 (8)	Hours (9)
Childcare	4.63 (6.27)	14.51 (12.20)	23.24 (13.70)	−0.03 (0.03)	−7.24 (10.96)	0.10 (0.04)	20.90 (12.86)	0.06 (0.04)	12.28 (14.65)
Cash	−6.70 (5.91)	14.55 (12.89)	12.59 (14.33)	0.00 (0.04)	3.79 (12.27)	0.07 (0.04)	14.59 (12.84)	0.05 (0.04)	20.47 (15.24)
Childcare and cash	4.01 (6.14)	−1.71 (12.40)	8.62 (14.27)	0.04 (0.04)	16.69 (12.40)	0.05 (0.04)	9.93 (13.20)	0.06 (0.04)	24.96 (15.25)
<i>p</i> -value (equal treatment effects)									
Childcare = cash	0.085	0.998	0.476	0.354	0.375	0.546	0.625	0.866	0.596
Childcare = childcare and cash	0.928	0.194	0.327	0.048	0.057	0.231	0.406	0.837	0.412
Cash = childcare and cash	0.102	0.215	0.801	0.310	0.344	0.583	0.726	0.718	0.778
Childcare and cash = childcare + cash	0.506	0.087	0.194	0.155	0.250	0.038	0.166	0.511	0.719
Mean control	25.33	77.37	103.19	0.21	57.19	0.38	100.22	0.57	156.17
Observations	970	968	968	970	969	970	968	970	967

Notes: The dependent variables measure profits earned through self-employment (column 1); income earned through wage labor (column 2) and the sum of wages and profits (column 3); and labor supply in wage labor, self-employment, and in total at the extensive (columns 4, 6, and 8) and at the intensive (columns 5, 7, and 9) margins. All monetary values are in thousands of Ugandan shillings and are winsorized at the top ninety-ninth percentile. We include the same control variables as in Table 2. Robust standard errors are reported in parentheses.

change in their business revenues, assets, or employees (see Supplemental Appendix Table A.5).²⁹

The cash treatments also affect fathers' labor income positively, but these effects are imprecisely estimated. Providing cash only had a similar impact on fathers' wage labor as providing childcare only, and did not change their business outcomes or inputs. In the combined arm, we find that the fathers were more likely to be self-employed and spent more hours working in self-employment compared to the fathers in the childcare-only arm (*p*-values are 0.048 and 0.057, respectively). This suggests that addressing both time and credit constraints caused fathers to work more in household businesses relative to addressing only the time constraint, which increased their wage employment instead.³⁰

To sum up, we find that providing childcare led to an increase in fathers' likelihood to be working for a wage, while the cash transfer, given to the mother of the target child, did not have any significant effects on fathers' labor. The impact of the childcare subsidy on fathers' wage labor and income could be driven by two

²⁹ Note that only 15 percent of the fathers owned a business at baseline.

³⁰ In Supplemental Appendix Tables B.7 and B.8, we provide the lower and upper attrition bounds using imputation, and in Supplemental Appendix Table B.9 using Lee bounds. Overall, the effects on fathers' labor supply are robust to various attrition bounds, while the effects on their earnings is not robust when we use Lee bounds.

potential mechanisms. First, childcare may have freed up some of the father's time, either directly, by freeing time he would otherwise have spent caring for the child, or indirectly, by the mother taking over some of his domestic work. A recent national time-use survey shows that Ugandan men spent about five hours per day doing unpaid care work (Uganda Bureau of Statistics 2019). This is less than the seven hours women spent on such tasks, but it is still substantial.³¹ The childcare treatment relieved the household from part of the domestic work required, resulting in the reallocation of the parents' time to other tasks, such as income-generating activities. If there are capital constraints, the main income-generating option is wage labor. Given the importance of the gender gap in the labor market in Uganda (see Section IA), the most lucrative option from the household's point of view is to increase the father's wage labor, with the mother potentially taking over some of his domestic chores. In addition, the division of labor may also be guided by the traditional role of the woman as the main person responsible for household chores (Uganda Bureau of Statistics 2019). The time channel therefore provides a plausible explanation.

Second, the childcare subsidy may have freed up resources, as some households would have sent their child to daycare even without the subsidy, allowing the fathers to invest more in costly job search. After all, while the cash transfers did not significantly impact fathers' labor supply, we cannot reject the null of equality between the treatment effects of the childcare and cash-only arms, which suggests that the resource channel could also be driving the results. Moreover, the cash transfer was labeled to be used by the mothers, whereas any resources freed up by the childcare subsidy would have no such label. To shed more light on this, we predict for which households the resource channel could be more relevant by assessing the correlates of full-day childcare enrollment in the control group using baseline covariates.³² We then use the same covariates to predict the target child's likelihood to be in full-day childcare in the absence of the subsidy. We use this predicted likelihood to split the sample into households where it is highly likely that the target child would have attended full-day childcare in the absence of the subsidy. For families who would have sent the target child to full-time childcare anyhow, our childcare subsidy is more likely to free up resources, alleviating the credit constraint rather than the time constraint. We find that among families who are less likely to have sent the target child to daycare, the childcare subsidy caused a large and significant increase in the father's total income and labor supply. On the other hand, for households who were more likely to send the target child to daycare, the childcare subsidy had no discernible effect on the father's total income or labor supply (see Supplemental Appendix Table A.13).³³ This suggests the main mechanism driving the effects on fathers is time as opposed to the credit constraint.

³¹ According to Uganda Bureau of Statistics (2019), cooking, shopping, childcare, and care for dependent adults take up most of this time (5.3 hours for women and 3 hours for men). Men spend more time on other domestic tasks, such as home maintenance, transporting goods or family members, and unpaid work in support of other households (2.7 hours, versus 1.4 for women).

³² In particular, we find that the mother's occupation (wage employment) and education level, as well as the target child's age and gender, are among the significant correlates of childcare enrollment among the control group. See Supplemental Appendix Table A.12.

³³ Note that this analysis (i.e., results presented in Supplemental Appendix Tables A.12 and A.13) was not prespecified and should therefore be caveated as such.

TABLE 5—EFFECTS ON HOUSEHOLD INCOME AND CONSUMPTION

	Total household income (1)	Consumption per day		
		Total (2)	Food (3)	Nonfood (4)
Childcare	27.84 (13.46)	0.93 (0.52)	0.09 (0.27)	0.83 (0.37)
Cash	4.70 (13.00)	1.29 (0.53)	0.33 (0.27)	0.91 (0.38)
Childcare and cash	7.83 (13.32)	1.63 (0.57)	0.22 (0.28)	1.35 (0.41)
<i>p</i> -value (equal treatment effects)				
Childcare = cash	0.115	0.524	0.353	0.847
Childcare = childcare and cash	0.182	0.234	0.612	0.232
Cash = childcare and cash	0.831	0.563	0.711	0.320
Childcare and cash = childcare + cash	0.215	0.454	0.624	0.496
Mean control	142.84	11.44	5.9	5.54
Observations	1,411	1,393	1,413	1,393

Notes: In column 1, the dependent variable is total income. In column 2, the dependent variable measures total household expenditures per day, comprising expenditures on food in column 3 and nonfood in column 4. We include the same control variables as in Table 2. All monetary values are in thousands of Ugandan shillings and are winsorized at the top ninety-ninth percentile. Robust standard errors are reported in parentheses.

III. Effects on Family Well-Being

We now turn to the impact of the childcare subsidy and the cash transfers on a range of outcomes related to family well-being. We first discuss the treatment effects on household income and consumption, and then those on child development and domestic violence.

A. Household Income and Consumption

Table 5 reports the treatment effects on total household income and consumption. Column 1 shows that households assigned to the childcare treatment saw a large increase in total household income. In particular, households in the childcare arm generated UGX 28,000 more. Compared to the control group average of UGX 143,000, this corresponds to a 19 percent increase. The cash transfer and the combined treatment also have positive but imprecisely estimated effects on total household income.

To measure changes in household socioeconomic conditions, we also collected data on household consumption.³⁴ In column 2 of Table 5, we estimate treatment

³⁴To measure consumption, respondents were asked about their households' expenditures over the past month for infrequent purchases, and the value of consumption over the past week for drinks, food and tobacco. Using these, we impute the average household consumption per day. The measure, therefore, does not only include expenditures, but also the consumption of goods produced by the household (from farming and livestock) and received from others.

effects on household consumption per day.³⁵ We find that all treatments increased total household consumption. Relative to the control group, household consumption per day was 8 percent higher among households who received the childcare treatment, 11 percent more for those who got only the cash transfer, and 14 percent higher for those who received both childcare and cash. While the point estimates are higher for the combined treatment arm, the differences across the three treatments are not statistically significant and we do not find evidence of a complementarity between childcare and cash. In columns 3 and 4, we present the treatment effects on household food and nonfood consumption separately. The results suggest that the increase in total household consumption is mainly driven by an increase in nonfood expenditures by 15 percent (childcare only), 16 percent (cash only), and 24 percent (childcare and cash). The treatment effects on food consumption are positive for all treatment arms, yet insignificant.³⁶

Overall, the effects on household income and consumption highlight the importance of both time and credit constraints. Childcare subsidies as well as cash grants have the potential to improve household income and consumption. Based on our findings, we cannot conclude that one policy is more effective than the other in improving household socioeconomic conditions.

B. Child Development

Table 6 presents the treatment effects on the target child's development. Column 1 presents the impact on the standardized aggregate IDELA score, while columns 2–5 show the effects on each of its four dimensions: emergent literacy, emergent numeracy, socioemotional skills, and motor development.

We find that the childcare subsidy—alone or when combined with cash—had positive and significant effects of about 0.15 SD on the aggregate score, driven by significant improvements in emergent literacy and motor development. The effects on emergent numeracy and socioemotional skills are also positive (0.1 SD and 0.04 SD, respectively), but not statistically significant. Turning to the cash treatment, the impact on the aggregate score is 0.09 SD and on its components is positive but not statistically significant. Nevertheless, we cannot reject the null hypothesis that the treatment effects of the three types of treatment on child development are equal. The positive but noisy effect of the cash transfer on children's development could be driven by the fact that some cash transfer recipients used this to send their children to childcare as well (see discussion in Section ID above).³⁷

Overall, our findings suggest that the childcare subsidy had a positive effect on child development after one year. As we discussed in Section ID, the childcare

³⁵ We did not collect data on consumption at baseline, but only at the long-term follow-up survey. Therefore, the regressions presented in columns 2–4 of Table 5 are slightly different from our estimating equation (1) in that we cannot control for the baseline level of the outcome, y_{i0} .

³⁶ Supplemental Appendix Tables B.10 and B.11 provide the lower and upper attrition bounds using imputation and Supplemental Appendix Table B.12 the Lee bounds for the results in Table 5. Our findings are robust with respect to attrition when we use the imputation method, but the lower Lee bounds are not precisely estimated.

³⁷ Supplemental Appendix Tables B.13 and B.14 provide the lower and upper attrition bounds and Supplemental Appendix Table B.15 the Lee bounds for the findings in Table 6. Overall, the effects on child development are robust to alternative methods of adjusting for attrition. The only exception is the lower bounds for emergent literacy.

TABLE 6—EFFECTS ON CHILD DEVELOPMENT

	IDELA score (1)	Breakdown into components			
		Emergent literacy (2)	Emergent numeracy (3)	Socioemotional (4)	Motor development (5)
Childcare	0.16 (0.06)	0.12 (0.06)	0.11 (0.06)	0.04 (0.07)	0.23 (0.06)
Cash	0.09 (0.06)	0.06 (0.06)	0.08 (0.06)	0.01 (0.07)	0.11 (0.06)
Childcare and cash	0.15 (0.06)	0.16 (0.06)	0.10 (0.06)	0.04 (0.07)	0.19 (0.06)
<i>p</i> -value (equal treatment effects)					
Childcare = cash	0.219	0.334	0.588	0.562	0.056
Childcare = childcare and cash	0.918	0.491	0.846	0.950	0.523
Cash = childcare and cash	0.273	0.100	0.731	0.613	0.207
Childcare and cash = childcare + cash	0.244	0.786	0.325	0.921	0.080
Mean control	0	0	0	0	0
Observations	1,366	1,366	1,366	1,366	1,366

Notes: In column 1, the dependent variable is the standardized aggregate IDELA score, and in columns 2–5 it is the standardized components of the score: emergent literacy, emergent numeracy, socioemotional skills, and motor development. We include the same control variables as in Table 2. Robust standard errors are reported in parentheses.

subsidy results in an increase in children's enrollment in full-day childcare. Our findings in Table 6 imply that this increase in full-day childcare had a positive effect on child development after one year.³⁸

C. Domestic Violence

As a final outcome, we analyze the treatment effects on domestic violence. Previous literature has shown that cash transfers targeted to women may affect the prevalence of intimate partner violence (IPV). Theoretically, the effect of cash transfers targeted to women on IPV is ambiguous. Cash transfers and the resulting increase in mothers' earnings could improve their position within the households and reduce IPV. On the other hand, it may lead to a backlash. Most studies have found that cash transfers either reduce or have little impact on IPV on average, although for some subgroups, such as women with low education, they may have adverse effects (Hidrobo and Fernald 2013; Baranov et al. 2021). There is less evidence on how access to free childcare affects IPV. To the extent that access to childcare affects mothers' or fathers' labor income, it may affect their relative bargaining powers within the household which can have implications for IPV.

³⁸ Recent evidence on the effects of preschools on child development suggests that quality of the service is very important (Andrew et al. 2024). We do not have a direct measure of the quality of childcare. Presuming that the cost reflects its quality, and under the caveat that households in the control and in the cash-only arm self-select into paying for childcare, there is no evidence that children attend different types of schools. The average cost per trimester for full-time daycare is UGX 152,040 in the control arm, UGX 155,390 in the childcare arms, and UGX 144,040 in the cash-only arm.

TABLE 7—DOMESTIC VIOLENCE

	Against partner			Against child (in hh)			Against child (others)		
	Psych. (1)	Phy. (2)	Any (3)	Psych. (4)	Phy. (5)	Any (6)	Psych. (7)	Phy. (8)	Any (9)
Childcare	0.00 (0.04)	0.00 (0.03)	0.00 (0.04)	0.05 (0.03)	−0.03 (0.03)	0.03 (0.02)	0.03 (0.04)	0.04 (0.03)	0.04 (0.04)
Cash	0.04 (0.04)	0.08 (0.04)	0.08 (0.04)	0.04 (0.03)	0.00 (0.03)	0.03 (0.02)	−0.02 (0.04)	−0.01 (0.03)	−0.02 (0.04)
Childcare and cash	0.03 (0.04)	0.06 (0.04)	0.06 (0.04)	0.05 (0.03)	−0.01 (0.03)	0.02 (0.02)	0.03 (0.04)	0.02 (0.03)	0.03 (0.04)
<i>p</i> -value (equal treatment effects)									
Childcare = cash	0.290	0.019	0.079	0.687	0.499	0.874	0.111	0.170	0.098
Childcare = childcare and cash	0.478	0.072	0.196	0.930	0.568	0.666	0.993	0.644	0.920
Cash = childcare and cash	0.730	0.584	0.655	0.756	0.923	0.554	0.117	0.351	0.127
Childcare and cash = childcare + cash	0.825	0.717	0.750	0.317	0.610	0.217	0.643	0.851	0.704
Mean control	0.29	0.14	0.32	0.78	0.75	0.88	0.47	0.23	0.51
Observations	907	907	903	1,388	1,388	1,388	1,388	1,388	1,388

Notes: The dependent variables measure the extensive margin of psychological, physical, or any violence against the respondent (columns 1–3), against children by members of the household (columns 4–6), and against children by others (columns 7–9). We include the same control variables as in Table 2. Robust standard errors are reported in parentheses.

In Table 7, we investigate potential treatment effects on domestic violence, as reported by the mothers. In columns 1–3, we present treatment effects on reported prevalence of IPV. Mothers who have a partner were asked in private about the occurrence of psychological and physical violence over the past month.³⁹ We report effects on the extensive margin, looking separately at psychological violence, physical violence, and the combination of both. For the childcare treatment, there was no impact on IPV as the coefficients are small and insignificant. We do, however, find that the cash transfer led to an 8 pp increase in the prevalence of IPV, as reported by mothers. Relative to the control group, where 14 percent of mothers reported having experienced any physical violence, this corresponds to a large increase. The effect of the cash transfer on any type of IPV is similar. The effects of the combined treatment are similar to the cash-only arm, although they are imprecisely estimated. Nevertheless, the large point estimates imply that we cannot exclude that the cash transfers increased IPV in our context.⁴⁰

We also track any effects on violence against children (VAC), which is prevalent in Uganda (Ministry of Gender, Labour and Social Development 2015; Devries et al. 2015).⁴¹ Columns 4–6 in Table 7 report treatment effects on VAC by household

³⁹ For details on the questions, see Supplemental Appendix E.

⁴⁰ We also prespecified and collected information on mothers' own assessment of their well-being. We report the results on these outcome in Supplemental Appendix Table A.14. We find that all three treatments lead to improvements in the mother's subjective well-being, measured through self-reported happiness, life satisfaction, and perceived stress. The effect of cash transfer on mothers' reported happiness and life satisfaction is significantly higher than the effect of the childcare subsidy.

⁴¹ The childcare subsidy and the cash transfer may have affected the risk of VAC via various mechanisms. For example, attending childcare implies that the child spends less time in the household, which may reduce the risk of intrahousehold VAC. Cash transfers and higher income levels can also reduce stress and the risk of violence.

members, as reported by the mother of the child.⁴² Note that in the control group, 78 percent report at least 1 episode of psychological violence and 75 percent report at least 1 episode of physical VAC. Overall, we do not find any significant treatment effects on prevalence of intrahousehold VAC. The point estimates are small and statistically insignificant. Columns 7–9 discuss VAC by others. In this case, we asked the mother if she was aware of any other adult having performed the same acts of violence against the target child. We do not find any evidence of increased VAC outside the household.⁴³

IV. Conclusion

We reported findings from a randomized control trial that offered women who have a child aged three to five (i) free childcare, (ii) a cash grant, or (iii) both a cash grant and free childcare. A fourth group of women remained as the control group. We find that access to free childcare did not affect average maternal labor market outcomes, but it positively affected household socioeconomic status (as measured by household income and consumption). The increase in household income was driven by different channels depending on the household composition. For single mothers, maternal labor supply and earnings improved, while among couples, an increase in fathers' earnings was driving the impact on household income. In terms of other indicators of family well-being, we find that childcare had a positive effect on child development and did not have any notable effect on domestic violence.

The cash grant of similar value and timing as the childcare subsidy triggered an occupational shift from wage labor to self-employment for mothers, increasing their earnings, business profits, and total income. However, its impact on family well-being was more mixed. Cash transfers had a positive effect on household consumption and no significant impact on child development, and led to an increase in the prevalence of IPV, as reported by the mothers.

Based on the findings, our main conclusion is that subsidizing childcare can be a cost-effective way to improve household economics status and child development. The positive effect of childcare on household income, consumption, and child development is at least as large as that of a cash grant of equivalent cost. However, if the policy objective is to improve women's labor market outcomes in a context where women are mainly involved in self-employment, cash grants are likely to be more effective.

Given the large returns to childcare in terms of household income and child development, one question is why families do not use such services more often. One plausible explanation is the increase in household income is not sufficient to cover the cost of formal childcare.⁴⁴ Credit-constrained households may therefore be unable

⁴² For VAC, mothers were asked if they or any other adult household member committed violent acts against the target child in the past month. See Supplemental Appendix E for further details.

⁴³ Supplemental Appendix Tables B.16 and B.17 provide the lower and upper attrition bounds, and Table B.18 the Lee bounds for the findings in Table 7. Our finding on effects of cash transfers on IPV are in general robust to attrition bounds, with the exception of lower Lee bounds.

⁴⁴ The childcare treatment increased monthly household income by around UGX 28,000 on average. The cost was approximately UGX 410,000 per year, or UGX 34,000 per month per child. Taking into account the take-up rate of the subsidy, the effect on monthly household income is still lower than the cost of the childcare treatment.

to use childcare services as much as they would like. The fact that 65 percent of households receiving the cash transfer reported using it partly to pay for childcare is consistent with the hypothesis of binding liquidity constraints limiting access to childcare for some families. However, the enrollment rates in full-day childcare among the cash transfer recipients still fall short of the levels obtained through the subsidy. This may be driven by the labeling of cash grants for business activities, by households underestimating the potential impact of childcare on household income and child development, or simply by their preference for less uncertain and immediate income gains over long-term investments in children.

Our paper has several limitations. First, the duration of our project implies that we cannot evaluate the effects of having access to childcare beyond one year. Second, we cannot assess the impact of offering childcare to multiple children in the household. Third, the lack of detailed time-use information for all household members implies that we cannot shed light on the exact mechanisms through which childcare enabled fathers, as opposed to mothers, to work more. Finally, our small-scale experiment allows us only to estimate partial equilibrium effects. If childcare subsidies were to be offered on a larger scale, their impact on labor market outcomes and child development would likely differ. These are important questions for further research.

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