

ONLINE APPENDIX

“Long-term effects of preschool subsidies and cash transfers on child development: Evidence from Uganda”

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A Additional regressions and figures

TABLE A.1: TREATMENT EFFECTS ON CHILD DEVELOPMENT, BY SURVEY WAVE

	Anthropometrics	Learning outcomes
	(1)	(2)
Preschool	0.14*	0.09
	(0.08)	(0.07)
Cash	0.22***	0.05
	(0.08)	(0.07)
Preschool & cash	0.18**	0.15**
	(0.08)	(0.07)
Preschool \times 2023	-0.01	-0.05
	(0.08)	(0.07)
Cash \times 2023	-0.10	-0.03
	(0.07)	(0.07)
Preschool & cash \times 2023	-0.02	-0.10
	(0.08)	(0.07)
Observations	2493	2577
Control mean in 2022	-0.00	-0.00
Control mean in 2023	-0.00	-0.00
Preschool effect in 2023	0.13	0.04
	(0.08)	(0.07)
Cash effect in 2023	0.13*	0.02
	(0.08)	(0.07)
Preschool & cash effect in 2023	0.16**	0.05
	(0.08)	(0.07)
H_0 : Preschool = Cash in 2022	0.29	0.60
H_0 : Preschool = Preschool & cash in 2022	0.61	0.43
H_0 : Cash = Preschool & cash in 2022	0.55	0.19
H_0 : Preschool = Cash in 2023	0.96	0.82
H_0 : Preschool = Preschool & cash in 2023	0.75	0.90
H_0 : Cash = Preschool & cash in 2023	0.70	0.71

Notes: “Anthropometrics” is a standardized index that combines the Z-scores for the child’s height-for-age, weight-for-age and BMI-for-age. “Learning outcomes” is a standardized index that combines the child’s reading and mathematics test scores, where reading is measured using EGRA and mathematics using EGMA. We estimate the effects using ordinary least squares, based on data from the 2022 and 2023 survey waves (see specification 1). “2023” is a dummy variable equal to one if the observation comes from the 2023 survey wave (compared to the 2022 survey wave). Standard errors are clustered at the household level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$).

TABLE A.2: TREATMENT EFFECTS ON DISAGGREGATED CHILD DEVELOPMENT INDICATORS

	Anthropometrics			Learning outcomes	
	Weight-for-age	Height-for-age	BMI-for-age	Reading	Mathematics
	(1)	(2)	(3)	(4)	(5)
Preschool	0.154** (0.077)	0.122 (0.082)	0.195** (0.084)	0.052 (0.058)	0.064 (0.055)
Cash	0.199*** (0.071)	0.171** (0.075)	0.112 (0.081)	0.039 (0.057)	0.030 (0.053)
Preschool & cash	0.191*** (0.073)	0.149* (0.080)	0.112 (0.084)	0.088 (0.058)	0.087 (0.055)
Observations	2452	2361	2353	2577	2576
Control mean	-0.98	-0.75	-0.84	-0.00	0.00
H_0 : Preschool = Cash	0.54	0.54	0.31	0.82	0.54
H_0 : Preschool = Preschool & cash	0.62	0.75	0.33	0.57	0.68
H_0 : Cash = Preschool & cash	0.91	0.78	0.99	0.41	0.30

Notes: For anthropometrics, we estimate the impact on the child’s height-for-age Z-score (“Height”), weight-for-age Z-score (“Weight”) and BMI-for-age Z-score (“BMI”). For learning outcomes, we estimate the impact on the child’s “reading” (measured by the EGRA test score) and “mathematics” (measured by the EGMA test score). The test scores are standardized by subtracting the mean and dividing by the standard deviation of the control group within each survey wave. We estimate the effects using ordinary least squares, based on data from the 2022 and 2023 survey waves (see specification 1). Standard errors are clustered at the household level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$).

B Attrition

TABLE B.1: ATTRITION

	2022	2023	Pooled
	(1)	(2)	(3)
Panel A: Anthropometric outcomes missing			
Preschool	-0.047*	-0.059**	-0.053**
	(0.027)	(0.029)	(0.025)
Cash	-0.066**	-0.069**	-0.068***
	(0.027)	(0.029)	(0.025)
Preschool & cash	-0.072***	-0.096***	-0.084***
	(0.027)	(0.028)	(0.024)
Observations	1496	1496	2992
Control mean	0.21	0.25	0.23
H_0 : Preschool = Cash	0.48	0.71	0.55
H_0 : Preschool = Preschool & cash	0.35	0.18	0.19
H_0 : Cash = Preschool & cash	0.82	0.33	0.49
Panel B: Learning outcomes missing			
Preschool	-0.039	-0.039	-0.039*
	(0.026)	(0.026)	(0.022)
Cash	-0.062**	-0.071***	-0.066***
	(0.026)	(0.025)	(0.022)
Preschool & cash	-0.074***	-0.086***	-0.080***
	(0.025)	(0.024)	(0.021)
Observations	1496	1496	2992
Control mean	0.19	0.18	0.18
H_0 : Preschool = Cash	0.36	0.19	0.20
H_0 : Preschool = Preschool & cash	0.15	0.05	0.05
H_0 : Cash = Preschool & cash	0.60	0.51	0.49

Notes: The dependent variable is an indicator that takes value one if the child's weight (Panel A) or learning outcomes (Panel B) could not be collected in the 2022 (column 1), 2023 (column 2) or either 2022 or 2023 (column 3) survey waves. All regressions control for the five randomization strata and standard errors are clustered at the household level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$).

TABLE B.2: TREATMENT EFFECTS ON CHILD DEVELOPMENT, ATTRITION LOWER BOUNDS

	Anthropometrics (1)	Learning outcomes (2)
Panel A: 5% imputation		
Preschool	0.114* (0.058)	0.050 (0.048)
Cash	0.157*** (0.054)	0.032 (0.048)
Preschool & cash	0.165*** (0.056)	0.097* (0.050)
Observations	2992	2992
Control mean	0.01	0.01
H_0 : Preschool = Cash	0.47	0.73
H_0 : Preschool = Preschool & cash	0.39	0.37
H_0 : Cash = Preschool & cash	0.88	0.22
Panel B: 10% imputation		
Preschool	0.094 (0.058)	0.034 (0.048)
Cash	0.139** (0.054)	0.017 (0.048)
Preschool & cash	0.148*** (0.056)	0.083* (0.050)
Observations	2992	2992
Control mean	0.02	0.02
H_0 : Preschool = Cash	0.45	0.75
H_0 : Preschool = Preschool & cash	0.37	0.35
H_0 : Cash = Preschool & cash	0.88	0.21
Panel C: 20% imputation		
Preschool	0.055 (0.059)	0.001 (0.048)
Cash	0.104* (0.054)	-0.013 (0.048)
Preschool & cash	0.112** (0.056)	0.054 (0.050)
Observations	2992	2992
Control mean	0.04	0.04
H_0 : Preschool = Cash	0.42	0.79
H_0 : Preschool = Preschool & cash	0.34	0.32
H_0 : Cash = Preschool & cash	0.88	0.20

Notes: Following Kling et al. (2007) and Fairlie et al. (2015), we calculate lower bound estimates that adjust for differential non-response rates in the treatment groups relative to the control. We calculate the lower bounds by imputing the mean among the treated minus 0.05 (or 0.1 or 0.2) standard deviations (SDs) to the non-responders in each treatment group. For the control group, we impute using the mean among the control plus 0.05 (or 0.1 or 0.2) SDs. We then re-estimate the treatment effects. See Table 1 for a description of the dependent variables. Standard errors are clustered at the household level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$).

TABLE B.3: TREATMENT EFFECTS ON CHILD DEVELOPMENT, ATTRITION UPPER BOUNDS

	Anthropometrics (1)	Learning outcomes (2)
Panel A: 5% Imputation		
Preschool	0.153*** (0.058)	0.083* (0.048)
Cash	0.193*** (0.054)	0.062 (0.048)
Preschool & cash	0.201*** (0.056)	0.126** (0.050)
Observations	2992	2992
Control mean	-0.01	-0.01
H_0 : Preschool = Cash	0.50	0.69
H_0 : Preschool = Preschool & cash	0.42	0.41
H_0 : Cash = Preschool & cash	0.89	0.22
Panel B: 10% Imputation		
Preschool	0.172*** (0.058)	0.099** (0.048)
Cash	0.211*** (0.054)	0.077 (0.048)
Preschool & cash	0.218*** (0.056)	0.140*** (0.050)
Observations	2992	2992
Control mean	-0.02	-0.02
H_0 : Preschool = Cash	0.52	0.67
H_0 : Preschool = Preschool & cash	0.44	0.43
H_0 : Cash = Preschool & cash	0.89	0.23
Panel C: 20% Imputation		
Preschool	0.211*** (0.059)	0.131*** (0.048)
Cash	0.246*** (0.055)	0.107** (0.048)
Preschool & cash	0.254*** (0.056)	0.169*** (0.050)
Observations	2992	2992
Control mean	-0.04	-0.04
H_0 : Preschool = Cash	0.56	0.63
H_0 : Preschool = Preschool & cash	0.48	0.48
H_0 : Cash = Preschool & cash	0.90	0.24

Notes: Following [Kling et al. \(2007\)](#) and [Fairlie et al. \(2015\)](#), we calculate upper bound estimates that adjust for differential non-response rates in the treatment groups relative to the control. We calculate the upper bounds by imputing the mean among the treated plus 0.05 (or 0.1 or 0.2) standard deviations (SDs) to the non-responders in each treatment group. For the control group, we impute using the mean among the control minus 0.05 (or 0.1 or 0.2) SDs. We then re-estimate the treatment effects. See Table 1 for a description of the dependent variables. Standard errors are clustered at the household level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$).

C Heterogeneity

TABLE C.1: TREATMENT EFFECTS ON CHILD DEVELOPMENT, BY CHILD'S AGE

	Anthropometrics	Learning outcomes
	(1)	(2)
Preschool	0.07 (0.10)	0.07 (0.08)
Cash	0.10 (0.09)	-0.06 (0.07)
Preschool & cash	0.13 (0.09)	0.11 (0.08)
Preschool \times Old	0.09 (0.14)	-0.03 (0.11)
Preschool \times Old	0.15 (0.13)	0.19* (0.11)
Preschool & cash \times Old	0.04 (0.13)	-0.04 (0.11)
Observations	2493	2577
Control mean for younger children	0.17	-0.06
Control mean for older children	-0.16	0.05
Preschool effect for older children	0.16 (0.10)	0.04 (0.08)
Cash effect for older children	0.25*** (0.09)	0.13* (0.08)
Preschool & cash effect for older children	0.17* (0.09)	0.07 (0.08)
H_0 : Preschool = Cash for younger children	0.74	0.08
H_0 : Preschool = Preschool & cash for younger children	0.52	0.63
H_0 : Cash = Preschool & cash for younger children	0.74	0.03
H_0 : Preschool = Cash for older children	0.37	0.31
H_0 : Preschool = Preschool & cash for older children	0.91	0.75
H_0 : Cash = Preschool & cash for older children	0.38	0.48

Notes: "Anthropometrics" is a standardized index that combines the Z-scores for the child's height-for-age, weight-for-age and BMI-for-age. "Learning outcomes" is a standardized index that combines the child's reading and mathematics test scores, where reading is measured using EGRA and mathematics using EGMA. We estimate the effects using ordinary least squares, based on data from the 2022 and 2023 survey waves (see specification 1). "Old" is a dummy variable equal to one if the child was five at baseline (compared to three or four years old). Standard errors are clustered at the household level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$).

TABLE C.2: TREATMENT EFFECTS ON CHILD DEVELOPMENT, BY CHILD'S GENDER

	Anthropometrics	Learning outcomes
	(1)	(2)
Preschool	0.10 (0.10)	0.02 (0.08)
Cash	0.19** (0.09)	0.06 (0.08)
Preschool & cash	0.14 (0.09)	0.10 (0.08)
Preschool × Boy	0.08 (0.14)	0.09 (0.11)
Preschool × Boy	-0.05 (0.13)	-0.06 (0.11)
Preschool & cash × Boy	0.05 (0.13)	-0.01 (0.11)
Observations	2493	2577
Control mean for girls	0.04	0.10
Control mean for boys	-0.04	-0.10
Preschool effect for boys	0.17* (0.10)	0.11 (0.08)
Cash effect for boys	0.15 (0.09)	0.00 (0.08)
Preschool & cash effect for boys	0.19** (0.10)	0.10 (0.08)
H_0 : Preschool = Cash for girls	0.31	0.52
H_0 : Preschool = Preschool & cash for girls	0.62	0.28
H_0 : Cash = Preschool & cash for girls	0.54	0.62
H_0 : Preschool = Cash for boys	0.82	0.20
H_0 : Preschool = Preschool & cash for boys	0.82	0.86
H_0 : Cash = Preschool & cash for boys	0.64	0.24

Notes: “Anthropometrics” is a standardized index that combines the Z-scores for the child’s height-for-age, weight-for-age and BMI-for-age. “Learning outcomes” is a standardized index that combines the child’s reading and mathematics test scores, where reading is measured using EGRA and mathematics using EGMA. We estimate the effects using ordinary least squares, based on data from the 2022 and 2023 survey waves (see specification 1). “Boy” is a dummy variable equal to one if the child is male (compared to female). Standard errors are clustered at the household level (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$).

References

- Fairlie, R. W., D. Karlan, and J. Zinman (2015, May). Behind the gate experiment: Evidence on effects of and rationales for subsidized entrepreneurship training. *American Economic Journal: Economic Policy* 7(2), 125–61.
- Kling, J. R., J. B. Liebman, and L. F. Katz (2007). Experimental analysis of neighborhood effects. *Econometrica* 75(1), 83–119.