Combining Supply and Demand-side Interventions: Evidence from a vast Early Childcare Programme in Cambodia

Adrien Bouguen (Researcher Mannheim University, Germany), Deon Filmer (Development Research Group, World Bank), Jan Berkes (DIW Berlin, Germany).

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Background

- Intervention
- Research Design

- 2 Baseline Results
 - Socio-economic gradient
 - Preschool Enrollment

Background

- With support of GPE Grant II (2014-2017), Cambodian government seeks to:
 - Improve quality of and access to ECE for 3-5 year old children
 - Increase 5 year olds' preschool enrollment to 80% in 2017-2018
 - Focus on children from disadvantaged backgrounds

Intervention

Community Preschool (CPS)

- Construction of new building
- Equipped with tables, chairs and blackboard, etc.
- CPS teachers receive monthly salary and 30 days training
- 5 Days a week, 2 hours a day
- Up to 25 children, age 3-5 (priority given to oldest)
- In some cases, attached to primary school
- Door-to-Door (D2D)
- Home-based Program (HBP)

Impact evaluation (RCT)

- Supports evidence-based policy making
- Which interventions work? Which do not?
- Example: What is the impact of a preschool expansion program on primary school readiness of young children?
- Difficulty: What is the correct counterfactual?
- Randomized Controlled Trial
 - Inspired by medical sciences
 - Assign villages randomly to treatment or control groups before the intervention begins
 - Compare treatment and control groups afterwards (treatment effect)

Research questions

- Determinants of enrollment
- Impact of supply-side intervention on child outcomes
- Impact demand-side interventions on enrollment rates
- Role of essential heterogeneity (differential impact)

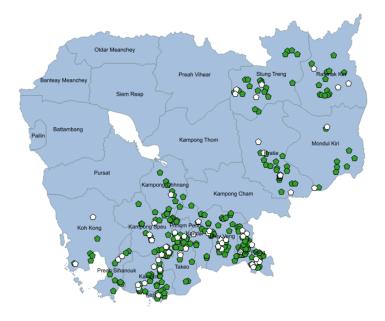
Background Baseline Results Intervention Research Design

Design

Group	CPS	D2D	HBP	Villages
T1	\boxtimes			120
T2b	\boxtimes	\boxtimes		64
T2a	\boxtimes	\boxtimes	\boxtimes	63
Control				58

Table: Random treatment allocation.

- Baseline (2016), Midline (2017), Endline (2018)
- Random sampling in villages: households with child at age 2-4 at baseline (2016)
- Still not trivial: What is our counterfactual?



Instruments

- Household, village chief and teacher questionnaire
- Caregiver questionnaire (N = 7053)
 - Parenting questionnaire: stress, affection, communication, activities
 - Cognitive test (Raven's Matrices)
- Child questionnaire (N = 7637/7495)
 - MELQO: executive function, mathematics, language, fine-motor
 - MDAT: gross-motor, socio-emotional development
 - SDQ
- Anthropometric measurements

1 Background

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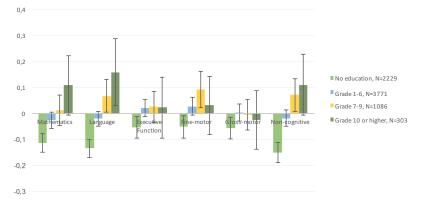
2 Baseline Results

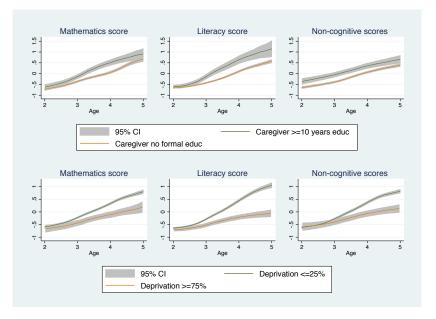
- Socio-economic gradient
- Preschool Enrollment

Socio-economic gradient

- Many aspects of home environment affect early childhood development significantly
- Skill gap seems to widen at age 3
- Gap in health already visible at age 2

Gap in Child Test Scores by Caregiver Education



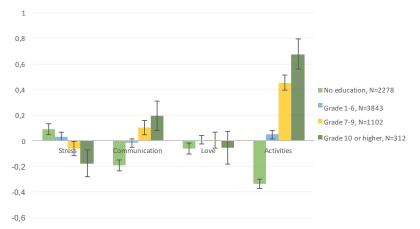


		Mathematics	Language	Fluid intel	Fine-motor	Gross-motor	Non-cognitive	
		score	score	score	score	score	score	
Child	Age in years with decimals	0.562***	0.608***	0.641***	0.616***	0.669***	0.561***	
	Female	0.045*	0.026	0.040*	0.094***	0.008	0.121***	
	Ihfa below -2sd	-0.141***	-0.152***	-0.132***	-0.157***	-0.121***	-0.071**	
	Ihfa below -3sd	-0.193***	-0.183***	-0.233***	-0.145***	-0.232***	-0.129***	
нн	Owns >= 1 hectare land	-0.078***	-0.115***	-0.141***	-0.074**	-0.112***	-0.096***	
	Owns children books	0.070*	0.081**	0.091***	0.095**	0.103***	0.079**	
	Assets index	0.022**	0.019**	0.029***	0.012	0.022**	0.027**	
	House quality index	0.021	0.092***	0.051*	0.080***	0.045	0.008	
Caregiver	Caregiver literacy	0.047*	0.054**	0.019	0.053*	0.004	0.082***	
	Caregiver biological parent	-0.059**	-0.067***	-0.109***	-0.044	-0.122***	0.015	
	Caregiver Ravenscore	0.065***	0.092***	0.051***	0.046***	0.062***	0.075***	
	Caregiver: BMI<18.5	-0.033	-0.048	-0.016	0.019	-0.013	-0.041	
arenting	Parenting score stress	-0.029**	-0.047***	-0.035***	-0.031**	-0.011	-0.160***	
	Parenting score communication	0.023*	0.023*	0.015	0.017	0.023*	-0.015	
	Parenting score love	-0.014	-0.022*	0.005	-0.037*	-0.014	0.015	
	Parenting score activities	0.046***	0.035***	0.029**	0.040**	0.015	0.079***	
	Constant	-1.918***	-2.042***	-2.079***	-2.102***	-2.180***	-2.037***	
	Observations	7280	7280	7280	7280	7280	7280	
	Adjusted R-squared	0.294	0.376	0.326	0.264	0.350	0.291	

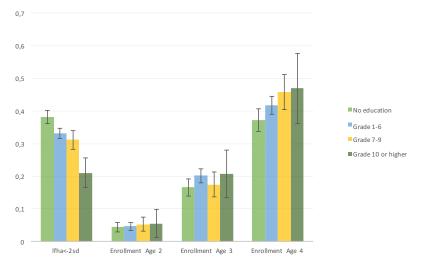
TABLE 8: TEST SCORES - WITHOUT SCHOOL ATTENDANCE

The table shows OLS regressions of different child test scores on a set of covariates. Standard errors account for within-village correlations. * 10% significant level ** 5% significant level *** 1% significant level

Gap in Parental Involvement by Caregiver Education



Gap in Child Stunting and Preschool Enrollment by Caregiver Education

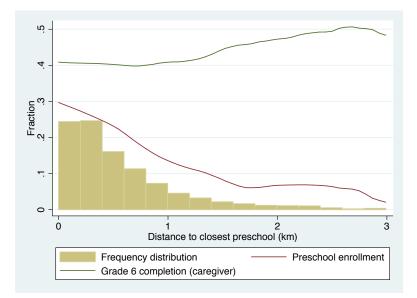


Dependent variable: Child is enrolled in preschool							
Age in years with decimals	0.182***	0.182***	0.181***	0.182***	0.179***	0.091***	0.105***
Female	0.037***	0.037***	0.038***	0.039***	0.033***	0.026**	0.023*
lhfa below -2sd		-0.035**	-0.027*	-0.027*	-0.025*	-0.005	-0.006
Ihfa below -3sd		-0.049**	-0.041*	-0.043*	-0.044*	-0.017	-0.027
Household size			-0.011***	-0.012***	-0.009**	-0.007*	-0.008*
Owns children books			0.081***	0.080***	0.064***	0.051***	0.042**
Assets index			0.010**	0.011**	0.007	0.004	0.009*
House quality index			0.028*	0.020	0.015	0.005	-0.020
Caregiver completed grade 6				-0.000	-0.025*	-0.028*	-0.024
Caregiver Ravenscore				0.001	-0.004	-0.014**	-0.017***
Caregiver biological parent				-0.044***	-0.044***	-0.033**	-0.015
Parenting score activities					0.053***	0.048***	0.044***
Parenting score stress					-0.024***	-0.020***	-0.018**
Parenting score communication					0.001	-0.002	-0.005
Parenting score love					-0.010	-0.008	-0.005
Total test score						0.119***	0.112***
Dist (km) closest preschool							-0.140***
Constant	-0.439***	-0.422***	-0.384***	-0.352***	-0.346***	-0.059	-0.023
Observations	7292	7292	7292	7292	7292	7292	5675
Adjusted R-squared	0.142	0.145	0.158	0.160	0.178	0.220	0.250

TABLE 2: PRESCHOOL ENROLMENT

The table shows OLS regressions of preschool enrollment (0,1) on a set of covariates. Standard errors account for withinvillage correlations. Last column includes only children with a preschool in village and distance less than 1.75km. * 10% significant level ** 5% significant level *** 1% significant level





Preliminary Impact Estimates

Estimates (upward) biased due to

- Unobserved effects
- Simultaneity
- Possibility: Assume distance to closest preschool is as good as random
- Policy relevance?

	TABLE 8: TEST SCORES - SEPARATE CONTROL VARIABLES (OLS)							
		Total test						
		score	score	score	score	score		
Child	Age in years with decimals	0.646***	0.648***	0.653***	0.657***	0.655***		
	Female	0.040*	0.037*	0.041*	0.041**	0.037*		
	Currently attending any school	0.502***	0.480***	0.458***	0.453***	0.439***		
	lhfa below -2sd		-0.191***	-0.167***	-0.160***	-0.158***		
	Ihfa below -3sd		-0.242***	-0.224***	-0.210***	-0.211***		
нн	Owns >= 1 hectare land			-0.138***	-0.132***	-0.133***		
	Owns children books			0.083**	0.087***	0.084***		
	Assets index			0.038***	0.027***	0.025***		
	House quality index			0.099***	0.070***	0.063***		
Caregiver	Caregiver literacy				0.063***	0.048**		
	Caregiver biological parent				-0.066***	-0.064***		
	Caregiver Ravenscore				0.089***	0.087***		
	Caregiver: BMI<18.5				-0.021	-0.021		
Parenting	Parenting score activities					0.020*		
	Parenting score stress					-0.031***		
	Parenting score communication					0.021*		
	Parenting score love					-0.016		
	Constant	-2.399***	-2.317***	-2.288***	-2.304***	-2.283***		
	Observations	7280	7280	7280	7280	7280		
	Adjusted R-squared	0.451	0.469	0.487	0.497	0.498		

The table shows OLS regressions of pooled child test score on a set of covariates. Standard errors account for within-village correlations. * 10% significant level *** 5% significant level **** 1% significant level

	TABLE 8: TEST SCORES - SEPARATE CONTROL VARIABLES (2SLS)							
		Total test						
Instrument: Distance to closest preschool.		score	score	score	score	score		
Child	Age in years with decimals	0.683***	0.677***	0.691***	0.683***	0.682***		
	Female	0.036	0.037	0.040*	0.035	0.031		
	Currently attending any school	0.278	0.302*	0.232	0.292*	0.286		
	lhfa below -2sd		-0.197***	-0.171***	-0.166***	-0.165***		
	Ihfa below -3sd		-0.244***	-0.232***	-0.216***	-0.217***		
нн	Owns >= 1 hectare land			-0.140***	-0.135***	-0.137***		
	Owns children books			0.137***	0.136***	0.131***		
	Assets index			0.036***	0.023**	0.023**		
	House quality index			0.103***	0.080***	0.076***		
Caregiver	Caregiver literacy				0.058**	0.050*		
	Caregiver biological parent				-0.048*	-0.047*		
	Caregiver Ravenscore				0.090***	0.087***		
	Caregiver: BMI<18.5				-0.014	-0.014		
Parenting	Parenting score activities					0.014		
	Parenting score stress					-0.031**		
	Parenting score communication					0.005		
	Parenting score love					-0.005		
	Constant	-2.468***	-2.369***	-2.376***	-2.366***	-2.354***		
	Observations	5387	5387	5387	5387	5387		
	Adjusted R-squared	0.430	0.451	0.466	0.479	0.479		

The table shows 25LS regressions of pooled child test score on a set of covariates, and preschool enrollment (0,1) instrumented by distance to preschool. Sample includes only children with a preschool in village and distance less than 1.75km. Standard errors account for within-village correlations. * 10% significant level ** 5% significant level *** 1% significant level

Conclusion & Outlook

- Community preschools promising candidate to generate impact
- Causal interpretation and policy conclusions difficult without RCT (Midline 2017, Endline 2018)
- Demand-side interventions crucial for insights on inequality

Thank you very much! I look forward to your questions and suggestions.

Jan Berkes, jberkes@diw.de