

# Starting Early: Returns on Kindergarten Attendance in Indonesia

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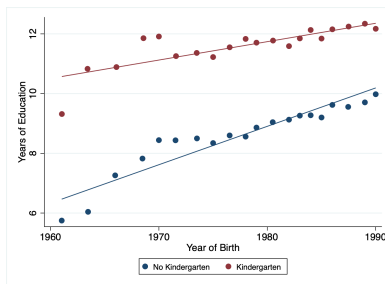
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# Introduction

- ▶ Despite rapid economic growth, quality of education has lagged behind in Indonesia
  - ▶ Indonesia averaged 5.26% economic growth from 2000 to 2019
  - ▶ Between 2012 and 2022, boys performed worse in math, and girls didn't improve
  - ▶ Indonesia ranked 71st in reading, 70th in math, and 67th in science (out of 81 countries) in 2022
- ▶ There's some correlation between kindergarten attendance and educational attainment:

Figure 1: Years of Education over Year of Birth, by Kindergarten Attendance



# Data

## **Indonesian Family Life Survey (IFLS)**

- ▶ Multi-wave household and community survey, five waves from 1993 to 2014
- ▶ Tracks individuals from when they're kindergarten age in 1997 to post-graduation and adult life in 2014

## **Village Potential Statistics (PODES)**

- ▶ Survey of 65,000 villages in Indonesia
- ▶ Contains data IFLS doesn't; I use the 1990 and 2000 waves to create my instrument relating to the presence of kindergartens in each kecamatan

## **Sample**

- ▶ All individuals aged between 3 and 9 in 1997 and were interviewed in both 1997 and 2014
- ▶ My sample size is 3,232 individuals

# Empirical Methods

## Mother fixed-effects model:

$$Y_{if} = \beta_0 + \beta_1 \text{KINDER}_{if} + \beta_2 \mathbf{K}_{if} + \mu_f + \epsilon_{if} \quad (1)$$

$Y$  is my outcome variable,  $\text{KINDER}$  is whether a child attended kindergarten, and  $\mathbf{K}$  is a vector of individual characteristics.

## 2-Stage Least Squares (2SLS) model:

$$\text{Main equation: } Y_i = \alpha_0 + \rho \text{KINDER}_i + \gamma_0 \mathbf{K}_{if} + \mathbf{C}_f + \epsilon_{0i} \quad (2)$$

$$\text{First stage: } \text{KINDER}_i = \alpha_1 + \phi Z_i + \gamma_1 \mathbf{K}_{if} + \mathbf{C}_f + \epsilon_{1i} \quad (3)$$

$Z$  is the instrument and  $\mathbf{C}$  is a vector of household characteristics.

Instruments:

1. kindergartens per 10,000 people in each kecamatan in 1990
2. kindergartens per 10,000 people in each kecamatan in 2000

# Fixed Effects Results

Table 1: Kindergarten's Effects on Various Educational Outcomes

	educ yrs	educ yrs	elem completion	junior completion	senior completion
Kinder	0.70*** (0.11)	0.34 (0.34)	0.03 (0.03)	0.00 (0.03)	0.09* (0.05)
Household Controls	YES	NO	NO	NO	NO
Individual Controls	YES	YES	YES	YES	YES
Mother Fixed-Effects	NO	YES	YES	YES	YES
Adjusted R-squared	0.34	0.01	0.01	0.01	0.01
Number of observations	3232	3233	3233	3233	3233

# Instrumental Variable Estimation Results

Table 2: Instrumental Variable (IV) Estimation Results

	(1)	(2)	(3)	(4)
Kinder	2.40*** (0.24)	2.56*** (0.62)	2.61*** (0.68)	1.56** (0.60)
Household Controls	NO	YES	YES	YES
Individual Controls	NO	NO	YES	YES
Community Controls	NO	NO	NO	YES
Number of observations	2872	2871	2868	2592
Adjusted R-squared	0.11	0.33	0.33	0.38

Table 3: First Stage Regression Results

	(1)	(2)	(3)	(4)
Kindergartens/10,000 people (2000)	0.01* (0.00)	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)
Kindergartens/10,000 people (1990)	0.11*** (0.00)	0.06*** (0.01)	0.06*** (0.01)	0.07*** (0.01)
Household Controls	NO	YES	YES	YES
Individual Controls	NO	NO	YES	YES
Community Controls	NO	NO	NO	YES
Adjusted R-squared	0.24	0.41	0.44	0.45
F statistic	511.88	192.29	151.28	124.92
Number of observations	2872	2871	2868	2592