Education For All?

The Gender Literacy Gap and the Distributional Effects of World Bank Assistance

Brandon Merrell

Visiting Assistant Professor
Georgia Institute of Technology

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IPES

"If we educate a boy, we educate one person.
If we educate a girl, we educate… a whole nation."

—World Bank President James Wolfensohn, 1995

Three Main Contributions

1. Improved measures of historical education

2. Evidence that education predicts economic growth in low-income countries

3. Evidence that autocratic governments selectively channel assistance, reifying preexisting inequities
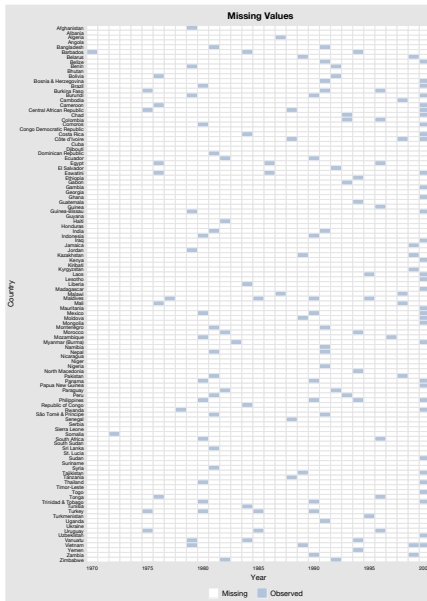
UNESCO Literacy Estimates

Missing Values

UNESCO Literacy Estimates

111 Developing Countries
1970-2000

Missing Values
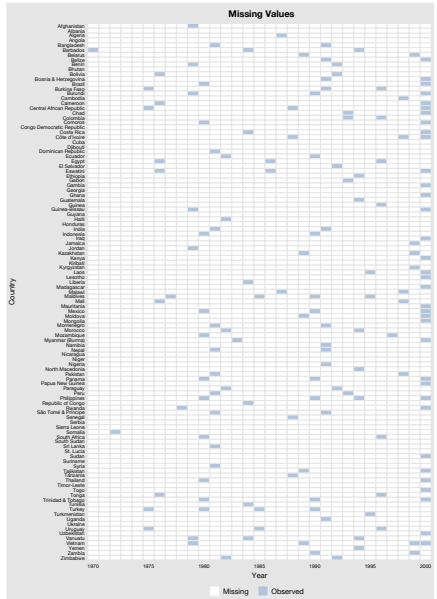
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White: Missing (3,275)
Shaded: Observed (166)
(~5% Observed)

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Measured Inconsistently
Within and Across Countries

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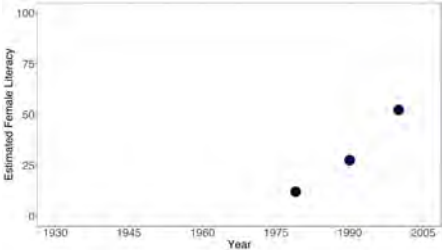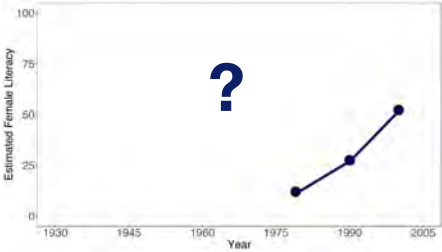
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"Should be used cautiously."
- UNESCO

Missing Values — Country vs. Year chart (1970–2000), Missing / Observed legend

UNESCO Literacy Estimates
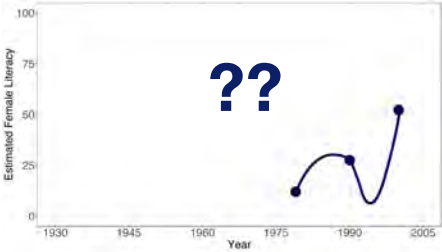
Burundi (UNESCO)

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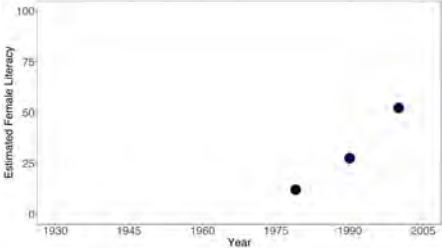
Burundi (UNESCO)

Missing Values

Burundi (UNESCO)

Niger (UNESCO)
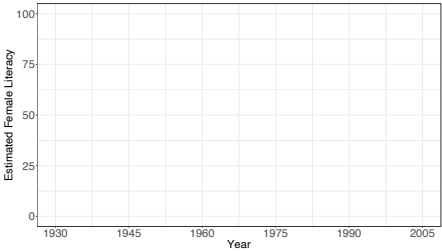
UNESCO Literacy Estimates
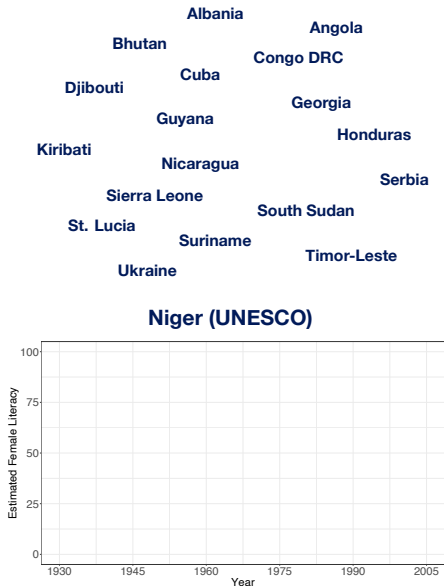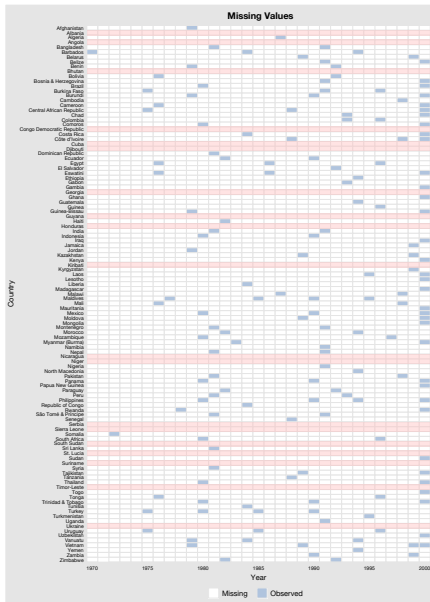
Missing Values

Albania

Angola

Bhutan

Congo DRC

Cuba

Djibouti

Georgia

Guyana

Honduras

Kiribati

Nicaragua

Serbia

Sierra Leone

South Sudan

St. Lucia

Suriname

Timor-Leste

Ukraine

Niger (UNESCO)

Estimated Female Literacy vs Year

UNESCO Literacy Estimates

Missing Values

Country vs Year

Missing   Observed

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Bhutan
Congo DRC
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Sierra Leone
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St. Lucia
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Ukraine

Niger (UNESCO)

UNESCO Literacy Estimates

Missing Values

This Paper

Missing Values

This Paper

Same Countries & Timeframe

Missing Values
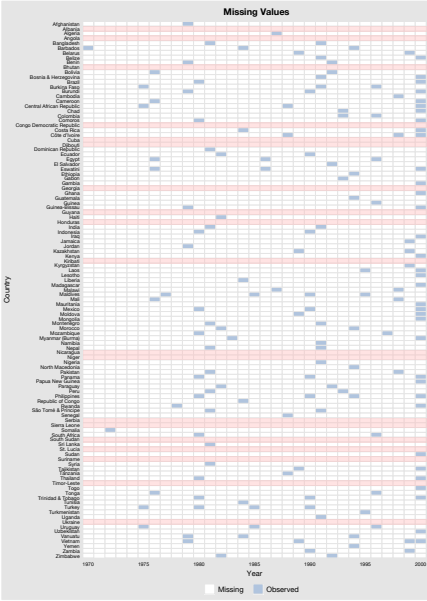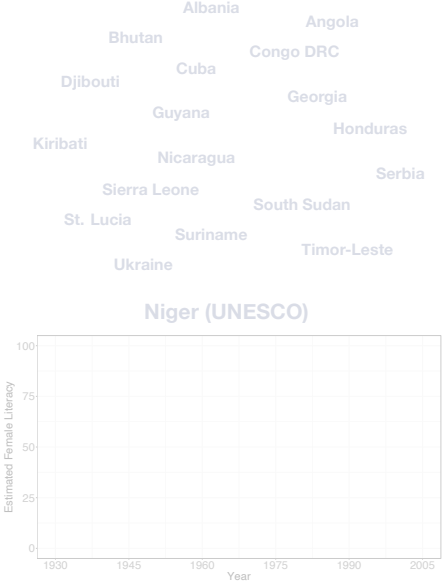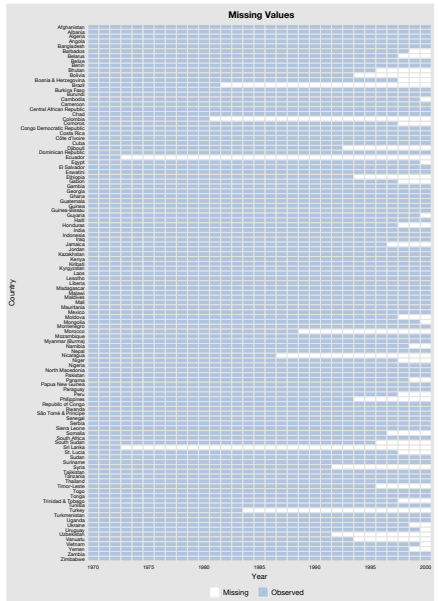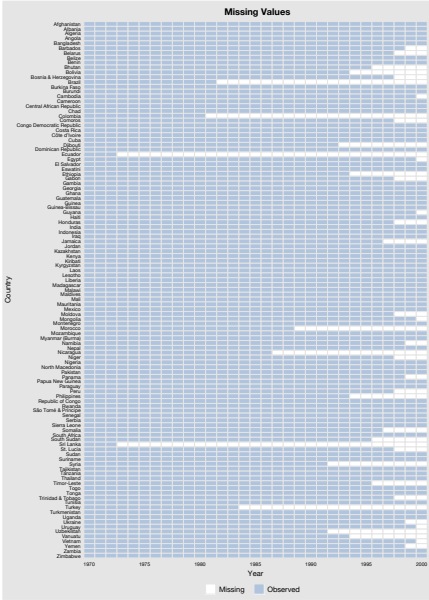
This Paper

Same Countries & Timeframe

92% Coverage 1970-2000

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92% Coverage 1970-2000
71% Coverage 1935-2005

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Consistently Measured
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Annual Periodicity
Facilitates New Research
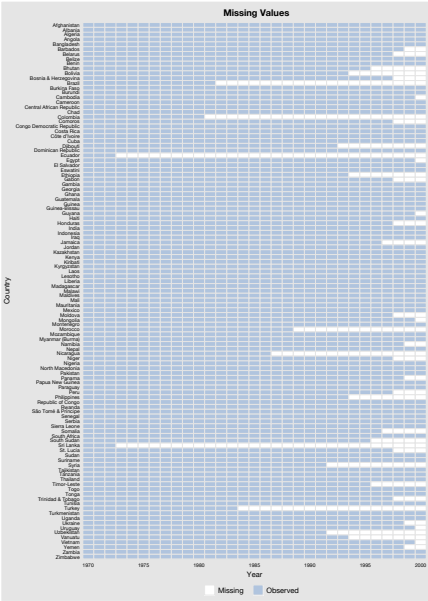
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Correlation w/ UNESCO: ∼.86
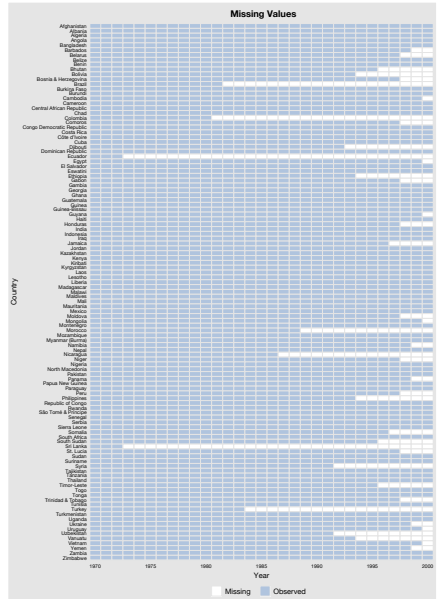
My Approach

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400+ DHS and MICS Surveys

- Large, nationally representative surveys
- Face-to-face interviews with respondents aged 15–49
- Direct evaluation of literacy in respondent's preferred language
- Total sample: ~6,300,000

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- Average birth-cohort size: 1000 women; 300 men
- Calculate the proportion of each cohort who obtained literacy
- Various checks against migration, attrition, etc.

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Lifetime Literacy Rate (LLR)

Female LLR in Burundi (This Paper)

○ DHS 1987 △ DHS 2010 ✛ DHS 2012 ✱ DHS 2016 ◇ MICS 2005
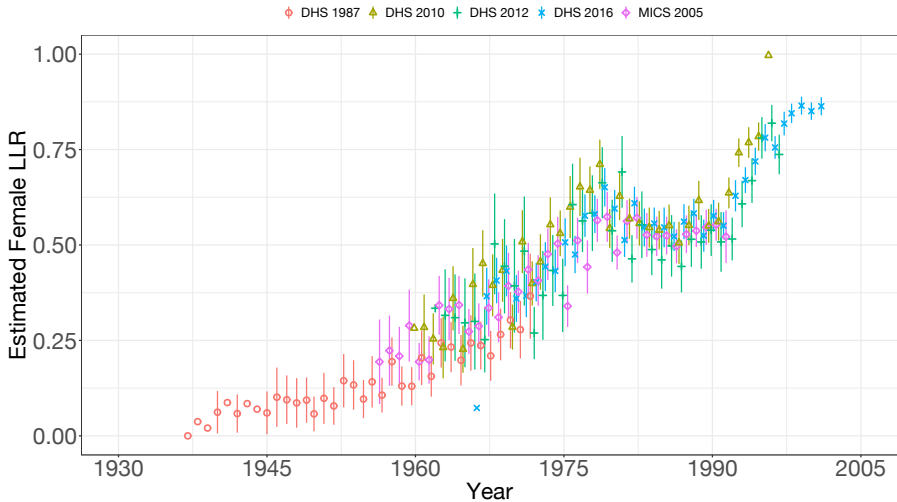
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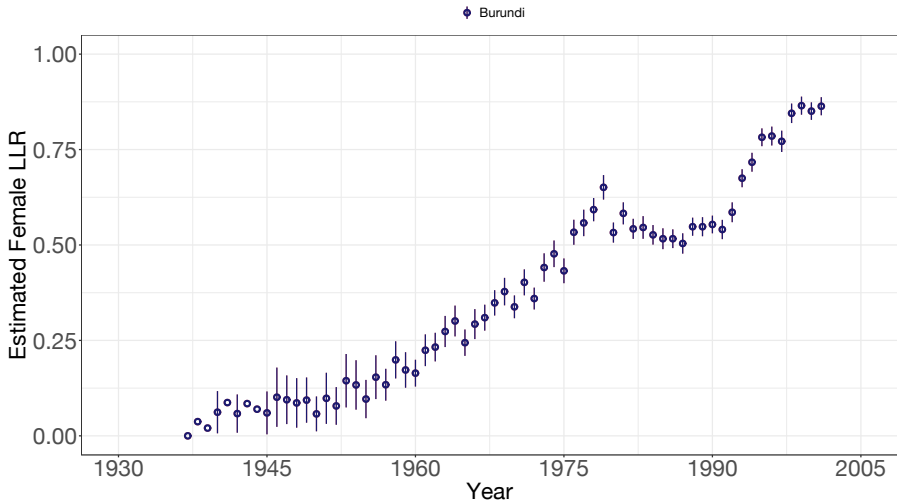
Geographic Coverage

Earliest Data: 1935 1945 1955 1965 1975
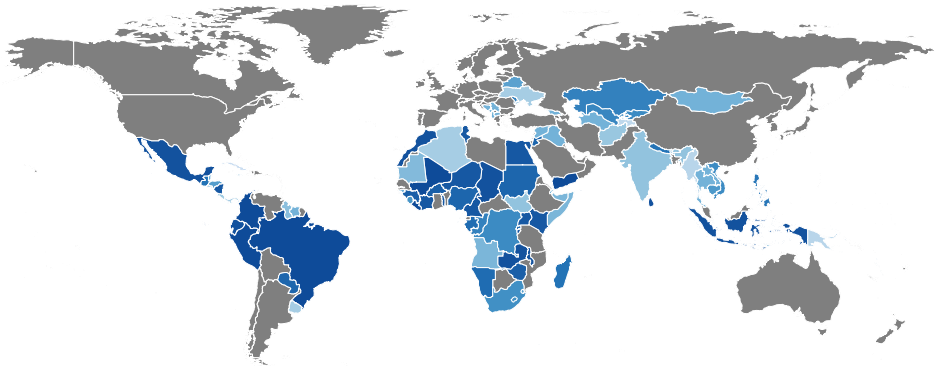
What Can We Do With This?

1. Improved measures of historical education

2. **Evidence that education predicts economic growth in low-income countries**

3. Evidence that autocratic governments selectively channel assistance, reifying preexisting inequities

	(1)	(2)	(3)	(4)	(5)
Female LLR and GDP P.C. Growth					
Schooling Years (B&L)					
Human Capital (PWT)					
LLR (This Paper)					
Period F.E.					
Initial GDP P.C.					
N					
Adj. R^2					
F					

$* p < 0.10, ** p < 0.05, *** p < .01$ **DV mean:** 1.635

Linear models estimated using OLS. Standard errors clustered by country. Models exclude observations from countries suffering inflation crises, for whom natural resources rents comprise more than 25% of GDP, and that are experiencing civil conflict.

GDP Per Capita Growth is average annualized growth over a five-year period as per World Bank Indicators (e.g., 1970-1974). All models include a control for observed GDP per capita at the start of the period.

	(1)	(2)	(3)	(4)	(5)
			Female LLR and GDP P.C. Growth		
Schooling Years (B&L)	-0.040				
	(0.330)				
Human Capital (PWT)		-0.166			
		(0.355)			
LLR (This Paper)					
Period F.E.	✓	✓			
Initial GDP P.C.	✓	✓			
N	296	296			
Adj. R^2	0.065	0.066			
F	0.008	0.124			

$* p < 0.10, ** p < 0.05, *** p < .01$ **DV mean:** 1.635

Linear models estimated using OLS. Standard errors clustered by country. Models exclude observations from countries suffering inflation crises, for whom natural resources rents comprise more than 25% of GDP, and that are experiencing civil conflict.

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	(1)	(2)	(3)	(4)	(5)
Female LLR and GDP P.C. Growth					
Schooling Years (B&L)	-0.040			-0.372	
	(0.330)			(1.150)	
Human Capital (PWT)		-0.166		-1.209	
		(0.355)		(1.246)	
LLR (This Paper)			0.976***	1.967***	
			(0.251)	(0.384)	
Period F.E.	✓	✓	✓	✓	
Initial GDP P.C.	✓	✓	✓	✓	
N	296	296	296	296	
Adj. R^2	0.065	0.066	0.107	0.152	
F	0.008	0.124	7.555	7.282	

$* p < 0.10, ** p < 0.05, *** p < .01$ **DV mean:** 1.635

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	(1)	(2)	(3)	(4)	(5)
			Female LLR and GDP P.C. Growth		
Schooling Years (B&L)	-0.040			-0.372	-0.340
	(0.330)			(1.150)	(1.288)
Human Capital (PWT)		-0.166		-1.209	-1.345
		(0.355)		(1.246)	(1.304)
LLR (This Paper)			0.976***	1.967***	
			(0.251)	(0.384)	
LLR (w/ 15-Year Lag)					2.006***
					(0.422)
Period F.E.	✓	✓	✓	✓	✓
Initial GDP P.C.	✓	✓	✓	✓	✓
N	296	296	296	296	313
Adj. R^2	0.065	0.066	0.107	0.152	0.154
F	0.008	0.124	7.555	7.282	7.617

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What Else Can We Do With This?

1. Improved measures of historical education

2. Evidence that education predicts economic growth in low-income countries

3. Evidence that autocratic governments selectively channel assistance, reifying preexisting inequities

	Effect on Female Literacy Deficit				
	(1)	(2)	(3)	(4)	(5)
IDA Membership					
Controls:					
Population & Urban.					
Government & Conflict					
Economic Exposure					
N					
Adj. R^2					

$* \ p < 0.10, ** \ p < 0.05, *** \ p < .01$

All models include country f.e., year f.e., and country-specific linear trends.

Standard errors: clustered by country and year.

	Effect on Female Literacy Deficit				
	(1)	(2)	(3)	(4)	(5)
IDA Membership	0.047**				
	(0.020)				
Controls:					
Population & Urban.					
Government & Conflict					
Economic Exposure					
N	1,488				
Adj. R^2	0.778				

$* \, p < 0.10, ** \, p < 0.05, *** \, p < .01$

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		Effect on Female Literacy Deficit			
	(1)	(2)	(3)	(4)	(5)
IDA Membership	0.047**	0.044**			
	(0.020)	(0.020)			
Controls:					
Population & Urban.		✓			
Government & Conflict					
Economic Exposure					
N	1,488	1,488			
Adj. R^2	0.778	0.778			

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Controls: (Models 2 & 5) Population, Population Growth (annual %), Urban Population (% of total)

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	(1)	(2)	(3)	(4)	(5)
IDA Membership	0.047**	0.044**	0.054***		
	(0.020)	(0.020)	(0.015)		
Controls:					
Population & Urban.		✓			
Government & Conflict			✓		
Economic Exposure					
N	1,488	1,488	1,488		
Adj. R^2	0.778	0.778	0.779		

$* p < 0.10, ** p < 0.05, *** p < .01$

All models include country f.e., year f.e., and country-specific linear trends.

Standard errors: clustered by country and year.

Controls: (Models 2 & 5) Population, Population Growth (annual %), Urban Population (% of total); **(Models 3 & 5)** VDem Polyarchy, Natural Resource Rents (% of GDP), Presence/Intensity of Civil and International Conflict, Occurrence of a Successful Coup

	Effect on Female Literacy Deficit				
	(1)	(2)	(3)	(4)	(5)
IDA Membership	0.047**	0.044**	0.054***	0.061**	
	(0.020)	(0.020)	(0.015)	(0.023)	
Controls:					
Population & Urban.		✓			
Government & Conflict			✓		
Economic Exposure				✓	
N	1,488	1,488	1,488	1,488	
Adj. R^2	0.778	0.778	0.779	0.780	

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	Effect on Female Literacy Deficit				
	(1)	(2)	(3)	(4)	(5)
IDA Membership	0.047**	0.044**	0.054***	0.061**	0.064***
	(0.020)	(0.020)	(0.015)	(0.023)	(0.019)
Controls:					
Population & Urban.		✓			✓
Government & Conflict			✓		✓
Economic Exposure				✓	✓
N	1,488	1,488	1,488	1,488	1,488
Adj. R^2	0.778	0.778	0.779	0.780	0.781

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Pre- and Post-Treatment Trends

Legend:
- Joined the IDA
- Did Not Join

X-axis: Years Before and After W.B. (IDA) Accession
Y-axis: Female Lifetime Literacy Deficit

Pre- and Post-Treatment Trends

Female Lifetime Literacy Deficit (y-axis)

Years Before and After W.B. (IDA) Accession (x-axis)

Joined the IDA
Did Not Join

Pre- and Post-Treatment Trends

Female Lifetime Literacy Deficit vs. Years Before and After W.B. (IDA) Accession

Legend:
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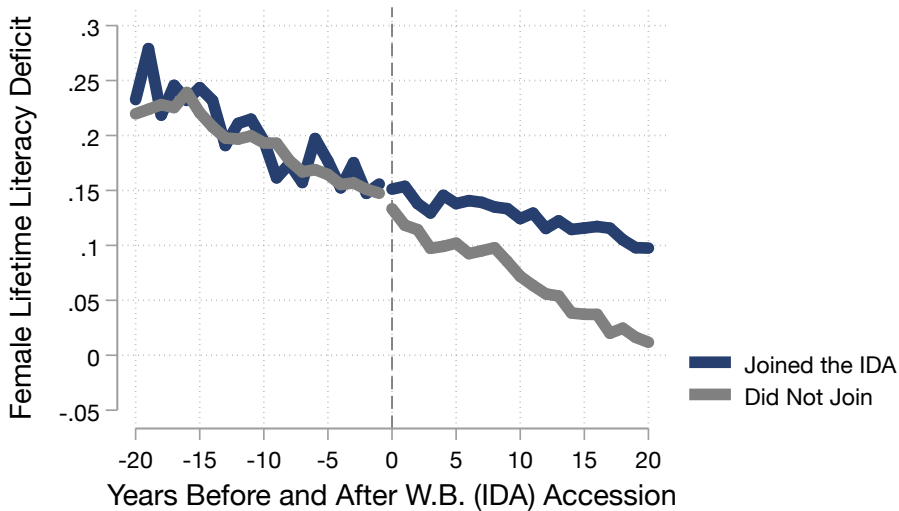
Heterogeneous Effects by Regime Type

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	Effect on Female Literacy Deficit				
	(1)	(2)	(3)	(4)	(5)
IDA Membership					
Electoral Democracy					
Interaction Term					
Controls:					
Population & Urban.					
Government & Conflict					
Economic Exposure					
N					
Adj. R^2					

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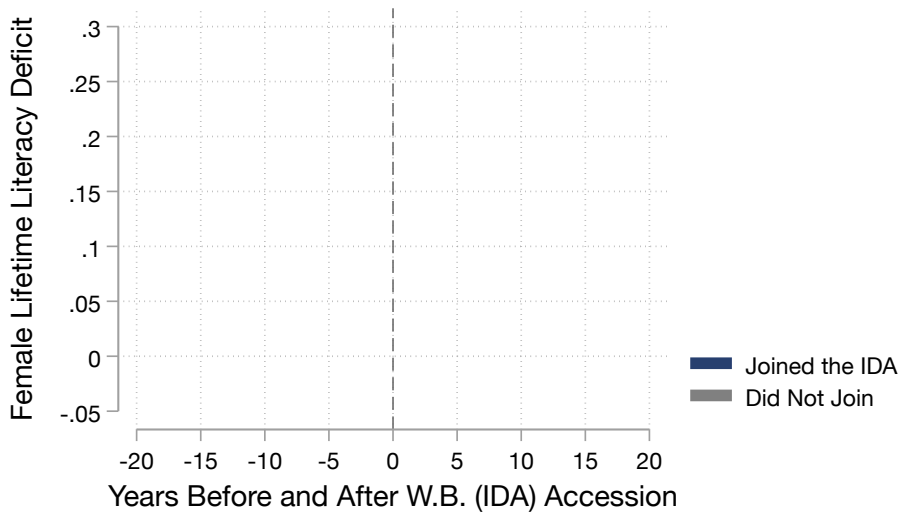
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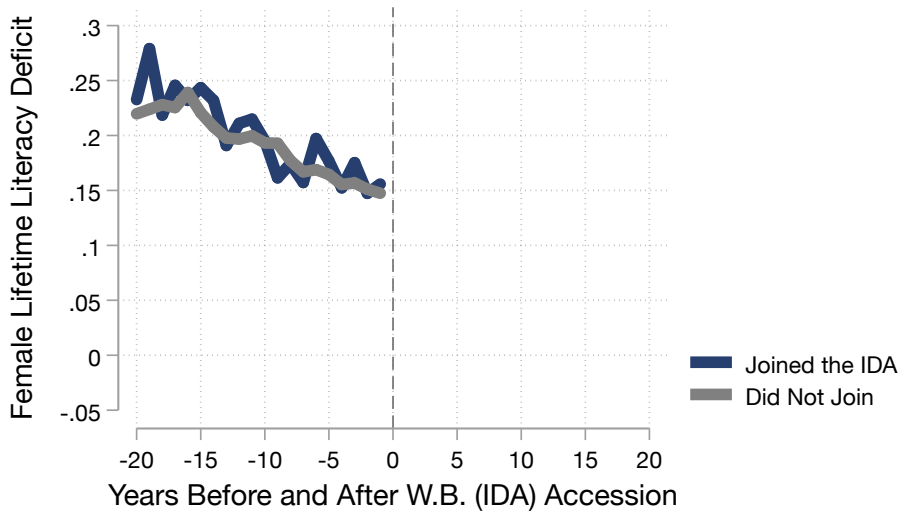
Standard errors: clustered by country and year.

Heterogeneous Effects by Regime Type

	Effect on Female Literacy Deficit				
	(1)	(2)	(3)	(4)	(5)
IDA Membership	0.070***	0.068***	0.070***	0.081***	0.079***
	(0.013)	(0.013)	(0.013)	(0.016)	(0.016)
Electoral Democracy	0.017	0.017	0.015	0.018	0.018
	(0.015)	(0.025)	(0.016)	(0.026)	(0.033)
Interaction Term	-0.098***	-0.101***	-0.097***	-0.089***	-0.092***
	(0.031)	(0.033)	(0.031)	(0.034)	(0.036)
Controls:					
Population & Urban.		✓			✓
Government & Conflict			✓		✓
Economic Exposure				✓	✓
N	1,488	1,488	1,488	1,488	1,488
Adj. R^2	0.780	0.780	0.779	0.781	0.781

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Standard errors: clustered by country and year.

Estimated Marginal Effect of IDA Membership
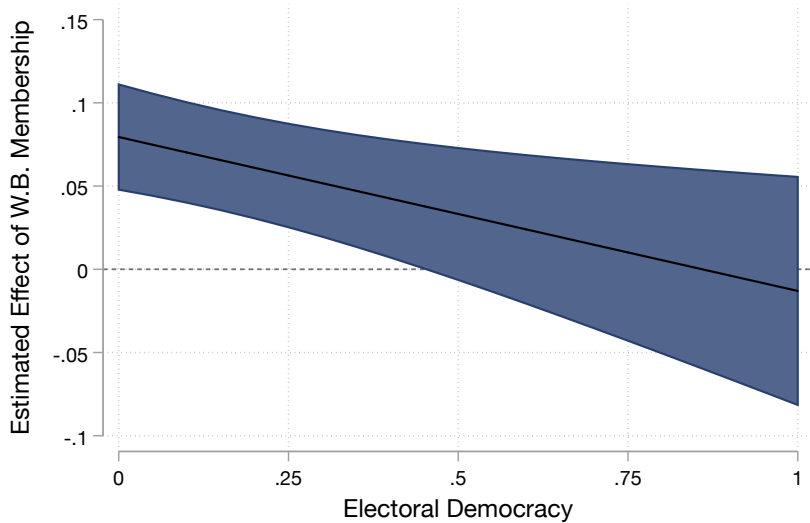
Alternative Mechanisms & Supplemental Tests

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Male Prioritization

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More Support for Preferential Targeting

- Evidence of urban/rural selective channeling
- Effect reversal following IDA graduation
- Tests with alternative counterfactual estimators
- Alternative tests with IDA funding rather than membership

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alternative samples; case-wise exclusion; removal of uncertain estimates, etc.;
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Summary Statistics for IDA Members / Non-Members

	Observations from IDA Members			Observations from Non-Members		
	Mean	SD	Obs	Mean	SD	Obs
Lifetime Literacy Rate						
Female Literacy	0.63	0.28	3105	0.58	0.36	2491
Male Literacy	0.69	0.20	2347	0.62	0.30	1897
Population Measures						
Population (Millions)	26.54	89.27	3116	6.17	12.84	1259
Population Growth (%)	2.42	1.18	3100	1.80	1.30	1181
Urban Population (%)	31.90	16.56	3116	34.97	20.34	1259
Politics & Stability						
Electoral Democracy	0.27	0.18	2964	0.18	0.18	2140
Nat. Resource Rents (% GDP)	7.67	8.49	2335	7.25	13.02	323
International Conflict	0.13	0.74	2880	0.04	0.31	789
Civil Conflict	1.06	2.02	2880	0.47	1.46	792
Successful Coup	0.04	0.22	2748	0.04	0.21	751
International Exposure						
WTO Membership	0.15	0.35	3116	0.01	0.11	2862
UNESCO Membership	0.97	0.17	3116	0.28	0.45	2862
Per Capita GDP (USD)	753.46	949.75	2786	1238.22	1565.66	517
Per Capita GDP Growth (%)	1.34	6.34	2726	0.79	7.09	474
Net ODA Per Capita (USD)	36.47	55.79	3079	30.20	55.70	674
FDI Inflows (Millions)	213.04	1084.65	2463	38.66	95.11	289

Lifetime Literacy Rate data are calculated by the author using data from DHS and MICS. Population, Population Growth, Urban Population, Natural Resource Rents, Per Capita GDP, Per Capita GDP Growth, Net ODA Per Capita, and FDI Inflows are obtained from the World Bank Indicators. Presence and Intensity of International Conflict and Presence and Intensity of Civil Conflict are from the Major Episodes of Political Violence database. Occurrence of Successful Coups is from the Center for Systemic Peace's Coup D'Etat Events. Electoral Democracy is measured using "v2x_polyarchy" from the Varieties of Democracy (VDEM) dataset, V10.

Correlation Matrices

Female Lifetime Literacy Rate

	This Paper LLR	UNESCO Adult Lit.	UNESCO Youth Lit.	B&L 2013 Any School.
Female Lifetime Literacy (This Paper)				
Adult Female Literacy % (UNESCO)	0.86			
Youth Female Literacy % (UNESCO)	0.90	0.97		
% Any Schooling (Barro & Lee 2013)	0.86	0.91	0.87	
Years of Schooling (Barro & Lee 2013)	0.79	0.80	0.73	0.94

Male Lifetime Literacy Rate

	This Paper LLR	UNESCO Adult Lit.	UNESCO Youth Lit.	B&L 2013 Any School.
Male Lifetime Literacy (This Paper)				
Adult Female Literacy % (UNESCO)	0.75			
Youth Female Literacy % (UNESCO)	0.77	0.96		
% Any Schooling (Barro & Lee 2013)	0.70	0.85	0.78	
Years of Schooling (Barro & Lee 2013)	0.66	0.72	0.65	0.94

Female and Male LLR calculated by the author using DHS and MICS surveys. Schooling data from Barro (2013). Literacy estimates from UNESCO via the World Bank Indicators.

Case-Wise Exclusion of Individual Countries (Full Data)
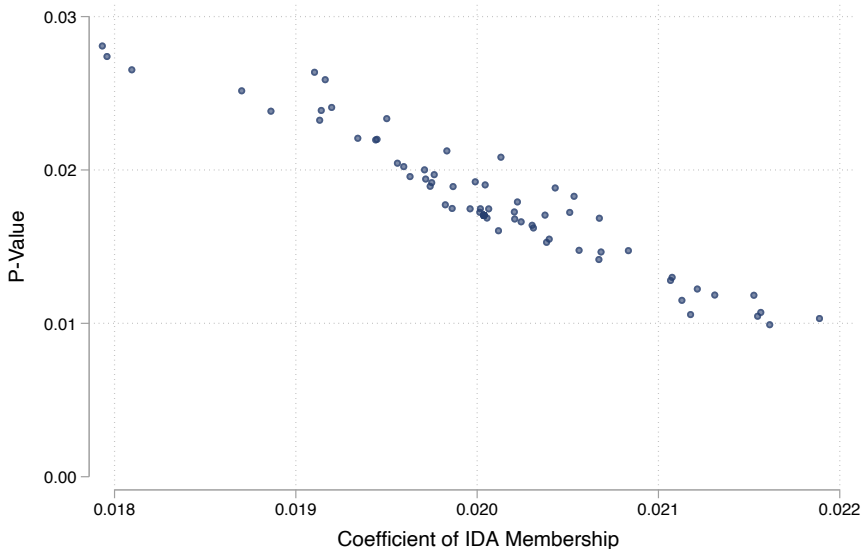
Baseline Estimates with Alternative Samples I

	Effect on Female Literacy Deficit			
	(1) (DHS Only)	(2) (Cohort SE < .05)	(3) (Cohort n ≥ 50)	(4) (Initial LLR ≤ .95)
IDA Membership	0.065** (0.027)	0.022* (0.011)	0.026** (0.011)	0.064*** (0.018)
Controls:	✓	✓	✓	✓
Country-Specific Trends:	✓	✓	✓	✓
N	1218	1413	1426	1479
Adj. R^2	0.801	0.848	0.852	0.780

Models include country fixed effects, year fixed effects, and country-specific linear trends. Standard errors are listed in parentheses and are clustered separately by country and year. Controls: Population, Population Growth (annual %), Urban Population (% of total), VDem Polyarchy, Natural Resource Rents (% of GDP), Presence/Intensity of Civil and International Conflict, Occurrence of a Successful Coup, Per Capita GDP (current USD), Per Capita GDP Growth (annual %), WTO Membership, UNESCO Membership, Net ODA Received (current USD), Net FDI Inflows (current USD).

$* p < 0.10, ** p < 0.05, *** p < .01$ DV mean (Female Literacy Deficit): .0809.

Baseline Estimates with Alternative Samples II

	(1) (Age > 18)	(2) (No Lit. Prog.)	(3) (No Time Trd.)	(4) (No New States)	(5) (No Covariates)
			Effect on Female Literacy Deficit		
IDA Membership	0.047**	0.065**	0.051	0.053*	0.022**
	(0.018)	(0.027)	(0.031)	(0.031)	(0.008)
Controls:	✓	✓	✓	✓	—
Country-Specific Trends:	✓	✓		✓	✓
N	1302	1218	1488	1434	3861
Adj. R^2	0.767	0.802	0.705	0.708	0.772

Models include country fixed effects, year fixed effects, and country-specific linear trends (trends are omitted in model 3). Standard errors are listed in parentheses and are clustered separately by country and year. Controls: Population, Population Growth (annual %), Urban Population (% of total), VDem Polyarchy, Natural Resource Rents (% of GDP), Presence/Intensity of Civil and International Conflict, Occurrence of a Successful Coup, Per Capita GDP (current USD), Per Capita GDP Growth (annual %), WTO Membership, UNESCO Membership, Net ODA Received (current USD), Net FDI Inflows (current USD).

$* p < 0.10, ** p < 0.05, *** p < .01$ DV mean (Female Literacy Deficit): .0809.

Interaction Estimates with Alternative Samples I

	Effect on Female Literacy Deficit			
	(1)	(2)	(3)	(4)
	(DHS Only)	(Cohort SE < .05)	(Cohort n ≥ 50)	(Initial LLR ≤ .95)
IDA Membership	0.135***	0.034***	0.036***	0.079***
	(0.024)	(0.012)	(0.012)	(0.016)
Electoral Democracy	0.565***	0.038	0.024	0.018
	(0.171)	(0.024)	(0.027)	(0.033)
Interaction Term	-0.581***	-0.070**	-0.063*	-0.093**
	(0.173)	(0.027)	(0.031)	(0.036)
Controls:	✓	✓	✓	✓
Country-Specific Trends:	✓	✓	✓	✓
Observations	1218	1413	1426	1479
Adjusted R^2	0.801	0.848	0.853	0.781

Models include country fixed effects, year fixed effects, and country-specific linear trends (trends are omitted in model 7). Standard errors are listed in parentheses and are clustered separately by country and year. Controls: Population, Population Growth (annual %), Urban Population (% of total), Natural Resource Rents (% of GDP), Presence/Intensity of Civil and International Conflict, Occurrence of a Successful Coup, Per Capita GDP (current USD), Per Capita GDP Growth (annual %), WTO Membership, UNESCO Membership, Net ODA Received (current USD), Net FDI Inflows (current USD).

$* p < 0.10, ** p < 0.05, *** p < .01$ DV mean (Female Literacy Deficit): .0809.

Interaction Estimates with Alternative Samples II

	Effect on Female Literacy Deficit				
	(1) (Age > 18)	(2) (No Lit. Prog.)	(3) (No Time Trd.)	(4) (No New States)	(5) (No Covariates)
IDA Membership	0.067** (0.026)	0.137*** (0.024)	0.067* (0.037)	0.069* (0.038)	0.031** (0.013)
Electoral Democracy	0.077*** (0.028)	0.579*** (0.171)	0.048 (0.035)	0.049 (0.037)	-0.003 (0.032)
Interaction Term	-0.119*** (0.037)	-0.596*** (0.172)	-0.097* (0.057)	-0.097 (0.058)	-0.059 (0.040)
Controls:	✓	✓	✓	✓	—
Country-Specific Trends:	✓	✓		✓	✓
Observations	1302	1218	1488	1434	3408
Adjusted R^2	0.768	0.802	0.705	0.708	0.766

Models include country fixed effects, year fixed effects, and country-specific linear trends (trends are omitted in model 7). Standard errors are listed in parentheses and are clustered separately by country and year. Controls: Population, Population Growth (annual %), Urban Population (% of total), Natural Resource Rents (% of GDP), Presence/Intensity of Civil and International Conflict, Occurrence of a Successful Coup, Per Capita GDP (current USD), Per Capita GDP Growth (annual %), WTO Membership, UNESCO Membership, Net ODA Received (current USD), Net FDI Inflows (current USD).

$* p < 0.10, ** p < 0.05, *** p < .01$ DV mean (Female Literacy Deficit): .0809.
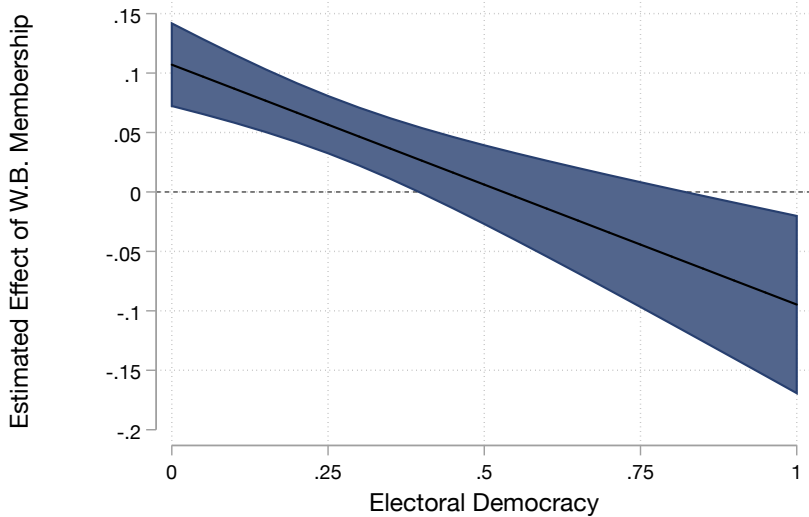
Interaction Estimates with Pre-Membership Regime Type

	Effect on Female Literacy Deficit				
	(1) (Age > 18)	(2) (No Lit. Prog.)	(3) (No Time Trd.)	(4) (No New States)	(5) (No Covariates)
IDA Membership	0.091***	0.090***	0.091***	0.107***	0.107***
	(0.019)	(0.018)	(0.019)	(0.017)	(0.018)
Electoral Democracy	0.020	0.021	0.019	0.019	0.020
	(0.014)	(0.025)	(0.015)	(0.026)	(0.034)
Interaction Term	-0.183***	-0.191***	-0.182***	-0.189***	-0.202***
	(0.052)	(0.058)	(0.052)	(0.038)	(0.049)
Controls:					
Population & Urban.		✓			✓
Government & Conflict			✓		✓
Economic Growth & Exposure				✓	✓
N	1485	1485	1485	1485	1485
Adj. R^2	0.778	0.778	0.777	0.780	0.780

All models include country fixed effects, year fixed effects, and country-specific linear trends. Standard errors are listed in parentheses and are clustered separately by country and year. Controls for Models (2) & (5): Population, Population Growth (annual %), Urban Population (% of total). Controls for Models (3) & (5): Natural Resource Rents (% of GDP), Presence/Intensity of Civil and International Conflict, Occurrence of a Successful Coup. Controls for Models (4) & (5): Per Capita GDP (current USD), Per Capita GDP Growth (annual %), WTO Membership, UNESCO Membership, Net ODA Received (current USD), Net FDI Inflows (current USD).

$* \ p < 0.10, ** \ p < 0.05, *** \ p < .01$

Estimated Marginal Effect (Pre-IDA Regime Type)

Interaction Estimates with Alternative Regime Measures

	Effect on Female Literacy Deficit				
	(1)	(2)	(3)	(4)	(5)
	(Poliy2 < 6)	(Partic. Dem.)	(Egalit. Dem.)	(Gend. Emp.)	(Desc. Fem. Rep.)
IDA Membership	0.037**	0.047***	0.060***	0.051**	0.097***
	(0.016)	(0.016)	(0.011)	(0.019)	(0.016)
Regime Measure	-0.020*	0.007	0.005	0.050**	0.028***
	(0.010)	(0.007)	(0.006)	(0.024)	(0.005)
Interaction Term	0.030**	-0.026***	-0.024***	-0.060**	-0.029***
	(0.013)	(0.009)	(0.007)	(0.026)	(0.008)
Controls:					
Population & Urban.	✓	✓	✓	✓	✓
Government & Conflict	✓	✓	✓	✓	✓
Economic Growth & Exposure	✓	✓	✓	✓	✓
N	1525	1488	1488	1487	1487
Adj. R^2	0.784	0.782	0.781	0.780	0.780

All models include country fixed effects, year fixed effects, and country-specific linear trends. Standard errors are listed in parentheses and are clustered separately by country and year. Autocracy is an indicator for whether a country's Polity2 score was below -6 (note that this predicts the opposite result from other variables, which are coded such that more democratic/egalitarian countries obtain higher scores). Other regime type measures are standardized and come from VDem v. 11, using the following variables: participatory democracy (v2x_partipdem), egalitarian democracy (v2x_egaldem), gender empowerment (v2x_gender), and descriptive female representation (v2x_genpp). Controls: Population, Population Growth (annual %), Urban Population (% of total), Natural Resource Rents (% of GDP), Presence/Intensity of Civil and International Conflict, Occurrence of a Successful Coup, Per Capita GDP (current USD), Per Capita GDP Growth (annual %), WTO Membership, UNESCO Membership, Net ODA Received (current USD), Net FDI Inflows (current USD).

$* \; p < 0.10, ** \; p < 0.05, *** \; p < .01$

Survey-Year Observations w/ Survey F.E.

	Estimated Effect on Female Literacy Deficit		
	(1)	(2)	(3)
IDA Membership	0.036**	0.056**	0.054**
	(0.017)	(0.021)	(0.022)
Electoral Democracy	-0.017	0.232*	
	(0.034)	(0.135)	
Interaction		-0.224	
		(0.137)	
E.D. Pre-Membership			0.185
			(0.144)
Interaction (E.D. Pre-Membership)			-0.199***
			(0.066)
Controls:			
Population & Urban.	✓	✓	✓
Government & Conflict	✓	✓	✓
Economic Growth & Exposure	✓	✓	✓
N	2477	2477	2474
Adj. R^2	0.734	0.702	0.702

All models include survey fixed effects, year fixed effects, and country-specific linear trends. Standard errors are listed in parentheses and are clustered separately by country and year. Controls: Population, Population Growth (annual %), Urban Population (% of total), Electoral Democracy (VDem Polyarchy), Natural Resource Rents (% of GDP), Presence/Intensity of Civil and International Conflict, Occurrence of a Successful Coup, Per Capita GDP (current USD), Per Capita GDP Growth (annual %), WTO Membership, UNESCO Membership, Net ODA Received (current USD), Net FDI Inflows (current USD).

$* p < 0.10, ** p < 0.05, *** p < .01$

Alternative Mechanisms & Supplemental Tests

	Effect on Female Literacy Deficit					
	(1) (Sibling Gap)	(2) (Bride-Price Gap)	(3) (Male Urban Gap)	(4) (Male Urban Gap)	(5) (Female Urban Gap)	(6) (Female Urban Gap)
IDA Membership	-0.002 (0.031)	-0.052 (0.035)	-0.019 (0.043)	-0.082* (0.042)	-0.010 (0.015)	-0.026 (0.020)
Urban Support (Binary)			-0.059* (0.029)		0.006 (0.016)	
Interaction (Urb. Sup. Binary)			0.111*** (0.038)		0.026 (0.019)	
Urban Support (Contin.)				-0.025** (0.010)		-0.002 (0.006)
Interaction (Urb. Sup. Cont.)				0.050*** (0.015)		0.012* (0.007)
Electoral Democracy	-0.029 (0.039)	0.076 (0.079)	-0.111 (0.067)	-0.100 (0.061)	-0.056 (0.043)	-0.051 (0.044)
N	2369	1035	1390	1390	2033	2033
Adj. R^2	0.013	0.340	0.181	0.183	0.544	0.544

All models include survey fixed effects, year fixed effects, and country-specific linear trends. Standard errors are listed in parentheses and are clustered separately by country and year. The Sibling Literacy Gap, Bride-Price Gap, and Urban Literacy Gaps are calculated by the author using DHS and MICS data. The Sibling Literacy Gap is calculated as the Female LLR among second-born women whose older sibling is male - Female LLR among second-born women whose older sibling is female. The Bride-Price Literacy Gap is calculated as the Female LLR among groups who practice bride price customs - the Female LLR among groups that do not practice such customs. Urban Literacy Gaps are calculated as the LLR among individuals who report they lived in urban settings in childhood - the LLR among individuals who report they lived in rural settings during childhood. Measures of urban political support are drawn from the Varieties of Democracy dataset, v11 (v2regsuploc_nr). The dichotomous measure codes political regimes drawing support primarily from the capital or other urban environments as "1" and all other regimes as "0." The continuous measure codes political regimes drawing political support primarily from the capital as "4," other urban settings as "3," rural settings as "2," and no within-country geographic focus as "1."

$* p < 0.10, ** p < 0.05, *** p < .01$

Estimated Effects of IDA Graduation

Effect on Female Literacy Deficit

	(1)	(2)	(3)	(4)	(5)	(6)
IDA Graduation	-0.019	-0.036**	-0.019	-0.034**	-0.027*	-0.040**
	(0.013)	(0.015)	(0.012)	(0.015)	(0.014)	(0.019)
Electoral Democracy		-0.059**		-0.045	-0.054**	-0.061**
		(0.028)		(0.029)	(0.025)	(0.027)
Interaction		0.095**		0.080*		0.057
		(0.044)		(0.042)		(0.050)
Controls:						
Per Capita GDP			✓	✓	✓	✓
Other Controls					✓	✓
N	2275	2168	2040	1940	1393	1393
Adj. R^2	0.798	0.799	0.811	0.814	0.791	0.791

All models include country fixed effects, year fixed effects, and country-specific linear trends. I control for per capita GDP in Models (3) & (4) because IDA graduation is tied to this threshold. Standard errors are listed in parentheses and are clustered separately by country and year. Additional controls for Models (5) & (6): Population, Population Growth (annual %), Urban Population (% of total), Natural Resource Rents (% of GDP), Presence/Intensity of Civil and International Conflict, Occurrence of a Successful Coup, Per Capita GDP Growth (annual %), WTO Membership, UNESCO Membership, Net ODA Received (current USD), Net FDI Inflows (current USD).

$* \, p < 0.10, \, ** \, p < 0.05, \, *** \, p < .01$

Estimated Effects of IDA Graduation

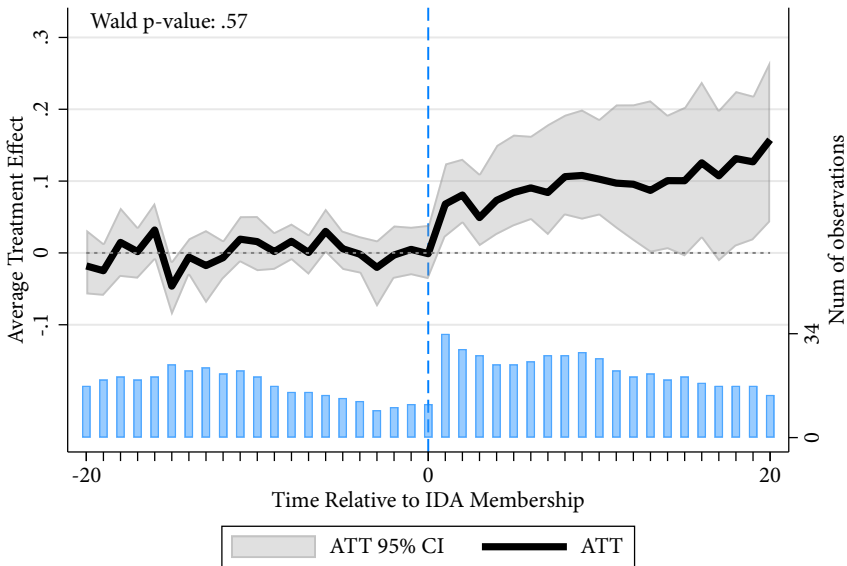**Estimated ATT of IDA Membership on the Female Literacy Deficit**

	(MC Estimator)			(IFEct Estimator)		
	(1) (Baseline)	(2) (Grad/Reentry)	(3) (Pre-Member)	(4) (Baseline)	(5) (Grad/Reentry)	(6) (Pre-Member)
<u>Autocracies:</u>						
ATT	.0955	.0655	.0465	.0465	.0383	.0582
SD	.0396	.0250	.0432	.0361	.0256	.0441
N	544	563	545	544	563	545
Wald Pre-Treat. p-value	.57	.60	.94	.82	.87	.82
Placebo Test p-value	.596	.456	.441	.596	.827	.700
<u>Democracies:</u>						
ATT	-.0654	-.0129	-.0471	-.0489	-.0380	-.0561
SD	.0161	.0163	.0197	.0228	.0305	.0275
N	659	613	548	659	613	548
Wald Pre-Treat. p-value	.58	.38	.48	.73	.48	.72
Placebo Test p-value	.424	.779	.157	.833	.482	.120
<u>Welch Test:</u>						
Difference of Means	.1609	.0783	.0936	.0954	.0762	.1142
t-stat	89.55	63.05	46.02	43.71	46.57	51.29
Significant Difference	Yes	Yes	Yes	Yes	Yes	Yes
Country F.E.:	✓	✓	✓	✓	✓	✓
Year F.E.:	✓	✓	✓	✓	✓	✓

Models estimated in Stata using the FEct package (Liu 2020). Models (2) and (5) use an alternative coding of IDA membership that allows for IDA graduation and reentry. MC models estimated with $\lambda = .001$; IFEct models estimated with $r = 2$. "Democracies" and "Autocracies" refer, respectively, to countries below and above the sample median Electoral Democracy score, calculated using the v2x_polyarchy variable from the Varieties of Democracy dataset, v10. Models (3) and (6) use an alternative coding of Electoral Democracy for member countries as measured in the final year prior to a country's initial IDA membership.

$* p < 0.10, ** p < 0.05, *** p < .01$ DV mean (Female Literacy Deficit): .0809.

MC Estimated ATT in Autocracies: ∼ .090

Wald p-value: .57

Average Treatment Effect / Num of observations

Time Relative to IDA Membership

ATT 95% CI — ATT

MC Estimated ATT in Democracies: ∼ -.046

Wald p-value: .58

Average Treatment Effect

Num of observations

Time Relative to IDA Membership

ATT 95% CI — ATT