

School Management and Student Performance in Uganda

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Motivation

- Learning in schools is far too low in developing countries, and this matters for outcomes (earnings, employment, health, democracy...)
- 'Inputs' not strongly correlated with test scores
- The most effective interventions to improve learning are those focused on either pedagogy, or governance & accountability (Glewwe & Muralidharan 2016)
- Interventions aside, we know little about business-as-usual functioning of school systems (Muralidharan & Zieleniak 2013, Singh 2016)

Research Question

- Can we measure school management quality?
- Does management matter for student performance?
- What explains variation school management?

Our Contribution

- Demonstrated feasibility of management surveys with limited time-span & budget
- First use in Africa
- Combine Bloom/Van Reenen management surveys with student-level panel data for better (causal?) estimates of effect of variation in existing management quality on student performance

Main Findings

- 1 SD management ~ 0.2 SD better test scores (school regressions), falling to 0.05 SD for student-level regressions
- Effects largest for target-setting & teacher management
- Low overall level of management
- Unexplained variation

Context: Secondary Schools in Uganda

- Free Primary introduced in 1997
- Free Secondary followed in 2007
- 90% Primary NER vs 23% Secondary NER
- Diverse system of public, private, & PPP secondary schools

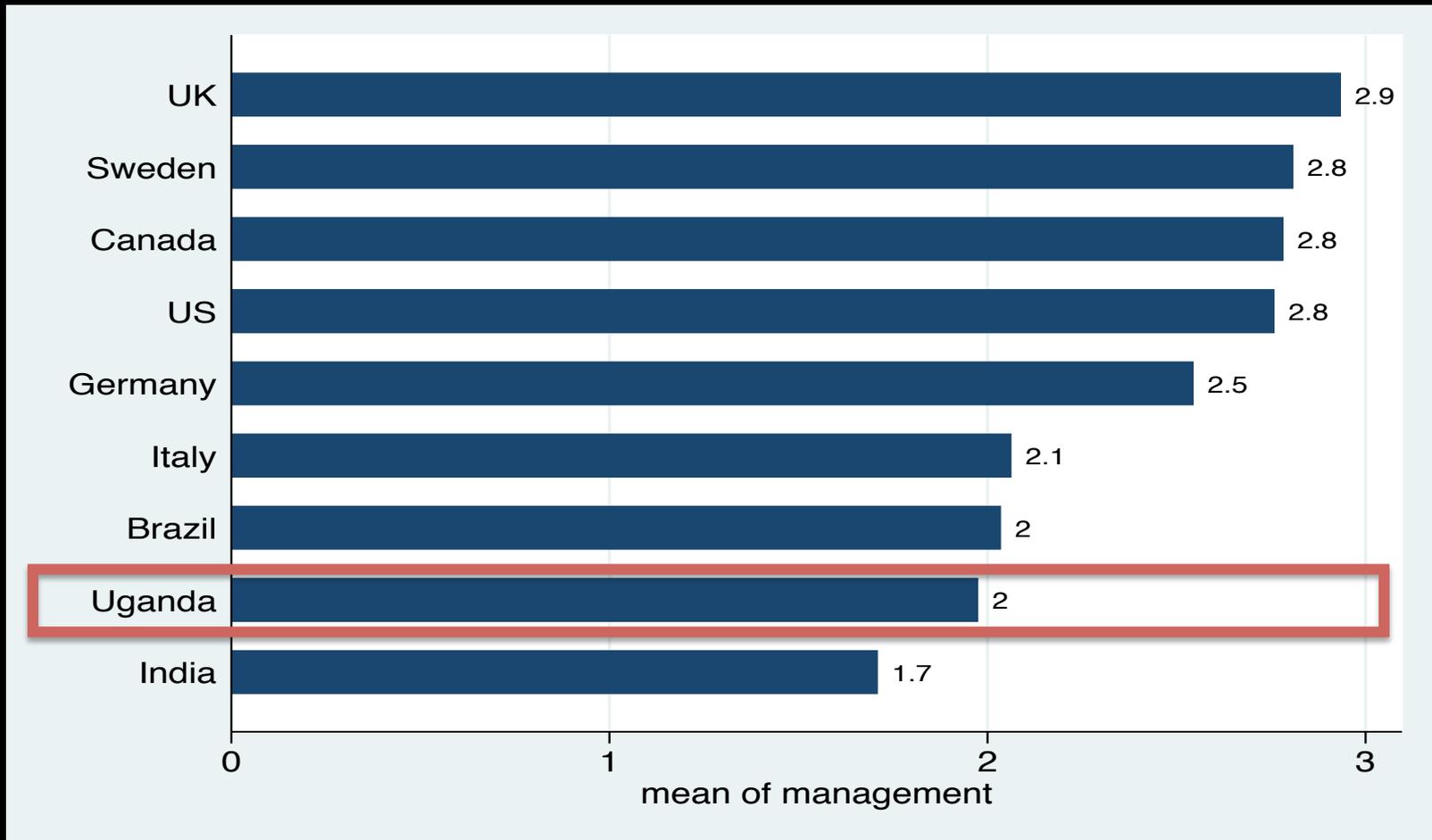
Related Literature

- “New Empirical Economics of Management” (Bloom et al., 2014) (Bloom et al., 2015a) (Lemos and Scur, 2016)
- Value-added estimates of school quality (Andrabi et al 2011, Singh 2016)
- Understanding characteristics of charters/academies (Dobbie and Fryer, 2013) (Eyles and Machin, 2014)

Data: Management Survey

- Management survey carried out 199 nationally representative secondary schools in Uganda Jan 2016
- 4 days training. Team of 7 enumerators, 1 supervisor, Kampala call centre, £4,000
- Phone interviews, scoring responses against a descriptive 1-5 rubric
 - Operations (planning and leading teaching):
 - Monitoring (tracking performance)
 - Target setting
 - Teachers (recruitment, management)

Uganda scores similarly to Brazil & India

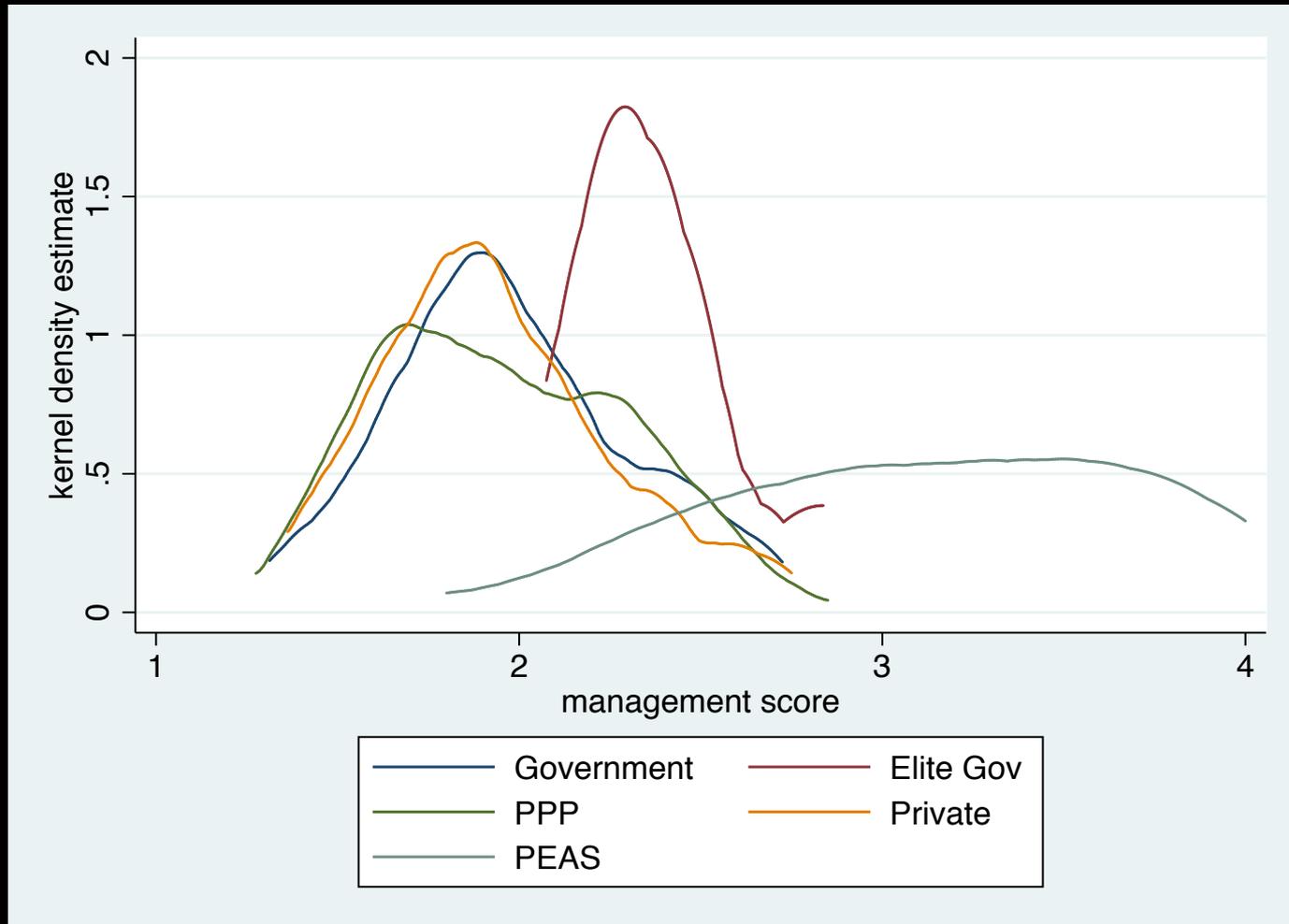


Health warning: Differences in our survey instrument mean this comparison should be taken with caution

Data: Outcomes & covariates

- Official lower secondary (G11) exam scores for all candidates in 2013-2015, linked to their official primary (G7) exam score
- Significant dropouts – address using inverse probability weighting
- School survey
 - Headteacher characteristics
 - School characteristics

‘PEAS’ Schools are best managed, followed by elite government schools, with little difference between the rest



Descriptive Statistics

	Government (USE)	Elite Government	PPP (Private USE)	Private	PEAS (PPP)	All
Number of Schools	82	7	62	48	19	218
<i>Management</i>						
Aggregate Score	2.0	2.4	2.0	1.9	3.1	2.1
- Operations	2.0	2.4	1.9	2.0	3.3	2.1
- Monitoring	2.1	2.4	2.0	1.9	3.0	2.1
- Target-Setting	1.7	2.4	1.8	1.6	2.9	1.8
- People	2.1	2.2	2.1	2.1	3.2	2.2
<i>Test Scores</i>						
Number of Students	11,741	1,583	6,118	3,353	1,085	23,880
Value-Added (z-score)	-0.07	0.32	-0.01	0.12	0.10	0.00
UCE (z-score)	-0.12	1.03	-0.16	0.25	0.09	0.00
<i>School Characteristics</i>						
Mean Students (2015)	565	552	427	278	.	452
SES Index (z-score)	0	0.95	-0.04	0.15	.	-0.03
% Female Students	0.41	0.60	0.44	0.50	0.50	0.45
Total Fees* (UGX)	76	127	86	116	105	92
% For Profit	0	0	0.38	0.49	0	0.23
% With Academic Selection	0.98	1	0.98	0.90	0.84	0.95
% Religious	0.65	0.86	0.60	0.46	0.05	0.55
% Urban	0.06	0.14	0.16	0.17	.	0.12

Approach

- 1: Value-added estimates of learning

$$T_{ist} = \alpha + \beta^1 T_{ist-1} + \beta^2 M_s + \beta^3 X_i + \beta^4 S_s + u_{ist}$$

- 2: Correlates of Management

$$M_s = \alpha + \beta^1 S_s + \beta^2 HT_h + \beta^3 C_c + u_{ist}$$

Results: Management & Performance

- 1SD Management \sim 0.05 Student VA SD
- Smaller coefficient than other countries (but not directly comparable?)
- Effect significant only for target-setting & people management

The 'effect' of management on school test performance is similar in Uganda to other countries

	All (excl Uganda)	Brazil	Canada	India	Sweden	US	UK	Uganda	Uganda
	Cross- country pooled	Average maths	Fraser rating	Average maths	9th grade GPA	HSEE maths pass	Context- ual value added	UCE Score	Value added
Management (z-score)	0.232*** (0.044)	0.104** (0.050)	0.609 (0.368)	0.499** (0.243)	0.242 (0.206)	0.170** (0.080)	0.881** (0.369)	0.104** (0.055)	0.204** (0.090)
General controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pupil controls	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1002	472	77	152	82	133	78	476	476

Source: Uganda School Management Survey & Bloom et al (2015)

Positive correlation between management & student learning

	UCE Score	UCE Score	VA	VA
Management (Z-Score)	0.238*** (0.062)	0.104** (0.051)	0.314*** (0.105)	0.204** (0.093)
School Controls	No	Yes	No	Yes
N	199	199	199	199
r ²	0.088	0.504	0.046	0.357

Std. Err. adjusted for 199 school clusters. School controls include number of students, fee rates, ownership, student socioeconomic status, location, and 'noise controls' or survey enumerator * p<0.1, ** p<0.05, *** p<0.01

	UCE	UCE	VA	VA
Management (Z-Score)	0.294*** (0.089)	0.081* (0.046)	0.097** (0.040)	0.055** (0.026)
School Controls	No	Yes	No	Yes
N	15,775	15,775	15,775	15,775
r ²	0.039	0.306	0.521	0.578

Std. Err. adjusted for 199 school clusters. School controls include number of students, fee rates, ownership, student socioeconomic status, location, and 'noise controls' or survey enumerator
* p<0.1, ** p<0.05, *** p<0.01

Target-setting & Staff management are the most important aspects of management for learning

	(1)	(2)	(3)	(4)	(5)
Management (Z-Score)	0.055** (0.026)				
Operations (Z-Score)		0.011 (0.025)			
Targets (Z-Score)			0.069*** (0.021)		
Monitoring (Z-Score)				0.012 (0.020)	
People (Z-Score)					0.059*** (0.021)
School Controls	Yes	Yes	Yes	Yes	Yes
N	15,775	15,775	15,775	15,775	15,775
r ²	0.578	0.577	0.579	0.577	0.578

Std. Err. adjusted for 199 school clusters. School controls include number of students, fee rates, ownership, student socioeconomic status, location, and 'noise controls' or enumerator * p<0.1, ** p<0.05, *** p<0.01

Heterogeneity: Management seems to matter more in wealthier schools

Table 14: Heterogeneous effects of management on Student VA by School Characteristics

	(1)	(2)	(3)	(4)	(5)
Management (Z-Score)	0.060 (0.037)	0.056** (0.026)	0.053** (0.023)	0.060** (0.026)	0.044* (0.025)
Urban x Mgmt	-0.005 (0.090)				
Peri-urban x Mgmt	-0.013 (0.066)				
Num. students x Mgmt		-0.005 (0.028)			
SES x Mgmt			0.131*** (0.038)		
Drop-out rate x Mgmt				0.043* (0.026)	
Tuition fees x Mgmt					0.109*** (0.038)
School Controls	Yes	Yes	Yes	Yes	Yes
N	15,775	15,775	15,775	15,775	15,775
r2	0.578	0.578	0.580	0.579	0.579

Std. Err. adjusted for 199 school clusters. School controls include number of students, fee rates, ownership, student socioeconomic status, location, and 'noise controls' or survey enumerator

* p<0.1, ** p<0.05, *** p<0.01

Explaining Management

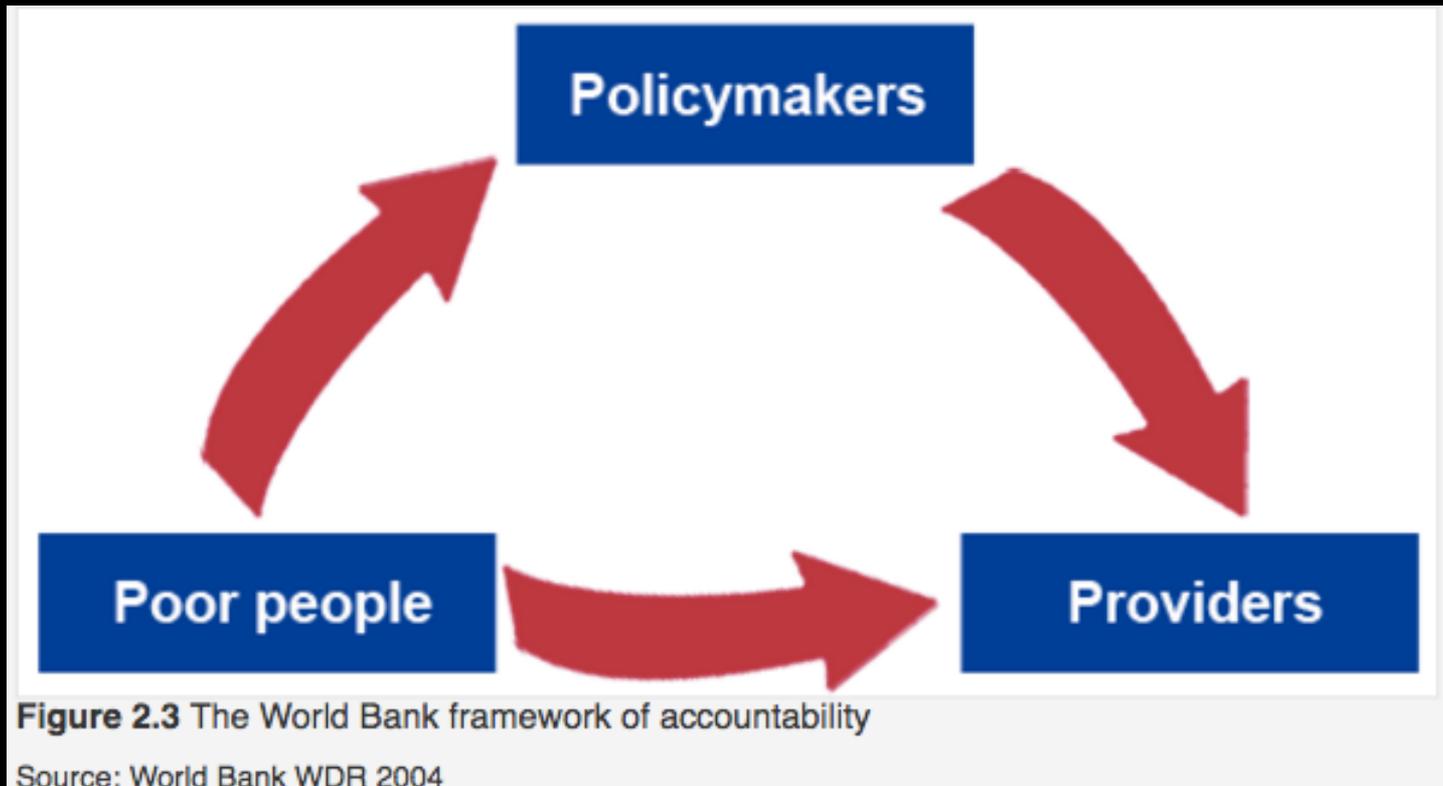
- Substantial variation in management quality, not well explained overall by school characteristics
- Positive effects of internationally-owned PPP / 'autonomous government school' but not locally-owned
- Management as a Technology
 - Output = f (TFP, Capital, Labour, Management)
 - Implies (at least for private sector), a response to competition
 - Schools per capita
 - School age (selection effect)
 - Supply of skills

Few of these variables correlate robustly with management

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Schools per capita (Z-Score)	0.029 (0.024)	0.026 (0.024)						
School age (Z-Score)			0.092*** (0.026)	0.065* (0.035)				
NTC (Z-Score)					0.047 (0.033)	0.042 (0.028)		
2002 Literacy Rate (Z-Score)							0.051** (0.024)	0.046 (0.033)
SES (Z-Score)		0.084** (0.034)		0.072** (0.036)		0.087** (0.034)		0.064* (0.037)
School Controls	No	Yes	No	Yes	No	Yes	No	Yes
N	199	199	199	199	218	199	199	199
r ²	0.008	0.125	0.061	0.142	0.009	0.130	0.023	0.129

School controls include number of pupils, socioeconomic status, region, urban location, and survey enumerator. * p<0.1, ** p<0.05, *** p<0.01

What about the long route?



The top-down accountability system for most publicly-funded schools is weak & focused only on physical inputs. Except for some

A Case Study of PEAS Schools

- 28 schools, nonprofit, remote rural schools, disadvantaged children, non-selective, internationally founded, locally financed
- 1 point (2.5 SDs) better performance on management
- Management score 'explains' better test score performance
 - **Targets**
 - School improvement plans developed by school leaders with targets on student outcomes. Every S4 knows what their target is. Linked to overall school target.
 - **People**
 - Worst school leaders removed.
 - **Overall regular training on school management**

Conclusion

- Management matters for test scores
- In this (and similar) contexts, management is poor and variable
- It is possible to do better in this context when the right accountability & support is in place
- Literature on technology adoption suggests information constraints & supply-side constraints may matter – school leaders don't realise they need training, and there isn't any on offer anyway

Future questions

- How do you replicate and scale micro success in other schools? (Fryer 2014, Bold, Sandefur et al 2013)
- How robust is the target-setting finding – is that sufficient by itself?

