

Information and collective action in the community-based monitoring of public services

Field and lab experimental evidence from Uganda

Abigail Barr,¹ Frederick Mugisha,² Pieter Serneels³, and
Andrew Zeitlin⁴

¹University of Nottingham, ²EPRC and Uganda Ministry of Finance, ³University
of East Anglia, ⁴Georgetown University and CGD

IGC Growth Week
September 2012

Accountability problems in Ugandan primary schools

- ▶ Since Universal Primary Education in 1997, remarkable enrollment gains.
 - ▶ From 3 million to 5 million pupils in the first year alone.
 - ▶ Physical inputs have largely caught up (Kasirye 2009), but performance continues to lag (Byamugisha and Ssenbula 2005)
- ▶ Teacher absenteeism is widespread in Ugandan primary schools.
 - ▶ Chaudhury and coauthors (2006) estimate a 27% absenteeism rate for Uganda
 - ▶ Sanctioning of teachers by District Education Offices is rare.
- ▶ School Management Committees (SMCs) function poorly
 - ▶ SMCs: representatives of parents, teachers (including Head), 'foundation body', and District with mandate to ensure quality
 - ▶ No correlation in Uganda between management activity levels and absenteeism in Chaudhury et al. (2006)

Accountability problems in Ugandan primary schools

- ▶ Since Universal Primary Education in 1997, remarkable enrollment gains.
 - ▶ From 3 million to 5 million pupils in the first year alone.
 - ▶ Physical inputs have largely caught up (Kasirye 2009), but performance continues to lag (Byamugisha and Ssenbula 2005)
- ▶ Teacher absenteeism is widespread in Ugandan primary schools.
 - ▶ Chaudhury and coauthors (2006) estimate a 27% absenteeism rate for Uganda
 - ▶ Sanctioning of teachers by District Education Offices is rare.
- ▶ School Management Committees (SMCs) function poorly
 - ▶ SMCs: representatives of parents, teachers (including Head), 'foundation body', and District with mandate to ensure quality
 - ▶ No correlation in Uganda between management activity levels and absenteeism in Chaudhury et al. (2006)

Accountability problems in Ugandan primary schools

- ▶ Since Universal Primary Education in 1997, remarkable enrollment gains.
 - ▶ From 3 million to 5 million pupils in the first year alone.
 - ▶ Physical inputs have largely caught up (Kasirye 2009), but performance continues to lag (Byamugisha and Ssenbula 2005)
- ▶ Teacher absenteeism is widespread in Ugandan primary schools.
 - ▶ Chaudhury and coauthors (2006) estimate a 27% absenteeism rate for Uganda
 - ▶ Sanctioning of teachers by District Education Offices is rare.
- ▶ School Management Committees (SMCs) function poorly
 - ▶ SMCs: representatives of parents, teachers (including Head), 'foundation body', and District with mandate to ensure quality
 - ▶ No correlation in Uganda between management activity levels and absenteeism in Chaudhury et al. (2006)

Management and motivation: Baseline findings

At baseline, we study behavior in a simplified (lab) decision-making environment, in schools, with stakeholders.

Findings: (Barr & Zeitlin 2010, Barr & Zeitlin 2011):

1. Teachers turn up for work (in part) because they are intrinsically motivated.
2. Not all types of SMC member are equally willing to use pecuniary powers hold teachers to account.
3. Teachers' internal motivations may be vulnerable to crowding out.

Management and motivation: Baseline findings

At baseline, we study behavior in a simplified (lab) decision-making environment, in schools, with stakeholders.

Findings: (Barr & Zeitlin 2010, Barr & Zeitlin 2011):

1. Teachers turn up for work (in part) because they are intrinsically motivated.
2. Not all types of SMC member are equally willing to use pecuniary powers hold teachers to account.
3. Teachers' internal motivations may be vulnerable to crowding out.

Management and motivation: Baseline findings

At baseline, we study behavior in a simplified (lab) decision-making environment, in schools, with stakeholders.

Findings: (Barr & Zeitlin 2010, Barr & Zeitlin 2011):

1. Teachers turn up for work (in part) because they are intrinsically motivated.
2. Not all types of SMC member are equally willing to use pecuniary powers hold teachers to account.
3. Teachers' internal motivations may be vulnerable to crowding out.

Management and motivation: Baseline findings

At baseline, we study behavior in a simplified (lab) decision-making environment, in schools, with stakeholders.

Findings: (Barr & Zeitlin 2010, Barr & Zeitlin 2011):

1. Teachers turn up for work (in part) because they are intrinsically motivated.
2. Not all types of SMC member are equally willing to use pecuniary powers hold teachers to account.
3. Teachers' internal motivations may be vulnerable to crowding out.

Local accountability and public service delivery

- ▶ **Community-based monitoring interventions** provide a low (economic and political) cost approach to strengthen short-route of accountability (World Bank 2004).
- ▶ Results are mixed.
 - ▶ (Olken 2007, Banerjee, Banerji, Duflo, Glennerster & Khemani 2008, Björkman & Svensson 2009, Björkman & Svensson 2010)
- ▶ Mechanisms are not well understood:
Is information-for-accountability hostage to collective action problems?

Local accountability and public service delivery

- ▶ Community-based monitoring interventions provide a low (economic and political) cost approach to strengthen short-route of accountability (World Bank 2004).
- ▶ Results are mixed.
 - ▶ (Olken 2007, Banerjee, Banerji, Duflo, Glennerster & Khemani 2008, Björkman & Svensson 2009, Björkman & Svensson 2010)
- ▶ Mechanisms are not well understood:
Is information-for-accountability hostage to collective action problems?

Local accountability and public service delivery

- ▶ Community-based monitoring interventions provide a low (economic and political) cost approach to strengthen short-route of accountability (World Bank 2004).
- ▶ Results are mixed.
 - ▶ (Olken 2007, Banerjee, Banerji, Duflo, Glennerster & Khemani 2008, Björkman & Svensson 2009, Björkman & Svensson 2010)
- ▶ Mechanisms are not well understood:
Is information-for-accountability hostage to collective action problems?

What we do

- ▶ Design and evaluate **two variants on a community monitoring intervention**, which variably address collective action problems. Aim:
 - ▶ to shed light on comparative effectiveness of alternative designs, via test scores and direct measurement of teacher/pupil absenteeism; and
 - ▶ to provide experimental variation in *mechanisms* (Ludwig, Kling & Mullainathan 2011).
- ▶ Combine with a post-intervention laboratory public goods game conducted in the field to provide direct evidence of collective action mechanism.
 - ▶ Compare: a growing number of papers use lab experiments to measure outcomes (Attanasio, Pellerano & Polania-Reyes 2009, Fearon, Humphreys & Weinstein 2009, Casey, Glennerster & Miguel 2011)

What we do

- ▶ Design and evaluate two variants on a community monitoring intervention, which variably address collective action problems. Aim:
 - ▶ to shed light on comparative effectiveness of alternative designs, via test scores and direct measurement of teacher/pupil absenteeism; and
 - ▶ to provide experimental variation in *mechanisms* (Ludwig et al. 2011).
- ▶ Combine with a post-intervention **laboratory public goods game** conducted in the field to provide direct evidence of collective action mechanism.
 - ▶ Compare: a growing number of papers use lab experiments to measure outcomes (Attanasio et al. 2009, Fearon et al. 2009, Casey et al. 2011)

Mechanisms of community monitoring interventions

The literature suggests two channels:

1. **Improve informational basis** by which community holds school to account:
 - ▶ Improved allocation of resources (Pritchett & Filmer 1999); and/or
 - ▶ Reward and sanction teacher effort (Holmstrom & Milgrom 1991), by means of meals, staff housing, 'heckle and chide' (Habyarimana and Jack forthcoming).
2. Mediated by community's ability to overcome collective action problems.
 - ▶ Social cohesion—proxied by ethnic homogeneity—matters for public good provision in general (Habyarimana et al. 2007) and in education (Miguel & Gugerty 2005).
 - ▶ Ethnic heterogeneity matters for response to community monitoring interventions (Björkman & Svensson 2010).
 - ▶ Evidence that outcomes can be improved by deliberately addressing collective action is limited (Banerjee et al. 2008).

Mechanisms of community monitoring interventions

The literature suggests two channels:

1. Improve informational basis by which community holds school to account:
 - ▶ Improved allocation of resources (Pritchett & Filmer 1999); and/or
 - ▶ Reward and sanction teacher effort (Holmstrom & Milgrom 1991), by means of meals, staff housing, 'heckle and chide' (Habyarimana and Jack forthcoming).
2. Mediated by community's ability to overcome **collective action problems**.
 - ▶ Social cohesion— proxied by ethnic homogeneity—matters for public good provision in general (Habyarimana et al. 2007) and in education (Miguel & Gugerty 2005).
 - ▶ Ethnic heterogeneity matters for response to community monitoring interventions (Björkman & Svensson 2010).
 - ▶ Evidence that outcomes can be improved by deliberately addressing collective action is limited (Banerjee et al. 2008).

Field experiment

We implement two variants on a 'school scorecard':

1. Standard design

including measures of teacher, pupil, and parent activities; physical inputs; school finances; health and welfare; or

2. Participatory design

in which we train SMC members to overcome collective action problems through designing their own scorecard.

Holding constant. . .

- ▶ **Selection of 12 monitors:** representatives of all stakeholders, based on School Management Committee;
- ▶ **Training duration:** initial training consisting of 3 days, led by MoE's Center Coordinating Tutors;
- ▶ **Monitoring process:** individual members visit once per term; CCTs facilitate consensus meeting at end of term; results disseminated to PTA.

Field experiment

We implement two variants on a 'school scorecard':

1. Standard design
including measures of teacher, pupil, and parent activities; physical inputs; school finances; health and welfare; or
2. Participatory design
in which we train SMC members to overcome collective action problems through designing their own scorecard.

Holding constant. . .

- ▶ **Selection of 12 monitors:** representatives of all stakeholders, based on School Management Committee;
- ▶ **Training duration:** initial training consisting of 3 days, led by MoE's Center Coordinating Tutors;
- ▶ **Monitoring process:** individual members visit once per term; CCTs facilitate consensus meeting at end of term; results disseminated to PTA.

Field experiment

Experimental design

- ▶ Allocation of schools to treatments
 - ▶ Sample: 100 rural, government primary schools in 4 districts of Uganda.
 - ▶ Randomly assigned 40 schools to control, 30 each to Standard and Participatory treatments, stratified by sub-county.
- ▶ Timeline
 - ▶ Baseline study in July 2008;
 - ▶ Intervention launched in third term of 2009;
 - ▶ Follow-up study in November 2010.
- ▶ Measurement
 - ▶ Learning outcomes and unannounced visits
 - ▶ Scorecard content
 - ▶ Dichotomous Voluntary Contributions Mechanism Game

Field experiment

Experimental design

- ▶ Allocation of schools to treatments
 - ▶ Sample: 100 rural, government primary schools in 4 districts of Uganda.
 - ▶ Randomly assigned 40 schools to control, 30 each to Standard and Participatory treatments, stratified by sub-county.
- ▶ Timeline
 - ▶ Baseline study in July 2008;
 - ▶ Intervention launched in third term of 2009;
 - ▶ Follow-up study in November 2010.
- ▶ Measurement
 - ▶ Learning outcomes and unannounced visits
 - ▶ Scorecard content
 - ▶ Dichotomous Voluntary Contributions Mechanism Game

Field experiment

Experimental design

- ▶ Allocation of schools to treatments
 - ▶ Sample: 100 rural, government primary schools in 4 districts of Uganda.
 - ▶ Randomly assigned 40 schools to control, 30 each to Standard and Participatory treatments, stratified by sub-county.
- ▶ Timeline
 - ▶ Baseline study in July 2008;
 - ▶ Intervention launched in third term of 2009;
 - ▶ Follow-up study in November 2010.
- ▶ Measurement
 - ▶ Learning outcomes and unannounced visits
 - ▶ Scorecard content
 - ▶ Dichotomous Voluntary Contributions Mechanism Game

Public goods game

- ▶ A **dichotomous voluntary contributions mechanism** (Cardenas and Jaramillo 2007; Attanasio et al. 2009; Barr et al. 2011)
 - ▶ One-shot game, played by 12 members of school scorecard committee, immediately following training.
 - ▶ Each subject endowed with one token, which can either be allocated to a private or group account.
 - ▶ 'Group account' yields a return of UShs 1,000 to every participant, while 'private account' yields a return of UShs 5,000 (approx USD 2.50 at the time) to the individual.
- ▶ Zero contributions is the dominant-strategy equilibrium for self-interested players.
 - ▶ In practice, studies in developing countries often observe contribution rates between 40 and 70 percent of the stake (Cardenas & Carpenter 2008).
 - ▶ Variation in contributions typically attributed to a combination of preferences and beliefs (Fischbacher & Gächter 2010).

Public goods game

- ▶ A dichotomous voluntary contributions mechanism (Cardenas and Jaramillo 2007; Attanasio et al. 2009; Barr et al. 2011)
 - ▶ One-shot game, played by 12 members of school scorecard committee, immediately following training.
 - ▶ Each subject endowed with one token, which can either be allocated to a private or group account.
 - ▶ 'Group account' yields a return of UShs 1,000 to every participant, while 'private account' yields a return of UShs 5,000 (approx USD 2.50 at the time) to the individual.
- ▶ Zero contributions is the **dominant-strategy equilibrium** for self-interested players.
 - ▶ In practice, studies in developing countries often observe contribution rates between 40 and 70 percent of the stake (Cardenas & Carpenter 2008).
 - ▶ Variation in contributions typically attributed to a combination of preferences and beliefs (Fischbacher & Gächter 2010).

Results: an overview

- ▶ Across outcomes of interest—pupil learning, teacher presence, and pupil presence—a substantial and significant impact of the participatory treatment.
 - ▶ Smaller and insignificant effects of the standard approach across each dimension.
 - ▶ Joint hypothesis test—using randomization inference—shows that the consistent pattern of relative impacts is statistically significant.
- ▶ To distinguish information from collective action...
 1. Show that issues on participatory scorecards are generally present on the standard instrument.
 2. Demonstrate that impacts are greater on outcome dimensions—teacher and pupil absence—where there is no informational advantage for the participatory approach.
 3. Demonstrate causal effect of participatory training on contributions in the lab public goods game.

Results: an overview

- ▶ Across outcomes of interest—pupil learning, teacher presence, and pupil presence—a substantial and significant impact of the participatory treatment.
 - ▶ Smaller and insignificant effects of the standard approach across each dimension.
 - ▶ Joint hypothesis test—using randomization inference—shows that the consistent pattern of relative impacts is statistically significant.
- ▶ To distinguish information from collective action. . .
 1. Show that issues on participatory scorecards are generally present on the standard instrument.
 2. Demonstrate that impacts are greater on outcome dimensions—teacher and pupil absence—where there is no informational advantage for the participatory approach.
 3. Demonstrate causal effect of participatory training on contributions in the lab public goods game.

Learning outcomes

	(1)	(2)	(3)	(4)
	Pooled	Controls	Pupil FE	Pupil-exam FE
standard treatment \times follow-up	0.0820 (0.10)	0.106 (0.12)	0.0786 (0.10)	0.0800 (0.10)
participatory treatment \times follow-up	0.191* (0.10)	0.220** (0.11)	0.190* (0.10)	0.192* (0.10)
standard treatment	0.0259 (0.11)	0.00374 (0.13)		
participatory treatment	-0.0860 (0.13)	-0.114 (0.16)		
Obs.	3512	3076	3512	3512
p-value	0.339	0.371	0.328	0.326

Notes: Dependent variable is standardized test z-score. Math and literacy results pooled. Standard errors clustered at school level for all estimates. All specifications include strata-year controls and indicator for follow-up. Additional controls in columns (1)-(3) for test type (numeracy, literacy) and in column (2) for age and gender of pupil. p -values from test of equality of effects.

Pupil and teacher presence

	(1)	(2)	(3)	(4)
	Teachers	Teachers	Pupils	Pupils
standard, <i>S</i>	0.0894	0.0914	0.0462	0.00669
	(0.06)	(0.06)	(0.05)	(0.05)
participatory, <i>P</i>	0.132**	0.127**	0.0896*	0.0973**
	(0.06)	(0.06)	(0.05)	(0.05)
Pupil characteristics	No	No	No	Yes
Teacher characteristics	No	Yes	No	No
Obs	564	534	936	780
Wald <i>p</i> -value	0.512	0.574	0.356	0.0487

Notes: Linear probability model. Dependent variable equals 1 if individual was present at unannounced visit. *p*-values presented for Wald test of hypothesis for equality of treatment effects. Pupil controls: baseline test scores, age, gender. Teacher controls: baseline absences (administrative records), tenure, baseline salary, gender.

Relative treatment effects and multiple endpoints

A randomization inference approach

Three key endpoints (learning, pupil presence, teacher presence) each may depend on collective action mechanism.

- ▶ No a priori reason to expect effect sizes (even on standardized variables) to be same—cf mean index approach (Casey et al. 2011).
- ▶ Different units of analysis, specifications (presence/absence of baseline data by indicator) complicate joint estimation.
- ▶ We develop a test based on the idea of randomization inference (Fisher 1935).
 - ▶ For $r = 1, \dots, 1000$ synthetic treatment assignments, estimate difference in treatment effects τ_r .
 - ▶ Test statistic is fraction of observations with $|\tau_{kr}| > |\hat{\tau}_k|$, for all outcomes $k \in \{\text{test scores, teacher absence, pupil absence}\}$.

Relative treatment effects and multiple endpoints

A randomization inference approach

Three key endpoints (learning, pupil presence, teacher presence) each may depend on collective action mechanism.

- ▶ No a priori reason to expect effect sizes (even on standardized variables) to be same—cf mean index approach (Casey et al. 2011).
- ▶ Different units of analysis, specifications (presence/absence of baseline data by indicator) complicate joint estimation.
- ▶ We develop a test based on the idea of randomization inference (Fisher 1935).
 - ▶ For $r = 1, \dots, 1000$ synthetic treatment assignments, estimate difference in treatment effects τ_r .
 - ▶ Test statistic is fraction of observations with $|\tau_{kr}| > |\hat{\tau}_k|$, for all outcomes $k \in \{\text{test scores, teacher absence, pupil absence}\}$.

Relative treatment effects and multiple endpoints

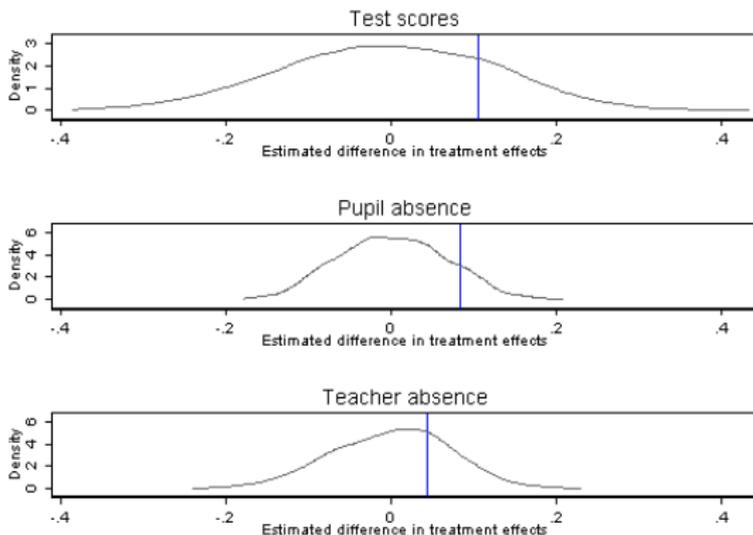
A randomization inference approach

Three key endpoints (learning, pupil presence, teacher presence) each may depend on collective action mechanism.

- ▶ No a priori reason to expect effect sizes (even on standardized variables) to be same—cf mean index approach (Casey et al. 2011).
- ▶ Different units of analysis, specifications (presence/absence of baseline data by indicator) complicate joint estimation.
- ▶ We develop a test based on the idea of randomization inference (Fisher 1935).
 - ▶ For $r = 1, \dots, 1000$ synthetic treatment assignments, estimate difference in treatment effects τ_r .
 - ▶ Test statistic is fraction of observations with $|\tau_{kr}| > |\hat{\tau}_k|$, for all outcomes $k \in \{\text{test scores, teacher absence, pupil absence}\}$.

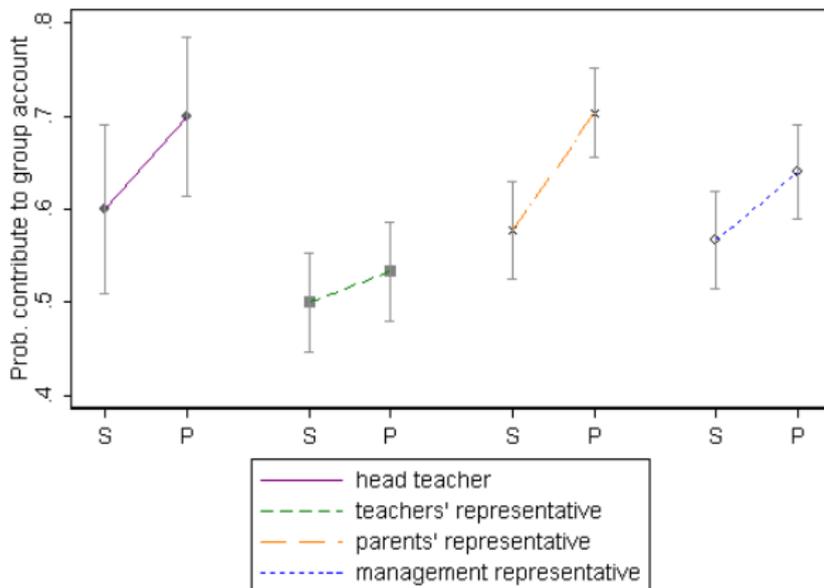
Multiple comparisons

Results



- ▶ Fraction of draws for which estimated treatment effect in all three dimensions is at least as large as in the true data: **4.8%** (2-sided test).

VCM contribution rate



- ▶ Estimated impact on all groups is 8.9%*; on parents is 16.2%**
- ▶ Participatory treatment has significantly higher impacts in ethnically homogeneous schools.

Discussion

- ▶ At a cost of USD 320/school, impact of 0.19sd potentially cost effective. [▶ Comparison](#)
 - ▶ Cost-benefit depends on assumptions about impacts for other classes.
 - ▶ Commissioner for Education Planning proposes to scale up (*New Vision*, 2011.12.07).
- ▶ Evidence supports participatory mechanism.
 - ▶ Potential tradeoff between comparability and engagement in design of monitoring and incentive schemes.
 - ▶ Broader lesson: design policy interventions with collective action problems in mind.
 - ▶ “Involve communities in development efforts” (Opinion, *New Vision*, 2011.12.08)
- ▶ Question remains whether effects of participatory engagement are transient or sustained.

Discussion

- ▶ At a cost of USD 320/school, impact of 0.19sd potentially cost effective. [▶ Comparison](#)
 - ▶ Cost-benefit depends on assumptions about impacts for other classes.
 - ▶ Commissioner for Education Planning proposes to scale up (*New Vision*, 2011.12.07).
- ▶ Evidence supports participatory mechanism.
 - ▶ Potential tradeoff between comparability and engagement in design of monitoring and incentive schemes.
 - ▶ Broader lesson: design policy interventions with collective action problems in mind.
 - ▶ “Involve communities in development efforts” (Opinion, *New Vision*, 2011.12.08)
- ▶ Question remains whether effects of participatory engagement are transient or sustained.

Discussion

- ▶ At a cost of USD 320/school, impact of 0.19sd potentially cost effective. [▶ Comparison](#)
 - ▶ Cost-benefit depends on assumptions about impacts for other classes.
 - ▶ Commissioner for Education Planning proposes to scale up (*New Vision*, 2011.12.07).
- ▶ Evidence supports participatory mechanism.
 - ▶ Potential tradeoff between comparability and engagement in design of monitoring and incentive schemes.
 - ▶ Broader lesson: design policy interventions with collective action problems in mind.
 - ▶ “Involve communities in development efforts” (Opinion, *New Vision*, 2011.12.08)
- ▶ Question remains whether effects of participatory engagement are transient or sustained.

Information and collective action in the community-based monitoring of public services

Field and lab experimental evidence from Uganda

Abigail Barr,¹ Frederick Mugisha,² Pieter Serneels³, and
Andrew Zeitlin⁴

¹University of Nottingham, ²EPRC and Uganda Ministry of Finance, ³University
of East Anglia, ⁴Georgetown University and CGD

IGC Growth Week
September 2012

References I

-  Atanasio, O., Pellerano, L. & Polania-Reyes, S. (2009), 'Building trust: Conditional cash transfers and social capital', *Fiscal Studies* **30**(2), 139–177.
-  Banerjee, A., Banerji, R., Duflo, E., Glennerster, R. & Khemani, S. (2008), 'Pitfalls of participatory programs: Evidence from a randomized evaluation of education in India', NBER Working Paper No. 14311.
-  Barr, A. & Zeitlin, A. (2010), 'Dictator games in the lab and in nature: External validity tested and investigated in Ugandan primary schools', CSAE Working Paper Series, No. 2010-11.
-  Barr, A. & Zeitlin, A. (2011), 'Conflict of interest as a barrier to local accountability', CSAE Working Paper Series, No. 2011-13.
-  Bjorkman, M. & Svensson, J. (2009), 'Power to the people: Evidence from a randomized field experiment on community-based monitoring in Uganda', *Quarterly Journal of Economics* **124**(2), 735–769.

References II

-  Björkman, M. & Svensson, J. (2010), 'When is community-based monitoring effective? evidence from a randomized experiment in primary health in Uganda', *Journal of the European Economic Association* **8**(2–3), 571–581.
-  Cardenas, J. C. & Carpenter, J. (2008), 'Behavioural development economics: Lessons from field labs in the developing world', *Journal of Development Studies* **44**(3), 311–338.
-  Cardenas, J.-C. & Jaramillo H, C. R. (2007), 'Cooperation in large networks: An experiment', Unpublished, Universidad de los Andes.
-  Casey, K., Glennerster, R. & Miguel, E. (2011), 'Reshaping institutions: Evidence on external aid and local collective action', NBER Working Paper No. 17012.
-  Chaudhury, N., Hammer, J., Kremer, M., Muralidharan, K. & Rogers, F. H. (2006), 'Missing in action: Teacher and health worker absence in developing countries', *Journal of Economic Perspectives* **20**(1), 91–116.

References III

-  Chen, D., Glewwe, P., Kremer, M. & Moulin, S. (2001), 'Interim report on a preschool intervention program in kenya', Mimeo, Harvard University.
-  Fearon, J., Humphreys, M. & Weinstein, J. (2009), 'Can development aid contribute to social cohesion after civil war? evidence from a field experiment in post-conflict Liberia', *American Economic Review* **99**(2), 287–291.
-  Fehr, E. & Fischbacher, U. (2004), 'Third-party punishment and social norms', *Evolution and Human Behavior* **25**, 63–87.
-  Fischbacher, U. & Gächter, S. (2010), 'Social preferences, beliefs, and the dynamics of free riding in public goods experiments', *American Economic Review* **100**(1), 541–556.
-  Fisher, R. A. (1935), *The Design of Experiments*, Oliver and Boyd.

References IV

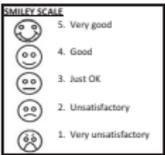
-  byarimana, J., Humphreys, M., Posner, D. & Weinstein, J. (2007), 'Why does ethnic diversity undermine public goods provision? an experimental approach', *American Political Science Review* **101**(4), 709–725.
-  olmstrom, B. & Milgrom, P. (1991), 'Multitask principal-agent analyses: Incentive contracts, asset ownership, and job design', *Journal of Law, Economics, and Organization* **7**, 24–52.
-  asirye, I. (2009), 'Determinants of learning achievement in Uganda', Paper presented at the annual conference of the Centre for the Study of African Economies, Oxford, 2009.
-  udwig, J., Kling, J. R. & Mullainathan, S. (2011), 'Mechanism experiments and policy evaluations', *Journal of Economic Perspectives* **25**(3), 17–38.
-  iguel, E. & Gugerty, M. K. (2005), 'Ethnic diversity, social sanctions, and public goods in Kenya', *Journal of Public Economics* **89**(11–12), 2325–3468.

References V

-  Oken, B. A. (2007), 'Monitoring corruption: Evidence from a field experiment in indonesia', *Journal of Political Economy* **115**(2), 200–249.
-  Pritchett, L. & Filmer, D. (1999), 'What education production functions really show: a positive theory of education expenditure', *Economics of Education Review* **18**(2), 223–239.
-  World Bank (2004), *World Development Report 2004: Making Services Work for Poor People*, International Bank for Reconstruction and Development, Washington, D.C.

Standard scorecard

SCHOOL SCORECARD HEAD TEACHER VERSION		SCHOOL NAME: _____ SCHOOL ID: _____ DATE: _____	
Pupils' involvement			
How many pupils are present in...	P1 P2 P3 P4 P5 P6 P7	How satisfactory is progress in pupil involvement in the school?	<input type="checkbox"/> Very good <input type="checkbox"/> Good <input type="checkbox"/> Just OK <input type="checkbox"/> Unsatisfactory <input type="checkbox"/> Very unsatisfactory
Are all the pupils in class at 9:00 AM?	Y / N		
Provision for teachers			
Have teachers received their last month's salaries by the 5th of this month?	Y / N	How satisfactory is progress in provisions for staff?	<input type="checkbox"/> Very good <input type="checkbox"/> Good <input type="checkbox"/> Just OK <input type="checkbox"/> Unsatisfactory <input type="checkbox"/> Very unsatisfactory
Have teachers received meals or other resources in kind from the community this month?	Y / N		
Has anything been invested in construction or maintenance of staff	Y / N		
Teaching activities			
Preparations. Do teachers have up-to-date...	...schemes of work? Y / N ...lesson plans? Y / N	How well prepared do teachers seem to be?	<input type="checkbox"/> Very good <input type="checkbox"/> Good <input type="checkbox"/> Just OK <input type="checkbox"/> Unsatisfactory <input type="checkbox"/> Very unsatisfactory
Presence. How many teachers are present by 8:30 AM on the day of your visit?		How satisfactory is progress in teachers' presence in this school?	<input type="checkbox"/> Very good <input type="checkbox"/> Good <input type="checkbox"/> Just OK <input type="checkbox"/> Unsatisfactory <input type="checkbox"/> Very unsatisfactory
Methods. Observe one teacher for 1 hour. Which of the following teaching activities/methods did you observe?	Reading aloud Y / N Explanation or Discussion Y / N Drill and Practice Y / N Mentoring/Sealwork Y / N Managing Students Y / N Raising Y / N Projects Y / N Are teachers using visual aids? Y / N Are pupils asking questions? Y / N Are pupils using textbooks? Y / N Assessment. Has pupils' written work been assessed in the last week? Y / N	How satisfactory is progress in teaching methods?	<input type="checkbox"/> Very good <input type="checkbox"/> Good <input type="checkbox"/> Just OK <input type="checkbox"/> Unsatisfactory <input type="checkbox"/> Very unsatisfactory
Materials and facilities	Has the school acquired any textbooks or other learning aids since the end of last term? Y / N Are classrooms well maintained? Y / N	How satisfactory is progress in the supply of learning materials? How satisfactory is progress in the maintenance and upkeep of school facilities?	<input type="checkbox"/> Very good <input type="checkbox"/> Good <input type="checkbox"/> Just OK <input type="checkbox"/> Unsatisfactory <input type="checkbox"/> Very unsatisfactory

SCHOOL SCORECARD HEAD TEACHER VERSION		SCHOOL NAME: _____ SCHOOL ID: _____ DATE: _____	
School finances			
Did you find the money received by the school listed publicly?	Y / N	How satisfactory is progress in the management of school's finances?	<input type="checkbox"/> Very good <input type="checkbox"/> Good <input type="checkbox"/> Just OK <input type="checkbox"/> Unsatisfactory <input type="checkbox"/> Very unsatisfactory
How much UPE money received since end of last term?			
Does school have an approved budget?	Y / N	How satisfactory is the spending of school funds according to plan?	<input type="checkbox"/> Very good <input type="checkbox"/> Good <input type="checkbox"/> Just OK <input type="checkbox"/> Unsatisfactory <input type="checkbox"/> Very unsatisfactory
How much money has been spent THIS TERM for purpose of...	Instructional Co-Curricular Management Administration Contingency		
Are receipts available for all expenditure?	Y / N		
Community involvement in the school			
Has the school held an Open Day this term?	Y / N	How satisfactory is progress in community involvement?	<input type="checkbox"/> Very good <input type="checkbox"/> Good <input type="checkbox"/> Just OK <input type="checkbox"/> Unsatisfactory <input type="checkbox"/> Very unsatisfactory
Do homeworks have parent signatures?	Y / N		
Health and wellbeing			
Are latrines maintained well, with provision for drainage and daily clearing/flushing?	Y / N	How satisfactory is the maintenance and upkeep of sanitary and health facilities?	<input type="checkbox"/> Very good <input type="checkbox"/> Good <input type="checkbox"/> Just OK <input type="checkbox"/> Unsatisfactory <input type="checkbox"/> Very unsatisfactory
Are there functional hand washing facilities near the latrines?	Y / N	How satisfactory is progress in the provision for student meals?	<input type="checkbox"/> Very good <input type="checkbox"/> Good <input type="checkbox"/> Just OK <input type="checkbox"/> Unsatisfactory <input type="checkbox"/> Very unsatisfactory
Are first aid facilities available?	Y / N		
Do all pupils have access to lunch?	Y / N		
Security and discipline			
Since the end of last term, has the school punished any students by use of...	...Suspension? Y / N ... Corporal punishment? Y / N	How satisfactory are disciplinary methods in school?	<input type="checkbox"/> Very good <input type="checkbox"/> Good <input type="checkbox"/> Just OK <input type="checkbox"/> Unsatisfactory <input type="checkbox"/> Very unsatisfactory
Since the end of last term, has the school had any incidents of...	... Bullying? Y / N ... Violence against girls? Y / N ... drug or alcohol abuse? Y / N	How satisfactory are steps taken in school to protect pupils' security?	<input type="checkbox"/> Very good <input type="checkbox"/> Good <input type="checkbox"/> Just OK <input type="checkbox"/> Unsatisfactory <input type="checkbox"/> Very unsatisfactory
Other Comments			
		SMILEY SCALE 	

Standard scorecard

Pupil participation questions

Pupils' involvement

How many pupils are present in..	P1
	P2
	P3
	P4
	P5
	P6
	P7
Are all the pupils in class at 9:00 AM?	Y / N

DATE: _____

How satisfactory is progress in pupil involvement in the school?

Smiley scale

Standard scorecard

Provisions for teachers

Provision for teachers

Have teachers received their last month's salaries by the 5th of this month?	Y / N
Have teachers received meals or other resources in kind from the community this month?	Y / N
Has anything been invested in construction or maintenance of staff	Y / N

How satisfactory is progress in provisions for staff?

Smiley
scale

Standard scorecard

Teaching activities

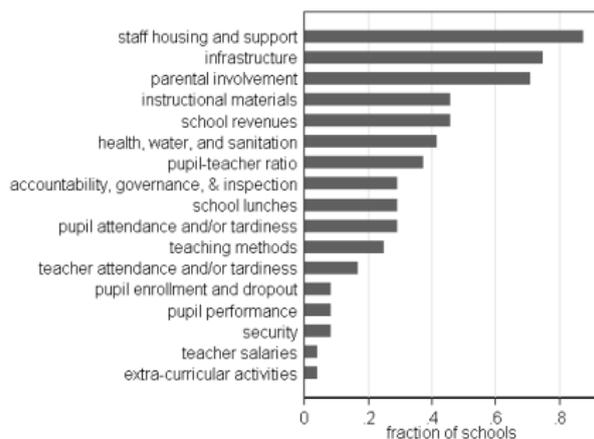
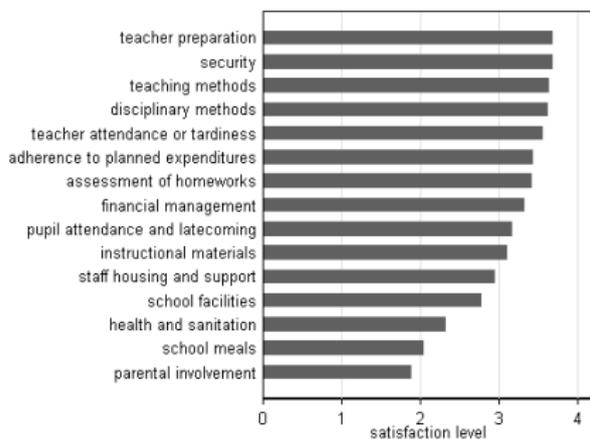
Teaching activities

Preparations. Do teachers have up-to-date...	...schemes of work?	Y / N	How well prepared do teachers seem to be?	Smiley scale
	...lesson plans?	Y / N		
Presence. How many teachers are present by 8:30 AM on the day of your visit?			How satisfactory is progress in teachers' presence in this school?	Smiley scale
Methods. Observe one teacher for 1 hour. Which of the following teaching activities/methods did you observe?			How satisfactory is progress in teaching methods?	Smiley scale
Reading aloud		Y / N		
Explanation or Discussion		Y / N		
Drill and Practice		Y / N		
Monitoring Seatwork		Y / N		
Managing Students		Y / N		
Resting		Y / N		
Projects		Y / N		
Are teachers using visual aids?		Y / N		
Are pupils asking questions?		Y / N		
Are pupils using textbooks?		Y / N	How satisfactory is progress in the assessment of homework?	Smiley scale
Assessment. Has pupils' written work been assessed in the last week?		Y / N		

Participatory scorecard

Issue no.	Indicator	Symbol	Score	Reason
1				
2				
...				
10				

Scorecard content



[◀ Back to results](#)

Background: Social preferences in the workplace

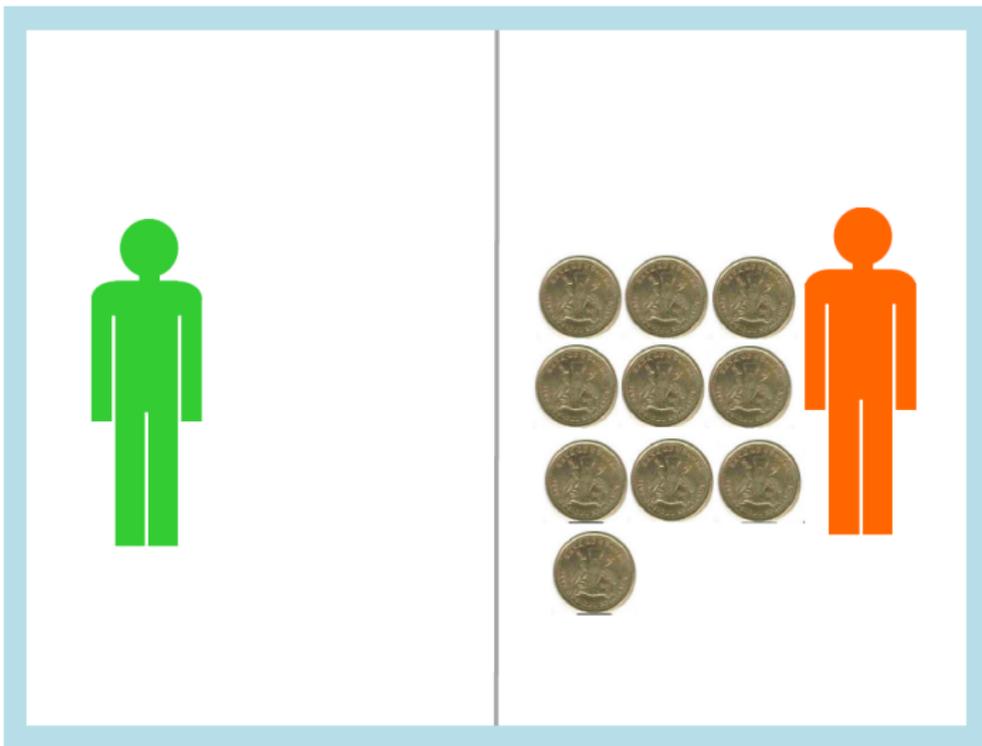
- ▶ Evidence from artefactual field experiments at baseline suggests that motivation matters:
 - ▶ Teacher motivation—as captured in a Dictator Game—is associated with absenteeism rate. [▶ Details](#)
 - ▶ Significant differences across management stakeholders in willingness to hold teachers to account in a Third Party Punishment Game. [▶ Details](#)
- ▶ Implications for the design of interventions
 - ▶ Extrinsic (pecuniary) incentives may be counterproductive (Deci 1971, Frey and Oberholzer-Gee 1997, Gneezy and Rustichini 2000)
 - ▶ Delegating discretionary authority to ‘conflicted’ parties may be ineffective (Chen, Glewwe, Kremer & Moulin 2001)

Background: Social preferences in the workplace

- ▶ Evidence from artefactual field experiments at baseline suggests that motivation matters:
 - ▶ Teacher motivation—as captured in a Dictator Game—is associated with absenteeism rate. [▶ Details](#)
 - ▶ Significant differences across management stakeholders in willingness to hold teachers to account in a Third Party Punishment Game. [▶ Details](#)
- ▶ Implications for the design of interventions
 - ▶ Extrinsic (pecuniary) incentives may be counterproductive (Deci 1971, Frey and Oberholzer-Gee 1997, Gneezy and Rustichini 2000)
 - ▶ Delegating discretionary authority to ‘conflicted’ parties may be ineffective (Chen et al. 2001)

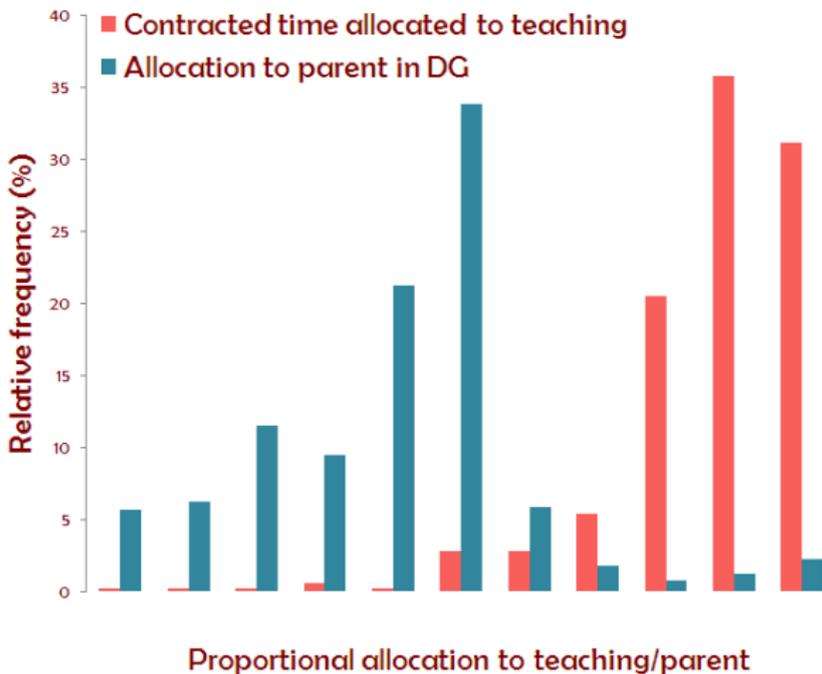
Dictator game

Design



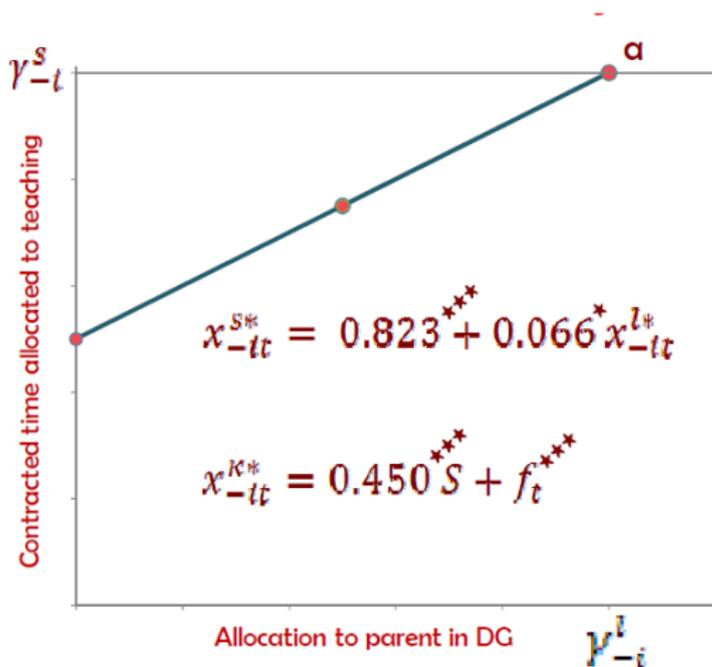
Dictator game

Data



Dictator game

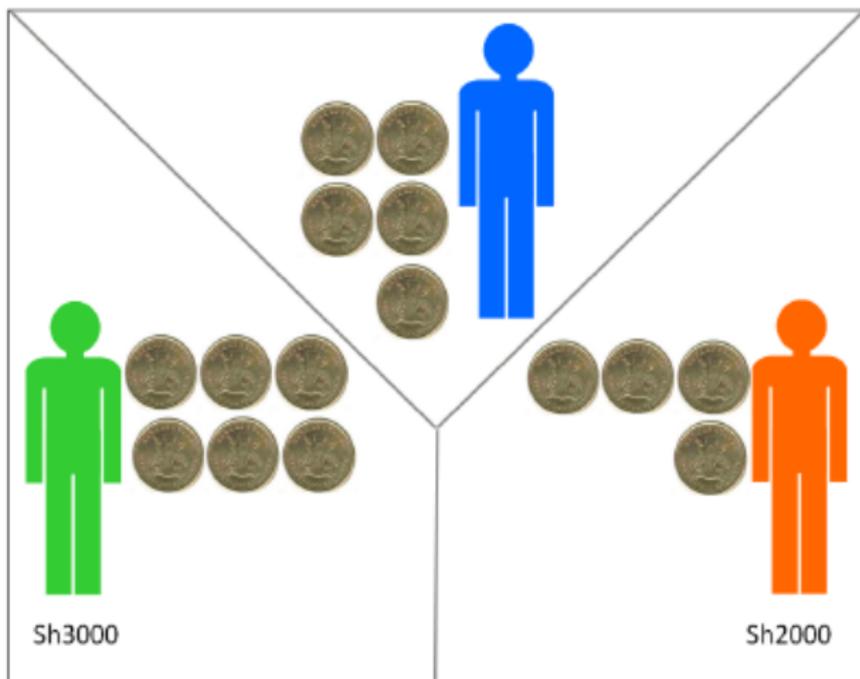
Results



Source: Barr and Zeitlin (2010)

Third-Party Punishment Game

Design

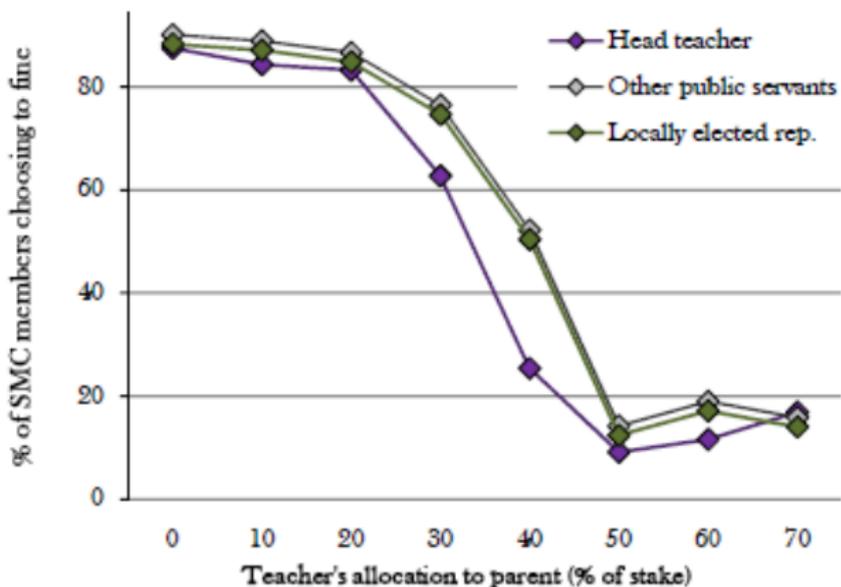


Source: Barr and Zeitlin (2011)

Third-party punishment game

Results

Figure 4: Predicted fining strategies for a head teacher and a locally elected representative



Source: Barr and Zeitlin (2011)

Third-party punishment game

Results, cont'd

- ▶ Greater willingness to sanction than Fehr and Fischbacher's original student sample (Fehr & Fischbacher 2004).
 - ▶ 80% vs 63% fine a teacher who allocates zero to parent
- ▶ Head teachers 13% less likely to fine a teacher who allocates 30%, and 24% less likely to fine a teacher who allocates 40%.
 - ▶ The relevant margin?
- ▶ Head teachers significantly more likely to exhibit non-monotonic fining strategies (15% vs 7% of centrally appointed public servants).
 - ▶ Rate busting?

Third-party punishment game

Results, cont'd

- ▶ Greater willingness to sanction than Fehr and Fischbacher's original student sample (Fehr & Fischbacher 2004).
 - ▶ 80% vs 63% fine a teacher who allocates zero to parent
- ▶ Head teachers 13% less likely to fine a teacher who allocates 30%, and 24% less likely to fine a teacher who allocates 40%.
 - ▶ The relevant margin?
- ▶ Head teachers significantly more likely to exhibit non-monotonic fining strategies (15% vs 7% of centrally appointed public servants).
 - ▶ Rate busting?

Third-party punishment game

Results, cont'd

- ▶ **Greater willingness to sanction** than Fehr and Fischbacher's original student sample (Fehr & Fischbacher 2004).
 - ▶ 80% vs 63% fine a teacher who allocates zero to parent
- ▶ **Head teachers 13% less likely to fine** a teacher who allocates 30%, and 24% less likely to fine a teacher who allocates 40%.
 - ▶ The relevant margin?
- ▶ Head teachers significantly more likely to exhibit **non-monotonic** fining strategies (15% vs 7% of centrally appointed public servants).
 - ▶ Rate busting?

Treatment effects on VCM contributions

	(1) all	(2) all	(3) parents
participatory treatment	0.0887* (0.05)	0.162** (0.08)	0.152** (0.06)
participatory × head teacher		-0.0607 (0.14)	
participatory × teacher		-0.141 (0.12)	
participatory × management		-0.0838 (0.12)	
participatory × ethnic share			0.878** (0.40)
head teacher	0.0183 (0.07)	0.0494 (0.11)	
teacher	-0.0969 (0.06)	-0.0247 (0.08)	
management	-0.0181 (0.06)	0.0247 (0.09)	
ethnic share	0.543*** (0.20)	0.540*** (0.20)	0.314 (0.37)
Observations	550	550	166

Benchmarks from alternative interventions

Teacher absenteeism reductions

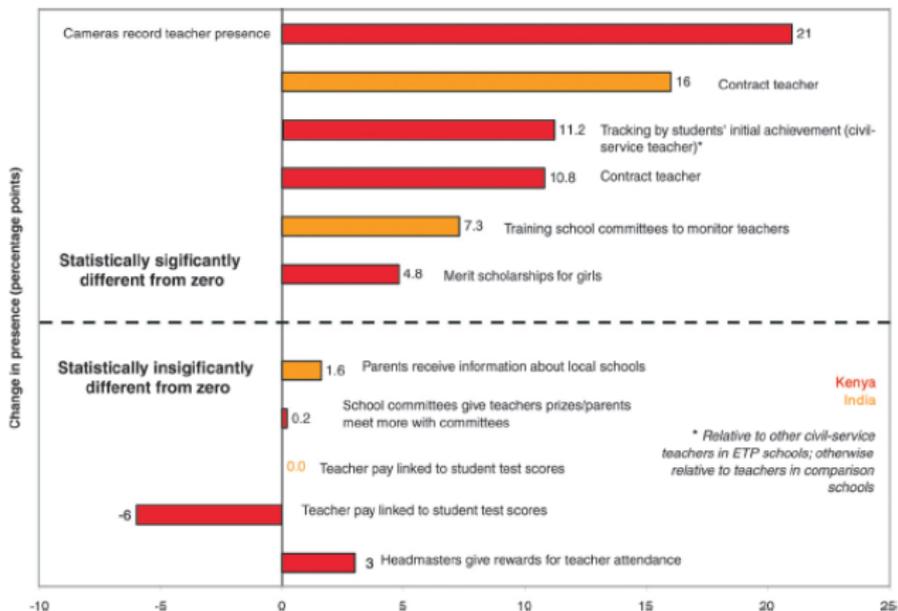
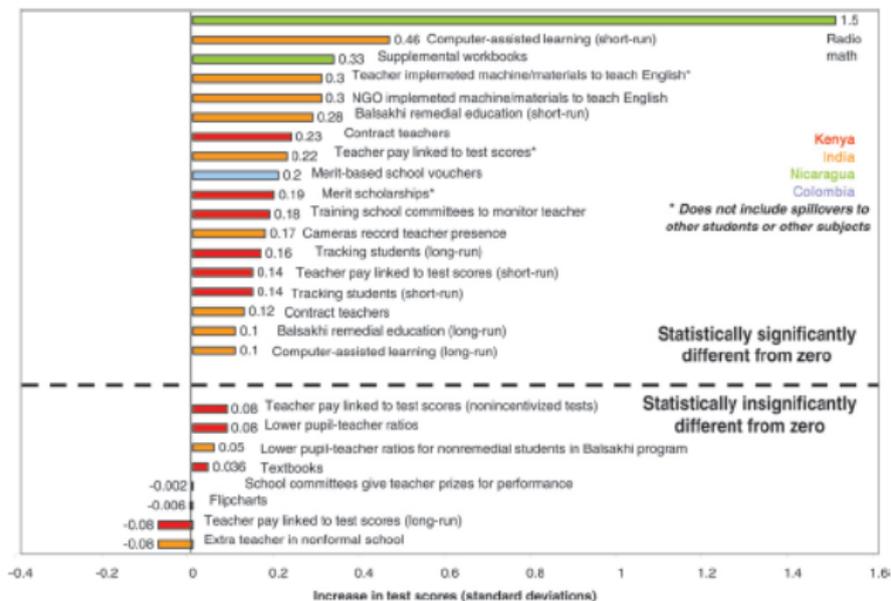


Figure 2

Increases in teacher presence, by program. The largest estimated effect is shown when there is a range of estimates. The figure illustrates the probability of a teacher being in class and teaching a random school day for the Extra Teacher Program (ETP) in Kenya and the probability of a teacher being in school for all other programs.

Benchmarks from alternative interventions

Pupil test scores



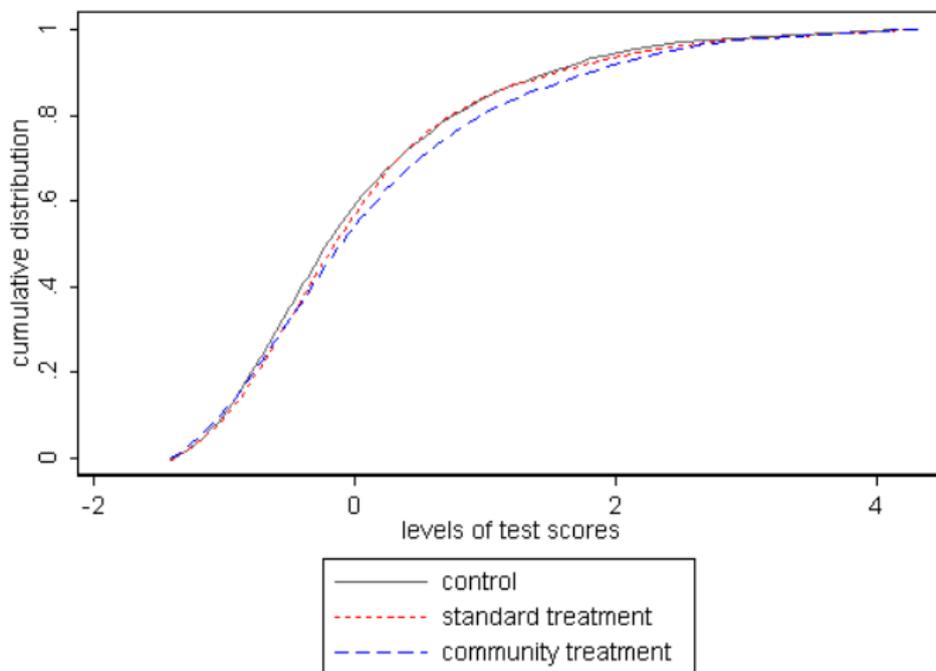
Test of balance

School characteristics at baseline, by treatment assignment

	Control	Standard	Participatory	S-C	P-C
school size (pupils)	578.24 (334.30)	551.37 (220.02)	613.53 (299.22)	-26.87 (74.47)	35.29 (72.29)
pupil-teacher ratio	56.76 (24.97)	63.40 (25.60)	65.71 (25.40)	6.64 (6.40)	8.95 (6.27)
mean teacher absences	0.13 (0.08)	0.15 (0.11)	0.17 (0.10)	0.02 (0.02)	0.04 (0.02)
PLE pct Div. 1	0.01 (0.02)	0.01 (0.02)	0.02 (0.07)	0.00 (0.01)	0.01 (0.01)
PLE pct Div. 2	0.28 (0.20)	0.31 (0.20)	0.35 (0.22)	0.02 (0.06)	0.06 (0.05)
PLE pct pass	0.70 (0.17)	0.74 (0.17)	0.75 (0.17)	0.04 (0.05)	0.05 (0.05)
UNEB literacy z-score	0.10 (1.10)	-0.10 (0.94)	-0.04 (0.93)	-0.20 (0.24)	-0.14 (0.24)
UNEB numeracy z-score	-0.00 (0.99)	0.02 (1.03)	-0.01 (1.01)	0.02 (0.24)	-0.01 (0.24)

Notes: Columns (1)–(3) present means and standard deviations of variables, by treatment arm. Columns (4) and (5) present p-values for test of differences between standard scorecard and control and participatory scorecard and control, respectively.

Distribution of test scores at follow-up, by treatment arm



Pupils' involvement

How many pupils are present in...	P1
	P2
	P3
	P4
	P5
	P6
	P7

Are all the pupils in class at 9:00 AM?	Y/N
---	-----

How satisfactory is progress in pupil involvement in the school?

Provision for teachers

Have teachers received their last month's salaries by the 5th of this month?	Y/N
--	-----

Have teachers received meals or other resources in kind from the community this month?	Y/N
--	-----

Has anything been invested in construction or maintenance of staff	Y/N
--	-----

How satisfactory is progress in provisions for staff?

Teaching activities

Preparations. Do teachers have up-to-date...schemes of work?	Y/N
...lesson plans?	Y/N

Presence. How many teachers are present by 8:30 AM on the day of your visit?	
--	--

Methods. Observe one teacher for 1 hour. Which of the following teaching activities/methods did you observe?

Reading aloud	Y/N
Explanation or Discussion	Y/N
Drill and Practice	Y/N
Monitoring Seatwork	Y/N
Managing Students	Y/N
Resting	Y/N
Projects	Y/N
Are teachers using visual aids?	Y/N
Are pupils asking questions?	Y/N
Are pupils using textbooks?	Y/N

Assessment. Has pupils' written work been assessed in the last week?	Y/N
--	-----

Materials and facilities

Has the school acquired any textbooks or other learning aids since the end of last term?	Y/N
--	-----

Are classrooms well maintained?	Y/N
---------------------------------	-----

How well prepared do teachers seem to be?

How satisfactory is progress in teachers' presence in this school?

How satisfactory is progress in teaching methods?

How satisfactory is progress in the assessment of homework?

How satisfactory is progress in the supply of learning materials?

How satisfactory is progress in the maintenance and upkeep of school facilities?

School finances

Did you find the money received by the school listed publicly?	Y/N
--	-----

How much UPE money received since end of last term?	
---	--

Does school have an approved budget?	Y/N
--------------------------------------	-----

How much money has been spent THIS TERM for purposes of...	Instructional
	Co-Curricular
	Management
	Administration
	Contingency

Are receipts available for all expenditure?	Y/N
---	-----

How satisfactory is progress in the management of school's finances?

How satisfactory is the spending of school funds according to plan?

Community involvement in the school

Has the school held an Open Day this term?	Y/N
--	-----

Do homeworks have parent signatures?	Y/N
--------------------------------------	-----

How satisfactory is progress in community involvement?

Health and wellbeing

Are latrines maintained well, with provision for drainage and daily cleaning/smoking?	Y/N
---	-----

Are there functional hand washing facilities near the latrines?	Y/N
---	-----

Are first aid facilities available?	Y/N
-------------------------------------	-----

Do all pupils have access to lunch?	Y/N
-------------------------------------	-----

How satisfactory is the maintenance and upkeep of sanitary and health facilities?

How satisfactory is progress in the provision for student meals?

Security and discipline

Since the end of last term, has the school punished any students by use of...

... Suspension?	Y/N
-----------------	-----

... Corporal punishment?	Y/N
--------------------------	-----

Since the end of last term, has the school had any incidents of...

... Bullying?	Y/N
---------------	-----

... Violence against girls?	Y/N
-----------------------------	-----

... drug or alcohol abuse?	Y/N
----------------------------	-----

How satisfactory are disciplinary methods in school?

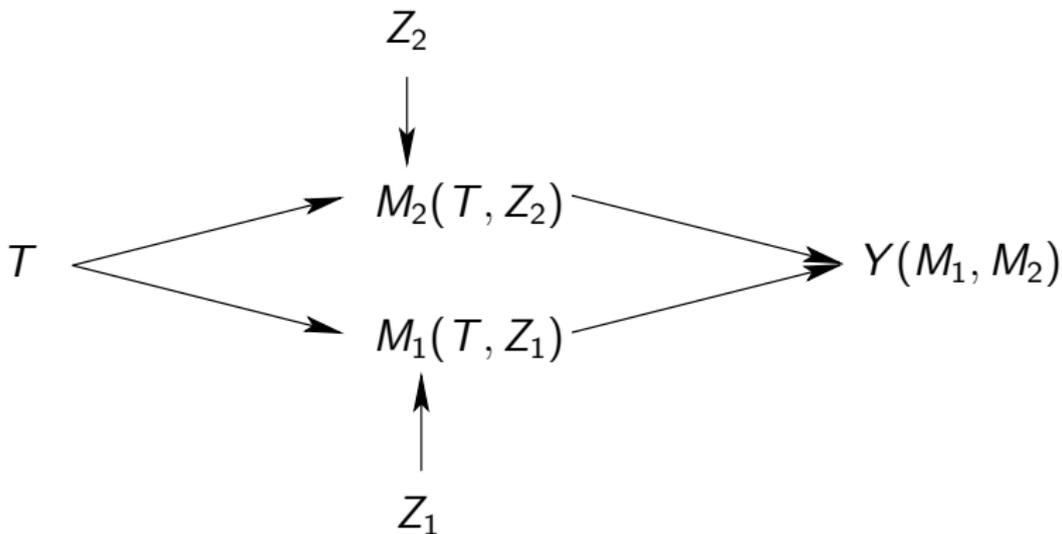
How satisfactory are steps taken in school to protect pupils' security?

Other Comments

FAMILY SCALE

	5. Very good
	4. Good
	3. Just OK
	2. Unsatisfactory
	1. Very unsatisfactory

Mediation and moderation



Notes: Figure illustrates the impact on outcome Y of a treatment, T , when this effect is mediated through two intermediate channels, M_1 and M_2 . The effects of T on M_1 and M_2 are moderated by characteristics Z_1 and Z_2 , respectively.