

Dictator games in the lab and in nature: Evidence of external validity from Ugandan primary schools

by

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Introduction

- **Focus:** Teacher absenteeism is a significant problem in publicly funded schools throughout the developing world
- **Aim:** to establish whether a DG can be used simultaneously
 - as a baseline in a series of laboratory experiments designed to investigate what would happen if Ugandan school management committees (SMCs) were empowered to hold teachers to account
 - to generate a measure of teachers' intrinsic motivations
- **Specifics:** Test and investigate the external validity of the DG
- **Why the DG?**

It appeared to be a good match for the status quo in Ugandan schools

Introduction

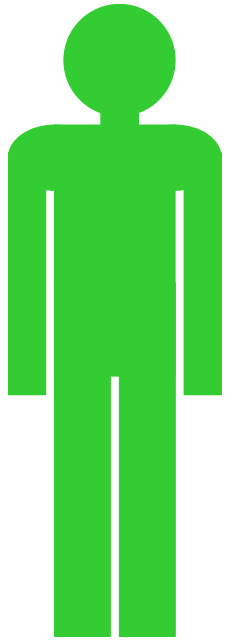
- **Focus:** Teacher absenteeism is a significant problem in publicly funded schools throughout the developing world

A characterization of the status quo

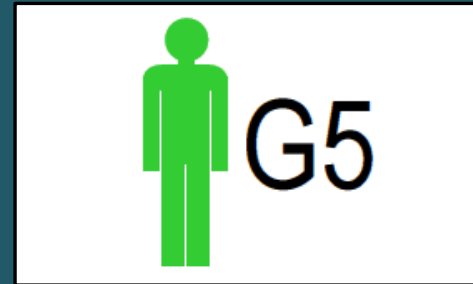
- Teachers sell a contracted amount of time to the government each month
- The government gives back this time and sends them off to remote communities to use the time to teach
- The teachers are not monitored => their contracts are not enforced => they are free to choose how much time to allocate to teaching and how much to themselves
- **This looks like a Dictator Game:** the teachers are the dictators; the communities are the recipients; the currency is the teachers' time; and the size of the stake is specified in the contract

Design

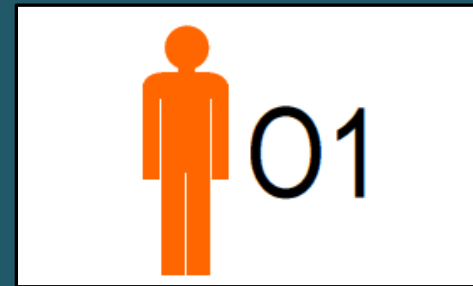
- 1 make-shift lab in each of 100 Ugandan primary schools
- 1 session in each involving
 - 5 teachers in the role of dictator
 - 5 parents of pupils in the role of recipient
 - 5 SMC members (present, paid, but passive in the DG)
- Teachers and parents randomly and anonymously paired
- 1 one-shot DG played
- Stake = 5,000 Ugandan Shillings (just under \$3.00)



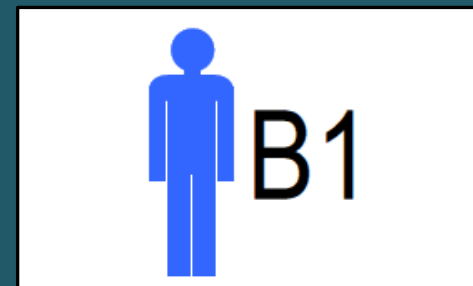
On arrival, teachers had to randomly pick one out of five badges with a green figure on it. They were told they would be referred to as *green players*.



On arrival, parents had to randomly pick one out of five badges with an orange figure on it. They were told they would be referred to as *orange players*.



On arrival, SMC members had to randomly pick one out of five badges with a blue figure on it. They were told they would be referred to as *blue players*.



Once subjects were seated in player-colour-specific zones, the session leader would do the introductions and then ask "Am I right in thinking that you are all teachers?" ...
"During the workshop I will refer to you as green players."

Theoretical framework

$$U_{it}^{\kappa} = x_{it}^{\kappa} - w^{\kappa} \alpha_t \sum_{j=i,-i} (x_{jt}^{\kappa} - \gamma_j^{\kappa})^2$$

where

x_{jt}^{κ} = allocation by teacher t to j ($=i$ for self, $-i$ for other) in context κ ($=S$ for contracted time, l for DG)

γ_j^{κ} = reference point allocation to j in context κ

α_t = preference to adhere to reference point

w^{κ} = weight applied to reference point in context κ

Theoretical framework

$$x_{-it}^{s*} = \gamma_{-i}^s - \frac{1}{2w^s \alpha_t} \quad \text{and} \quad x_{-it}^{l*} = \gamma_{-i}^l - \frac{1}{2w^l \alpha_t}$$

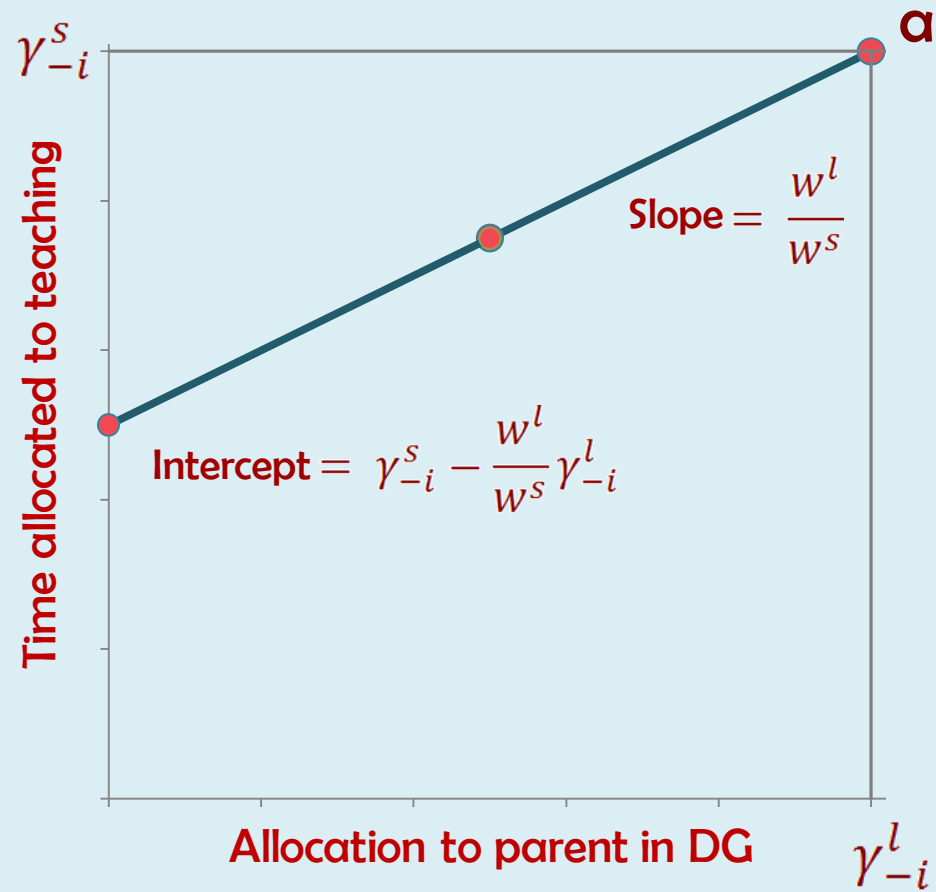
Rearranging and combining on α_t yields

$$x_{-it}^{s*} = \beta_0 + \beta_1 x_{-it}^{l*}$$

where

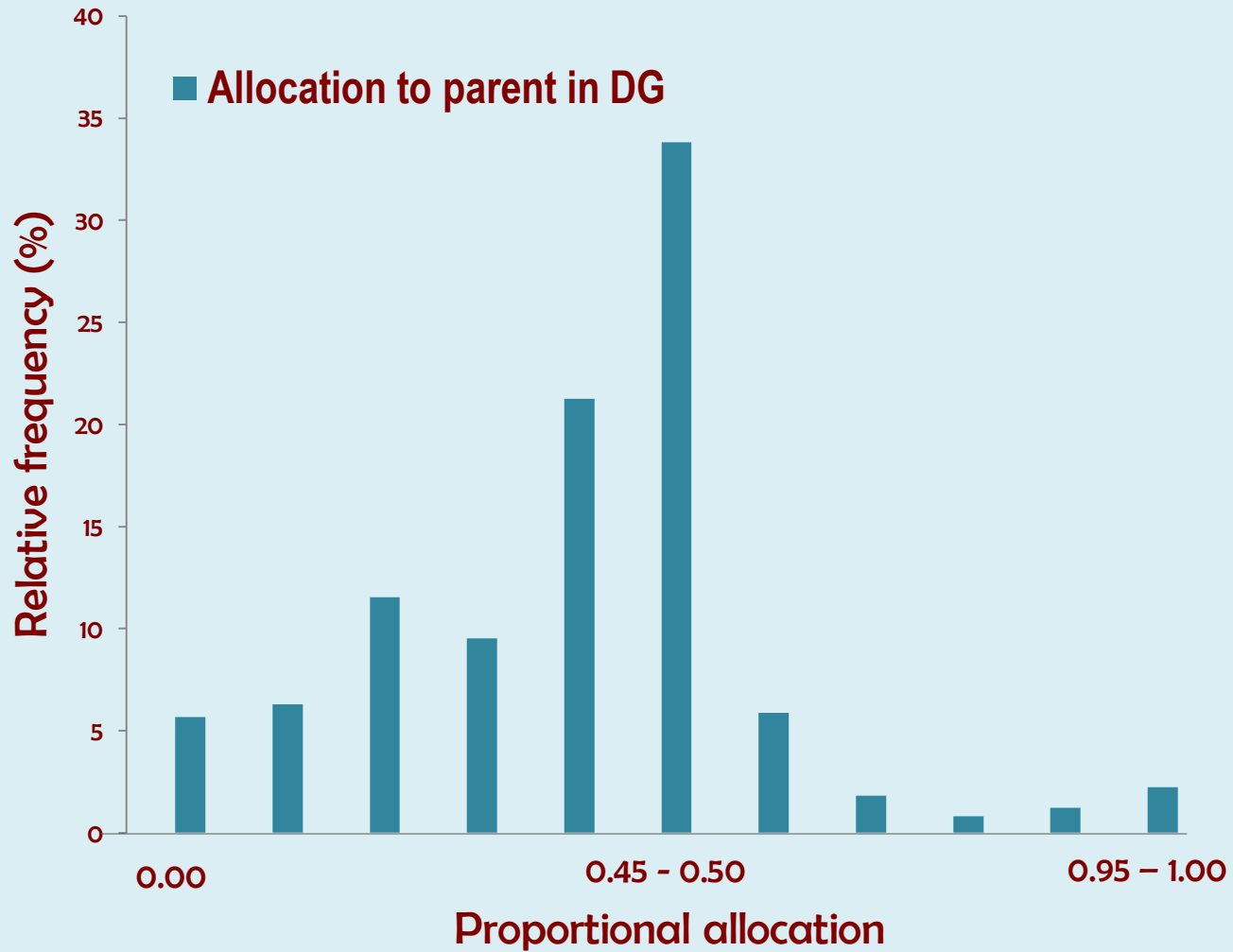
$$\beta_0 = \gamma_{-i}^s - \frac{w^l}{w^s} \gamma_{-i}^l \quad \text{and} \quad \beta_1 = \frac{w^l}{w^s}$$

Theoretical framework

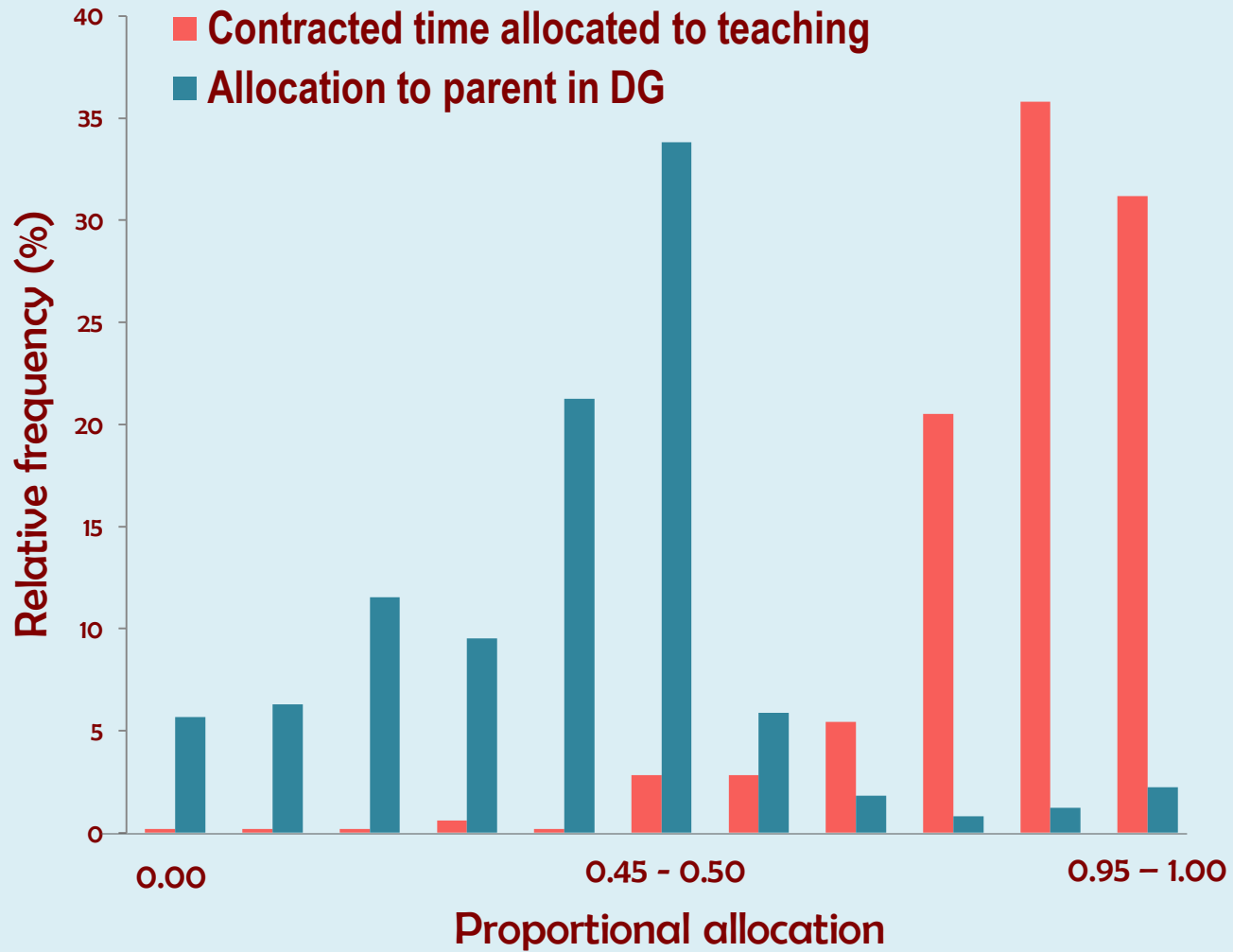


Data

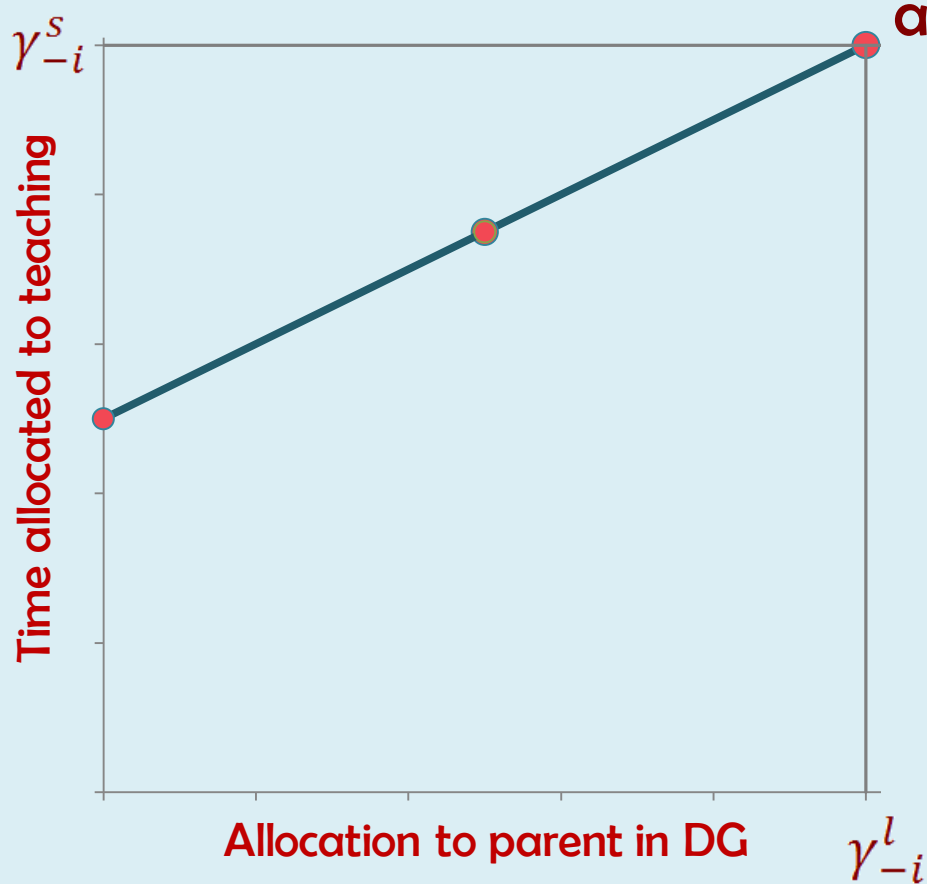
Data



Data



Correlation test of external validity

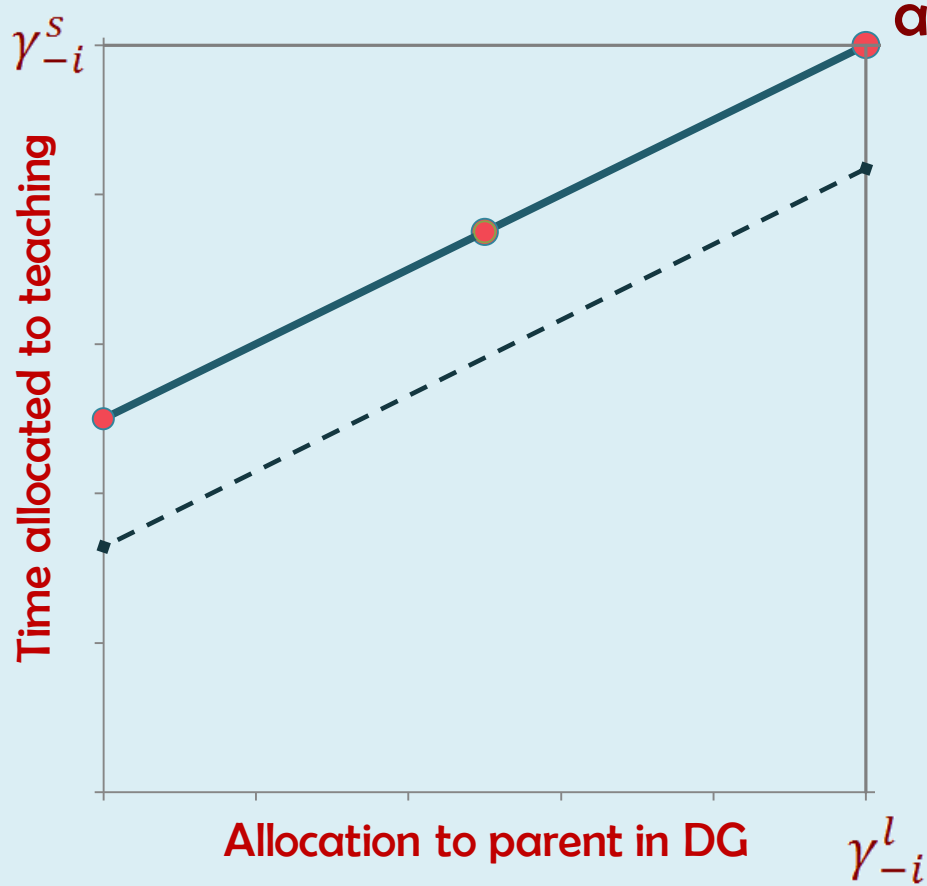


Dep. Var. = Time allocation

	1a
Constant	0.823 ***
DG allocation	0.066 *
R-squared	0.009
Obs	487

Why is the correlation not stronger?

Variations in reference point across teachers owing genuine absence



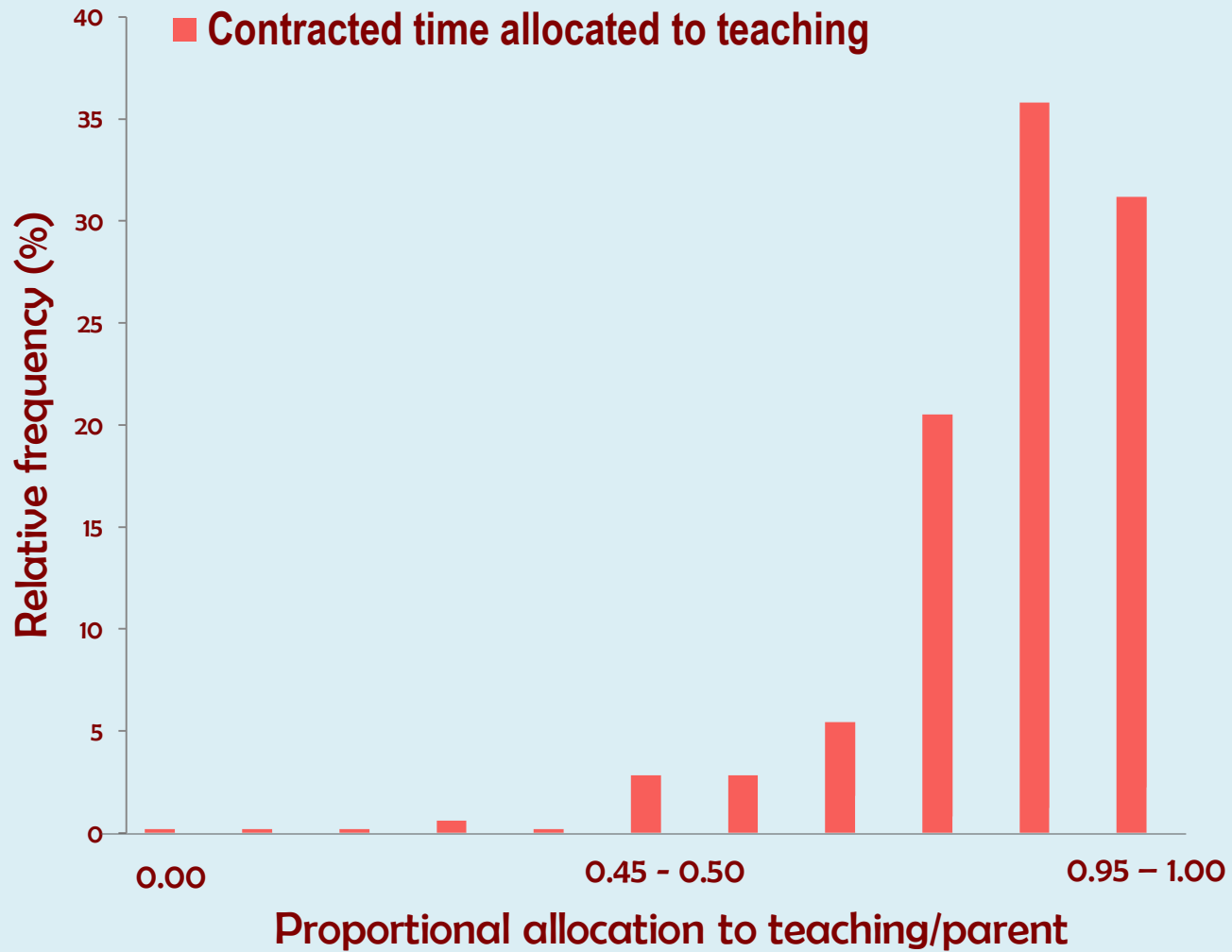
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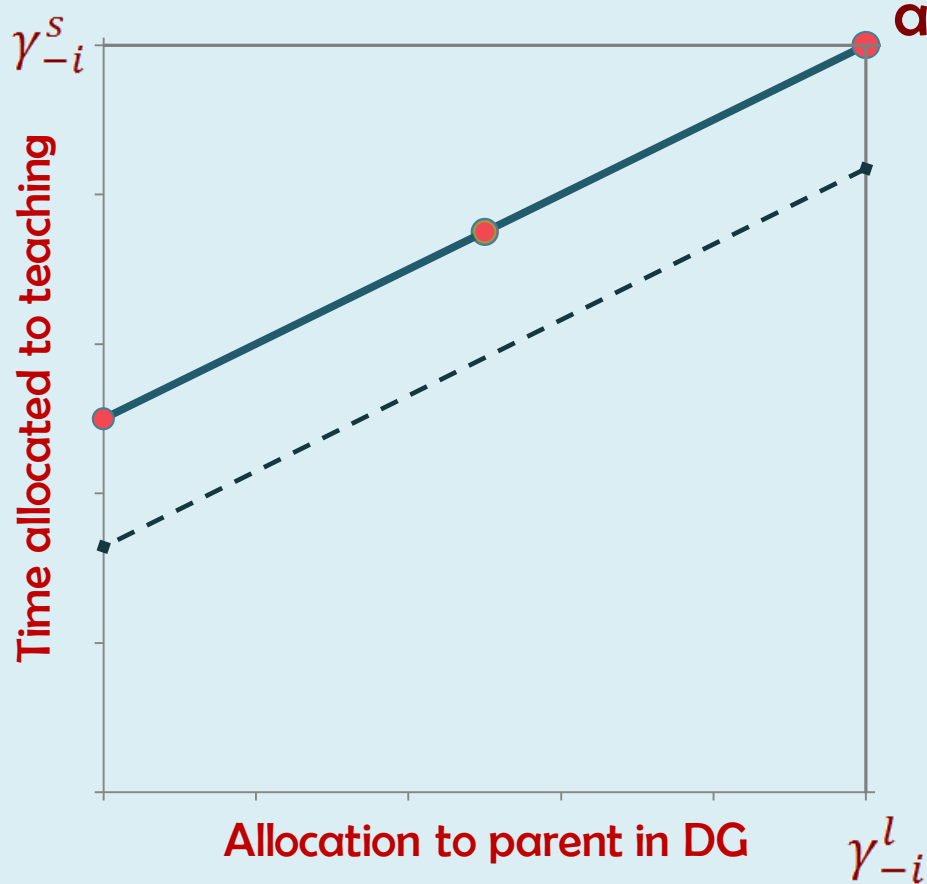
Dep. Var. = Time **OR** DG allocation

	1b
Constant	0.399 ***
Time context	0.450 ***
F-stat for teacher f.e.s	1.170 **
Within R-squared	0.785
Obs	974

Data



Variations in reference point across teachers owing genuine absence



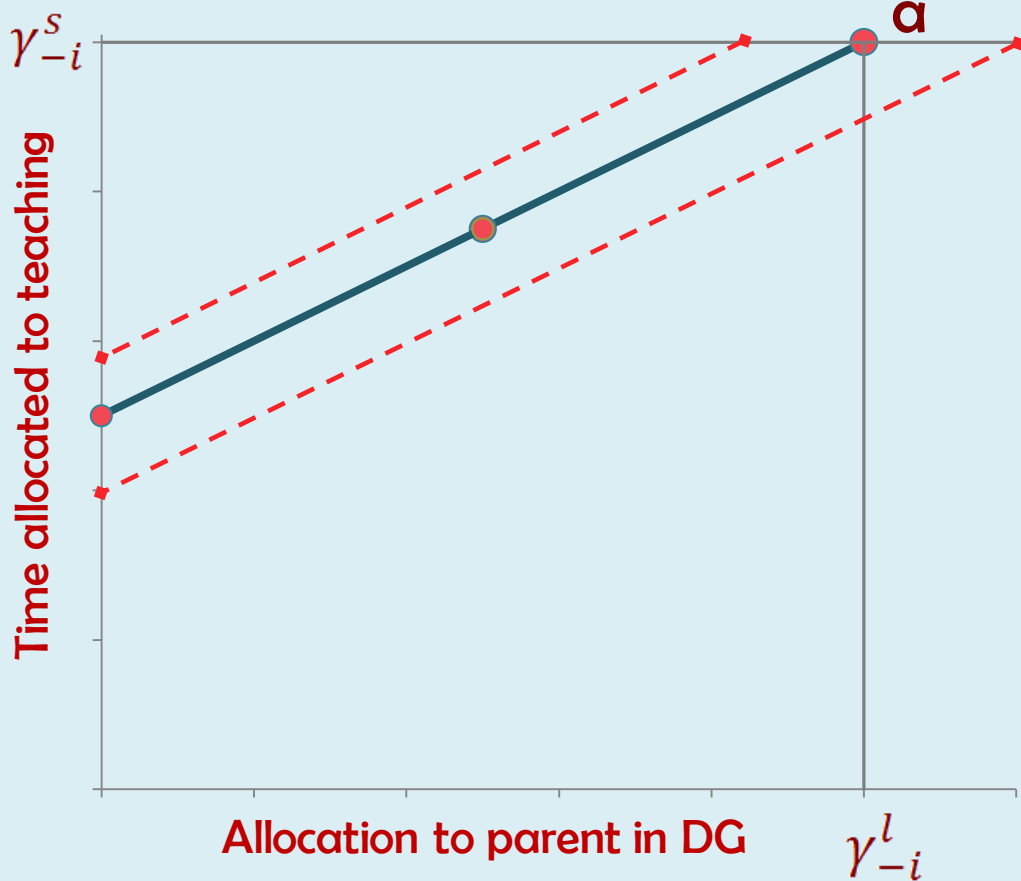
Dep. Var. = Time allocation

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Dep. Var. = Time **OR** DG allocation

	1b
Constant	0.399 ***
Time context	0.450 ***
F-stat for teacher f.e.s	1.170 **
Within R-squared	0.785
Obs	974

Variations in reference points across teachers owing to variations in relative wealth



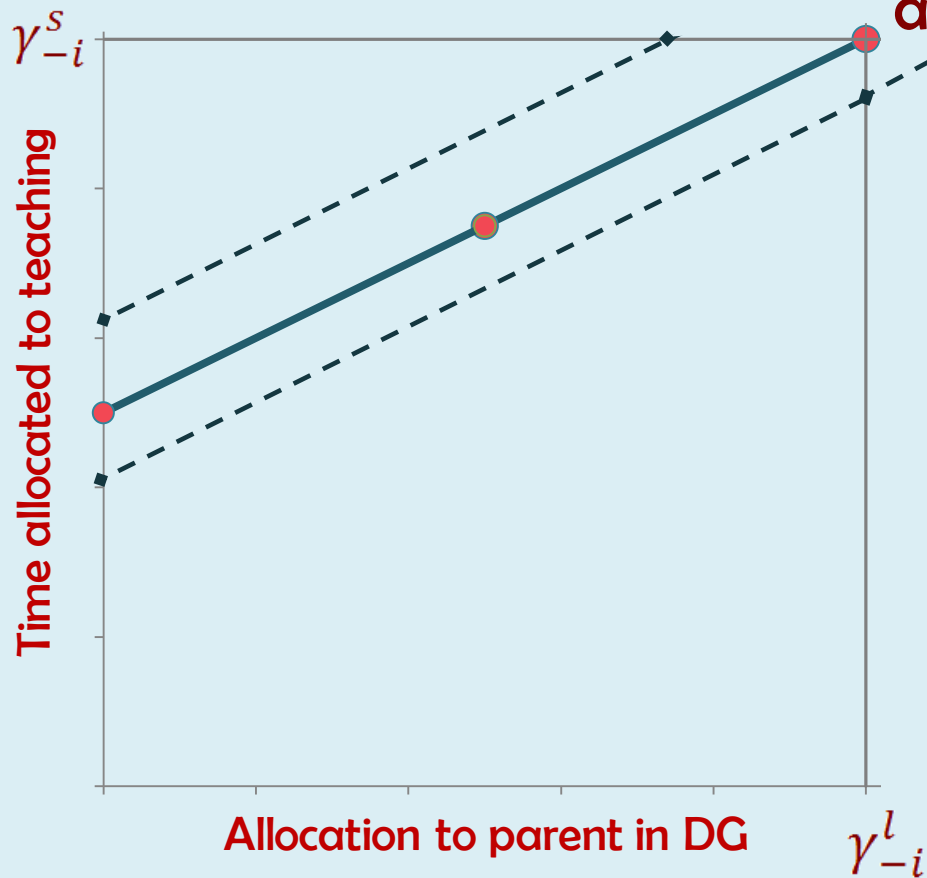
Dependent variable = Time allocation

	2a
Constant	0.836 ***
DG allocation	0.067 **
$\ln(\text{adj}(\text{wealth}_t - \text{wealth}_{-i}))$	
R-squared	0.014
Obs	476

Dependent variable = Time **OR** DG allocation

	2b
Constant	0.399 ***
Time context	0.464 ***
Time context * $\ln(\text{wealth}_i) - \ln(\text{wealth}_{-i})$	
F-stat for teacher fixed effects	1.220 **
Within R-squared	0.818
Obs	952

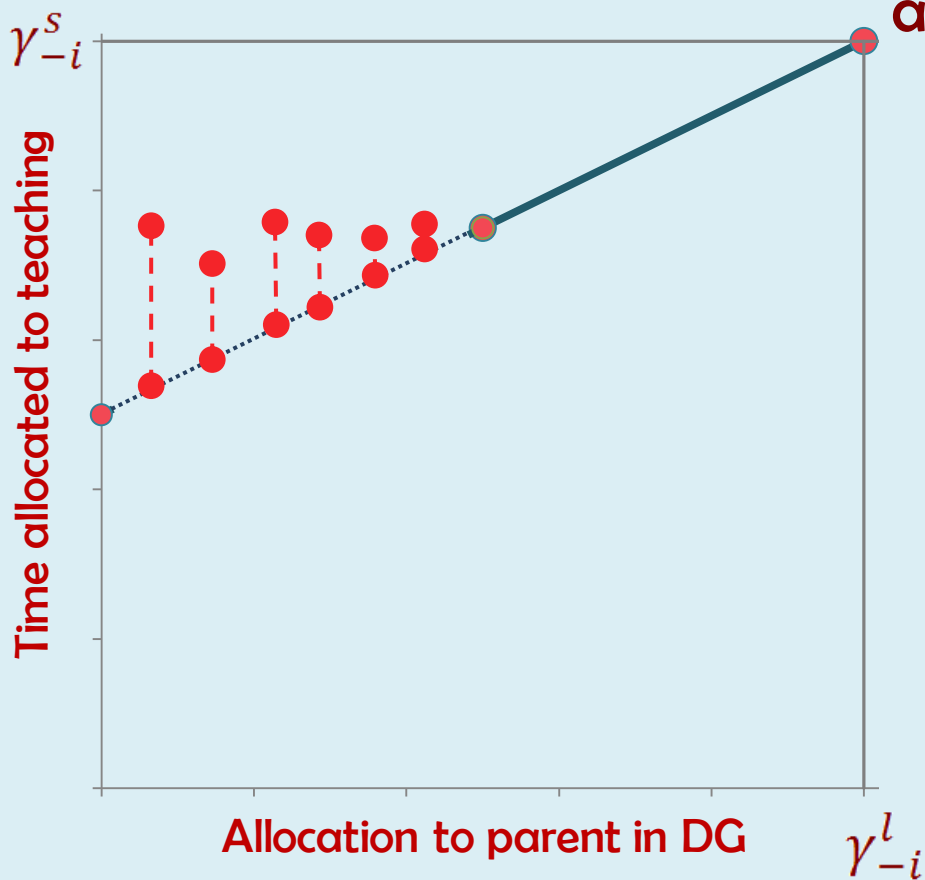
Variations in reference points across schools



Dependent variable = Time allocation

	3a	4a
Constant	1.001 ***	
DG allocation	0.067 **	
$\ln(\text{adj}(\text{wealth}_i - \text{wealth}_{-i}))$	-0.008 ***	
F-stat for school f.e.s		
Obs	435	

Variations in the extent to which teachers are informally held to account by SMCs



Dependent variable = Time allocation

	4a	5a
Constant	1.206 ***	
DG allocation	0.072 **	
$\ln(\text{adj}(\text{wealth}_i - \text{wealth}_{-i}))^\#$	-0.019 ***	
F-stat for school fixed effects	1.850 ***	
Obs	435	

Dependent variable = Time **OR** DG allocation

	3b	
Constant	0.404 ***	
Time context	0.451 ***	
Time context * $\ln(\text{wealth}_i) - \ln(\text{wealth}_{-i})$	-0.010 **	
F-stat for school fixed effects	1.919 ***	1.250 **
Obs	870	870

3+ SMC meetings in 6 months => correlation is broken
 36 SMCs (out of 100) had 3+ meetings

Summary

- DG between teachers and pupils' parents has some external validity as an experimental analogue to the status quo
- Some reasons for divergence are indicated by the data:
 - different reference points seem to apply to the DG and the teacher's time allocations
 - common (across contexts) preference to adhere to reference points may be variably salient across contexts (artificiality of alteration)
 - relative wealth of teachers (to parents) affects RPs differently in the DG and time allocation
 - RPs also vary across schools – local culture/social interact effects
 - In some schools teachers are held to account by SMCs – DG a poor analogue
- DG provides a useful measure of teacher motivations:
 - Facilitates the identification of an SMC effect that has never been identified before

Empowering the SMC members

- After the DG we played two Third-party Punishment Games (TPGs) with SMC members in the third-party role:
 - **Teacher** still received 5,000 Shillings of money to divide between him or herself and the parent (new anonymous matchings)
 - **Parents** still passive recipients
 - **SMC member** received 2,500 Shillings and could pay back 500 to have the **teacher** fined 1,000
 - Strategy method applied to SMC members:
 - “What would you do (nothing or pay to fine) if the **green player** allocated 0 to the orange player?”
 - “What would you do (nothing or pay to fine) if the **green player** allocated 500 to the orange player?”
 - :
 - :
 - “What would you do (nothing or pay to fine) if the **green player** allocated 3,500 to the orange player?”
- In first TPG SMC members made their decision in private, in the second 80% had an audience (composition – teachers, parents, other SMC – varied)

Empowering the SMC members

- Data a bit messy: around 30% of the strategies are inconsistent
- However, we got answers to two policy-relevant questions
- Headmasters sit on the SMCs: our data shows that they are conflicted, they fine less than other types of SMC member.
- The SMCs are made up of local and non-local members: our data shows that local members fine neither more nor less when there is an audience, whereas non-local members fine more when teachers are watching.
- We interpret the latter as evidence that, while both types may view the experiment as an opportunity to signal their intent to hold teachers to account if empowered to do so, local members have to weigh this up against the disruption that would be caused to their on-going series of interactions with the teachers if they publicly fined a teacher => social embeddedness undermines local accountability mechanisms.