No margin, no mission? A field experiment on incentives for public service delivery

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Introduction

- What does motivate people to work and importantly work hard?
- Crucial for designing mechanisms to align organizational objectives with individual incentives
- The theoretical literature suggests reasons why the effect of extrinsic rewards on performance in private and pro-social tasks might differ.
- Mission driven organizations hire specific individuals who are intrinsically motivated to work for the organization's mission. Hence, extrinsic rewards may create negative response as we saw in Benabou and Tirole (2003).

This Paper

- To study this, they conduct an experiment to evaluate the effect of extrinsic rewards, both financial and non-financial, on the performance of agents recruited by a public health organization to promote HIV prevention and sell condoms
- The experiment is designed to measure the interaction between extrinsic rewards and the pro-social motivation of the agents, and to test whether this interaction differs between financial and nonfinancial rewards.

Experiment Design I

- They collaborate with a public health organization based in Lusaka, Zambia, which recruits and trains hairdressers and barbers to provide information about HIV prevention and sell condoms in their shops.
- The experiment randomly assigns 205 distinct geographical clusters containing 1222 agents to one of four groups that receive different rewards based on condom sales. Agents in the control group receive no rewards, while agents in the three treatment groups receive financial margins at the bottom and the top of the feasible range, and nonfinancial rewards, respectively. The smaller and larger financial-margin treatments pay a 10% and 90% margin on each condom sale, respectively, whereas the non-financial scheme ("star" treatment) gives agents a "thermometer" display, showing condom sales and stamps, with one star stamp for each sale.

Experiment Design II

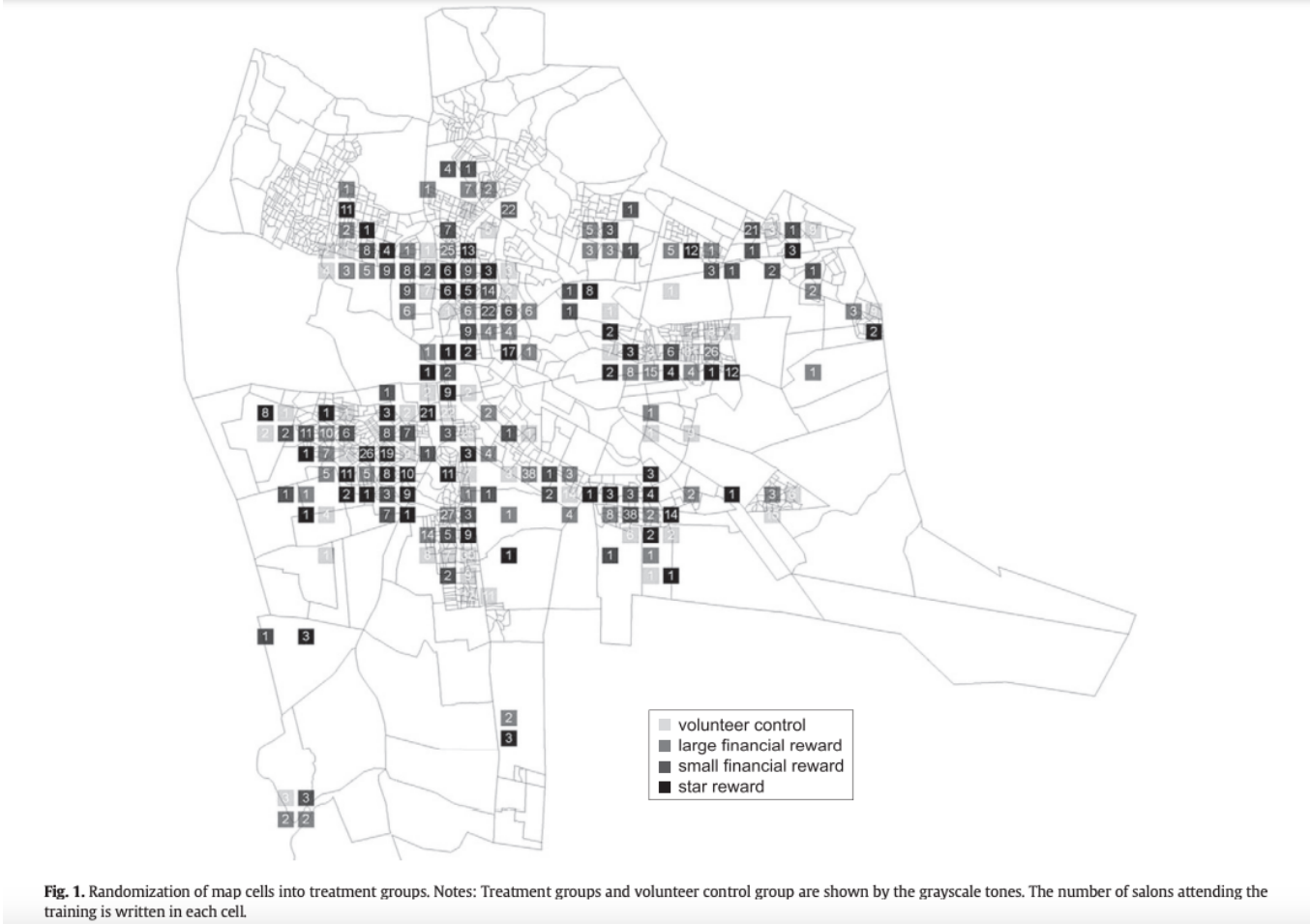

Fig. 1. Randomization of map cells into treatment groups. Notes: Treatment groups and volunteer control group are shown by the grayscale tones. The number of salons attending the training is written in each cell.

Figure: Experiment Design

Summary Statistics

Table 1
Summary statistics.

	Mean	Median	Min	Max	sd	N
Panel A: outcome variables						
Packs sold (restocked)	9.01	0.00	0.00	216.00	18.08	771
Packs sold (calculated)	13.90	12.00	0.00	148.00	15.77	771
Promoter attention	2.52	2.56	0.00	3.00	0.30	725
Promoter interest	2.15	2.12	0.00	3.00	0.38	697
Logbook filled	0.47	0.50	0.00	1.00	0.23	725
Total displays (promotional material)	2.26	2.20	0.00	8.00	0.90	726
Panel B: control variables						
Salon is a barbershop (0–1)	0.44	0.00	0.00	1.00	0.50	771
Salon is near a bar (0–1)	0.88	1.00	0.00	1.00	0.32	770
Salon size (number of employees)	1.75	2.00	1.00	9.00	0.99	770
Number of trained salons in the same area	4.46	3.00	1.00	30.00	5.06	173
Stylist sells other products in salon (0–1)	0.27	0.00	0.00	1.00	0.45	771
Stylist is in bottom quartile of asset distribution (0–1)	0.21	0.00	0.00	1.00	0.40	771
Stylist's socio-economic status is low (0–1)	0.19	0.00	0.00	1.00	0.40	771
Stylist's dictator-game donation (Kwacha)	5728.94	5000.00	0.00	40,000.00	3744.67	767
Stylist's reported work motivation is intrinsic (0–1)	0.58	1.00	0.00	1.00	0.49	771
Stylist's religion is Catholic (0–1)	0.23	0.00	0.00	1.00	0.42	771
Panel C: other descriptors						
Monthly income of the salon (Kwacha)	332,569	250,000	0	10,000,000	572,050	700
Stylist can read and write in at least one language (0–1)	0.94	1.00	0.00	1.00	0.23	771
Stylist can read and write in English (0–1)	0.85	1.00	0.00	1.00	0.35	770
Total number of products sold	0.47	0.00	0.00	6.00	0.94	771

Non-financial Incentives are effective

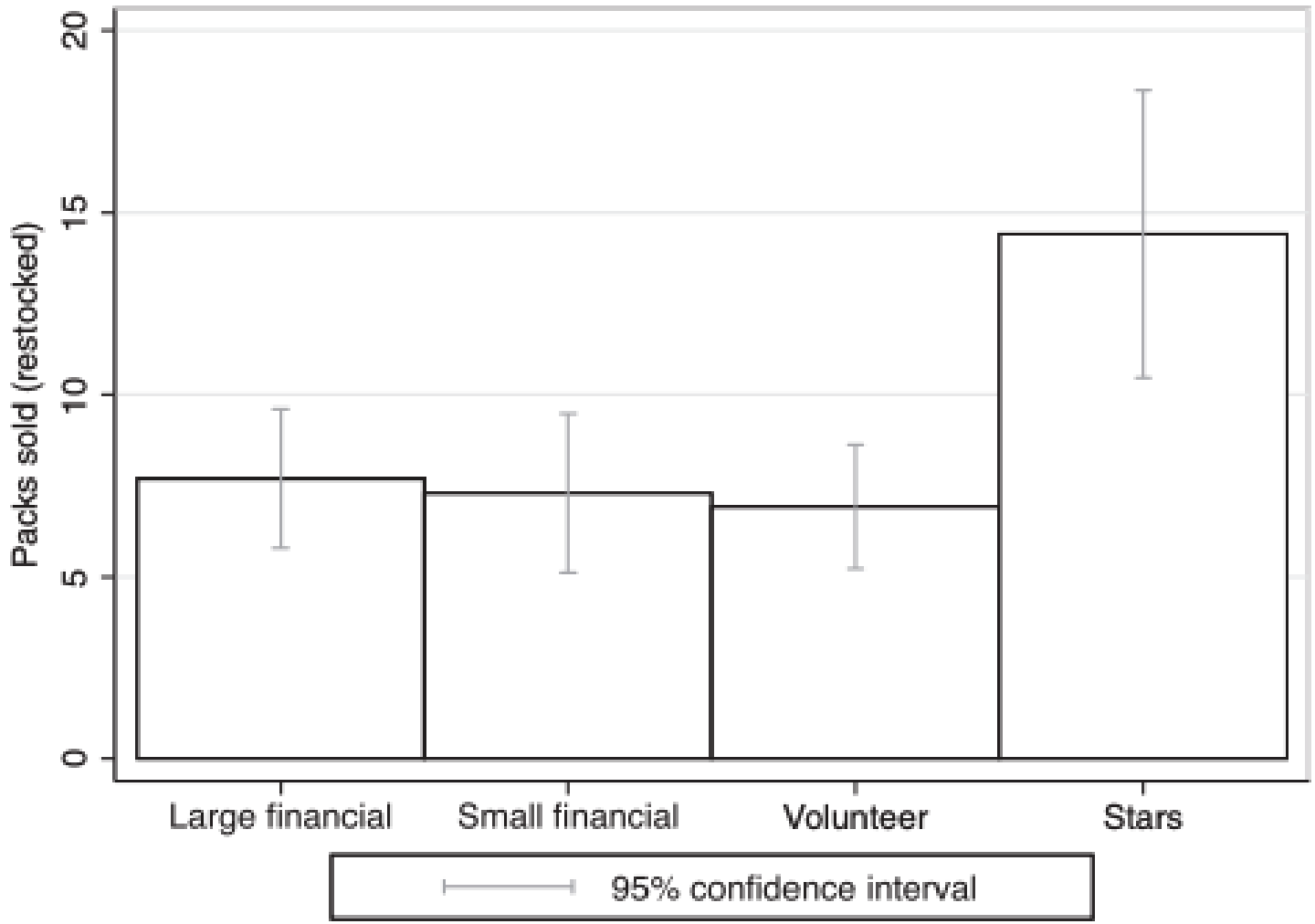

Fig. 2. Average yearly sales by treatment group. Notes: Each bar measures the average number of packs sold over the year by agents in each of the four groups with 95% confidence intervals.

Non-financial Incentives are effective

Table 2
Average treatment effects on sales.

Dependent variable	Packs sold (restocked)		Packs sold (calculated)	=1 if sells at least one pack	=1 if sells 12 or more packs	=1 if sells 24 or more packs
Mean in control group	*6.93*	*6.96*	13.30	*.368*	*.341*	*.128*
	(1)	(2)	(3)	(4)	(5)	(6)
Large financial reward	0.769	1.187	−0.653	−0.003	0.01	0.031
	[1.618]	[1.759]	[1.848]	[0.067]	[0.063]	[0.042]
Small financial reward	0.378	0.826	−0.135	−0.025	−0.018	0.011
	[1.528]	[1.530]	[1.603]	[0.066]	[0.060]	[0.040]
Star reward	7.482***	8.022***	6.283**	0.114*	0.128*	0.101**
	[2.448]	[2.639]	[2.451]	[0.066]	[0.065]	[0.049]
Salon is a barbershop (0–1)		2.751*	3.193**	0.101**	0.098**	0.031
		[1.600]	[1.467]	[0.039]	[0.040]	[0.031]
Salon is near a bar (0–1)		0.544	0.772	−0.048	−0.031	−0.005
		[2.108]	[1.971]	[0.074]	[0.063]	[0.050]
Salon size (log number of employees)		2.379	1.195	−0.082	−0.069	0.037
		[2.950]	[2.917]	[0.063]	[0.063]	[0.049]
Number of trained salons in the same area		0.02	0.069	0.001	0.000	−0.001
		[0.087]	[0.094]	[0.003]	[0.003]	[0.002]
Stylist sells other products in salon (0–1)		5.110***	2.758*	0.084**	0.085**	0.073**
		[1.701]	[1.542]	[0.039]	[0.041]	[0.035]
Stylist in the bottom quartile of asset distribution (0–1)		1.303	0.448	0.006	−0.001	0.018
		[1.743]	[1.639]	[0.051]	[0.052]	[0.036]
Stylist's socio-economic status is low (0–1)		−1.048	−0.962	−0.008	−0.012	−0.042
		[1.411]	[1.212]	[0.046]	[0.047]	[0.029]
Stylist's dictator-game donation above the median (0–1)		3.353***	2.210**	0.152***	0.143***	0.016
		[1.125]	[1.115]	[0.031]	[0.032]	[0.028]
Stylist's reported work motivation is intrinsic (0–1)		−0.541	−0.458	−0.035	−0.034	−0.03
		[1.298]	[1.166]	[0.036]	[0.035]	[0.031]
Stylist's religion is Catholic (0–1)		−3.567**	−3.163***	−0.085**	−0.074*	−0.035
		[1.370]	[1.185]	[0.041]	[0.040]	[0.033]
Constant	6.929***	0.175	8.176**	0.355***	0.313***	0.086
	[1.123]	[4.002]	[3.957]	[0.098]	[0.093]	[0.073]
R-squared	0.0285	0.0631	0.0526	0.0499	0.0482	0.0267
Observations	771	765	743	765	765	765
Large financial = small financial (p-value)	0.803	0.823	0.747	0.694	0.578	0.583
Large financial = stars (p-value)	0.00719	0.0108	0.00502	0.0517	0.0501	0.145
Small financial = stars (p-value)	0.00365	0.00548	0.00725	0.018	0.0119	0.0502

Notes: OLS estimates. Standard errors are clustered at cell level. The dependent variable in columns 1–5, *Packs sold (restocked)* is the total number of packs (excluding the initial dispenser sold at training) that the stylist chooses to buy and restock during the study period, based on invoices. The dependent variable in column 6, *Packs sold (calculated)* is the total number of packs sold (including the initial dispenser sold at training), based on representatives' calculations. The sample size varies across columns because of missing values in some covariates. Variables are as described in Table 1. p-Values in the bottom three rows are from a Wald test for equality of coefficients between treatments.

* $p < 0.10$

Non-financial Incentives are stable and not driven by novelity

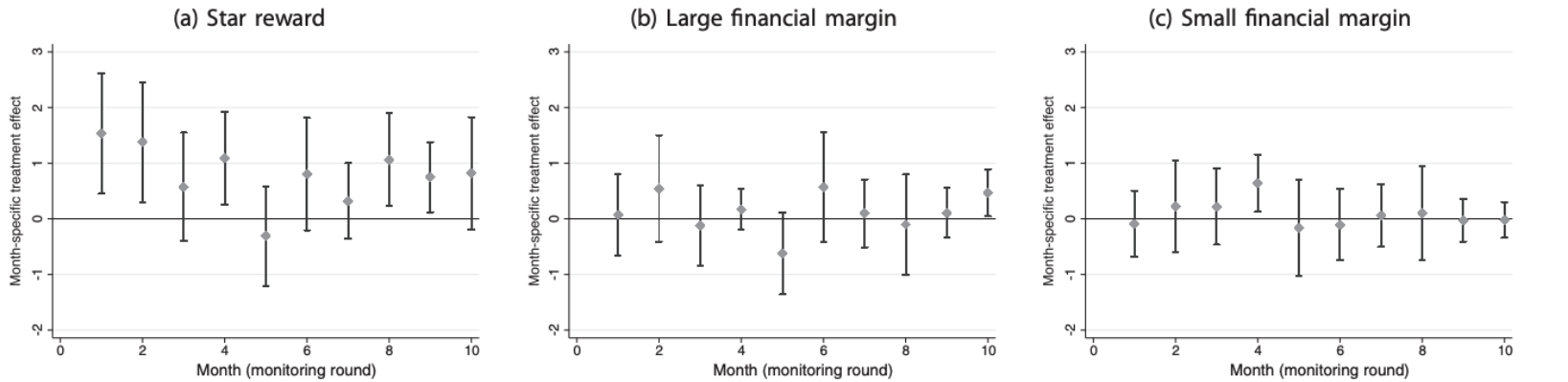

Fig. 4. Month-specific treatment effects. Notes: Each dot represents the estimated effect of the star treatment (panel a), large financial margin treatment (panel b) and small financial margin treatment (panel c) in a regressions of sales on the three treatments, and controls listed in Table 2. The vertical lines represent 95% confidence intervals based on standard errors clustered at the cell level.

Mechanisms: Increase in effort or demand?

Table 3
Average treatment effects on effort measures.

Dependent variable	Total displays	Logbook filled	Promoter attention	Promoter interest	Average standardized effect
Mean in control group	2.285	0.479	2.498	2.111	
Standard deviation in control group	*1.19*	*0.28*	*0.41*	*0.42*	
	(1)	(2)	(3)	(4)	(5)
Large financial reward	0.071	0.028	−0.004	0.024	0.029
	[0.102]	[0.029]	[0.034]	[0.035]	[0.033]
Small financial reward	−0.101*	0.007***	0.021	0.049	−0.006
	[0.126]	[0.028]	[0.044]	[0.049]	[0.050]
Star reward	0.264**	0.067**	−0.036	0.094**	0.097**
	[0.127]	[0.029]	[0.034]	[0.044]	[0.042]
Controls	Yes	Yes	Yes	Yes	Yes
R-squared	0.099	0.0232	0.0317	0.0603	
Observations	722	722	721	694	726
Large financial = small financial (p-value)	0.151	0.5	0.529	0.603	0.49
Large financial = stars (p-value)	0.108	0.189	0.32	0.128	0.108
Small financial = stars (p-value)	0.0118	0.0582	0.167	0.437	0.07

Notes: OLS estimates weighted by the number of observations for each salon. All outcomes are averages at the salon level across all restocking visits. Standard errors are clustered at the cell level. *Total displays* is the average number of posters, brochures, "sold here" signs, flipcharts, condom dispensers, and certificates visible in the shop during non-missing restocking visits. *Logbook filled* is an indicator variable that takes a value of 1 if filled-in logbook sheets were collected by the sales agent, averaged across non-missing visits. *Promoter attention* is a measure of stylist's level of attention, on average, across all sales agent visits during the "interpersonal communication" session on a 0–3 scale (with 0 being "not interested," and 3 being "very interested"). Similarly, *Promoter interest* is the sales agent's subjective rating, on average, of the stylist's level of interest in promoting female condoms, on a scale of 0 to 3. Column 5 reports the average standardized effect for the four effort variables. All regressions include the same vector of controls as in Table 2. p-Values in the bottom three rows are from a Wald test for equality of coefficients between treatments.

* $p < 0.10$.
** $p < 0.05$.
*** $p < 0.01$.

Mechanisms: Increase in effort or demand?

Table 4
Placebo star reward.

Dependent variable	Packs sold (restocked)		Packs sold (calculated)	
	Placebo round	First round	Placebo round	First round
Mean in control group	*0.469*	*0.469*	*1.156*	*1.156*
	(1)	(2)	(3)	(4)
Placebo thermometer	0.388*	0.016	−0.067	0.016
	[0.380]	[0.400]	[0.374]	[0.400]
Star reward	1.699***	1.721**	1.581***	1.721**
	[0.624]	[0.689]	[0.482]	[0.689]
Controls	Yes	Yes	Yes	Yes
R-squared	0.0633	0.0946	0.116	0.0946
Observations	319	318	319	318
Placebo thermometer = stars (p-value)	0.0453	0.00836	0.000648	0.00836

Interaction between extrinsic and intristic motivation

Table 5
Heterogeneous treatment effects, by stylist motivation.

Dependent variable is packs sold (restocked)		
Motivation variable	Stylist's dictator game donation is above the median	Stylist's socio-economic status is low
Mean in control group = 6.96	(1)	(2)
Motivation variable	0.778*	−3.984**
	[1.518]	[1.605]
Effect of large financial when motivation variable = 0	−2.215	0.806
	[1.633]	[2.095]
Effect of small financial when motivation variable = 0	1.141	−0.041
	[1.933]	[1.705]
Effect of stars when motivation variable = 0	4.537	7.462**
	[2.859]	[3.021]
Effect of large financial when motivation variable = 1	3.462	3.542**
	[2.476]	[1.780]
Effect of small financial when motivation variable = 1	0.352	4.741*
	[1.889]	[2.858]
Effect of stars when motivation variable = 1	10.480***	11.110***
	[3.411]	[3.126]
Controls	Yes	Yes
R-squared	0.07	0.064
Observations	765	765
Large financial: p-value of the null that difference by motivation variable = 0	0.029	0.326
Small financial: p-value of the null that difference by motivation variable = 0	0.731	0.146
Stars: p-value of the null that difference by motivation variable = 0	0.091	0.350

Notes: Standard errors are clustered at cell level. The dependent variable, *Packs sold (restocked)* is the total number of packs (excluding the initial dispenser sold at training) that the stylist chooses to buy and restock over the study period, based on invoices. All regressions include the same vector of controls as in Table 2. Variables are described in Table 1.

* $p < 0.10$.
** $p < 0.05$.
*** $p < 0.01$.

Relative Value of Non-financial inventives

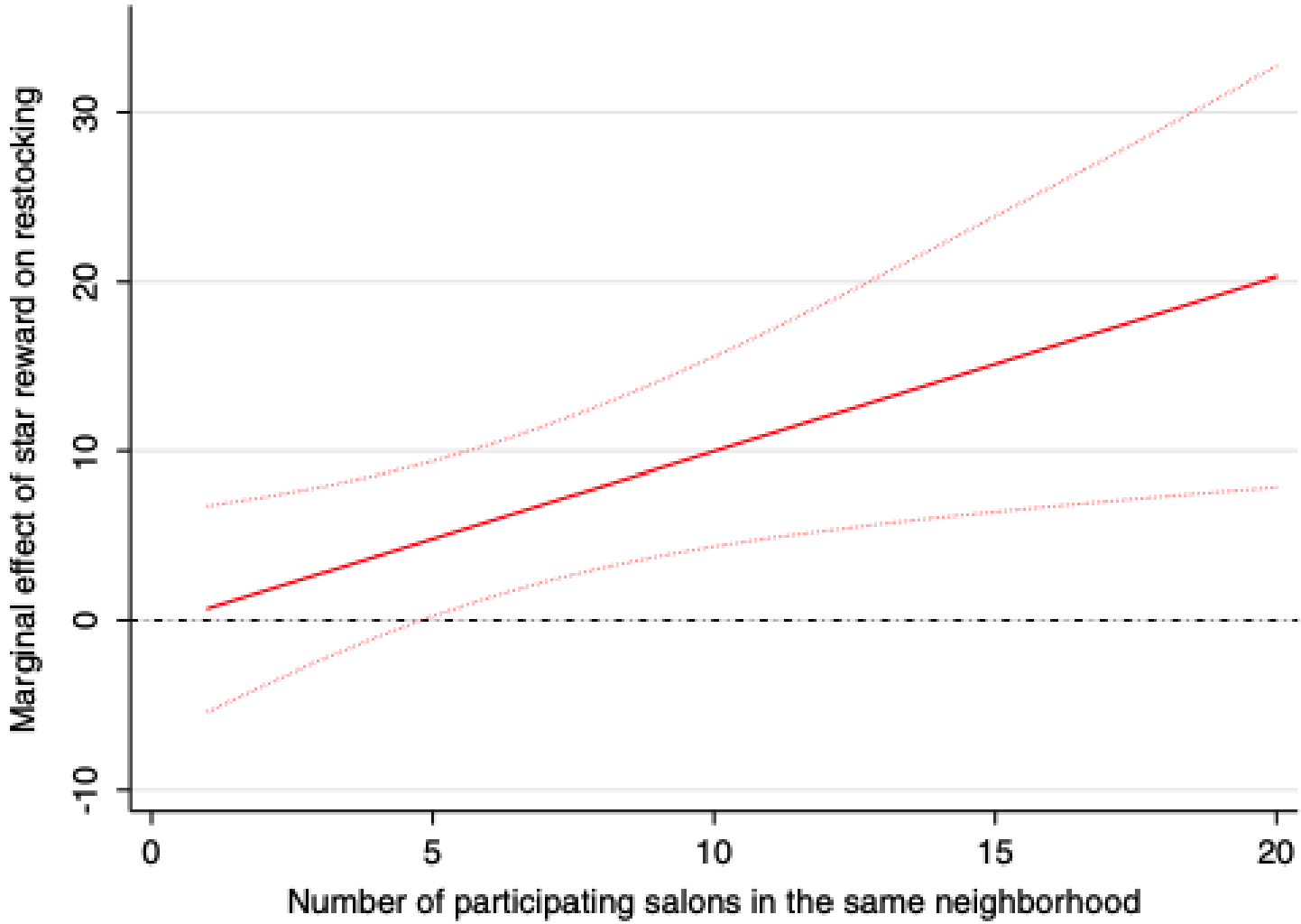

Figure: Relative Value of Non-financial inventives

Discussion

- Very cool paper that takes a theoretical result/discussion where reality could be a little ambigious and tests it in the field.
- Question: What could be external validity of results? Could this result be peculiar to the sale of condoms?