Promotions and Productivity: The Role of Meritocracy and Pay Progression in the Public Sector

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Promotions and Productivity

- Many organizations rely on promotion incentives to motivate employees [Prendergast 1999, Milgrom 1988]
  - Especially when they face constraints to dismiss workers or to offer them performance pay [Bertrand et al. 2019]

- The success of promotion incentives depends on two distinct but interrelated components:
  1. Extend to which the promotion rule is based on performance (meritocracy)
  2. Size of the prize associated with the promotion (pay progression)

The Role of Meritocracy and Pay Progression

$$u_i(e_1, e_2) = \underline{w} + P_i^b[\bar{w} - \underline{w}] - c_i(e_i)$$

$$P_i^b = P_i(e_1 + b_1, e_2 + b_2) = \begin{cases} 0 & \text{if } e_i + b_i < e_{-i} + b_{-i} \\ \frac{1}{2} & \text{if } e_i + b_i = e_{-i} + b_{-i} \\ 1 & \text{if } e_i + b_i > e_{-i} + b_{-i} \end{cases}$$

- Promotions increase worker effort if:
  1. $P^b = (P_1^b, P_2^b)$: promotion rule is meritocratic enough $\rightarrow$ low $|b_1 - b_2|$
  2. $\bar{w} - \underline{w}$: pay progression is steep enough
- This paper estimates the causal effect of more meritocracy ($\downarrow |b_1 - b_2|$) and more pay progression ($\uparrow \bar{w} - \underline{w}$) on worker productivity, in isolation and combined

Experiment in the Public Sector

- Field experiment with the Ministry of Health and Sanitation in Sierra Leone
- 2x2 design with exogenous variation in:
  (1) meritocracy by varying extent to which promotions from a health worker to a supervisor job are linked to performance
  (2) perceived pay progression from health worker to supervisor job by varying whether health workers are informed about supervisor's pay

Bridge Between Two Literatures

1. Literature on promotions:
   - Mostly theoretical [Lazear & Rosen 1981, Harris & Holmstrom 1982, Gibbons & Murphy 1992, Gibbons & Waldman 1999]
   - Recent empirical evidence on upward mobility and worker performance [Nieddu and Pandolfi 2022, Bertrand et al. 2019]
   - Little evidence on changing promotion criteria *holding upward mobility fixed* + interaction with pay progression

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2. Literature on pay inequality:
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$\Rightarrow$ We study meritocracy, pay progression and the interplay of the two within the same context

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Context and Research Design

The Effect of Meritocratic Promotions

The Effect of Pay Progression

The Community Health Worker (CHW) Program

- Increases access to health services in rural Sierra Leone
- Organized into Peripheral Health Units (PHUs), each composed of
  - 7-10 CHWs (low-tier position)
  - 1 peer supervisor (PS) (high-tier position)
- CHWs are trained and monitored by the PS to provide household visits in their village
  - provide info about health, conduct pre- and post-natal checks, treat diseases and refer to health facility

Pay Progression

- Pay progression
  - CHWs and PSs work part-time and earn a fixed monthly wage of SLL 150k ($17) and SLL 250k ($29), respectively
  - Lack of pay transparency: <1/3 of the CHWs know the exact PS pay

Promotions

- Promotions from CHW to PS within a PHU
  - Status-quo: decision made by PHU in-charge (local health authority) who has limited knowledge of CHW performance
  - When promoted, 70% of the PSs had more connections to PHU in-charge than the other candidates but only 20% had highest performance

2x2 Research Design

372 PHUs cross-randomized into:

1. T_{merit}: new promotion system based on CHW performance (measured through household surveys)
   - CHWs in $T_{merit} = 1$ are informed about the new system
   - CHWs in $T_{merit} = 0$ are reminded of the status-quo system

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2. T_{pay}: info about PS pay, which $\Uparrow$ pay progression if prior < truth or $\Downarrow$ pay progression if prior > truth
   - CHWs in $T_{pay} = 1$ are informed about PS pay + reminded about own pay
   - CHWs in $T_{pay} = 0$ are reminded about own pay

Research Design: Key Role of Perceptions

- T_{pay} shifts CHW perception of pay progression
- T_{merit} shifts CHW perception of meritocracy in *anticipation* of future promotions
  - no need of *actual* promotion for CHWs to react to the new promotion system
  - does not assess effect of more meritocracy on CHW performance due to better PS selection

Data

Peer Supervisors (PSs)

- One PS per PHU: N=372
- Surveyed at baseline (May 2018) and endline (Sept 2019) on background, experience, ranking of CHW performance

Community Health Workers (CHWs)

- One CHW per village: N=2,009
- Surveyed at baseline (May 2018) and endline (Sept 2019) on background, experience
- Surveyed 2 weeks before & after treatments (Nov-Dec 2018) on beliefs about meritocracy and pay progression

Beneficiaries/Households (HHs)

- Random 3 (~7%) per village: N=6,027
- Surveyed at endline (Sept 2019) on number and quality of services received from the CHW

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Context and Research Design

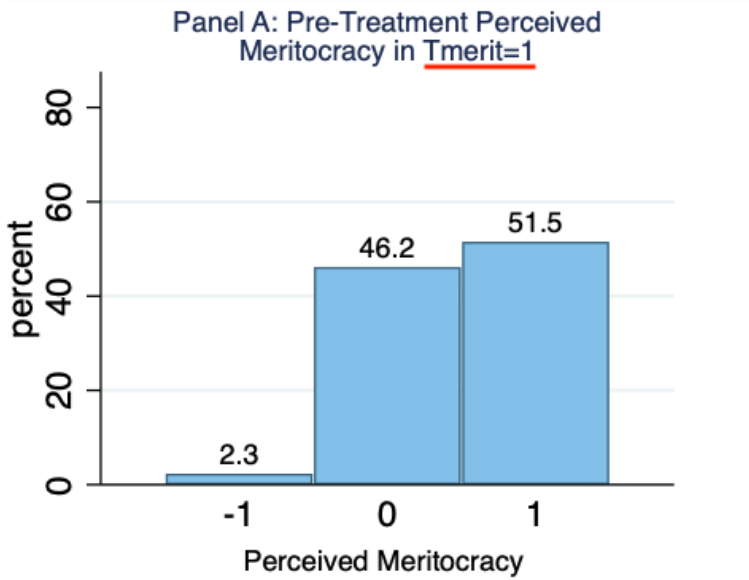
The Effect of Meritocratic Promotions

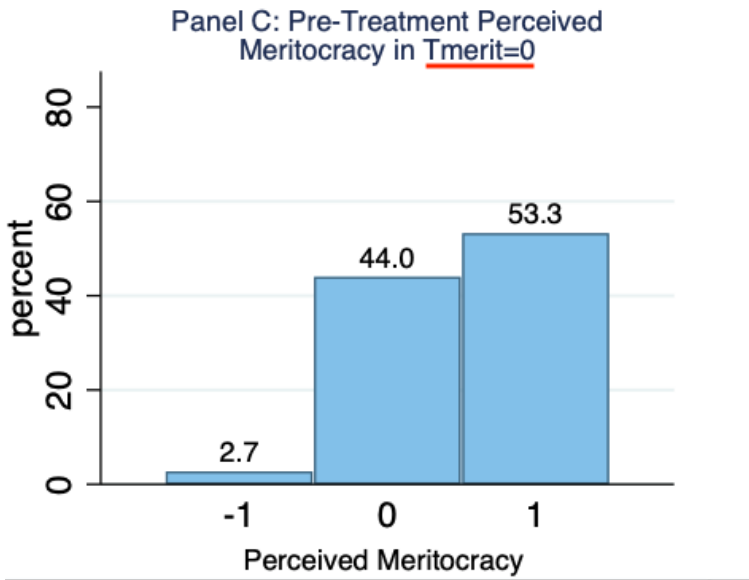
The Effect of Pay Progression

Survey Question About Meritocracy

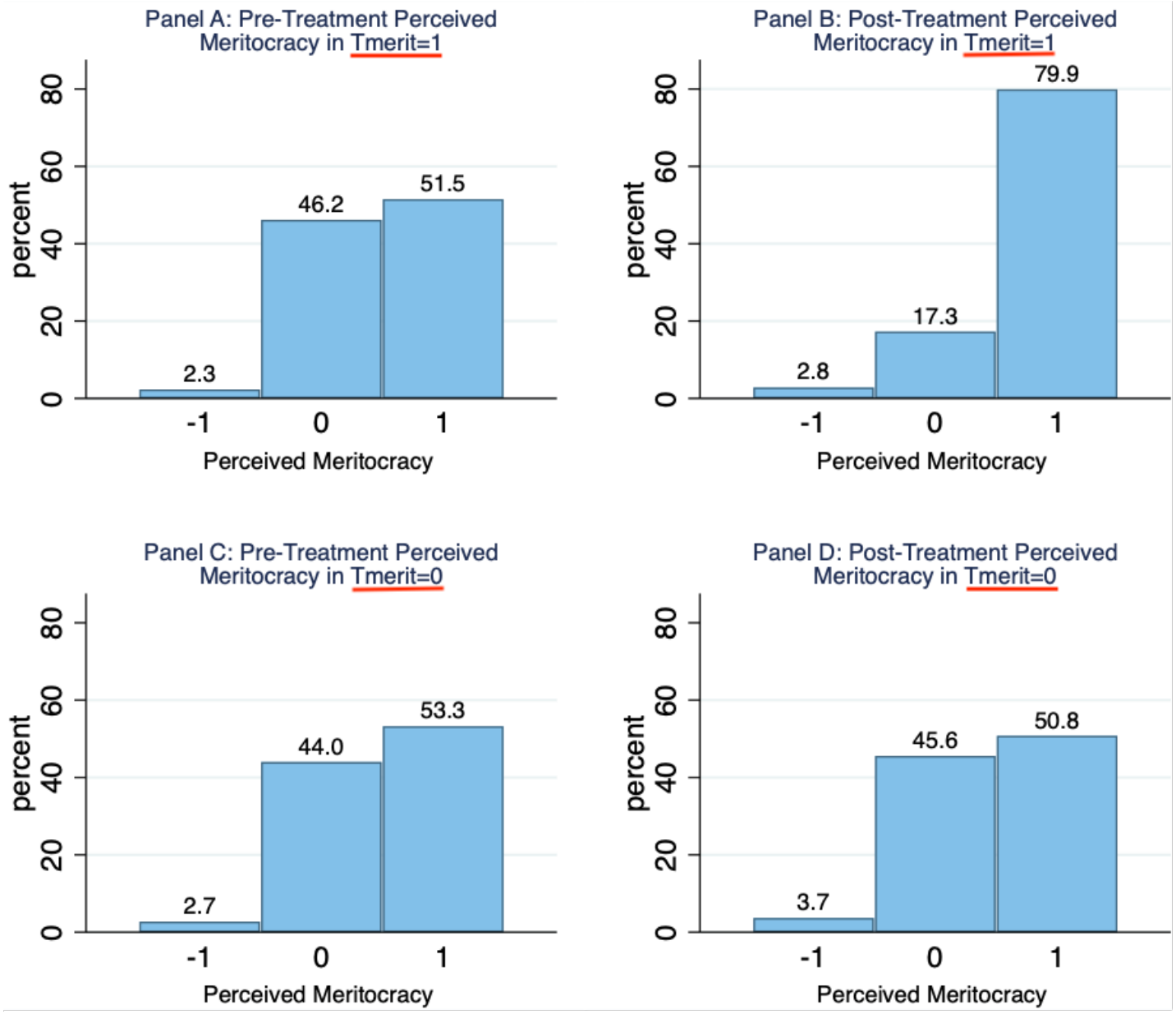
- "A PHU needs a new PS. Whom of the following two CHWs is most likely promoted to PS?"
  1. a "non-connected" CHW with performance rank 1/10
  2. a "connected" CHW with rank X where X = {2, 5, 10}
- Perceived meritocracy is measured on scale -1 to 1:
  - -1 if the connected CHW is always promoted even if she is the worse-performing
  - 0 if the connected CHW is promoted only if she is good enough (second-best or fifth-best)
  - +1 if the best-performing CHW is always promoted

Belief Updating About Meritocracy

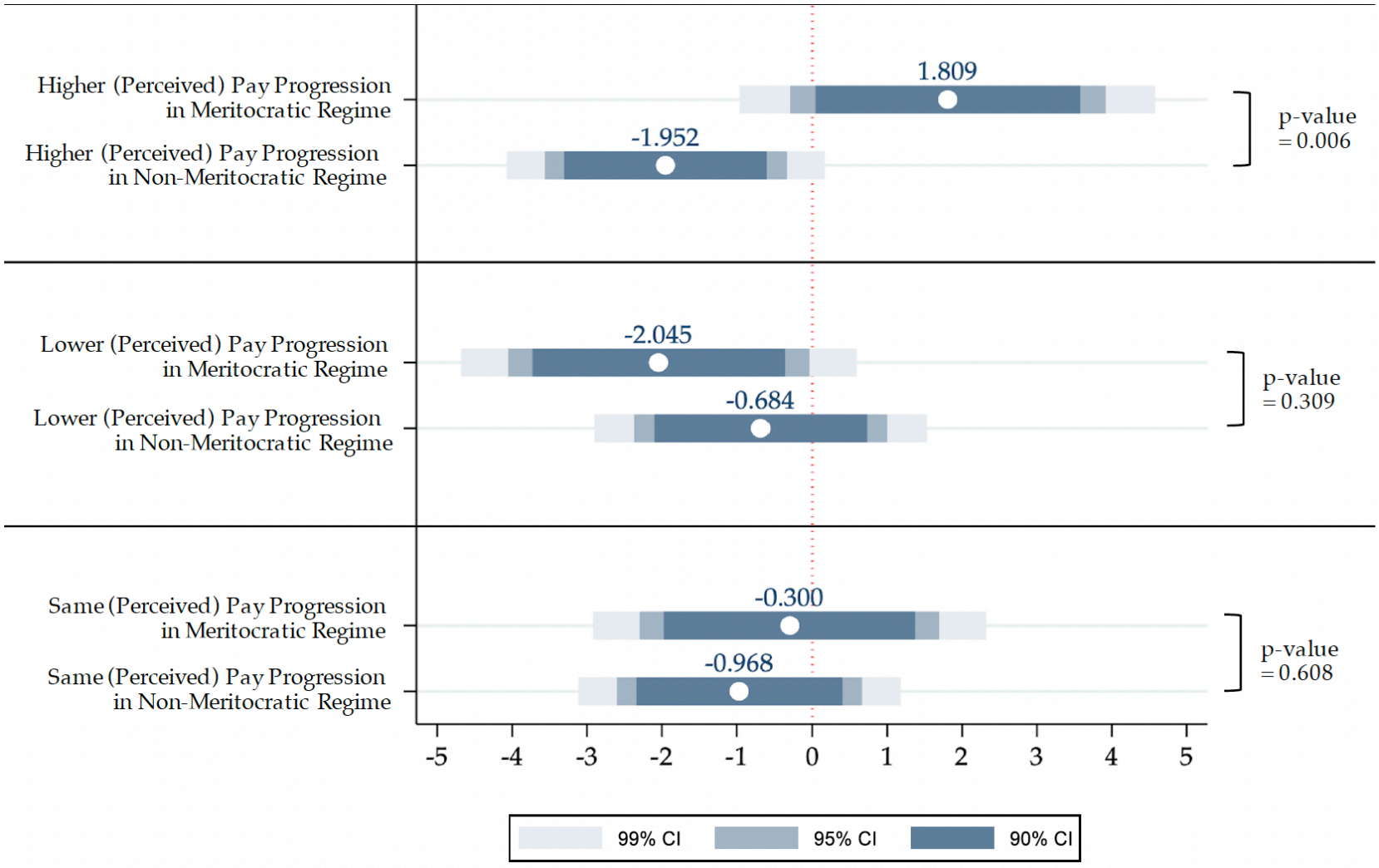




Belief Updating About Meritocracy



Effect of Meritocracy on Number of Visits



Effect of Meritocracy – More Results

- No reduction in visit length
- No change in household targeting

Mechanisms

- Meritocratic promotions ↑ productivity of workers with ...
  - high ranking ⇒ higher chance of promotion under new promotion system
  - promotion soon or high perceived pay progression ⇒ more interested in promotion
- Alternative stories we can reject:
  - workers with high rank/perceived pay progression update perceived meritocracy more strongly

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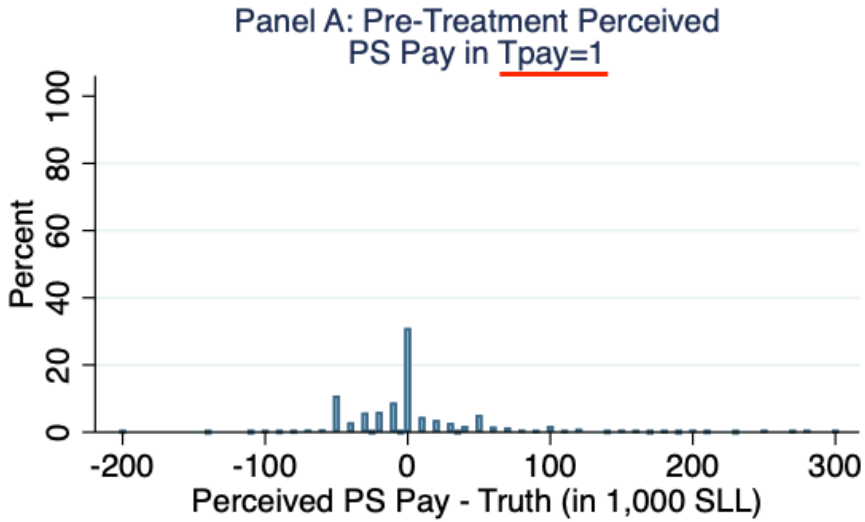
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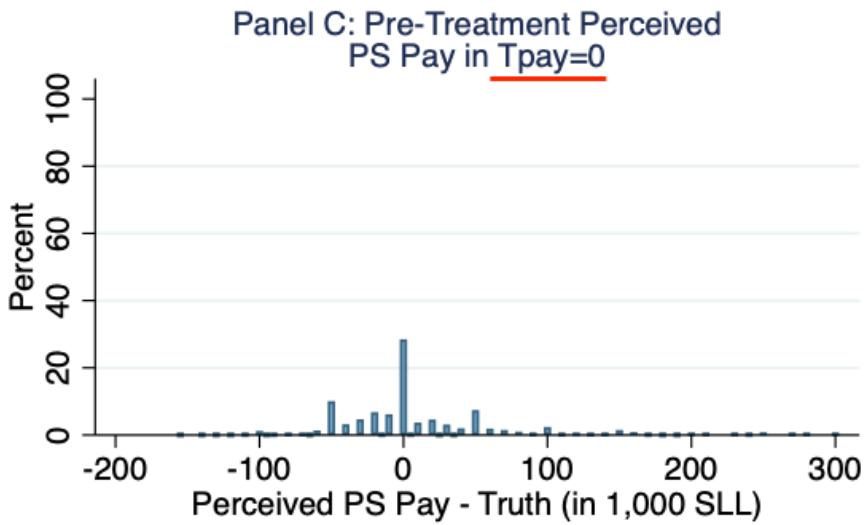
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Belief Updating About PS Pay

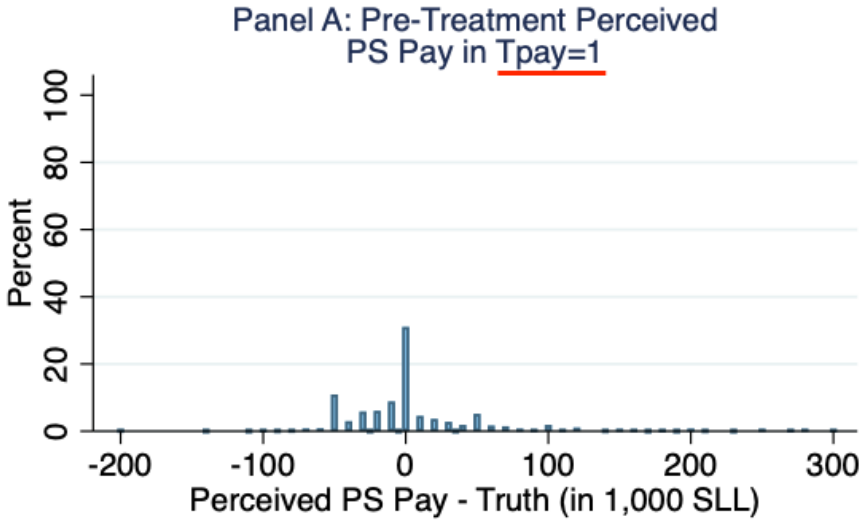
"How much do you think the PS earns per month?"

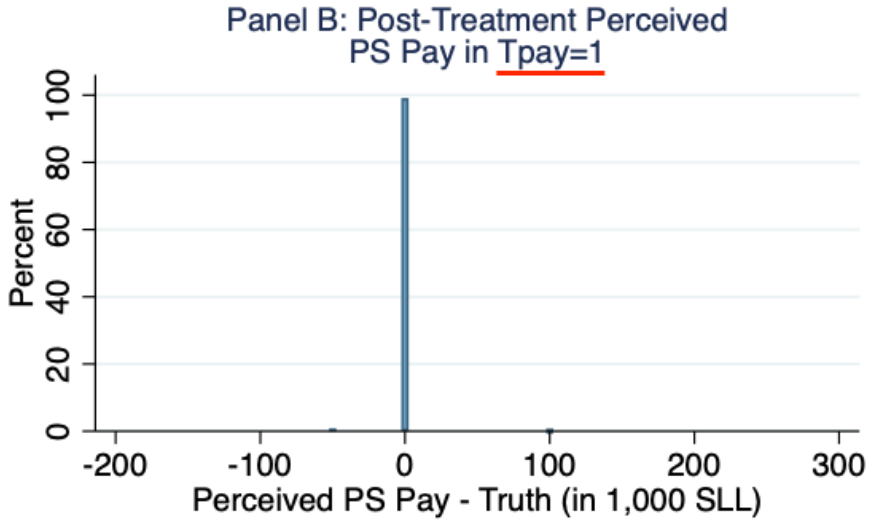


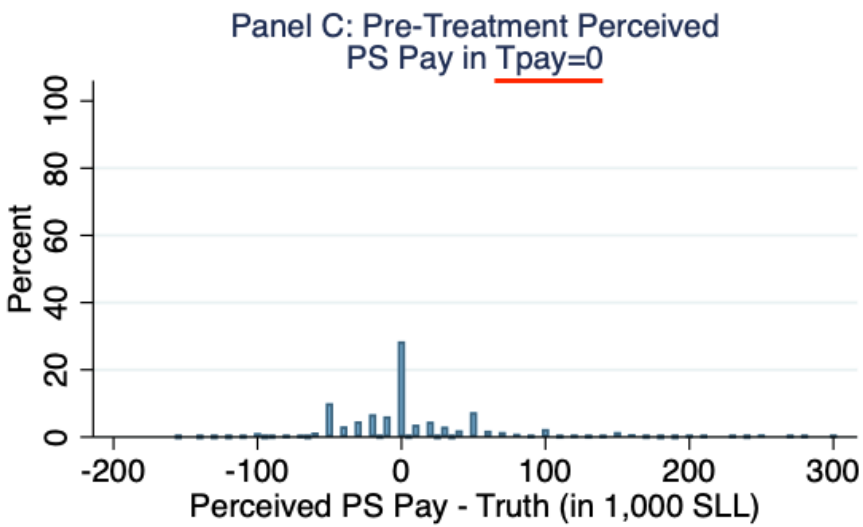


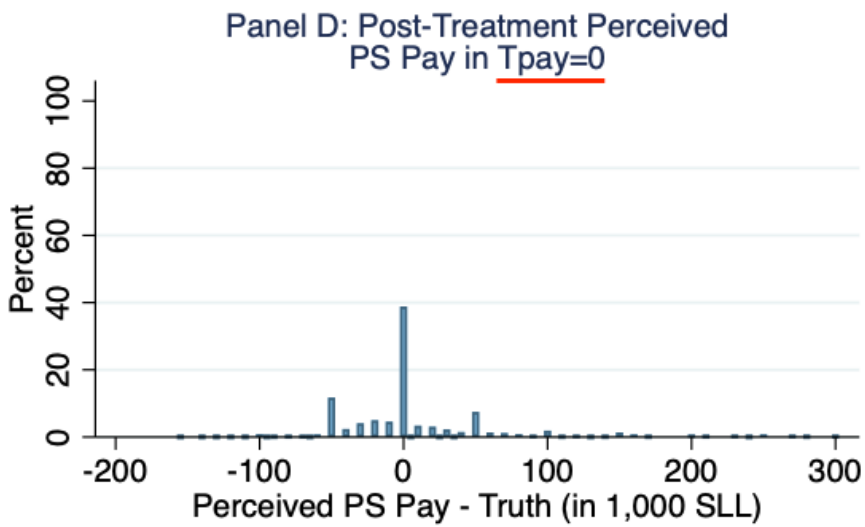
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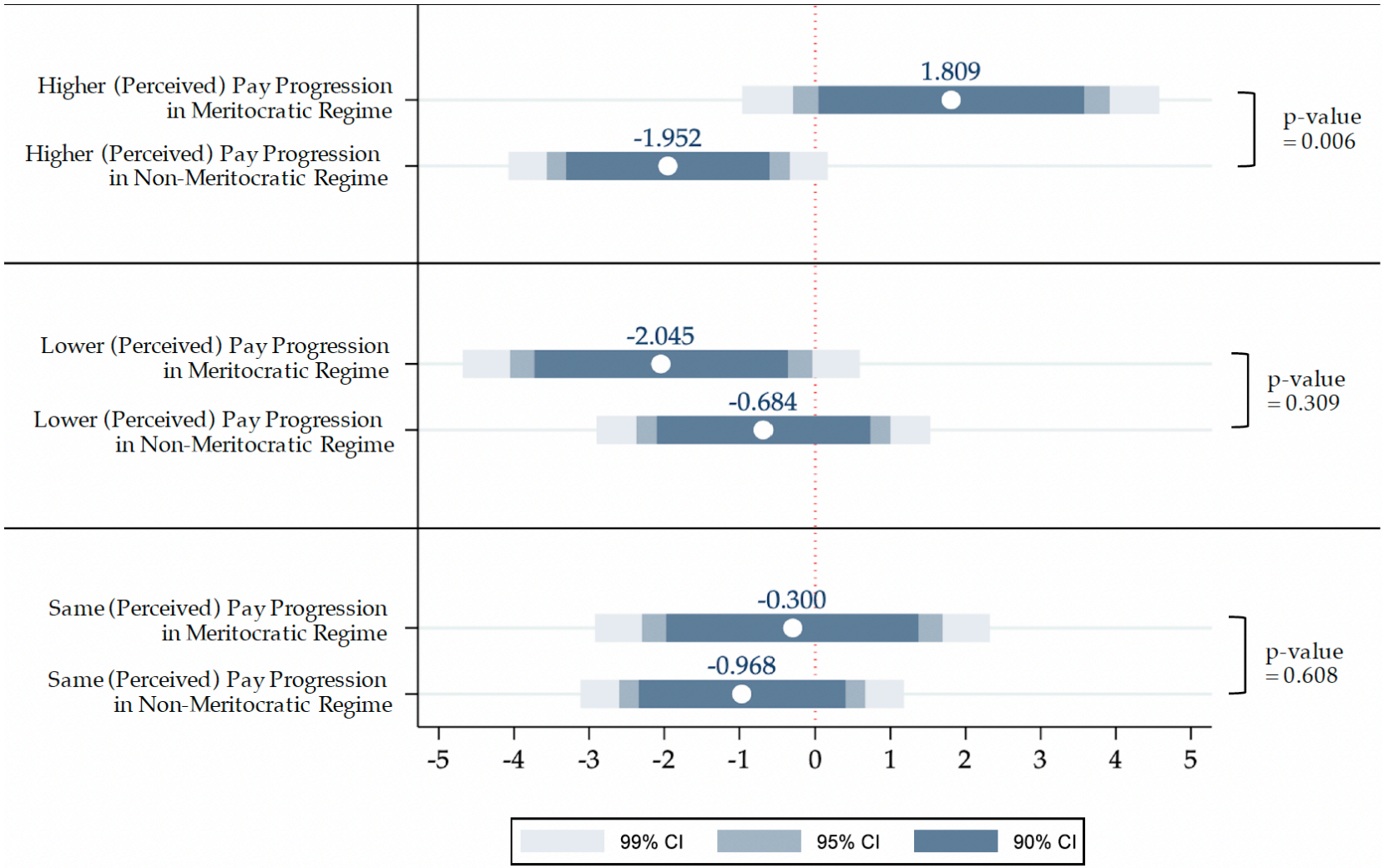








Pay Progression and Number of Visits



Moral Concerns vs. Lobbying

- Higher pay progression ↓ worker productivity (visits) in non-meritocratic regime
- Potential mechanisms
  1. morale concerns: workers perceive steep pay progression in non-meritocratic system as unfair and get demotivated
  2. lobbying: workers substitute time away from health services into lobbying

Moral Concerns vs. Lobbying

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- Potential mechanisms
  1. morale concerns: workers perceive steep pay progression in non-meritocratic system as unfair and get demotivated
  2. lobbying: workers substitute time away from health services into lobbying
- Evidence consistent with morale concerns:
  - no effect on whether CHW talked to PHU in-charge or on time devoted to non-patient activities

Conclusion

- Manager-worker pay ratio has grown exponentially around the world in recent years
  - x10 in the US private sector and x2 in public sector of low-income countries
- Steeper pay progression boosts performance of lower-tier workers if combined with meritocratic system
- ... but can backfire in non-meritocratic system
  - can $\downarrow$ performance of lower-tier workers through greater pay inequality

Conclusion

- Many organizations combine steep pay progression and non-meritocracy
  - public sector: patronage/nepotism or strict seniority based rules [Sheperd 2003, World Bank 2016]
  - private sector: lower women promotion rates across all ranks of firm hierarchy [Kunze and Miller 2017, Cullen and Perez-Truglia 2020, Benson et al. 2021, Azmat et al. 2021]

- Organizations should combine ↑ in pay progression with more meritocratic promotions
  - e.g., by collecting more reliable data on performance and promoting based on that