

Investing in Workers Improves Firm Productivity: Lessons from India and Latin America

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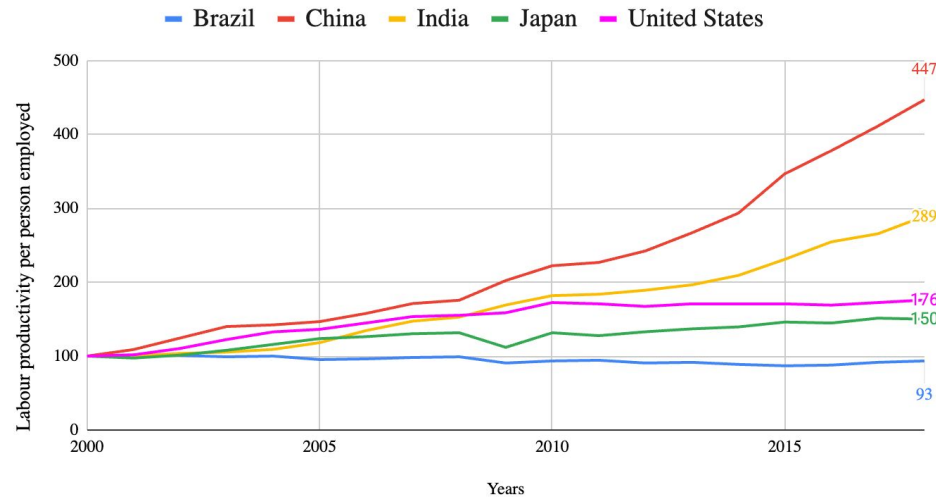
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Manufacturing productivity around the world

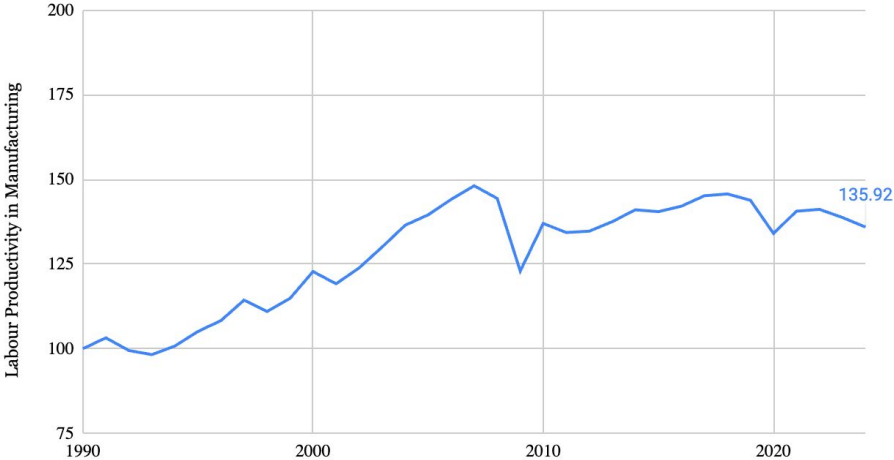
As in many developed economies, manufacturing productivity growth in Japan has stagnated in the past two decades.

Country-wise Labour Productivity in Manufacturing, 2000-2018



Indexed, 2000=100

Labour Productivity in Manufacturing in Japan, 1990-2024

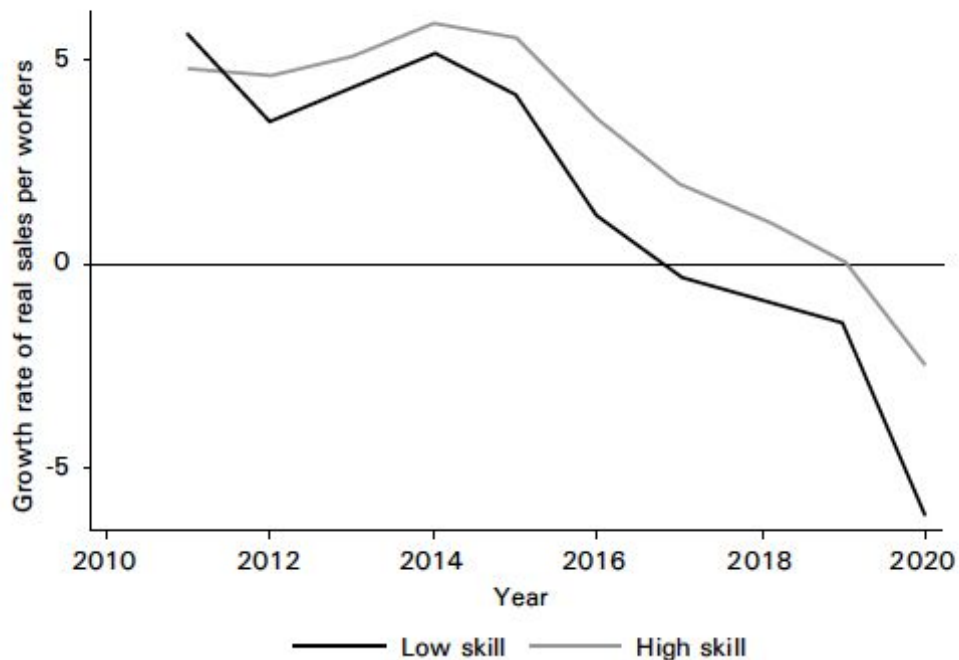


Indexed, 1990=100

Productivity is measured a real value added per worker.
Data sources:
Productivity Statistics of Japan Productivity Center.
The Conference Board International Labor Comparisons program, 2019.

(The story is the same in recent years in India)

Growth Rates at the Three-digit Industry Level in India by Skill Requirements



Data source: multiple rounds of the Annual Survey of Industry (ASI). High- and low-skill tasks are classified according to a procedure developed by Autor et al. (2003) and Acemoglu and Autor (2011).

Productivity is strongly correlated with firms' investments in their workers.



<i>Log(real sales/worker)</i>			
	(1)	(2)	(3)
Log(real emoluments)	0.333*** (0.0196)	0.340*** (0.00807)	0.321*** (0.00721)
Log(real wages)	0.661*** (0.0463)	0.640*** (0.0262)	0.615*** (0.0192)
Observations	344583	344583	344583

Data Source: ASI, 2019-20

My research aims to evaluate the **causal relationships** between investments in workers and business performance.

Together with many academic colleagues and the nonprofit *Good Business Lab*, I have developed the evidence base for **six broad areas of investment.**

Key levers of worker productivity



Soft Skills



Mental Health



Voice



Managerial Quality



**Environmental
Conditions**

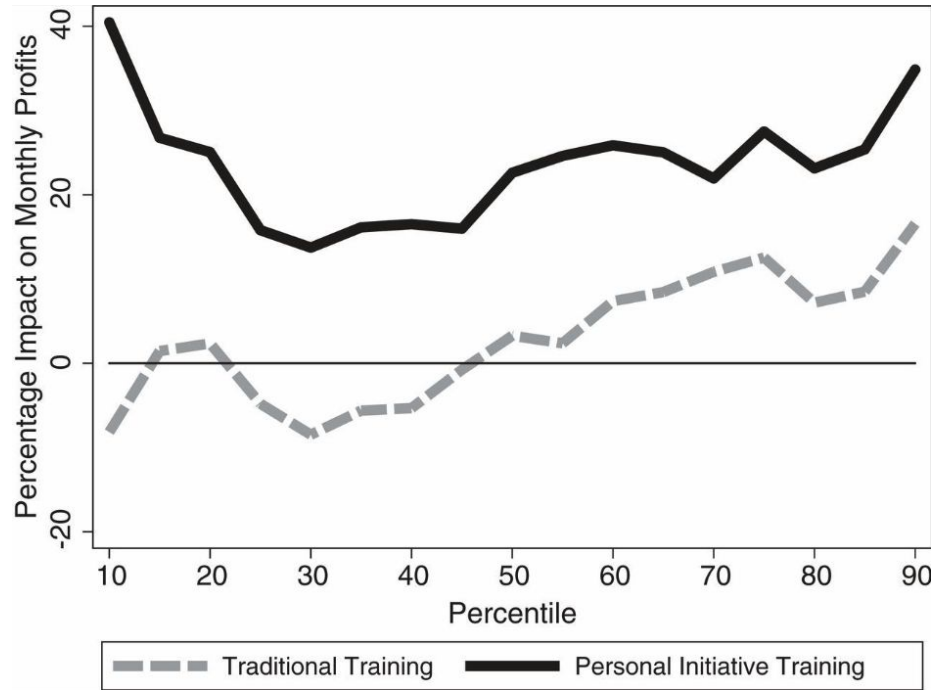


Financial Inclusion



- On-the-job **soft skills training** among **Indian female garment workers** increased **productivity** by **13.5%** and demonstrated a **250% ROI** to the firm (Adhvaryu et al., 2022b).
- Productivity gains come primarily through better **teamwork and communication**: untreated workers in teams with treated peers see large gains in productivity, too.

- Compared to a leading business training, a **psychology-based personal initiative training** program which teaches a proactive mindset and focuses on entrepreneurial behaviors **increased firm profits by 30%** over two years in an RCT in Togo, West Africa (Campos et al., 2017).
- The training break-even point was **less than one year.**

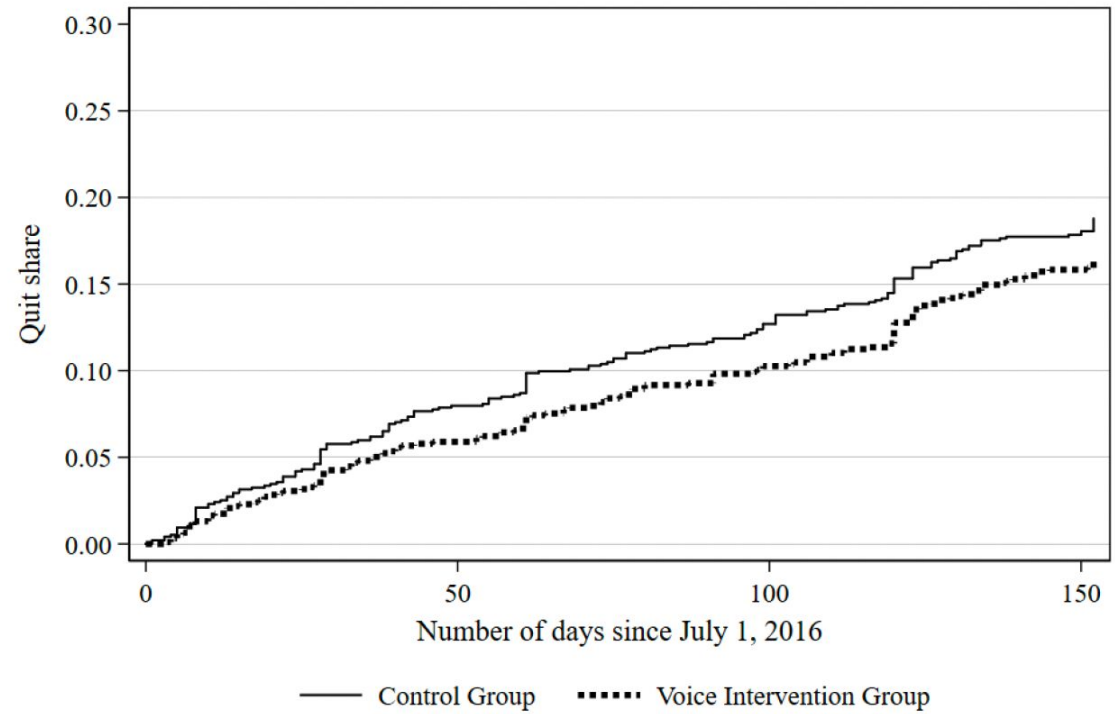


Quantile treatment effects on monthly profits

Source: Campos et al., 2017

- The relationship between **employers and workers is of paramount importance to productivity.**
- When that relationship becomes strained, both productivity as well as worker outcomes (job satisfaction, utility) could suffer, leading workers to exit the firm.
- Hirschman (1970) first theorized that enabling more “voice,” the ability to communicate with the employer and have that feedback translate into action, could reduce worker turnover and increase morale and productivity.

- After a (disappointing) minimum wage hike in India, **garment workers** were chosen at random to **anonymously give feedback on job conditions**, supervisor performance, and overall job satisfaction (Adhvaryu et al., 2022c).
- Enabling voice in this manner **reduced turnover by 20%** after the hike, particularly for the most disappointed workers.



Source: Adhvaryu et al., 2022c

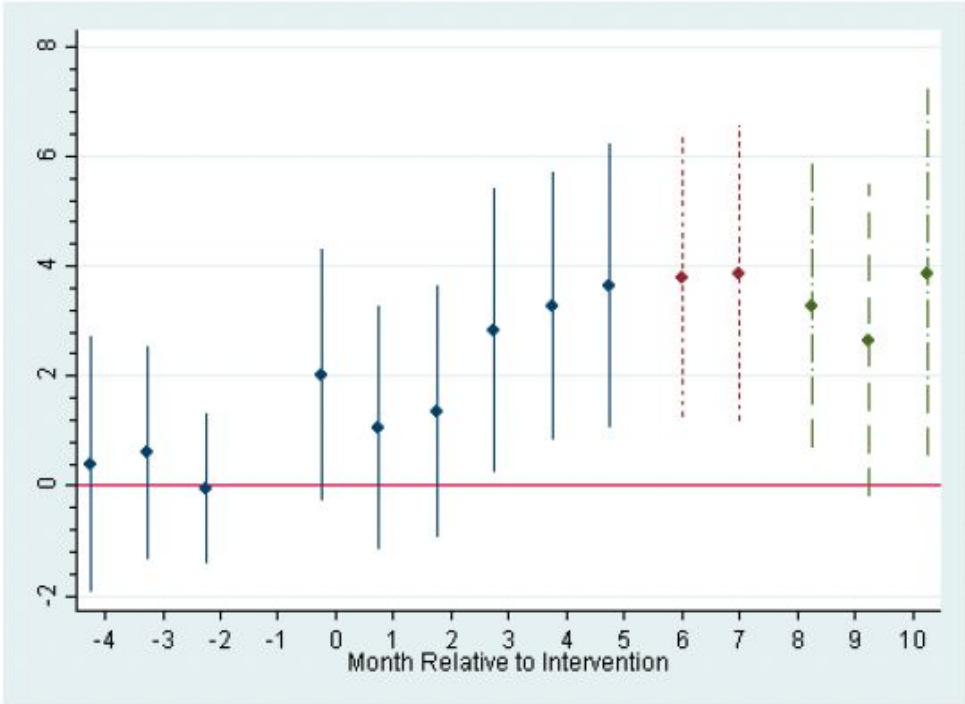
- Adhvaryu et al. (2021) introduced an SMS based **anonymised two-way communication system between workers and management** in two garment factories.
- **Quit rates reduced by 10% and absenteeism reduced by 5%** in the treatment group (group that received training of the tool and SMS reminders) than in the control group (group that was not prevented from using the tool but did not get training or reminder).



- GBL developed **Inache, a low tech, two-way, anonymized, worker communication tool**. Workers can send a text or call about their grievances, suggestions, or questions, which go to a central dashboard and onwards to designated factory staff.
- In a treatment arm, HR personnel were provided incentives for **timely and accurate resolution** of the messages received.
- The incentive arm had **12.5% reduction in monthly absenteeism** and **7.2% increase in productivity**.



- Cai and Wang (2022), introduce **worker evaluation for randomly selected supervisors** in auto manufacturing plant in China.
- Providing feedback **reduced worker turnover by 50% and increased team-level productivity by 2.3%.**
- These results are driven by changes in the behaviour of managers and improved relationship between managers and workers.



Coefficient of Team production KPI

Source: Cai and Wang, 2022

- Boudreau (2020) find that mandating the **formation of Occupational Safety and Health (OSH) increased compliance with the OSH** committee law.
- The stronger OSH committees had small but **positive impact on safety** with **largest impact** on factories with **better managerial practices**.
- These **improvements did not come at the cost of productivity** or reduction in wages or employment.

	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A</i>	Log(Labor Productivity)					
Treatment	0.101 (0.063)	0.077* (0.045)	0.101 (0.064)	0.040 (0.037) {0.272}	0.043 (0.034)	0.046 (0.038) {0.216}
	[0.088]	[0.205]	[0.094]	[0.361]	[0.319]	[0.321]
Control Mean	0.767	0.767	0.767	0.749	0.749	0.749
Factories	77	77	77	76	76	76
Observations	378	378	378	380	380	380
Stratification variables	Y	Y	Y	Y	Y	Y
Control, baseline dep. var.	Y	Y	N	Y	Y	N
Product FE	N	Y	N	N	Y	N
PDS Lasso Selected Controls	N	N	Y	N	N	Y
Drop partial shutdown	N	N	N	Y	Y	Y

Impact on labor productivity

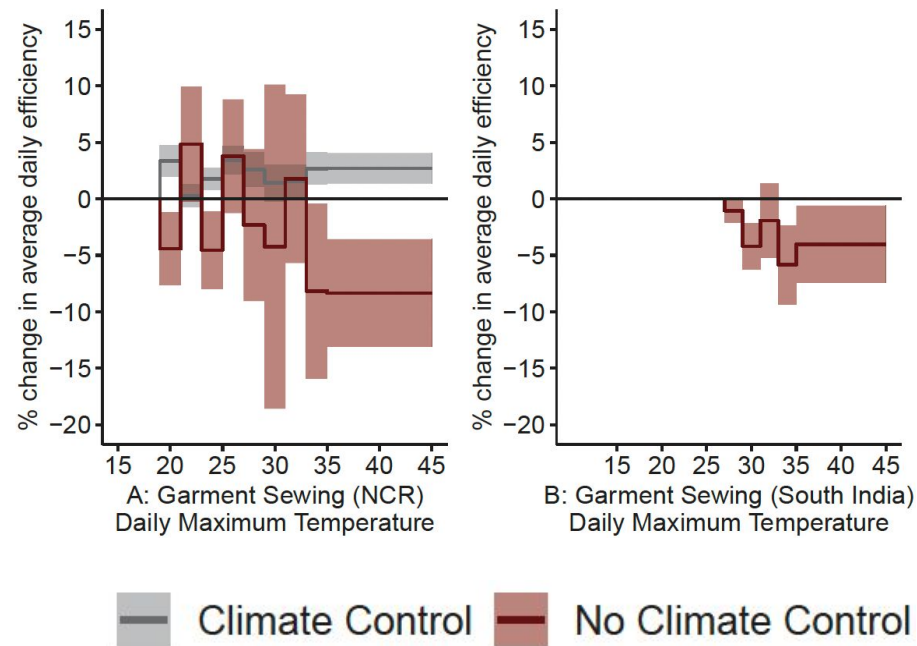
Source: Boudreau, 2020

- Levine et al.(2012) compared more than 400 uninspected firms with a matched set of inspected firms and found that **inspected employers experienced a 9.4% decline in injury rates and a 26% reduction in injury cost.**
- These improvements also **did not come at the expense of employment, sales, credit ratings, or firm survival.**
- When Occupational Safety and Health Administration (OSHA) in the US began issuing press releases about employers found to be violating its standards inspections, Johnson (2020) found that it led **to 73% fewer violations at “peer” facilities in the same sector within a 5 kilometer radius.**
- Improvements in compliance persist for facilities located even up to **50 km away.**

Environmental Conditions

Heat stress

- The physical environment of a worker likely has a significant influence on well-being and productivity.
- The **growing rates of extreme heat and pollution**, particularly in urban settings in low-income countries, which are accelerating due to climate change, **potentially threaten both worker health and well being as well as firm productivity**.
- **A one-degree Celsius increase** in temperature leads **productivity to fall by 2%**.
- Factories with cooling systems see no negative impact.

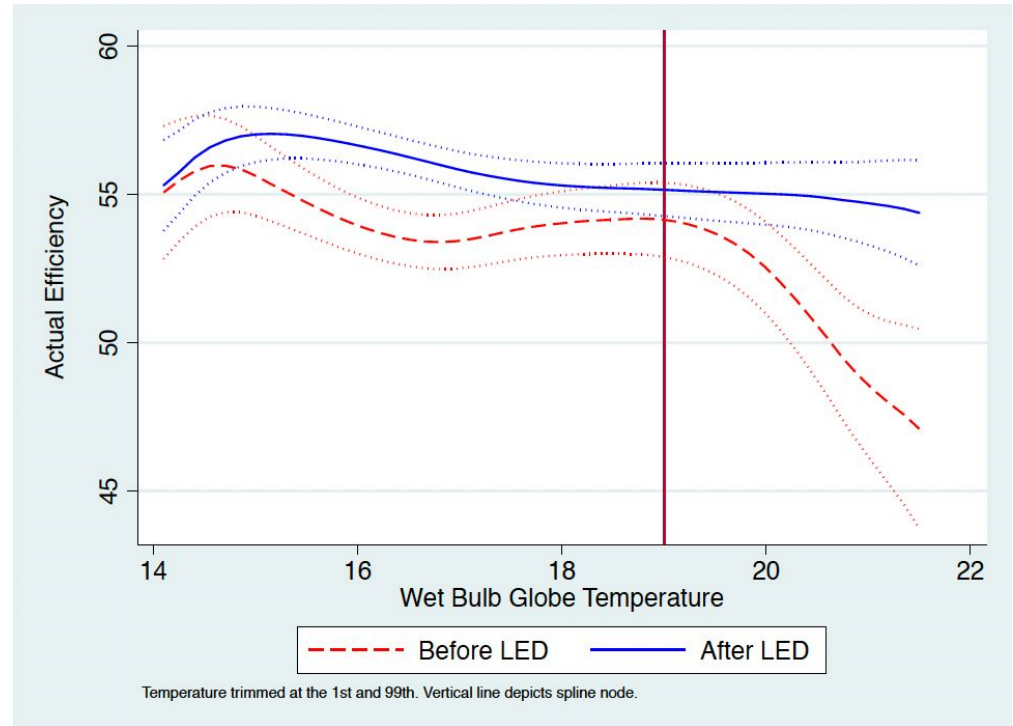


Source: Somanathan et al., 2021

Environmental Conditions

Lighting on the factory floor

- Introducing **energy-efficient lighting** on garment factory floors in India **eliminated roughly 85% of the negative impact of temperature** on worker efficiency during relatively hot days (Adhvaryu et al., 2020).
- Accounting for productivity benefits, the overall **break-even point** for the firm shifted from over 3.5 years to **less than 8 months**.



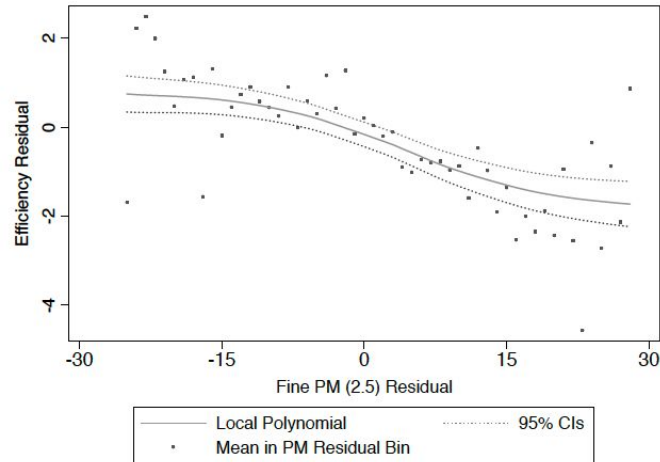
Efficiency Against Temperature by LED

Source: Adhvaryu et al., 2020

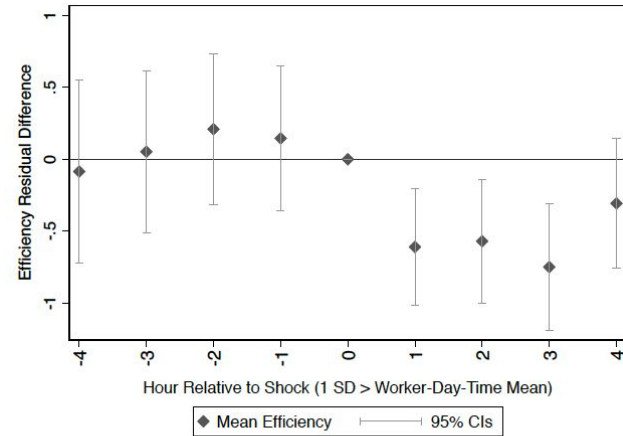
Environmental Conditions

Air pollution

- One-standard-deviation increase in Particulate Matter (PM) **pollution decreases efficiency by 1%** (Adhvaryu et al., 2022a).
- Impacts are larger** for **workers performing complex tasks** by 60% and **for older workers** by 35%.



(a) Worker-Hour Productivity-PM Gradient



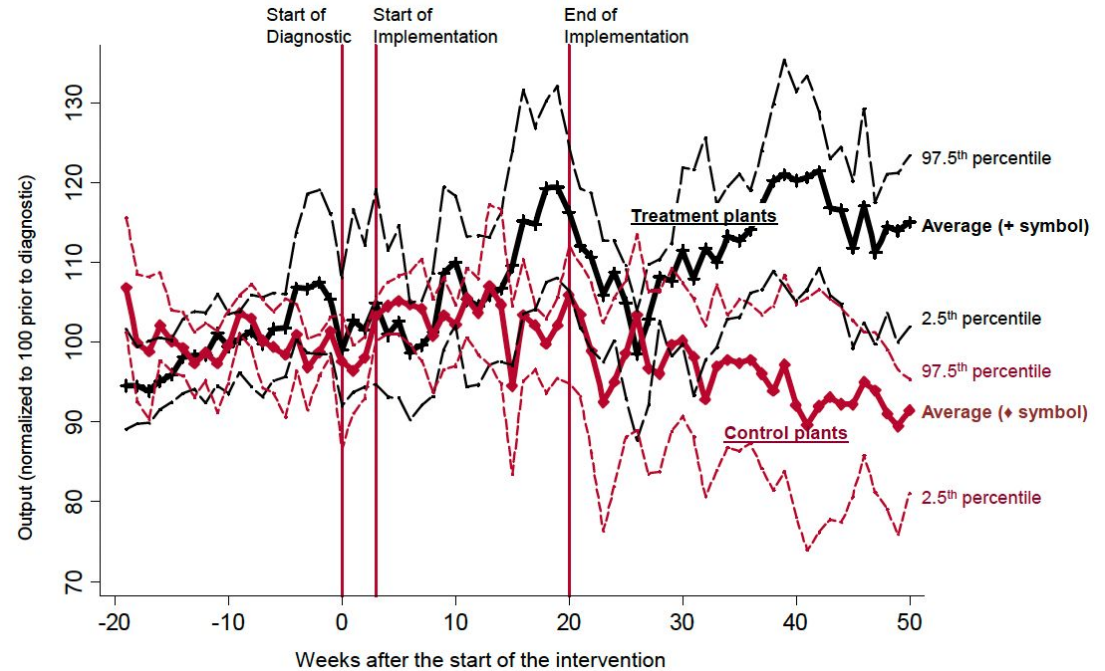
(b) Worker-Level Event Study

- The quality of managers is integral to a firm's performance, affecting workers' well-being, productivity, and, ultimately, the company's profitability.
- Comprehensive and specialized **training programs targeting managerial practices** and communication skills have proven to be **effective**.
- Allocation of training resources and the **alignment of incentives** within the managerial hierarchy are critical considerations for the successful implementation of these productivity-enhancing investments.

Managerial Quality

Introduction

- Providing **free consulting** on modern management practices to a randomly chosen firms **raised average productivity by 11%** through improved quality and efficiency and reduced inventory (Bloom et al., 2013).
- **Better practices** enabled owners to delegate more decisions to middle managers and **grow the firm size.**



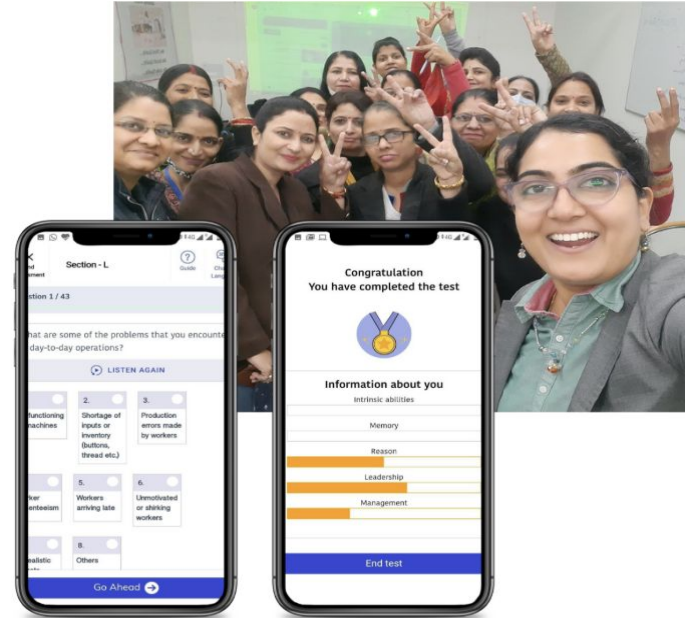
Output for the treatment and control plants

Source: Bloom et al., 2013

Managerial Quality

STITCH

- STITCH is a **research-backed soft skills training program** that promotes activity-based learning to build **interpersonal and leadership skills** among aspiring and current supervisors.
- Components of the training include **conflict resolution, communication, emotional intelligence, culture building, team management, and problem solving** among other crucial aspects.
- **Managers** of production garment production lines saw a **7% increase in productivity** in an RCT **following STITCH implementation** (Adhvaryu et al., 2023a).
- Trained managers were **15% less likely to quit**.



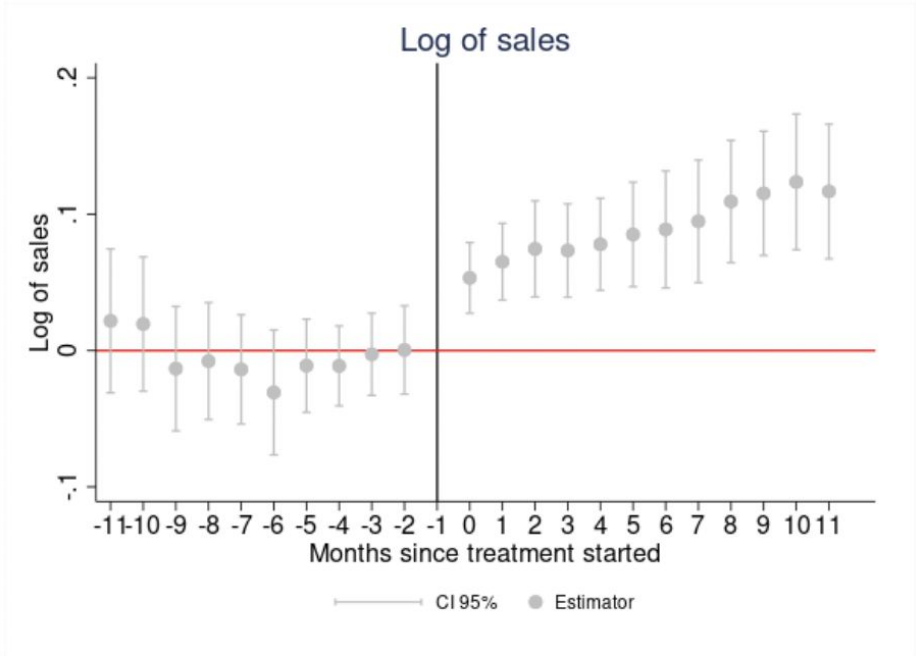
- Selecting candidates for manager positions based on hard-to-observe traits and behaviors could dramatically improve productivity (Adhvaryu et al., 2022).

Simulated Contributions to Productivity			
Factor	Mean	Short orders	Long orders
<i>Screening (Easily Observed)</i>			
Tenure	0.237 (0.0441)	0.1704 (0.0348)	0.3436 (0.0603)
Demographics	0.1687 (0.0054)	0.1321 (0.0042)	0.2269 (0.008)
<i>Screening (Costly to Observe)</i>			
Cognitive Skills	0.2945 (0.0606)	0.2314 (0.0446)	0.3954 (0.0856)
Control	0.421 (0.0601)	0.3313 (0.0457)	0.5637 (0.083)
Personality	0.2363 (0.0305)	0.171 (0.0229)	0.3293 (0.0419)
<i>Training</i>			
Autonomy	0.1655 (0.0299)	0.1188 (0.0025)	0.2384 (0.0406)
Attention	0.3054 (0.0338)	0.2281 (0.0247)	0.4278 (0.0472)

Managerial Quality

Managerial quality in retail

- In large retail firms in Columbia, arrival of a **“good” manager unlocked a 12.4 percent increase in monthly sales**, which translates to an additional **21,000 USD** in monthly sales.
- Good managers don’t do more, they focus on critical areas. They reallocate talent to high-return areas of production and make tough trade-offs (e.g., reducing worker training and increasing worker effort costs).



Source: Adhvaryu et al., 2025a

Financial Inclusion

Introduction

- Low and moderate-wage earners, despite having stable and predictable income streams, frequently encounter **financial setbacks due to short-term liquidity constraints**.
- Kaur et al. (2021) argue that an inability to meet expenses creates mental burdens—referred to as financial strain—which can impair workplace productivity through distraction or increased errors
- DFS can provide liquidity during shocks, promoting saving, and enabling consumption smoothing (Munyegeera and Matsumoto, 2016; Suri and Jack, 2016).

Financial Inclusion

Earned Wage Access

- A digital **Earned Wage Access tool** was designed that **lets factory workers to access up to 50% of their earned salary when they need it most before payday** through on-site tablets, integrated with payroll systems.
- Earned Wage Access **increased productivity by 8%**, and **decreased turnover by 22%** (Adhvaryu et al., 2025b)



Mental Health

Buddy System

- Migrant workers often face **isolation** in cities, impacting mental health and productivity.
- In an Indian garment manufacturing **simple, low-cost intervention** was designed that brought women migrant workers together to foster friendships and emotional support by **pairing new migrant workers with senior factory workers**.
- The results showed that the **productivity increased by 12% for seniors factory workers and by 6.43% for all workers who received the treatment**.



Given often very large ROI, why don't firms invest more in workers?

- **Information frictions**

Firms may not know about the importance of investments in workers or underestimate the magnitudes of the impact of investments.

- **Risk aversion**

Worthwhile investments may be forgone if there is uncertainty in the value of investments and decision-makers are risk averse

- **Limited attention**

Managerial inattention could impede the ability of the firm to either invest or implement effective strategies that seek to further worker productivity

- **Misalignment of incentives**

Misaligned incentives can hinder the adoption of beneficial technologies, potentially limiting improvements in firm performance.

Discussion

- Non-wage amenities of several kinds are effective at increasing worker productivity and reducing turnover (and sometimes increasing worker compensation).
- Firm investments in these areas tend to have positive ROI.
 - Initial investments are quite small and payback periods are short.
- More work is needed to understand why firms do not invest more in these areas in *status quo*.
 - Recent work shows that such investments are likely “experience goods” – WTP increases substantially after initial experimentation (Garg et al. 2025)