



Department of Management public lecture

# How Much Does Good Management Matter? Evidence from India

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# Does Management Matter? Evidence from India

John Roberts  
Stanford GSB and LSE  
May 2010

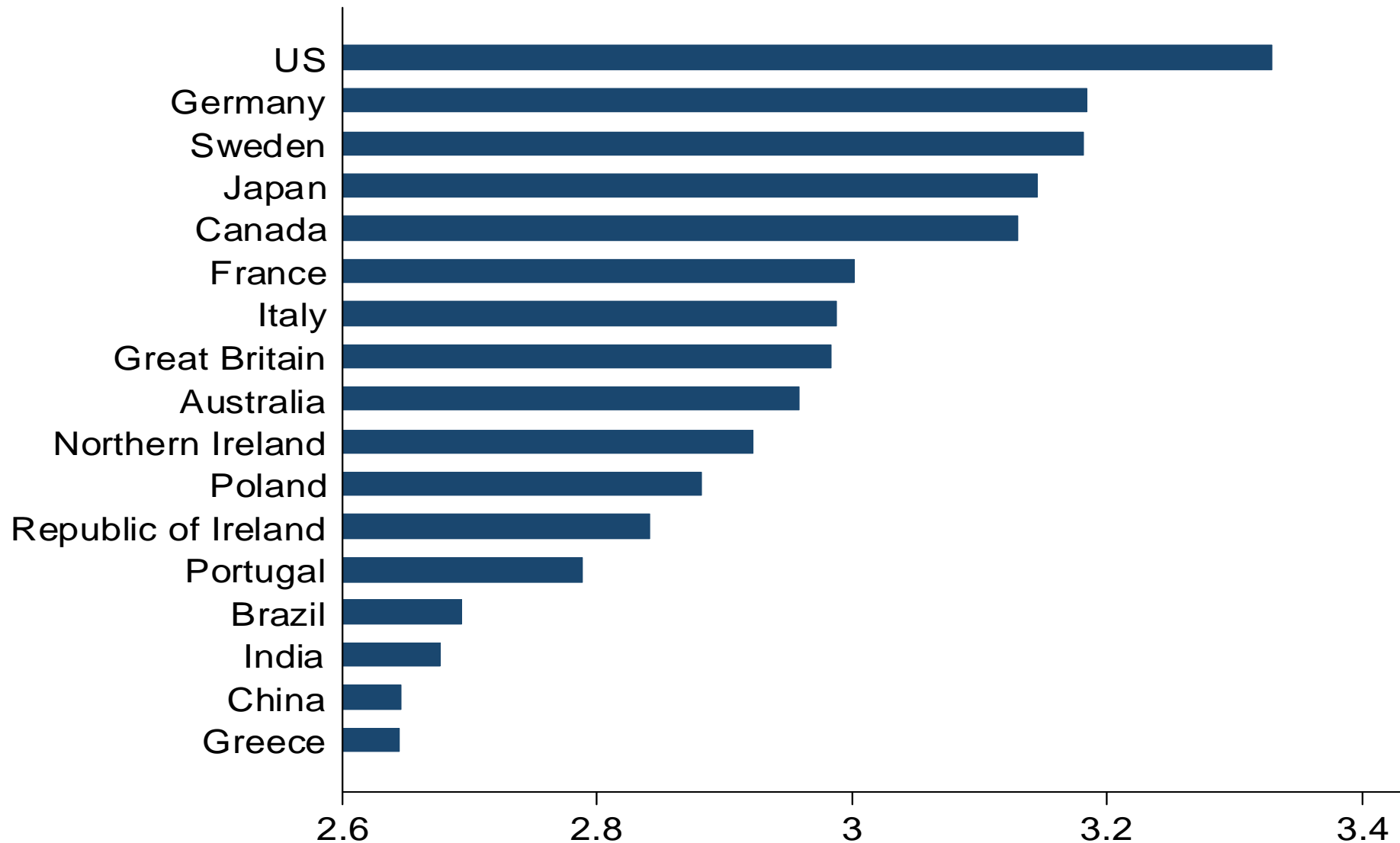
# “Does Management Matter: Evidence from India”

- Nicholas Bloom, Stanford
  - Benn Eifert, Berkeley
  - Aprajit Mahajan, Stanford
  - David McKenzie, World Bank
  - John Roberts, Stanford
- 
- <http://www.stanford.edu/~nbloom/DMM.pdf>

# Does Management Matter?

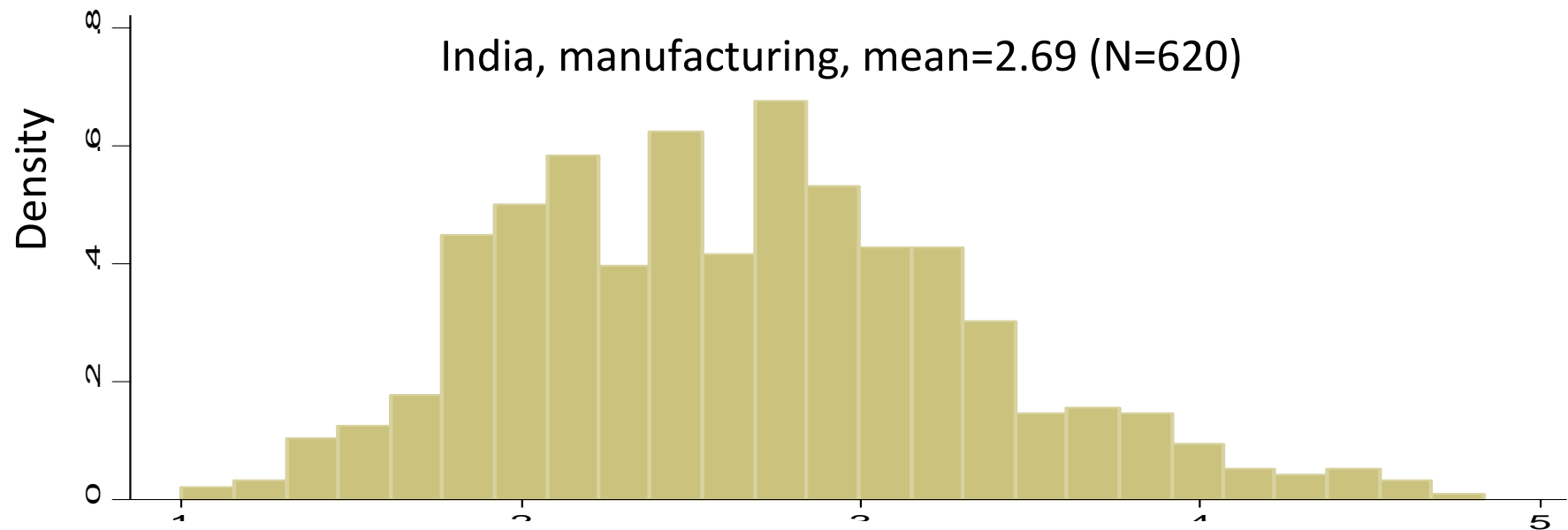
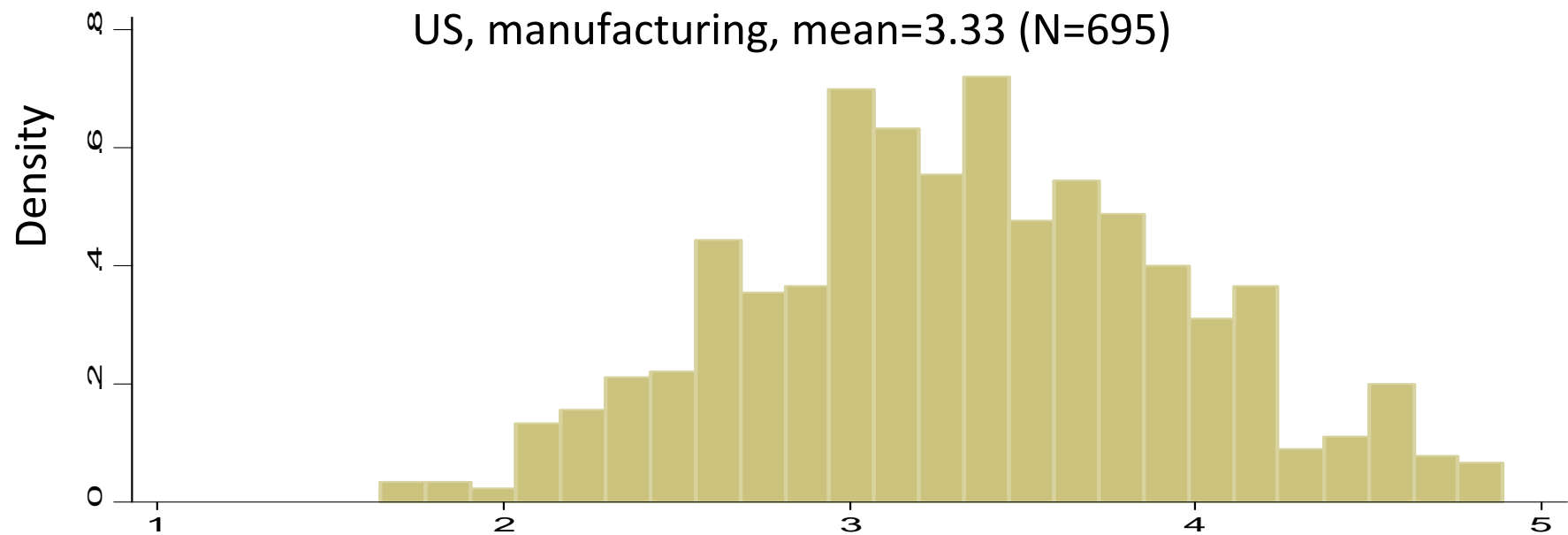
- Business practitioners and scholars versus economists
- Difficulty of measurement, recently met
- Lots of correlations
  - Bloom-Van Reenen and coauthors
  - Ichniowsky-Shaw and coauthors
- But causation?
  - No work in large firms

# Richer Countries Have Better Management



Average BVR country management score, manufacturing firms 100 to 5000 employees

# Developing Countries Have Many Badly Managed Firms



# Some Questions

- Are we really seeing bad management here?
- If so, why are so many Indian (and, more generally, developing country) firms badly managed?
- How do they then survive?
- Can their management be improved?
- With what effect?

# Trying to Answer the Questions

- Experiment with changing management practices supported by a consultancy
- Large weaving firms (300+ employees, \$7.5 million turnover) near Mumbai
- Treatment group got heavy consulting help
- Control group got light consulting (to permit data collection)
- Collect weekly data on management practices and plant performance, 2008-2010



# Results

- Total Factor Productivity up 11% on average
- Profits up on average \$330,000 annually per firm
  - Probably on the order of 100%
  - No access to trustworthy financials for most firms
- Quality problems decreased 60%

# Results

- More decentralization and delegation
- Greater communication
  - Horizontal and multilayer
- More use of IT

# Why Were They So Bad?

- Lack of information
  - Did not know about practices
  - Mis-estimated applicability/benefits
- Weak top management (family)
- Competition ineffective in driving out badly managed firms
  - Traditional entry barriers
  - Managerial limits on expansion (family)

# What Might Be Done?

- Improve rule of law
- Basic management training
- Technology transfer
  - FDI
  - Large Indian firms

# Typical Plants





# Four Stages of Production



(1) Winding the yarn thread onto the warp beam



(2) Drawing the warp beam ready for weaving



(3) Weaving the fabric on the weaving loom



(4) Quality checking and repair

# Many Plants Were Dirty and Unsafe



# Garbage inside a Plant





# Flammable Garbage in a Plant



# Chemicals in Open Containers



# Work Areas Messy, Disorganized



# Tools Left on the Floor



# Dirty, Poorly Maintained Machines





# Inventory Unlabelled, Unorganized and Unprotected from Damp



# Yarn Piled So Deep it is Unreachable



# Stock Mixed Together and Damaged





# Spare Parts Unorganized and Unlabelled



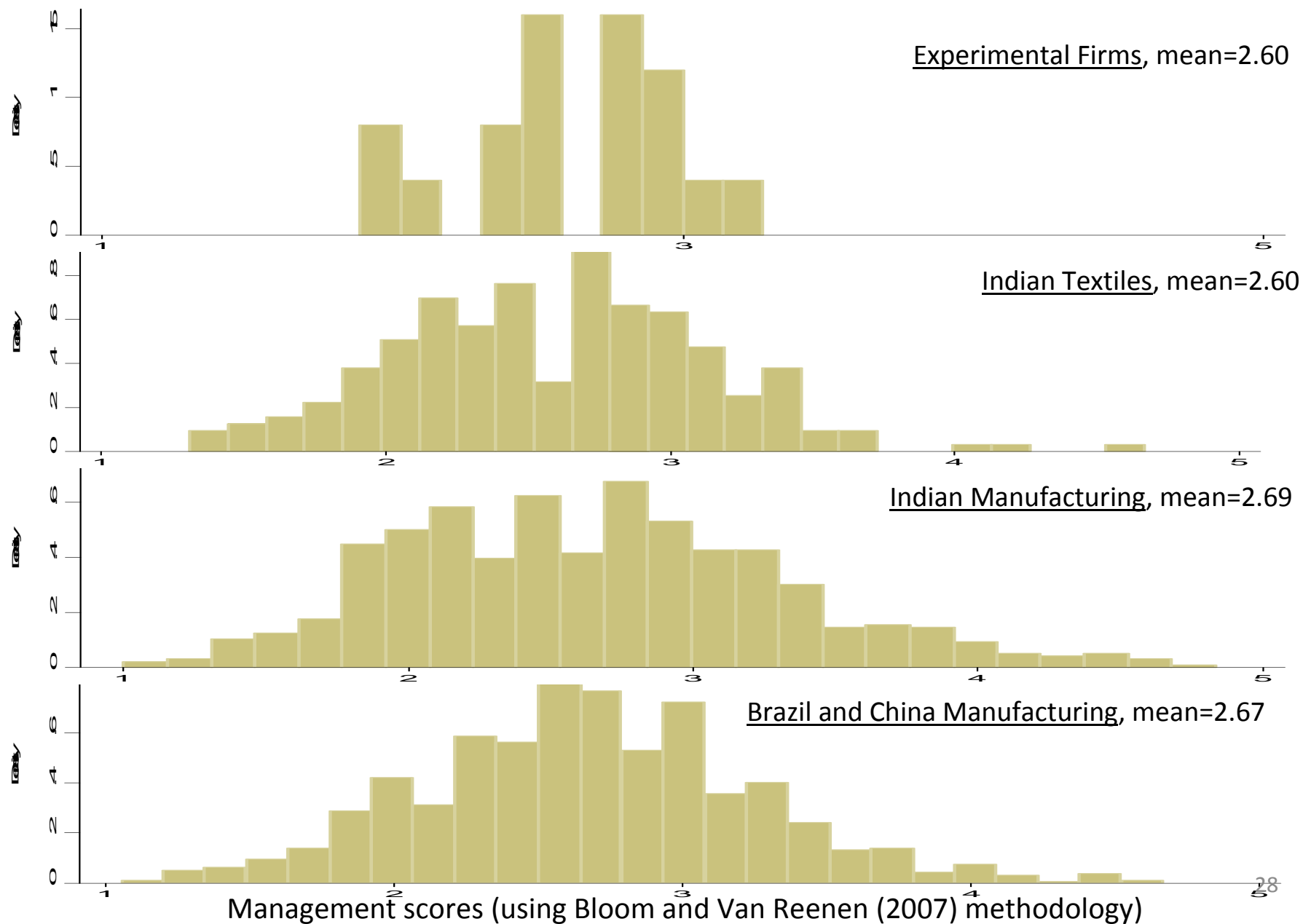
# Spare Parts Stores a Mess



# Typical Store Room



# These firms appear typical





# Agenda

## **Management practices before and after treatment**

Performance of the plants before and after treatment

Decentralization, communication and IT

Why were these practices not introduced before?

# Experimental Design

- Identified 66 large textile firms in Tarapur
- Contacted each with offer of management consulting by Accenture paid by Stanford and the World Bank
- 17 firms, with 28 plants, accepted
- Randomly assigned plant to four groups
  - 4 to Wave 1 Treatment, 10 to Wave 2 Treatment
  - 6 to Control
  - 8 to “Off-site”

# Treatment and Control

- Treatment and control both got one month of diagnostic during which the Accenture consultants identified existing practices, collected data on practices and performance and formulated recommendations
- Treatment then got 4 months of help with implementation, 2 – 2.5 days a week
- Collect practice and performance data from both weekly



# Off-site Plants

- Very costly to provide consulting and to collect performance data
- Wanted to see if practices would spread within firms
- So 8 “off site” plants belonging to experiment firms held back, collected data only on practices

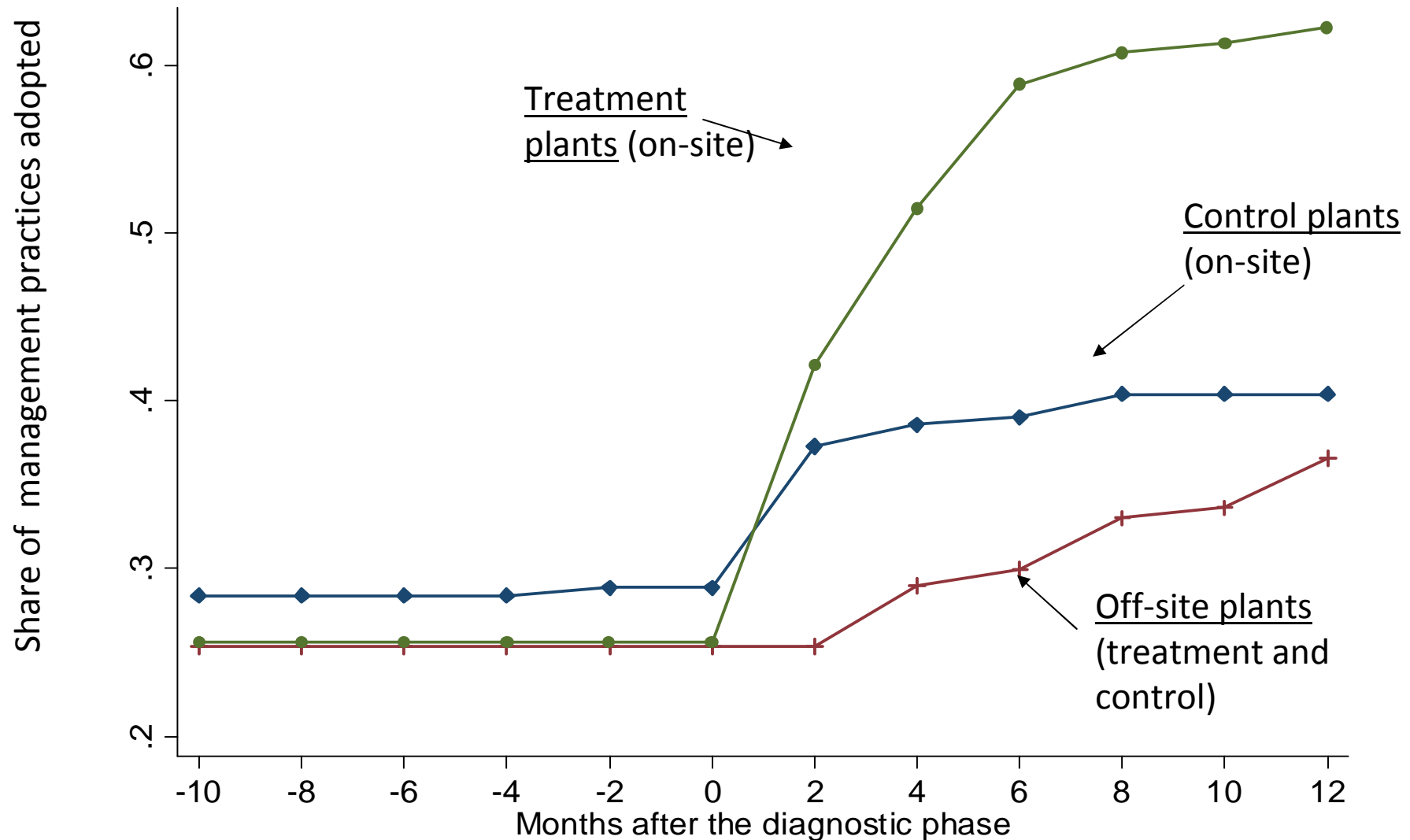
# Intervention

- 38 management practices
- 6 areas
  - Factory operations
  - Quality control
  - Inventory management
  - Loom planning
  - HRM
  - Sales and orders

# Examples

- Operations
  - Do you do preventative maintenance?
  - Do you do it to manufacturers recommended standards?
  - Is downtime recorded?
  - Are the reasons for downtime identified and analyzed?
- Inventory
  - Are purchases and use of inventory recorded?
  - Are stock levels monitored at least weekly?

# Adoption of 38 Management Practices



# Agenda

Management practices before and after treatment

**Performance of the plants before and after treatment**

Decentralization, communication and IT

Why were these practices not introduced before?

# Quality: 20% of Staff in Repairs



Quality: 5% of Output Scrapped



# Quality: Record Keeping

7/5/2008				
1202	26	69	61	68
1202	26	69	61	68
1203	37	62	57	84
1204	37	62	57	84
1205	31	38	38	84
1206	31	39	38	84
1207	24	459	56	76
1208	24	458	56	76
1209	43	4719	28	76
1210	43	4720	28	76

# Records only to deal with customer complaints



# Record Keeping Now

SILK MILLS

JA

Date: 18/04/2024

GREY PERCH INSPECTION AND DAILY PRODUCTION OF PIECES

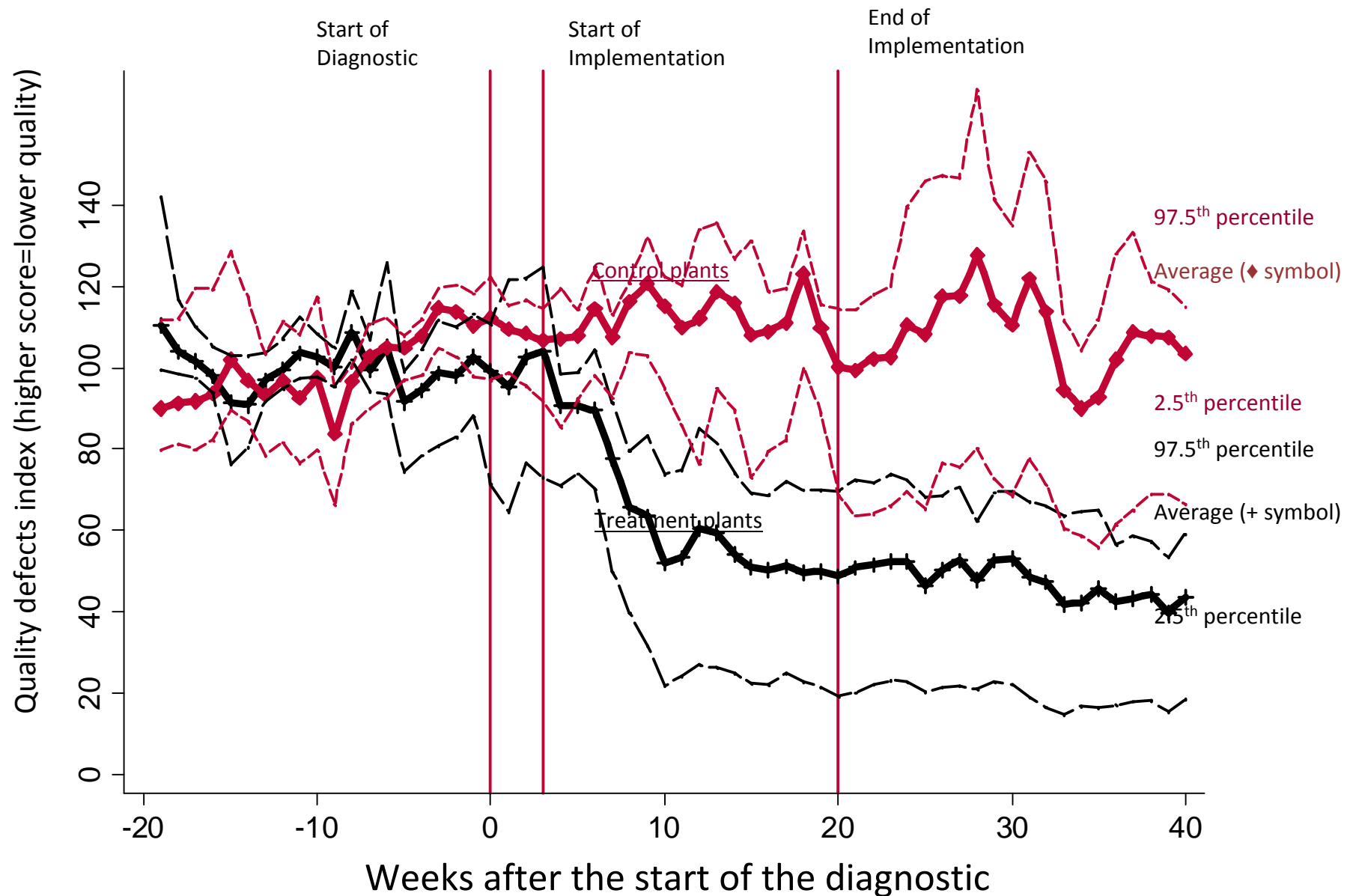
Quantity No.	Lot No.	Part No.	Beam No.	HPI	WPH	Piece Marks	Piece Weight (Kg.)	Quality Weight (Gm)	Standard Weight	Sub	DEFECTS				C				Remarks	Total				
											Curly	Shorn	Chase	More Light Cut	Wing Finding	Back Set edge	Shorn & Broken	Wing & Broken			Shorn & Broken	Shorn & Broken		
50000 54	41	T6180	112	42	62	186-180	30.520	247	249	180														
										187														
50000 55	42	T6181	114	48	63	180-180	34.960	269	276	180														
										185														
50000 56	43	T6182	115	44	64	129-180	47.620	266	265	120														
										175														
										168														
50000 57	44	T6183	117	45	63	124-180	29.760	235	240	180														
										182														
										120														
50000 58	45	T6184	121	44	64	124-180	31.040		263	180														
										187														
50000 59	46	T6185	-	48	63	122-180	38.720		-	180														
										182														
50000 60	47	T6186	113	42	63				267	142														
										180														

Standardized, systematic, ready to enter in computer

# Quality Data Analyzed at Daily Meetings of Plant Manager and Direct Reports



# Quality Defects Index



# Estimating Management Effect in Regressions

(A) OLS: plant FEs and weekly time dummies

$$\text{Outcome}_{i,t} = \alpha_i + \lambda_t + \beta \text{management}_{i,t} + v_{i,t}$$

(B) IV: 2<sup>nd</sup> stage as above, 1<sup>st</sup> stage instruments management

$$\text{Management}_{i,t} = \alpha_i + \lambda_t + \beta_1 \log(1 + \text{intervention weeks})_{i,t} + e_{i,t}$$

(C) ITT: regress on outcome on intervention

$$\text{Outcome}_{i,t} = \alpha_i + \lambda_t + \beta \text{intervention}_{i,t} + v_{i,t}$$

All standard errors bootstrapped clustered at firm level

# Impact of Management on Quality

Dependent Variable	Quality (log QDI)		
Specification	OLS	IV	ITT
	(1)	(2)	(3)
Management <sub>i,t</sub> Adoption of management practices	-0.760 (0.457)	-2.024*** (0.715)	
Intervention <sub>i,t</sub> Intervention stage initiated			-0.385** (0.165)
Instrument		Log (1+ months of treatment)	
Time FEs	106	106	106
Plant FEs	20	20	20
Observations	1366	1366	1366

Data is weekly at the plant level. Standard errors are bootstrap clustered at the firm level.

# Inventory Labeled, Racked and Protected

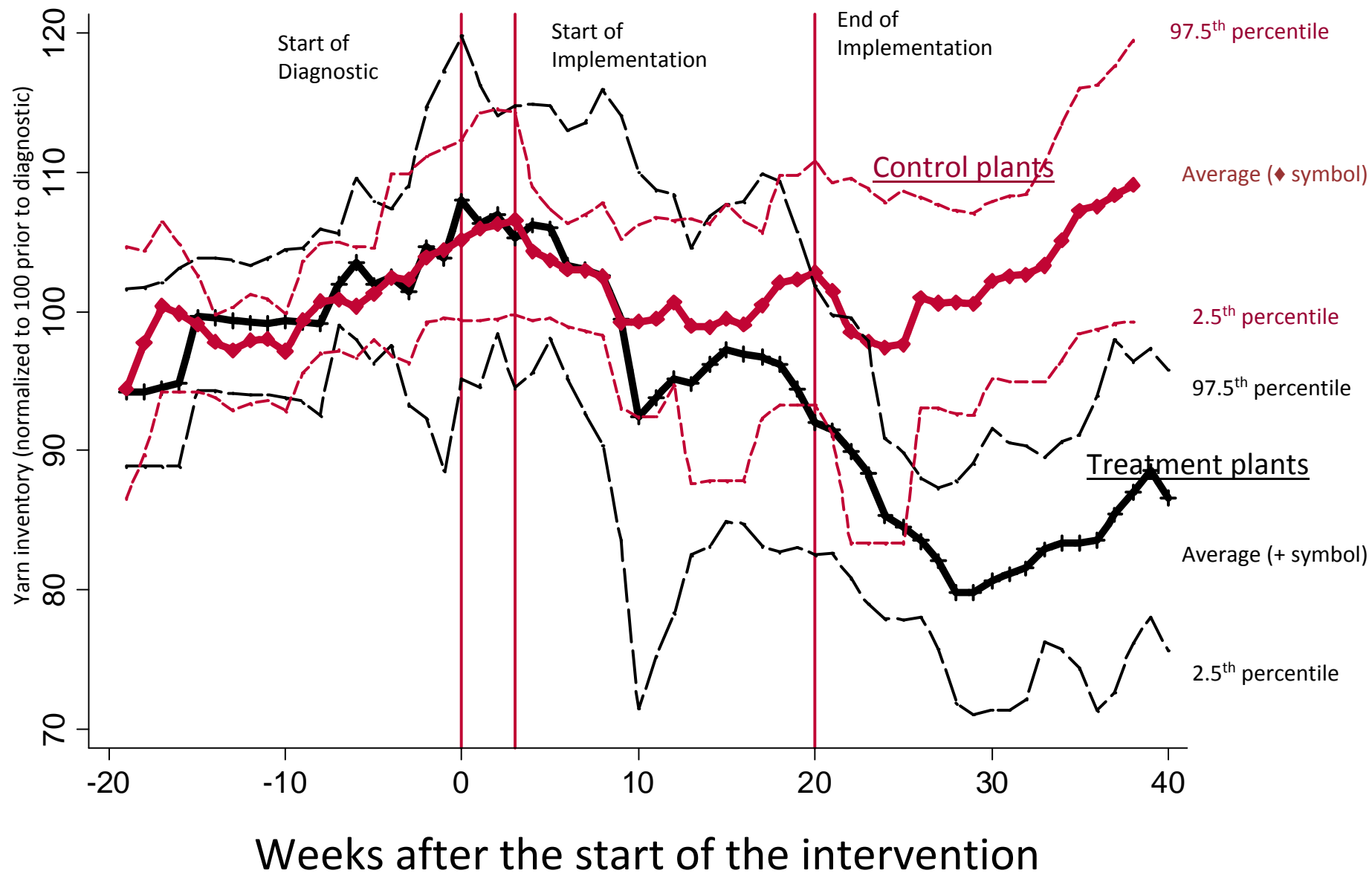


# Sales Function is Informed about Yarn Inventories to Influence Sales

FIBRE		CARD NO.
Colour Name	Yarn Sample	
100% cotton Shiro Lt Tanpe R112-1536		59
100% cotton Shiro ECM R112-1537		55
2/60 cotton Mars 94		18
8/3 cotton Shiro Lt Tanpe		8
100 cotton Shiro Moss Green		14
8/3 cotton Shiro Amellon		15



# Yarn Inventory





# Impact of Management on Inventory

Dependent Variable	Inventory (log tons)		
Specification	OLS	IV	ITT
	(4)	(5)	(6)
Management <sub>i,t</sub> Adoption of management practices	-0.707*** (0.225)	-0.939*** (0.349)	
Intervention <sub>i,t</sub> Intervention stage initiated			-0.173* (0.086)
Instrument		Log (1+ months of treatment)	
Time FEs	104	104	104
Plant FEs	18	18	18
Observations	1690	1690	1690

Data is weekly at the plant level. Standard errors are bootstrap clustered at the firm level.

# Production

- 5S
- Tagging abnormalities
- Record keeping
- Organized spares supply
- Maintenance
- Performance boards and incentive pay
- ...

# Impact of Management on Output

Dependent Variable	Output (log picks)		
Specification	OLS	IV	ITT
	(7)	(8)	(9)
Management <sub>i,t</sub> Adoption of management practices	0.121 (0.085)	0.253*** (0.076)	
Intervention <sub>i,t</sub> Intervention stage initiated			0.018 (0.029)
Instrument		Log (1+ months of treatment)	
Time FEs	104	104	104
Plant FEs	20	20	20
Observations	1862	1862	1862

Data is weekly at the plant level. Standard errors are bootstrap clustered at the firm level.

# Agenda

Management practices before and after treatment

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**Decentralization, communication and IT**

Why were these practices not introduced before?

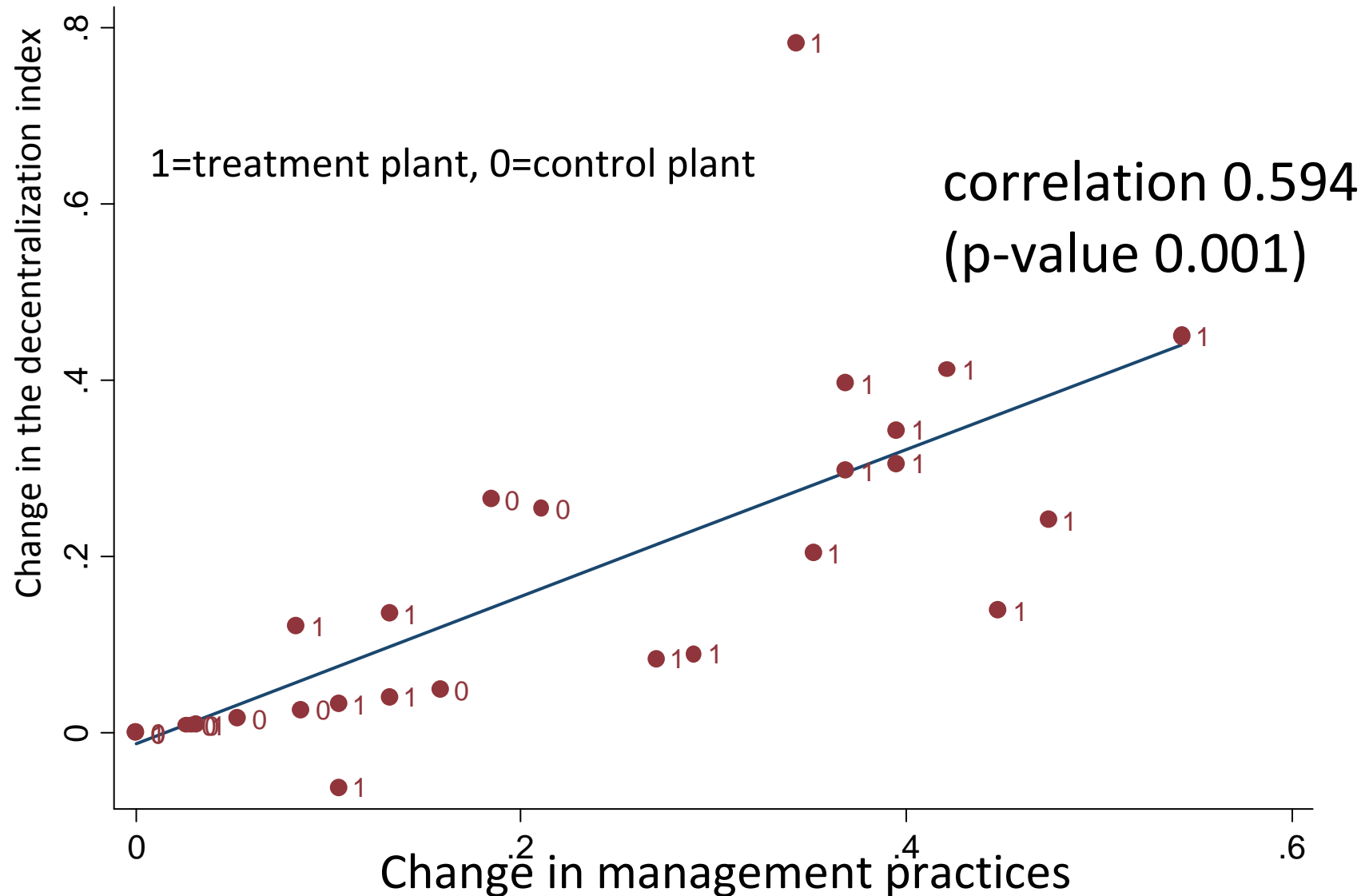
# Improved Management Led to More Delegation

- Firms in developing countries are typically very centralized (Bloom, Sadun and Van Reenen, 2009)
- Owners take decisions to avoid embezzlement by their middle managers, because:
  - Rule of law is weak, so punishing theft is hard
  - Management is poor, so detecting theft is hard
- When management improves the ability to detect theft increases, so we should see more decentralization
- This matters for growth since the inability to decentralize limits the growth of productive firms, impeding reallocation

# Computerization and Communication

- Significant increase in numbers using computers or reports/analysis from them
- More communication spanning non-adjacent layers
- More horizontal communication
- More open discussions
  - Implications for IV estimates?

# Decentralization and Changes in Management Practices



# Why Were These Changes not Already Adopted?

- Consultants used decision model to categorize cause of non-adoption at 60 day intervals
- Based on observations, discussions
- Supplemented by our visits
- Initially 73% not adopted
- 39% because of ignorance of practice
- 29% because of miscalculation of value



# Over Time

- Practices adopted
- Reasons for non-adoption of remaining shift from ignorance to
  - Miscalculation
  - Director failure and
  - Manager lack of incentives

# Why Doesn't Competition Work?

- Bankruptcy not a threat
- Director decision-making constraints
  - Work 72 hours a week
  - But do not delegate for fear of embezzlement
  - Limits growth
  - Number of brothers explains number of plants
- Capital barrier to entry (\$13 million) and no guarantee of management quality

# Summary

- Firms in emerging economies often have bad management that limits their productivity
- Lack of knowledge is the key reason for this
- Such knowledge can be transferred and applied
- The results are significant

# Policy

- Education
- Rule of law
- Technology transfer
  - FDI
  - Competition



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