

# Quality Management & Job Quality:

## How ISO 9001 affects employees & employers

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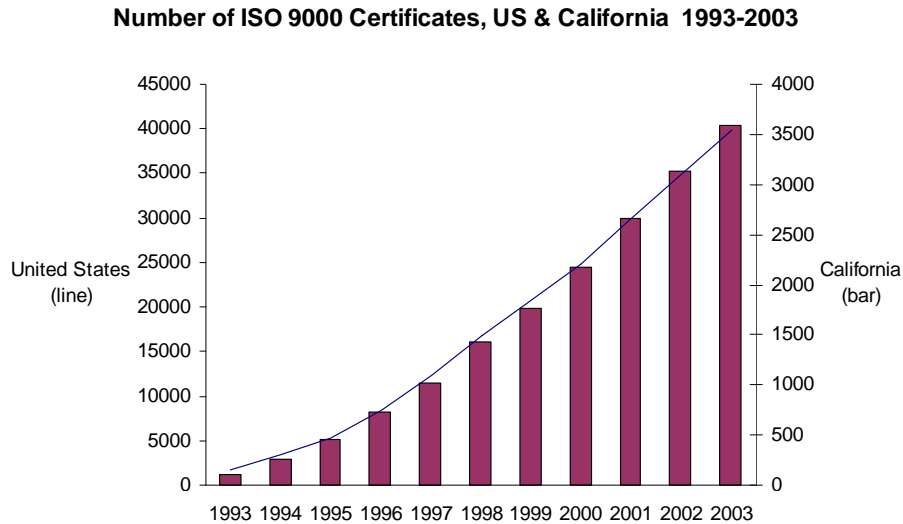
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## About me

- Industry experience
  - Operations management
  - EHS consulting
  - Corporate EHS Director
    - Internal policies, procedures, training, auditing
    - ISO 14001 and Responsible Care
- Harvard Business School
  - Teach MBAs and PhDs
  - Case studies
  - Large-N data analysis

# ISO 9001 is popular

900,000 adopters in 170 countries by 2006



Source: ISO 9000 Registered Company Directory

## Why study the impacts of ISO 9001?

- Half a million adopters.
- Diffusion based largely on faith, not on large-scale empirical results.
- Prior analyses have some drawbacks:
  - Subjective measures  
“Did ISO 9001 help your sales?” None, A bit, A lot
  - Subjective survey respondents  
Typically, Quality Manager

# Our empirical approach

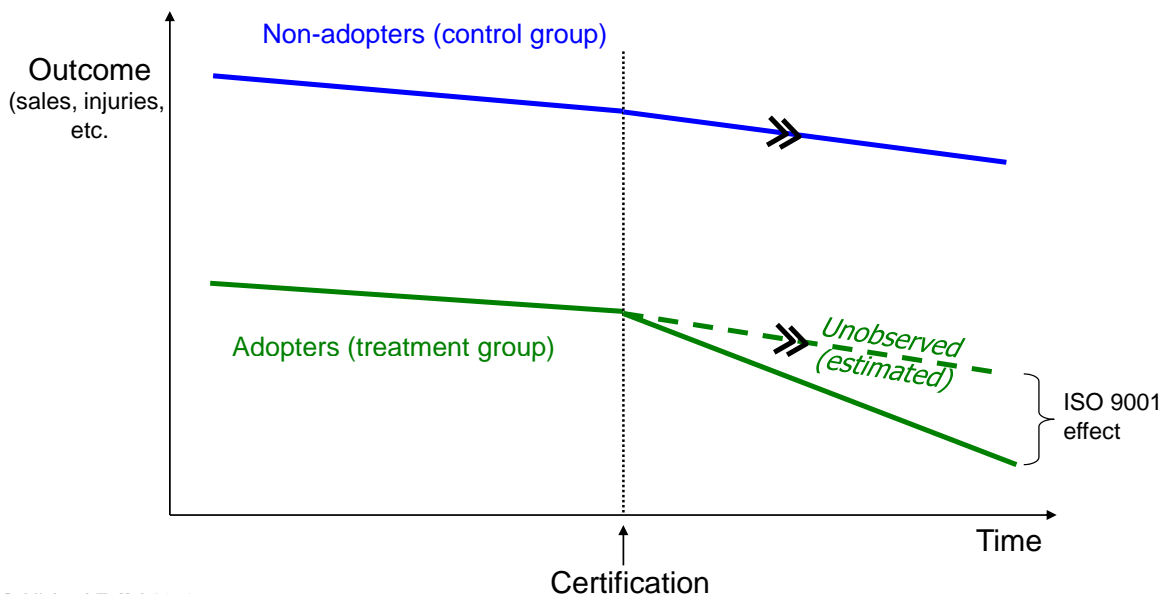
We compare ISO 9001 adopters to similar set of non-adopters

- In California
- Single-plant firms
- Purchase worker's compensation insurance (not self-insured)
- Match on size, industry, etc.
- Exhibit similar performance pre-trends

Number of single-plant firms

- Overall: 1,418 adopters + 20,777 non-adopters
- Matched: 550 adopters to 550 non-adopters

## Empirical approach: differences in differences



# What was already known and What we learned

## What's the impact of ISO 9001?

**Signal to (potential) buyers that quality management approach meets international standards**

- ↑ production ✓
- ↑ financial returns ✓
- ↑ sales ?
- ↑ employment ?
- ↑ company survival ?

**Improve management practices**

- ↑ quality outcomes (e.g., ↓ defects)
- ↑ or ↓ required skill set ? (wages)

Possible spillovers to...

- ↑ or ↓ occupational safety ?
- ↓ pollution ✓

Our study  
examines these  
potential  
outcomes

# ISO 9001 → survival & sales

ISO 9001 may lead to higher rates of firm survival and higher sales if adopting ISO 9001...

## 1. Promotes learning

...teaches how to reduce costs or improve quality → lowers cost ( $\uparrow \Pi$ )

## 2. Signals

...signals unobservable high-quality to buyers → increases price ( $\uparrow \Pi$ )

## 3. Screens

...qualifies suppliers → increases sales

We found that, compared to matched non-adopters, ISO 9001 adopters subsequently...

- Had higher survival (fewer firm deaths)

Proportion of firms that disappeared from our dataset between adoption year and 2003: 0.5% of adopters vs. 7.1% of non-adopters

- Had higher sales

Adopters subsequently had 9% higher sales than non-adopters

# ISO 9001 → worker skills

ISO 9001 requires new tasks:

- standardizing procedures
- documenting procedures
- root-cause analysis
- training
- auditing
- continuous improvement

➤ If require more effort, skill, or specialized knowledge, higher wages

ISO 9001 may erode skill requirements by codifying routines, which can reduce worker discretion and devalue tacit expertise.

➤ Enables lower skill operators, at lower wages

We found that, compared to matched non-adopters, ISO 9001 adopters subsequently...

- Had higher wages

Adopters subsequently had 7.5% higher wages than non-adopters

# ISO 9001 → employment

If ISO 9001 increases sales, do companies increase productivity, hire workers, or both?

We found that, compared to matched non-adopters, ISO 9001 adopters subsequently...

- Increased employment

Adopters subsequently had 10% more employees than non-adopters.

This is the same as sales growth, so no evidence of increased productivity

# ISO 9001 → health & safety

If standardized procedures, training, and routine auditing include:

- Adherence to safety procedures
- Mitigating hazards / work-arounds
- Root cause analysis and corrective action applied to safety incidents and accidents
- ISO 9001 may improve worker safety

But, if standardized procedures:

- Reduce flexibility and job rotation
  - Cumulative trauma disorders from repeated tasks
- Reduce worker innovation to develop safer work methods
  - More difficult to change procedures
- ISO 9001 may worsen worker safety

# ISO 9001 → health & safety

We found that, compared to matched non-adopters, ISO 9001 adopters subsequently...

- Had slightly increased odds of zero injuries

Adopters were subsequently 5 percentage points more likely to report zero Worker's Comp claims than controls (beyond overall mean of 28%)

But no evidence that adopters subsequently differed from controls in annual injury costs or rate

## What's the impact of ISO 9001?

**Signal to (potential) buyers that quality management approach meets international standards**

- ↑ production ✓
- ↑ financial returns ✓
- ↑ sales ? ⇒ ✓
- ↑ employment ? ⇒ ✓
- ↑ company survival ? ⇒ ✓

**Improve management practices**

- ↑ quality outcomes (e.g., ↓ defects) – still unknown
- ↑ or ↓ required skill set ? ⇒ ↑ ✓
- Possible spillovers to...
  - ↑ or ↓ occupational safety ? ⇒ ?
  - ↓ pollution ✓

# Caveats

## Generalizability

- Single-plant firms
- California only
  - California has strong H&S regulations

For more details, see the article...

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Quality Management and Job Quality: How the  
ISO 9001 Standard for Quality Management Systems  
Affects Employees and Employers

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Questions?