The Natural Laws of Management

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American Economic Association Annual Meeting

Session on Productivity: The Role of Market Power, Managers and Management Practices

January 5, 2024

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Setting the Stage

Natural Laws

- Natural laws in ethical theory govern morality in human behavior

- Scientific laws in the hard sciences are drawn from a large body of empirical observations

- Drawing inspiration from these, we look for some "natural laws" drawn from a large body of empirical observations

- We establish three empirical stylized facts based on multi-country set of surveys

Management

- Multidimensional concept with many measurement challenges

- We focus on three aspects: monitoring, targets, and incentives

- More structured management practices are more frequent, formal, explicit, and specific

Motivation

- Productivity and Management Practices
  - Evidence from micro data shows that a large driver of aggregate productivity growth is the reallocation of economic activity from low-productivity to high-productivity businesses within narrowly defined industries
  - What drives these productivity differences?
  - "[P]erhaps no potential driver of productivity differences has seen a higher ratio of speculation to actual empirical study. Data limitations have been the stumbling block. The proliferation of production microdata has afforded a great increase in detail, but such data rarely contains detailed information on any aspect of managerial inputs."   - Syverson, 2011
- This paper is part of a larger effort to address this paucity of data

First Approach: World Management Survey
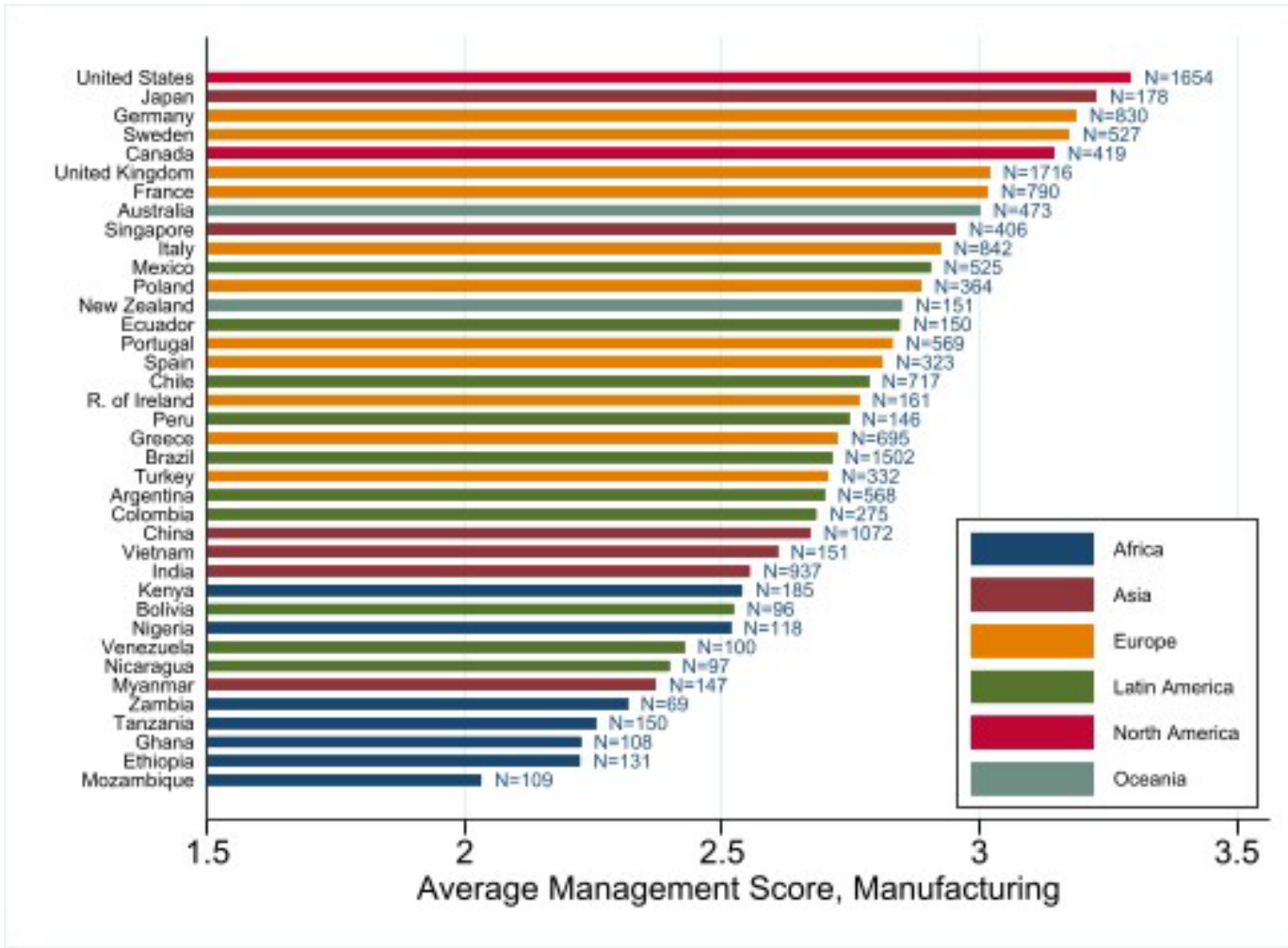
Second Approach: Country Specific Collections

- Develop and field a standardized, closed-form management survey – the Management and Organizational Practices Survey (MOPS)

- 16 questions on the adoption of structured management practices
  - Performance monitoring
    - Number of key performance indicators (KPI)
    - Frequency of review, who reviews
  - Target setting
    - Time frame
    - Difficulty
  - Incentives
    - Bonus/promotions
    - Reassignment/removal

2 In 2010 and 2015, how many key performance indicators were monitored at this establishment?

Examples: Metrics on production, cost, waste, quality, inventory, energy, absenteeism and deliveries on time.

Mark one box for each year

	2010	2015
1-2 key performance indicators	☐	☐
3-9 key performance indicators	☐	☐
10 or more key performance indicators	☐	☐
No key performance indicators (If no key performance indicators in both years, SKIP to ⑥)	☐	☐

6 In 2010 and 2015, what best describes the time frame of production targets at this establishment?

Mark one box for each year

Examples of production targets are: production, quality, efficiency, waste, on-time delivery.

	2010	2015
Main focus was on short-term (less than one year) production targets	☐	☐
Main focus was on long-term (more than one year) production targets	☐	☐
Combination of short-term and long-term production targets	☐	☐
No production targets (If no production targets in both years, SKIP to ⑬)	☐	☐

9 In 2010 and 2015, what were **non-managers'** performance bonuses usually based on at this establishment?

Mark all that apply

	2010	2015
Their own performance as measured by production targets	☐	☐
Their team or shift performance as measured by production targets	☐	☐
Their establishment's performance as measured by production targets	☐	☐
Their company's performance as measured by production targets	☐	☐
No performance bonuses (If no performance bonuses in both years, SKIP to ⑪)	☐	☐

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Structured Management Scores

- For each question, assign scores to response based on whether the response reflects structured management practices: frequent, formal, explicit, and specific

- Scores are between 0 (least structured practice) to 1 (most structured practice)
  - No KPIs = 0;   10+ KPIs = 1
  - No targets = 0; combined targets = 1
  - No bonus = 0;   their own performance = 1

- Each plant is assigned the average of their scores over the 16 questions

- When we aggregate over plants we use sample weights

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	2010	2015
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10 or more key performance indicators	☐	☐
No key performance indicators (If no key performance indicators in both years, SKIP to ❻)	☐	☐

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Examples of production targets are: production, quality, efficiency, waste, on-time delivery.
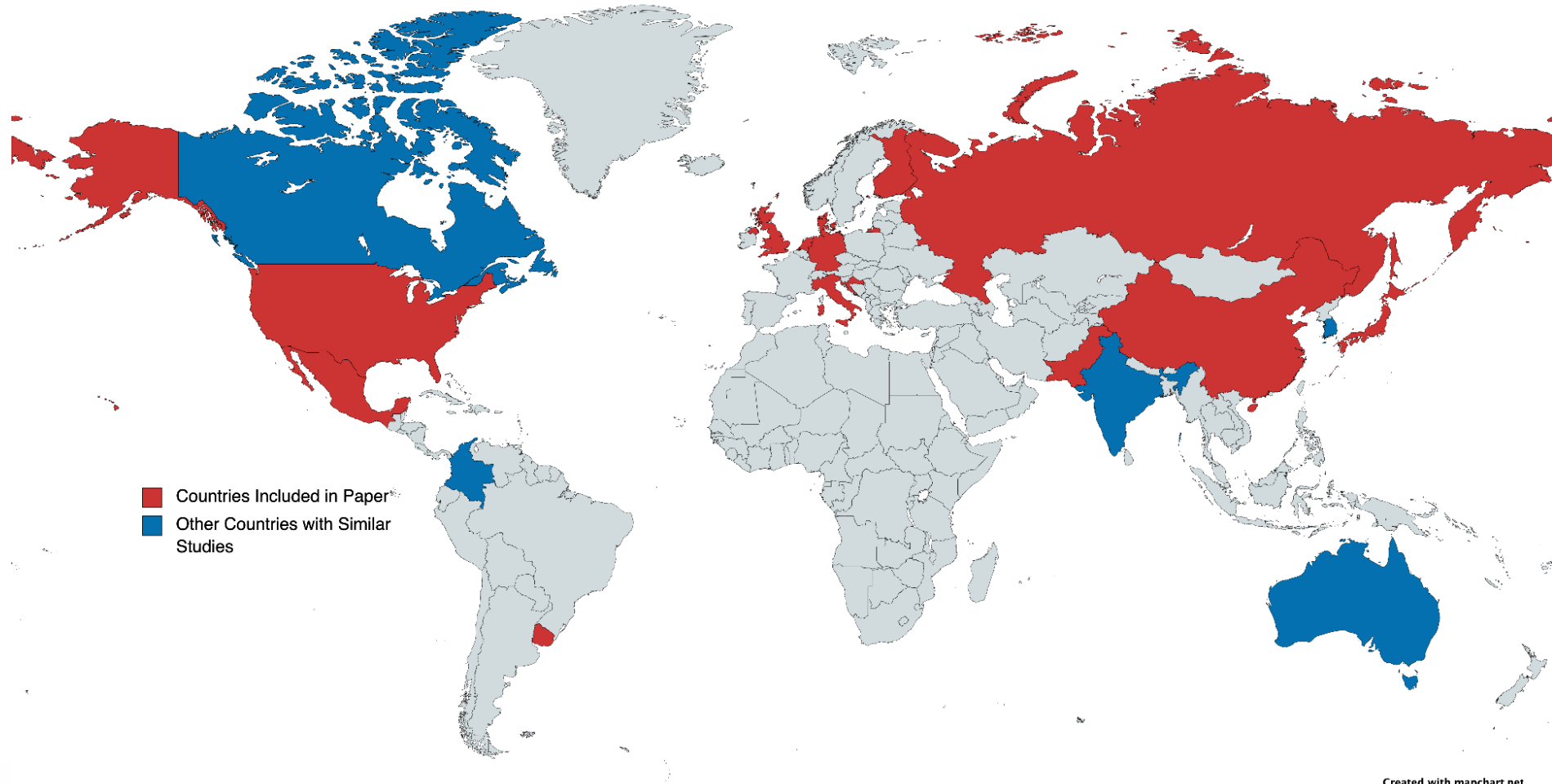
	2010	2015
Main focus was on short-term (less than one year) production targets	☐	☐
Main focus was on long-term (more than one year) production targets	☐	☐
Combination of short-term and long-term production targets	☐	☐
No production targets (If no production targets in both years, SKIP to ⓭)	☐	☐

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	2010	2015
Their own performance as measured by production targets	☐	☐
Their team or shift performance as measured by production targets	☐	☐
Their establishment's performance as measured by production targets	☐	☐
Their company's performance as measured by production targets	☐	☐
No performance bonuses (If no performance bonuses in both years, SKIP to ⓫)	☐	☐

Countries in this Study

Countries Included in Paper
Other Countries with Similar Studies

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Overview of Countries

Country	Sectors Covered	Reference Year	Reporting Unit	Mandatory	Response Mode	Units Contacted (All Sectors)	Response Rate (All Sectors)
China	Manufacturing	2017	Firm	No	In-person	2,364	84%
Croatia	Manufacturing, Services	2017	Firm	No	In-person	4,307	17%
Denmark	All sectors	2017	Firm	No	Internet	26,000	17%
Finland	Manufacturing	2016	Establishment	No	Internet	2,509	25%
Germany	Manufacturing	2013	Establishment	No	Mail, Internet	35,000	6%
Italy	Manufacturing, Services	2019	Firm	No	In-person, Telephone	5,000	30%
Japan	Manufacturing, Wholesale, Selected retail and services industries	2015[†]	Establishment	No	Mail	36,052[†]	32%
Mexico	Manufacturing, Services	2014	Firm	Yes	In-person	25,456	90%
Netherlands	Manufacturing, Retail, Services	2018	Firm	No	Internet	1,708	59%
Pakistan	Manufacturing	2017-2018	Establishment	No	Hand delivery & retrieval	78,687	32%
Russia	Manufacturing	2017	Firm	No	Telephone	5,864	17%
United Kingdom	All sectors	2016	Firm	No	Mail	25,006	31%
United States	Manufacturing	2015	Establishment	Yes	Mail, Internet	50,000	71%
Uruguay	All sectors	2019	Firm	Yes	Internet	4,300	79%

[†] Manufacturing only.

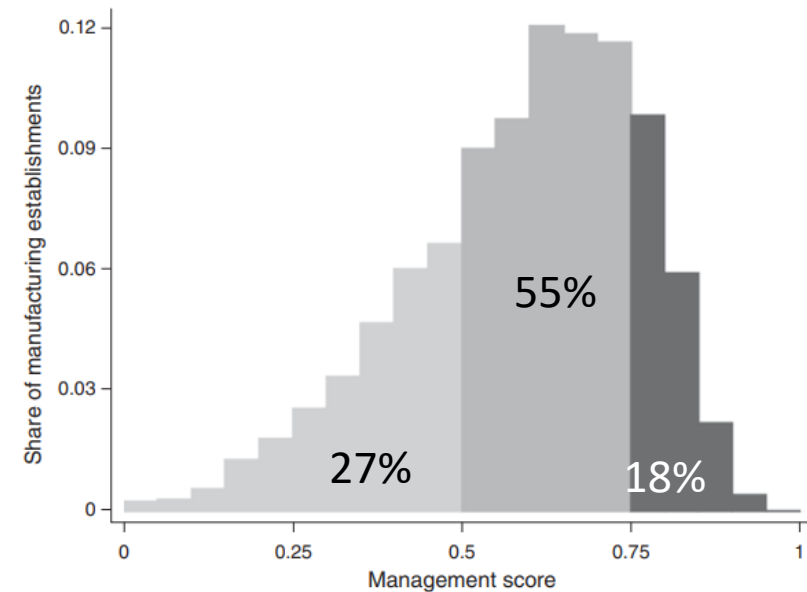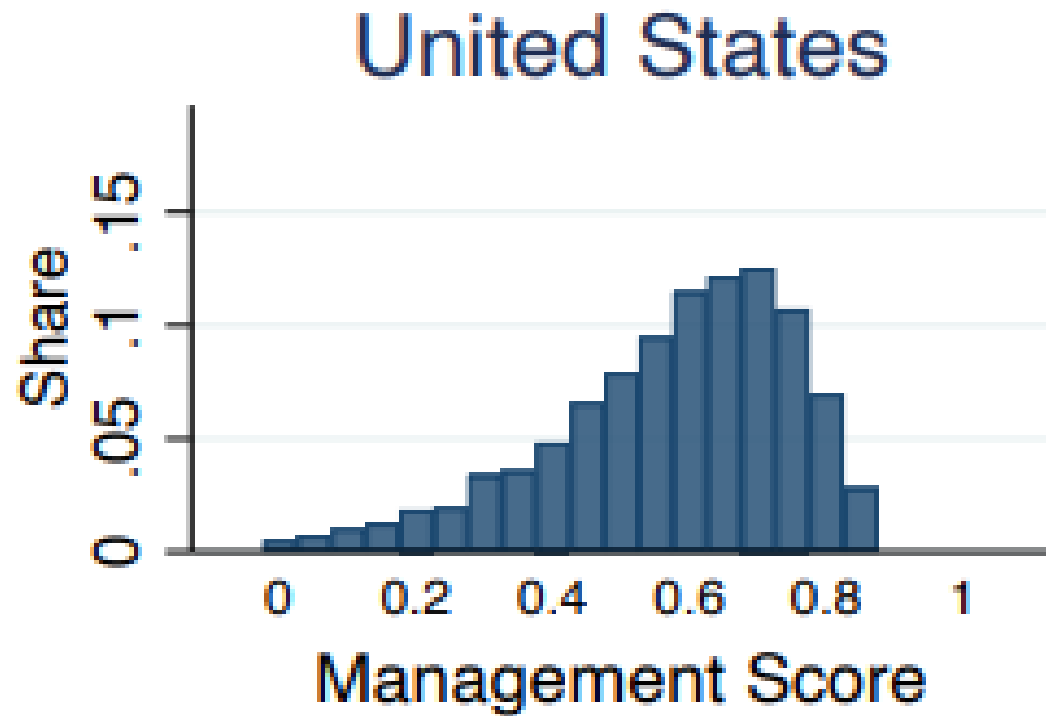# Management Scores: Example United States

FIGURE 1. THE WIDE SPREAD OF MANAGEMENT SCORES ACROSS ESTABLISHMENTS

Notes: The management score is the unweighted average of the score for each of the 16 questions, where each question is first normalized to be on a 0–1 scale. The sample is all 2010 MOPS observations with at least 11 non-missing responses to management questions and a successful match to ASM, which were also included in ASM tabulations, and have positive value added, positive employment, and positive imputed capital in the ASM. Figure is weighted using ASM weights.
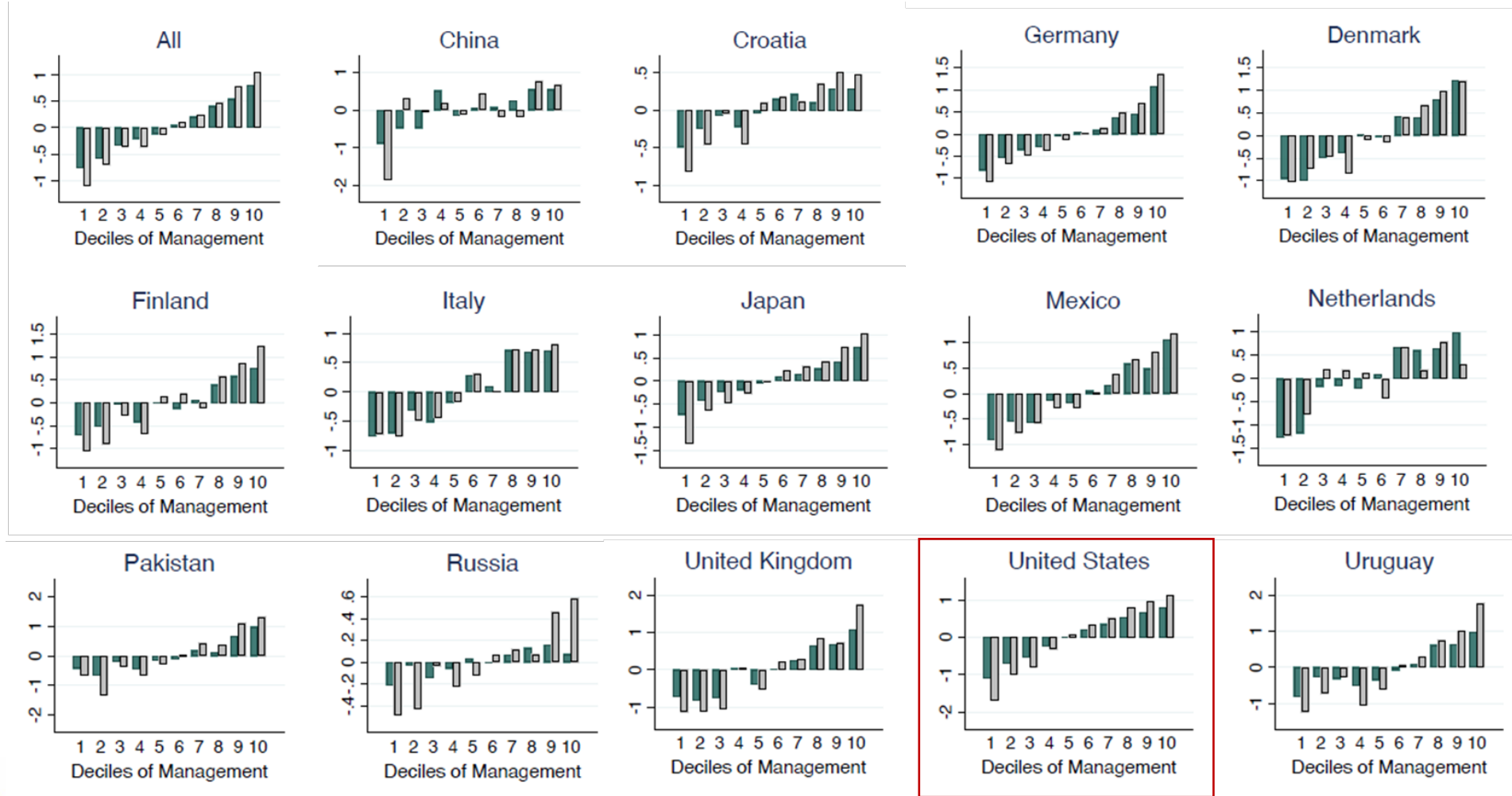
Bloom et al. (2019)

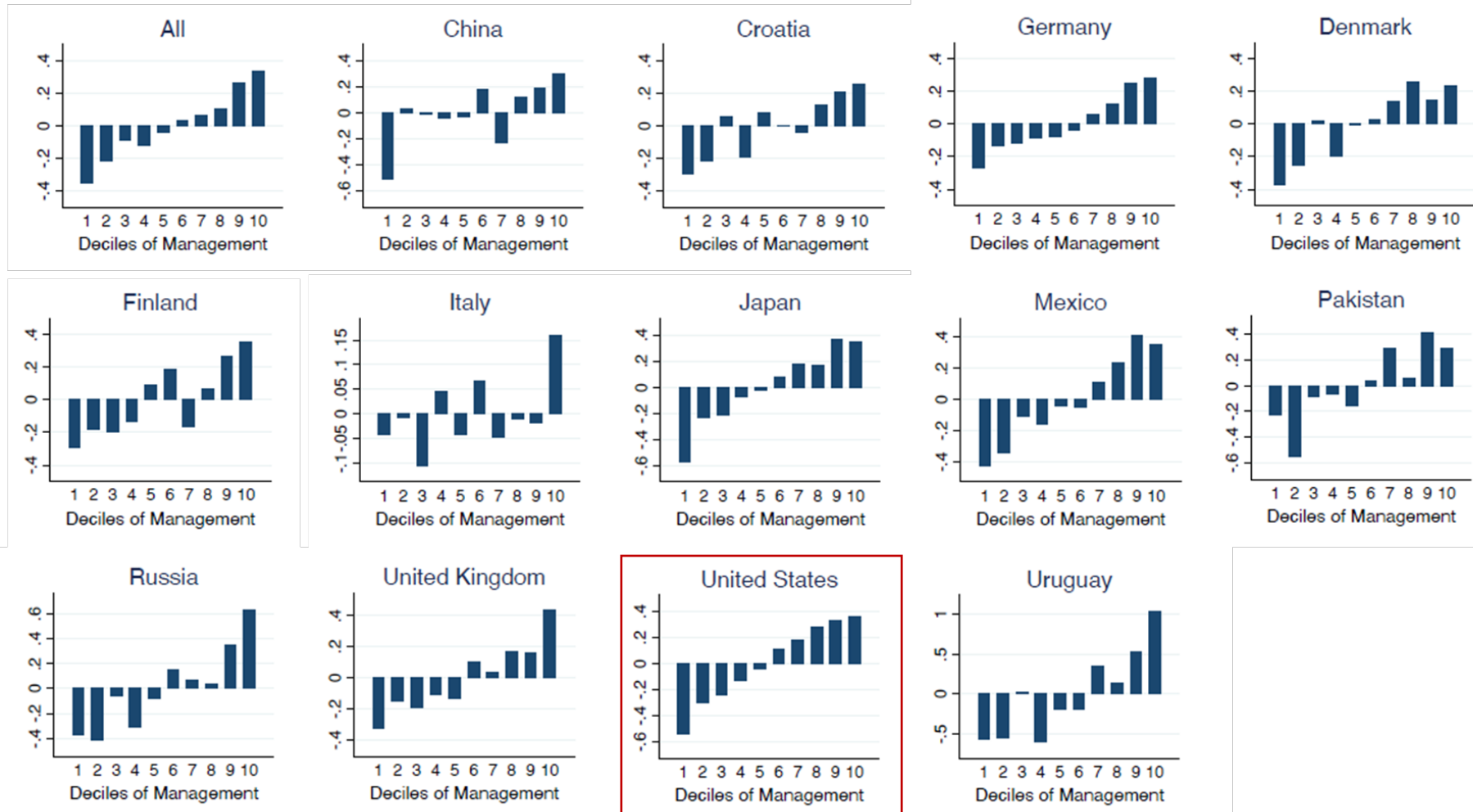# Natural Law 1: Adoption of Structured Management is Dispersed Across Businesses within Countries

Management Scores and Size: Example United States

United States

Deciles of Management
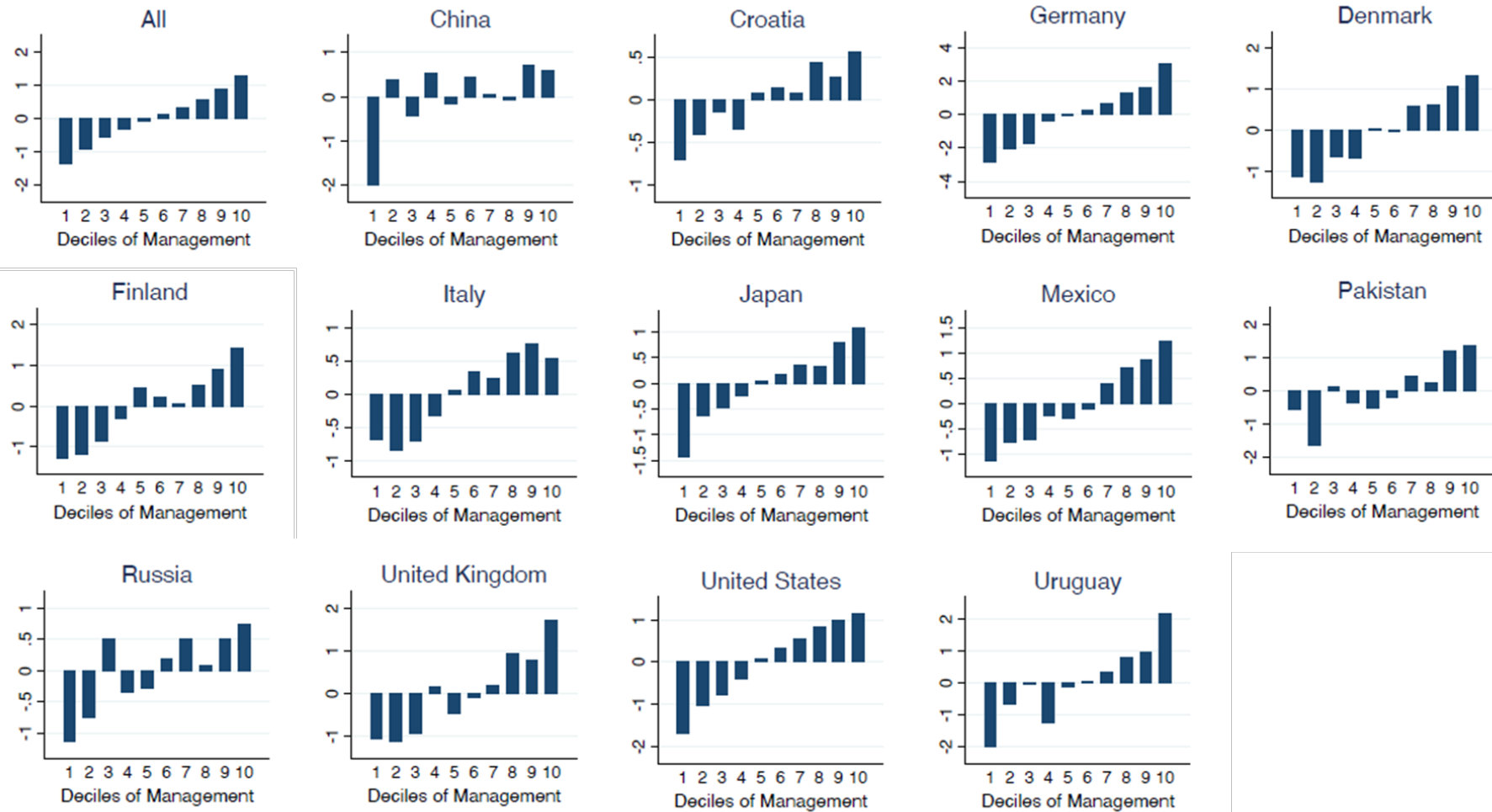
■ Ln(employment) □ Ln(revenue)
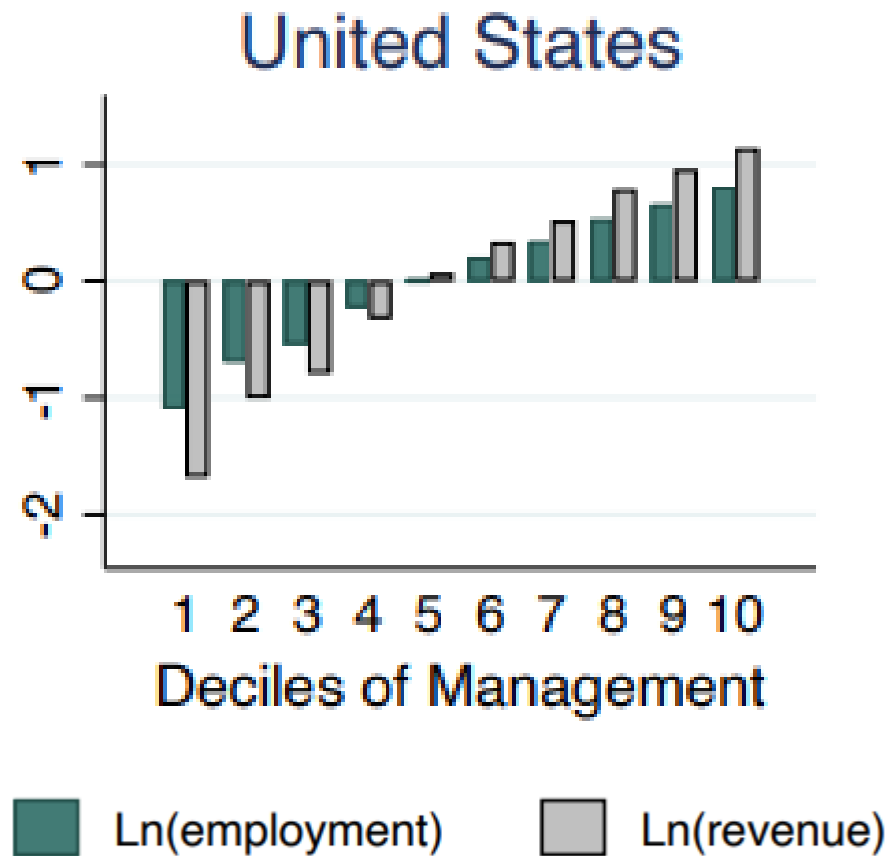
Natural Law 2: Adoption of Structured Management is Positively Correlated with Business Size
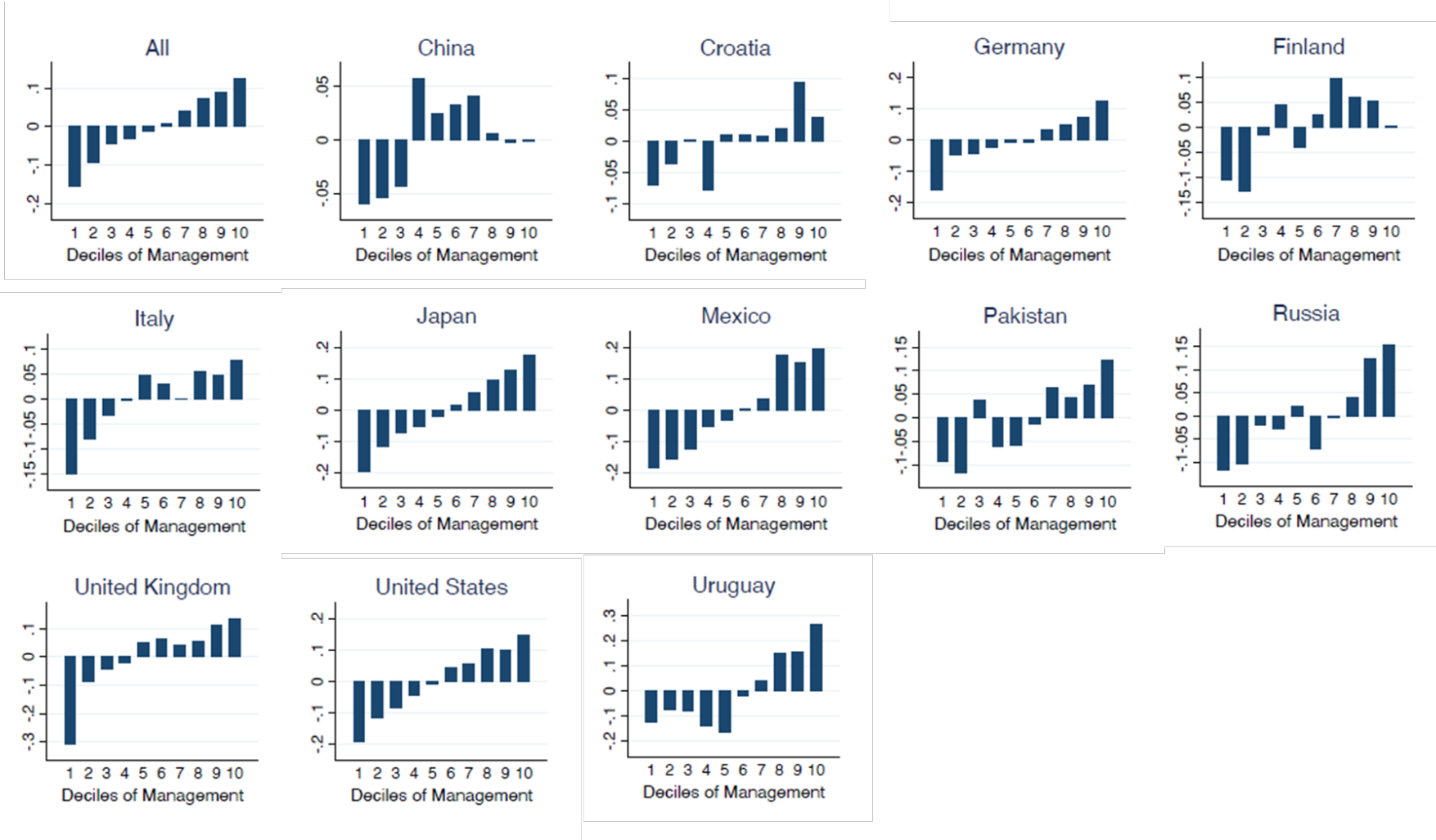
Natural Law 3: Adoption of Structured Management is Correlated with Other Business Outcomes – *Labor Productivity*

Natural Law 3: Adoption of Structured Management is Correlated with Other Business Outcomes – *Profit*

Natural Law 3: Adoption of Structured Management is Correlated with Other Business Outcomes – *Exporters*

Conclusions

- Proof of concept: possible to generate robust measurement of management across firms and countries using standard methods
  - And to scale it up to get much larger samples

- Robust findings emerge across all countries:
  I. Huge variation in management scores within nations
  II. Businesses with higher management scores are larger whether measured by inputs (jobs) or outputs (sales)
  III. Businesses with higher management scores perform better on multiple dimensions: productivity, profits, and trade

Some Next Steps

- Evaluating policies

- Expanding countries

- Encouraging use as part of national data infrastructure

Thank you!

For more information:

MOPS website: https://www.census.gov/programs-surveys/mops.html

WMS website: https://worldmanagementsurvey.org/

Email: Lucia.S.Foster@census.gov