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1

2 **Supporting Information for**

3 **The International Empirics of Management**

4 **Daniela Scur, Scott Ohlmacher, John Van Reenen, Morten Bennesen, Nick Bloom, Ali Choudhary, Lucia Foster, Jesse**
5 **Groenewegen, Arti Grover, Sjoerd Hardeman, Leonardo Iacovone, Ryo Kambayashi, Marie-Christine Laible, Renata Lemos,**
6 **Hongbin Li, Andrea Linarello, Mika Maliranta, Denis Medvedev, Charlotte Meng, John Miles Touya, Natalia Mandirola, Roope**
7 **Ohlsbom, Atsushi Ohyama, Megha Patnaik, Mariana Pereira-López, Raffaella Sadun, Tatsuro Senga, Franklin Qian, and**
8 **Florian Zimmermann**

9 **For general paper enquiries, contact Daniela Scur (e-mail: dscur@cornell.edu).**

10 **For Appendix enquiries please contact Scott Ohlmacher (e-mail: scott.w.ohlmacher@frb.gov).**

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18 **From World Management Survey to the MOPS.** The World Management Survey (WMS) pioneered quantifying business manage-
19 ment practices. We briefly outline here the methodology of the WMS to provide context on the background of the Management
20 and Organizational Practices Survey and describe the existing cross-country comparable data from the original survey. To
21 quantify the business' practices, a trained WMS interviewer conducted a 45-minute interview with a manager from the business.
22 Following the interview, the interviewer scores the responses to the 18 questions on the survey instrument according to a
23 prescribed rubric. Using these scores, the WMS team assesses the degree of structure that the firm applies to practices related
24 to performance monitoring, target-setting, and performance incentives, where "more structured" practices are those that are
25 more explicit, formal, frequent, or specific.

26 The WMS is labor-intensive, due to the need for skilled interviewers who can conduct and evaluate the interviews. To
27 generate quantitative measures of management practices on a larger scale, an alternative approach that is less expensive on
28 a per-response basis was necessary. To undertake such a study, the U.S. Census Bureau and a group of external experts
29 developed a questionnaire of closed-form questions to assess management practices at U.S. manufacturing plants. That is, the
30 questionnaire consists of short questions to which plant managers can select the response that best describes the practices at
31 their plant from a list of appropriate options. This methodology eliminates the need for an interviewer who subjectively scores
32 the responses. Instead, values associated with the structure of the practice are assigned to each possible response. A measure of
33 the structure of the business' management practices can then be constructed by taking the simple mean of the scores associated
34 with the selected responses. (1) provide an overview of the advantages and disadvantages of measuring management practices
35 using the WMS methodology relative to a closed-form questionnaire.

36 Developing the closed-form management questions from the open-ended WMS interview protocol and scoring rubric was a
37 multi-year process. Census Bureau economists and the external experts drafted initial content that subsequently underwent
38 Census Bureau expert review and two rounds of cognitive testing with potential respondents in various industries in four U.S.
39 cities. (2) The initial draft of the content translated most concepts from the World Management Survey to a closed-form
40 setting. Questions that dealt with the introduction of management practices were not included in the Census questionnaire,
41 and the scope of questions relating to performance-based compensation was reduced from the WMS protocol. During the
42 expert review, Census Bureau survey methodologists reviewed the draft questionnaire to ensure that the content was suited
43 for a planned survey of manufacturing establishments and consistent with the Census Bureau's overall mission, the Bureau's
44 quality standards, and with the language and form used in related surveys.

45 After the expert review was complete, the Census Bureau produced a sample questionnaire. Census Bureau survey
46 methodologists solicited voluntary participants from the pool of potential survey respondents to participate in hour-long
47 cognitive testing interviews. These interviews ensured that respondents understood the survey questions and that the list of
48 possible responses was as appropriate and comprehensive as possible. In these interviews, respondents are typically asked
49 about the process by which they would answer the questions and their initial reactions to the questionnaire. The interviews are
50 also used to determine the appropriate respondent for the questionnaire within the business. The cognitive testing interviews
51 for the management questionnaire were typically observed by a Census Bureau subject matter expert and/or a member of the
52 external research team. The first round of cognitive testing was exploratory. The first round of interviews was followed by a
53 round of editing by the subject matter experts. The resulting edited content underwent a second round of cognitive testing
54 interviews to confirm the efficacy of the revisions.

55 The result of this process was the Management and Organizational Practices Survey (MOPS), the core of which consists of
56 a series of 16 closed-form questions on monitoring, targeting, and incentives practices. The Census Bureau has run MOPS
57 survey waves for reference years 2010, 2015, and 2021.* For each survey wave, the MOPS was mailed as a supplement to the
58 Census Bureau's Annual Survey of Manufactures (ASM). The ASM is an establishment-level survey of business outcomes in
59 the manufacturing sector. All establishments in the ASM sample for the relevant survey year received a MOPS questionnaire
60 several months after the ASM was initially mailed to respondents. For a detailed description of the methodology used to collect
61 and process the results of the 2010 and 2015 MOPS, see (4). Descriptive results of the 2010 MOPS wave were published in a
62 Census Bureau press release and in (5). Results of the 2015 MOPS are available to the public on the Census Bureau's survey
63 website.† Researchers on approved projects with access can gain access to the microdata from the MOPS through the Federal
64 Statistical Research Data Center (FSRDC) system.‡ (6) use the 2010 and 2015 MOPS to show that local business environment
65 and learning spillovers are potential drivers of the adoption of structured management practices.

66 Following the success of the MOPS, this survey served as a template in developing the similar surveys used to conduct
67 large-scale studies of management practices worldwide.§ Each of these resulting studies followed unique development paths by
68 which the content and methodology were modified to meet country-specific requirements. In this study, we incorporate results

* All waves of the MOPS have included the same 16 questions on management practices, as well as modules on business organization and background characteristics of the plant. The 2015 survey wave additionally included modules on business uncertainty and the use of data in decision making. The 2021 survey wave included modules on uncertainty, the use of purchased services, and the use of artificial intelligence in decision making. The current team of external researchers partnering with the U.S. Census Bureau to develop and evaluate the results of the MOPS consists of Bloom, Van Reenen, John Barrios, Erik Brynjolfsson, Steven Davis, Kristina McElheran, Michael Minnis, and Raffaella Sadun. For more information on the MOPS content, see (3).

† <https://www.census.gov/programs-surveys/mops.html>.

‡ <https://www.census.gov/about/adrm/fsrdc.html>.

§ Independent of the MOPS, Statistics Canada ran the Survey of Innovation and Business Strategy (SIBS) in 2010 and 2012. This survey included content based on the WMS. See (7) for results of the SIBS.

69 from 14 surveys that utilize some variation of what we will call “the MOPS methodology.”[¶]

70 Of course, extending this methodology over a large set of disparate countries, where each country ran their surveys
71 independently results in differences among the surveys. Of the surveys discussed in this paper, the US MOPS is the largest
72 and most regular, consisting of a sample frame of approximately 50,000 establishments in three survey years. The sample
73 is representative of the US manufacturing sector, and survey weights are used construct representative aggregates. Because
74 response to the US survey is required by law, response rates are generally around 70%. For the 2015 survey wave analyzed
75 in this paper, the US sample consists of approximately 35,000 plants. To compare the countries in our sample, we proceed
76 alphabetically.

77 **China.** The China Employer-Employee Survey (CEES) surveyed on average eight different individuals, spanning CEOs, middle
78 managers, and workers, within the same manufacturing business. (10). To keep comparability with the other countries (which
79 generally only surveyed one respondent - the plant manager), we just used the plant management response (or the response
80 that was closest to this position). The CEES is conducted by a team of researchers including Hong Cheng (Wuhan University),
81 Yang Du (CASS), Hongbin Li (Stanford), and Albert Park (HKUST). Responses were collected by enumerators who visited
82 the physical location of the business. The survey is larger than the US MOPS and contains seven modules. The management
83 module is based on the WMS and the US MOPS and contains all 16 questions from the US MOPS. Businesses having more
84 than two employees were eligible for inclusion in the sample. For this study we analyze data from 1,986 firms from the 2017
85 CEES survey wave.

86 **Croatia.** For Croatia, 15 of the questions from the US MOPS are embedded in the Firm Capabilities Survey conducted by the
87 World Bank. Direct translations 15 of the 16 questions from the US MOPS were included in the survey module. Instead of the
88 question from the US MOPS on reassignment or dismissal of managers, the module included a subjective evaluation of how
89 well the firm was managed. The survey sample consists of 727 small and medium-sized firms (having 10-250 employees) in both
90 manufacturing and services. The results of the Firm Capabilities Survey can be matched to administrative tax data on firm
91 performance. The 1,888 manufacturing firms contacted for the survey yielded a sample of 314 firms. (11)

92 **Denmark.** Morten Bennedsen and Daniela Scur spearheaded the MOPS Denmark, which was funded through Copenhagen
93 University (KU). The MOPS Denmark was administered by the survey firm Epinion using an official government email inbox
94 utilized by Statistics Denmark. The survey included a direct translation of the 16 management questions from the US MOPS
95 was sent to 26,000 firms from the universe of firms with more than five employees. Responses were received from a total of
96 4,482 firms and 743 of respondent firms were in the manufacturing sector. Results of the MOPS Denmark can be linked to
97 outcome data from all Statistics Denmark firm surveys. Researchers with access to Statistics Denmark data may be able to
98 access data from the MOPS Denmark on request.

99 **Finland.** The Finnish Management and Organizational Practices Survey (FMOPS) was conducted by Statistics Finland and
100 funded by the Strategic Research Council for reference year 2016. The FMOPS included 16 questions on management practices
101 that were translated from the US MOPS. Responses were collected by internet survey instrument. Respondents received the
102 survey by email, and managers were identified by phone calls before the survey was sent. To be included in the sample, the
103 establishment must belong to a firm with at least 50 employees and the establishment itself must have at least four employees.
104 The results of the FMOPS can be matched to outcome data from Statistics Finland’s Business Register database and financial
105 statement data from the businesses. (12) provide analysis of the results of the FMOPS. For our analyses, we use a total of
106 582 establishments for whom data could be matched to outcome data. Researchers may obtain access to FMOPS data by
107 contacting Statistics Finland’s research services and completing an application for a license to use the data.

108 **Germany.** The Kiel Institute for the World Economy (IfW), the Institute for Employment Research (IAB), and the Institute
109 for Applied Social Sciences (ifas) partnered to run the German Management and Organizational Practices Survey (GMOP).
110 (13) provide an overview of the GMOP and its findings. The GMOP collected data from manufacturing establishments for
111 reference year 2013. Responses were collected via paper and electronic instruments. The GMOP included translations of the 16
112 management questions from the US MOPS as well as additional questions specific to the German business environment. The
113 GMOP also collected data on establishment performance. For our analysis, we use only the questions that correspond to the
114 US MOPS survey. Any manufacturing establishment with at least 25 employees that was subject to social security in 2011
115 was eligible to be included in the sample. We utilize 1,927 observations matched to outcome data from Bureau van Dijk. To
116 prevent disclosure of unauthorized information, the share of observations with management scores between 0-0.05, 0.05-0.1,
117 0.1-0.15, 0.9-0.95, and 0.95-1 are not reported in the distributions. Researchers interested in utilizing the GMOP for replication
118 studies are encouraged to contact iab.fdz@iab.de.

119 **Italy.** The Bank of Italy’s annual INVIND survey included a module based on the US MOPS in 2020. Approximately 5,000
120 firms were asked 8 questions about their management practices in 2019. The INVIND also includes questions regarding
121 outcomes and expectations and is representative of firms with at least 20 employees. The survey is conducted via in-person
122 and telephone interviews. The INVIND MOPS included eight questions. The survey content was translated from the US
123 MOPS and underwent additional cognitive testing. The INVIND MOPS combined questions from the US MOPS that asked

[¶]Our coverage of surveys utilizing this methodology is not comprehensive. We are aware of similar studies that have been conducted or are in development in Australia (8), Colombia, India, and South Korea (9). We hope future research will incorporate results from the full family of related surveys.

124 about practices for managers and non-managers separately. Questions from the US MOPS on the location of production
125 display boards, awareness of production targets, the share of workers receiving bonuses, and reassignment or dismissal of
126 underperforming managers were not included in the survey. The analysis sample for this study consists of responses from 1,122
127 firms. In a timely study, (14) use results from the INVIND MOPS to study the role that management practices played in firms'
128 responses to the COVID-19 pandemic. Researchers can carry out statistical and econometric analyses without direct access to
129 the microdata via <https://www.bancaditalia.it/statistiche/basi-dati/rdc/bird/index.html>.

130 **Japan.** In Japan, the Economic and Social Research Institute (ESRI) conducted the JP MOPS in multiple survey waves.
131 The first survey wave in 2016 covered the manufacturing sector, followed by a wave in 2017 covering food and drink retail,
132 and information services sectors, and a wave in 2018 covering the wholesale, road freight transport, and medical sectors.
133 Manufacturing establishments having at least 30 employees were eligible for inclusion in the sample. An additional wave for the
134 manufacturing sector was conducted in 2021. The survey closely follows the US MOPS, including direct translations of the 16
135 management questions from the US MOPS for the manufacturing sector, with some modifications of the language to make the
136 questions more applicable to non-manufacturing sectors. Responses were collected by mail. For our analysis, we utilize 10,081
137 establishment-level observations from the first wave of the manufacturing sector data linked to outcome data from the Japanese
138 Census of Manufactures and the Basic Survey of Japanese Business Structure and Activities. (15) provide a comparative study
139 of the JP MOPS across sectors. Residents of Japan may access microdata for research projects approved by ESRI.

140 **Mexico.** Mexico's National Survey on Productivity and Competitiveness of Micro, Small and Medium-Size Enterprises in Mexico
141 (ENAPROCE) was conducted in 2018 and 2015 by the National Institute of Statistics and Geography (INEGI). We focus
142 on firms with more than ten employees as they received the full management questionnaire, whereas micro enterprises were
143 only asked four of the management questions to reduce respondent burden. We utilize results of the 2018 survey, which
144 was conducted as a panel, following up on 25,456 respondents from the 2015 wave. The survey had a high response rate of
145 approximately 90%. ENAPROCE included direct translations of the 16 US MOPS management questions for the manufacturing
146 sector, with adaptations of the language for non-manufacturing sectors. The content underwent additional piloting and testing
147 before implementation. Enumerators collected responses for firms in-person. Our sample consists of 3,729 manufacturing
148 businesses. ENAPROCE included questions on firm performance but is based on the 2014 Economic Census, and results of
149 ENAPROCE can be linked to outcomes from the 2014 Economic Census for robustness checks. (16) provide an overview of
150 ENAPROCE and utilize the management-firm size relationship as a measure of misallocation. Researchers with approved
151 projects can access ENAPROCE microdata at the INEGI Microdata Lab.

152 **The Netherlands.** Rabobank and Utrecht University conducted the MOPS Netherlands as a stand alone survey of firms in the
153 manufacturing, retail, and services sectors in 2018. The survey included direct translations of the 16 US MOPS questions
154 for the manufacturing sector. Modified versions of the questions were used for the retail and services sectors. Responses
155 were collected via internet survey instrument. The sample consisted of 1,708 employer firms, and we analyze a sample of 377
156 manufacturing firms. Data from the MOPS Netherlands is available upon request. (17) report results from a newer survey of
157 businesses in the Netherlands that utilized seven questions from the US MOPS.

158 **Pakistan.** The Pakistan Bureau of Statistics (PBS) conducted the Management and Organizational Practices Survey in Pakistan
159 (PK-MOPS) as a supplement to the Census of Manufacturing Industries (CMI) for 2017-2018. The PK-MOPS underwent
160 a thorough development process. A direct translation of the US MOPS was piloted on 82 firms in Punjab, followed by a
161 first survey wave in 2015 that was limited to 2,010 firms in Punjab. (18) In the pilot and both survey waves, enumerators
162 hand-delivered and collected the survey form from manufacturing establishments. The second wave of the PK-MOPS was
163 delivered to 78,687 establishments, making the PK-MOPS the largest survey in our study. Responses were collected from
164 25,392 establishments. Our analysis sample is restricted to 11,159 establishments having at least ten employees. Results from
165 PK-MOPS are reported in (19).

166 **Russia.** The Management and Organizational Practices Survey in Russia was conducted by the World Bank as a stand-
167 alone survey in 2017. The survey was conducted via telephone interviews with small and medium-sized (25-250 employees)
168 manufacturing firms. The survey included translations of all 16 questions from the US MOPS. Enumerators attempted to
169 contact 12,912 firms, successfully reaching 5,864 firms in five federal districts that were in-scope for the survey. Of these firms,
170 approximately 17% provided valid responses to the survey. Results of the survey can be matched to performance data from
171 Bureau van Dijk. Our analysis sample consists of 947 firms. Results from the Management and Organizational Practices
172 Survey in Russia are reported in (20).

173 **United Kingdom.** The Office of National Statistics (ONS) collected two survey waves of the Management and Expectations Survey
174 (MES) for 2017 and 2020, after conducting a pilot survey for 2016 (see (21)) The pilot survey included 8 of the questions from
175 the US MOPS questionnaire. Subsequent waves included 12 questions. The survey content underwent additional testing, and
176 language was modified for sectors other than manufacturing. Questions from the US MOPS on the location of display boards
177 and the share of managers (non-managers) who received bonuses were excluded, and questions on reassignment and dismissal
178 of managers (non-managers) were combined into a single question that also included probation and training as examples of
179 responses to under-performance. The 2017 survey sample consisted of 25,006 firms that were representative of the population of
180 UK firms having more than ten employees. The 2017 survey wave yielded responses from 7,756 firms with positive employment

181 in the Annual Business Survey, to which the MES can be linked. Restricting to responses from manufacturing businesses yields
 182 a sample of 1,329. Data may be available upon request for accredited researchers having access to the ONS.

183 **United States.** The text at the start of this Appendix describes the US which is our baseline country. Please note all data in this
 184 paper is covered by this disclaimer: “The Census Bureau has ensured appropriate access and use of confidential data and has
 185 reviewed these results for disclosure avoidance protection (Project 7512395: CBDRB-FY22-CES008-004, CBDRB-FY23-0519).”

186 **Uruguay.** The Annual Survey of Economic Activity conducted by the National Institute of Statistics (INE) in Uruguay included
 187 a management module in its 2019 survey wave. The survey was sent electronically to 4,300 firms having at least ten employees
 188 in all sectors of the economy. Response to the Annual Survey of Economic Activity is required by law. All firms having more
 189 than 50 employees and/or monthly sales above \$US 160,670,500 are included in the sample with certainty. The management
 190 module included direct translations of all 16 questions from the US MOPS, although additional examples were included for the
 191 service sector. Due to the structure of the Annual Survey of Economic Activity, firm performance data is also available for 2017
 192 and 2018. Limiting the responses to businesses in the manufacturing sector yields 550 observations. Data may be available
 193 upon request from the INE with authorization from the National Agency of Development (ANDE) and the entrepreneurial
 194 organization (ACDE), who sponsored the module.

195 **Additional figures, tables, and robustness**

196 The MOPS methodology is not well-suited for comparisons of mean management scores across countries, while the WMS
 197 methodology addresses these concerns. For completeness, we include Figure S1, which shows some intuitive patterns with the
 198 WMS country scores ranked similarly to a country’s productivity and GDP per capita.

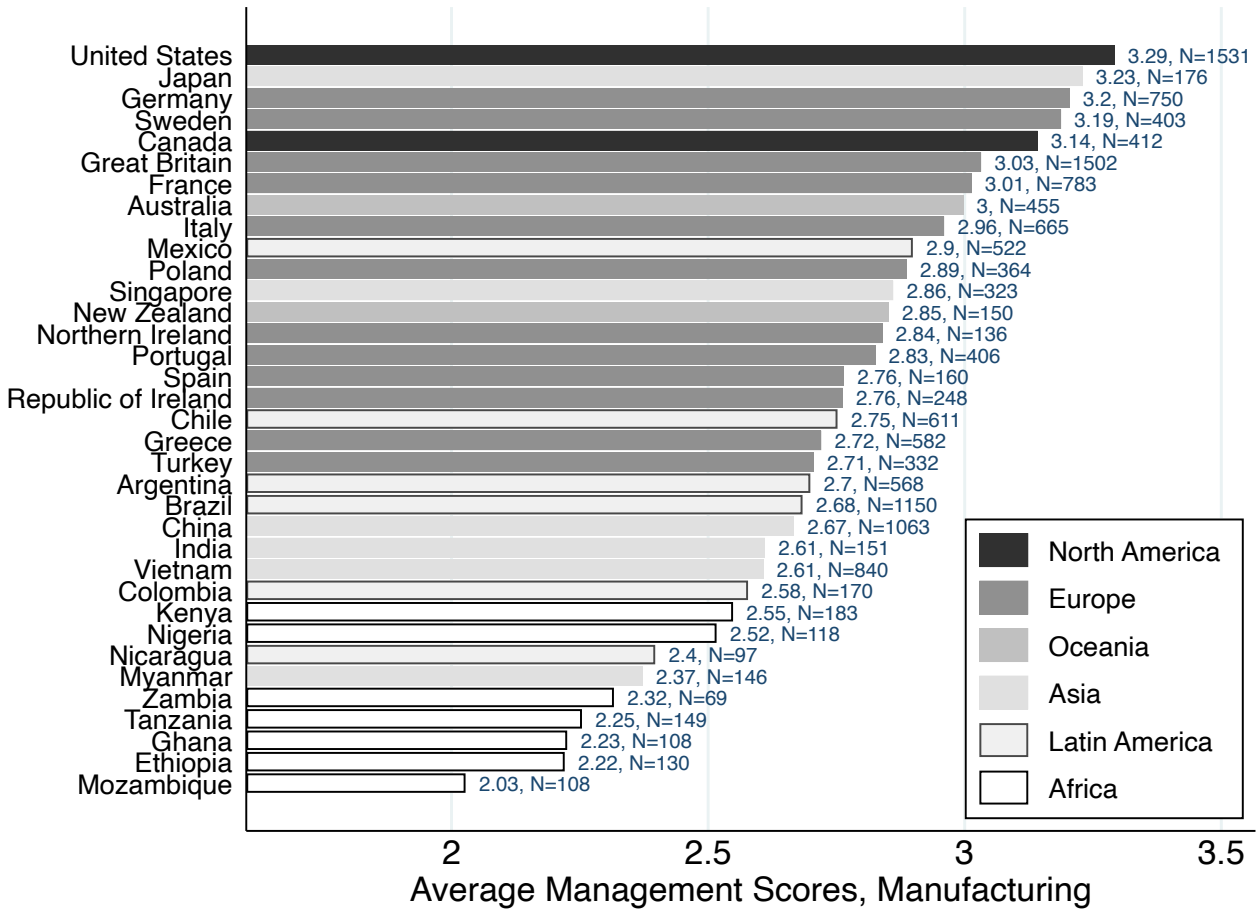
199 Table S1 summarizes key features of the surveys that we discussed in the previous section (with links to even more detail).
 200 We have chosen waves of each survey to be as close in possible reference years (2013-19). Table S2 has some descriptive
 201 statistics. These tables do show some differences across countries which we investigate in this section to see if they alter any of
 202 main conclusions.

Table S1. Management and Organizational Practices Surveys

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

203 **A. Business Size thresholds.** Different surveys have different minimum business employment thresholds. the US samples all
 204 employer establishments, so the minimum number of employees is one. But most have a higher minimum like the UK where
 205 the minimum is 10. Two countries also have a maximum employment size (Croatia and Russia). The latter is particularly a
 206 concern as this would be expected to mechanically weaken the employment-management relationship, as the largest firms (who
 207 generally have the highest management scores) are excluded by construction.

Fig. S1. Management scores by country



Notes: This figure uses the full World Management Survey (WMS) manufacturing dataset. Bars are ordered from highest to lowest average overall management score. "N" indicates the number of observations per country

Table S2. Summary Statistics

| Variable | Statistic | CN | CR | DK | FI | GE | IT | JP | MX | NL | PK | RU |
|---------------------|-----------|-------------|---------|-----------|-----------|-------------|---------|---------|---------|---------|---------|---------|
| Management | Mean | 0.60 | 0.54 | 0.51 | 0.62 | 0.57 | 0.52 | 0.51 | 0.46 | 0.45 | 0.30 | 0.42 |
| | Std Dev | (0.13) | (0.15) | (0.15) | . | (0.16) | (0.18) | (0.17) | (0.17) | (0.18) | (0.24) | (0.20) |
| | Min | 0.00 | 0.10 | . | 0.10 | . | 0.00 | 0.00 | 0.02 | 0.04 | 0.00 | 0.00 |
| | Max | 0.92 | 0.96 | . | 0.92 | . | 0.96 | 0.96 | 0.90 | 0.86 | 0.94 | 0.96 |
| Empl | Mean | 495 | 36 | 58 | 113 | 146 | 185 | 128 | 129 | 34 | 41 | 83 |
| | Std Dev | (1,195) | (38.45) | (108.8) | (136) | (279.1) | (316.7) | (183.2) | (256.2) | (61.39) | (88.37) | (57.33) |
| | Min | 5 | 10 | . | 3 | . | 10 | 16 | 11 | 2 | 7 | 25 |
| | Max | 8,377 | 229 | . | 2,572 | . | 1,864 | 1,119 | 1,862 | 700 | 646 | 250 |
| Revenue | Mean | 1,004,800 | 33,280 | 209,904 | 69,280 | 429,954 | 113 | 906 | 239 | . | 138 | 8 |
| | Std Dev | (4,283,696) | . | (519,853) | (118,085) | (1,906,448) | (249) | (2,466) | (576) | . | (480) | (11) |
| | Min | 400 | 1503 | . | . | . | 1.75 | 14.73 | 1.09 | . | . | 0 |
| | Max | 39,840,000 | 292,800 | . | 1,585,600 | . | 1,646 | 16,320 | 3,872 | . | . | 62 |
| Revenue p.w. | Mean | 1177 | 841 | 2,779 | 631 | 8,178 | 0.57 | 5.35 | 1.67 | . | 3.09 | 0.09 |
| | Std Dev | (2,152) | . | (2,329) | (676) | (40,031) | (0.64) | (7.02) | (2.55) | . | (5.94) | (0.15) |
| | Min | 12 | 110 | . | . | . | 0.08 | 0.42 | 0.05 | . | . | 0.00 |
| | Max | 164,80 | 3,749 | . | 36,640 | . | 3.97 | 44.40 | 17.05 | . | . | 1.01 |
| Exporter | Mean | 0.424 | 0.347 | . | 0.813 | 0.772 | 0.832 | 0.295 | 0.345 | 0.631 | 0.107 | 0.280 |
| | Std Dev | (0.492) | (0.477) | . | (0.329) | (0.42) | (0.374) | (0.438) | (0.476) | (0.483) | (0.326) | (0.449) |
| Obs | | 1,986 | 314 | 743 | 582 | 1,927 | 1,126 | 10,081 | 3,729 | 377 | 11,159 | 947 |

| Variable | Statistic | UK | US | UY |
|---------------------|-----------|-----------|-----------|-----------|
| Management | Mean | 0.61 | 0.60 | 0.33 |
| | Std Dev | (0.18) | (0.19) | (0.19) |
| | Min | 0.61 | . | 0.00 |
| | Max | 0.64 | . | 0.87 |
| Empl | Mean | 244 | 111 | 56 |
| | Std Dev | (370.5) | (178) | (101.7) |
| | Min | 25 | 10 | 11 |
| | Max | 2,530 | . | 841 |
| Revenue | Mean | 55,327 | 57,870 | 74,148 |
| | Std Dev | (143,758) | (151,700) | (227,738) |
| | Min | 473 | . | 1,875 |
| | Max | 1,345,373 | . | 2,006,254 |
| Revenue p.w. | Mean | 168 | 445 | . |
| | Std Dev | (139.5) | (633.7) | . |
| | Min | 4 | . | . |
| | Max | 16 | . | . |
| Exporter | Mean | 0.393 | 0.795 | 0.264 |
| | Std Dev | (0.447) | (0.367) | (0.416) |
| Obs | | 628 | 35,000 | 550 |

Notes: All revenue and revenue per worker values are in hundreds of US\$ (May 2022 exchange rate). Number of observations for each country (manufacturing sector only): China (CN) = 1,986; Croatia (HR) = 314; Denmark (DK) = 743; Finland (FI) = 633; Germany (DE) = 1,927; Italy (IT) = 1,126; Japan (JP) = 10,081; Mexico (MX) = 3,729; Netherlands (NL) = 377; Pakistan (PK) = 11,159; Russia (RU) = 947; UK = 1,329; US = 35,000; Uruguay (UY) = 550.

208 To investigate the impact of this issue, Table S3 documents the impact of different restrictions. Recall, these are based
 209 off deciles from Figure 2, so column (2) shows the micro-level regressions for comparison using all the business level data.
 210 Unsurprisingly, these are very similar. The final column restricts the regressions to firms with between 50 and 250 employees,
 211 so imposes the Russia and Croatia size cut-offs to all countries. Unsurprisingly, this reduces the correlation, substantially in
 212 many cases. The finding that Russia has the lowest correlation, i.e. the worse misallocation remains robust to this exercise
 213 however. Croatia looks less of an outlier, however. Several countries have a lower employment-management association. Hence,
 214 we conclude that although the findings for Russia are robust, Croatia’s exceptionally low correlation is not and is likely due to
 215 sampling bias.

Table S3. Strength of the size-management relationship: summary vs micro-data

| Country | Summary coeff | | Micro-data coeff | | 50-250 empl | |
|-------------|---------------|-------|------------------|-------|-------------|-------|
| | Firm | Estbl | Firm | Estbl | Firm | Estbl |
| Denmark | 3.91 | | 3.84 | | | |
| Italy | 2.98 | | 2.91 | | 2.90 | |
| USA | | 2.91 | 3.23 | 2.89 | | 1.23 |
| Netherlands | 2.91 | | 2.96 | | 0.75 | |
| UK | 2.77 | | 2.80 | | 0.92 | |
| Mexico | 2.76 | | 2.76 | | 0.94 | |
| Finland | | 2.56 | | | | |
| China | 2.35 | | 2.39 | | 0.53 | |
| Germany | | 2.19 | | | | |
| Uruguay | 2.08 | | 2.07 | | 0.76 | |
| Japan | | 2.02 | 1.96 | 1.92 | | 1.07 |
| Pakistan | | 0.66 | | 0.96 | | |
| Croatia | 1.09 | | 1.57 | | 1.57 | |
| Russia | 0.52 | | 0.52 | | 0.52 | |

Notes: The summary coefficient is the coefficient of a country specific OLS regression of log firm employment size on management. The regression was run on 20 observations per country, using the average employment and average management score within each vingtile. The microdata coefficient is the result of the same regression on the underlying firm- or establishment-level microdata where available. The 50-250 employment coefficient is the result of the microdata regression where the sample is restricted to firms (establishments) with between 25 and 250 employees. For Japan and the United States, firm-level management scores are the employment-weighted mean of establishment-level management scores. Number of observations for each country in the original datasets (manufacturing sector only): China = 1,320; Croatia = 314; Denmark = 743; Finland = 582; Germany = 1,927; Italy = 1,122; Japan = 10,081; Mexico = 3,729; Netherlands = 377; Pakistan = 11,159; Russia = 978; UK = 1,329; US = 35,000; Uruguay = 550.

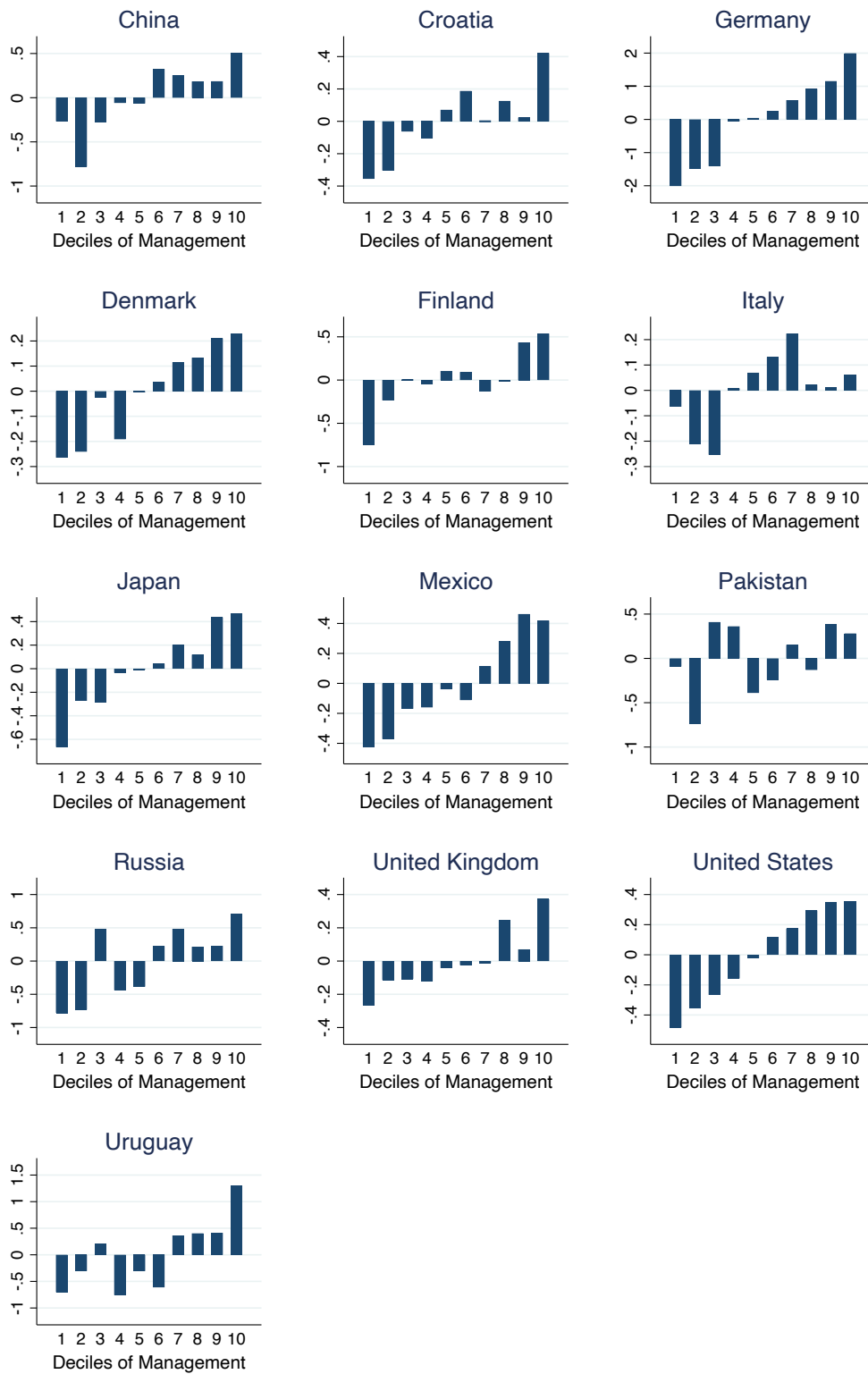
216 **B. Firms vs. establishments.** Many firms, especially the largest, are composed of multiple establishments. Table A1 shows
 217 that the level of the reporting unit in MOPS is sometimes the firm (9 countries) and sometimes the establishment (5 countries).
 218 To examine the importance of this, we would want to aggregate up the establishments to the firm level for these five countries
 219 and see whether anything changes. We cannot do this for every country as not all keep firm identifiers (Germany and Finland).
 220 But for those that we can do this for U.S., Pakistan and Japan, we find near identical results.

221 **C. Other performance outcomes.** Other measures of performance also broadly follow the same patterns that we have documented
 222 above. Figure S2 shows one example of this which is profits per worker (instead of total profits in Figure S3). This shows a
 223 strong upwards sloping relationship.

224 **D. Other country-level metrics.** Figure S4 plots the average management score at the country level against a score of institutional
 225 quality –specifically, regulatory quality – from the World Bank’s World Governance Index (WGI). The Regulatory Quality
 226 index measures “perceptions of the ability of the government to formulate and implement sound policies and regulations that
 227 permit and promote private sector development” and ranges from -2.5 to 2.5 (22). While there is a clear positive significant
 228 correlation between the two variables, this is a country-level plot and only includes 13 observations and should be interpreted
 229 with extreme caution. As noted in Section C.2, the MOPS is not well suited for cross-country comparisons and we would urge
 230 the reader to consider the World Management Survey for such cross-country rank analyses.

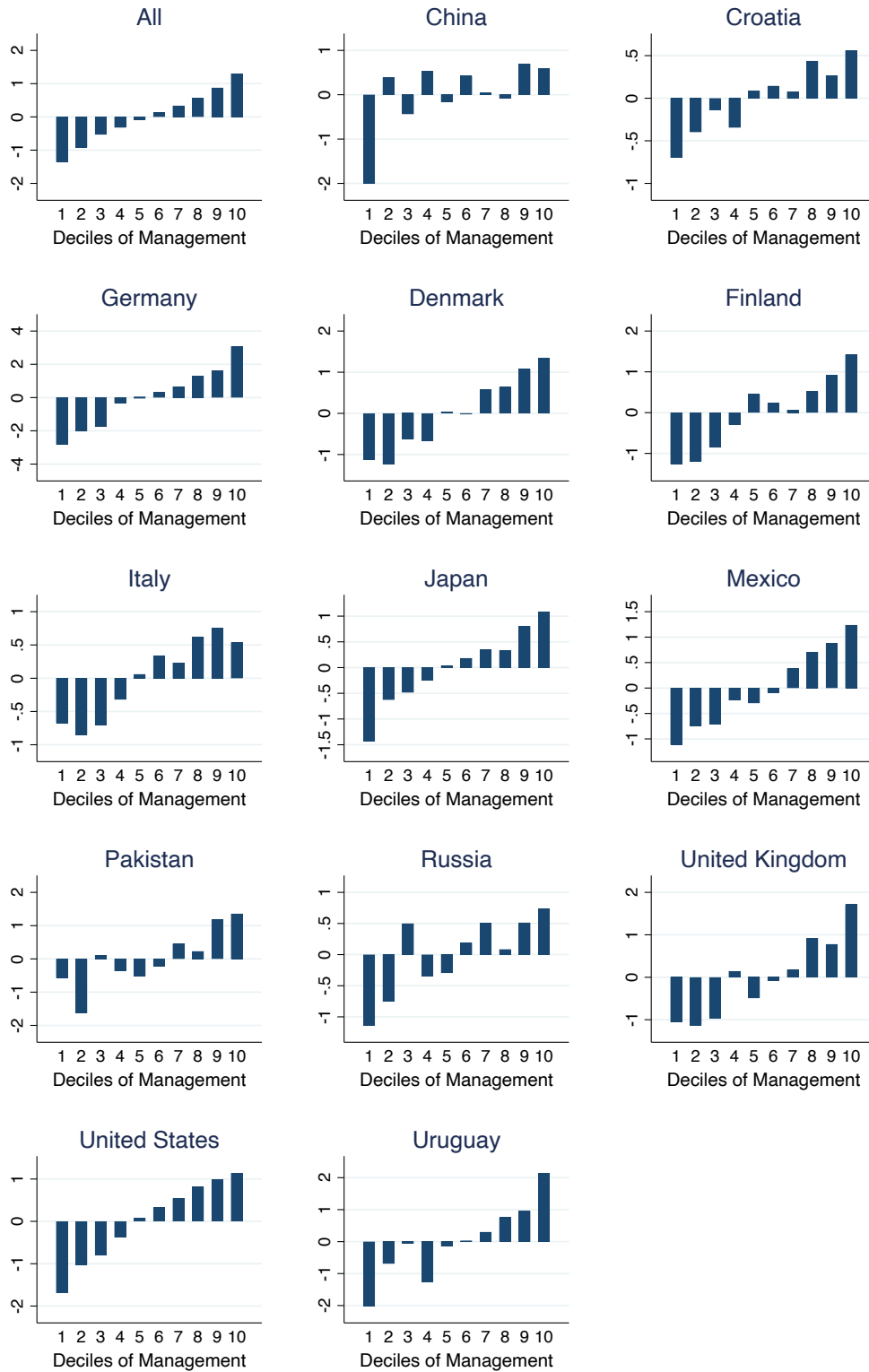
231 **E. Non-manufacturing.** As mentioned in the main text, US MOPS was just on the manufacturing sector and many other
 232 countries followed suit. Eight countries, however, also included sectors outside manufacturing. Often sample sizes are too small,
 233 but for 5 countries we have enough data to perform some of the analyses we did for manufacturing. Figure S5 shows the
 234 distribution of management scores which, as for management, is very large. Figure S6 has the relationship between scale (as
 235 measured by employment or revenue) which also shows a strong and positive relationship between size and management.

Fig. S2. Log of profit per worker (relative to country means)



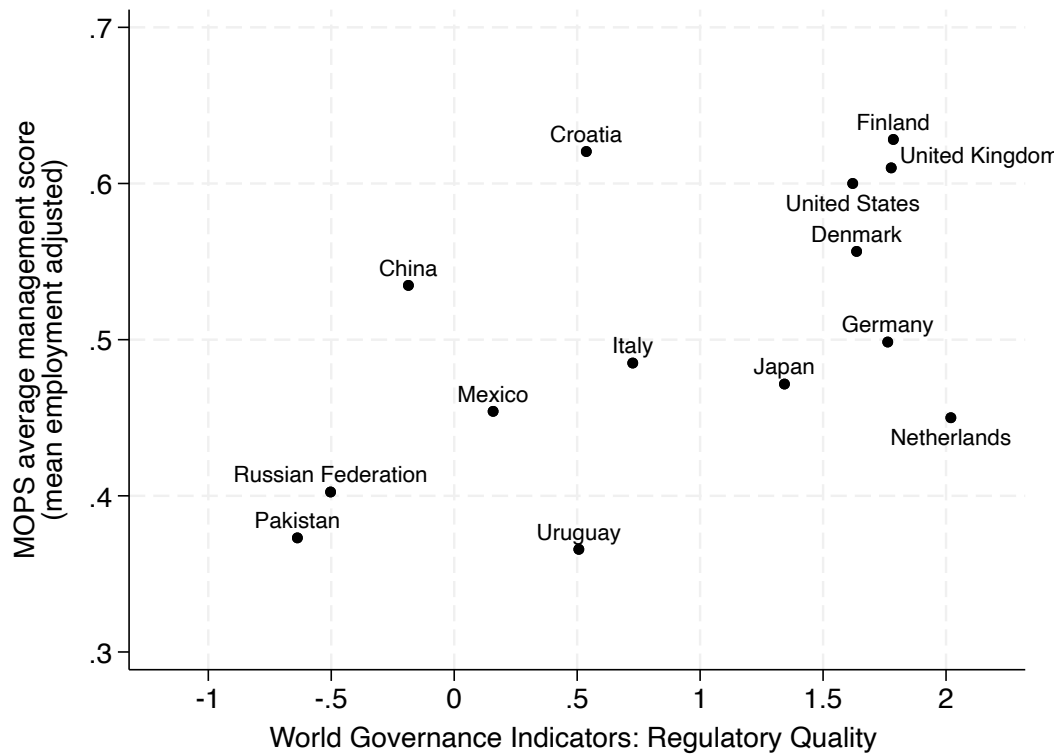
Notes: The x-axis divides firms into country-specific deciles of their management score. The vertical axis gives (the natural logarithm of) the mean level of gross profit divided by the mean level of employment in each of these bins. Number of observations for each country in the original datasets (manufacturing sector only): China = 1,320; Croatia = 314; Denmark = 743; Finland = 582; Germany = 1,927; Italy = 1,122; Japan = 10,081; Mexico = 3,729; Netherlands = 377; Pakistan = 11,159; Russia = 978; UK = 1,329; US = 35,000; Uruguay = 550.

Fig. S3. Log of profit (relative to country means)



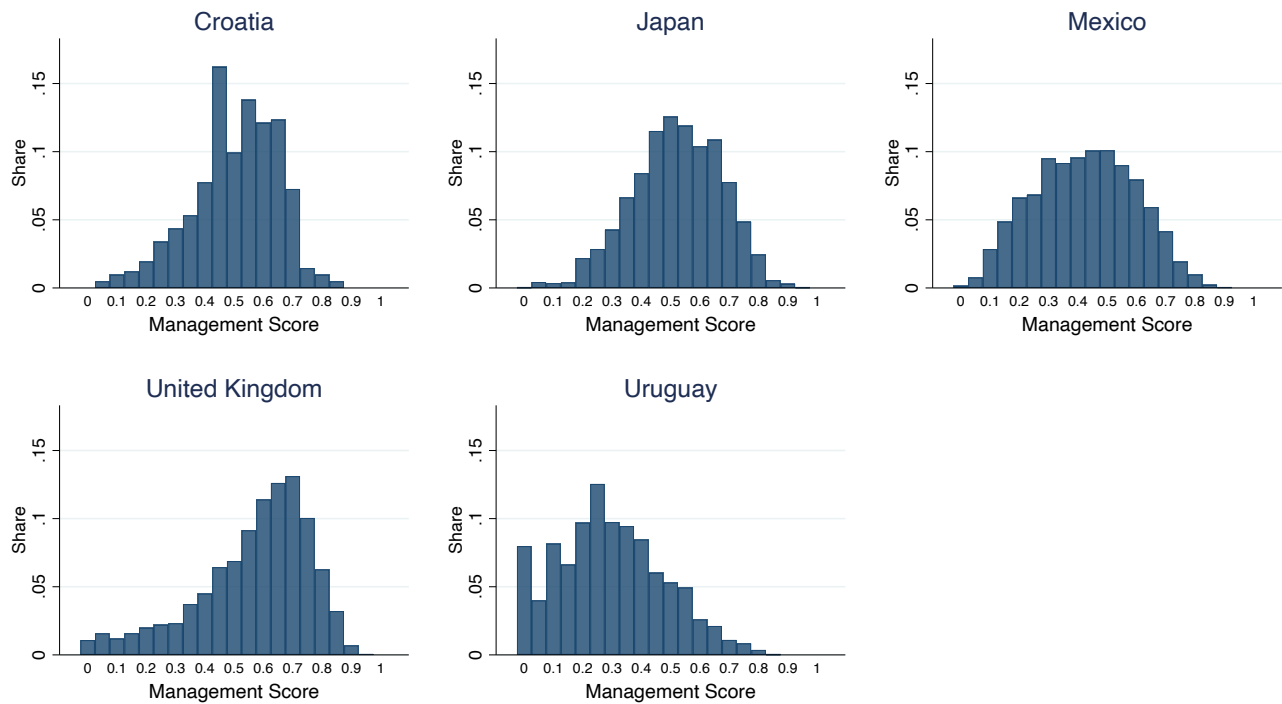
Notes: The x-axis divides firms into country-specific deciles of their management score. The vertical axis gives (the natural logarithm of) profits in each of these bins. Number of observations for each country in the original datasets (manufacturing sector only): China = 1,320; Croatia = 314; Denmark = 743; Finland = 582; Germany = 1,927; Italy = 1,122; Japan = 10,081; Mexico = 3,729; Netherlands = 377; Pakistan = 11,159; Russia = 978; UK = 1,329; US = 35,000; Uruguay = 550.

Fig. S4. Positive association between better regulatory quality and management practices



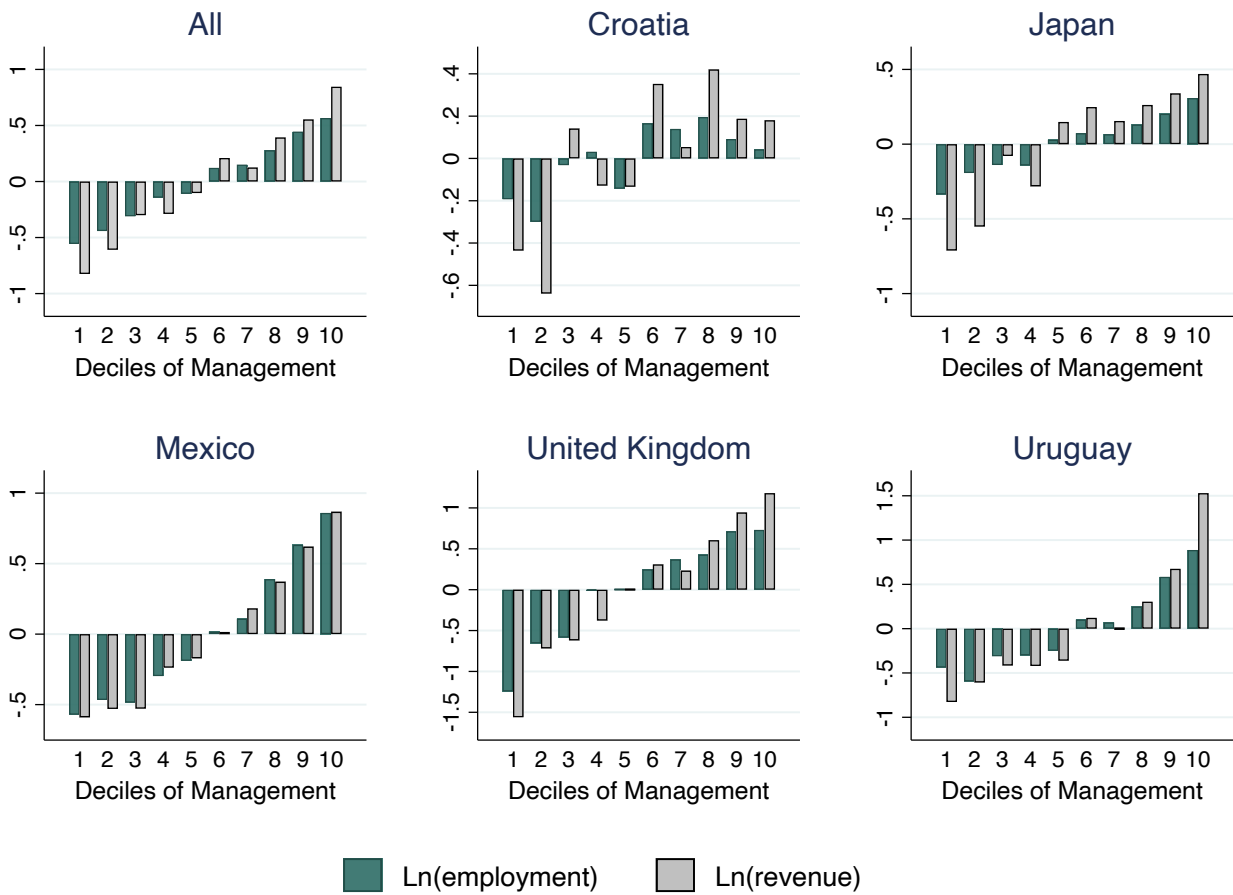
Notes: Each circle represents the average values for one of the MOPS countries. The y-axis shows the residualized average management score (controlling for average firm size). The x-axis shows the average estimate measure of the World Governance Indicator for Regulatory Quality. The overall correlation here is statistically significant but should be interpreted with caution as it would be a cross-country regression with only 14 observations.

Fig. S5. Non-manufacturing industries: distribution of management practices



Notes: Not all countries have data for non-manufacturing industries. Here we replicate the basic results in the manufacturing-focused paper for the subset of industries that are available in other countries. The industries are as follows: wholesale (Japan), services (Croatia, Mexico and Uruguay) and 'non-manufacturing' (UK).

Fig. S6. Non-manufacturing industries: log of employment and revenue (relative to country means)



Notes: Not all countries have data for non-manufacturing industries. Here we replicate the basic results in the manufacturing-focused paper for the subset of industries that are available in other countries. The industries are as follows: wholesale (Japan), services (Croatia, Mexico and Uruguay) and 'non-manufacturing' (UK).

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