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Management Practices Across Firms and Countries
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ABSTRACT

For the last decade we have been using double-blind survey techniques and randomized sampling to construct management data on over 10,000 organizations across twenty countries. On average, we find that in manufacturing American, Japanese, and German firms are the best managed. Firms in developing countries, such as Brazil, China and India tend to be poorly managed. American retail firms and hospitals are also well managed by international standards, although American schools are worse managed than those in several other developed countries. We also find substantial variation in management practices across organizations in every country and every sector, mirroring the heterogeneity in the spread of performance in these sectors. One factor linked to this variation is ownership. Government, family, and founder owned firms are usually poorly managed, while multinational, dispersed shareholder and private-equity owned firms are typically well managed. Stronger product market competition and higher worker skills are associated with better management practices. Less regulated labor markets are associated with improvements in incentive management practices such as performance based promotion.

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As four Europeans, we are used to hearing that American firms are the world's best managed. American companies such as GE, Apple, IBM, McDonald's, and Walmart are icons of business. And U.S. business schools, which train the top-level managers of these firms, dominate global rankings. This was not always the case, however. In the 1980s, for example, Japanese firms were regarded by many as the best managed in the world, powered by Toyota-inspired lean manufacturing principles.[1]

The chief purpose of our ongoing research program is to understand how and why management practices vary not only across countries as well as across firms and industries. To address this we must first tackle a serious challenge: how to measure and define management practices? We believe that management practices can be systematically measured, which then allows us to investigate their role in explaining the astounding differences in performance across firms and countries.

To measure management practices, we use a new double-blind survey tool. This survey is run on randomly drawn samples of organizations across a range of different industries and countries and uses open questions to obtain accurate responses regarding the quality of managerial practices inside each firm. By systematically executing this approach on around 10,000 organizations over the past decade, we have assembled one of the first large internationally comparable management datasets.[2] In this paper we will both describe this dataset and present some preliminary results.[3]

We begin by describing this new survey approach, which focuses on measuring management practices along three operations-focused dimensions: (1) performance

[1] See, for example, Appelbaum and Batt (1994) for a historical review on the cross-country evolution of some of the managerial concepts that are included in our survey. And note that while U.S. manufacturing firms are struggling domestically due to high employment costs, U.S. multinationals have been very successful abroad over the past couple of decades (see Bloom, Sadun, and Van Reenen, 2012).
[2] Other international management datasets include the Global Manufacturing Research Group (GLOBE) survey (House et al., 2004; Javidan et al., 2006) and the World Bank/EBRD establishment surveys.
[3] An anonymized version of the full data is available online at www.worldmanagementsurvey.org. We can provide only anonymized data because we committed to confidentiality during the interviews. Anyone with access to a U.S. Census Research Data Center can apply to us to gain access to the full dataset, since data within the RDCs is protected by U.S. federal law.

monitoring, (2) target setting, and (3) incentives/people management. Within these three areas of management we define "best" management practices as those that continuously collect and analyze performance information, that set challenging and interlinked short- and long-run targets, and that reward high performers and retrain/ fire low performers.

There is a vast literature on the theory and measurement of management practices[4] that offers a wide spread of opinions on the definition, scope, and impact of different practices, and even a debate whether "best practices" exist or whether every management practice is contingent. Our management scoring grid has a very practical origin: It was developed by McKinsey as a first-contact guide to firms' management quality. As such it targets a set of core operational management practices that have a direct impact on firm performance based on the consultants' experience, and that can be easily measured in an initial appraisal. As we discuss below, we also test (and confirm) that these practices are indeed strongly linked to higher productivity, profitability, and growth.

Our main findings on management practices can be summarized in ten points (with the corresponding figures in the main text referenced):

1. U.S. manufacturing firms score higher than any other country. Companies based in Canada, Germany, Japan, and Sweden are also well managed. Firms in developing countries, such as Brazil, China, and India, are typically less well managed (Figure 1).

[4] Details of the survey can be found in Table 1 and online at www.worldmanagementsurvey.com. This survey was originally developed by McKinsey, but most of the concepts in the questionnaire overlap with the existing management literature. For example, the emphasis on repeated and persistent organizational processes is similar to the literature on static and dynamic routines (Eisenhardt & Martin, 2000; Nelson & Winter, 1982; Winter, 2003; see Becker, 2004, for a review). Conceptually, the survey is also related to the idea that intangible firm-specific assets and organizational processes are crucial in determining firm performance, a key element of the resource-based view of the firm (Barney & Arikan, 2001; see Barney & Griffin, 1992, for a review). Finally, the section of the survey dedicated to human resources (HR) practices—and in particular the attention to the selection, rewards, and training given to employees—is consistent with the literature dedicated to high-performance work systems (e.g., Lengnick-Hall, Lengnick-Hall, Andrade, & Drake, 2009; Lepak, Liao, Chung, & Harden, 2006; Pfeffer, 1999a, 1999b; Pfeffer & Veiga, 1999). Bloom and Van Reenen (2010) discussed the links between their work and the more general HR management literature. In terms of methodology, our work shares the same emphasis on data and econometric identification issues discussed in Becker and Huselid (1998) and Huselid and Becker (1996).

2. In manufacturing, there is a wide spread of management practices within every country. This spread is particularly notable in developing countries, such as Brazil and India, which have a large tail of very badly managed firms (Figure 2).

3. Looking at other sectors, U.S. firms in retail and hospitals also appear to be the best managed internationally, but U.S. (high) schools score poorly (Figure 3).

4. There is a wide spread of management practices in non-manufacturing (Figure 4).

5. Publicly (i.e., government) owned organizations have worse management practices across all sectors we studied. They are particularly weak at incentives; promotion is more likely to be based on tenure (rather than performance), and persistent low performers are much less likely to be retrained or moved (Figures 5 and 6).

6. Among private-sector firms, those owned and run by the founders or their descendants, especially firstborn sons, tend to be badly managed. Firms with professional (external, nonfamily) CEOs tend to be well managed (Figure 7).

7. Multinationals appear able to adopt good management practices in almost every country in which they operate (Figure 8).

8. There is strong evidence that tough product market competition is associated with better management practices, within both the private and public sectors (Figure 9).

9. Light labor market regulation is correlated with the systematic use of monetary and nonmonetary incentives (related to hiring, firing, pay, and promotions), but not monitoring or target management (Figure 10).

10. The level of education of both managers and nonmanagers is strongly linked to better management practices (Figure 11).

As mentioned above, one immediate concern with our work is that measuring management is impossible because it is unclear which management practices are “good” or “bad.” Maybe all management practices are contingent on the business situation. For

example, firms in India may not adopt performance measurement because wages are so low that measuring workers' output is unnecessary. We find that for at least our core set of management practices around monitoring, targets, and incentives, there does appear to be a concept of "best" practices. Firms adopting these practices are more profitable and more productive, grow faster, and survive longer, not just in the Anglo-Saxon nations but in every region we looked at. Moreover, in recent experimental studies randomly chosen treatment firms that were helped to adopt these practices demonstrated large causal improvements in profitability compared to the control firms.[5]

There are several caveats to this. First, there are many management practices that are contingent on the firms' business environment and product, such as strategy, finance, M&A, and marketing. We deliberately focus on a narrow subset of basic management practices for which best practices most likely exist: those practices that seem likely to raise the efficiency of firms' production of goods and services.[6] Second, there are other types of management, such as leadership, that are undoubtedly important to business success but are much harder to quantify (House et al., 2004, is the most ambitious attempt). Finally, even this core set of best practices almost surely changes over time. For example, the advent of cheap computers now makes it relatively more attractive to undertake continuous performance measurement and related analysis. But before addressing our results in depth, we step back and look at our methodology.

How Can Management Practices Be Measured?

To measure management practices, we developed a new survey methodology described in detail in Bloom and Van Reenen (2007). In summary, we use an interview-based evaluation tool that defines and scores from 1 ("worst practice") to 5 ("best practice") 18 key management practices. Table 1 lists the management questions for manufacturing, and it also gives some sense of how each is mapped onto the scoring grid. We then

[5] See, for example, Bloom, Eifert, Mahajan, McKenzie, and Roberts (2011).

[6] In our view it is an open question whether high scores on our management practices grid are beneficial, neutral, or detrimental to innovation (the generation of *new* goods and services). On one hand, our management practices may be complements to innovation, as efficiently organizing a research team is likely to get more "bang" for every R&D "buck" spent. On the other hand, the kind of careful monitoring and managerial oversight we emphasize could potentially frustrate a more freewheeling innovative culture. Ultimately, this is an empirical issue.

average the individual question scores for each firm into a single indicator that is meant to reflect "good management," as commonly understood. For retail, schools, and hospitals we use a very similar methodology.[7]

As mentioned, this evaluation tool attempts to measure management practices in three key areas. First, *monitoring*: How well do organizations monitor what goes on inside the firm, and use this information for continuous improvement? Second, *targets*: Do organizations set the right targets, track the right outcomes, and take appropriate action if the two are inconsistent? Third, *incentives*: Are organizations promoting and rewarding employees based on performance, prioritizing hiring, and trying to keep their best employees?[8]

Our methodology defines a badly managed organization as one that fails to track performance, has no effective targets, and bases promotions on tenure with no system to address persistent employee underperformance. In contrast, a well-managed organization is defined as one that continuously monitors and tries to improve its processes, sets comprehensive and stretching targets, and promotes high-performing employees and fixes (by training or exit) underperforming employees.

To collect the data, we hired teams of MBA-type students to conduct the telephone interviews, as they had some business experience and training. These students were all from the countries we surveyed (and so could interview managers in their native languages) but were studying at top U.S. or European universities. The survey was completed by plant managers in manufacturing, retail store managers, clinical service leads in hospitals, and school principals or headmasters. This level of middle managers was purposely selected, as they were senior enough to have an overview of management practices but not so senior as to be detached from day-to-day operations.

[7] For the full survey grids for each industry see www.worldmanagementsurvey.org. The differences across industries primarily reflect different organizational structures—for example, using the words "nurse manager" and "unit" in hospitals as compared to "plant manager" and "factory" in manufacturing firms.
[8] These practices are similar to those emphasized in earlier work on management practices, by, for example, Osterman (1994), Macduffie (1995), Delery and Doty (1996), and Ichniowski, Shaw, and Prennushi (1997).

We interviewed these managers using a double-blind survey technique. The first part of this double-blind technique was that managers were not told they were being scored or shown the scoring grid. They were told only that they were being "interviewed about management practices." To do this, we asked "open" questions in the survey. For example, on the first monitoring dimension in manufacturing, we started by making the open statement "Tell me how you monitor your production process" rather than closed questions such as "Do you monitor your production daily [yes/no]?"

We continued with open questions focusing on actual practices and examples until the interviewer could make an accurate assessment of the firm's practices. For example, the second question on that performance tracking dimension was "What kinds of measures would you use to track performance?" and the third was "If I walked around your factory what could I tell about how each person was performing?" The combined response to this dimension are scored against a grid that goes from 1, which is defined as "*Measures tracked do not indicate directly if overall business objectives are being met. Tracking is an ad hoc process (certain processes aren't tracked at all),*" to 5, which is defined as "*Performance is continuously tracked and communicated, both formally and informally, to all staff using a range of visual management tools.*"

The other side of our double-blind approach was that our interviewers were not told in advance anything about the organization's performance; they were provided only with the organization's name, telephone number, and industry. We randomly sampled medium-sized firms (employing between 100 and 5,000 workers) in manufacturing and retail, acute care hospitals, and schools that offered general education to 15-year-olds (which corresponds to high schools in most of the countries we surveyed). These organizations are large enough that the type of systematic management practices chosen is likely to matter, but small enough that they are not usually covered in the business press. Thus, the interviewers generally had not heard of them before, so they should have had no preconceptions.

We used a variety of procedures to obtain a high success rate and to remove potential sources of bias from our estimates. First, we obtained government endorsements for the surveys in most countries and industries. Second, we positioned the surveys as "an interview on management," never using the word "survey" or "research," as telephone operators usually block surveys and market research. Third, we never asked interviewees for performance or financial data; instead, we obtained such data from independent sources such as company accounts or hospital and school league tables. Fourth, the interviewers were encouraged to be persistent; they ran about two interviews, lasting 45 minutes each on average, per day, with the rest of the time spent contacting managers to schedule interviews.[9] We also ran interviews in the managers' native languages to make the process as comfortable as possible. These steps helped yield a response rate of about 50% across industries, which was uncorrelated with the (independently collected) performance measures for the firm—thus, we were not disproportionately interviewing successful or failing organizations.

We also collected a series of "noise controls" on the interview process itself (such as the time of day and the day of the week), characteristics of the interviewee (such as tenure in firm), and the identity of the interviewer (so we could include a full set of dummy variables for the interviewer to deal with interviewer bias). Including these in our regression analysis typically helps to improve the precision of our estimates by stripping out some of the measurement error.

Validating the Management Data

Before showing the management data, it is important to ask whether our survey procedure appears to be measuring consistent differences in management across firms. To do this we carried out two survey exercises to assess to what extent our management data appears internally consistent across questions and interviews.

[9] As a result, these management surveys were expensive to run. Our interviews cost about $150 each (including all overheads) across all the survey waves. To help defray costs we actively collaborated with several different research teams and governments, and welcome any interest in future collaboration.

First, for almost three quarters of all interviews we had a second person listening in on a phone extension as a "silent monitor" to independently score the interview. For these double-scored interviews we found the correlation across scores was 0.887, which shows that two interviewers typically gave the same score to the same interview.

Second, we also ran repeat interviews on 222 firms from our manufacturing sample, using a second MBA student to interview a second plant manager in the same firm. This helped to evaluate how consistently we were measuring management practices within firms by interviewing one manager. We found that the correlation between our independently run first and second interview scores was 0.51. Part of this difference across plants within the same firms is likely to be real internal variations in management practices; no two plants within the same firm will have identical management practices. The rest of this difference across plants within firms reflects measurement error in the survey process. Nevertheless, this 0.51 correlation across different plants within the same firm, which is highly significant (p-value< 0.001), suggests that while our management score is clearly noisy, it picks up significant management differences across firms. Similar high correlations are found in the hospital surveys (see Bloom, Propper, Seiler, & Van Reenen, 2010)[10].

International Patterns of Management

Below we summarize some of the main findings from the management data.[11]

Manufacturing

Figure 1 presents the average management practice score across countries (details in Appendix 1). These firms were randomly sampled from the population of all

[10] Further evidence of the consistency of the management scores is in Grous (2011). He conducted extensive factory visits of 23 British aerospace firms, administering both the Bloom and Van Reenen (2007) telephone survey on the plant manager and face-to-face interviews with up to three other employees (the CEO/Managing Director, a manager and a shopfloor worker). The management scores from his site visits were highly associated with the scores from the telephone interviews (the correlation coefficient was 0.89 and was significant at the 1% level).

[11] The anonymized data and Stata files to replicate the results are available at www.worldmanagementsurvey.org.

manufacturing firms with 100 to 5,000 employees. The median firm is privately owned, employs around 350 workers, and operates two production plants.

The United States has the highest management practice scores, on average, followed by Germany and Japan. At the bottom of the rankings are countries in Southern Europe (Greece and Portugal) and developing countries, such as Brazil, China, and India.

As discussed above, we can separate these overall management scores into three broad categories: monitoring, targets, and incentives; the country-level scores are shown in Table 2. For ease of comparison, average scores are given in the bottom row of the table. U.S. management has by far the largest advantage in incentives (with Canada and Germany following) and the second-largest advantage monitoring and target-setting (behind Sweden and Japan, respectively). However, these data also describe how management styles differ across countries. In the United States, India, and China, managerial use of incentives (relative to the average country) is substantially greater than use of monitoring and target-setting, while in Japan, Sweden, and Germany, managerial use of monitoring and target setting (relative to the average) far exceeds the use of incentives (relative to the average). There could be many reasons for this pattern of specialization across countries. One factor we examine below is that the lighter labor market regulations in the United States make it easier to remove poor performers and to reward high performers.

What does the distribution of management practices look like *within* countries? We can plot a firm-level histogram of management practices, as shown in Figure 2. The first histogram shows this data for the United States, where the bars show the actual data and the dark line is a smoothed (kernel) fit of the data. Other advanced economies in Western Europe, such as the United Kingdom, have some resemblance to the U.S. distribution, except they have a somewhat thicker left "tail" of badly managed firms. In comparison, firms in developing countries such as Brazil and India have a much thicker left tail of badly managed firms. These diagrams also show the smoothed value for the U.S. economy, so that management in these countries can be readily compared to the United

States. Another key finding is that China has a more compressed distribution, which could be because Chinese firms are relatively young, so there is less variation in managerial "vintages."[12]

This cross-country ranking is perhaps not surprising, since it approximates the cross-country productivity ranking. Although we cannot offer a rigorous argument here about the magnitude of any causal effect, it certainly appears plausible that management practices should be viewed as part of the determinants of national productivity. A regression of GDP per capita on management practices across 17 countries yields an R-squared of 0.81.

Hospitals, Schools, and Retail

In Figure 3, we report management scores for three service sectors: healthcare, where we interviewed clinical service leads in cardiology and orthopedics units in acute-care hospitals; education, where we interviewed principals in secondary (high) schools; and retail where we interviewed store and district managers in firms with 100 to 5,000 employees.[13] Because of funding constraints this survey data covers fewer countries than for manufacturing, although we are continuing to extend these surveys across countries and industries.

An analysis of Figure 3 reveals that U.S. hospitals and retailers are again the best managed across our international sample. What is potentially more surprising is that U.S. schools are notably poorly managed by international standards. U.S. schools tend to be particularly poor at incentives management—that is, promoting and rewarding high-performing teachers, and retraining and/or firing badly performing teachers. This may be because the U.S. schooling system is dominated by the public sector with strong union representation, unlike the other three sectors we examined. In contrast, U.K. schools are the best managed within our sample of countries. One reason appears to be that U.K.

[12] Chinese firms are 18 years old on average, compared to the sample average of 43.7 years. India has the second-youngest firms at 30.3 years old on average, while Germany has the oldest at 55.2 years.

[13] We thank the Institute for Competitiveness and Prosperity for helping to collect the retail data.

schools have undergone a series of reforms in recent years to improve management (for example, see McNally, 2010).

As in manufacturing, we also see a wide spread of management practices. For example, Figure 4 plots the distributions of management scores for hospitals, schools, and retail firms, and again we see wide dispersions in each country studied. These spreads in management practices appear to mimic the wide dispersions in performance in these sectors as reported in, for example, Skinner and Staiger (2009) for hospitals, Foster, Haltiwanger, and Krizan (2006) for retail, and Hoxby (2000) for schools.

Our management scoring method has also been used by other research teams to study sectors beyond manufacturing, retail, schools, and hospitals. For example, McConnell et al. (2009) looked at 147 substance abuse clinics; Delfgaauw et al. (2011) looked at around 200 fostering, adoption, and nursing homes; McKinsey (2009) studied around 100 tradable service firms in Ireland; Dohrmann and Pinshaw (2009) surveyed around 20 tax agencies across OECD countries; and Homkes (2011) studied around 200 global public-private partnerships. In every case the researchers found extremely wide variations in management practices across the organizations studied.

Factors Associated With Differences in Management Practices

Based on our sample of around 10,000 management interviews, we can identify some stylized facts regarding quality of managerial practices.

Public (Government) Ownership

One factor that seems to be strongly linked to management practices is ownership. Figure 5 demonstrates that publicly owned organizations have consistently lower management scores in each sector, even after controlling for country and size. This gap is quantitatively large: The average gap in management scores between public and private ownership is 0.14, similar, for example, to the overall management gap between the U.S. and Sweden.

As shown in Figure 6, the overriding reason publicly owned institutions score substantially lower is that they have weaker incentive management practices. In particular, in many public-sector agencies promotion is based on time served, and persistent underperformers are not retrained or moved to different positions. One explanation for this is the strength of unions, which place a great emphasis on equity, fairness, and political criteria.

Family and Founder Ownership and Management

The privately owned firms in our manufacturing and retail sample can be divided by ultimate ownership: including dispersed shareholders, family ownership with an external chief executive officer, family ownership with a family chief executive officer, owned by the founder or the managers of the firm, and owned by private equity or private individuals. Figure 7 plots the average management practices by ownership type, including government-owned firms for comparison. Because of wide differences in ownership patterns across countries, industries, and firm size, we report the management scores after controlling for size, country, and industry dummies.

One interesting group that emerges is family firms, which our research defines as firms owned by the descendants of the founder—that is, sons, grandsons, and great-grandsons, and more rarely, daughters, granddaughters, etc. Those that are family owned and also family managed ("Family, family CEO") have a large tail of badly managed firms, while the family owned but externally managed ("Family, external CEO") look very similar to dispersed shareholders. The reason appears to be that many family firms adopt a rule of primogeniture, so that the eldest son becomes the chief executive officer, regardless of merit considerations. Many governments around the world also provide tax subsidies for family firms. For example, the United Kingdom has many more family-run and -owned firms than the United States, which is likely to be related to the estate tax exemption for inherited business assets in the United Kingdom.

Since family firms typically have less debt, product market competition may not be as effective in driving them out of business if they are badly managed. Without debt firms have to cover operating costs (e.g., salaries and wages) but not capital costs (e.g., the rent on property or equipment since these were typically bought outright many years ago). Hence, family firms can continue to generate positive cash flow while generating economic losses because their family owners are subsidizing them through cheap capital.

Firms with private equity ownership appear well managed, in particular when compared to family- and government-owned firms (Bloom, Sadun, & Van Reenen, 2009b). These findings are consistent with empirical studies indicating that private equity transactions in the United States and the United Kingdom result in a substantial increase in productivity (Cumming, Siegel, & Wright, 2007; Harris, Siegel, & Wright, 2005; Lichtenberg & Siegel, 1990; Siegel & Simons, 2010). Thus, the pattern in recent years of private equity firms purchasing firms in Europe and Asia that were previously under family or government management may make some economic sense.

A perhaps surprising result is that "founder-owned, founder-CEO firms"—where the current chief executive officer founded the firm—are the worst managed on average. We are still trying to understand this phenomenon, but one potential explanation is that the entreprenuerial skills required of a start-up (e.g., creativity and risk taking) are not the same skills required when a firm grows large enough to enter our sample (at least 100 employees). A mature firm needs to move beyond informal rules, and these may be implemented more effectively by a professional manager (see, for example, Boeker & Karichalil, 2002 and Davila, Foster, & Jia, 2010).

Multinational Firms

Figure 8 plots management scores by country for domestic firms (those with no production facilities abroad) and foreign multinationals. Two results stand out. First, foreign multinationals are better managed than domestic firms. Second, foreign multinationals seem able to partially "transport" their better practices abroad despite often-difficult local circumstances. We also found that multinationals transplant other

features of their organizational form overseas, such as the average degree of decentralization (Bloom, Sadun, & Van Reenen, 2009b). We also distinguished by export status, revealing a clear pecking order: Average management scores were lowest for non-exporters (2.62), next lowest for non-multinational exporters (2.89), and highest for multinationals (3.25).

Product Market Competition

In our interviews, we asked the manufacturing and retail managers to identify the number of competitors they faced in the marketplace. We found that the average management score was significantly higher when firms reported facing more competitors (see Figure 9). Using other measures of competition for manufacturing firms not reported by managers, such as the import penetration rates (measured by imports as a share of domestic production) or Lerner indices of competition, yields a similar general result that management quality tends to increase with competitive intensity.[14] We also collected competition data for hospitals and schools and found a similar correlation; that is, organizations reporting that they faced more competitors appear to adopt better management practices.

A concern with all of the associations of management with "driving factors" such as competition is that the correlation is spurious and not causal. In the case of competition, this may cause an underestimate of the positive effect of competition, as a particularly well-managed organization would be likely to drive badly managed rivals out of business and so reduce the number of rivals, lowering measured competition.

This idea can sometimes be directly tested; for example, Bloom, Propper, Seiler, and Van Reenen (2010) did so based on a "natural experiment" involving the closing of hospitals in the United Kingdom. Politicians control exit and entry and tend to keep hospitals open

[14] We defined the Lerner index as 1 minus the average profits/sales ratio of all other firms in the country industry cell over the past five years. High values suggest low long-run profits, suggestive of tough competition. When we used this and the import measure data we added country and industry dummies to control for factors like country size and different reporting requirements; see Bloom and Van Reenen (2007) for details.

in politically marginal districts, and this creates some random variation in the number of hospitals across different areas. Using this variation we find that the positive causal effect of competition on management (and clinical outcomes such as survival rates) is indeed *stronger* than the simple correlation would suggest.

In general, we interpret this finding as showing that more competitive markets are associated with better management practices. This result could arise through a variety of channels. For example, one route for competition to improve management practices may be through selection, with badly run firms, hospitals, or schools exiting more speedily in competitive markets. A second route may be through incentives to improve practices, which could be sharper when competition "raises the stakes" either because efficiency improvements have a larger impact on shifting market share or because managers are more fearful of losing their jobs.[15]

Labor Market Regulation

Labor market regulation can constrain the ability of managers to hire, fire, pay, and promote employees. Figure 10 plots each country's average manufacturing management scores on incentives management (survey questions 13 to 18 on hiring, firing, pay, and promotions) against an employment rigidity index from the World Bank, which focuses on the difficulties firms face in hiring workers, firing workers, and changing their hours and pay. In tougher labor markets regulation is indeed significantly negatively correlated with the management scores on incentives. In contrast, more restrictive labor market regulations are not significantly correlated with management practices in other dimensions such as monitoring or targets.

Obviously there are a number of other factors that vary across countries, so the pattern shown in Figure 10 does not conclusively demonstrate that labor market regulations

[15] The competition impact fits well with the evolutionary economics paradigm (Nelson & Winter, 1982). When competition is measured by the number of firms, more firms could also improve the ability of owners or regulators to implement "yardstick" competition and improve management. Underperformance is often easier to spot when organizations have local competitors to be evaluated against.

constrain some forms of management practices. It is, however, certainly suggestive of this effect.

Human Capital

As shown in Figure 11, the education of managers and workers is strongly correlated with high management scores. Of course, we cannot infer a causal relationship from this association. However, it is plausible that managers with a college degree are more likely to be aware of the benefits of modern management practices, such as lean manufacturing. More surprisingly perhaps, is that worker education level is also positively associated with management scores, suggesting that implementing many of these practices may be easier when the workforce is more knowledgeable. Many of the best practices in Table 1 require significant initiative from workers, such as the Japanese-inspired lean manufacturing techniques.

Our belief is that more basic business education—for example, around capital budgeting, data analysis, and standard human resources practices—could help improve management in many countries. This holds particularly true in developing countries, and recent fieldwork we have been doing with firms in India has provided supportive evidence on this (see below).

Non-experimental Evidence on Management Quality and Firm Performance

While it appeared likely that effective monitoring, targets, and incentives should be associated with better performance, we wanted to confirm this empirically in our sample. To do this, we first examined the correlation between our measure of management practices and organizational performance. For manufacturing and retail firms this performance is in terms of productivity, profitability, growth rates, exit rates, and market value; for hospitals this is in terms of patient outcomes such as heart attack survival rates; and for schools it is in terms of pupil outcomes such as standardized test scores.

For the manufacturing firms we obtained this data from company accounts, which were available for 2,927 of the firms.[16] We had performance data for 251 hospitals in the United States and United Kingdom and for 354 schools in the United States, United Kingdom, Canada, and Sweden. We found that higher management scores are robustly associated with better performance.

Table 3 reports the results of the ordinary least squares (OLS) regressions. Our dependent variables are different measures of firm performance, including sales per employee, profitability, the growth of sales, and survival. Our key explanatory variable is the measure of the company's management quality. In some of the regressions, we control for capital per employee and the share of the workforce with a college degree. We also include control variables for country and industry (a full set of dummy variables),[17] firm-level controls for hours worked and firm age, and a set of "noise controls" that (as discussed earlier) include a dummy variable for our interviewers as well as for the job tenure of the manager, the day of the week the interview was conducted, the time of day the interview was conducted, the length of the interview, and a judgment from the interviewer on the reliability of the information collected.

In column 1 of Table 3, the dependent variable is the logarithm of sales per employee, a very basic measure of firm labor productivity. Our management score is an average across all 18 questions. The coefficient suggests that firms with one point higher average management score have about 52 log points (about 69%) higher labor productivity, so a one-standard-deviation change in management (of 0.664) is associated with about a 45% increase in labor productivity (e.g., a 45% increase in sales, holding employment constant). Column 2 controls for a full set of country and three-digit industry dummies to

[16] We had sales and employment accounting data for 3,900 firms, but complete data for sales, employment, capital, ROCE, and sales growth for 2,927 firms. Our sample contained 90% private firms and 10% publicly listed firms. In most countries around the world, both public and private firms publish basic accounts. In the United States, Canada, and India, however, private firms do not publish (sufficiently detailed) accounts, so while we surveyed these firms no accounting performance data is available for them. Hence, these performance regressions exclude privately held firm in the United States, Canada, and India.

[17] We should note that including a full set of dummies for variables such as country and industry is exactly the same as removing the country and industry means from all variables (see, for example, Greene, 2002). Hence, these results compare the performance of firms to other firms in the same country and industry, with additional controls for size, capital intensity, hours, firm age, skill intensity, etc.

reflect the huge number of unmeasured differences in institutions, regulations, prices, accounting differences, and legal structures. We also include controls for capital per employee, the percentage of the workforce with a college degree, and our controls for survey "noise" (such as interviewer dummies). These covariates somewhat reduce the coefficient on the management variable to around 0.233, primarily because better managed firms tend to have more fixed capital and human capital, but the coefficient remains strongly significant.

In column 3 we exploit the longitudinal dimension of the data and include a dummy variable for every firm (fixed effects), which controls for all those unmeasured features of firms that do not change much over time (such as technology and culture). Thus, we are comparing firm level changes in productivity with their changes in management practices. In this demanding specification the coefficient on management drops to 0.047 but remains statistically significant.[18] These correlations are not simply driven by the Anglo-Saxon countries, as one might suspect if the measures were culturally biased. The relationship between productivity and management is strong across all regions in the data. The significance is also robust to different ways of combining the 18 management practices—for example, using the principal factor of the questions instead of the average in column 1 of Table 3 yields a point estimate (standard error) of 0.374 (0.019).

In column 4 of Table 3 we report profitability, as measured by return on capital employed (defined as profits over equity plus debt capital) and find that this is about two percentage points higher for every one-point increase in the management score. In column 5 we use the five-year sales growth rate as the outcome. Here, a unit improvement in the management practice score is associated with 6.7% higher annual sales growth. In column 6 we examine exit, defined as bankruptcy or liquidation by the last year of our accounts data (typically 2010). We find that a one-point increase in management

[18] Note that the drop in the magnitude of the coefficient is due entirely to the introduction of firm-level fixed effects. This means the parameters are estimated solely from short-run changes in management practices, which are almost certainly measured with more noise than cross-sectional differences. For example, if we repeat the specification of column 2 on the subsample of 1,349 firms with multiple management observations, the coefficient on the management score is 0.210 (standard error 0.029).

practices is associated with a 1.1% reduction in exit, a substantial difference given that the average exit rate was 2.4% for this sample.

Another key measure of performance is firm size. Better managed firms should be larger, and this is partly because the market will allocate these firms a greater share of sales and also because larger firms have the resources and incentives to employ better management (e.g., if there are fixed costs of the types of management practices we consider). When we plotted average management score against the number of employees in a firm (as a measure of firm size) we found that firms with 100 to 200 employees had average management scores of about 2.7. The management score then rose steadily with firm size, so that firms with 2,000 to 5,000 employees—the largest firms in our sample—had average management scores of about 3.2.

The association of management with firm performance is also clear in other sectors outside manufacturing. In Bloom, Propper, Seiler, and Van Reenen (2010) we interviewed 161 managers and physicians in the orthopedic and cardiology departments of 100 U.K. hospitals. We found that management scores were significantly associated with better performance as indicated by improved survival rates from emergency heart attack admissions and other kinds of general surgery as well as shorter waiting lists. In column 7 of Table 3, we show the association between management and 30-day risk-adjusted mortality rates from patients admitted to the hospital with acute myocardial infarction (AMI)[19] across U.K. and U.S. hospitals. The estimates show that a one-point increase in management is associated with a decrease of 0.471 points of a standard deviation in the risk-adjusted mortality rate. For schools, column 8 reports the association between management and measures of pupils' achievement.[20] A one-point increase in management is associated with an increase of 0.196 of a standard deviation in test scores.

[19] This is recognized to be a good outcome measure of acute care quality for several reasons. First, patients are usually taken to the nearest hospital after an acute heart attack. Second, survival is accurately measured, as are risk adjustments. Third, providing care for this illness requires the mobilization of a variety of processes and services, so that the AMI survival rate is a good proxy for quality of care (Skinner & Staiger, 2009).

[20] Due to data availability, the school-level measure of students' achievement varies across countries (the variable is z-scored to take into account these differences). In the U.S. we use the math exam pass rate from high school exit exams (HSEEs). In the U.K. we employ the proportion of students achieving five GCSEs

Management Clusters

A large recent literature has focused on the potential complementarity between different types of management practices. For example, the returns on having strong targets are likely to be higher if an organization can also monitor performance. To investigate this we run a principal component factor analysis on our 18 management questions. We find that the primary factor explains 44% of the variation across firms and loads positively on all practices. This presumably reflects that some common factor—such as having a good CEO or operating in a competitive product market—improves all types of management practices within a firm. The second factor explains only another 7% of the data, but does load positively on monitoring and targets and negatively on incentives. This suggests that some firms specialize more in the monitoring (often those from Germany, Sweden, and Japan) and other firms specialize more in incentives (often those from Anglo-Saxon countries). Hence, we find some evidence for a moderate clustering of management practices, although most of the variation seems common to all practices within a firm.

Potential Downsides of Management Improvements for Workers and the Environment

Many commentators might agree that the management practices we identify are beneficial for productivity but would remain concerned that such practices may have serious downsides in other dimensions. In particular, could improving these management practices have a negative effect on workers' life balance and/or degrade the environment?

In the first major survey wave in 2004, we also collected information on aspects of work-life balance such as child-care facilities, job flexibility, and self-assessed employee satisfaction. We found that well-managed firms actually tended to have better facilities and policies for workers along these dimensions (Bloom, Kretschmer, & Van Reenen, 2011).

(level 2) including English and math. In Canada we employ the school-level rating produced by the Fraser Institute, which is based on several measures of student achievement, including average province exam mark, percentage of exams failed, courses taken per student, diploma completion rate, and delayed advancement rate. In Sweden we use the grade point average (GPA) in the 9th grade.

In terms of environmental impact, we found that energy-efficiency is strongly associated with better firm-level management. This is likely to be because good management practices (such as lean manufacturing) tend to economize on energy use (Bloom, Genakos, Martin, & Sadun, 2010).

Experimental Evidence on Management Quality and Firm Performance

The results shown in Table 3 reveal only conditional correlations between management and performance. Unfortunately, it is very hard to distinguish cause and effect from these results alone. For example, it could be that better management practices improve firm performance, or maybe when firms are performing well they tend to modernize their management practices, or maybe something else (such as hiring educated managers) drives both better performance and improved management. This inability to distinguish cause from effect in management performance analysis is obviously an issue with our survey evidence, but more generally the entire survey and case study literature.[21] Without evidence on causality, it is extremely hard to make strong statements about the relationship between management practices and firm performance. As a result many researchers remain skeptical about the importance of management practices for explaining variations in firm performance.[22]

One way to investigate the causal impact of various management practices is to run a randomized management field experiment. The idea is similar to the way scientists evaluate drugs—providing drugs to a randomly selected treatment group and comparing their outcome to the excluded control group.

[21] Case studies, while excellent in terms of proving detailed micro-data, have a second statistical problem beyond reverse causality, which is selection bias. Unless case- study participants are randomly selected they will not represent the average firm. Since the process of becoming a case subject is often quite arduous—involving extensive research engagement and information disclosure—it may tend to attract unusual types of firms. For example, Enron was a popular case- study subject in the 1990s.

[22] See, for example, the discussion in Stigler (1976) and Syverson (2011). The argument against the importance of management is that profit maximization will lead firms to reduce costs. As a result, any residual variations in management practices will reflect firms' optimal responses to differing market conditions. Hence, different management practices are not "good" or "bad," but the optimal response to different market circumstances. This view also underlies the contingency theory of Woodward (1958).

One such experiment was recently conducted on 28 large Indian textile factories by a Stanford University–World Bank research team. They provided free management consulting to a set of randomly selected treatment plants to help them adopt modern management practices and compared their performance to another randomly chosen set of control plants (see Bloom, Eifert, Mahajan, McKenzie, & Roberts, 2011).[23] The Indian experiment revealed that the adoption of these management practices for monitoring, targets, and incentives was highly profitable, leading to an average increase in productivity of 18%. This took several months to occur as the firms slowly improved productivity with the gradual adoption of these new management practices, as shown in Figure 12.

Interestingly, the Indian experiment also found that the adoption of these types of modern management practices was more likely to occur when production conditions were bad. When facing tough times, firms were more likely to try to upgrade their management practices; in contrast, when conditions were better, firms were reluctant to change or adjust management practices. If this type of reverse causality was common, it would lead survey research to underestimate the impact of management on performance.

Hence, this suggests that management practices can dramatically improve firm performance, and that the correlation results in the survey literature may understimate this magnitude. This highlights the need for more experimental research to identify the causal impact of changing management practices on firm performance.

Contingent Management

Thus far, we have assumed that certain management practices are, on average, productivity-enhancing. From this perspective, management resembles a technology, and there can be technical progress in management, just as there is for machines. An alternative perspective is that all management practices are contingent on the firm's

[23] Although drug trials are double blind (neither the administering doctor nor the patient knows who is treatment and who is control), due to logistical constraints this experiment was single blind (only the firms were not informed about the existence of different treatment and control groups). Even so, these types of randomized experiments are clearly much more reliable at identifying the causal impact of better management on firm outcomes than correlations from surveys.

environment (e.g., Woodward, 1958): Every organization is optimally adopting its own best practices given the circumstance it finds itself in.

There is certainly some element of contingency in management choices in at least three respects. First, different countries specialize in different aspects of the managerial practices. For example, Japan focuses more on monitoring than incentives/people management. There are few possible explanations for this: It may be due to cultural differences across countries (possibly because Asian culture is claimed to be more "collectivist") or historical differences (the lack of capital after World War II is argued to have forced Japanese firms to develop monitoring-focused lean production techniques). Second, many aspects of strategic management—such as pricing or takeover decisions—will be very contingent on specific circumstances the organization faces, with no typical or generally accepted "good" or "bad" practice. This is why our survey looks at only a subset of the more process-oriented management practices where it is more likely that best practices exist. Third, the management practices we assess have not been equally beneficial throughout history. For example, rigorously and systematically using data to deal with issues and make decisions is facilitated by the dramatic drop in the real cost of information technology.

Even with these elements of contingency readily acknowledged, our work suggests that this is not the whole story. As Table 3 shows, better managed organizations within the same country and industry are earning more profits, growing faster, reducing patient mortality rates, and improving student test scores, among other performance measures. This is hard to square with the idea that all the differences in management practices reflect optimal responses to different circumstances.

It thus seems much more likely that many aspects of management style are not contingent. For example, basing promotion on nepotism or keeping workers at the same job without any regard to their performance is unlikely to be productivity-enhancing in any economy. Moreover, in every country in our survey, multinationals do bring a

stronger management approach, even though the multinationals need to work with most of the same constraints that domestic firms face.

Future Research

Empirical research on the international aspects of management practices is somewhat embryonic; there are several fruitful areas for additional research. One such area is the use of field experiments. It would be helpful to see more management experiments in firms, hospitals, and schools to clearly identify the causal impacts of better management practices. Another area is longer run management panel data, which will help to identify the dynamics of managerial change and make stronger statements about cause and effect. This latter approach is part of our ongoing research, as we have already sampled a set of 2,094 firms in three time periods (2004, 2006, and 2009) and are hoping to run another large survey wave soon to continue to build the panel dimension of the data. This will help us match the data more closely to various theories of why we observe such vast heterogeneity of management practices.

A third methodological area to explore is whether we can simplify our methods of quantifying management into a set of "closed questions" on a paper survey. Working with the European Bank of Reconstruction and Development, we piloted this on a sample of firms in formerly Communist-countries, finding results on performance, ownership, skills and competition consistent with those discussed above (see Bloom, Schweiger, & Van Reenen, 2011). We are now working with the U.S. Census Bureau to develop this approach further into a large-scale publicly accessible management datasets. A management survey on about 48,000 plants was carried out in the spring of 2011 and will be accessible to researchers by 2012 via the Census Research Data Centers. We hope this will be the first of several survey waves, building large-scale publicly accessible management panel datasets.

Fourth, this research has focused mainly on operational practices such as improved monitoring, tougher targets, and stronger incentives; a general consensus that these can be beneficial for performance seems to be forming. We would like to widen our focus to

a broader range of practices—for example, human resource practices over flexi-time, flexi-place, and job-sharing. There is very little consensus about the costs and benefits of these human resource practices, with firms and researchers taking a wide range of positions (e.g., Bloom, Kretschmer, & Van Reenen, 2011), so experimental evidence on their impact would be particularly helpful, something we are now working on (see Bloom, Liang, Roberts, & Ying, 2012). More generally, we hope our work encourages other researchers to rigorously quantify further aspects of management practices.

Finally, we are experimenting with ways to bring our research into the classroom as a possible complement to case studies. As a first step in this direction, we have conducted in-depth interviews with multiple managerial figures (from CEOs to nurse managers) within a small sample of U.S. and European hospitals for which a case study existed. We are now using this type of material in specialized MBA and management courses at Harvard and Stanford Business Schools and LSE, and we hope to continue to develop the use of quantitative data on management as a support tool for the class teaching.

Conclusions

Studying the causes and implications of variation in productivity across firms has become an important theme in social science. While several fields have been studying management for many decades, economists have traditionally ignored management as a driving factor explaining differences in productivity. We believe the discipline would benefit from more interaction with the management field. We have started to bridge this gap by developing a simple methodology to quantify some basic aspects of management practices across sectors and countries, and using experiments to identify causal impact.

The patterns we find in our large samples of management data lead us to believe that an important explanation for these large differences in productivity among firms and countries are variations in management practices. These are hard, but not impossible, to measure, and we hope the methodology we have developed will be refined and used by other researchers to help draw the international map of management in finer detail in

additional countries, industries, and practices. To facilitate this, our methodology and the data we collected and used in this paper are also freely available on www.worldmanagementsurvey.org.

From a policy perspective, several factors seem important in influencing management quality. Product market competition has a critical influence in increasing aggregate management quality b**y** thinning the ranks of the badly managed and incentivizing the survivors to improve (e.g., Bloom, Draca, & Van Reenen, 2011). Indeed, much of the cross-country variation in management appears to be due to the presence or absence of this tail of bad performers. One reason for higher average management scores in the United States is that better managed firms appear to be rewarded more quickly with greater market share and the worse managed forced to rapidly shrink and exit. This appears to have led American firms to rapidly copy management best practices from around the world, with most large U.S. manufacturing firms now routinely adopting Japanese-originated lean manufacturing.

We have also uncovered many other policy-relevant effects. For example, taxes and other distortive policies that favor family-run firms appear to hinder better management, while general education and multinational presence seem valuable in improving management practices.

The patterns described here support many new theories developed to explain productivity dispersion but also pose many puzzles. So the empirical and theoretical foundations of management economics should continue to be a fertile and exciting area for future research.

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Table 1. Management Practice Dimensions

Categories	Score from 1 to 5 based on:
1) Introduction of modern manufacturing techniques	What aspects of manufacturing have been formally introduced, including just-in-time delivery from suppliers, automation, flexible manpower, support systems, attitudes, and behavior?
2) Rationale for introduction of modern manufacturing techniques	Were modern manufacturing techniques adopted just because others were using them, or are they linked to meeting business objectives like reducing costs and improving quality?
3) Process problem documentation	Are process improvements made only when problems arise, or are they actively sought out for continuous improvement as part of normal business processes?
4) Performance tracking	Is tracking ad hoc and incomplete, or is performance continually tracked and communicated to all staff?
5) Performance review	Is performance reviewed infrequently and only on a success/failure scale, or is performance reviewed continually with an expectation of continuous improvement?
6) Performance dialogue	In review/performance conversations, to what extent are the purpose, data, agenda, and follow-up steps (like coaching) clear to all parties?
7) Consequence management	To what extent does failure to achieve agreed objectives carry consequences, which can include retraining or reassignment to other jobs?
8) Target balance	Are the goals exclusively financial, or is there a balance of financial and nonfinancial targets?
9) Target interconnection	Are goals based on accounting value, or are they based on shareholder value in a way that works through business units and ultimately is connected to individual performance expectations?
10) Target time horizon	Does top management focus mainly on the short term, or does it visualize short-term targets as a "staircase" toward the main focus on long-term goals?
11) Target stretching	Are goals too easy to achieve, especially for some "sacred cow" areas of the firm, or are goals demanding but attainable for all parts of the firm?
12) Performance clarity	Are performance measures ill-defined, poorly understood, and private, or are they well-defined, clearly communicated, and made public?
13) Managing human capital	To what extent are senior managers evaluated and held accountable for attracting, retaining, and developing talent throughout the organization?
14) Rewarding high performance	To what extent are people in the firm rewarded equally irrespective of performance level, or is performance clearly related to accountability and rewards?
15) Removing poor performers	Are poor performers rarely removed, or are they retrained and/or moved into different roles or out of the company as soon as the weakness is identified?
16) Promoting high performers	Are people promoted mainly on the basis of tenure, or does the firm actively identify, develop, and promote its top performers?
17) Attracting human capital	Do competitors offer stronger reasons for talented people to join their companies, or does a firm provide a wide range of reasons to encourage talented people to join?
18) Retaining human capital	Does the firm do relatively little to retain top talent, or does it do whatever it takes to retain top talent when they look likely to leave?

Note: Full set of questions that are asked to score each dimension are included in Bloom and Van Reenen (2007) and also at www.worldmanagementsurvey.com.

Table 2. Management Practice Scores by Country

Country	Overall Management	Monitoring Management	Targets Management	Incentives Management	Firm Interviews
Argentina	2.76	3.08	2.67	2.56	246
Australia	3.02	3.27	3.02	2.75	392
Brazil	2.71	3.06	2.69	**2.55**	568
Canada	3.17	3.54	3.07	2.94	378
Chile	2.83	3.14	2.72	2.67	316
China	2.71	**2.90**	**2.62**	2.69	742
France	3.02	3.41	2.95	2.73	586
Germany	3.23	3.57	3.21	2.98	639
Greece	2.73	2.97	2.65	2.58	248
India	**2.67**	2.91	2.66	2.63	715
Italy	3.02	3.25	3.09	2.76	284
Japan	3.23	3.50	**3.34**	2.92	176
Mexico	2.92	3.29	2.89	2.71	188
New Zealand	2.93	3.18	2.96	2.63	106
Poland	2.90	3.12	2.94	2.83	350
Portugal	2.87	3.27	2.83	2.59	247
Republic of Ireland	2.89	3.14	2.81	2.79	106
Sweden	3.20	**3.63**	3.18	2.83	382
U.K.	3.02	3.32	2.97	2.85	1214
U.S.	**3.35**	3.57	3.25	**3.25**	1196
Average	2.99	3.28	2.94	2.82	9079

Note: Manufacturing firm sample. **Overall management** is the average score across all 18 questions. All questions are scored the same across all countries and industries. **Monitoring management** is the average score across questions 1 to 6 in Table 1. **Targets management** is the average score across questions 8 to 12. **Incentives management** is the average score across questions 7 and 13 to 18. The lowest and highest country-level scores in each column are highlighted in bold.

Table 3. Management and Organizational Performance

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sector	**Manufact.**	**Manufact.**	**Manufact.**	**Manufact.**	**Manufact.**	**Manufact.**	**Hospitals**	**Schools**
Dependent variable	**Log(Sales)**	**Log(Sales)**	**Log(Sales)**	**Profitability (ROCE)**	**5-Year Sales growth (%)**	**Exit (%)**	**AMI Mortality Rate (z-scored)**	**Test Scores (z-scored)**
Management	0.523***	0.233***	0.048**	1.952***	6.738***	-1.138**	-0.471***	0.196***
	(0.030)	(0.024)	(0.022)	(0.444)	(1.984)	(0.498)	(0.166)	(0.066)
Ln(Employees)	0.915***	0.659***	0.364***					0.105
	(0.019)	(0.026)	(0.109)					(0.081)
Ln(Capital)		0.289***	0.244***					
		(0.020)	(0.087)					
Country controls	No	Yes	n/a	Yes	Yes	Yes	Yes	Yes
Industry controls	No	Yes	n/a	Yes	Yes	Yes	n/a	n/a
General controls	No	Yes	n/a	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	No	No	Yes	No	No	No	No	No
Organizations	2,927	2,927	1,453	2,927	2,927	2,927	251	354
Observations	7,094	7,094	5,561	7,094	7,094	2,927	251	354

Note: All columns estimated by OLS with standard errors are in parentheses under coefficient estimates clustered by organization (firm, school, or hospital). *** denotes 1% significant, ** denotes 5% significance, and * denotes 10% significance. Sample for columns 1 to 6 is all firm-years with sales, employment, capital, return on capital employed (ROCE), and 5-year sales growth data, except column 3, which also restricts to firms with two or more surveys and drops the noise controls (which have little time series variation), and column 6 which just used the most recent year to evaluate exit. Column 7 uses all hospitals for which we had AMI data, while column 8 uses all schools for which we had pupil test scores. **Management** is the organization-level management score. **Profitability** is ROCE, and **5-Year Sales Growth** is the 5-year growth of sales. **Exit** means the firm was liquidated or went bankrupt. **AMI Mortality Rate** is the risk-adjusted mortality rate from acute myocardial infarction (z-scored to take into account differences in the way the index is expressed in the U.S. and the U.K.). The school-level measure **Test Scores** varies across countries (the variable is z-scored to take into account these differences). In the U.S. we use the math exam pass rate from high school exit exams (HSEEs). In the U.K. we employ the proportion of students achieving five GCSEs (level 2), including English and Math. In Canada we employ the school-level rating produced by the Fraser Institute, which is based on several measures of student achievement, including average province exam mark, percentage of exams failed, courses taken per student, diploma completion rate, and delayed advancement rate. In Sweden we use the 9th-grade GPA. **Country controls** are a full set of country dummies (17 for columns 1 to 5, 2 for column 6, and 4 for column 7). **Industry controls** are 162 SIC three-digit dummies. **Columns 1 to 6: General controls** comprise firm-level controls for average hours worked and the proportion of employees with college degrees (from the survey), plus a set of survey noise controls that are interviewer dummies, the seniority and tenure of the manager who responded, the day of the week the interview was conducted, the time of day the interview was conducted, the duration of the interview, and an indicator of the reliability of the information as coded by the interviewer. **Column 7: General controls** comprise hospital-level controls for ln(average hours worked) and ln(hospital age), a dummy if interviewee is a nurse, the number of sites in the hospital network, and percentage of managers with a clinical degree, plus a set of survey noise controls that are 10 interviewer dummies, the seniority and tenure of the manager who responded, the day of the week the interview was conducted, the time of day the interview was conducted, the duration of the interview, and an indicator of the reliability of the information as coded by the interviewer. **Column 8: General controls** comprise regional dummies and school-level controls for the pupil/teacher ratio and the different types of schools included in the sample (public, magnet, and charter in the U.S.; public, voluntary aided, foundations, and independent in the U.K.; public, separate, and independent in Canada), plus a set of survey noise controls that are 19 interviewer dummies, the tenure of the manager who responded, the day of the week the interview was conducted, the time of day the interview was conducted, the duration of the interview, and an indicator of the reliability of the information as coded by the interviewer.

Source: Bloom, Sadun and Van Reenen (2012)

Appendix A

Extensive details of the survey procedure are contained in Bloom and Van Reenen (2007), which we summarize and update below.

Sample population

The manufacturing management survey was targeted at the population of firms with 100 to 5,000 employees across 20 countries. These firms were drawn from national firm databases and company registries—for example, Companies House in the United Kingdom, Dunn and Bradstreet in the United States, and the Registrar of Companies in India. From comparisons with national census databases these firm populations appear to provide good coverage (50% or more) in every country we analyze.

Survey organization

We ran management surveys primarily from the London School of Economics during the summer, because we could obtain space for the survey team (classrooms are empty in the summer) and hire high-quality survey team members (MBA and Ph.D. students during their summer break). London is an excellent survey location because it lies midway between the United States and Asian time zones and is in the European time zone, and it is easy to hire interviewers with a range of language skills.

We organized the survey team into groups, with four interviewers in each group overseen by a group manager. The interviewers were paid by interview completed; the group manager silently listened in to each interview to ensure interview quality. The group managers were people we could trust, such ourselves or Ph.D. students. After some initial experimentation we found this combination of piece-rate pay for the interviewers with extensive monitoring to be particularly effective in both generating a large number of interviews and ensuring high interview quality (since the group managers would provide feedback after each interview).

Cross-country management calibration

We operated the survey team from one location to harmonize cross-country data comparison. In particular, all team members had the same initial training, they all sat in one large survey room, and they all attended weekly survey calibration meetings at which we would collectively discuss one interview and compare scores.

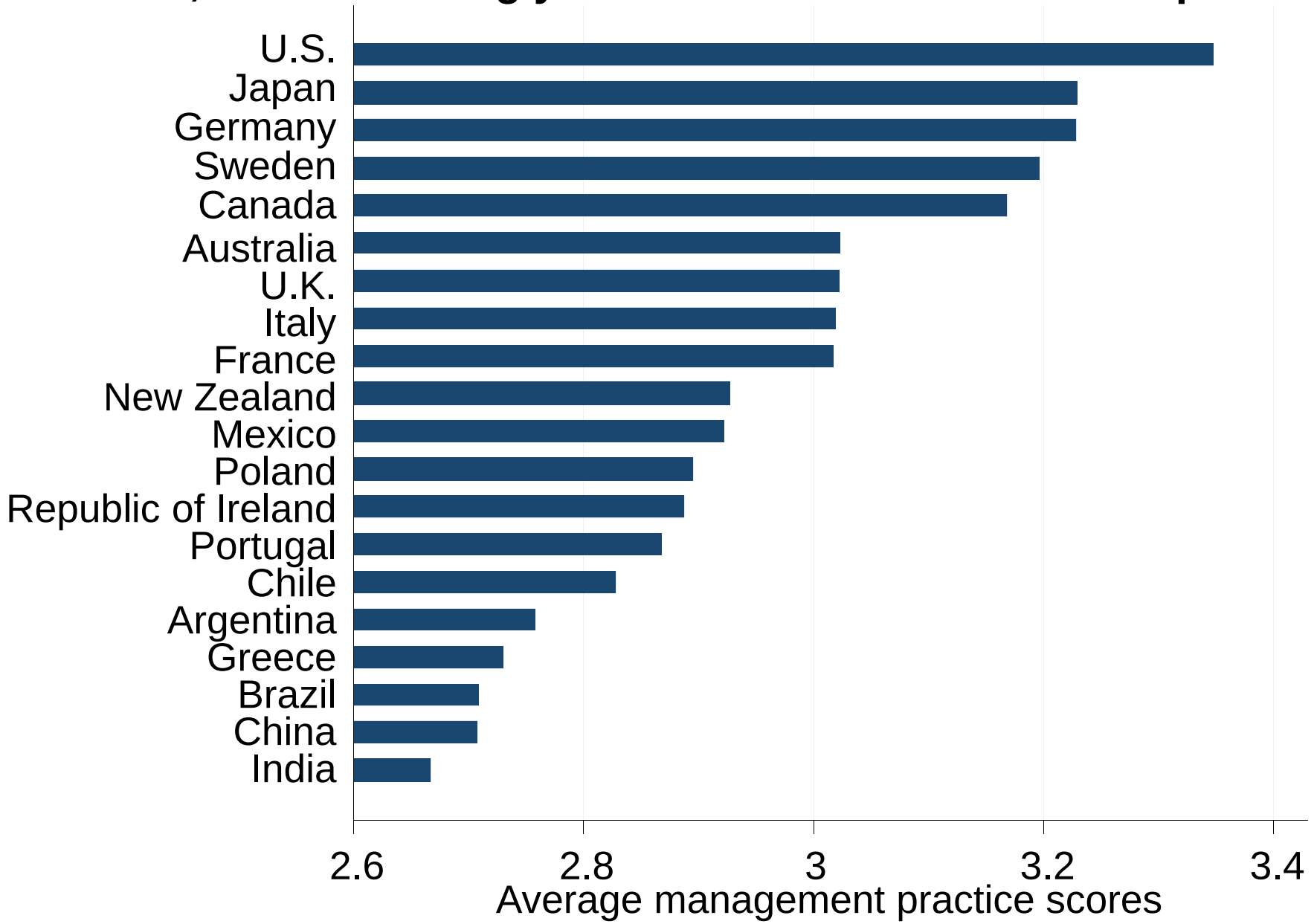
Interviewers were also all required to run 10 interviews each in at least two different countries. This typically involved running 10 or more interviews in each of the United Kingdom and United States (since all interviewers spoke English) plus at least one other country (for example, France for the French-speaking interviewers). As a result, our median interviewer ran interviews on managers in three different countries. Hence, when we report low management scores in Indian firms this is based on the survey evidence from interviewers who were regularly using the same grid to interview managers in India, the United Kingdom, and the United States, so are well positioned to make an accurate international assessment.

Finally, 25.4% of our sample are affiliates of foreign multinationals—for example, a Japanese-owned firm operating in France. These firms were always interviewed in the native language (French in this example), but we can also compare their management practices to those of their parent country (Japan in this example). Interestingly, we found that multinational subsidiaries tend to adopt about 50% of their practices from their country of location and about 50% from their country of origin. This suggests that our methodology is able to pick up cross-country differences in management practices despite the language of the interview, the location of the firm, and the nationality of our interviewer. In our example, despite having a French MBA student interviewing a French manager (in French) at a firm located in France, we would still find on average a significant number of Japanese management practices being adopted in this firm when it is owned by a Japanese parent company.

Variation of management practices by country, industry, and firm

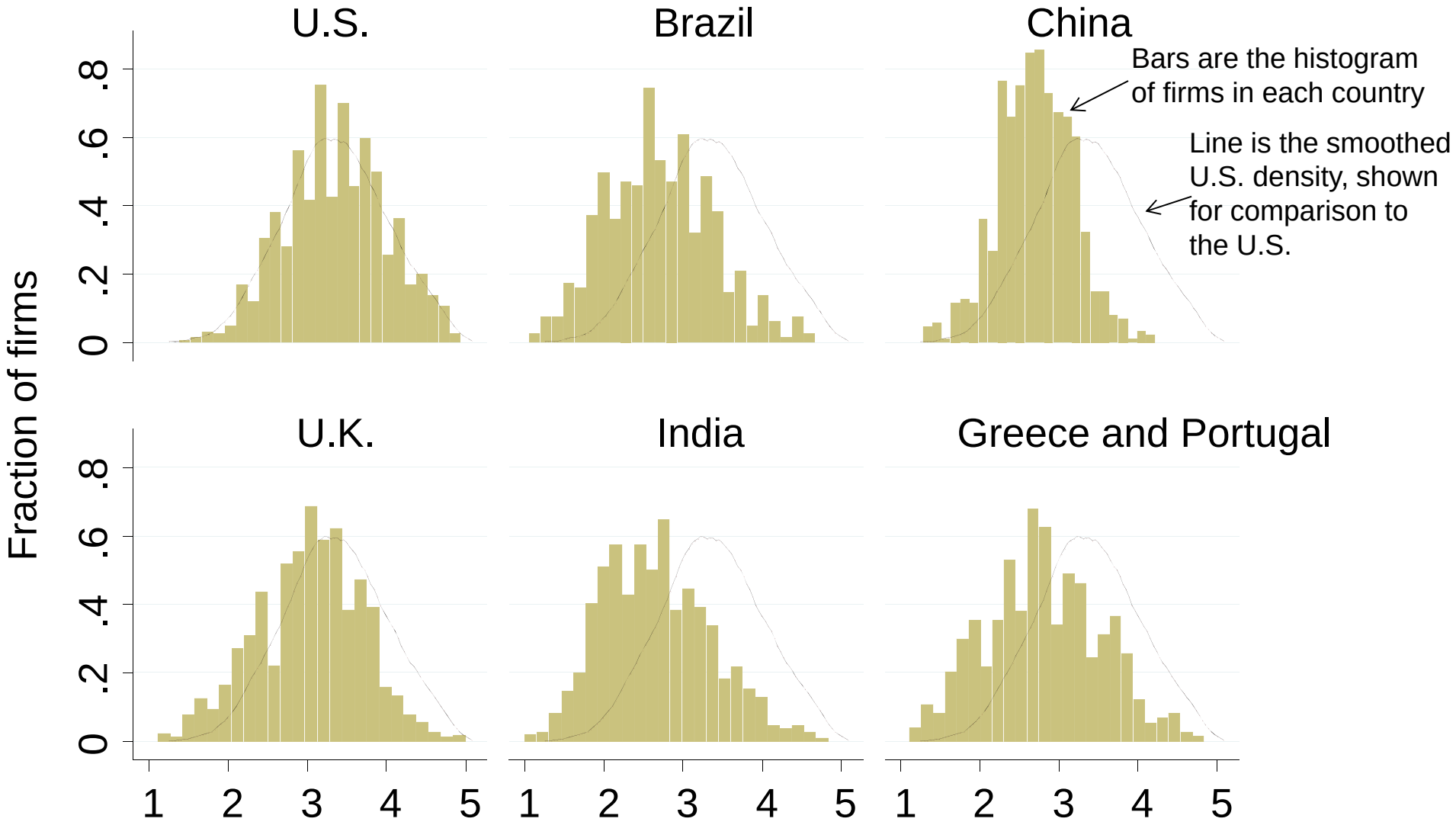
Overall we find that in our manufacturing sample around 11.1% of our management practices can be explained by country of location and about 11.9% by industry of operation (using 254 SIC 1987 three-digit industry codes). Hence, the majority of the variation in management practices cannot be explained by either country or industry. In part this presumably reflects the presence of substantial measurement error in our management scores. But in part it probably reflects the large variation in management practices in firms operating in the same country and industry, consistent with the incredibly wide dispersion of productivity of firms in these country-industry cells, reported by Foster, Haltiwanger, and Syverson (2008) and others.

Figure 1. Management Practice Scores in Manufacturing Vary by Countries, and are Strongly Linked to the Level of Development



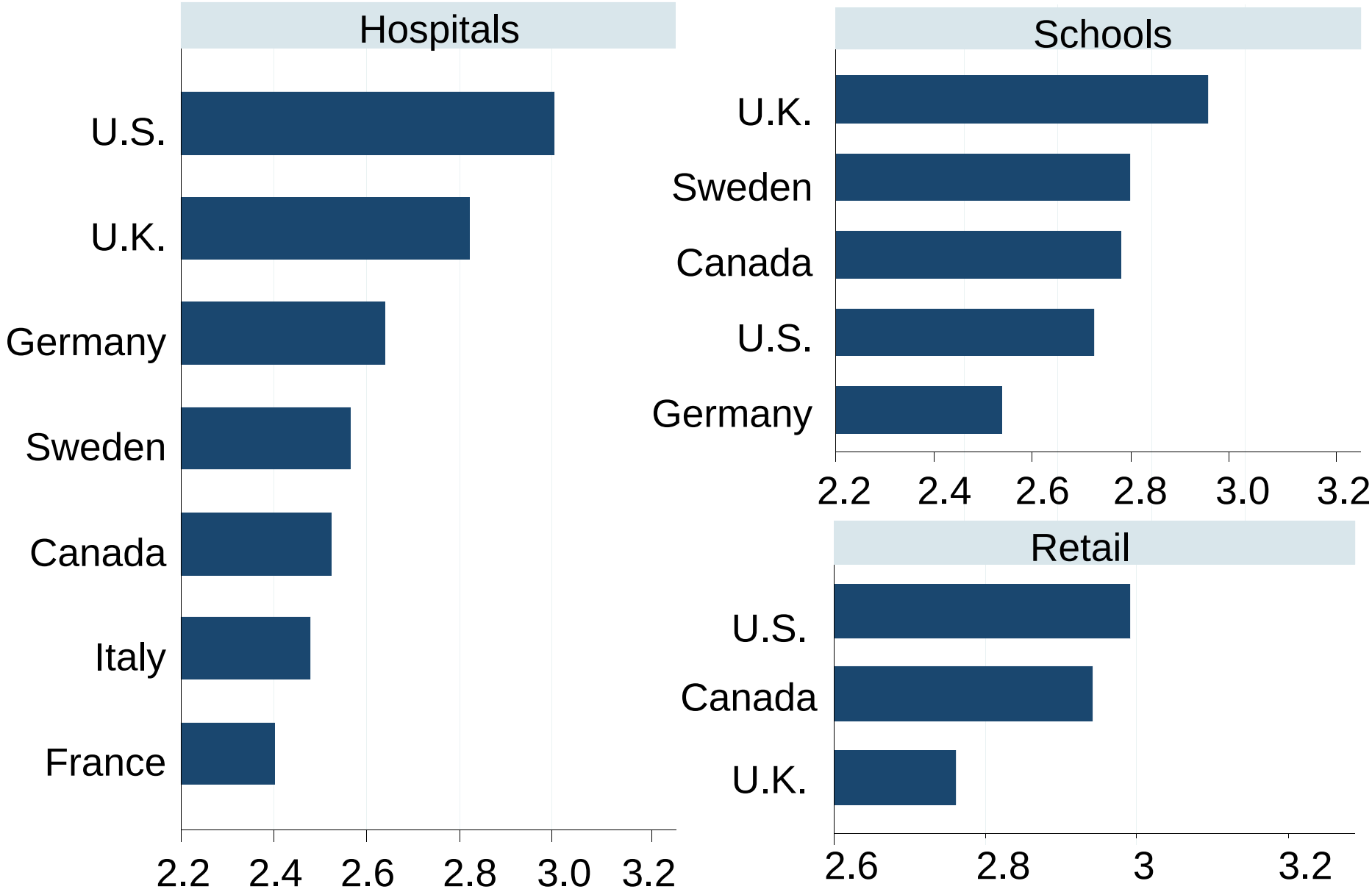
Note: Averages taken across all firms within each country. 9,079 observations in total.

Figure 2. The U.S. Has Few Badly Managed Manufacturing Firms, While Brazil, China, and India Have a Tail of Badly Managed Firms



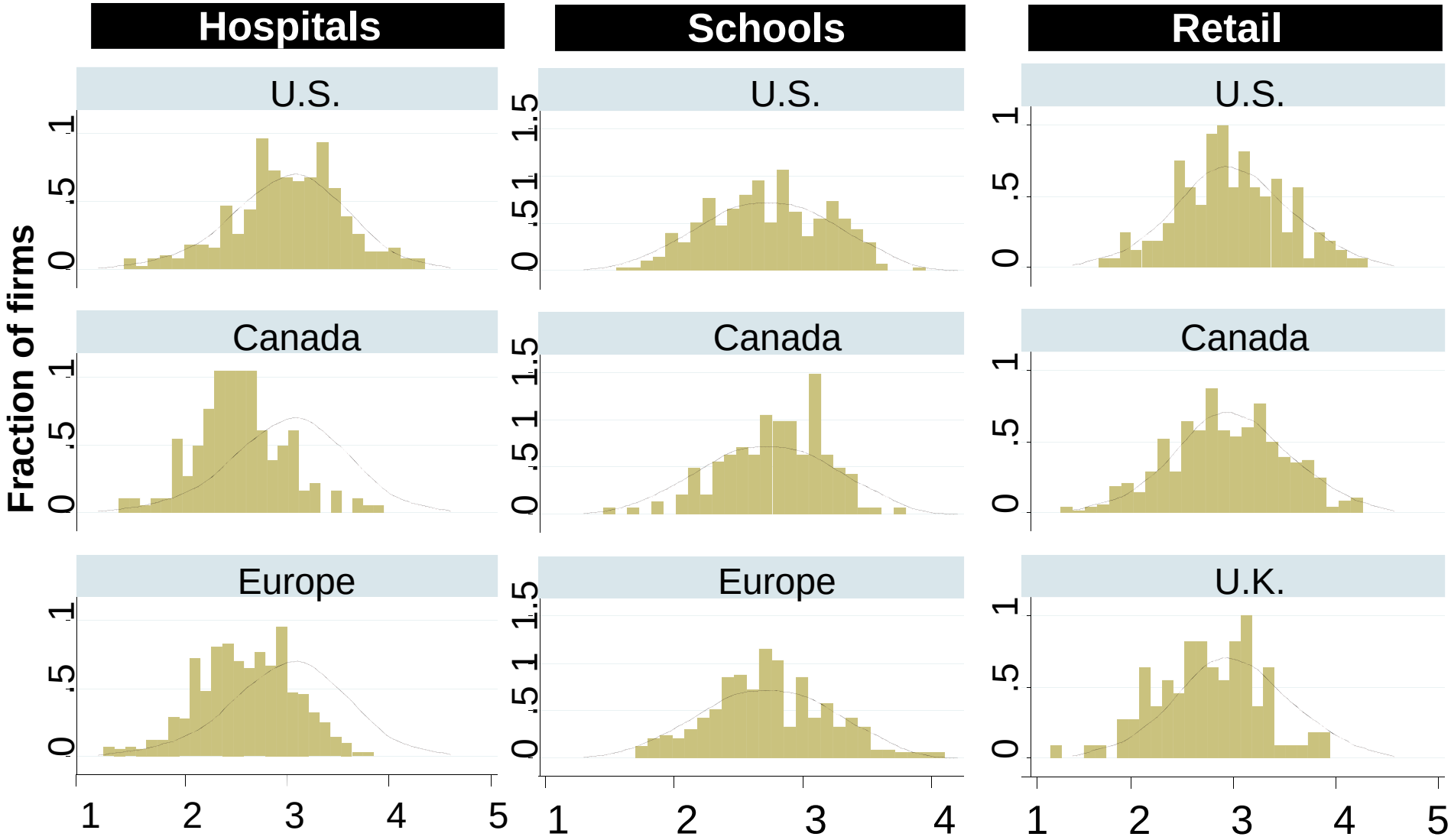
Note: 4,930 observations from manufacturing in total.

Figure 3. Hospital, School, and Retail Management Practices Also Vary Across Countries, With the U.S. Top Except in Schools



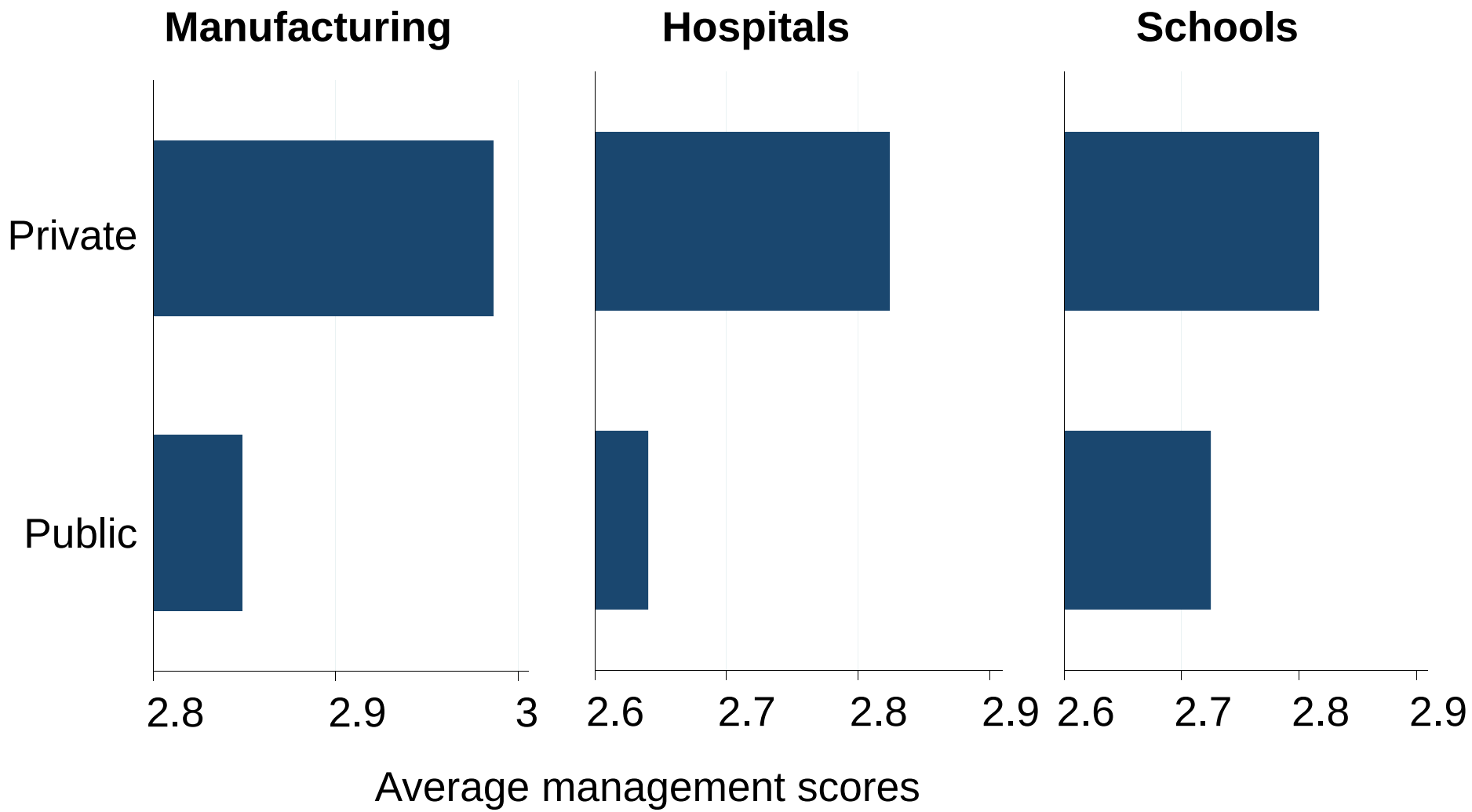
Note: Averages taken across all organizations within each country: 1,183 hospitals, 780 schools, and 661 retail sites.

Figure 4. Hospitals, Schools, and Retail Management Practices Also Show Large Spreads Across Organizations Within Each Country



Note: Bars are the histogram of the actual density. The line is the smoothed (kernel) of the U.S. density for comparison.

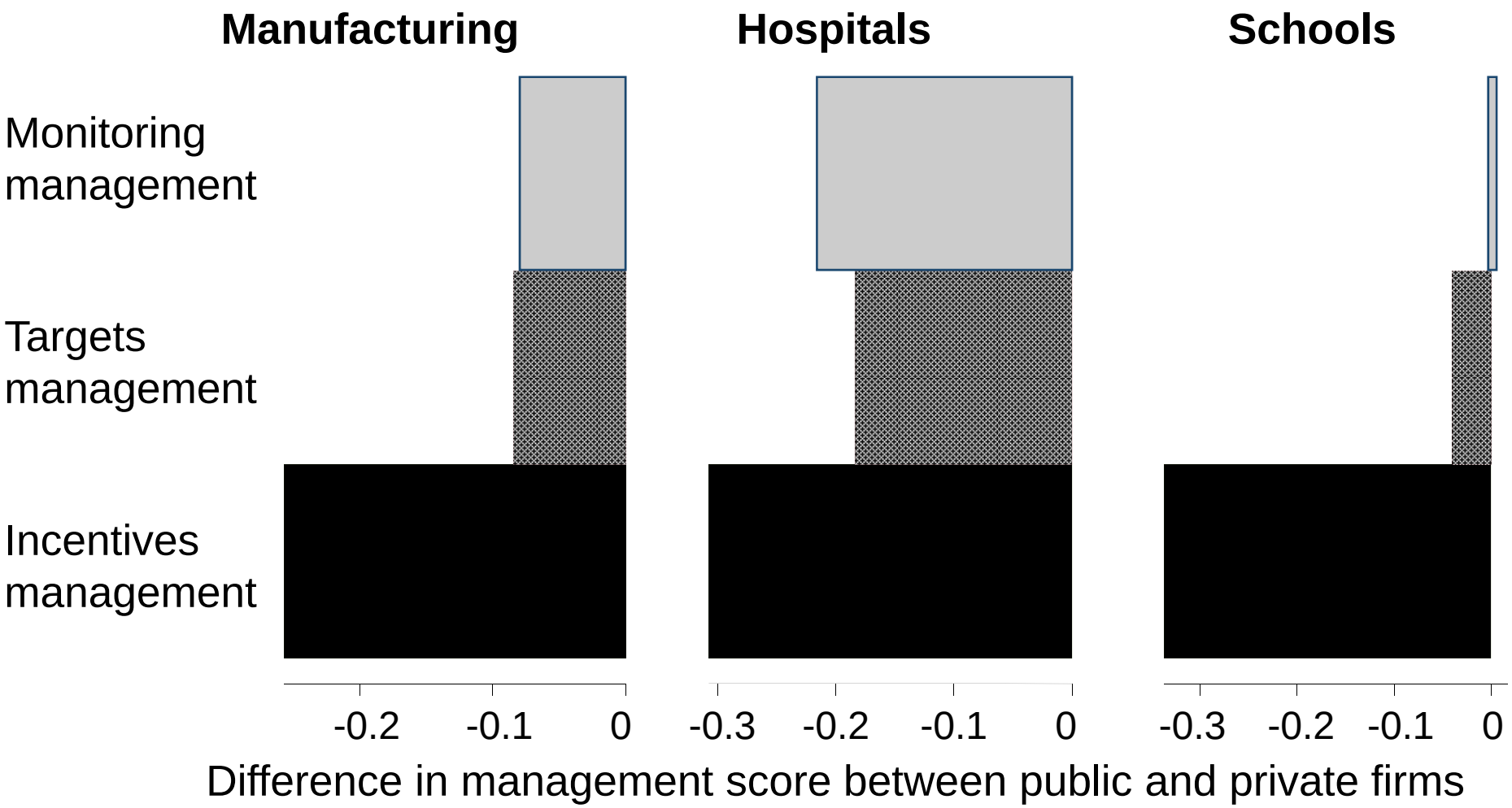
Figure 5. Public (Government) Ownership Is Associated With Worse Management Practices Across Every Industry We Studied



Management scores after controlling for size (number of employees, beds, or students) and country. Data from 9,079 manufacturing firms, 1,183 hospitals, and 779 schools. There were no publicly owned retail firms, so the comparison is not possible within retail.

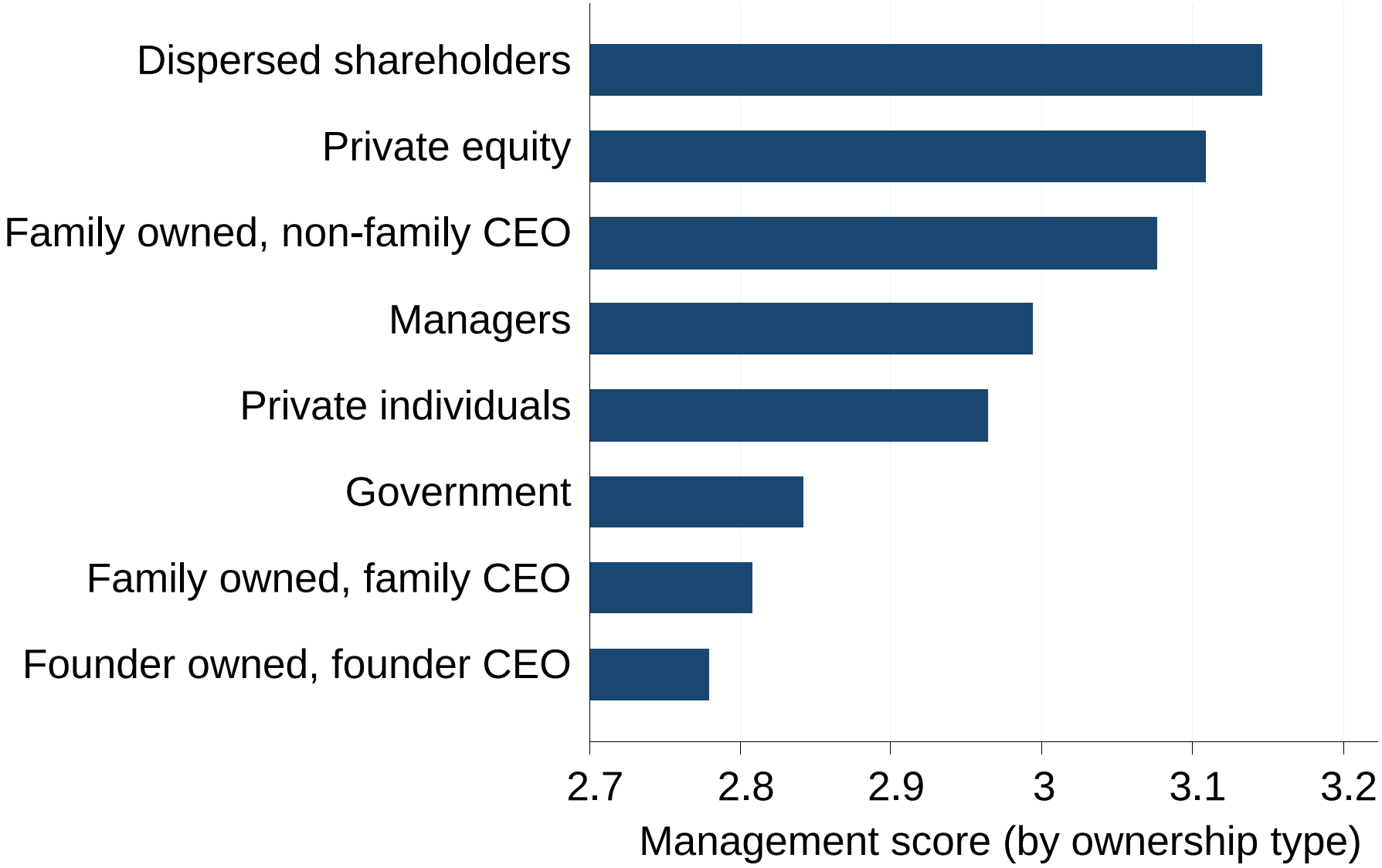
Figure 6. Public ownership Is Associated With Particularly Poor Incentives Management (Hiring, Firing, Pay, and Promotions)

Gap between public and private ownership by subcomponents of management



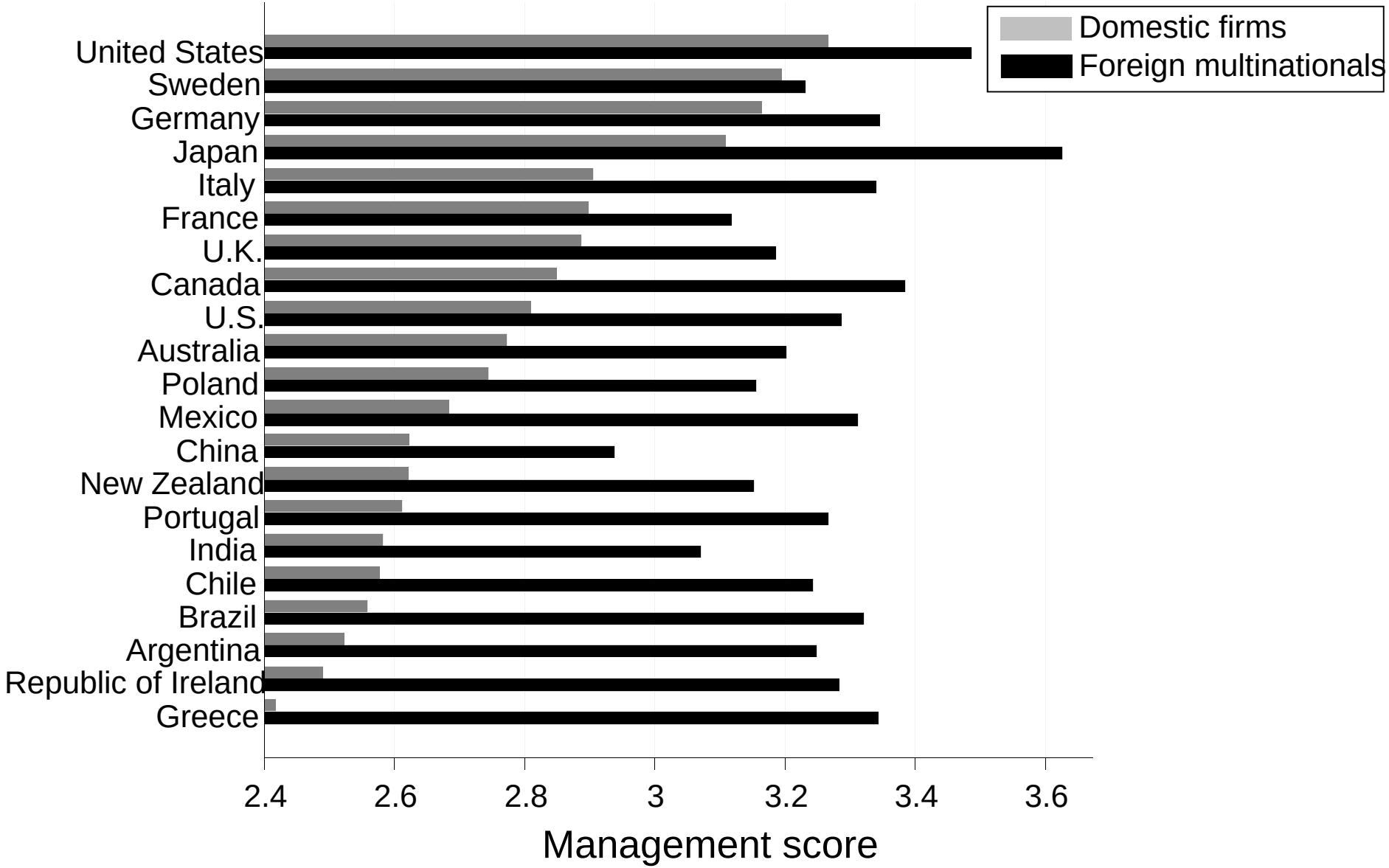
Management scores after controlling for size (number of employees, beds, or students) and country. Monitoring is collecting and using data, targets are the setting and effectiveness of targets, and incentives are performance-related hiring, promotions, bonus, and exit. Data from 9,079 manufacturers, 1,183 hospitals, and 779 schools.

Figure 7. Family- and Founder-Owned and -Managed Firms (in Manufacturing and Retail) Typically Have the Worst Management



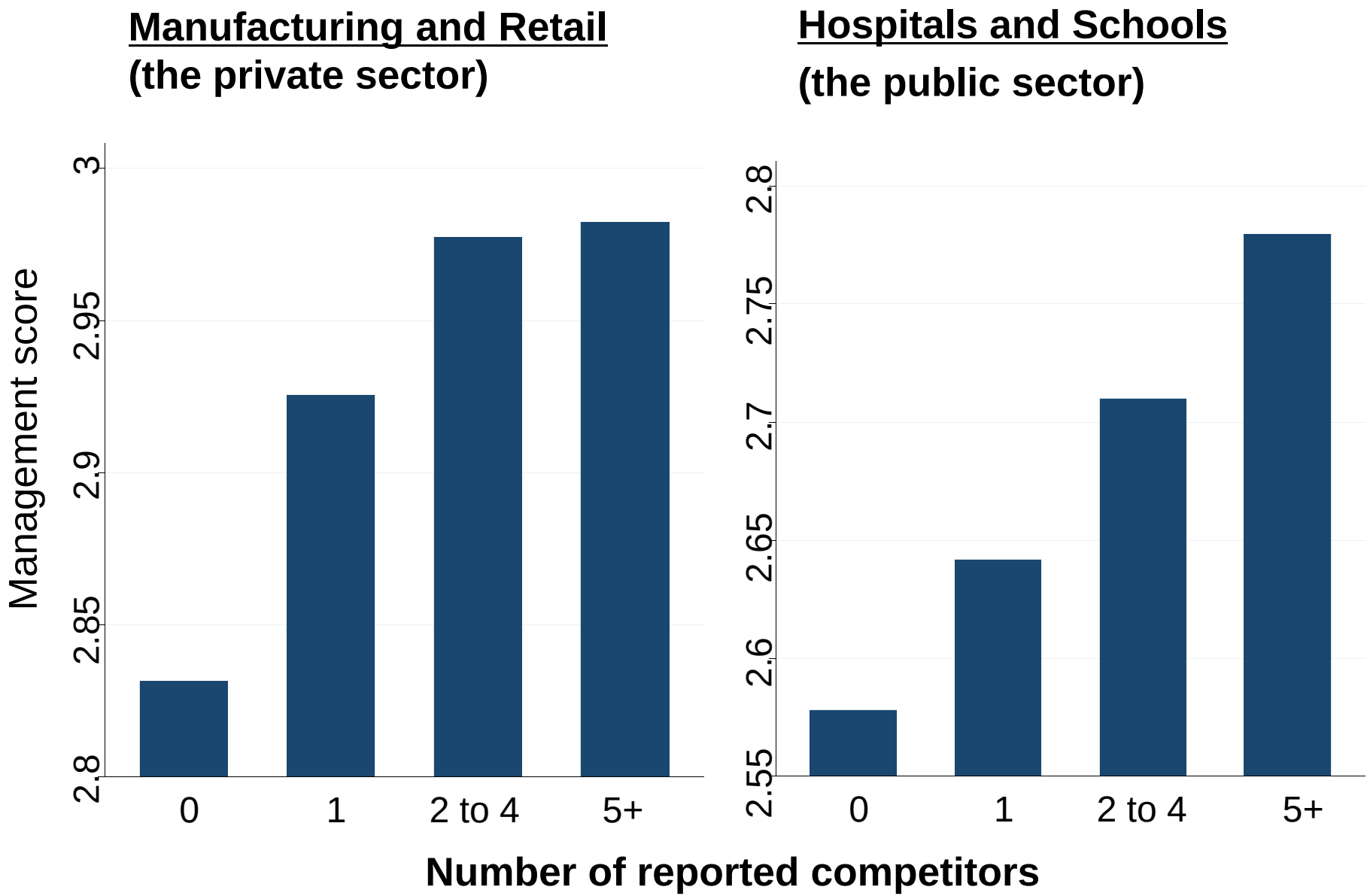
Management scores after controlling for country, industry, and number of employees. Data from 9,085 manufacturers and 658 retailers. “Founder owned , founder CEO” firms are those still owned and managed by their founders. “Family firms” are those owned by descendents of the founder. “Dispersed shareholder” firms are those with no shareholder with more than 25% of equity, such as widely held public firms.

Figure 8. Multinationals (in Manufacturing and Retail) Appear to Achieve Good Management Practices Wherever They Locate



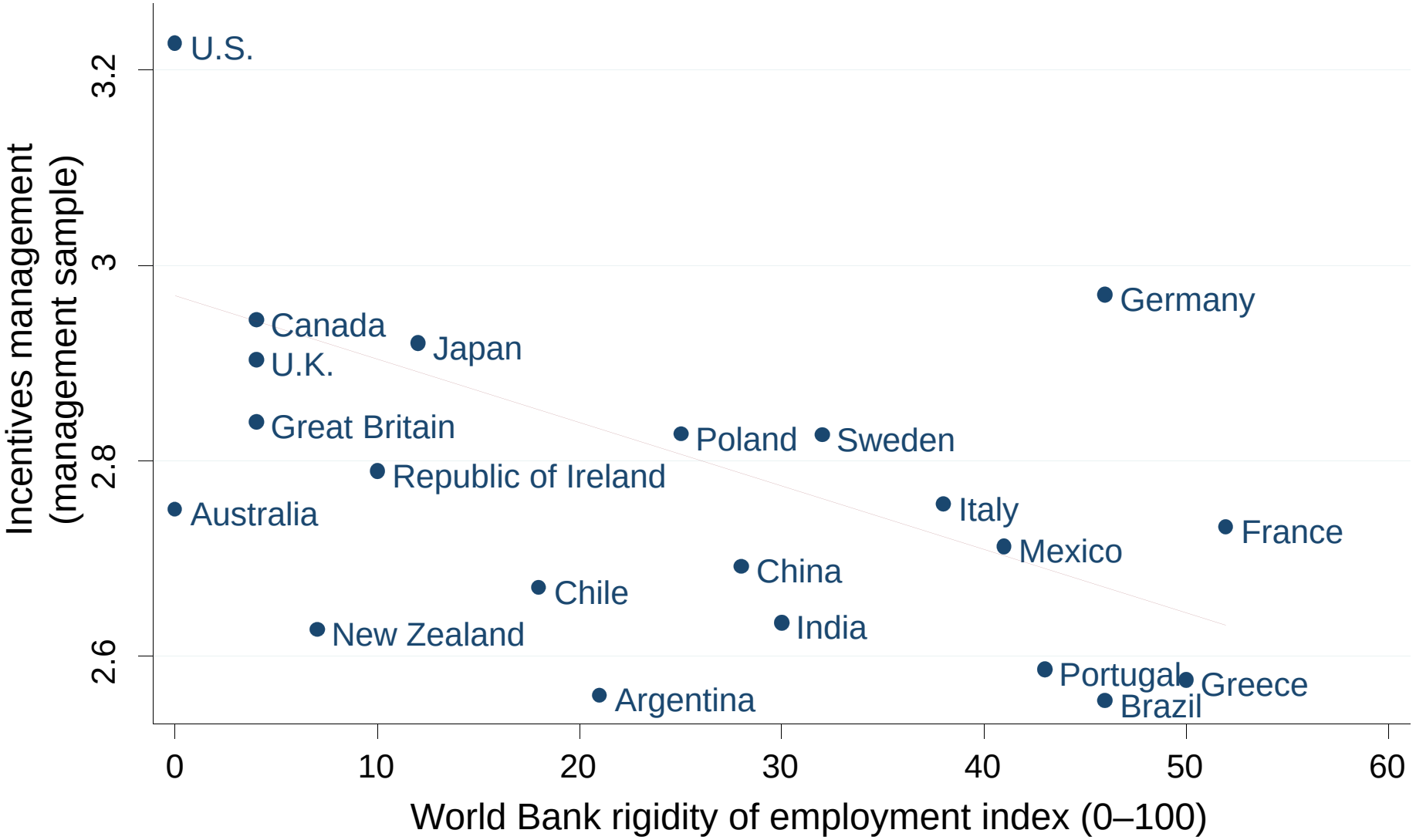
Sample of 7,262 manufacturing and 661 retail firms, of which 5,441 are purely domestic and 2,482 are foreign multinationals. Domestic multinationals are excluded—that is, the domestic subsidiaries of multinational firms (like a Toyota subsidiary in Japan).

Figure 9: Competition Appears Linked to Better Management



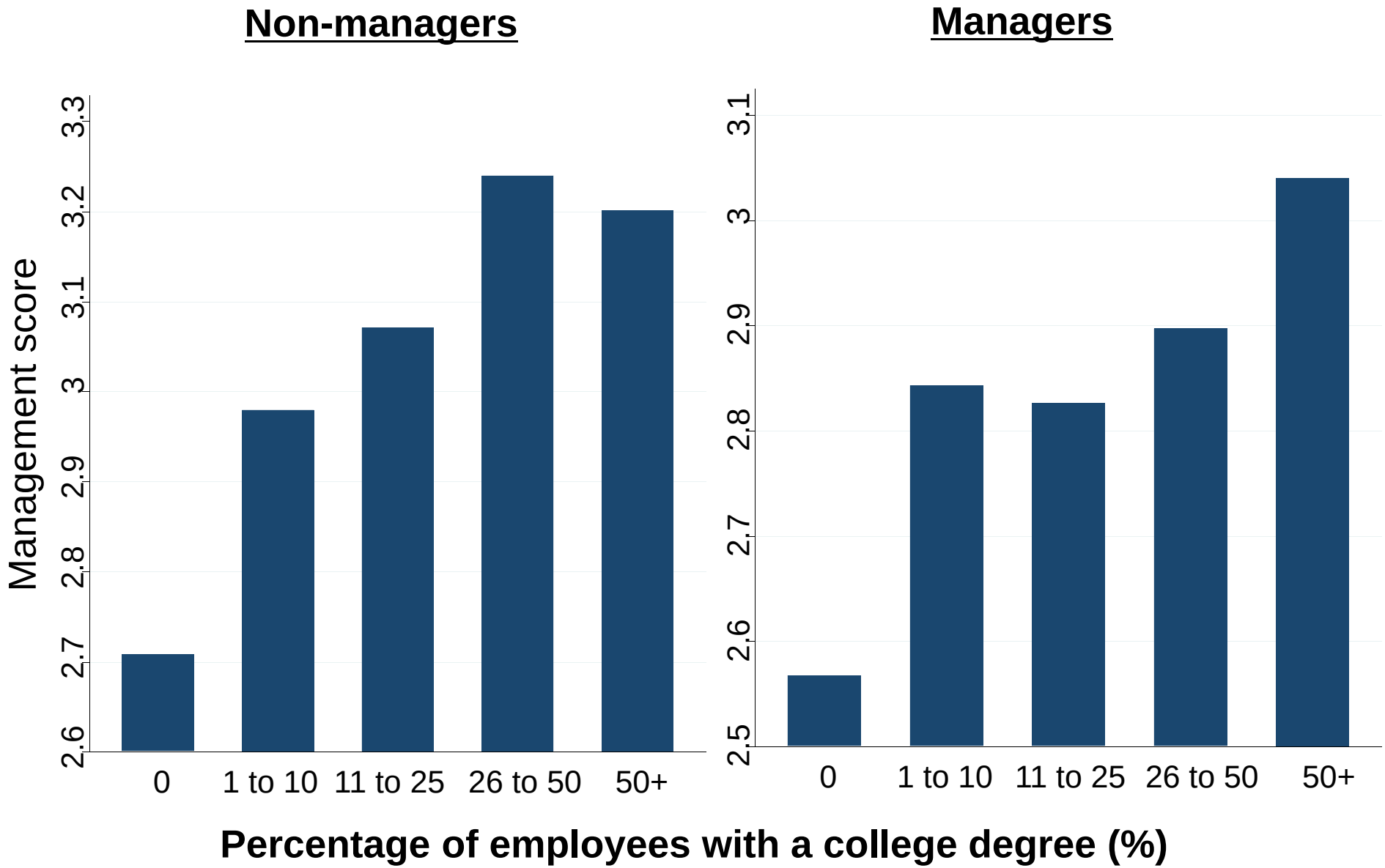
Sample of 9,469 manufacturing and 661 retail firms (private-sector panel) and 1,183 hospitals and 780 schools (public-sector panel). Reported competitors defined from the response to the question “How many competitors does your [organization] face?”

Figure 10. Labor Market Regulation Seems to Inhibit Good Management Practices, Particularly Incentives Management



Note: Averaged across all manufacturing firms within each country (9,079 observations). We did not include other sectors as we do not have the same international coverage. Incentives management is defined as management practices around hiring, firing, pay, an promotions. The index is from the Doing Business database: http://www.doingbusiness.org/ExploreTopics/EmployingWorkers/.

Figure 11. Education for Non-Managers and Managers Appears Linked to Better Management (in Manufacturing and Retail)



Sample of 8,032 manufacturing and 647 retail firms. We did not collect comparable education data in hospitals and schools.

Figure 12. Productivity Improvements in a Randomized Field Experiment on the Adoption of Modern Management Practices

Notes: Weekly average total factor productivity for the 14 treatment plants that adopted modern management practices for quality, inventory, and production efficiency and the 6 control plants. All plants make cotton fabric near Mumbai, India, with between 100 and 1,000 employees. Values normalized so both series have an average of 100 prior to the start of the intervention. Confidence intervals we bootstrapped over firms. Source: figure copied from Bloom, Eifert, Mahajan, McKenzie, and Roberts (2011).