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 American firms regarded as the world's best managed. American companies, such as GE, Apple, IBM, McDonalds and Wal-Mart are icons of business. U.S. business schools, which train top-level managers of these firms, dominate global rankings. This was not always the case; for example, Japanese firms in the 1980s were regarded by many as the best managed in the world, powered by the Toyota inspired Lean manufacturing system.[1]

The chief purpose of our ongoing research program is to understand how and why management practices vary across countries but also 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 over 10,000 organizations over the last decade, we have assembled one of the first large internationally comparable management data sets.[2] In this paper we will both describe this dataset and present some preliminary results. An anonymized version of the full data is available on-line at www.worldmanagementsurvey.org[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 US manufacturing firms are struggling domestically due to high employment costs, US multinationals have been very successful abroad over the last couple of decades (see Bloom, Sadun and Van Reenen, 2012).

[2] Other international management datasets include the Global Manufacturing Research Group Survey, the GLOBE survey (House et al. 2004, Javidan et al 2006), and the World Bank/EBRD establishment surveys.

[3] We can only provide the anonymized data because we committed to confidentiality during the interviews. Anyone that has access to a US Census Research Data Center can apply to us to gain access to the full dataset since data within the RDCs is protected by US 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 or fire low performers.

There is a vast literature on the theory and measurement of management practices.[4] There is a wide spread of opinions over 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 a large international consulting firm as a first-contact guide to firms' management quality (what consultants call an initial "diagnostic"). 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 which 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 bullet points (with the corresponding figures in the main text referenced):

1. US 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] The details of the survey questions can be found in Table 1 and online at www.worldmanagementsurvey.com. This was developed by a leading international consulting firm, but most of the concepts included in the questionnaire overlap with the existing management literature. For example, the emphasis on repeated and persistent organizational processes is very similar in spirit 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 idea that intangible firm specific assets and organizational processes are crucial in determining firm performance, which constitutes a key foundational 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 HR practices—and in particular the attention to the selection, rewards and training given to employees—is consistent with the set of best practices emphasized in the literature dedicated to "High Performance Work Systems" (for example, Lengnick-Hall, Lengnick-Hall, Andrade, & Drake, 2009; Lepak, Liao, Chung, & Harden, 2006; Pfeffer, 1999a, 1999b; Pfeffer & Veiga, 1999). Bloom &Van Reenen (2010) discuss the links between their work and the more general HRM literature. In terms of methodology, our work shares the same emphasis on data and econometric identification issues discussed in Becker & Huselid (1998) and Huselid & 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, US firms in retail and hospitals also appear to be the best managed internationally, but US schools score poorly (Figure 3).

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

5. Publicly (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. Amongst private sector firms, those owned and run by their founder or their family descendants, especially firstborn sons, tend to be badly managed. Firms with professional (external, non-family) 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 non monetary incentives (related to hiring, firing, pay and promotions), but not monitoring or targets management (Figure 10).

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

As mentioned above, one immediate concern with all 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, more productive, grow faster and survive longer, not just in the Anglo-Saxon nations, but in every region we have looked at. Moreover, in recent experimental studies randomly chosen treatment firms that were helped to adopt these practices demonstrate large causal improvements in profitability compared to the control firms[5].

There are several caveats to this. First, there are distinct styles of management, and some firms and countries do specialize in some clusters of our practices rather than others. Second, there are many management practices that are contingent such as strategy, finance, M&A and marketing. We deliberately focus in our work on a narrow subset of basic management practices for which best practices most likely exist, that is those practices that seem likely to raise the efficiency firms' production of goods and services[6]. Thirdly, 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.

[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 the 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 emphasis could potentially frustrate a more freewheeling innovative culture. Ultimately, this is an empirical issue.

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 one ("worst practice") to five ("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 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 was developed by an international consulting firm, and broadly interpreted, it 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, priotitzing 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 continuously monitoring and trying to improve its processes, setting comprehensive and stretching targets, and promoting high-performing employees and fixing (by training or exit) underperforming employees.

To collect the data, we hired teams of MBA students to conduct the telephone interviews, as they had some business experience and training. These students were all from the

[7] For the full survey grids for each industry see http://worldmanagementsurvey.org/?page_id=187. The differences across industry are primarily to reflect different organizational structures – for example using the word "nurse manager" and "unit" in hospitals as compared to "plant manager" and "factory" in manufacturing firms. As the management practices we survey are so fundamental, the survey approach transfers readily across industries.

[8] These practices are similar to those emphasized in earlier work on management practices, by for example Osterman (1994), Macduffie (1995), Delery & Doty (1996) and Ichniowski, Shaw, & Prennushi (1997).

countries we surveyed (so could interview managers in their native language), but were studying at top US 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.

We interviewed these managers using a "double-blind" survey technique. The first part of this double-blind technique is that managers are not told they are being scored or shown the scoring grid. They are only told they are 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 start by asking the open question "tell me how you monitor your production process", rather than closed questions such as "do you monitor your production daily [yes/no]".

We continue with open questions focusing on actual practices and examples until the interviewer can make an accurate assessment of the firm's practices. For example, the second question on that performance tracking dimension is "what kinds of measures would you use to track performance?" and the third is "If I walked round your factory what could I tell about how each person was performing?" The combined response to this dimension are scored against a grid which goes from 1 (out of 5) 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).*" up 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 full list of dimensions and questions used to score these in each industry are given on http://www.worldmanagementsurvey.org/

The other side of our "double-blind" approach is that our interviewers are not told in advance anything about the organization's performance; they are only provided with the organization's name, telephone number and industry. We randomly sample medium-

sized firms (employing between 100 and 5,000 workers) in manufacturing and retail, acute care hospitals and schools who offered general education to 15 year olds (which correspond to high schools in most of the countries we surveyed). These organizations are large enough that the type of systematic management practices chosen are likely to matter. However, these are small enough that they are not usually reported in the business press. Thus, the interviewers generally have not heard of them before, so they should have 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 switchboards usually block surveys and market research. Third, we never ask 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 – so they ran about two interviews a day lasting 45 minutes each on average, with the rest of the time spent repeatedly contacting managers to schedule interviews.[9] We also ran interviews in the managers native language to make the process as comfortable as possible. These steps helped to 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 can 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.

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

Validating the Management Data

Before showing the management data, it is important to ask if our survey procedure appears to be measuring meaningful differences in management across firms. To do this we carry out two validation exercises. The first is internal validation, which evaluates to what extent our management data appears internally consistent across questions and interviews. The second is external validation, which evaluates to what extent our management data is correlated with independently collected performance data from company accounts and national census. That is, do the firms our interview says are well managed also perform better? The short answer is yes, and we discuss this in detail in the section "the effect of management quality on firm performance" below**.**

Internal validation:

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

The much tougher test was the second interviews we conducted. We re-surveyed 222 (about three percent) of the manufacturing sample to arrange a second interviewer on a second plant manager in the same firm using a second MBA interviewer. This should help to reveal how consistently we are 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 the same identical management practices. The rest of this difference across plants within firms will reflect 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 is picking 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 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) along with developing countries, such as Brazil, China and India.

As introduced above, we can separate these overall management scores into three broad categories: monitoring, targets and incentives, and 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 in the category of monitoring and target-setting (behind Sweden and Japan respectively). However, this data also describes how management styles differ across countries. In the United States, India and China, managerial use of incentives (relative to the average country) are substantially greater than the 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

[10] Further evidence of the consistency of the management scores is in Grous (2011). His team conducted extensive factory visits of 19 British aerospace firms conducting both the Bloom & Van Reenen (2007) telephone survey on the plant manager and also face to face interviews with several employees including the CEO, plant manager and shopfloor workers. The management scores from his site visits where highly correlated with the scores from the telephone interviews.

[11] The full anonymized dataset and Stata do-files to replicate these results are available on www.worldmanagementsurvey.org/

specialization across countries. One factor we will 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, like the UK, have some resemblance to the US 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 due to the fact that 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 worked with the Institute for Competitiveness and Prosperity to interview store and district managers in firms with 100 to 5000 employees. Because of

[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.

funding constraints this survey data covers fewer countries than for manufacturing, although we are continuing to extend these surveys across countries and industries.[13]

An analysis of Figure 3 reveals that US hospitals and retailers are again the best managed across our international sample. What is potentially more surprising is that US schools are notably poorly managed by international standards. US schools in particular tend to be particularly poor at incentives management – that is promoting and rewards high performing teachers, and retraining and/or firing badly performing teachers. This may be because the US schooling system is dominated by the public sector with strong union representation, which is in contrast to the other three sectors we have examined. In contrast, UK schools are the best managed within our sample of countries. One reason appears to be that UK 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, Dur, Propper & Smith (2011) looked at around 200 fostering, adoption and nursing homes, McKinsey (2009) studied around 100 tradable service firms in Ireland; Dohrmann & Pinshaw's (2009) survived around 20 tax agencies across OECD countries; and Homkes' (2011) studied around 200 global public-private partnerships. In every case they also found extremely wide variations in management practices across the organizations studied.

[13] For example, we are talking to a number of Governments about them funding the extension of the manufacturing survey to their country.

What Factors are Associated with Differences in Management Practices?

Based on our sample of over 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 publicly-owned organizations have consistently lower management scores in each sector, even after controlling for country and size.[14] 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 US and Sweden.

As shown in Figure 6, the overriding reason why publicly-owned institutions score substantially lower is that they weaker incentive management practices. In particular, within many public sector agencies promotion is based on time served, and persistent under-performers are not retrained or moved positions. One explanation for this is the strength of unions who 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 up 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 as well 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 are family firms, which our research defines as firms owned by the descendants of the founder, that is, sons, grandsons, great grandsons and

[14] Note that retail is excluded here as we observed no publicly owned retail firms in Canada, the UK or US.

more rarely, daughters, granddaugthers 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 typically 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 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 only 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 U.S. and U.K. result in a substantial increase in productivity (Siegel & Simons, 2010; Cumming, Siegel, & Wright, 2007; Harris, Siegel, & Wright, 2005; Lichtenberg & Siegel, 1990). 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 and Karichalil (2002), Washburn, Waldman, & Sully de Luque (2009) 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 find 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 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.[15] We also collected competition data for hospitals and schools and found a similar correlation; that is, organizations reporting they faced more competitors appear to adopt better management practices.

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

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 would be likely to cause an underestimate of the positive effect of competition as a particularly well-managed organization would be likely to drive other 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, & Van Reenen (2010) do so based on a "natural experiment," involving the closing of hospitals in the UK. Politicians control exit and entry and tend to keep hospitals open in politically marginal districts, and this creates some random variation in the number of hospitals across different areas. Using this exogenous variation we find that the positive causal effect of competition on management (and clinical outcomes like 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.[16]

Labor Market Regulation

Labor market regulations 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

[16] 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.

promotions) against an employment rigidity index from the World Bank, which focuses on the difficulties that firms face in hiring workers, firing workers and changing their hours and pay. 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 like monitoring or targets.

Obviously there are a number of other factors which vary across countries, so the pattern shown in Figure 10 does not conclusively demonstrate labor market regulations 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 level education 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 field work 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 appears likely that effective monitoring, targets and incentives should be associated with better performance, we want 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 like standardized test-scores.

For the manufacturing firms we obtained this data from company accounts, which were available for 2,927 of the firms.[17] For 251 hospitals we had performance data in the U.S. and U.K., while we obtained this for 354 schools in the US, UK, 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)[18], firm-level controls for hours worked and firm age, and a set of "noise controls" that (as discussed earlier) include a dummy variables 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

[17] We had at sales and employment accounting data for 3900 firms, but complete data for sales, employment, capital, ROCE and sales growth for 2,927 firms. Our sample contained 90 percent private firms and 10 percent 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 still surveyed these firms no accounting performance data is available for them. Hence, these performance regressions use data for all firms except privately held ones in the United States, Canada and India.

[18] We should note that including a full set of dummies for variables like 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.

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 percent) higher labor productivity, so a one-standard deviation change in management (of 0.664) is associated with about a 45 percent increase in labor productivity (e.g. a 45 percent increase in sales holding employment constant). Column (2) controls for a full set of country and three-digit industry dummies to 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 changes in productivity with changes in management practices. In this demanding specification the coefficient on management drops to 0.047 but remains statistically significant.[19] 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

[19] 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 is 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).

together – 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 2 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 percent higher annual sales growth.

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 firm with 100-200 employees had average management scores of about 2.7. The management score then rose steadily with firm size, so that firms with 2000-5000 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, & Van Reenen (2010), we interviewed 161 managers and physicians in the orthopedic and cardiology departments of 100 UK 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 (6) of Table 3, we show the association between management and 30 days risk adjusted mortality rates from patients admitted in the hospital with Acute Myocardial Infarction (AMI)[20] across UK and US hospitals. The estimates show that a one point increase in

[20] 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,

management is associated with a decrease of 0.471 points of a standard deviation in the risk adjusted mortality rate. Column (7) reports the association between management and measures of pupils' achievement[21]. One point increase in management is associated with an increase of 0.196 of a standard deviation in test scores.

Management clusters

A large recent literature has focused on the potential complementarity between different types of management practices. For example, the returns to 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 – like 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 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 comentators 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

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as well as 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 and Staiger 2009).

[21] 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 US we use the Math Exam Pass Rate from High School Exit Exams (HSEEs). In the UK we employ the proportion of students achieving 5 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 Grade Point Average (GPA) in the 9th grade.

practices have a negative effect on the 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 satification. We found that well-managed firms actually tended to have better facilities and policies for workers along these dimensions (Bloom, Kretschmer, & Van Reenen, 2011).

In terms of environmental impact, we found that energy efficency is strongly associated with better firm-level management. This is likely to be because good management practices (like 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 only reveal conditional correlations between management and performance. Unfortunately, it is very hard to distinugish 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 (like hiring educated managers) drives both better performance and improved management? This inability to distinguish cause from effect in management performance analysis is obvioulsy an issue with our survey evidence, but more generally the entire survey and case-study literature.[22] 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

[22] 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 – involve 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.

researchers remain skeptical about the importance of management practices for explaining variations in firm performance.[23]

One way to investigate the causal impact of different 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.

One such experiment was recently conducted on 28 large Indian textile factories in India by a Stanford-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).[24]

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. As a result, the correlation evidence in the experiment

[23] 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).

[24] Note while drugs trials are double blind (neither the administering doctor nor the patient knows whom 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.

dramatically underestimated the productivity impact of better management practices (by almost two thirds) compared to the correctly estimated treatmend effect.

Hence, this suggests that management practices can dramatically improve firm performance, and further that the correlation results in the literature based on the survey data may be severely understimating 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 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. This 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 only at 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 fall 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 showed, better managed organizations within the same country and industry are earning more profits, growing faster, reducing patient mortality rates and improving students 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 are 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. We would like to run 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. Doing this latter issue is part of our ongoing research, as we have sampled a set of 2,094 firms across three time periods already (2004, 2006 and 2009) and are hoping to soon run another large survey wave to continue to build the panel dimension of the data. This will help us match the data more closely to different theories of why we observe such huge heterogeneity of management practices.

A third methodological area to explore is whether we can simplify our methods of quantifying management so they can be used without our in-depth telephone interview technique. We have developed a more traditional set of interview questions that can be incorporated into a set of "closed questions" on a paper survey (a sub-set of Table 1). Working with the European Bank of Reconstruction and Development, we piloted this on a sample of twelve countries (mainly from Communist Transition countries such as Russia) and firms in Germany and Poland, in which we had already run our standard management survey. Although the "paper and pen" responses had more noise, there was a good correlation with the original measures, and results on ownership, competition and skills consistent with what we have found and discussed here (see Bloom, Schweiger, & Van Reenen, 2011).

Fourth, this research has mainly focused on operational practices like improved monitoring, tougher targets and stronger incentives, around which 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 over the costs and benefits of these human-resource practices, with firms and researchers taking a wide range of positions (e.g. Bloom, Kretschmer and Van Reenen, 2011). So experimental evidence on their impact would be particularly helpful, something we are now working on (see Bloom, Liang, Roberts & Ying, 2011). More generally, we hope our work encourages other researchers to rigorously quantify further aspects of management practices.

Fifth, we are experimenting on ways to bring our research into the classroom as a possible complement to case study evidence. As a first step in this direction, we have conducted in-depth interviews with multiple managerial figures (from the CEO down to nurse managers) within a small sample of US 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.

Finally, we are currently working with the US Census Bureau to build large scale public access management datasets. Based on the EBRD questions, a management survey on around 48,000 plants was carried out in Spring 2011 and will be accessible by 2012 via the Census Research Data Centers by researchers and matched into Census performance data. We hope this will be the first of several such survey waves, slowly building large-scale publicly accessible management panel datasets.

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 use 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 between 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, this 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 by thinning the ranks of the badly managed and incentivizing the survivors to improve (e.g. Bloom, Draca and 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 US 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 US 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 they 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.

REFERENCES

Appelbaum, E., & Batt, R. L. (1994). *The new American workplace: transforming work systems in the United States*. Ithaca, NY: ILR Press.

Barney, J. B., & Arikan, A. M. (2001). The resource-based view origins and implications. In M. A. Hitt, R. E. Freeman & J. S. Harrison (Eds.), *The Blackwell handbook of strategic management* (Chapter 5). Oxford, UK; Malden, MA: Blackwell.

Barney, J. B., & Griffin, R. W. (1992). *The management of organizations: Strategy, structure, behavior*. Boston: Houghton Mifflin Co.

Becker, B. E., & Huselid, M. A. (1998). High performance work systems and firm performance: A synthesis of research and managerial implications. *Research in Personnel and Human Resources Journal, 16*(1), 53–101.

Becker, M. C. (2004). Organizational routines: A review of the literature. *Industrial and Corporate Change, 13*(4), 643–678.

Bloom,N. Draca, M. and Van Reenen, J. (2011) "Trade induced technical change? The impact of Chinese imports on Innovation, IT and Productivity" Centre for Economic Performance Discussion Paper No. 1000.

Bloom, N., Eifert, B., Mahajan, A., McKenzie, D., & Roberts, J. (2011). Does management matter? Evidence from india. *National Bureau of Economic Research Working Paper Series, No. 16658*. Retrieved from http://www.nber.org/papers/w16658.pdf

Bloom, N., Genakos, C., Martin, R., & Sadun, R. (2010). Modern management: Good for the environment or just hot air? *The Economic Journal, 120*(544), 551–572.

Bloom, N., Kretschmer, T., & Van Reenen, J. (2011). Are family-friendly workplace practices a valuable firm resource? *Strategic Management Journal, 32*(4), 343–367.

Bloom, N., Liang, J., Roberts., J and Ying, Z. (2011). Can IT improve work-life balance? Evidence from a Chinese field experiment. Stanford mimeo.

Bloom, N., Propper, C., Seiler, S., & Van Reenen, J. (2010). The impact of competition on management quality: Evidence from public hospitals. *National Bureau of Economic Research Working Paper Series, No. 16032*.

Bloom, N., Sadun, R., & Van Reenen, J. (2009b). Do private equity-owned firms have better management practices? In A. Gurung & J. Lerner (Eds.), *The Global Economic Impact of Private Equity Report 2009* (pp. 1–23). Geneva, Switzerland: World Economic Forum. Available from http://www.weforum.org/pdf/cgi/pe/Full_Report2.pdf

Bloom, Nicholas, Raffaella Sadun, and John Van Reenen. (2009a). "The Organization of Firms across Countries." *National Bureau of Economic Research Working Paper Series, No.15129*. Retrieved from http://www.nber.org/papers/w15129.pdf

Bloom, Nicholas, Raffaella Sadun, and John Van Reenen. (2012). "Americans do I.T. better: US multinationals and the productivity miracle", forthcomming *American Economic Review*.

Bloom, N., Schweiger, H., & Van Reenen, J. (2011). The land that lean manufacturing forgot? Management practices in transition countries. *National Bureau of Economic Research Working Paper Series, No. 17231*.

Bloom, N., & Van Reenen, J. (2007). Measuring and explaining management practices across firms and countries. *Quarterly Journal of Economics*, 122(4), 1351–1408.

Bloom, N., & Van Reenen, J. (2011) "Human Resource Management and Productivity", *Handbook of Labor Economics Volume 4B* in Orley Ashenfelter and David Card (eds), Chapter 19 1697-1769.

Boeker, W and Karichalil, R. (2002). Entrepreneurial Transitions: Factors Influencing Founder Departure. *The Academy of Management Journal*. 45(4), 818-826.

Cumming, D., Siegel, D. S., & Wright, M. (2007). Private equity, leveraged buyouts and governance. *Journal of Corporate Finance, 13*(4), 439–460.

Davila, A., Foster, G., & Jia, N. (2010). Building sustainable high-growth startup companies: Management systems as an accelerator. *California Management Review, 52*(3), 79–105.

Delery, J. E., & Doty, D. H. (1996). Modes of theorizing in strategic human resource management: Tests of universalistic, contingency, and configurations. Performance predictions. *Academy of Management Journal, 39*(4), 802–835.

Delfgaauw, J., Dur, R., Proper, C. and Smith, S. (2011), "Management practices: are not for profits different?", CMPO working paper 11/263.

Dohrmann, T. and G. Pinshaw. 2009. *The road to improved compliance: A McKinsey benchmarking study of tax administrations 2008-2009*. New York: McKinsey & Company.

Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic capabilities: What are they? *Strategic Management Journal, 21*(10/11), 1105–1121.

Foster, L., Haltiwanger, J., & Krizan, C. J. (2006). Market selection, reallocation, and restructuring in the U.S. Retail trade sector in the 1990s. *Review of Economics & Statistics, 88*(4), 748–758.

Foster, L., Haltiwanger, J., & Syverson, C. (2008). Reallocation, firm turnover, and efficiency: Selection on productivity or profitability? *American Economic Review, 98*(1), 394–425.

Grous, A. (2011) "Management Practices in the UK Aerospace Sector", LSE mimeo

Greene, William, (2002). Econometric Analysis (fifth edition). Prentice Hall

Harris, R., Siegel, D. S., & Wright, M. (2005). Assessing the impact of management buyouts on economic efficiency: Plant-level evidence from the United Kingdom. *Review of Economics & Statistics, 87*(1), 148–153.

Homkes, Rebecca. 2011. The missing management link: Why Management Matters in global public-private partnerships, LSE mimeo

Hoxby, C. M. (2000). Does competition among public schools benefit students and taxpayers? *American Economic Review, 90*(5), 1209–1238.

House, R. J., Hanges, P.M., Javidan, M., Dorfman, P., and Gupta, V. (2004). *Culture, leadership, and organizations: The GLOBE study of 62 societies*. Thousand Oaks, CA: SAGE Publications.

Huselid, M. A., & Becker, B. E. (1996). Methodological issues in cross-sectional and panel estimates of the human resource-firm performance. *Industrial Relations, 35*(3), 400–422.

Ichniowski, C., Shaw, K., & Prennushi, G. (1997). The effects of human resource management practices on productivity: A study of steel finishing lines. *The American Economic Review, 87*(3), 291–313.

Javidan, M., Dorfman, P., Sully de Luque, M., & House, R. J. (2006). In the eye of the beholder: Cross-cultural lessons in leadership from Project GLOBE. *Academy of Management Perspectives*, 20(3): 67–91.

Lengnick-Hall, M. L., Lengnick-Hall, C. A., Andrade, L. S., & Drake, B. (2009). Strategic human resource management: The evolution of the field. *Human Resource Management Review, 19*(2), 64–85.

Lepak, D. P., Liao, H., Chung, Y., & Harden, E. (2006). A conceptual review of human resource management systems in strategic human resource management research. In J. Martocchio (Ed.), *Research in personnel and human resource management* (pp. 217–271). Stamford, CT: JAI Press.

Lichtenberg, F. R., & Siegel, D. (1990). The effects of leveraged buyouts on productivity and related aspects of firm behavior. *Journal of Financial Economics, 27*(1), 165–194.

Macduffie, J. P. (1995). Human resource bundles and manufacturing performance: Organizational logic and flexible production systems in the world auto industry. *Industrial & Labor Relations Review, 48*(2), 197–221.

McConnell, J., Hoffman, K., Quanbeck., A, and McCarty, D. (2009). Management practices in substance abuse treatment programs. *Journal of Substance Abuse*.

McNally, S. (2010). Evaluating education policies: The evidence from economic research. *CEP Election Analysis,* (Paper No: CEPEA008). Retrieved from http://cep.lse.ac.uk/pubs/download/ea008.pdf

McKinsey & Company. 2009. "Management Matters in Northern Ireland and the Republic of Ireland.", http://www.delni.gov.uk/managementmatters

Nelson, R. R., & Winter, S. G. (1982). *An evolutionary theory of economic change*. Cambridge, MA: Belknap Press of Harvard University Press.

Osterman, P. (1994). How common is workplace transformation and who adopts it? *Industrial & Labor Relations Review, 47*(2), 173–188.

Pfeffer, J. (1999a). Seven practices of successful organizations. *Health Forum Journal, 42*(1), 24–27.

Pfeffer, J. (1999b). Seven practices of successful organizations: Part 2: Invest in training reduce status differences don't keep secrects. *Health Forum Journal, 42*(2), 55.

Pfeffer, J., & Veiga, J. F. (1999). Putting people first for organizational success. *Academy of Management Executive, 13*(2), 37–48.

Siegel, Jordan I., Amir N. Licht, and Shalom H. Schwartz. (2011). "Egalitarianism and International Investment." *Journal of Financial Economics* (forthcoming).

Siegel, D. S. & Simons. K. (2010). Assessing the effects of mergers and acquisitions on firm performance, plant productivity, and workers: New evidence from matched employer-employee data. *Strategic Management Journal*, 31, 903-916

Skinner, J., & Staiger, D. (2009). Technology diffusion and productivity growth in health care. *National Bureau of Economic Research Working Paper Series,* (No. 14865). Retrieved from http://www.nber.org/papers/w14865.pdfSyverson, Chad (2011) "What determines productivity?", *Journal of Economic Literature*, 49(2) 326–365

Washburn, N., Waldman, D, Sully de Luque, M. (2009). *Agents behaving like stewards: Executive discretion and the display of steward behaviors*. Paper presented at the 69th Annual Meeting of the Academy of Management, Chicago, IL, August.

Winter, S. G. (2003). Understanding Dynamic Capabilities. *Strategic Management Journal*, *24*(10), 991–995.

Woodward, J. (1958). *Management and technology*. London: H. M. Stationery Office.

Table 1: The Management Practice Dimensions

Categories	Score from 1-5 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 a 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 is 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 non-financial 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) Targets are stretching	Are goals too easy to achieve, especially for some “sacred cows” 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 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 on 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
UK	3.02	3.32	2.97	2.85	1214
US	**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 in 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**

Sector	**(1) Manufact.**	**(2) Manufact.**	**(3) Manufact.**	**(4) Manufact.**	**(5) Manufact.**	**(6) Hospitals**	**(7) Schools**
Dependent variable	**Log(Sales)**	**Log(Sales)**	**Log(Sales)**	**Profitability (ROCE)**	**5 year Sales growth (%)**	**AMI Mortality Rate (zscored)**	**Test Scores (zscored)**
Management	0.523***	0.233***	0.046**	1.952***	6.738***	-0.471***	0.196***
	(0.030)	(0.024)	(0.022)	(0.444)	(1.984)	(0.166)	(0.066)
Ln(Employees)	0.915***	0.659***	0.363***				0.105
	(0.019)	(0.026)	(0.108)				(0.081)
Ln(Capital)		0.289***	0.245**				
		(0.020)	(0.087)				
Country controls	No	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	No	Yes	Yes	Yes	Yes	n/a	n/a
General controls	No	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	No	No	Yes	No	No	No	No
Organizations	2,927	2,927	1,345	2,927	2,927	251	354
Observations	7,094	7,094	5,512	7,094	7,094	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 (5) is all firms-years with sales, employment, capital, ROCE and 5-year sales growth data, except in column (3) which also restricts to firms with two or more surveys and drops the noise controls (which have little time series variation). Column (6) uses all hospitals for which we had AMI data, while column (7) uses all schools for which we had pupil tests scores. "**Management"** is the organization-level management score.). **"Profitability"** is "Return on Capital Employed" (ROCE) and "**5 year Sales growth"** is the 5-year growth of sales. **AMI mortality rate** is the risk adjusted mortality rate from Acute Myocardial Infarction (zscored to take into account differences in the way the index is expressed in the US and the UK). The school level measure **Test Scores** varies across countries (the variable is z-scored to take into account these differences). In the US we use the Math Exam Pass Rate from High School Exit Exams (HSEEs). In the UK we employ the proportion of students achieving 5 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 3-digit dummies. **Columns 1 to 5:** "**General controls**" comprise of 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 which are interviewer dummies, the seniority and tenure of the manager who responded, the day of the week the interview was conducted, the time of the day the interview was conducted, the duration of the interviews and an indicator of the reliability of the information as coded by the interviewer. **Column 6:** "**General controls**" comprise of 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, %of managers with a clinical degree, plus a set of survey noise controls which 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 the day the interview was conducted, the duration of the interviews and an indicator of the reliability of the information as coded by the interviewer. **Column 7:** "**General controls**" comprise of , 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 US; public, voluntary aided, foundations, independent in the UK; public, separate and independent in Canada), plus a set of survey noise controls which are 19 interviewer dummies, the tenure of the manager who responded, the day of the week the interview was conducted, the time of the day the interview was conducted, the duration of the interviews and an indicator of the reliability of the information as coded by the interviewer.

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 5000 employees across 20 countries. These populations of firms were drawn from national firm databases and company registries – for example, Companies House in the UK, Dunn and Bradstreet in the US and the Registrar of Companies in India. From comparisons with national census databases these firm populations appear to provide good coverage (50% of more) in every country we analyze.

Survey organization:
We ran management surveys primarily from the London School of Economics during the summer. The reason is we can obtain space for the survey team (class-rooms are empty in the summer) and hire high quality survey team members (MBA and PhD students during their summer break). London is an excellent survey location because it lies midway between the US 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 with the group manager silently listening in to each interview to ensure interview quality. The group managers were people we could trust, such ourselves or PhD 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 in at least two different countries. This typically involved running 10 or more interviews in each of the UK and US (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 are regularly using the same grid to interview managers in India, the UK and the US, so are well positioned to make an accurate international assessment.

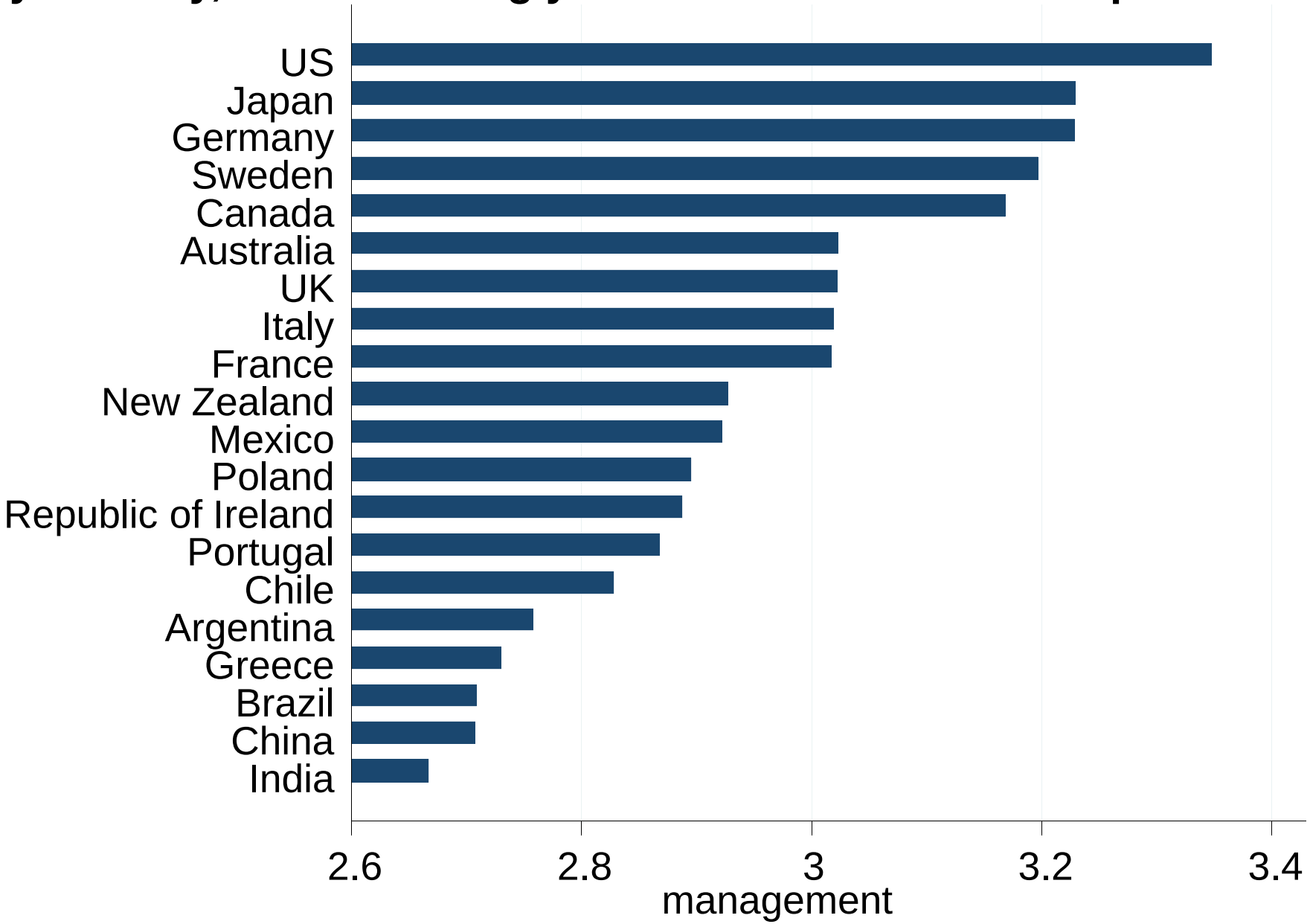
Finally, 25.4% of our sample are affiliates of foreign multinationals – for example, a Japanese owned firm operating in France. These firms were always interviewed in the

native language (French in this example) but we can also compare their management practices to those of their parent country (Japan in our example). We found interestingly 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 interviewing a French MBA student interviewing a French manager (in French) in 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

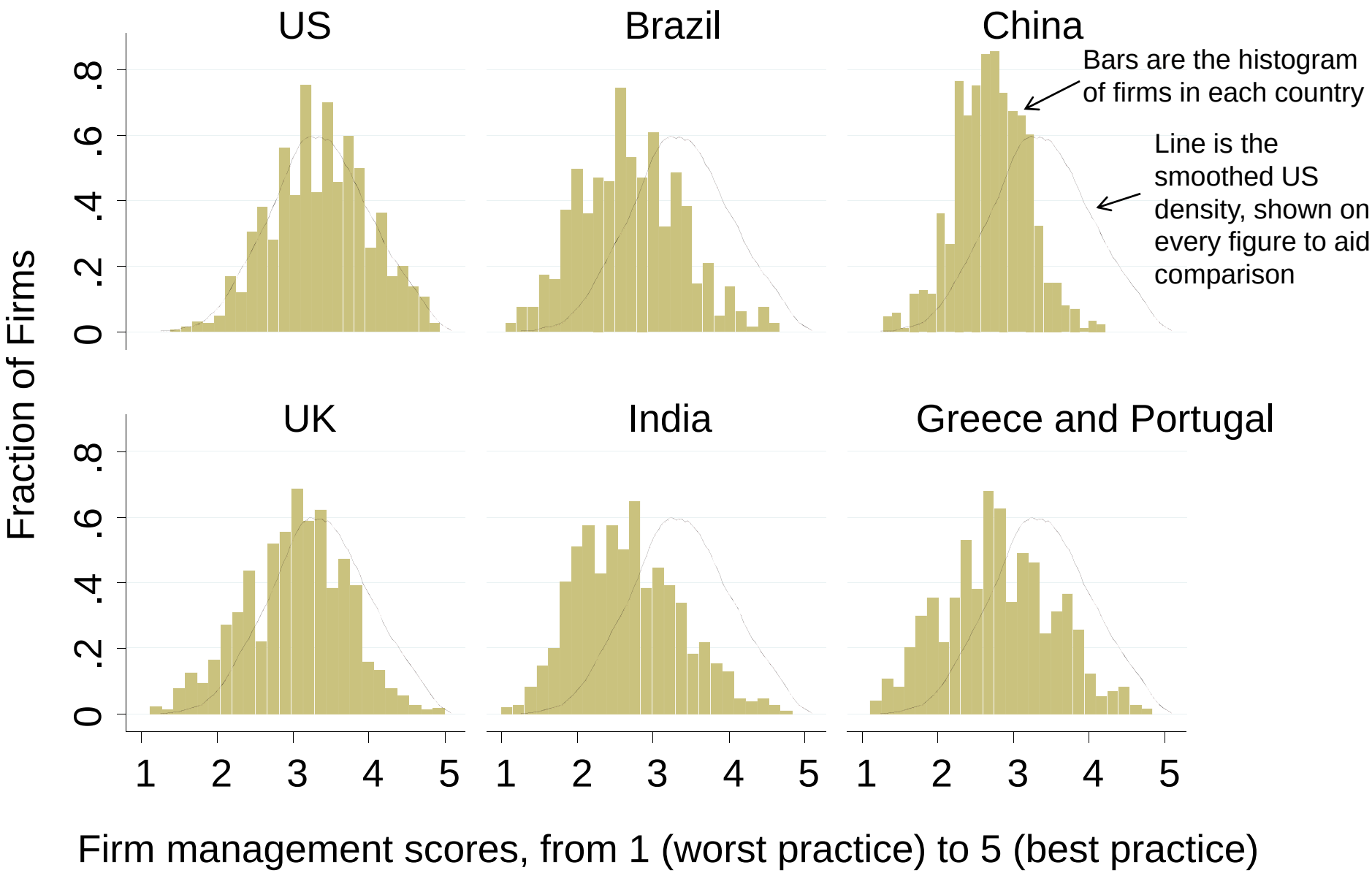
Overall we find that in our manufacturing sample that around 11.1% of our management practices can be explained by country of location and about 11.9% by industry of operation (using 254 SIC 1987 3-digit industry codes). Hence, the majority of the variation in management practices cannot be explained 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 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 Country, but are Strongly Linked to Level of Development



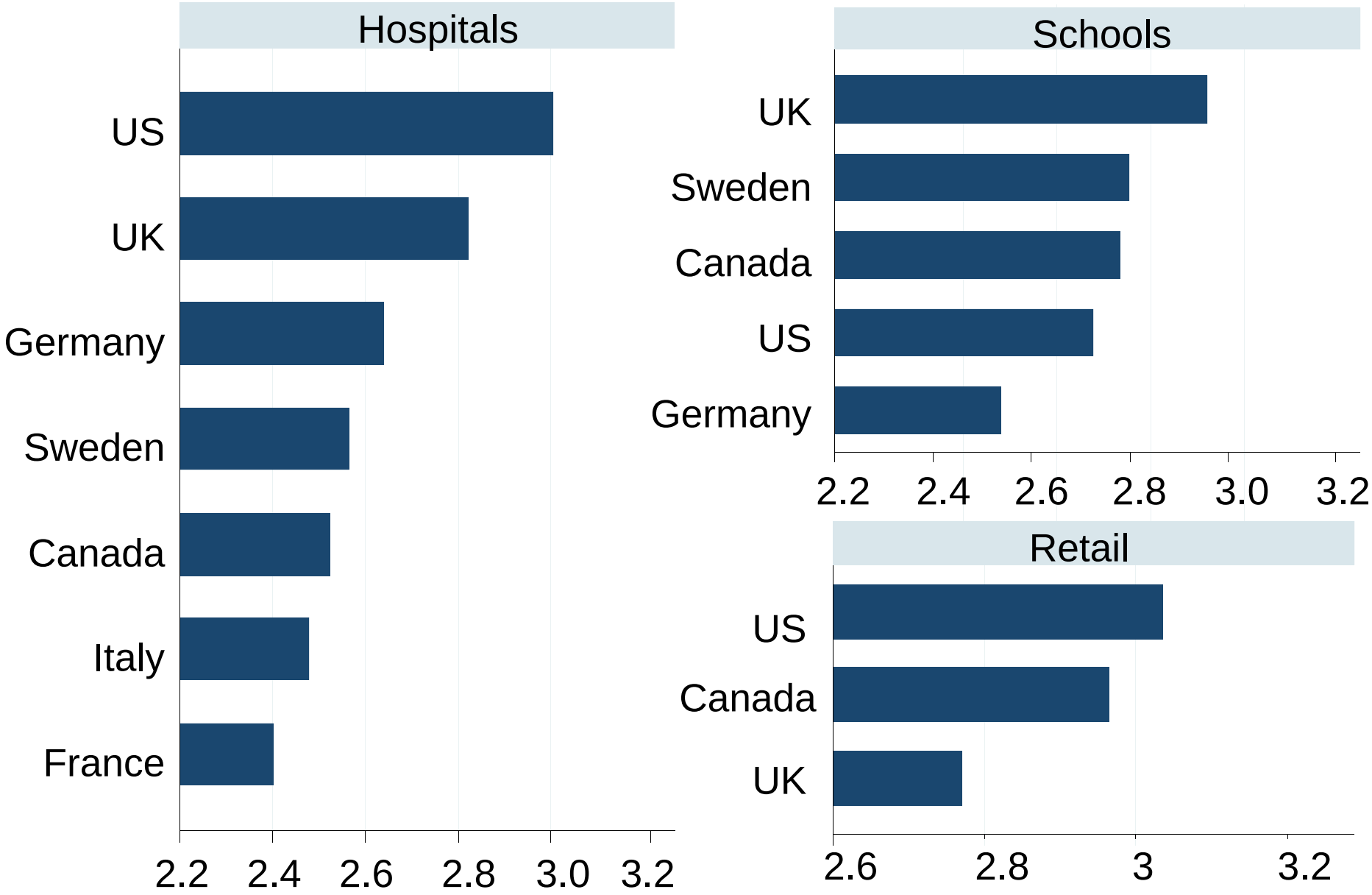
Note: Averages taken across all firms within each country. 9079 observations in total.

Figure 2: The US has Few Badly Managed (Manufacturing) Firms, while Brazil, China and India have a Tail of Badly managed Firms.



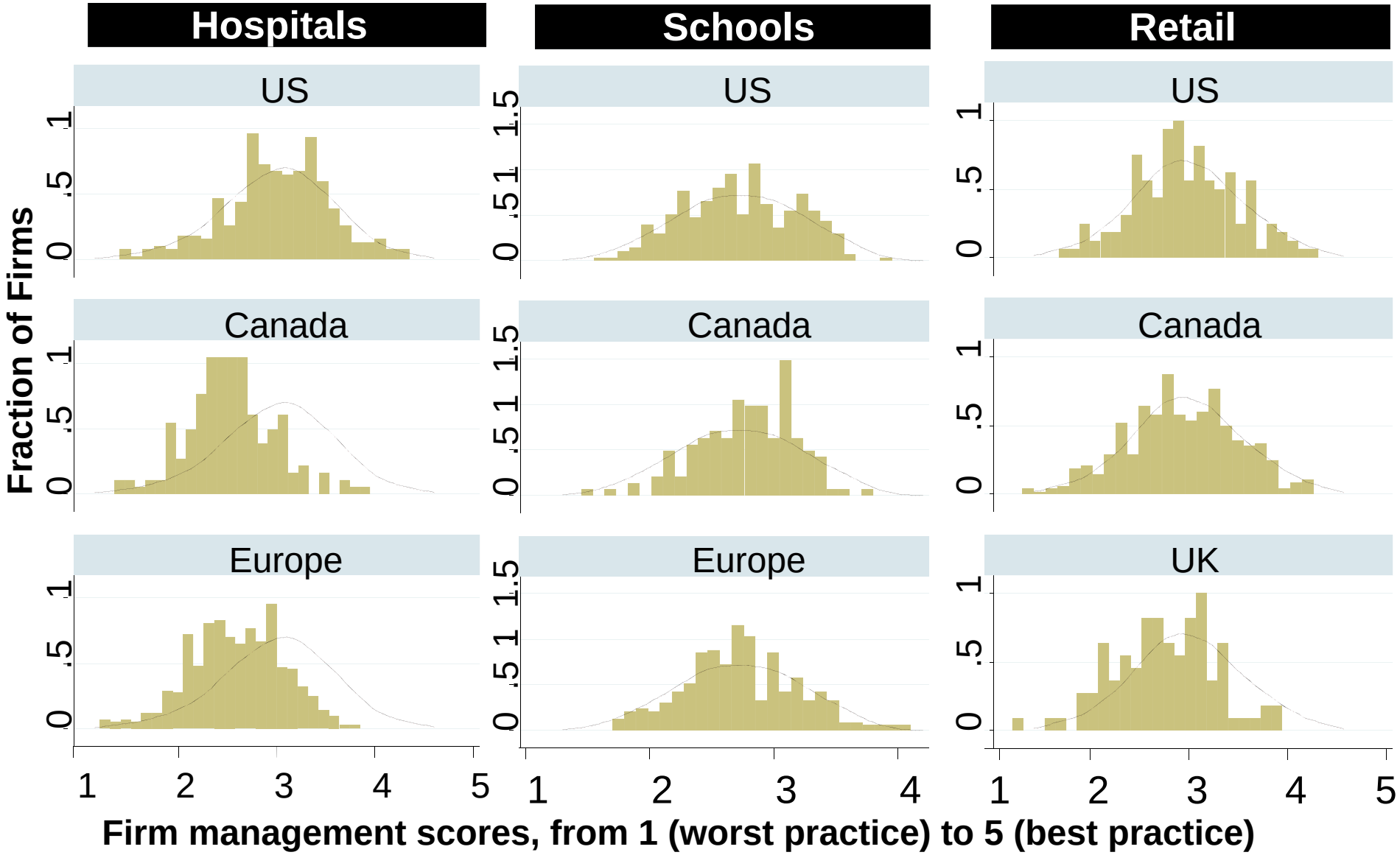
Note: 4930 observations from manufacturing in total.

Figure 3: Hospital, School & Retail Management Practices Also Vary Across Countries, With the US Top Except in Schools



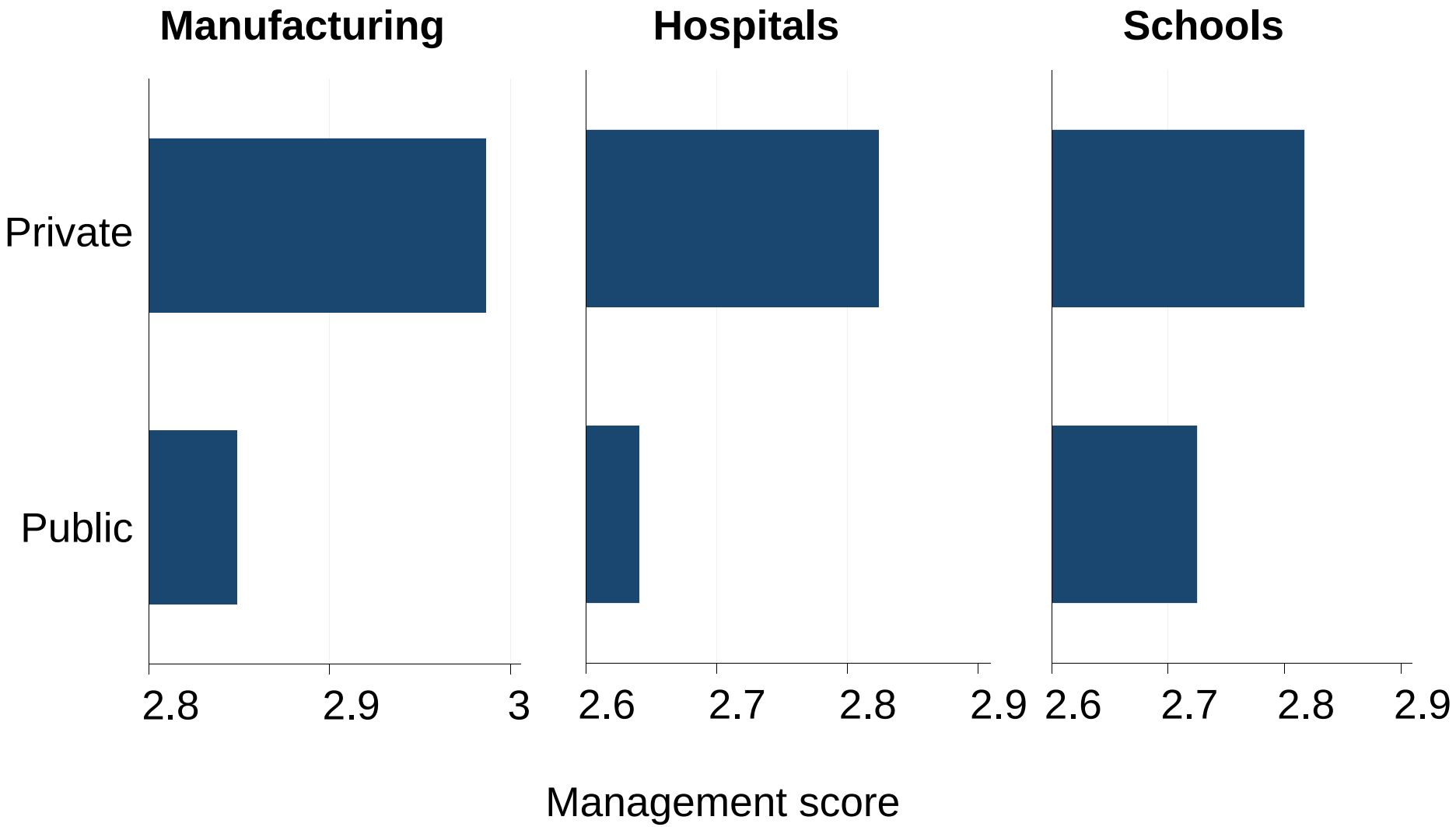
Note: Averages taken across all organizations within each country. 1,183 hospitals, 780 schools and 661 retail sites

Figure 4: Hospitals, Schools and Retail Management Practices Also Show A Large Spread Across Organizations Within Each Country



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

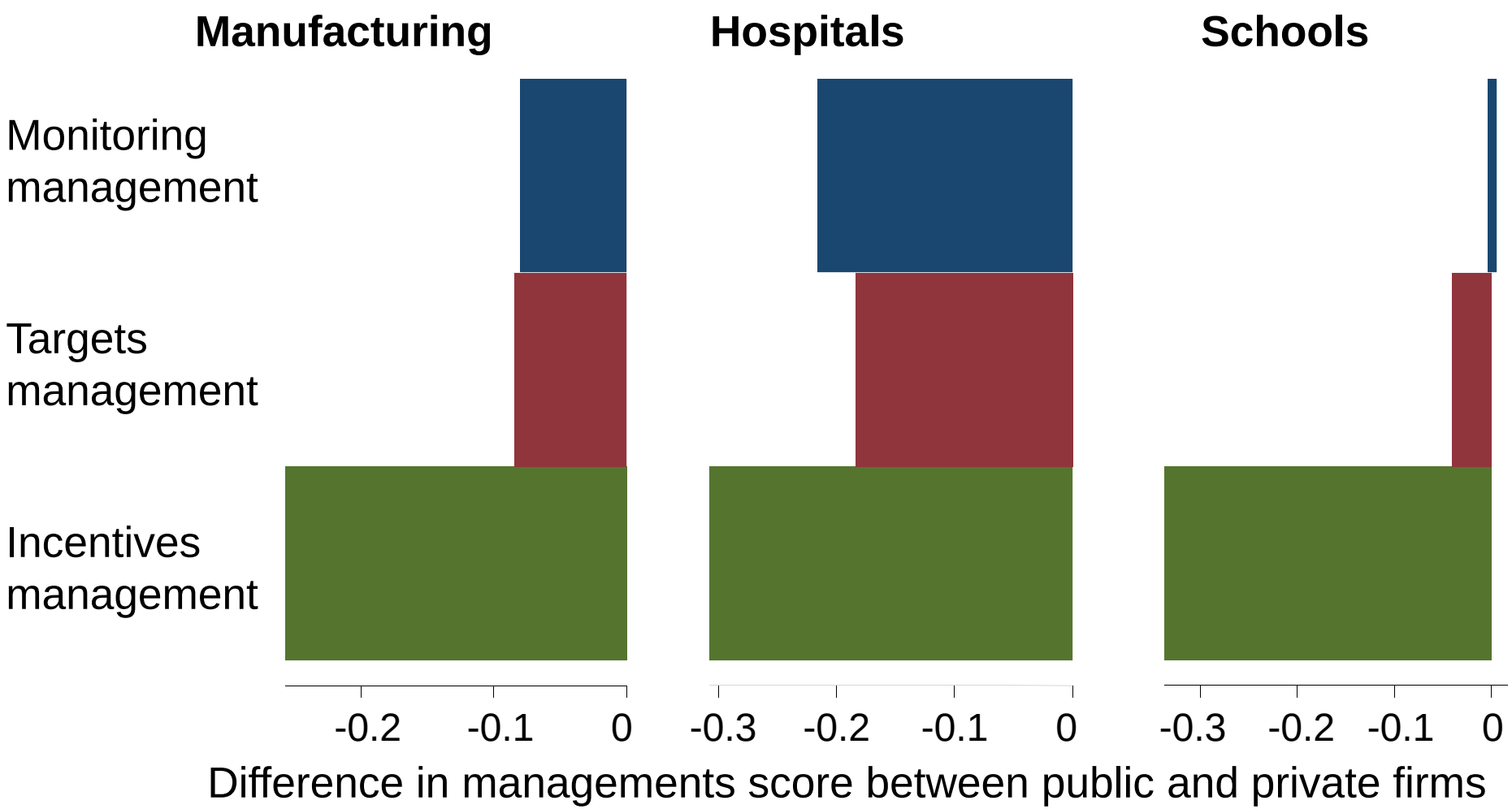
Figure 5: Public (Government) Ownership is Associated with Worse Management Practices Across Every Industry We Studied



Management scores after controlling for size (number of employees, beds or students) and country. Data from 9079 manufacturing firms, 1,183 hospital and 779 schools. There were no publicly owned retail firms so the comparison is not possible within retail.

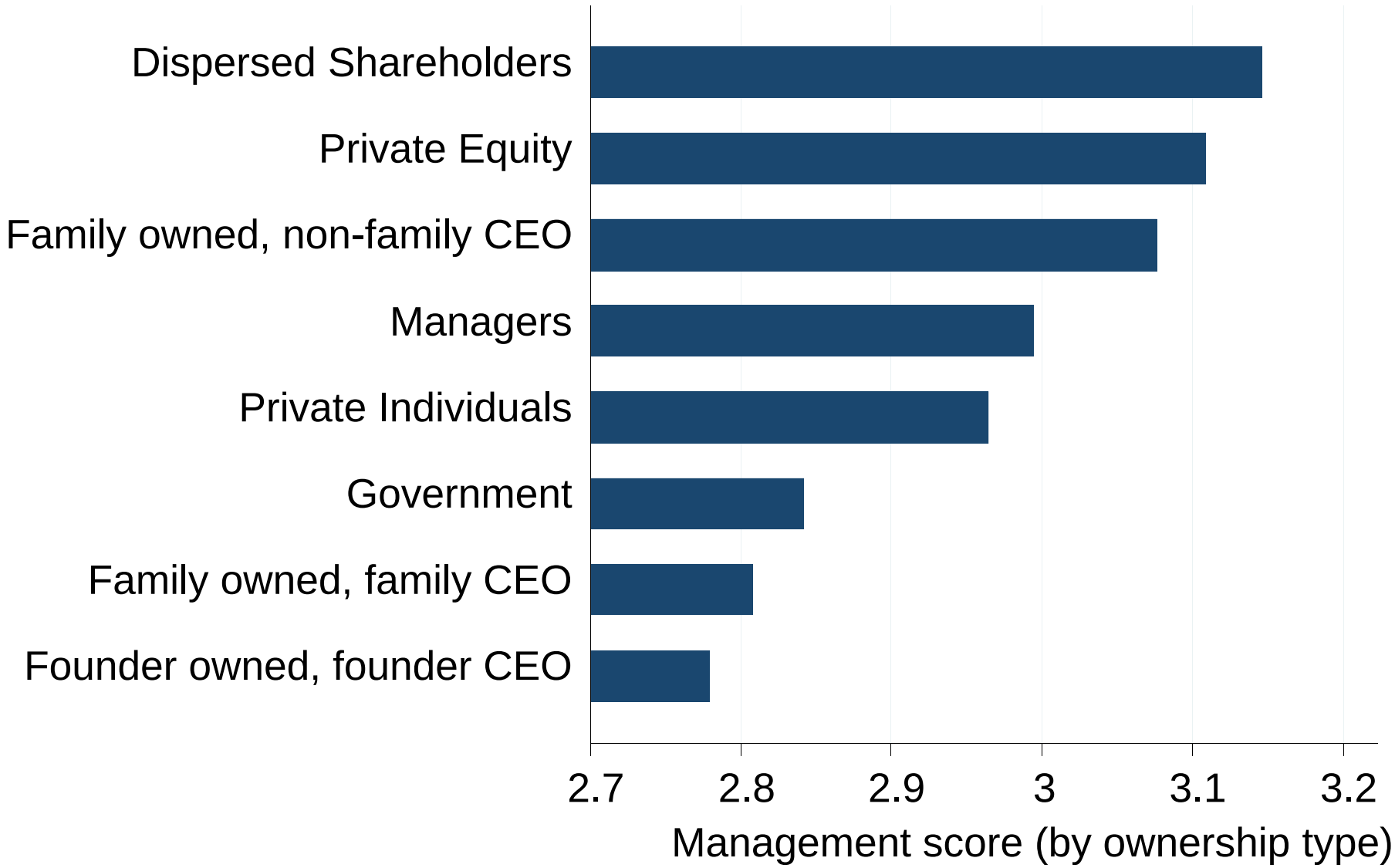
Figure 6: Public ownership is associated with particularly poor incentives management (hiring, firing, pay and promotions)

Gap between public and private ownership by sub-components of management



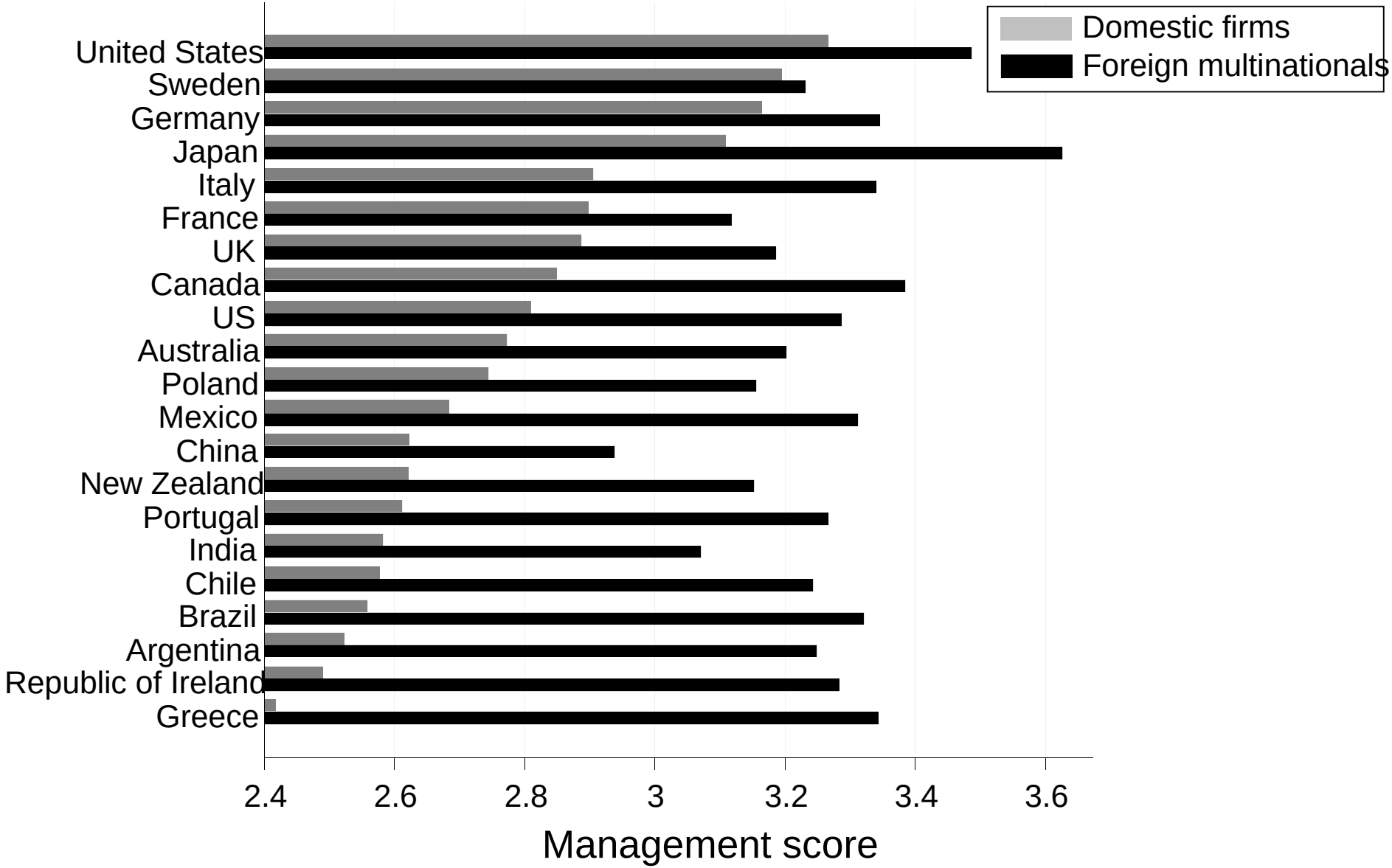
Management scores after controlling for size (number of employees, beds or students) and country. Monitoring is collecting and using data, targets are the setting and effectiveness of targets, and incentives is performance related hiring, promotions, bonus and exit. Data from 9079 manufacturers, 1,183 hospital and 779 schools.

Figure 7: Family and founder owned and managed firms (in manufacturing and retail) typically have the worst management



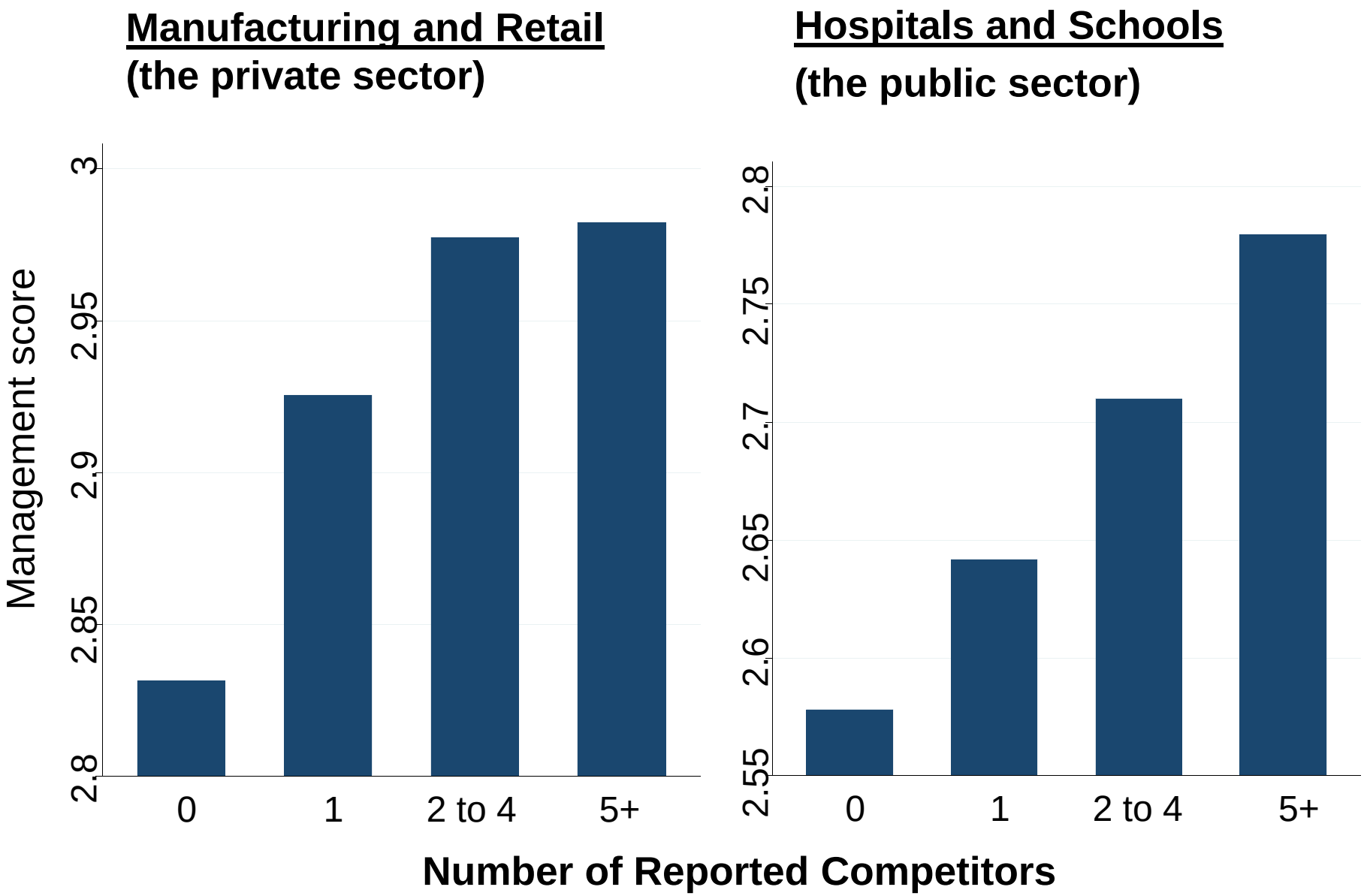
Management scores after controlling for country, industry and number of employees. Data from 9085 manufacturers and 658 retailers. “Founder owned , founder CEO” firms are those still owned and managed by their founders. “Family firms” are those owned by descendants of the founder “Dispersed shareholder” 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



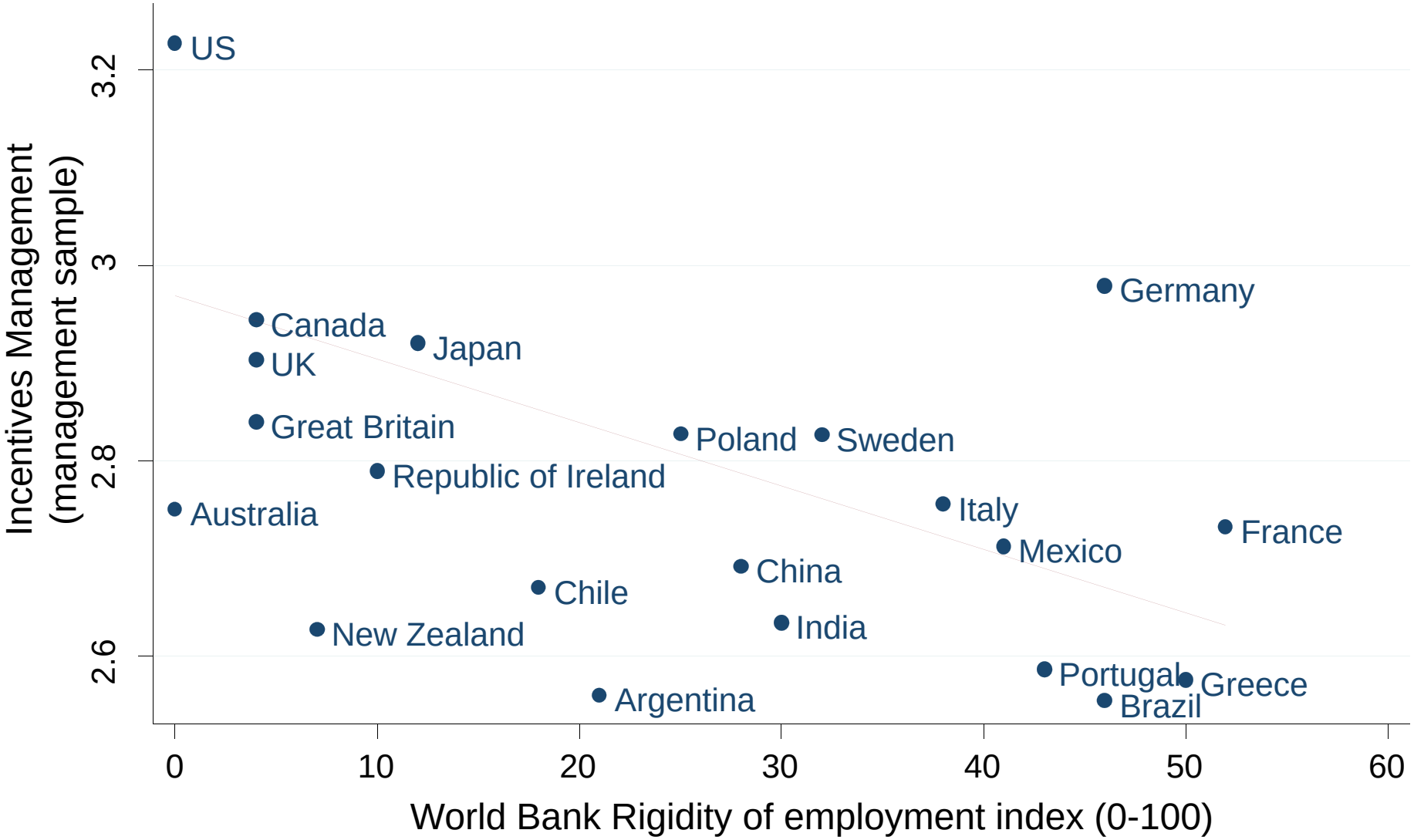
Sample of 7,262 manufacturing and 661 retail firms, of which 5,441 are purely domestic and 2,482 are foreign multinationals. Domestic multinationals are excluded – that is the domestic subsidiaries of multinational firms (like a Toyota subsidiary in Japan).

Figure 9: Competition Appears Linked to Better Management



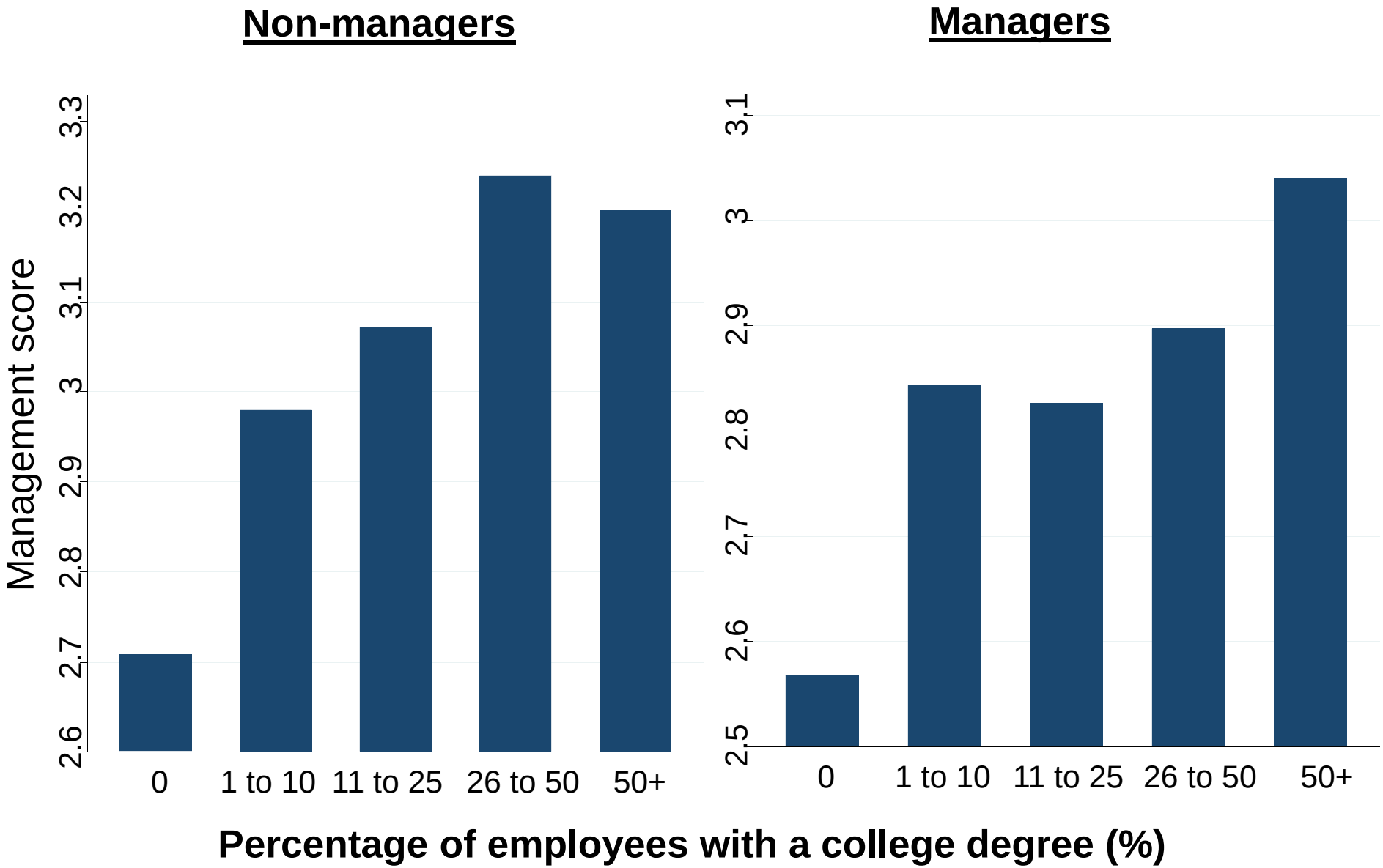
Sample of 9469 manufacturing and 661 retail firms (private sector panel) and 1183 hospitals and 780 schools (public sector panel). Reported competitors defined from the response to the question “How many competitors does your [organization] face?”

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



Note: Averaged across all manufacturing firms within each country (9079 observations). We did not include other sectors as we do not have the same international coverage. Incentives management defined as management practices around hiring, firing, pay and promotions. The index is from the Doing Business database http://www.doingbusiness.org/ExploreTopics/EmployingWorkers/

Figure 11: Education for Non-Managers and Managers Appear 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 which 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 1000 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: Bloom, Eifert Mahajan, McKenzie, Roberts (2011).