MANAGEMENT PRACTICES AND MERGERS AND ACQUISITIONS*

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ABSTRACT

We provide new empirical evidence on the sources of value creation in mergers and acquisitions by using a dataset of establishment-level management practices from the U.S. Census Bureau. We find that firms with better management practices tend to acquire establishments with worse management practices, and following the acquisition, improve the target's management practices. These improvements are larger when acquirers have a greater incentive and ability to make these changes and are also followed by increases in establishment performance. Overall, our findings suggest that spillovers of good management practices constitute an important source of synergies from mergers and acquisitions.

Keywords: Mergers and Acquisitions, Management Practices, Synergies, Value Creation

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1. Introduction

How do mergers and acquisitions create value? Synergies are the leading motive behind mergers. However, direct empirical evidence on the sources of these gains is limited. An often overlooked source of synergies arises from improvements in management practices. Firms with strong managerial practices, such as those related to more effective monitoring, performance targets, and incentives, perform better on metrics such as productivity, profitability, growth, and longevity (e.g., Bloom and Van Reenen, 2007; Bloom et al., 2013b; Sadun, Bloom, and Van Reenen, 2017). This performance persists over time, suggesting that management practices can be a source of competitive advantages. While business schools, the popular press, and research have long stressed the importance of good management, there is little empirical evidence on whether improvements in management practices are a source of gains from mergers and acquisitions. A major challenge in addressing this question has been the absence of high-quality data on management practices.

In this study, we utilize a novel survey dataset of establishment-level management practices from the United States (U.S.) Census Bureau to peek inside the "black box" of mergers and examine whether mergers create value through improving management practices. The 2010 Management and Organizational Practices Survey (MOPS) is the first large-scale management practices survey created and introduced by Bloom et al. (2013a), covering over 30,000 manufacturing establishments in the U.S.[1]

The survey groups management practices into three categories: monitoring (six practices), production targets (two practices), and incentives (eight practices). Questions on monitoring practices focus on the extent to which performance is tracked and reviewed and whether these data are used to improve performance. Better monitoring practices can improve the production process through enhanced collection and use of data. The questions on production target practices focus on the horizon and realism of the targets. Questions on incentive practices include promotion criteria, how pay and bonuses are distributed, and

[1] An establishment is a single physical location where business is conducted or where services or industrial operations are performed.

when bad performers are fired, where best practices are those that give strong rewards to employees based on their ability and effort. While better production target and incentive practices do not necessarily impact productivity directly, they can improve performance by impacting employee decision-making and effort. In addition, good incentive practices can affect productivity through employee selection, whereby high-powered incentives attract workers with high ability (e.g., Lazear, 2000; Oyer and Schaefer, 2005). Following prior work (e.g., Bloom et al., 2013a; Bloom et al., 2018), our primary measure of establishment-level management practices is an aggregate, normalized management score that reflects all three of these categories. In general, better management practices are those that are more specific, formal, frequent, or explicit.

To examine the effect of mergers on acquired establishments' management practices, we match the MOPS data to the Census' Longitudinal Business Database (LBD). The LBD provides annual coverage on employment and payroll information for the universe of all business establishments with at least one paid employee in the U.S. Important for our analyses, the LBD includes unique firm- and establishment-level identifiers, making it possible to follow an establishment as it changes owners. We are therefore able to track changes in the management practices of targets and acquirers separately before and after each merger event. Moreover, our data covers both public and private firms, which allows us to observe both partial- and whole-firm acquisitions.

We begin our analysis by examining whether there is a relation between management practices and the likelihood that a firm becomes an acquirer and an establishment becomes a target.[2] Overall, we find that firms with better management practices are more likely to become acquirers and that establishments with worse management practices are more likely to be acquired. In addition, using a regression specification that resembles gravity models used to study trade flows between countries, we show that firms with better management practices tend to acquire establishments with relatively worse management practices.

[2] Our main analyses focus on establishment-level management practices. In analyses conducted at the firm level, we calculate the employment-based weighted-average management score across all of the firm's establishments.

We then turn to our main analyses. The 2010 MOPS asks respondents questions about their establishments' management practices in 2010 and 2005. This longitudinal component of the survey allows us to implement a difference-in-differences empirical specification to examine the effect of acquisitions on management practices. Using this research design, we document significant improvements in the management practices of acquired establishments relative to a control group of establishments that did not get acquired during the same time period. These improvements are not concentrated in one particular category of management practices, as we find improvements in monitoring, production target, and incentive practices separately. Further, we show that management practices not only improve at acquired establishments on average, but also the target's management practices converge to those of the acquirer's incumbent establishments. Taken together, these findings suggest that firms with better management practices acquire establishments with relatively worse management practices, and that following the acquisition, the spillover of superior management practices from acquirers to targets could be a source of value creation.

We implement our difference-in-differences research design in a changes analysis and therefore control for any time-invariant firm- and establishment-level characteristics. In these change regressions, we also include industry fixed effects. Because the panel dataset has only two periods and is in changes, these industry fixed effects control for any time-varying industry characteristics that could be correlated with changes in an establishment's management practices and the likelihood that it is acquired. As a result, the primary identification threat that would not allow us to attribute the improvement in management practices to the acquisition event is if these improvements are a continuation of a pre-existing trend. For example, if acquirers tend to purchase establishments that are already improving their management practices, then the improvements we observe could simply be a continuation of this trend and not a result of the acquisition. However, inconsistent with this alternative explanation, we do not find a relation between changes in management practices and the likelihood that an establishment is acquired in an out of sample test.

In our next set of tests, we explore cross-sectional variation in the effect of acquisitions on improvements in an acquired establishment's management practices. If our results are driven by acquirers improving the management practices of target establishments to realize synergies, then we should find that these improvements are greater when acquirers have a greater incentive and ability to do so. We test this prediction in four ways.

First, we capture an acquirer's comparative advantage in management practices using the acquirer's management score before the acquisition. Acquirers endowed with better management practices have the skills, knowledge, and resources needed to realize greater synergies by improving the target's management practices. Second, we capture an acquirer's ability to influence organizational change with the extent to which managers have decision-making authority. When decision control is concentrated with mangers, they are able to make decisions and implement changes faster (e.g., Wally and Baum, 1994; Baum and Wally, 2003). Third, we use the extent of product market competition in the establishment's industry to capture instances when acquirers have a greater incentive to improve management practices. More intense product market competition serves as a disciplinary device and mitigates managerial slack (e.g., Giroud and Mueller, 2010), giving acquirers greater incentives to improve economic efficiency. Fourth, improvements in the management practices of acquired establishments are also likely greater when targets and acquirers have complementary operations because the acquirer already possesses a comparative advantage and expertise that it can use to manage the target's operations (e.g., Maksimovic and Phillips, 2001; Frésard, Hege, and Phillips, 2017). Consistent with these predictions, we find that improvements in the management practices of acquired establishments are greater when: i) acquirers start with better management practices, ii) there are fewer layers of direct reports from the factory floor to the establishment manager, iii) managers are primarily the ones prioritizing and allocating tasks to production workers, iv) establishments are in more competitive industries, and v) the acquirer and target operate in the same industry.

Next, we examine whether improvements in the management practices of acquired establishments translate into better performance to test whether these improvements are a

source of value creation in mergers. We capture establishment performance using several measures, including total factor productivity, return on capital, and value added per employee. Consistent with the notion that improvements in management practices are a source of gains from mergers and acquisitions, we find that larger improvements in post-acquisition management practices are associated with larger improvements in performance.

In additional analyses, we examine whether an acquirer's management practices affect the quality of the acquisitions it makes. We gauge acquisition quality using measures of cumulative abnormal announcement returns and post-acquisition long-run abnormal buy-and-hold returns. Overall, while firms with better management practices are more likely to become acquirers, the collective evidence suggests that these acquirers do not make higher quality acquisitions on average. However, a large caveat associated with this analysis is that these tests are conducted on a sample of about 200 merger events. Thus, it is possible that these tests lack enough power to identify a relation between management practices and acquisition quality.

This paper complements the existing literature in at least three dimensions. First, we contribute to work on the sources of gains from mergers and acquisitions. In theory, such value creation could arise from many sources, including economies of scale or scope, increases in managerial efficiency, improvements in production techniques, or increases in market power (e.g., Trautwein, 1990; Andrade, Mitchell, and Stafford, 2001). While it is well documented that successful mergers often increase the value of the combined company (e.g., Healy, Palepu, and Ruback, 1992; Betton, Eckbo, and Thorburn, 2008), direct empirical evidence showing how these gains occur has historically been limited.

Recently, hand collection and better access to confidential and proprietary data have led to work that investigates the specific channels of the sources of these synergies. For example, gains can come from improved cash flows and productivity resulting from better resource allocation and product differentiation (e.g., Lichtenberg and Siegel, 1987; Healy, Palepu, and Ruback, 1992; McGuckin and Nguyen, 1995; Maksimovic and Phillips, 2001; Schoar, 2002; Hoberg and Phillips, 2010; Maksimovic, Phillips, and Prabhala, 2011; Li, 2013).

Gains can also arise from interest tax shields, improvements in product quality, and efficiency-enhancing cost savings resulting from economies in capital expenditures, investments in working capital, and advertising (e.g., Devos, Kadapakkam, and Krishnamurthy, 2009; Fee, Hadlock, and Pierce, 2012; Sheen, 2014). In the case of horizontal mergers, gains could come from enhanced buying and pricing power (e.g., Kim and Singal, 1993; Focarelli and Panetta, 2003; Fee and Thomas, 2004; Ashenfelter and Hosken, 2010; Bhattacharyya and Nain, 2011). We build on this work by providing evidence that improvements in management practices are also an important source of gains from mergers.

Second, we extend work on management practices in general. Better management practices are linked to greater productivity (e.g., Ichniowski, Shaw, and Prennushi, 1997; Lazear, 2000; Black and Lynch, 2001). In particular, better management practices lead to improvements in quality, inventory, and output, which translate into higher productivity (Bloom et al., 2013b; Bender et al., 2018). Differences in management practices across countries can also in part explain cross-country differences in productivity (Bloom and Van Reenen, 2007; Bloom et al., 2010). We extend this work by linking improvements in post-merger performance to improvements in management practices.

Finally, our results relate to recent work on how culture and other characteristics of merged companies converge, and to work on how cultural fit, human capital relatedness, and technological overlap affect merger outcomes (e.g., Atalay, Hortacsu, and Syverson, 2014; Bena and Li, 2014; Bereskin et al., 2017; Lee, Mauer, and Xu, 2018; Li et al., 2018).

The rest of this paper is organized as follows. Section 2 describes the MOPS data, how we identify acquisitions, and our sample. Section 3 reports empirical results. Section 4 reports results of additional analyses and robustness checks. Section 5 concludes.

2. Databases and Sample Selection

2.1. The Management and Organizational Practices Survey

Our source of establishment-level data on management practices comes from the U.S. Census' 2010 Management and Organizational Practices Survey (MOPS). The 2010 MOPS is

a supplement to the 2010 Annual Survey of Manufacturers (ASM), which covers approximately 70% of U.S. manufacturing activities in terms of total value of shipments. For the ASM, reporting is mandatory for establishments selected to participate in the survey. Establishments must report all of the data to the government by law, and fines are levied for misreporting.

The purpose of the MOPS is to better understand current and evolving management and organizational practices and to assist in identifying determinants of establishment productivity and growth. The 2010 survey consists of 36 questions in three sections: management practices, organizational structure, and background characteristics. Following prior work, we focus on the first 16 questions on management practices (see Appendix for a list of these questions). These 16 questions fall into three categories: monitoring (six practices), production targets (two practices), and incentives (eight practices). These questions asked in the MOPS are based on the survey questions of management practices used in Bloom and Van Reenen (2007) and the World Management Survey, which are based in part on the principles of continuous monitoring, evaluation, and improvement from Lean manufacturing (e.g., Womack, Jones and Roos, 1990).

The six questions on monitoring ask the extent to which establishments track and review performance and whether these data are used to improve performance. For example, one question is "how many key performance indicators were monitored at this establishment?" The two questions on production targets attempt to assess how well establishments set production goals. For instance, respondents are asked "what best describes the time frame of production targets at this establishment?" The eight questions on incentives examine how employees are promoted, rewarded, and retained, or alternately reprimanded and dismissed. For example, one question is "what were non-managers' performance bonuses usually based on?"

The 2010 MOPS was distributed as a supplement of the ASM mailout sample. This portion of the survey is comprised of a probability sample of approximately 50,000 manufacturing establishments from a universe of approximately 101,250 establishments.

The survey was sent electronically and by mail to the ASM respondent for each establishment, and the majority of these respondents were establishment managers (63.9%), divisional managers (14.9%), or Chief Executive Officers (8.8%). On average, respondents have worked at their establishment for 11.7 years at the time of the survey. The 2010 MOPS received responses from approximately 37,000 establishments (about 78% of the establishments to whom the survey was successfully delivered). To create a longitudinal dataset, each respondent was asked about her establishment's management practices in 2005.[3] This longitudinal component of the survey allows us to observe an establishment's management practices in 2005 and 2010 and therefore allows us to calculate changes in its management practices over this five-year period.

Following prior work (Bloom et al., 2013a; Bloom et al., 2018), our primary measure of establishment-level management practices is an aggregate, normalized management score that captures all three categories of management practices. The creation of this measure involves two steps. First, we normalize each of the responses to the 16 management practices questions to a value between zero and one, with the responses associated with desirable management practices receiving a value of one. In general, better management practices are those that are more specific, formal, frequent, or explicit. For example, responses to the question "how many key performance indicators were monitored at this establishment" are: i) No key performance indicators, ii) 1-2 key performance indicators, iii) 3-9 key performance indicators, or iv) 10 or more key performance indicators. Converting these responses to our 0-1 scale, responses (i) to (iv) receive values of 0.0, 0.333, 0.667, and 1.0, respectively. Similarly, for the question "how frequently were the key performance indicators reviewed by non-managers at this establishment," possible responses include: i) Never, ii) Yearly, iii) Quarterly, iv) Monthly, v) Weekly, vi) Daily, and vii) Hourly or more frequently. Converting

[3] A potential concern called recall bias arises in surveys when respondents are asked to recall information from an earlier time period. Recall bias in our setting is a concern because it could affect the quality of the responses for 2005. We address this concern in detail in Section 4.2. Overall, accounting for potential recall bias has very little effect on our results.

these responses to our 0-1 scale, responses (i) to (vii) receive values of 0.0, 0.167, 0.333, 0.5, 0.667, 0.833, and 1.0, respectively.

Second, we take the simple average of the 16 normalized responses to obtain each establishment's management score. Consistent with these management scores capturing meaningful and value relevant content instead of just statistical noise, Bloom et al. (2013a) document that firms and establishments with higher management scores have higher market valuations, profitability, productivity, value added, employment growth, research and development expenditures, and patents.

2.2. Changes in Ownership

Central to our analyses is the ability to accurately identify all forms of partial- and full-firm acquisitions. In our sample, only about 5% of acquisitions involve acquiring more than 80% of a firm's establishments. Thus, nearly all of the acquisitions in our sample are partial-acquisitions. We identify ownership changes of establishments by tracking the same establishment over time using the Census' Longitudinal Business Database (LBD). The LBD provides annual coverage for all business establishments in the U.S. with at least one paid employee and is available from 1976 to 2014. An establishment is a single physical location where business is conducted or where services or industrial operations are performed.

The LBD contains unique establishment- and firm-level identifiers as well as employment, payroll, industry, and detailed geographical location information for each establishment. Importantly, these unique establishment- and firm-level identifiers allow us to follow an establishment as its owners change over time. Thus, we are able to identify years when the ownership of each establishment changes from one firm to another. In addition, these establishment-level data allow us to track changes in the management practices and performance of targets and acquirers separately before and after each merger event, even after a public establishment is acquired by a private firm. This feature is very attractive, as it allows us to observe changes in the management practices of each establishment, which is

an improvement over studies that rely on aggregate firm-level accounting or stock market data to gauge the impact of mergers and acquisitions.

2.3. Sample Selection

Our final sample consists of approximately 14,000 establishment-level observations in 2010.[4] Our sample is smaller than the approximately 37,000 establishments that responded to the MOPS for the following reasons: i) we require establishments to have data in the ASM and LBD in both 2005 and 2010,[5] ii) we exclude administrative records to minimize measurement error (e.g., Maksimovic, Phillips, and Prabhala, 2011; Giroud and Mueller, 2015), iii) we require each establishment to have strictly positive values of sales and employment, and iv) we require that respondents answer at least 11 of the 16 questions on management practices (e.g., Bloom et al., 2013a).

Panels A and B of Table 1 tabulate summary statistics for the main establishment- and firm-level variables used in our regressions, respectively. On average, management practices improved between 2005 and 2010, with a change in normalized management scores of 0.10 from an initial value of about 0.59. Further, 73.2% of establishments improved their management practices, while the management practices of 11.6% of establishments worsened. Of the 14,000 establishments, 14.0% experience an ownership change between 2006 and 2010. On average, establishments downsized over this period and mostly in terms of employment, with the number of employees shrinking by 16.4% and capital stock shrinking by less than 1%. This latter result is not surprising and is consistent with Giroud and Mueller (2017), as our sample starts during an economic peak two years before the Great Recession in 2007-2008 and ends a year after the recession's trough in 2009.

Panel C compares the 2005 values of characteristics of establishments that are eventually acquired to those of establishments that are not acquired. On average,

[4] According to the Census' disclosure policy, observations exceeding 1,000 are rounded to the nearest thousands, and observations between 100 and 1,000 are rounded to the nearest hundreds.

[5] The ASM panel is a rotating panel of manufacturing establishments, in which establishments with over 250 employees are surveyed with a probability of one and smaller establishments are surveyed with a pre-assigned probability. A new rotating panel is introduced two years after each U.S. Census (i.e., years ending in '2' and '7').

establishments that are acquired have lower management scores, more physical assets, higher average education of managers, and greater union membership rates. However, establishments that are acquired are similar to those that are not acquired in terms of number of employees, the ratio of managers to non-managerial employees, and age. Ideally, establishments that are acquired and those that are not acquired would be similar along each dimension. However, because they are not, we control for each variable in our main regressions to account for these differences.

Table 2 shows the average management score in 2005 for the 21 3-digit NAICS manufacturing industries in our sample. Overall, it does not appear that there are substantial differences in the management practices of establishments in different industries. The industry with the best management practices is "Transportation Equipment Manufacturing," with an average management score of 0.624. The industry with the worse management practices is "Leather and Allied Product Manufacturing," with an average management score of 0.541. To put this difference into perspective, the standard deviation of management scores across all establishments is 0.148.

3. Empirical Results

3.1. Management Practices and the Likelihood of Becoming an Acquirer and a Target

Do management practices predict whether a firm becomes an acquirer and an establishment becomes a target? We first use firm-level data to estimate the likelihood that a firm becomes an acquirer in any of the years between 2006 and 2010 as a function of its level of management practices in 2005. In this firm-level analysis, we calculate one firm-level variable for each characteristic by taking the employment-based weighted average of each characteristic across all of the firm's establishments.

The dependent variable is either an indicator variable that is set to one if a firm acquires an establishment between 2006 and 2010 and zero otherwise, or the natural logarithm of one plus the number of acquisitions the firm makes between 2006 and 2010. We estimate OLS regressions and control for the 2005 values of the following firm-level variables:

the natural logarithm of the number of employees, the natural logarithm of total factor productivity, and the natural logarithm of the number of establishments owned by the firm.[6] In this test, we also include industry fixed effects based on 6-digit NAICS industries to control for different industry characteristics between firms that could be correlated with the level of a firm's management score and the likelihood that it becomes an acquirer. Thus, the coefficient estimate on our variable of interest (*Firm MP Score$_{05}$)* represents the effect of a firm's management practices relative to the average level of management practices of other firms in the same industry on the likelihood that the firm becomes an acquirer. We cluster standard errors by firm.

The results in columns 1 and 2 of Table 3 show a positive and statistically significant relation between a firm's management score and the likelihood that it becomes an acquirer as well as the number of acquisitions it makes. Thus, firms with better management practices are more likely to participate in the acquisition market. For example, the coefficient estimates in column 1 imply that a one standard deviation higher management score is associated with a 0.60 (=0.0448×0.1340) percentage point higher likelihood that a firm becomes an acquirer. Given that 10.3% of firms eventually become an acquirer in our sample, a firm with a one standard deviation higher management score is 5.8% more likely to become an acquirer.

Next, we use the establishment-level data to estimate the likelihood that an establishment is acquired in any of the years between 2006 and 2010 as a function of its level of management practices in 2005. We estimate a linear probability model and control for the 2005 values of the establishment's employment, age, and productivity. In these regressions, we also include firm fixed effects to control for differences in characteristics between firms that could be correlated with the level of an establishment's management practices and the likelihood that it is acquired. Thus, the coefficient estimate on our variable of interest (*Estab. MP Score$_{05}$)* represents the effect of an establishment's management practices relative to the

[6] All of the results in Table 3 are robust to including the full set of firm- and establishment-level control variables used in our main analyses in Table 5.

average level of management practices of other establishments belonging to the same firm on the likelihood that the establishment is acquired. We continue to cluster standard errors by firm.

The results in column 3 show a negative and statistically significant relation between an establishment's management score and the likelihood that it is acquired between 2006 and 2010. Hence, establishments with worse management practices are more likely to be acquired. Given that 14.0% of establishments in our sample are eventually acquired, the coefficient estimates in column 3 imply that an establishment with a one standard deviation lower management score is 3.4% more likely to become a target (=0.032×0.148/0.140).

Overall, the results in Table 3 are consistent with firms with better management practices acquiring establishments with worse management practices. Another approach to test this conclusion would be to estimate a specification that resembles gravity models used in economics to study trade flows between countries. Specifically, for this test, we match each establishment that is eventually acquired to all potential acquiring firms that have management scores. Thus, each observation represents a target establishment-acquirer firm pair. We then estimate the following pooled linear probability model:

$$Target_{i,j} = \beta_1 \Delta MPS_{i,j} + \Gamma' \Delta X_{i,j} + \eta_k + \varepsilon_{i,j}, \quad (1)$$

where $Target_{i,j}$ is an indicator variable that is set to one if establishment i is acquired by firm j. $\Delta MPS_{i,j}$ measures the difference between firm j's management score in 2005 and establishment i's management score in 2005. Similar to the prior analysis, firm j's management score is the employee-based weighted-average management score across all of its establishments. A positive coefficient on β_1 would indicate that firms with better management practices tend to acquire establishments with relatively worse management practices. $\Delta X_{i,j}$ measures the difference in control variables between firm j in 2005 and establishment i in 2005. For this test, we also control for differences in the following variables: number of employees, capital stock, average manager education, the ratio of

managers to non-managerial employees, the union membership rate, and age. We also include industry fixed effects (η_k) and cluster standard errors by the target establishment.

Table 4 presents the results of this analysis. Consistent with the results in Table 3, we find that firms with higher management scores tend to acquire establishments with lower management scores. In terms of economic significance, the coefficient estimate on *Difference MP Score*$_{05}$ implies that establishment-firm pairs in which the potential acquiring firm has a one standard deviation higher management score than the establishment increases the likelihood that the firm acquires the particular establishment by 15.7% relative to the unconditional mean.

3.2. Mergers and Changes in Management Practices

Do the management practices of an acquired establishment improve following a merger? To test this question, we estimate the following difference-in-differences OLS regression in changes:

$$\Delta MPS_{i,k} = \beta_1 Ownership\,Change_i + \Gamma' X_i + \eta_k + \varepsilon_{i,k}, \quad (2)$$

where $\Delta MPS_{i,k}$ is the change in the management score of establishment i in industry k from 2005 to 2010. Industry fixed effects (η_k) are defined at the 6-digit NAICS level. *Ownership Change*$_i$ is an indicator variable that is set to one if establishment i is acquired between 2006 and 2010 and zero otherwise. Thus, the coefficient estimate β_1 represents the difference-in-differences estimate comparing the change in the management scores of establishments that are acquired relative to the change in the management scores of establishments in the same industry that are not acquired over the same time period. X is a set of establishment-level characteristics that include changes in the following variables between 2005 and 2010: the natural logarithm of the number of employees, the natural logarithm of capital stock, the average education-level across managers, the ratio of the number of managers to non-managerial employees, and the union membership rate. To account for differences in initial conditions between establishments in 2005, we also control for the 2005 values of the

establishment's age, the natural logarithm of the establishment's number of employees, and the natural logarithm of the number of establishments owned by the parent firm.

Because we estimate the model in changes, we difference out any time-invariant differences between establishments, such as differences in industry and geographic location as well as differences in the average level of management practices. However, even though we also control for time-invariant industry characteristics with the changes analysis, one could still be concerned that changes in management scores and changes in ownership could be correlated with changes in industry characteristics, such as changing growth opportunities, cash flows, product market competition, etc. To account for this concern, we also include industry fixed effects. Because, we have a panel dataset with only two years of observations and hence one cross-section of establishments when the data is in changes, these fixed effects control for any industry characteristic that changed between 2005 and 2010. Finally, we cluster standard errors by firm to correct for heteroskedasticity and the correlation of standard errors within establishments owned by the same firm (Bertrand, Duflo, and Mullainathan, 2004).

Table 5 presents results examining the effect of mergers and acquisitions on changes in management practices. Column 1 presents the results from a regression without any control variables and shows a statistically significant increase in the management scores of establishments that are acquired. The regressions in columns 2-4 sequentially add control variables, with column 2 adding industry fixed effects, column 3 adding establishment-level control variables in changes, and column 4 adding the initial establishment conditions. Across all of these models, we continue to find statistically significant improvements in the management practices of acquired establishments. In terms of economic significance, column 4 shows that the normalized management scores of acquired establishments increase by 0.024. Given an average increase in management scores of 0.099 between 2005 and 2010, this additional increase of 0.024 for acquired establishments is economically significant, representing an additional improvement of 24.2% (=0.024/0.099). If we compare this 0.024 increase to the average initial management score of 0.591 with a standard deviation of 0.148,

this increase represents an improvement of 4.1% (=0.024/0.591) relative to the mean and 16.2% (=0.024/0.148) of a standard deviation.

In column 5, we explore how changes in management scores between 2005 and 2010 are affected by when the establishment is acquired during this time period. Various frictions and adjustment costs can cause management practices to not adjust immediately following an acquisition. For example, prior work suggests restructuring after a merger can take time, merging workforces can be a lengthy and complex task, and other tasks associated with the merger can draw managements' attention away, resulting in the realization of synergies and changes over a length of time (e.g., Berger et al., 1998; Focarelli and Panetta, 2003). A delayed response would also be consistent with Bloom and Van Reenen (2007) who posit that "…frictions will slow down the adoption of best management practices. Even if a new management practice were a purely technological innovation, we would expect it to take time to spread…" Therefore, we would expect that the management practices of acquired establishments will improve more if the acquiring firm has a longer time to make these changes. Thus, establishments acquired closer to 2005 will likely have larger improvements in management practices.

To test this prediction, we decompose the ownership change variable into two indicator variables. *Ownership Change (06-08)* is an indicator variable that is set to one if the establishment is acquired between 2006 and 2008 and zero otherwise. *Ownership Change (09-10)* is an indicator variable that is set to one if the establishment is acquired between 2009 and 2010 and zero otherwise. Consistent with our prediction, establishments that are acquired between 2006 and 2008 have improvements in management scores of 0.026, while establishments acquired in 2009 or 2010 have improvements of 0.015. However, these values are not statistically different at conventional levels (p-value = 0.19).

In our analyses, our primary measure of management practices is an establishment's normalized management score aggregated across the three categories of practices—monitoring, production target, and incentive practices. In Table 6, we examine the effect of mergers and acquisitions on each of these categories of management practices separately. We

find significant post-merger improvements in each of the three categories of management practices, and the coefficient estimates on *Ownership Change* are comparable in magnitude across the models. These results imply that improvements in management practices are across the board and that one specific category does not drive our findings.

Taken together, the results presented so far suggest that firms with better management practices tend to acquire establishments with relatively worse management practices. Then, following the acquisition, the acquirers improve the management practices of the target establishments to realize gains. We test whether these post-acquisition improvements in management practices translate into better performance in Section 3.6.

3.3. Convergence in Management Practices between Acquirers and Targets

While the results in Table 5 show that the management practices of an establishment improve after it is acquired, we also examine the extent to which the management practices of the target establishment converge to those of the acquiring firm. We test this question in two ways. First, we estimate the same model specification as in Eq. (2) but replace the industry fixed effects with firm fixed effects based on the ultimate parent firm of the establishment in 2010. By including firm fixed effects in the model, we now exploit variation in the changes in the management practices of acquired establishments relative to the other establishments owned by the firm. Thus, we compare changes in the management practices of acquired establishments to simultaneous changes in the management practices of the acquiring firm's incumbent establishments.

Panel A of Table 7 reports the results of this analysis. The regressions are the same as those in Table 5 except that we replace the industry fixed effects with firm fixed effects. Overall, the results show a statistically significant improvement in the management practices of acquired establishments. This result suggests that the management practices of acquired establishments not only improve on average, but also converge to the management practices of acquiring firms' incumbent establishments.

The second way we test this question is by examining whether the difference between the acquirer's management score and the target's management score shrinks after the acquisition. Thus, this test uses a panel dataset in which the unit of observation is a target-acquiring firm pair with observations in 2005 and 2010. Panel B of Table 7 presents the results of this analysis. In comparison to the first approach that allows us to use all establishments in the analysis, for this second approach, we have to focus on the subsample of establishments that are eventually acquired. The dependent variable is the difference between the acquiring firm's average management score and the acquired establishment's management score in year *t* (i.e., 2005 or 2010). Control variables include differences between each acquiring firm's characteristic and the same characteristic of the acquired establishment as well as establishment fixed effects.

The key variable of interest is *Year 2010*, which is an indicator variable that equals one in 2010 and zero otherwise. Thus, because the sample includes only establishments that are acquired between 2006 and 2010, the coefficient estimate on *Year 2010* represents the difference between an acquirer's management score and the acquired establishment's management score in 2010 relative to this difference in 2005. A negative coefficient estimate on *Year 2010* would indicate that this difference shrinks, implying that the quality of the acquired establishment's management practices converge to those of the acquirer. Consistent with the results using the first approach, the results in Panel B of Table 7 also suggest that the management practices of acquired establishments converge to those of the acquiring firms' incumbent establishments.

3.4. Threats to Identification

Our difference-in-differences research design controls for any time-invariant firm- and establishment-level characteristics as well as any time-varying industry characteristics because we include industry fixed effects in the two-period change regressions. As a result, the primary identification threat that would not allow us to attribute the improvements in the management practices of acquired establishments to the acquisition event is if these

improvements are a continuation of a pre-existing trend. If acquirers tend to purchase establishments that are already improving their management practices, then the improvement in management practices following the acquisition that we observe could simply be a continuation of this trend and not a result of the acquisition.

To investigate this alternative explanation, the ideal test would be to examine whether changes in an establishment's management score predicts the likelihood that the establishment is acquired between 2006 and 2010. However, we do not have data on management practices before 2005. Therefore, we conduct an out of sample test. Specifically, we examine whether, for establishments that were not acquired between 2006 and 2010, changes in the management scores of these establishments between 2005 and 2010 predict whether the establishments are acquired between 2011 and 2014.[7]

Table 8 presents the results of this analysis. The dependent variable is an indicator variable that is set to one if the establishment is acquired between 2011 and 2014. The variable of interest is $\Delta MP\ Score_{05\text{-}10}$, which is the change in an establishment's management score over the 2005 to 2010 period. Column 1 controls for establishment employment, productivity, and age as of 2010. Column 2 further controls for changes in establishment employment, capital stock, managerial education, the ratio of the number of managers to non-managers, and the unionization rate as well as the level of the establishment's management score in 2005. Overall, the results in columns 1 and 2 show a negative and statistically insignificant relation between changes in an establishment's management practices and the likelihood that the establishment is subsequently acquired. This result suggests that the changes we observe in an establishment's management practices following an acquisition is likely due to the acquisition event and not just a continuation of a pre-existing trend.

[7] We end this sample in 2014 to be consistent with our tests in subsequent sections examining the relation between changes in management practices and establishment-level productivity. The calculation of total factor productivity requires a standardized measure of capital stock. This standardization is done by Foster, Grim, and Haltiwanger (2016), and the data is available to researchers in the Research Data Center community within Census only up to 2014.

3.5. Cross-Sectional Analyses

What characteristics are associated with larger improvements in the management practices of acquired establishments? If our results are driven by acquirers improving the management practices of target establishments to realize synergies, then we should find that these improvements are greater when acquirers have a greater incentive and ability to make these changes. We test this prediction by exploiting cross-sectional variation in the effect of mergers and acquisitions on changes in an establishment's management practices and present the results of this analysis in Table 9.

First, we examine whether acquirers with better management practices are able to improve the management practices of the target establishments more. Acquirers endowed with better management practices have the knowledge, skills, and resources that they can use to realize greater improvements in the target's management practices. To test this prediction, we set the indicator variable *High Acq. MP Score*$_{05}$ to one if the acquirer's management score in 2005 is in the top quartile and zero otherwise. We note that we exclude the main effect for *High Acq. MP Score*$_{05}$ because this variable can only take a value of one for acquired establishments, and therefore the interaction term absorbs the main effect. The results in column 1 are consistent with the notion that acquirers with better management practices acquire establishments with worse management practices, and following the acquisition, improve the target's management practices as a source of value creation. Specifically, the coefficient estimates imply that, relative to acquirers with lower management scores, acquirers with the best management practices are able to improve target establishments' management scores by an additional 72.5% (=0.015/0.0207).

Second, we test whether the improvements in an acquired establishment's management practices are greater when the acquirer has a greater ability to influence organizational change after it acquires the establishment. The extent to which an organization has centralized or decentralized decision-making authority can have a large effect on organizational change. A centralized organization is one in which decision control is concentrated in higher levels, such as in organizations where establishment managers or

other upper-level managers have sole decision-making authority. While there are pros and cons associated with centralized and decentralized structures, a common theme is that centralized structures can be more efficient regarding business decisions in terms of how quick decisions can be made and changes implemented (e.g., Wally and Baum, 1994; Baum and Wally, 2003). Because there are fewer people involved in the decision-making process in a centralized structure, there are likely fewer conflicts, a smaller need for information sharing and consensus seeking, and less effort spent on time-consuming negotiations and other political behaviors, all of which promote faster decisions and changes.

To test this prediction, we utilize two other questions in the 2010 MOPS. The first question asks "how many layers of direct reports were there in this establishment from the factory floor to the plant manager?" When there are fewer such layers, managers have more direct information and a greater ability to directly delegate tasks and promote changes. To indicate instances of a flatter organizational structure, we set the indicator variable *Reporting Layers* to one if the establishment's response is in the bottom quartile and zero otherwise. The second question asks "who prioritized or allocated tasks to production workers," and responses include: i) Only managers, ii) Mostly managers, iii) Managers and production workers jointly, iv) Mostly production workers, v) Only production workers, and vi) Other. To indicate instances when decision-making authority is concentrated among managers, we set the indicator variable *Centralized* to one if the response is only managers and zero otherwise.[8] We measure both of these variables using the establishment's responses as of 2005.

The results in columns 2 and 3 of Table 9 are consistent with our prediction. We find that improvements in the management practices of acquired establishments are greater if managers have a greater ability to make decisions and influence organizational change. In terms of economic significance, the coefficient estimates in columns 2 and 3 imply that, relative to target establishments with more hierarchal and decentralized organizational

[8] We choose how to split our sample in these cross-sectional tests based on the distribution of the variables. We choose a method that ensures that each cell of the interaction is well populated in order to comply with the Census' disclosure policy.

structures, acquired establishments with flatter and more centralized organizational structures have additional improvements in post-merger management scores of 157.0% (=0.0223/0.0142) and 82.5% (=0.0165/0.0200), respectively.

Third, we examine whether there are larger improvements in the management practices of acquired establishments if they face greater product market competition. More intense product market competition serves as a disciplinary device and mitigates managerial slack (e.g., Giroud and Mueller, 2010), giving acquirers greater incentives to improve economic efficiency. In addition, if firms are acquiring establishments with worse management practices, acquirers could realize larger gains by improving the management practices of targets in more competitive industries. To test this prediction, we measure the degree of product market competition that an establishment faces using the sales-based weighted Herfindahl-Hirschman Index (HHI) of all establishments in its 3-digit NAICS industry that are in the Census' ASM. In census years (i.e., years ending in '2' and '7'), the ASM surveys all establishments and is also referred to as the Census of Manufacturers in these years. HHI measures based on the entire universe of manufacturing establishments provide a more accurate metric of product market competition and avoid the limitations associated with calculating industry concentration with only public firms (Ali, Klasa, and Yeung, 2009). We measure industry concentration as each industry's average HHI between 2002 and 2007. Lower HHI values indicate more intense competition. Hence, we set the indicator variable *Low Industry HHI* to one if the establishment's industry HHI is in the bottom quartile of the sample and zero otherwise.[9] We exclude the main effect for *Low Industry HHI* because it is absorbed by the industry fixed effects.

Consistent with greater product market competition incentivizing acquirers to improve management practices more, column 4 shows a larger improvement in the management practices of acquired establishments that are in more competitive industries. In terms of economic significance, the coefficient estimates imply that post-merger

[9] Unlike the other regressions in Table 9, column 4 includes 3-digit NAICS industry fixed effects instead of 6-digit NAICS industry fixed effects. We use 3-digit NAICS fixed effects to be consistent with how we define industry HHI. However, the results are robust to including 6-digit NAICS fixed effects.

improvements in the management practices of acquired establishments in more competitive industries are about twice as large as the improvements in the management practices of target establishments in less competitive industries.

Last, improvements in the management practices of acquired establishments are also likely greater when targets and acquirers have complementary operations, such as when both operate in the same industry. When the operations of the target and the acquirer are similar, the acquiring firm presumably already possesses the comparative advantage and expertise needed to operate in the target's industry (e.g., Maksimovic and Phillips, 2001; Frésard, Hege, and Phillips, 2017), making it easier for the acquirer to transfer its relative advantage in better management practices to the target. To test this prediction, we set the indicator variable $Same\ Industry_{05}$ to one if the acquired establishment and at least one of the acquiring firm's establishments are in the same 3-digit NAICS industry in 2005 and zero otherwise. Similar to the regression in column 1, we exclude the main effect for $Same\ Industry_{05}$ because this variable can only take a value of one for acquired establishments, and therefore the interaction term absorbs the main effect.

The results in column 5 are consistent with the prediction that an acquired establishment's management practices improve more when an acquirer and a target have complementary operations. The coefficient estimates imply that post-merger improvements in the management practices of targets in which the target and acquirer are in the same industry are 74.6% (=0.0129/0.0173) larger than the improvements in the management practices of acquired establishments that are in a different industry than the acquirer.

3.6. Changes in Establishment Performance

Are changes in an establishment's management practices following an acquisition associated with improvements in performance? To test this question, we apply an approach similar to Schoar (2002) by focusing on the subset of establishments that are eventually acquired between 2006 and 2010 and estimating the following difference-in-differences regression with a continuous treatment effect using a pooled OLS model:

$$y_{i,t} = \beta_1 Own.Chg_{i,t} + \beta_2 Own.Chg_{i,t} \times \Delta MPS_i + \Gamma' X_{i,t-1} + \nu_i + \tau_t + \varepsilon_{i,t}, \quad (3)$$

where $y_{i,t}$ is one of four measures of an establishment's performance: the natural logarithm of total factor productivity, return on capital (value added divided by sales, where value added is a measure of the value of outputs in excess of the value of inputs), the natural logarithm of value added per employee, and the natural logarithm of value added per production worker hour. For this test, we can use the panel data structure of the ASM. Specifically, the panel consists of establishment-year observations over the 2004 to 2014 period. $Own.Chg._{i,t}$ is an indicator variable that is set to one in the years after establishment i is acquired and zero otherwise. An appealing feature of this test for identification purposes is that ownership changes are staggered over the 2006 to 2010 period, which allows firms to be in both the treatment group and control group at different points in time. ΔMPS_i is the change in establishment i's management score between 2005 and 2010. Our coefficient of interest is β_2, which represents how much the performance of an establishment changes following an acquisition conditional on the degree to which its management practices change. Thus, positive values of β_2 indicate that larger improvements in post-acquisition management practices are associated with larger improvements in performance. X is a set of control variables that include the natural logarithm of capital stock per employee and the natural logarithm of the number of employees at the establishment. We include establishment fixed effects (ν_i) and year fixed effects (τ_t) to control for time-invariant differences between establishments and transitory nation-wide factors that could be correlated with performance and the likelihood that an establishment is acquired. We cluster standard errors by firm.

Overall, the results in Table 10 suggest that improvements in the management practices of acquired establishments translate into better performance. Across the four columns, we find statistically significant larger improvements in performance in acquired establishments that improve their management practices more. For example, the coefficient estimate on *Ownership Change* in column 1 implies that for establishments that do not

change their management practices, productivity does not change. In contrast, the coefficient estimate on the interaction term implies that for establishments that improve their management scores by one standard deviation, productivity increases by an additional 1.02% following the acquisition (=0.0783×0.1305). To put this magnitude into perspective, prior work finds increases in post-merger productivity between 0.4% and 2.4% (e.g., Maksimovic and Phillips, 2001; Schoar, 2002; Li, 2013), suggesting that the improvement in productivity attributable to improvements in management practices is economically significant. The results in columns 2-4 are similar. Following acquisitions in which establishments improve their management scores by one standard deviation, return on capital, value added per employee, and value added per worker hour increase by an additional 2.73 percentage points, 3.16%, and 2.56%, respectively.

4. Additional Analyses and Robustness Checks

4.1. Management Practices and the Quality of Acquisitions

Do firms with better management practices make higher quality acquisitions? Given that we find that firms with better management practices are more likely to become acquirers, a natural question is whether firms with better management practices make higher quality acquisitions. To test this question, we examine the relation between acquirer management scores and cumulative abnormal returns (CARs) around the date of the merger announcement. If firms with better management practices make better acquisitions, we should find that mergers announced by these firms are accompanied by higher CARs. Similar to the prior test, we calculate one acquirer-level management score by averaging the management scores across all of the acquirer's establishments.

We obtain merger announcement dates from the Securities Data Corporations (SDC) Mergers and Acquisitions database for U.S. acquirers. We obtain all acquisitions made between 2003 and 2012, and link the acquirer's management scores to these events around a 5-year window. Specifically, we match 2005 management scores to mergers announced between 2003 and 2007 and match 2010 management scores to mergers announced between

2008 and 2012. We obtain acquirer fundamentals and stock market data from the CRSP/Compustat merged database. In line with prior work (e.g., Masulis, Wang, and Xie, 2007), the following criteria must also be met to enter the final sample: (i) the acquisition is completed, (ii) the acquirer holds less than 50% of the shares of the target before the deal is announced and ends up owning 100% of the shares of the target after the deal is completed, (iii) the deal value disclosed in SDC is at least $1 million, (iv) the relative deal size (the ratio of the deal value to the acquirer's market value of equity on the 11th trading day before the announcement) is at least 1%, (v) the target is a public firm, private firm, or a subsidiary, and (vi) basic financial and stock return data are available for the acquirer.

We examine the relation between acquirers' management scores and merger announcement CARs measured over various windows. We calculate CARs from a market model using the CRSP equally-weighted index in which parameters are estimated over the (-210, -11) trading days before the announcement. We calculate CARs over the (-1,+1), (-1,+3), and (-5,+5) windows around the acquisition announcement. In these regressions, we include common acquirer and deal characteristics as well as year fixed effects.

Panel A of Table 11 presents the results of this analysis. Overall, we find a statistically insignificant relation between acquirer management practices and CARs, suggesting that acquirers with better management practices do not make higher quality acquisitions on average. However, we note that a potentially large limitation of this analysis is the dramatic decrease in sample size when we merge SDC to the MOPS. In these tests, we have about 200 acquisition events. Thus, it is possible that the test lacks enough power to identify a relation between management practices and acquisition quality. An alternative explanation for this no announcement return result is that, unlike aggregate firm-level variables that are readily observable from corporate filings, the establishment-level management practices are confidential, non-salient information that investors may not be able to access. Therefore, it is possible that in this setting, investors have incomplete information regarding a firm's management practices and are therefore unable to fully price in potential synergies arising

from spillovers of good management practices at the time of the merger announcement. Over the long run, however, investors could gradually incorporate these synergies into prices.

To test this alternative explanation, we examine the relation between acquirer long-run abnormal buy-and-hold returns and management practices, controlling for the same set of variables as in Panel A. We compute long-run abnormal buy-and-hold returns as the acquirer's buy-and-hold return from the day that the acquisition is announced to 12, 24, and 36 months after the announcement day less the buy-and-hold return of the CRSP value-weighted index over the same time period. Panel B presents the results of this analysis. Column 1 shows that acquirers with better management practices realize higher returns over the one year after the merger announcement, but columns 2 and 3 indicate that this better performance does not extend to the two and three-year horizons. Overall, we conclude that the collective evidence suggests that acquirers with better management practices do not make higher quality acquisitions on average, but we cannot rule out the possibility that the analysis is constrained by the small sample size.

4.2. Concerns about Recall Bias and Sampling Noise

To create a longitudinal dataset, each respondent was asked about her establishment's management practices in 2005. As a result, the longitudinal component of the 2010 MOPS relies on the recall ability of the respondents, and there could be concerns about recall bias and therefore about the quality of the responses for 2005. There is also a potential concern about sampling noise if, for example, larger establishments have more senior managers filling out the survey and these managers tend to be more optimistic or pessimistic in evaluating their management practices.

To examine the extent to which these concerns affect our results, we follow Bloom et al. (2013a, 2018) and show in Table 12 that our main result is robust to accounting for a full range of bias and noise controls. In particular, our results are robust to: i) controlling for the respondent's tenure to account for the concern that the respondent filling out the survey was not working at the establishment in 2005 (average tenure is 11.7 years), ii) controlling for

the difference between a respondent's recalled number of employees at her establishment in 2005 and 2010 and the actual number of employees reported in the ASM in these years (recall bias is likely greater for respondents that could not recall the correct number of employees), iii) controlling for whether the respondent completed the survey online or by mail, and iv) including fixed effects for the respondent's position at the establishment. The results are also robust to including fixed effects for the four Census regions.

5. Conclusion

Using an establishment-level survey dataset of management practices, we provide new evidence that spillovers of good management practices constitute a source of value creation in corporate mergers and acquisitions. We find that firms with better management practices tend to acquire establishments with worse management practices, and following the acquisition, improve the management practices of the target establishments. Further, these improvements are larger when acquirers are endowed with better management practices, managers have greater decision-control, establishments are in more competitive industries, and acquirers and targets have complementary operations. We also show that these improvements in management practices are accompanied by increases in performance, as measured by productivity, return on capital, and value added per worker.

Our paper is the first large-scale study to document that spillovers of good management practices are a source of value creation in mergers and acquisitions. Our results suggest that some establishments underinvest in good management practices and that these establishments could improve their performance by adopting better management practices. Thus, a remaining question is if higher quality management practices could improve performance, then why is it that all firms do not immediately adopt the best practices? Several reasons exist (e.g., Bloom and Van Reenen, 2007). First, upgrading management practices can be costly in terms of time and expenditures, and some firms may view these costs as exceeding any benefits. Second, upgrading to the best practices can increase the amount of effort required by managers, and entrenched managers may prefer the status quo.

Third, various frictions, such as learning effects and adjustment costs, could slow down the adoption of best management practices. One possible reason that we observe improvements in management practices following an acquisition is that the acquisition event changes the cost-benefit analysis and could therefore be an ideal time to upgrade to the best practices.

We believe that with the availability of this high-quality data on management practices, understanding how management practices interact with a firm's financial condition and various other decisions could be a fruitful area for future research.

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Appendix

Below, we reproduce the 16 questions used to construct each establishment's management score. We tabulate the management practice type, the questions associated with each type, and examples of responses to each question. For a complete list of the responses and additional question details, the complete 2010 Management and Organizational Practice Survey questionnaire is available at https://www.census.gov/programs-surveys/mops/technical-documentation/questionnaires.html.

Table A.1

Practice Type	Question	Examples of Responses
Monitoring	Q1: What best describes what happened at this establishment when a problem in the production process arose?	Range from (i) No action was taken to (v) We fixed it and took action to make sure it did not happen again, and had a continuous improvement process to anticipate problems like this in advance
Monitoring	Q2: How many key performance indicators were monitored at this establishment?	Range from (i) No key performance indicators to (iv) 10 or more key performance indicators
Monitoring	Q3: How frequently were the key performance indicators reviewed by managers at this establishment?	Range from (i) Never to (vii) Hourly or more frequently
Monitoring	Q4: How frequently were the key performance indicators reviewed by non-managers at this establishment?	Range from (i) Never to (vii) Hourly or more frequently
Monitoring	Q5: Where were the production display boards showing output and other key performance indicators located at this establishment?	Range from (i) We did not have any display boards to (iii) Display boards were located in multiple places
Targets	Q6: What best describes the time frame of production targets at this establishment?	Range from (i) No production targets to (iv) Combination of short-term and long-term production targets
Targets	Q7: How easy or difficult was it for this establishment to achieve its production targets?	Range from (i) Possible to achieve without much effort to (v) Only possible to achieve with extraordinary effort
Monitoring	Q8: Who was aware of the production targets at this establishment?	Range from (i) Only senior managers to (iv) All managers and most production workers
Incentives	Q9: What were non-managers' performance bonuses usually based on?	Range from (i) No performance bonuses to (v) Their own performance as measured by production targets
Incentives	Q10: When production targets were met, what percent of non-managers at this establishment received performance bonuses?	Range from (i) Production targets not met and (ii) 0% to (v) 100%

Incentives	Q11: What were managers' performance bonuses usually based on?	Range from (i) No performance bonuses to (v) Their own performance as measured by production targets
Incentives	Q12: When production targets were met, what percentage of managers at this establishment received performance bonuses?	Range from (i) Production targets not met and (ii) 0% to (v) 100%
Incentives	Q13: What was the primary way non-managers were promoted at this establishment?	Range from (i) Non-managers are normally not promoted to (iv) Promotions were based solely on performance and ability
Incentives	Q14: What was the primary way managers were promoted at this establishment?	Range from (i) Managers are normally not promoted to (iv) Promotions were based solely on performance and ability
Incentives	Q15: When was an under-performing non-manager reassigned or dismissed?	Range from (i) Rarely or never to (iii) Within 6 months of identifying non-manager under-performance
Incentives	Q16: When was an under-performing manager reassigned or dismissed?	Range from (i) Rarely or never to (iii) Within 6 months of identifying non-manager under-performance

Table 1
Summary Statistics

This table reports summary statistics for the main variables in the regression models. Panel A presents summary statistics for key establishment-level variables (approximately 14,000 observations), Panel B presents summary statistics for key firm-level variables (approximately 5,000 observations), and Panel C compares the 2005 values of characteristics of establishments that are eventually acquired to those of establishments that are not acquired. In Panel C, *, **, and *** in the column labeled *Difference* indicate significance at the 10%, 5%, and 1% levels, respectively, for a *t*-test of whether the two samples have equal means. Δ indicates variables are measured in changes from 2005 to 2010. *MP Score* is the establishment's normalized management score. *Pos.* Δ *MP Score (Neg.* Δ *MP Score)* is an indicator variable that is set to one if the change in an establishment's normalized management score between 2005 and 2010 is strictly positive (negative) and zero otherwise. *MP Monitoring Score, MP Target Score,* and *MP Incentive Score* are the normalized management scores based on the questions on monitoring, production target, and incentive practices, respectively. *Ownership Change* is an indicator variable that is set to one if an establishment is acquired between 2006 and 2010 and zero otherwise. *Estab. Employment* is the number of employees at the establishment. *Capital Stock* is the capitalized value of property, plant, and equipment of the establishment calculated using the perpetual inventory method. *Managerial Education* is the normalized responses to the question what percent of the establishment's managers have a bachelor's degree, with responses ranging from (i) 20% or less to (v) more than 80%. *Manager-Employee Ratio* is the number of managers at the establishment divided by the number of non-manager employees. *Unionization Rate* is the normalized responses to the question of what percent of the establishment's employees are members of a labor union, with responses ranging from (i) 0% to (vi) more than 80%. *Estab. Age* is the number of years since the establishment's initial appearance in LBD. *# Parent Estabs.* is the number of establishments owned by the parent firm. In Panel B, *Firm MP Score* is the average normalized management score across a firm's establishments. *Firm Employment* is the sum of the total number of employees at all of the establishments owned by the firm. *Firm Age* is the number of years that the firm's oldest establishment has been in existence in LBD, which follows Foster, Grim, and Haltiwanger (2016). *Ln(Firm Productivity)* is the average of the natural logarithm of total factor productivity across all of the firm's establishments, where productivity is estimated using a Cobb-Douglas production function.

Panel A: Establishment-Level Summary Statistics (14,000 Observations)

	Mean	Std. Dev.
Δ MP Score	0.0986	0.1305
Pos. Δ MP Score	0.7321	0.4429
Neg. Δ MP Score	0.1161	0.3203
MP Score_{05}	0.5914	0.1480
Δ MP Monitoring Score	0.1669	0.1831
MP Monitoring Score_{05}	0.5628	0.1933
Δ MP Target Score	0.0979	0.2346
MP Target Score_{05}	0.6682	0.2494
Δ MP Incentive Score	0.5902	0.1851
MP Incentive Score_{05}	0.0441	0.1397
Ownership Change	0.1395	0.3464
Δ Ln(Estab. Employment)	-0.1640	0.4950
Δ Ln(Capital Stock)	-0.0011	0.3370
Δ Managerial Education	0.2883	0.6870
Δ Manager-Employee Ratio	0.0032	0.4333
Δ Unionization Rate	-0.0179	0.4280
Estab. Age_{05}	26.410	9.8790
Ln(Estab. $\text{Employment})_{05}$	5.0600	1.1350
Ln(# $\text{Parent Estabs.})_{05}$	3.4750	1.7590

Table 1 – (*Continued*)

Panel B: Firm-Level Summary Statistics (5,000 Observations)

	Mean	Std. Dev.
Firm MP Score	0.6550	0.1340
Firm Employment	718.30	2291.0
Firm Age	28.040	9.2400
Ln(Firm Productivity)	1.7780	0.6225

Panel C: Comparison of Mean Characteristics (14,000 Observations)

	Establishments that are Acquired	Establishments that are not Acquired	
	Mean	Mean	Difference
MP Score$_{05}$	0.5813	0.5930	-0.0117***
Ln(Estab. Employment)$_{05}$	5.0886	5.0560	0.0326
Ln(Capital Stock)$_{05}$	9.7517	9.6920	0.0597**
Managerial Education$_{05}$	2.7624	2.6930	0.0694**
Manager-Employee Ratio$_{05}$	0.0927	0.0891	0.0036
Unionization Rate$_{05}$	2.3488	2.1000	0.2488***
Estab. Age$_{05}$	21.453	21.400	0.0532

Table 2
Average Management Practices by NAICS Industry

This table reports the average management score in 2005 for the 21 3-digit NAICS manufacturing industries in our sample. *Avg. MP Score*$_{05}$ is the mean normalized 2005 management score across all firms in a 3-digit NAICS industry.

3-Digit NAICS Industry	Avg. MP Score$_{05}$
336 - Transportation Equipment Manufacturing	0.6235
331 - Primary Metal Manufacturing	0.6062
334 - Computer and Electrical Manufacturing	0.6053
322 - Paper Manufacturing	0.6049
325 - Chemical Manufacturing	0.6047
312 - Beverage and Tobacco Product Manufacturing	0.6001
339 - Miscellaneous Manufacturing	0.5973
326 - Plastics and Rubber Products Manufacturing	0.5951
313 - Textile Mills	0.5936
321 - Wood Product Description	0.5923
335 - Electric Equipment, Appliance, and Component Manufacturing	0.5923
311 - Food Manufacturing	0.5918
324 - Petroleum and Cool Products Manufacturing	0.5844
315 - Apparel Manufacturing	0.5808
337 - Furniture and Related Product Manufacturing	0.5797
327 - Nonmetallic Mineral Product Manufacturing	0.5774
332 - Fabricated Metal Product Manufacturing	0.5746
333 - Machinery Manufacturing	0.5733
314 - Textile Product Mills	0.5713
323 - Printing and Related Support Activities	0.5639
316 - Leather and Allied Product Manufacturing	0.5409

Table 3
Management Practices and the Likelihood of Becoming an Acquirer or a Target

This table reports the results from OLS regressions examining the relation between management scores and the likelihood a firm becomes an acquirer or an establishment is acquired. The unit of observation in columns 1 and 2 is at the firm-level. The dependent variable *Became Acquirer* in column 1 is an indicator variable that is set to one if a firm acquires any establishment between 2006 and 2010. The dependent variable *Ln(1 + # of Acquisitions)* in column 2 is one plus the natural logarithm of the number of establishments a firm acquires between 2006 and 2010. *Firm MP Score$_{05}$* is a firm's employment-based weighted-average management score across all of its establishments in 2005. *Firm Employment$_{05}$* is the total number of employees at the firm in 2005. *Firm Productivity$_{05}$* is the firm's average total factor productivity across all of its establishments in 2005. *# Firm Estabs.$_{05}$* is the number of establishments owned by the firm in 2005. Industry fixed effects are based on 6-digit NAICS industries. The unit of observation in column 3 is at the establishment-level. The dependent variable *Became Target* in column 3 is an indicator variable that is set to one if an establishment is acquired between 2006 and 2010. *Estab. MP Score$_{05}$* is an establishment's management score in 2005. *Estab. Employment$_{05}$* is the number of employees at the establishment in 2005. *Estab. Age$_{05}$* is the age of the establishment in 2005. *Estab. Productivity$_{05}$* is the establishment's total factor productivity in 2005. Standard errors in parentheses are heteroscedasticity-robust and clustered by firm. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	Became Acquirer	Ln(1 + # of Acquisitions)	Became Target
	(1)	(2)	(3)
Firm MP Score$_{05}$	0.0448***	0.0362**	
	(0.0164)	(0.0182)	
Ln(Firm Employment)$_{05}$	0.0418***	0.0477***	
	(0.0033)	(0.0037)	
Ln(Firm Productivity)$_{05}$	-0.0016	-0.0015	
	(0.0074)	(0.0082)	
Ln(# Firm Estabs.)$_{05}$	0.0613***	0.0650***	
	(0.0042)	(0.0046)	
Estab. MP Score$_{05}$			-0.0320*
			(0.0181)
Ln(Estab. Employment)$_{05}$			-0.0047*
			(0.0027)
Estab. Age$_{05}$			-0.0001
			(0.0003)
Ln(Estab. Productivity)$_{05}$			0.0003
			(0.0045)
Industry FEs	Yes	Yes	No
Firm FEs	No	No	Yes
Observations	5,000	5,000	14,000
Adjusted R^2	0.1410	0.1409	0.6343

Table 4
Gravity Model of the Likelihood of Becoming a Target

This table reports the results from a linear probability model examining the likelihood that a specific firm will acquire a particular target. Coefficient estimates are multiplied by 1,000 to ease interpretation. Each establishment that is eventually acquired is matched to all potential acquiring firms that have management scores. Thus, each observation represents a target establishment-acquirer firm pair. The dependent variable *Became Target* is an indicator variable that is set to one if a firm acquires the establishment. *Difference* indicates that a particular characteristic is calculated by subtracting the establishment-level value of the characteristic from the firm-level value of the same characteristic for each target establishment-acquirer firm pair. Firm-level variables are calculated by averaging each characteristic across all of the firm's establishments. *MP Score* is an establishment's or a firm's management score in 2005. Industry fixed effects are based on 6-digit NAICS industries. All other variables are defined in Table 1. Standard errors in parentheses are heteroscedasticity-robust and clustered by target establishment. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	Became Target
	(1)
Difference MP Score$_{05}$	0.0839***
	(0.0111)
Difference Ln(Estab. Employment)$_{05}$	-0.0017
	(0.0024)
Difference Ln(Capital Stock)$_{05}$	0.0215***
	(0.0018)
Difference Managerial Education$_{05}$	0.0037***
	(0.0012)
Difference Manager-Employee Ratio$_{05}$	-0.0079
	(0.0057)
Difference Unionization Rate$_{05}$	0.0071***
	(0.0010)
Difference Age$_{05}$	0.0004**
	(0.0002)
Industry FEs	Yes
Observations	10,160,000
Adjusted R^2	0.0001

Table 5
Changes in Management Practices Following an Acquisition

This table reports the results from OLS regressions examining the effect of mergers and acquisitions on changes in management practices. The dependent variable *Δ MP Score* is the change in an establishment's management score from 2005 to 2010. *Ownership Change* is an indicator variable that is set to one if an establishment is acquired between 2006 and 2010 and zero otherwise. *Ownership Change (06-08)* is an indicator variable that is set to one if an establishment is acquired between 2006 and 2008 and zero otherwise. *Ownership Change (09-10)* is an indicator variable that is set to one if an establishment is acquired between 2009 and 2010 and zero otherwise. Δ indicates variables are measured in changes from 2005 to 2010. Industry fixed effects are based on 6-digit NAICS industries. All other variables are defined in Table 1. Standard errors in parentheses are heteroscedasticity-robust and clustered by firm. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable = Δ MP Score				
	(1)	(2)	(3)	(4)	(5)
Ownership Change	0.0253***	0.0265***	0.0248***	0.0244***	
	(0.0048)	(0.0045)	(0.0042)	(0.0043)	
Δ Ln(Estab. Employment)			0.0072**	0.0091***	0.0090***
			(0.0028)	(0.0029)	(0.0029)
Δ Ln(Capital Stock)			0.0126***	0.0125***	0.0127***
			(0.0036)	(0.0036)	(0.0036)
Δ Managerial Education			0.0554***	0.0552***	0.0552***
			(0.0022)	(0.0022)	(0.0022)
Δ Manager-Employee Ratio			-0.0041	-0.0040	-0.0040
			(0.0026)	(0.0026)	(0.0026)
Δ Unionization Rate			-0.0009	-0.0010	-0.0009
			(0.0041)	(0.0041)	(0.0041)
Estab. Age_{05}				-0.0001	-0.0001
				(0.0001)	(0.0001)
$Ln(Estab.\ Employment)_{05}$				0.0038***	0.0038***
				(0.0013)	(0.0013)
$Ln(\#\ Parent\ Estabs.)_{05}$				0.0017*	0.0017*
				(0.0010)	(0.0010)
Ownership Change (06-08)					0.0255***
					(0.0051)
Ownership Change (09-10)					0.0150**
					(0.0070)
Industry FEs	No	Yes	Yes	Yes	Yes
Observations	14,000	14,000	14,000	14,000	14,000
Adjusted R^2	0.0044	0.0453	0.1314	0.1324	0.1318

Table 6
Changes in Monitoring, Production Target, and Incentive Practices

This table reports the results from OLS regressions examining the effect of mergers and acquisitions on changes in management practices. The dependent variables in columns 1-3 are as follows: *Δ MP Monitoring Score* is the change in an establishment's management score from 2005 to 2010 based on the six questions on monitoring practices; *Δ MP Target Score* is the change in an establishment's management score from 2005 to 2010 based on the two questions on production target practices; *Δ MP Incentive Score* is the change in an establishment's management score from 2005 to 2010 based on the eight questions on incentive practices. Industry fixed effects are based on 6-digit NAICS industries. All other variables are defined in Table 1. Standard errors in parentheses are heteroscedasticity-robust and clustered by firm. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	Δ MP Monitoring Score	Δ MP Target Score	Δ MP Incentive Score
	(1)	(2)	(3)
Ownership Change	0.0227***	0.0267***	0.0258***
	(0.0059)	(0.0067)	(0.0048)
Δ Ln(Estab. Employment)	0.0126***	0.0145***	0.0050*
	(0.0041)	(0.0050)	(0.0030)
Δ Ln(Capital Stock)	0.0204***	0.0047	0.0088**
	(0.0051)	(0.0069)	(0.0039)
Δ Managerial Education	0.0715***	0.0606***	0.0408***
	(0.0028)	(0.0036)	(0.0025)
Δ Manager-Employee Ratio	-0.0065	-0.0013	-0.0027
	(0.0047)	(0.0033)	(0.0018)
Δ Unionization Rate	0.0015	0.0041	-0.0045
	(0.0052)	(0.0058)	(0.0040)
Estab. Age_{05}	-0.0002	-0.0002	-0.0000
	(0.0002)	(0.0002)	(0.0001)
$Ln(Estab.\ Employment)_{05}$	0.0065***	0.0044*	0.0018
	(0.0019)	(0.0024)	(0.0015)
$Ln(\#\ Parent\ Estabs.)_{05}$	0.0047***	0.0001	-0.0003
	(0.0016)	(0.0016)	(0.0009)
Industry FEs	Yes	Yes	Yes
Observations	14,000	14,000	14,000
Adjusted R^2	0.1245	0.0512	0.0680

Table 7
Convergence in Management Practices between Acquirers and Targets

This table reports the results from OLS regressions examining the effect of mergers and acquisitions on changes in management practices. In Panel A, the dependent variable *Δ MP Score* is the change in an establishment's management score from 2005 to 2010. *Ownership Change* is an indicator variable that is set to one if an establishment is acquired between 2006 and 2010 and zero otherwise. Δ indicates variables are measured in changes from 2005 to 2010. Panel B examines whether the difference between an acquiring firm's management score and the target establishment's management score shrinks after the acquisition. The sample is restricted to the subsample of establishments that are eventually acquired by firms with data on management practices. The sample is a panel dataset in which the unit of observation is a target-acquiring firm pair with observations in 2005 and 2010. *Difference* indicates that a particular characteristic is calculated by subtracting the target establishment's value of the characteristic from the acquirer's value of the same characteristic for each target-acquirer pair. The dependent variable *Difference MP Score* is the difference between the acquiring firm's management score and the acquired establishment's management score in year *t* (i.e., 2005 or 2010). *Year 2010* is an indicator variable that is set to one in 2010 and zero otherwise. Acquirer-level variables are calculated by averaging each characteristic across all of the firm's establishments. Industry fixed effects are based on 6-digit NAICS industries. All other variables are defined in Table 1. Standard errors in parentheses are heteroscedasticity-robust and clustered by firm (Panel A) and target establishment (Panel B). *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Test of Convergence Using Firm Fixed Effects

	Δ MP Score	
	(1)	(2)
Ownership Change	0.0304***	0.0235***
	(0.0085)	(0.0086)
Δ Ln(Estab. Employment)		0.0083*
		(0.0044)
Δ Ln(Capital Stock)		0.0108*
		(0.0055)
Δ Managerial Education		0.0482***
		(0.0031)
Δ Manager-Employee Ratio		-0.0041
		(0.0038)
Δ Unionization Rate		-0.0004
		(0.0054)
Estab. Age_{05}		-0.0002
		(0.0002)
$Ln(Estab.\ Employment)_{05}$		0.0014
		(0.0022)
$Ln(\#\ Parent\ Estabs.)_{05}$		-0.0047
		(0.0031)
Firm FEs	Yes	Yes
Observations	14,000	14,000
Adjusted R^2	0.1753	0.2410

Table 7 – *(Continued)*

Panel B: Test of Convergence Using Target-Acquirer Pair Matching

	Difference MP Score	
	(1)	(2)
Year 2010	-0.0225***	-0.0203***
	(0.0072)	(0.0070)
Difference Ln(Estab. Employment)		0.0026
		(0.0096)
Difference Ln(Capital Stock)		0.0198
		(0.0144)
Difference Managerial Education		0.0643***
		(0.0076)
Difference Manager-Employee Ratio		-0.0064
		(0.0279)
Difference Unionization Rate		0.0022
		(0.0107)
Establishment FEs	Yes	Yes
Observations	2,000	2,000
Adjusted R^2	0.3687	0.4439

Table 8
Changes in Management Practices and the Likelihood of Becoming a Target

This table reports the results from linear probability models examining the effect of changes in an establishment's management score on the likelihood it is acquired. The dependent variable *Became Target*$_{11\text{-}14}$ is an indicator variable that is set to one if an establishment is acquired between 2011 and 2014. *Δ MP Score*$_{05\text{-}10}$ is the change in an establishment's management score from 2005 to 2010. Δ indicates variables are measured in changes from 2005 to 2010. All other variables are defined in Table 1. Standard errors in parentheses are heteroscedasticity-robust and clustered by firm. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	Became Target$_{11\text{-}14}$	
	(1)	(2)
Δ MP Score$_{05\text{-}10}$	-0.0074	-0.0003
	(0.0344)	(0.0361)
Ln(Estab. Employment)$_{10}$	-0.0189**	-0.0180**
	(0.0080)	(0.0082)
Ln(Productivity)$_{10}$	0.0077	0.0074
	(0.0106)	(0.0105)
Estab. Age$_{10}$	0.0009*	0.0009*
	(0.0005)	(0.0005)
Δ Ln(Estab. Employment)$_{05\text{-}10}$		0.0046
		(0.0133)
Δ Ln(Capital Stock)$_{05\text{-}10}$		-0.0261*
		(0.0134)
Δ Managerial Education$_{05\text{-}10}$		0.0049
		(0.0065)
Δ Manager-Employee Ratio$_{05\text{-}10}$		-0.0001
		(0.0011)
Δ Unionization Rate$_{05\text{-}10}$		0.0062
		(0.0064)
MP Score$_{05}$		-0.0556
		(0.0513)
Firm FEs	Yes	Yes
Observations	8,000	8,000
Adjusted R^2	0.6083	0.6086

Table 9
Cross-Sectional Variation in Changes in Management Practices

This table reports the results from OLS regressions examining the effect of mergers and acquisitions on changes in management practices. The dependent variable *Δ MP Score* is the change in an establishment's management score from 2005 to 2010. *Ownership Change* is an indicator variable that is set to one if an establishment is acquired between 2006 and 2010 and zero otherwise. *High Acq. MP Score*$_{05}$ is an indicator variable that is set to one if the acquirer's management score is in the top quartile and zero otherwise (it is set to zero for establishments that are not acquired). *Reporting Layers*$_{05}$ is an indicator variable that is set to one if an establishment's response to how many layers of direct reports there are between the factory floor and the establishment's managers is in the bottom quartile in 2005 and zero otherwise. *Centralized*$_{05}$ is an indicator variable that is set to one if an establishment's response to who prioritizes and allocates tasks to production workers is only managers in 2005 and zero otherwise. *Low Industry HHI* is an indicator variable that is set to one if the establishment's average industry HHI between 2002 and 2007 is in the bottom quartile and zero otherwise. *Same Industry*$_{05}$ is an indicator variable that is set to one if the target and the acquirer are in the same 3-digit NAICS industry in 2005 and zero otherwise (it is set to zero for establishments that are not acquired). Control variables include *Δ Ln(Estab. Employment), Δ Ln(Capital Stock), Δ Managerial Education, Δ Manager-Employee Ratio, Δ Unionization Rate, Estab. Age*$_{05}$*, Ln(Estab. Employment)*$_{05}$, and *Ln(# Parent Estabs.)*$_{05}$. All the other variables are defined in Table 1. Industry fixed effects are based on 6-digit NAICS industries (columns 1-3, and 5) and 3-digit NAICS industries (column 4). Standard errors in parentheses are heteroscedasticity-robust and clustered by firm. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable = Δ MP Score				
	(1)	(2)	(3)	(4)	(5)
Ownership Change	0.0207***	0.0142***	0.0200***	0.0171***	0.0173***
	(0.0039)	(0.0054)	(0.0046)	(0.0038)	(0.0048)
Ownership Change × High Acq. MP Score$_{05}$	0.0150**				
	(0.0073)				
Ownership Change × Reporting Layers$_{05}$		0.0223***			
		(0.0074)			
Reporting Layers$_{05}$		-0.0163***			
		(0.0027)			
Ownership Change × Centralized$_{05}$			0.0165**		
			(0.0083)		
Centralized$_{05}$			0.0262***		
			(0.0029)		
Ownership Change × Low Industry HHI				0.0179**	
				(0.0077)	
Ownership Change × Same Industry$_{05}$					0.0129**
					(0.0064)
Control Variables	Yes	Yes	Yes	Yes	Yes
Industry FEs	Yes	Yes	Yes	Yes	Yes
Observations	14,000	14,000	14,000	14,000	14,000
Adjusted R^2	0.1327	0.1350	0.1412	0.1123	0.1327

Table 10
Changes in Performance Following an Acquisition

This table reports the results from OLS regressions examining the effect of mergers and acquisitions on changes in establishment performance over the years 2004 to 2014. The sample is restricted to establishments that are eventually acquired between 2006 and 2010. The dependent variables are as follows: *Ln(Total Factor Productivity)* is the natural logarithm of establishment total factor productivity; *Return on Capital* is establishment value added scaled by sales, where value added is a measure of the value of outputs in excess of the value of inputs; *Ln(Value Added per Employee)* is the natural logarithm of establishment value added scaled by the establishment's number of employees; *Ln(Value Added per Worker Hour)* is the natural logarithm of establishment value added scaled by the establishment's total number of production worker hours. Δ *MP Score*$_{05\text{-}10}$ is the change in an establishment's management score from 2005 to 2010. *Ownership Change* is an indicator variable that is set to one beginning the year an establishment is acquired and zero otherwise. All the other variables are defined in Table 1. Standard errors in parentheses are heteroscedasticity-robust and clustered by firm. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	Ln(Total Factor Productivity)$_t$	Return on Capital$_t$	Ln(Value Added per Employee)$_t$	Ln(Value Added per Worker Hour)$_t$
	(1)	(2)	(3)	(4)
Ownership Change	-0.0126	-0.0516**	-0.0780***	-0.0678***
	(0.0077)	(0.0246)	(0.0129)	(0.0136)
Ownership Change × Δ MP Score$_{05\text{-}10}$	0.0783*	0.2092*	0.2419***	0.1959***
	(0.0448)	(0.1261)	(0.0662)	(0.0698)
Ln(Capital Stock / Estab. Employment)$_{t-1}$	-0.0481***	-1.2318***	0.0574***	0.0533***
	(0.0053)	(0.0181)	(0.0095)	(0.0100)
Ln(Estab. Employment)$_{t-1}$	-0.0699***	-0.7361***	-0.1269***	-0.1072***
	(0.0058)	(0.0198)	(0.0104)	(0.0110)
Establishment FEs	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes
Observations	97,000	97,000	97,000	97,000
Adjusted R^2	0.4579	0.6796	0.6714	0.6913

Table 11
Management Practices and the Quality of Acquisitions

Panel A reports the results from OLS regressions examining the relation between acquirer management scores and cumulative abnormal returns (CARs) around the date of a merger announcement. The dependent variables are CARs calculated from a market model over the (-1,+1), (-1,+3), and (-5,+5) trading days around the acquisition announcement date. Panel B reports the results from OLS regressions examining the relation between acquirer management scores and long-run abnormal buy-and-hold returns (BHARs). BHARs are calculated as the acquirer's buy-and-hold return from the day of the acquisition announcement to 12, 24, and 36 months after the announcement less the buy-and-hold return of the CRSP value-weighted index over the same time period. *Acquirer MP Score* is an acquirer's average normalized management score across all of its establishments. Both Panels A and B include the following control variables: *Ln(Assets)* is the natural logarithm of book assets; *Tobin's Q* is market value of assets divided by book value of assets; *Free Cash Flow* is free cash flow scaled by book assets; *Market Leverage* is the book value of long- and short-term debt scaled by market value of assets; *Stock Price Run-up* is the firm's buy-and-hold return over the (-210,-11) trading days before the announcement less the buy-and-hold return of the CRSP value-weighted index over the same time period; *Relative Deal Size* is the deal value divided by the acquirer's market value of equity on the 11th trading day before the acquisition; *Diversifying Acquisition* is an indicator variable that is set to one if the acquirer and the target are in different 2-digit SIC industries and zero otherwise; *Stock Deal* is an indicator variable that is set to one if the deal is at least partially financed with stock and zero otherwise; *All Cash Deal* is an indicator variable that is set to one if the deal is financed entirely with cash; *Private Target* is an indicator variable that is set to one if the target is a private company; *Subsidiary Target* is an indicator variable that is set to one if the target is a subsidiary of another company. Standard errors in parentheses are heteroscedasticity-robust and clustered by firm. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Management Practices and Cumulative Abnormal Announcement Returns

	CAR(-1,+1)	CAR(-1,+3)	CAR(-5,+5)
	(1)	(2)	(3)
Acquirer MP Score	0.0075	-0.0188	-0.0262
	(0.0292)	(0.0371)	(0.0473)
Ln(Assets)	-0.0019	-0.0062***	-0.0040
	(0.0015)	(0.0019)	(0.0025)
Tobin's Q	-0.0087*	-0.0087	-0.0148*
	(0.0050)	(0.0063)	(0.0080)
Free Cash Flow	-0.0599	-0.0657	-0.0321
	(0.0363)	(0.0462)	(0.0587)
Market Leverage	-0.0277	-0.0128	0.0672*
	(0.0229)	(0.0291)	(0.0371)
Stock Price Run-p	-0.0038	-0.0118**	-0.0143**
	(0.0036)	(0.0046)	(0.0059)
Relative Deal Size	0.0050	0.0015	0.0013
	(0.0041)	(0.0052)	(0.0066)
Diversifying Acquisition	0.0026	0.0039	0.0131*
	(0.0043)	(0.0054)	(0.0069)
Stock Deal	0.0182**	0.0191*	0.0401***
	(0.0083)	(0.0106)	(0.0135)
All Cash Deal	-0.0019	-0.0075	-0.0066
	(0.0046)	(0.0059)	(0.0075)
Private Target	-0.0047	-0.0184**	-0.0239**
	(0.0063)	(0.0080)	(0.0102)
Subsidiary Target	0.0001	-0.0083	-0.0284***
	(0.0057)	(0.0072)	(0.0092)
Year FEs	Yes	Yes	Yes
Observations	200	200	200
Adjusted R^2	0.1114	0.1329	0.2056

Table 11 – (*Continued*)

Panel B: Management Practices and Abnormal Buy-and-Hold Returns

	BHAR – 12 Month (1)	BHAR – 24 Month (2)	BHAR – 36 Month (3)
Acquirer MP Score	0.4240*	0.3061	0.2306
	(0.2334)	(0.3553)	(0.4191)
Control Variables	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes
Observations	200	200	200
Adjusted R^2	0.1429	0.1636	0.2124

Table 12
Robustness: Changes in Management Practices Following an Acquisition

This table reports the results from OLS regressions examining the effect of mergers and acquisitions on changes in management practices. The dependent variable *Δ MP Score* is the change in an establishment's management score from 2005 to 2010. *Ownership Change* is an indicator variable that is set to one if an establishment is acquired between 2006 and 2010 and zero otherwise. *Respondents' Tenure* is the number of years the respondent of the survey has worked at the establishment. *Recall Bias 2010* and *Recall Bias 2005* are the difference between the respondent's recalled number of employees at the establishment and the actual number of employees reported in the ASM in 2010 and 2005, respectively. *Online Filing* is an indicator variable that is set to one if the respondent filled out the survey online and zero otherwise. Control variables include *Δ Ln(Estab. Employment), Δ Ln(Capital Stock), Δ Managerial Education, Δ Manager-Employee Ratio, Δ Unionization Rate, Estab. Age$_{05}$, Ln(Estab. Employment)$_{05}$,* and *Ln(# Parent Estabs.)$_{05}$.* All the other variables are defined in Table 1. Industry fixed effects are based on 6-digit NAICS industries. Standard errors in parentheses are heteroscedasticity-robust and clustered by firm. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable = Δ MP Score				
	(1)	(2)	(3)	(4)	(5)
Ownership Change	0.0232***	0.0236***	0.0228***	0.0244***	0.0210***
	(0.0043)	(0.0043)	(0.0043)	(0.0043)	(0.0043)
Respondent's Tenure	-0.0016***				-0.0016***
	(0.0001)				(0.0001)
Recall Bias 2010		0.0015			0.0048
		(0.0095)			(0.0095)
Recall Bias 2005		0.0138			0.0114
		(0.0085)			(0.0085)
Online Filing		0.0196***			0.0171***
		(0.0026)			(0.0026)
Control Variables	Yes	Yes	Yes	Yes	Yes
Industry FEs	Yes	Yes	Yes	Yes	Yes
Respondent Position FEs	No	No	Yes	No	Yes
Census Region FEs	No	No	No	Yes	Yes
Observations	14,000	14,000	14,000	14,000	14,000
Adjusted R^2	0.1490	0.1375	0.1373	0.1324	0.1578