Management practices and M&A success

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Abstract

We study whether management practices determine merger and acquisition (M&A) success. We model management as an unobserved (latent) variable in a standard microeconomic model of the firm and derive firm-year management estimates. We validate these estimates against benchmark survey data on management practices and by using Monte Carlo simulation. We show that our measure is among the most important determinants of value creation in M&A deals, substantially increasing the predictive power of models that explain cumulative abnormal returns. Thus, we offer a measure of management practices that identifies the best-performing M&As. Our results are robust to the inclusion of acquirer fixed effects and many control variables, and to several other sensitivity tests. We identify the Q-theory as the key mechanism driving our results.

JEL Classification: G14; G34; J24
Keywords: Mergers and acquisitions; Management practices; Acquirer returns

1. Introduction

Despite a voluminous literature on merger and acquisition (M&A) success, the main source of that success remains an issue of debate. Most of the variables that researchers propose as determinants of acquirers' performance add little explanatory power to models of value creation. A main reason is that M&A success relies on firm characteristics that, by their own nature, relate to the acquirer's qualitative management practices (Golubov et al., 2015). This is an element difficult to observe or measure. In this study, we first broadly measure management practices following its theoretical modelling as an input of production (Lucas, 1978; Bloom et al., 2017). Subsequently, we examine their effect of management practices on M&A value creation. We show that our measure is among the most important determinants (the *sine qua non*) of cumulated abnormal returns (CARs). We show that our key finding is consistent with the Q-theory of M&As, which predicts that acquirers with superior management create value in M&As by transferring this management to target firms.

The broad definition of "management practices" includes all business decisions and leadership elements. According to mainstream management theory (Katz, 1974), there are three components of management: human resource management (the ability to interact, communicate, motivate, and negotiate), technical abilities (human capital, knowledge, and proficiency), and conceptual skills (understanding concepts, develop ideas, and implement strategies). We use the term "management practices," as it is the most general term encompassing the three components.

To measure management practices, we use the implications of recent literature. Specifically, Bloom et al. (2017) build on early models of management by Lucas (1978) and Melitz (2003) and show that in addition to capital (physical capital, financial capital, R&D expenses, and land) and labor, firms use management practices to achieve their objectives. This assumption

perfectly aligns with the idea that there are three (instead of two) inputs of production and that management complements capital and labor (e.g., Samuelson and Nordhaus, 2009).

Following this set of theoretical models, we measure management practices as a latent (unobserved) input of firms' production function (Delis and Tsionas, 2018; Delis et al., 2020). The merit of this approach is threefold. First, it incorporates all firms (acquirers) to yield a firm-year index. Second, it is consistent with both the theoretical economic models of management and the broad definition in the management literature. Third, it includes a stochastic term to avoid attributing the estimates to other unobserved inputs or to operations efficiency (which in the stochastic frontier literature is part of the error term).

Subsequently, our key contribution is to examine the effect of management practices on the M&A deals' CARs. We posit that management is among the most important CAR determinants, given good management's ability to identify lucrative M&A deals and realize them in the most efficient way possible. Thus, our baseline specification follows from the extant literature on CAR modeling around M&As (e.g., Bao and Edmans, 2011; Golubov et al., 2015), with the exception that we add our management index.

The results of our study indicate that management practices are economically one of the most significant explanatory variables of CARs. Specifically, a one-standard-deviation increase in our measure increases the CAR of the average M&A deal by more than 50% in all our baseline specifications. Importantly, our results are still potent when including acquirer fixed effects. Therefore, our findings suggest that management practices are not merely a firm fixed effect. They are time-variant, implying that the dynamics of employment (entry and exit of employees), the learning process, and the evolution of human capital are important in defining M&A success.

Our baseline results survive a large battery of sensitivity tests. Specifically, we first use a long list of explanatory variables that the accounting and finance literatures identify as significant determinants of CARs. Second, we control for industry characteristics for the acquirer, the target, or both, and also conduct our analysis by industry. Third, we use alternative time windows to construct CARs, remove outliers by winsorizing our data, include withdrawn deals, and examine standard errors from different clustering. Fourth, we look at the role of managerial practices in synergistic gains (measured through synergy CARs). Fifth, we examine management's longer-term effects on M&A success using accounting measures of firm performance. In most cases, we identify positive correlations between management practices and firm performance post-acquisition, especially concerning return on equity and Tobin's q.

We contend that the key mechanism explaining the strong effect of management practices on M&A value creation is the Q-theory of M&As (Jovanovic and Rousseau, 2002). Specifically, we show that firms with better management practices are more likely to pursue M&As, more firm value is created with a larger management practices gap between the acquirer and the target, and firms with good management tend to acquire firms with bad management. Moreover, the cross-sectional dispersion in firm management practices positively affects the likelihood of M&As. These findings are economically significant, especially considering the ability of acquirers with good management practices to target firms with weaker ones and create value from advancing the target's management practices.

Our paper makes three interrelated contributions. First and foremost, we show that management, when broadly measured, is among the most important determinants of M&A success, essentially doubling the power of CAR models. Recent literature, especially Golubov et al. (2015), alludes to the idea (as in standard M&A event studies) that including acquirer fixed effects

markedly increases CAR models' explanatory power. With our management index we explain part of this fixed effect, but we also show the importance of within-firm variations in management practices, as the effect on M&A success comes over and above acquirer fixed effects.

Second, we introduce to the relevant literature (e.g., McDonald et al., 2008; Custódio et al., 2013; Custódio et al., 2018) a thorough management measure that originates in standard microeconomic theory. We eclectically view this measure as a complement of (not a substitute for) governance characteristics such as executive compensation and CEO and director experience (especially investment banking experience as in Huang et al., 2014), which are more precise in what they aim to measure.

Third, and related, we bring together three well-established but distinct strands of literature in production economics, corporate finance, and management science. The relevant production economics literature highlights important aspects of empirically estimating production functions (e.g., Greene, 2008; Ackerberg et al., 2006) and management (e.g., Bloom and Van Reenen, 2007; 2010). The relevant corporate finance literature examines the driving forces behind M&A success and explains a limited part of the variability in abnormal returns (e.g., Moeller et al., 2004; Masulis et al., 2007; Aktas et al. 2007; Harford et al., 2012; Born et al., 2013; Huang et al., 2014; Golubov et al., 2015). Finally, the relevant management science literature introduces the theoretical ideas of dynamic manager capabilities and overall effects on performance. The merger of these three strands of literature allows us to explain a significant part of M&A success and opens up new pathways for exploring important aspects of financial management, both within the borders of a country, but also in the international arena.

The rest of the paper proceeds as follows. Section 2 defines management practices, briefly discusses existing measures, and provides the model and estimation for our measure. Section 3

discusses the sample of M&As and CAR estimation. Section 4 provides the main results of the empirical analysis. Section 5 discusses potential economic mechanisms. Section 6 concludes and provides directions for future research.

2. Management practices: Definition, theory, and measurement

2.1. A broad definition of management practices

Management's role as a determinant of firm performance is a vivid avenue for academic research in economics, finance, and management sciences (e.g., Harris and Holmstrom, 1982; Hermalin and Weisbach, 1998; Huang et al., 2014; Silva, 2010). Here we define management practices in the broadest way possible, closely following micro-founded economic models. Specifically, Manne (1965), Lucas (1978), and Bloom et al. (2017) suggest that management should be viewed as a separate production factor that has important implications for firm productivity and performance.

Manne (1965) notes that the allocation of production factors to managers with different ability explains productivity differences especially in acquisitions. Lucas (1978) is the first to explicitly model the management technology as a function of a skill endowment and diminishing returns due to their span of control (the manager does not control everything in the firm). Bloom et al. (2017) consider management as a technology that enters the production function along with other forms of technology, labor, and capital, to contribute to total factor productivity. A distinguishing element of the latter model is that management is endogenously determined to improve firm performance by, for example, hiring management consultants, spending time developing or reinforcing improved organizational processes, investing in continuing education, learning-by-doing (experience), or paying for a better CEO. Thus, management practices are not fixed and evolve over time.

This general definition of management also relates to the definition in the management science literature (Katz, 1974), which encompasses three key dimensions. The first relates to human resource management, which encapsulates the abilities to lead, interact, communicate, motivate, and negotiate. Second are technical abilities, which relate to human capital, depth of knowledge, and proficiency among CEOs, top executives, and managers. Technical skill implies, inter alia, proficiency in all aspects of firm value creation, including M&A deals or choices regarding those aiding in completing these deals. Third, conceptual skills include understanding concepts, developing new ideas, and implementing strategies. This involves seeing the enterprise as a whole, improving efficiency (the optimal use of inputs), and understanding a firm's relationship with industry, political, social, and economic forces.

2.2. Previous measures of management and recent theory

A number of past studies measure managerial quality based on a firm's economic outcomes after a CEO departs. For example, Hayes and Schaefer (1999) argue that good managers are those whose former firms experience negative shocks after their departures. The way a CEO manages a company might have long-lasting effects, even after her departure, but one can argue that there are also managerial skill differentials and styles among individuals below the CEO level, such as among CFOs.

Another important aspect of studying managerial skill is its multidimensional profile. For example, Kaplan et al. (2012) identify two components of managerial practices—general ability and execution skills (e.g., communication and interpersonal skills)—and find that CEOs with higher general ability and execution skills are better at increasing firm value.

In M&As, where the allocation of resources is considerable and the risk of heavy losses is high (Harford and Li, 2007; Moeller et al., 2005), we expect management practices to play a crucial role in creating value for acquirers. However, the literature considers only how distinct elements of management affect M&A success.

Most closely related to our research objectives, for example, is the work on CEO experience in M&A deals. Jaffe et al. (2013) document that CEOs who were successful in their last deals tend to have higher-performing subsequent acquisitions. Custódio and Metzger (2013) and McDonald et al. (2008) find that CEOs who have experience in M&As for specific industries are more likely to increase corporate value. Custódio et al. (2018) document the means through which management skill spurs innovation. This expertise could provide management teams with better information and superior bargaining power, all of which have positive effects for acquiring firms. Hayward (2002) provides similar results from the whole firm (as opposed to CEO). However, CEO experience and other corporate governance characteristics do not capture all aspects of management practices.[1]

Additional literature attempts to proxy for management practices via firm size, performance indicators, and firm fixed effects. However, performance indicators tend to assume everything is the result of managerial skill; clearly this is not the case, because numerous firm characteristics and operational processes are outside the managers' reach. Similarly, fixed effects tend to assume all time-invariant firm characteristics are management-related, which again is not the case because, *inter alia*, management practices are not stable over time (Bloom et al., 2017).

[1] Advisors could also affect M&A outcomes. For example, Bao and Edmans (2011) find a positive relationship between M&A outcomes and using advisors from U.S. banks. However, this is not the case for cross-border acquisitions, as Rajamani et al. (2016) document. They find that employing internationally diversified advisors decreases M&A returns. One reason could be that international advisors have less to lose compared to domestic ones.

Recent techniques also include frontier-efficiency methods (e.g., data envelopment analysis, or DEA) and assume that skill is defined as efficiency if one subtracts variables outside the reach of executives and managers, such as firm size and age, market share, ownership status, etc. (e.g., Demerjian et al., 2012).[2]

Bloom and Van Reenen (2007; 2010) and later studies by the same team use survey data (the World Management Survey, or WMS) for a limited number of firms worldwide to quantify best management practices. These practices focus mostly on plant-level operations and the authors create firm-year management scores across a few thousand firms located in several countries.[3]

Delis and Tsionas (2018) estimate management practices using the theoretical implications of Lucas (1978) and Bloom et al. (2017). Specifically, their model assumes a cost function in which management is an unobserved (latent) input of production. Subsequently, they approximate latent management from its latent dynamics and observed firm characteristics, such as firm size and input prices (as proxies of investment in management).[4] Importantly, they validate their model using formal econometric techniques and show that what they measure is indeed management (and not general production efficiency or another unobserved component of production).

[2] There might be two problems with this approach. The first is that, especially when using DEA, regressing efficiency scores on covariates results in econometric bias and inconsistency (Simar and Wilson, 2007). The second problem is that the variables in the second stage never completely capture all firm elements that are beyond managerial control (much like performance indicators). This naturally creates omitted-variable bias in the residuals, which then include other elements of efficiency besides those that managers control.

[3] Bloom and Van Reenen (2007) use an evaluation tool designed by a consultancy firm (McKinsey) that is composed of 18 management practices (e.g., performance tracking, or managing human capital, *inter alia*). In addition, using an econometric model of productivity, they validate their managerial practices data following a two-step approach, where they estimate the production function in the first stage and calculate total factor productivity (TFP) in the second stage. The free version of WMS is available from the following link: http://worldmanagementsurvey.org/survey-data/download-data/

[4] The broad definition of management practices that we adopt here is not without shortcomings. Good managers produce optimal firm outcomes by managing both tangible and intangible inputs, and our broad definition naturally encompasses both. However, if the research objective is to measure the role of intangible inputs (such as corporate culture, brand reputation and recognition, strong relationships and business ties, etc.) on firm outcomes, then our broad definition and associated measure needs more detailed data. Specifically, any empirical model needs to further distinguish between these components of management practices, and this is impossible without detailed survey data on specific firms.

2.3. Estimating management practices

We estimate management using the theoretical economic models of management (Lucas, 1978; Bloom et al., 2017), the broad definition in the management literature (Katz, 1974; many others henceforth), and the empirical model of Delis and Tsionas (2018) and Delis et al. (2020). We assume that management practices constitute an unobserved (latent) input of production, along with observed labor and capital. The latter includes physical capital, financial capital, R&D expenses, and land. Our model is stochastic, which allows distinguishing between management as a latent input and operations efficiency. In the stochastic frontier models, operations efficiency is estimated in relative terms via separating the error term into the inefficiency component and the remainder disturbance (e.g., Greene, 2008).

From a theoretical viewpoint, all modern textbooks list human capital, entrepreneurship, or a similar concept as that third factor (e.g., Samuelson and Nordhaus, 2009), and this completes the list. Bloom et al. (2017) explicitly model management as that third factor of production (again, this completes the list) and show that their model consistently explains productivity and performance differences among firms. Corporate governance and management science largely revolve around the idea that coordinating inputs requires human resource management, technical skills, and conceptual skills in order to gather, allocate, and distribute economic resources or consumer products to individuals and other businesses. However, and in stark contrast, "best management practices" are missing from the list of inputs needed to estimate production relations.

From an empirical viewpoint, this assumption is in fact testable as in Delis and Tsionas (2018), who validate their approach based on a Monte Carlo method. Note that by its very nature our model is stochastic, allowing for an unobserved error term (besides the unobserved latent

variable). This is not just semantics: it shows that a stochastic model is preferable to deterministic approaches precisely because the stochastic component also reflects unobserved elements other than management.

Instead of using a cost function as in Delis and Tsionas (2018), we prefer to model a production function for three reasons related to simplicity and replicability. First, management directly enters the production function as a latent input. In contrast, cost and profit equations are functions of input prices (and not input quantities). This implies that an estimation of management (as a variable) needs involved transformations with the cost share equations (the cost share of inputs). Second, estimating the production function implies that we do not need data on management compensation (i.e., the price of management quality), which in principle is another latent variable in the model. This increases the estimation complexity, potentially introducing bias in our estimates. Third, the production model perfectly aligns with the theoretical model of Bloom et al. (2017).

The production function takes the form:

$$\ln q_{it} = \beta_0 + \beta_k \ln k_{it} + \beta_l \ln l_{it} + \beta_m \ln m_{it} + \frac{1}{2}\beta_{kk}(\ln k_{it})^2 + \frac{1}{2}\beta_{ll}(\ln l_{it})^2$$

$$+ \frac{1}{2}\beta_{mm}(\ln m_{it})^2 + \beta_{kl} \ln k_{it} \ln l_{it} + \beta_{km} \ln k_{it} \ln m_{it} + \beta_{lm} \ln l_{it} \ln m_{it} + u_{it}. \qquad (1)$$

In equation 1, q is the output of firm i in year t; k, l, and m are capital, labor, and management (inputs); and u is the stochastic disturbance. This is a translog specification including all the squared terms and interaction terms, which is preferred because of the appealing properties of flexibility and linearity in the parameters (e.g., Greene, 2008).

To estimate equation (1) we use firm-year data from Compustat for 1980–2016. We proxy firm output using the log of sales (Compustat item SALE), which reflects how well managers

maximize revenue. We estimate management twice, differentiating between models with four

inputs (*Capital*, *Cost of inventory*, *Employees*, and *Net operating leases*) and seven inputs (adding *Net R&D*, *Purchased goodwill*, and *Other intangible assets*).[5] To measure capital, we use the log of the sum of the dollar amount of net property, plant, and equipment (Compustat item PPENT); net operating leases (Demerjian et al., 2012); net R&D (Demerjian et al., 2012; Lev and Sougiannis, 1996); purchased goodwill (Compustat item GDWL); other intangible assets (the difference in the Compustat items INTAN-GDWL); and the cost of inventory (Compustat item INVT).[6,7] To measure labor, we use the log of the number of employees (Compustat item EMP). The choice of these inputs is justified based on their contributions to sales revenue and managers' role in determining their level.

For latent management practices, we assume:

$$m_{it} = \sum_{g=1}^{G} \gamma_g \, \varphi(\alpha_g + x'_{it}\beta_g) + v_{it,2}, \; i = 1, \ldots, n, \; t = 1, \ldots, T. \quad (2)$$

, where $\varphi(z) = \frac{1}{1+e^{-z}}$, $z \in \mathbb{R}$, is a sigmoid activation function and the process is an artificial neural network (ANN) with G nodes. For identification, we order the intercepts as: $\alpha_1 < \ldots < \alpha_G$. Using the marginal likelihood criterion, the best choice is $G = 5$.[8]

[5] The reason is that the additional three inputs might bias management estimation in favor of CAR performance. Specifically, R&D depreciation rates might differ across firms in ways that might be correlated with future M&A value creation. Further, the inclusion of purchased goodwill and other intangible assets as inputs reflecting intangible capital might yield measurement error in intangible capital, and this error might be correlated with a firm's past acquisition activity.

[6] To construct this variable, we follow Demerjian et al. (2012) and use firms' footnotes in Compustat to calculate the discounted present value of future (five years) operating lease payments. The Compustat items for the five lease obligations are MRC1-MRC5, and we use a discount rate of 10% in accordance with previous studies.

[7] We follow the literature to calculate net R&D (e.g., Lev and Sougiannis, 1996; Demerjian et al., 2012). Specifically, based on the Compustat item XRD, which measures research and development expense, net R&D is: $RD_{cap} = \sum_{t=-4}^{0}(1 + 0.2t) \times RD_{exp}$.

[8] We also experiment with the use of a latent autoregressive component m_{it-1} in equation (2). For the CAR models adding m_{it-1} might not be an optimal framework, especially if this generates a mechanical correlation with M&A value creation. The premise is that, when using a relatively long time series, any M&A success (failure) would be reflected in forward good (bad) management practices. Consistent with this premise, we find that adding an autoregressive management component, increases the effect of management on M&A value creation. We must also note, however, that management practices are persistent and failing to account for such dynamics might bias our estimates. Thus, even though we work with our more conservative estimates, the inclusion of lagged management

might be a useful modelling choice, especially when looking at long-term post-acquisition performance indicators.

Economics and management theory guide the assumption on the determinants of *m* in equation 2. We assume that latent management practices in equation (2) are a function of lagged values of inputs, and current and lagged values of the price of labor *p* in logs (estimated from the ratio of total operating expenses to total number of employees).[9] In other words, we assume that the use of inputs in optimal quantities and their allocation determines the quality of management. Also, including the price of labor follows the corporate governance literature identifying compensation as a positive correlate of ability and human capital (e.g., Custódio et al., 2013); it also serves as an external instrument. Identification through input prices has a long tradition in the production economics literature (e.g., Nevo, 2001). In our case, where we assume the labor market is fairly competitive, the price of labor can be a valid instrument (Ackerberg et al., 2006).[10]

The system of equations 1 and 2 essentially constitutes a structural equation model (SEM) with a latent variable. We estimate this model using Bayesian techniques. Contemporary econometrics literature prefers Bayesian methods to standard techniques in the presence of latent variables (e.g., Kaplan and Depaoli, 2012; van de Schoot et al., 2014).[11] The key theoretical reason

[9] To construct the price of labor, we optimally need information on staff expenses in order to determine the ratio of staff expenses to total employees. Unfortunately, the data for staff expenses are missing for many firms in our sample. We remedy this problem in two ways. The first is to regress the existing staff-expense observations on total operating expenses and predict the missing staff expenses from the fitted values of that regression. For precision, we use a model with firm and year fixed effects. The adjusted R-squared is as high as 91%. A simple alternative is to construct the price of labor from the ratio of total operating expenses to total number of employees. Irrespective of the method, the production function yields highly correlated estimates of management practices (about 96% and with perfect rank correlation). In addition, the change in the effect of management practices on M&A value creation is minimal. To use the actual data and avoid criticism related to estimation bias, we use the ratio of total operating expenses to total number of employees.

[10] For the price of labor to be a valid instrument in equation (2), the identification condition is that it is uncorrelated with the production function residuals *u*. For this to hold, we must exclude a number of possibilities. First and foremost, the price of labor needs to have a strong effect on *m*. Theoretically, this must hold, as higher labor prices should reflect better management practices in a competitive labor market. Empirically, we find that this is indeed the case. Second, these prices should not directly affect (enter) the production of firm output. By construction, the production function has this property. Third, and related to the first, the labor market needs to be perfectly competitive so that each firm separately has no effect on market prices. The size and depth of the markets considered should mean that, at least in our data set, this property is satisfied. Fourth, input prices should vary sufficiently to allow for good econometric identification. Our labor prices vary by firm-year so that this condition is also met.

[11] For more general discussions of advantages and disadvantages of Bayesian methods, see Kruschke (2011).

for this is that the Bayesian analysis incorporates uncertainty in measurements because of the infusion of prior knowledge (if priors are informative) or lack thereof (if priors are uninformative) into the prior distributions (e.g., van de Schoot et al., 2014). Given that we need one or more variables to approximate management practices, the informative priors help us towards a better approximation compared to a standard approach to SEM estimation. From a purely practical perspective, estimating our model with standard maximum likelihood encounters convergence problems in some of our applications.

We use a prior $\alpha_g, \beta_g, \gamma_g \sim iidN(0,1), \frac{\overline{q}}{\sigma_2^2} \sim \chi^2_{\overline{n}}$ where $\overline{n} = 50$, $\overline{q} = 10$ which means that in a fictitious sample of size 50, σ_2^2 is, on average, 1/5. Our results on the effect of management practices on M&A value creation are not particularly sensitive to these choices. This prior ensures that our management estimates take similar values and have similar distributions with the corresponding estimates in the WMS database.

As is standard practice in the Bayesian literature, we resort to Markov chain Monte Carlo (MCMC) methods for inference (StataCorp, 2017). We implement MCMC using a Gibbs sampling for increased efficiency (Gelfand et al., 1990; Andrieu et al., 2010). We run the Gibbs sampler for 150,000 iterations and burn the first 50,000 to mitigate possible start-up effects. We successfully test convergence using Geweke's (1992) diagnostic; autocorrelation in MCMC never exceeds approximately 0.40 for any parameter. We discuss the technical details in the Appendix.

Using the model described by equations (1) and (2), we obtain a mean value of management practices equal to 0.539 and standard deviation equal to 0.126. Also, our measure takes values between 0 and 0.968. In table A1 of the online appendix, we report average estimates of management practices by industry and year. We observe a similar level of skill across industries,

which is intuitive as there is *a priori* no reason that more skillful individuals are employed in specific industries.

Importantly, we conduct many robustness tests on our management estimates when examining the effect of management on CARs in the next section. Further, in addition to the validation procedures in Delis and Tsionas (2018) and Delis et al. (2020), we validate our measure within our M&A sample.

3. M&A sample, CAR estimation, and summary statistics

Having estimated management practices, we subsequently examine whether and how they affect M&A value creation. Our key hypothesis is that management practices are one of the most important determinants of M&A value creation, due to the superior ability of firms with good management to identify value-enhancing M&A deals and execute them effectively. Thus, we expect that the inclusion of management practices in CAR models substantially increases their power (in terms of the adjusted R-squared).

We draw M&A data from the Thomson One Banker database for January 1, 1980, to December 31, 2016. The data-selection process follows the five restrictions imposed by Fuller et al. (2002), Masulis et al. (2007), and Golubov et al. (2015). Specifically, (i) the bidder is a U.S. publicly listed company, and the target is either a public, private, or subsidiary U.S. company; (ii) the acquisition is complete; (iii) the acquirer owns less than 50% of the target prior to the acquisition and 100% after; (iv) the transaction is at least 1% of the bidder's market capitalization 11 days prior to the announcement and it exceeds $1 million in value; and (v) multiple deals within the same day for the same acquirer are excluded.

We end up with 15,261 events. From this sample, we drop observations lacking information on the variables needed to estimate management practices and on some of our important controls used in the baseline specifications. Our final sample has 7,721 events.[12] We provide variable definitions and data sources in table 1 and summary statistics in table 2. Following Fuller et al. (2002) and Golubov et al. (2015), we carry out our analysis using three samples. The first includes all deals (full sample), the second includes acquirers that completed at least five deals within a three-year time window (frequent acquirers), and the third includes acquirers who completed at least two deals within a three-year window (occasional acquirers). This practice allows us to study persistence in acquirers' returns and use acquirer fixed effects. The sample of frequent acquirers includes 1,294 deals, and the sample of occasional acquirers includes 5,136 deals. Nonetheless, because the number of observations drops considerably when we study synergistic gains, we use the whole sample without distinguishing between frequent and occasional acquirers.

As in previous studies, we find anemic gains for acquirers. Based on the summary statistics of table 2, the mean CAR is about 1.4% and the median is 0.8%. This is not the case for target firms, where the mean (median) CARs are 26.5% (23%). For synergies, we have a mean of 2.4% and a median of 1.5%.[13]

Using firm fixed effects is very important because it disentangles the time-invariant firm characteristics from our time-variant (firm-year) measure of management practices. In our view, management practices, as defined in our context, are dynamic through a learning-by-doing process and the addition of new managers and executives. In that sense, and unlike previous studies, we

[12] When we study synergistic gains, the number of observations drops to around 1,011. We expect this because we deal with unlisted targets that therefore do not have information in CRSP.
[13] Past studies also find positive combined returns (e.g., Andrade et al., 2001; Moeller et al., 2004; Bhagat et al., 2005; Wang and Xie, 2008).

examine the role of time-varying, firm-specific management practices in M&A success.[14] Although our focus is on acquirers, in a subsequent section we study how acquirer management practices affect combined firm CARs.

[Please insert tables 1&2 about here]

Table A2 in the online appendix reports average acquirer CAR (-2, +2) values for 1980–2016 for 12 different industries. The highest values are in the telephone/TV and consumer (durables and nondurables) industries. However, some of these industries perform either superbly or very poorly around the events, indicating high volatility.

Table 3 reports distributional information on the management practices index and three different acquirer CARs (three-, five-, and 11-day windows around an M&A). The statistics show that the management quality of the lowest 1% is slightly less than 0.245, but for the top 1% this value surpasses 0.8. This indicates that management practices among top performers are about 3.42 (0.838/0.245) times better than those among low performers. The range between the 75th and 25th quartile is about 0.17 points, which accounts for about one-third of the mean value of the management practices index.

As expected, there are considerable differences in abnormal returns. For the bottom 1% of performers, the returns are negative and span from -29% for CAR (-5, +5) to -18.7% for CAR (-1, +1). In contrast, the top 1% performers have returns spanning from 26.2% to 35.6%. Hence, the average difference in cumulative returns between the top and bottom performers is about 54.7%. With an average of 8.2%, the interquartile difference ranges from 6.3% (for the three-day window)

[14] This comes at the cost of being unable to conduct any meaningful analysis of target firms and their management practices. We limit our sample to firms with repeated acquisitions and, thus, a reduced sample of M&As. The sample of targets then becomes quite small because target firm information in Compustat and CRSP is quite limited (e.g., if the firm is not public, there is no information in CRSP). Subsequently, when the number of targets decreases, the same happens for synergy calculations, as target information from CRSP is needed to measure synergy CARs.

to 10.5% (for the 11-day window). This indicates that for a market capitalization of $3,588 million (the mean in our sample), moving from an acquirer in the first quartile to an acquirer in the third quartile results in gains of about $294.2 million. This outcome is in line with Golubov et al. (2015), who argue that acquirers are either very good or very bad at mergers, and because of this there is a considerable gap between the top and bottom bidders.

Solitary events of firms that appear once in our sample can drive this number and thus drive our results in a specific direction. We therefore show statistics for frequent and occasional acquirers. Occasional acquirers tend to have, on average, slightly lower CAR interquartile ranges compared to frequent acquirers (8% versus 8.1%). Hence, the mean interquartile value for frequent acquirers translates into almost $292 million. It is worth noticing that the median value of CARs is very low (0.67%). That is, the average acquirer has an anemic positive outcome from M&A activities, revealing that acquirers are either extremely good or bad performers (similar findings occur in Golubov et al., 2015, and Gompers et al., 2010).

[Please insert table 3 about here]

4. Empirical results

4.1. Empirical model and results without management

We now turn to explaining the observed valuation effects with our management practices index. The regression for the benchmark model is:

$$CAR_{it} = \beta_0 + \beta_1 T_{it} + \beta_{2it} + \mu_i + \nu_t + \epsilon_{it} \quad (3)$$

where T and are vectors of firm and deal characteristics, respectively, and μ and ν are firm and year fixed effects. Definitions for all variables in this model are in table 1, and summary statistics are in table 2.

For comparative purposes with benchmark empirical studies, we first estimate a CAR (-2, +2) model without our management index (e.g., Masulis et al., 2007; Bao and Edmans, 2011; Golubov et al., 2012; Harford et al., 2012). In table 4 we report our findings for the full sample, as well as for frequent and occasional acquirers. These findings are very similar to those in the benchmark studies. Specifically, acquirer size, buying public targets using stock, and Tobin's *q* enter with a negative and highly significant coefficient.[15] In contrast, relative size, buying private targets using stock, and buying subsidiary targets with cash have a positive and significant effect on CARs.[16] Variables such as *Relatedness* and *Free cash flow* have marginally significant effects in the full sample.

What is crucial to notice here is the very low explanatory power of the models, with the R-squared and adjusted R-squared being 4.9% and 4.7%, respectively, in the full sample. This level of explanatory power is highlighted in Moeller et al. (2004), Masulis et al. (2007), Harford et al. (2012), and Golubov et al. (2015), among others.

[Please insert table 4 about here]

4.2. Baseline results with management

We report our baseline results of the effect of management practices on CAR (-2, +2) in table 5. In the first three columns we report results without acquirer and year fixed effects, which we add in the last three columns. *Management practices* enters with the expected positive sign and is

[15] The latter result highlights that Tobin's *q*, previously a measure of management quality (e.g., Lang et al. 1989), does not properly reflect this quality.

[16] Previous research documents that the payment method for M&As matters. Specifically, Travlos (1987) and Franks et al. (1988) find that cumulative abnormal returns are higher when acquirers pay with cash instead of equity. Using stock to pay for acquisitions may signal firm internal problems that may decrease the acquirer's value. That is, firms could be overvalued and thus sell their stock (see also Myers and Majluf, 1984; Baker and Wurgler, 2002; Golubov et al., 2016). As far as private/subsidiary targets are concerned, Fuller et al. (2002) find higher CARs for firms that acquire targets with stock.

generally statistically significant at the 1% level. The coefficient estimate for the full sample and without (with) fixed effects equals 8.8% (5.9%). The findings in column (1) indicate that a one-standard-deviation increase in *Management practices* (equal to 0.126), increases CAR by 0.011 (obtained from 0.126*0.088). Given that the mean CAR in our sample is 0.014, this increase is about 79%. Similarly, the coefficient on *Management practices* in column (4) shows that a one-standard-deviation increase in *Management practices* increases CAR by 0.0075. We document equivalently large increases for occasional acquirers; for frequent acquirers, the effect of management is less potent, but this is likely due to the significantly smaller sample.[17, 18]

[Please insert table 5 about here]

To make the importance of our findings more explicit, in online appendix table A4 we report the standardized (beta) coefficients for table 5. These statistics allow for a direct comparison of the relative effects of the explanatory variables of CARs, showing that *Management practices* is one of the most important variables in explaining a firm's CAR following M&A in the models without fixed effects. Thus, it comes as no surprise that the adjusted R-squared of the models in table 5 (0.062) substantially increases compared to the one in table 4 (0.047). These results highlight the importance of including our management practices index in the CAR model.[19]

[17] Prior research by Delis and Tsionas (2018) has validated the management practices score via a Monte Carlo analysis. They show that this index captures management quality and not something else. Here, we perform another validation exercise. We compare the effect of our management practices measure on CARs against the equivalent effect of fitted values of management practices computed from the World Management Survey (WMS). This exercise also yields a positive relation between the fitted values of management practices and CARs. The results are in the online appendix in the detailed discussion of the Bayesian method and in the online appendix table A3.

[18] To be sure that our results are not driven by extreme values, we rerun our models by winsorizing the continues variables. The results are in the online appendix A5 and remain qualitatively and quantitatively unchanged. Further, instead of splitting the sample into frequent and infrequent acquirers, in the online table A6 we include the number of deals in the past five years and the ratio of dollar value of past deals to acquirer market capitalization. Our inferences are very similar to those of the benchmark model.

[19] In the main specifications, *Relatedness* is based on the two-digit SIC codes. Two-digit codes could be quite crude in determining whether two firms are related, so we replicate this exercise using four-digit SIC codes to construct an alternative *Relatedness* indicator. We find no significant change in our main results (see online table A7 in the appendix).

One objection that may arise in our analysis is whether our score is able to capture management practices that are specific to M&As only. For example, past papers have shown that firms having directors with investment banking experience are able to identify good M&A deals and have positive announcement returns (see e.g., Huang et al., 2014). We argue that this is not necessary. The management practices index provided here should be viewed as a general and robustly measured firm-year managerial efficiency score resulting from standard economic theory and estimated through Bayesian techniques. As such, this score can capture general management practices of top executives necessary to build the firm environment required to succeed in the M&A market; this includes both finding the right deals and increasing firm value. As such, our work acts as a complement of these prior studies.

The role of fixed effects also deserves special mention. The use of fixed effects increases the adjusted R-squared by about 3.8 points when using the full sample. Comparing the same specifications, the coefficient on *Management practices* decreases from 0.0876 in models without fixed effects to 0.0592 in models with fixed effects. This decrease implies a decline from a 0.011 point increase in CAR to a 0.0075 point increase in CAR when increasing *Management practices* by one standard deviation.[20] The 0.0035 difference is statistically significant at the 1% level (obtained from a Hausman test) and indicates that part of *Management practices* is indeed a firm fixed effect. However, three-quarters of the effect of management practices remains, even in models with fixed effects. This suggests that the role of management practices differs substantially from one acquisition to another. Thus, management practices are dynamic in the sense that good management implies adaptation to the unique environment surrounding each acquisition.

[20] Naturally, the models with fixed effects have fewer observations. If we reestimate the models without fixed effects for the sample of the models with fixed effects, there is no change in our inference. Notably, the year fixed effects do not play any role in the results (they are jointly insignificant) and any change in the results between the first three and the latter three columns of table 5 come from the firm fixed effects.

4.3. Sensitivity to additional control variables and CAR windows

In this section, we explore the robustness of the effect of management practices once we control for a series of variables shown to affect CARs in the literature. Essentially, our tests show that our management index affects CARs over and above the effect of these variables.

First, we look into the role of authority within companies, as corporate governance could affect shareholder behavior. Gompers et al. (2003) argue for the importance of balance of power and use a governance index *(G-index)* based on anti-takeover provisions to test their hypothesis. Lower *G-index* indicates relatively democratic firms, and higher values characterize a more despotic corporate environment. They find that firms with a higher *G-index* have lower market values. Similarly, Bebchuk et al. (2009) construct an entrenchment index (*E-index*), which *inter alia* accounts for mergers and charter amendments; they find that increases in this index are associated with decreases in market value and abnormal returns.[21]

Second, management practices might erroneously capture the effect of time-varying corporate governance characteristics, such as compensation and experience of the top-management team.[22] We include the relevant variables to control for the aforesaid.

Third, we control for several firm-performance variables, such as return on assets (*ROA*), return on equity (*ROE*), *Annual stock return*, *Net profit margin*, capital expenditures as a proportion of assets (*CAPX*), and *Industry sales Herfindahl*. This could be an important addition

[21] An issue further complicating firm governance is directors' incentives. For example, Bushman et al. (2004) document that directors' incentives increase with firm complexity and differ with earnings timeliness.

[22] The top-management team includes individuals above the vice president level who thus are senior executives (Chemmanur and Paeglis, 2005). For relevant empirical studies, see Gabaix and Landier (2008), Terviö (2008), Edmans et al. (2009), and Custódio et al. (2013).

to our baseline specification because our index should strictly capture management practices and not overall firm performance.

A last set of additional control variables that could affect the relation between effective management and CARs concerns industry characteristics. Several papers allude to the role of industry characteristics in M&A value creation. For example, one strand of literature argues that efficiency problems occur more often in conglomerates (e.g., Rajan et al., 2000; Scharfstein and Stein, 2000). Lang and Stulz (1994) show that multisegment firms have lower Tobin's *q* values. In the same spirit, Berger and Ofek (1995) argue that conglomerates are worth about 15% less than stand-alone firms. On the other hand, conglomerates allocate capital better due to their centralized control (e.g., Stein, 1997). Similar arguments exist in the literature on the role of technology and innovation.

We add three controls to examine whether the acquirer and the target (i) belong to the same Fama-French industry (*Conglomerate*), (ii) belong to high-tech industries (*TECH),* and (iii) have high R&D intensity (*RD intensity*). Given that our aim is to identify industry characteristics that may bias our estimates on *Management practices* rather than to identify the mere effects of industry characteristics, we also saturate the model using Fama-French industry fixed effects.

We report results in table 6. Column (1) shows results with governance controls (G-index and the E-index). We observe our *Management practices* score entering with a positive and significant coefficient at the 5% level, despite the large decrease in sample size. The value of the coefficient is somewhat lower compared to the benchmark model, but this is probably due to the large decrease in sample size due to the unavailability of information for newly added indices for a number of firms and years.

Column (2) shows results including boardroom characteristics. Again, our management index enters with a positive and significant coefficient. In this restrictive case, with the many control variables and fixed effects, the statistical significance drops due to the smaller sample and not the inclusion of the corporate governance controls (which are mostly statistically insignificant). According to the results, a one-standard-deviation increase in *Management practices* is associated with a 0.0045 unit increase in CAR.

Column (3) shows results while including firm-performance variables. We find that the effect of *Management practices* changes only slightly from the baseline specifications of table 5, indicating that our main finding is robust to the inclusion of firm-performance indicators. In terms of economic significance, a one-standard-deviation increase in *Management practices* leads to a 0.0075-point increase in CAR (the same as our baseline specification). As for the performance-related variables, we find that *Annual stock return* and *Net profit margin* are the most important (negative) determinants of M&A success, while *ROE* and *Industry sales Herfindahl* have some explanatory power.

The results regarding *Net profit margin* are somewhat puzzling, however. We expect that firms with more cash flow are more capable of creating firm value through M&As. A potential explanation could be that profitability indices do not necessarily capture firm characteristics—including management practices—that are of high importance in value creation through M&As. The negative coefficient on *Industry sales Herfindahl* could signal inefficiencies that are more pronounced in more concentrated sectors, where firms live the quiet life (Hicks, 1935).

In column (4) we report results while including industry characteristics. If anything, our management practices index enters with a slightly larger coefficient compared to the baseline specification. A one-standard-deviation increase in *Management practices* implies a higher CAR

(-2, +2) of approximately 0.0081 points. As far as the other controls are concerned, firms with higher R&D tend to have higher CAR values, and *Conglomerate* enters with a negative, yet insignificant coefficient. Further, *TECH (target)* enters with a negative and statistically significant coefficient. We should note here, however, that the large set of fixed effects might oversaturate the model and prevent proper identification of the effect of industry characteristics.

[Please insert table 6 about here]

To ensure that event timing does not drive our results, we repeat the previous models with CARs calculated over three- and 11-day windows. The results are in table 7 and are similar (if not stronger) to those of the baseline models.

[Please insert table 7 about here]

4.4. Synergies

Having studied the impact of management practices on acquirers' CARs, we next look at firm synergies. This is important, as previous research finds that M&As positively affect the cumulative abnormal returns of the combined firms (e.g., Andrade et al., 2001) and firm productivity (Maksimovic and Phillips, 2001). More recently, Li (2013) suggests that the increase in a target's productivity comes from decreases in capital expenditures, lower labor expenditures, and associated efficiency gains, all of which market expectations incorporate. These arguments strengthen our insight, whereby the market expects a positive relation between the quality of acquirers' managers and the firm's post-M&A productivity, efficiency, and eventually its value.

We calculate synergies following Bradley et al. (1988). We construct a value-weighted portfolio for the acquirer and the target, with weights based on market capitalizations of the acquirer and the target at the sixth trading day before the announcement (also see Wang and Xie,

2008). As shown in the online appendix table A8 of the appendix, there is a positive correlation among all cumulative abnormal return measures.

To quantify the effect of management practices on synergistic gains, we re-run our main specifications where the dependent variable is the synergistic gain for different time windows.[23] Comparing tables 5 and 8, the results look similar: in table 5 the coefficient on management practices is 0.0592 for the whole sample, and in table 8 it is 0.0683. The estimates on the controls are also very similar.[24]

[Please insert table 8 about here]

4.5. Additional robustness tests

Having established the strong explanatory power of management practices in the CAR models, we turn to additional measures of M&A success proposed by the extant literature. We first study long-run changes in profitability. In general, we find that our baseline management measures have less explanatory power in models of long-term post-acquisition performance. An important wrinkle to these findings are the significant effects of management practices on accounting measures (forward-looking return on equity and Tobin's q).[25]

Specifically, we use the change in *ROE* over three to five years post-acquisition (ΔROE) and Tobin's q (see Table 1 for definitions). Using such performance measures adds depth to our analysis (e.g., Fu et al., 2013), which does not suffer from reduced samples. Nonetheless, we are also cautious, as the use of accounting data to appraise the economic performance of firms that participate in M&A activities might suffer from noise due to internal (firm-specific) and external

[23] Because our sample is much smaller now, we do not include firm fixed effects.
[24] Because governance and industry characteristics might affect the gains made in synergistic gains, we report results including the relevant controls. These can be found in the online appendix tables A9 & A10. By and large, our results remain strong even in the inclusion of these controls.
[25] All our results in this section become highly significant when we model equation (2) as a function of latent lagged management. This is intuitive from an econometric perspective, as long-term performance indicators should encompass information about the underlying dynamics (e.g., Arellano, 2003; Baltagi, 2013).

developments, which make isolating the pure effect of M&As very difficult (e.g., Renneboog and Vansteenkiste, 2018).

We report our results in table 9. In columns (1) and (2) our results show that better management practices positively affect Δ*ROE* up to a period of three years post-acquisition. Specifically, a one standard deviation increase in management practices, increases Δ*ROE* by about 0.03 units (equivalent to 0.007 percentage points). Similarly, in columns (5) and (6) we find a positive effect of management practices on Tobin's q. Specifically, a one standard deviation increase in management practices increases Tobin's q by about 0.086 percentage points.

Overall, we find positive correlations between management practices and long-term firm performance, even though we should be cautious about interpreting these effects as causal. In the years following management practices, these practices change, other corporate events occur, firms manage their accounting measures, and the general business and economic environment evolves. Still, the identified positive correlations indicate how well-managed firms effectively choose their M&A deals.

[Please insert table 9 about here]

We have furnished several additional tests to check the robustness of the baseline findings. These results can be found in the online appendix that accompanies this work. In most of these tests, our results hold. Some of this additional analysis and results include validation exercises utilizing the World Management Survey, analysis while accounting for extreme values, (double-)clustering at different dimensions, models incorporating goodwill and firm innovativeness, and the past acquisitiveness of the acquiring corporation. We also provide results with additional governance characteristics (such as board characteristics and the presence of institutional blockholders). Finally, we show results utilizing seven instead of four inputs in generating

management practices scores using Bayesian techniques, as well as Bayesian inferences for the benchmark model.

5. Relation with the Q-theory of M&As

In this section, we explore a theoretical mechanism that explains our findings—the Q-theory of mergers (e.g., Jovanovic and Rousseau, 2002). According to this theory, a key motivation for acquiring firms is to relocate their assets to the best use possible. That is, mergers are a channel that helps capital reallocate to better projects and management. As a result, efficient acquirers create value and synergistic gains during takeovers because they transfer their superior management practices to target firms. Based on these insights, we introduce the following testable hypotheses:

H1: Firms with better management practices should pursue more M&As.

H2: More value will be created as the gap of managerial quality between the acquirer and target increases.

H3: Firms with good management acquire firms with bad management.

H4: The cross-sectional dispersion in firm management practices should be positively correlated with the likelihood of M&As.

We form a fifth testable hypothesis based on the insights of Dong et al. (2006), who suggest that the evidence on the Q-theory is more prominent in the pre-1990 market. The reason for this is that takeovers during the 1980s suffered more from agency issues, while those in the 1990s suffered from inefficiency issues. Thus, the evidence is more supportive of the Q-theory during the 1980s, while during the 1990s the mis-valuation hypothesis appears to explain better the data. Based on this premise, we formulate our fifth hypothesis as follows:

H5: The effect of management practices should be stronger in the pre-1990 market.

An important implication of our baseline results is that if better management practices create more value, then the involved firms should pursue more M&As. To test this hypothesis, we regress the number of M&A events on management practices. We conduct these tests using time series data for the acquiring firms; thus, our sample is considerably larger than the respective including M&A events only. Because there are many occurrences of zeros (firms do not conduct M&As in all years), we use a negative binomial model, which is suitable for over-dispersed count data.

We report the results in table 10. We find that management practices carry a positive and statistically significant coefficient. The results in column (2) indicate that a one unit increase of management practices, increases the difference in the logs of expected counts of M&A events by 0.422, *ceteris paribus*, which corresponds to an increase of about 55% (= exp(0.442)). This finding is consistent with the Q-theory, which predicts that firms with better management will find opportunities to increase their value through synergies with other firms.

[Please insert table 10 around here]

We test the hypotheses H2-H5 in table 11. Panel A of table 11 presents results for H2 and H3. Columns (1)-(3) in this panel, examine whether more value can be created when the gap in the management practices between the acquirer and the target is large (Lang, Stulz, and Walking, 1989). Using differences in our index between acquirers and targets, as well as the same controls and fixed effects (we cannot use acquirer fixed effects because our sample only has 344 observations), we end up with a coefficient that is positive and statistically significant, again consistent with Q-theory. In economic terms, an increase of *Δ(Management practices)* by one standard deviation, increases CAR by about 1.7 percentage points (= 0.0935*0.179).

Columns (4)-(6) test the Q-theory prediction that firms with good management will acquire firms with bad management. To this end, we construct an indicator variable taking the value one for all M&A cases where the target's management practices are lower than the acquirer's. We then examine whether the management practices of the acquirer have explanatory power on that indicator. We find a positive and statistically significant coefficient, indicating that a one percent increase in the *Management practices* score increases by about 3.2% the probability that a target company has a lower management score than the acquirer. However small the sample, our specification has a good explanatory power for a dichotomous choice model, as the pseudo R^2 is around 0.30. This again shows that our management practices score has strong explanatory power when testing Q-theory predictions.

Panel B of table 11 tests hypothesis H4. Specifically, we calculate the average management practices values in different Fama-French industries for each year. Then, for each Fama-French group and year, we count the number of M&A events. Next, we regress the number of events on the average values of management practices. We find a positive and statistically significant coefficient and our model has good explanatory power. In economic terms, a one standard deviation increase in *Management practices* for the average Fama-French industry is accompanied by an 0.8 (= 44.15*0.018) percentage point increase in M&A events in that industry. This indicates that for a sector to be M&A active, interfirm differences in managerial quality should exist. This follows the model of Jovanovic and Rousseau (2002) who suggest that, without interfirm dispersion, M&A events do not occur.

Panel C of table 11 tests hypothesis H5. We create an indicator variable taking the value one for all events that took place before 1990 and interact this variable with our management practices score. According to H5, Q-theory is better suited at explaining M&A waves in the 1980s

because during that period agency issues were more pronounced. This might not be the case for the waves that followed that period, whereby the misvaluation hypothesis appears to be more potent in explaining statistical patterns. If this conjecture is true, we should observe a positive coefficient on the interaction term. Indeed, we find that the interaction term enters with a positive coefficient, and that it is more potent for the case of frequent acquirers. This could indicate that frequent acquirers in the 1980s were more efficient at choosing the right target companies to create synergies; especially target companies that might have had agency issues and thus not functioning at their fullest capacity. The results of the interaction term for frequent acquirers indicate that those acquirers with management practices higher by one unit in the period before the 1990s would enjoy higher CARs by about 0.29, compared to acquirers after that period.

[Please insert table 11 around here]

6. Conclusions

This paper contributes to the M&A literature in three interrelated ways. First and most important, we measure management practices using standard microeconomic and management theory. We show that our measure is one of the most significant explanatory variables in empirical models of short-term M&A success. Including management practices substantially increases the explanatory power of these models, with a one-standard-deviation upsurge in our index increasing CARs by more than 50% around M&A deals. By also looking at longer-term measures of M&A success, we identify positive correlations, which are statistically and economically significant in models of forward-looking return on equity and Tobin's q.

Second, we show that the effect of management practices on M&A success comes over and above previously used firm characteristics and governance, as well as time-invariant acquirer

characteristics. Thus, we contend that the effect of management practices is indeed time-variant and not solely attributable to experience, previous success, or other unobserved time-invariant firm characteristics.

Third, we show that our results are explained by the Q-theory of M&As. Specifically, we find that acquirers with good management practices pursue more M&As and, importantly, they target firms with poor management practices to create value from improving these practices. Indeed, we provide evidence that the cross-sectional dimension in firm management practices is a positive and economically significant determinant of the likelihood of M&As.

Overall, we view management as an important component of short-term M&A performance that significantly increases the power of relevant empirical models. Future research can use this measure as a control in predicting M&As, but also in reexamining the relation between management practices and corporate characteristics such as CEO turnover, board independence, and female board participation. Further, our analysis provides incentives to reexamine the relation between the quality of managerial practices and executive or employee compensation. Finally, our approach to estimating management practices via a latent variable model might provide new ideas for modelling notions that, by their own nature, are unobserved or related to the management of intangible capital. These include but are not limited to corporate social responsibility, corporate culture, and accounting practices such as earnings management and profit-shifting. In doing, future studies will be able to also define and estimate management practices less broadly and mitigate part of the relevant limitations that our measure inevitably faces. We leave these ideas as a desideratum for future research.

References

Ackerberg, D. A., Caves, K., & Frazer, G. (2006). Structural Identification of Production Functions. *Mimeo*, UCLA Department of Economics.

Aktas, N., Bodt, E. D., & Roll, R. (2007). Is European M&A Regulation Protectionist? *The Economic Journal*, 117(522), 1096-1121.

Andrade, G., Mitchell, M., & Stafford, E. (2001). New Evidence and Perspectives on Mergers. *Journal of Economic Perspectives*, *15*(2), 103-120.

Andrieu, C., Doucet, A., & Holenstein, R. (2010). Particle Markov chain Monte Carlo methods (with discussion). *Journal of the Royal Statistical Society Series B, 72* (2), 1–33.

Arellano, M. (2003). Panel Data Econometrics. Oxford University Press, Oxford.

Baker, M., & Wurgler, J. (2002). Market Timing and Capital Structure. *Journal of Finance*, *57*(1), 1-32.

Baltagi, B. H. (2013). Econometric Analysis of Panel Data. John Wiley and Sons, Chichester.

Bao, J., & Edmans, A. (2011). Do Investment Banks Matter for M&A Returns? *Review of Financial Studies*, 24, 2286-2315.

Bebchuk, L., Cohen, A., & Ferrell, A. (2009). What Matters in Corporate Governance? *Review of Financial Studies*, *22*(2), 783-827.

Berger, P. G., & Ofek, E. (1995). Diversification's Effect on Firm Value. *Journal of Financial Economics*, *37*(1), 39-65.

Bhagat, S., Dong, M., Hirshleifer, D., & Noah, R. (2005). Do Tender Offers Create Value? New Methods and Evidence. *Journal of Financial Economics*, *76*(1), 3-60.

Bloom, N., Sadun, R., & Van Reenen, J. (2017). Management as a Technology? National Bureau of Economic Research Working Paper No. 22327.

Bloom, N., & Van Reenen, J. (2007). Measuring and Explaining Management Practices Across Firms and Countries. *Quarterly Journal of Economics, 122*(4), 1351-1408.

Bloom, N., & Van Reenen, J. (2010). Why do Management Practices Differ across Firms and Countries? *Journal of Economic Perspectives* 24, 203-224.

Born, B., Ehrmann, M., & Fratzscher, M. (2014). Central Bank Communication on Financial Stability. *The Economic Journal, 124*(577), 701-734.

Bradley, M., Desai, A., & Kim, E. H. (1988). Synergistic Gains from Corporate Acquisitions and Their Division Between the Stockholders of Target and Acquiring Firms. *Journal of Financial Economics*, 21(1), 3-40.

Bushman, R., Chen, Q., Engel, E., & Smith, A. (2004). Financial Accounting Information, Organizational Complexity and Corporate Governance Systems. *Journal of Accounting and Economics*, 37(2), 167-201.

Chemmanur, T. J., & Paeglis, I. (2005). Management Quality, Certification, and Initial Public Offerings. *Journal of Financial Economics, 76*(2), 331-368.

Custódio, C., Ferreira, M. A., & Matos, P. (2013). Generalists versus Specialists: Lifetime Work Experience and Chief Executive Officer Pay. *Journal of Financial Economics, 108*(2), 471-492.

Custódio, C., & Metzger, D. (2013). How do CEOs Matter? The Effect of Industry Expertise on Acquisition Returns. *Review of Financial Studies*, 26(8), 2008-2047.

Custódio, C., Ferreira, M.A., & Matos, P., 2018. Do General Managerial Skills Spur Innovation? *Management Science*, 65(2), 459-476.

Delis, M. D., Tsionas, E. G. (2018). Measuring Management Practices, *International Journal of Production Economics*, forthcoming, doi: 10.1016/j.ijpe.2018.02.006.

Delis, M. D., Iosifidi, M., & Tsionas, M. (2020). Management Estimation in Banking. *European Journal of Operational Research*, *284*(1), 355-372.

Demerjian, P., Lev, B., & McVay, S. (2012). Quantifying Managerial Ability: A New Measure and Validity Tests. *Management Science*, *58*(7), 1229-1248.

Dong, M., Hirshleifer, D., Richardson, S., & Teoh, S. H. (2006). Does investor misvaluation drive the takeover market?. *The Journal of Finance*, *61*(2), 725-762.

Edmans, A., Gabaix, X., & Landier, A. (2009). A Multiplicative Model of Optimal CEO Incentives in Market Equilibrium. *Review of Financial Studies*, *22*(12), 4881-4917.

Faccio, M., & Masulis, R. W. (2005). The Choice of Payment Method in European Mergers and Acquisitions. *Journal of Finance*, *60*(3), 1345-1388.

Franks, J. R., Harris, R. S., & Mayer, C. (1988). Means of Payment in Takeovers: Results for the United Kingdom and the United States. In *Corporate Takeovers: Causes and Consequences* (pp. 221-264). University of Chicago Press.

Fu, F., Lin, L., & Officer, M. S. (2013). Acquisitions Driven by Stock Overvaluation: Are They Good Deals? *Journal of Financial Economics*, *109*(1), 24-39.

Fuller, K., Netter, J., & Stegemoller, M. (2002). What Do Returns to Acquiring Firms Tell Us? Evidence from Firms that Make Many Acquisitions. *Journal of Finance*, *57*(4), 1763-1793.

Gabaix, X., & Landier, A. (2008). Why has CEO Pay Increased So Much? *Quarterly Journal of Economics*, *123*(1), 49-100.

Gelfand, A. E., Hills, S. E., Racine-Poon, A., & Smith, A. F. (1990). Illustration of Bayesian inference in normal data models using Gibbs sampling. *Journal of the American Statistical Association*, *85*(412), 972-985.

Geweke, J. (1992). Evaluating the Accuracy of Sampling-Based Approaches to the Calculation of Posterior Moments. *In Bayesian Statistics 4*, Bernardo, J. M., Berger, J. O., Dawid, A. P. and Smith, A. F. M. (eds.), 169-193. Oxford: Oxford University Press.

Golubov, A., Petmezas, D., & Travlos, N. G. (2012). When It Pays to Pay Your Investment Banker: New Evidence on the Role of Financial Advisors in M&As. *Journal of Finance, 67*(1), 271-311.

Golubov, A., Petmezas, D., & Travlos, N. G. (2016). Do Stock-Financed Acquisitions Destroy Value? New Methods and Evidence. *Review of Finance*, *20*(1), 161-200.

Golubov, A., Yawson, A., & Zhang, H. (2015). Extraordinary Acquirers. *Journal of Financial Economics, 116*(2), 314-330.

Gompers, P., Ishii, J., & Metrick, A. (2003). Corporate Governance and Equity Prices. *Quarterly Journal of Economics*, *118*(1), 107-156.

Gompers, P., Kovner, A., Lerner, J., & Scharfstein, D. (2010). Performance Persistence in Entrepreneurship. *Journal of Financial Economics*, 96(1), 18-32.

Greene, W. H. (2008). The Econometric Approach to Efficiency Analysis. In: The Measurement of Productive Efficiency and Productivity Growth, pp. 92-250. Oxford University Press, UK.

Harford, J., & Li, K. (2007). Decoupling CEO Wealth and Firm Performance: The Case of Acquiring CEOs. *Journal of Finance*, *62*(2), 917-949.

Harford, J., Humphery-Jenner, M., & Powell, R. (2012). The Sources of Value Destruction in Acquisitions by Entrenched Managers. *Journal of Financial Economics*, *106*(2), 247-261.

Harris, M., & Holmstrom, B. (1982). A Theory of Wage Dynamics. *Review of Economic Studies*, 49(3), 315-333.

Hayward, M. L. A. (2002). When do Firms Learn from their Acquisition Experience? Evidence from 1990 to 1995. *Strategic Management Journal*, *23*(1), 21-39.

Hayes, R. M., & Schaefer, S. (1999). How Much Are Differences in Managerial Ability Worth? *Journal of Accounting and Economics*, 27(2), 125-148.

Hermalin, B. E., & Weisbach, M. S. (1998). Endogenously Chosen Boards of Directors and their Monitoring of the CEO. *American Economic Review*, 96-118.

Hicks, J. R. (1935). Annual Survey of Economic Theory: The Theory of Monopoly. *Econometrica*, 3, 1-20.

Huang, Q., Jiang, F., Lie, E., & Yang, K. (2014). The role of investment banker directors in M&A. *Journal of Financial Economics*, *112*(2), 269-286.

Jaffe, J., Pedersen, D., & Voetmann, T. (2013). Skill Differences in Corporate Acquisitions. *Journal of Corporate Finance*, 23, 166-181.

Jovanovic, B., & Rousseau, P. L. (2002). The Q-theory of mergers. *American Economic Review*, *92*(2), 198-204.

Kaplan, D., & Depaoli, S. (2012). Bayesian structural equation modeling. In R. Hoyle (Ed.), Handbook of structural equation modeling (pp. 650–673). New York, NY: Guilford Press.

Kaplan, S. N., Klebanov, M. M., & Sorensen, M. (2012). Which CEO Characteristics and Abilities Matter? *Journal of Finance*, 67(3), 973-1007.

Katz, R. (1974). Skills of an Effective Administrator. *Harvard Business Review*, September.

Kruschke, J. K. (2011). Bayesian assessment of null values via parameter estimation and model comparison. *Perspectives on Psychological Science*, *6*(3), 299-312.

Lang, L. H., Stulz, R. M., & Walkling, R. A. (1989). Managerial Performance, Tobin's q, and the Gains from Successful Tender Offers. *Journal of Financial Economics* 24, 137-154.

Lang, L. H., & Stulz, R. M. (1994). Tobin's q, Corporate Diversification, and Firm Performance. *Journal of Political Economy*, *102*(6), 1248-1280.

Lev, B., & Sougiannis, T. (1996). The Capitalization, Amortization, and Value-relevance of R&D. *Journal of Accounting and Economics*, 21(1), 107-138.

Li, X. (2013). Productivity, Restructuring, and the Gains from Takeovers. *Journal of Financial Economics*, 109(1), 250-271.

Lucas, R. (1978). On the Size Distribution of Business Firms. *Bell Journal of Economics, 9*(2), 508-523.

Maksimovic, V., & Phillips, G. (2001). The Market for Corporate Assets: Who Engages in Mergers and Asset Sales and Are There Efficiency Gains? *Journal of Finance*, 56(6), 2019-2065.

Manne, H. G. (1965). Mergers and the market for corporate control. *Journal of Political Economy*, *73*(2), 110-120.

Masulis, R. W., Wang, C., & Xie, F. (2007). Corporate Governance and Acquirer returns. *Journal of Finance*, *62*(4), 1851-1889.

McDonald, M. L., Westphal, J. D., & Graebner, M. E. (2008). What do they Know? The Effects of Outside Director Acquisition Experience on Firm Acquisition Performance. *Strategic Management Journal 29*(11), 1155-1177.

Melitz, M. (2003). The Impact of Trade on Intra-Industry Reallocations and Aggregate Productivity Growth. *Econometrica*, *71*(6), 1695-1725.

Myers, S. C., & Majluf, N. S. (1984). Corporate Financing and Investment Decisions when Firms Have Information that Investors do not Have. *Journal of Financial Economics*, *13*(2), 187-221.

Moeller, S. B., Schlingemann, F. P., & Stulz, R. M. (2004). Firm Size and the Gains from Acquisitions. *Journal of Financial Economics*, *73*(2), 201-228.

Moeller, S. B., Schlingemann, F. P., & Stulz, R. M. (2005). Wealth Destruction on a Massive Scale? A Study of Acquiring-firm Returns in the Recent Merger Wave. *Journal of Finance*, 60(2), 757-782.

Nevo, A. (2001). Measuring Market Power in the Ready-to-Eat Cereal Industry. *Econometrica*, *69*(2), 307-342.

Rajan, R., Servaes, H., & Zingales, L. (2000). The Cost of Diversity: The Diversification Discount and Inefficient Investment. *Journal of Finance*, *55*(1), 35-80.

Rajamani, A., van der Poel, M., de Jong, A., & Ongena, S. (2016). The International Diversification of Banks and the Value of Their Cross-Border M&A Advice. *Management Science*, 63(7), 2211-2232.

Renneboog, L., & Vansteenkiste, C. (2018). What Goes Wrong in M&As? On the Long-Run Success Factors in M&As. *On the Long-Run Success Factors in M&As (December 20, 2018). European Corporate Governance Institute (ECGI)-Finance Working Paper*, (589).

Samuelson, P. A., Nordhaus, W. D. (2009). Economics. McGraw-Hill, 19th edition, New York, U.S.

Scharfstein, D. S., & Stein, J. C. (2000). The Dark Side of Internal Capital Markets: DivisionalRent-Seeking and Inefficient Investment. *Journal of Finance*, *55*(6), 2537-2564.

Silva, A. C. (2010). Managerial Ability and Capital Flows. *Journal of Development Economics*, 93(1), 126-136.

Simar, L., Wilson, P. W. (2007). Estimation and Inference in Two-Stage, Semi-parametric Models of Production Processes. *Journal of Econometrics*, 136, 31-64.

StataCorp, L. P. (2017). Bayesian Analysis Reference Manual. *College Station, TX: StataCorp LP*.

Stein, J. C. (1997). Internal Capital Markets and the Competition for Corporate Resources. *Journal of Finance*, *52*(1), 111-133.

Terviö, M. (2008). The Difference that CEOs Make: An Assignment Model Approach. *American Economic Review*, *98*(3), 642-668.

Travlos, N. G. (1987). Corporate Takeover Bids, Methods of Payment, and Bidding Firms' Stock Returns. *Journal of Finance*, *42*(4), 943-963.

Van de Schoot, R., Kaplan, D., Denissen, J., Asendorpf, J. B., Neyer, F. J., & Van Aken, M. A. (2014). A gentle introduction to Bayesian analysis: Applications to developmental research. *Child Development*, *85*(3), 842-860.

Wang, C., & Xie, F. (2008). Corporate Governance Transfer and Synergistic Gains from Mergers and Acquisitions. *Review of Financial Studies*, *22*(2), 829-858.

Table 1: Variable definitions and data sources

Variable	Description
Return variables and antitakeover indexes	
CAR (-2, +2) – acquirer	Five-day cumulative abnormal return (CAR) of acquirer firm's stock, i.e. in the (-2, +2) days surrounding the announcement date. CAR is calculated using the market model and the benchmark is the CRSP value weighted index. Model parameters are estimated over (-300, -91) days before the announcement.
CAR (-2, +2) – target	Five-day cumulative abnormal return (CAR) of target firm's stock, i.e. in the (-2, +2) days surrounding the announcement date. CAR is calculated using the market model and the benchmark is the CRSP value weighted index. Model parameters are estimated over (-300, -91) days before the announcement
Synergy CAR (-2, +2)	Five-day cumulative abnormal return for both the acquirer and the target for a value-weighted portfolio. CAR is calculated using the market model and model parameters are estimated over (-300, -91) days before the announcement. Acquirer' and target's weights are based on their market capitalization six trading days before the announcement (see Bradley, Desai, and Kim, 1988).
GIM index	The Governance Index of Gompers et al. (2003) that accounts for 24 anti-takeover provisions.
E-Index	The entrenchment index based on Bebchuk et al. (2009).
Bidder characteristics	
Management practices	Estimates of good management practices obtained from a production function and the method of Delis and Tsionas (2018).
Ln(acquirer size)	The natural logarithm of the market value of a firm's equity 11 days prior to the M&A announcement date. The data are in million dollars and are obtained from CRSP.
Run-up	Bidder's market-adjusted buy-and-hold return for the window (-210, -11) days. Data are from CRSP.
Sigma	Standard deviation of a bidder's market-adjusted daily returns for the time window (-210, -11). Data are from CRSP.
Free cash flow	[(Operating income before depreciation - total interest and related expenses - total income taxes - capital expenditures)/(close price x common shares outstanding)]. In Compustat coding: [(oibdp - xint - txt -capx)/(prcc_c (x) csho)].
Tobin's q	The calculation of Tobin's q in Compustat is: [at + csho (x) prcc_f – ceq]/at. The values are taken for the fiscal year prior to the acquisition.
Leverage	(Total debt in current liabilities + long-term debt)/total assets [Compustat: (dlc + dltt)/at].
Tech	= 1 if both the bidder and the target belong to high tech industries. Based on Faccio and Masulis (2005), Masulis et al. (2007), and Harford et al. (2012) tech firms have the following four digit SIC codes: 3572, 3575, 3577, 3578, 3661, 3663, 3669, 3671, 3672, 3674, 3675, 3677, 3678, 3679, 3812, 3823, 3825, 3826, 3827, 3829, 4812, 4813, 4899, 7371, 7372, 7373, 7374, 7375, 7378, 7379.
Tech target	= 1 if the target belongs to a high tech industry (as defined above) and = 0 otherwise.
Conglomerate	= 1 if the acquirer and the target are in different Fama-French industries and = 0 otherwise.
R&D intensity	R&D expenses divided by total assets (Compustat: xrd/at).
R&D high	= 1 if R&D intensity for a specific firm is above the industry median and = 0 otherwise.
ROA	Earnings before interest and taxes over total assets (Compustat: ebit/at). The values are computed in the fiscal year prior to the acquisition.

Low_ROA	= 1 if the ROA of a firm is lower than the average of the sector and = 0 otherwise. The values are computed for the fiscal year prior to the acquisition.
ROE	Net income over total assets (Compustat: ni/at). The values are computed for the fiscal year prior to the acquisition.
Annual stock return	A firm's stock return on a yearly basis. It is calculated using Compustat data in the following manner: [(prcc_f(t)/ajex(t) + dvpsx_f(t)/ ajex(t))/(prcc_f(t-1)/ajex_f(t-1))]. See also Custódio et al. (2013).
CAPX	Capital expenditures over total assets (Compustat: capx/at).
Net profit margin	Net income over sales (Compustat: ni/sale).
Industry sales Herfindahl	As in Custódio et al. (2013), this Herfindahl index is based on a firm's sales. The computation utilizes Compustat's SALE variable. Computations are based on the two-digit SIC industry codes.
Deal characteristics	
Relative size	The deal value (from Thomson One Banker) divided by the market value (CRSP) 11 days prior to the deal announcement.
Relatedness	= 1 if bidder and target are in the same two-digit SIC code and = 0 otherwise. Data are from Thomson One Banker.
Friendly merger	= 1 if the merger is characterized as such in Thomson One Banker and = 0 otherwise.
Hostile merger	Same as above.
Neutral merger	Same as above.
Public (cash)	= 1 for acquisition of public targets that have been financed with cash and = 0 otherwise. Data are from Thomson One Banker.
Public (stock)	= 1 for acquisition of public targets that have been financed with stock and = 0 otherwise. Data are from Thomson One Banker.
Private (cash)	= 1 for acquisition of private targets that have been financed with cash and = 0 otherwise. Data are from Thomson One Banker.
Private (stock)	= 1 for acquisition of private targets that have been financed with stock and = 0 otherwise. Data are from Thomson One Banker.
Subsidiary (cash)	= 1 if acquisition of a subsidiary target that have been finance with cash and = 0 otherwise. Data are from Thomson One Banker.
CEO and management team characteristics	
Above vice-president	The number of people who are in a position above that of a vice-president in the fiscal year prior to the M&A announcement (calculation based on Execucomp data).
Age1	The average age of the individuals who are above the position of the vice-president in the fiscal year prior to the announcement date (data from Execucomp).
Age2	Executive age in the year prior to the announcement date (data from Compustat).
Cash pay	Total current compensation (Execucomp: total_curr).
Total pay	Total pay for the CEO in thousands of dollars (Execucomp: tdc1).
Equity pay	Restricted stock granted + options granted (in thousands of dollars). In Execucomp: rstkgrnt + option_awards_blk_value.
Variables used for the creation of managerial practices index	
Log sales	The natural logarithm of sales (Compustat item: sale).
Capital	The natural logarithm of the sum of the dollar amount of net property, plant, and equipment (Compustat item: ppent).

Net operating leases	We use firm's footnotes in Compustat, to calculate the discounted present value of future (five years) operating lease payments. The Compustat items for the five lease obligations are MRC1-MRC5 and the discount rate we use is 10%, in accordance with previous studies.
Net R&D	Based on Compustat item "xrd", which measures research and development expense, net R&D is defined as: $RD_{cap} = \sum_{t=-4}^{0}(1 + 0.2t) \times RD_{exp}$.
Purchased goodwill	This is Compustat item "gdwl".
Other intangible assets	The difference between Compustat items "intal" and "gdwl".
Cost of inventory	Compustat item "invt".
Employees	Number of employees in a firm (Compustat item: emp).

Table 2: Summary statistics

Variable	Mean	Median	Std. Dev.	Min	Max	Obs.
CAR (-2, +2) -- acquirer	0.014	0.008	0.091	-0.663	1.486	7,721
CAR (-1, +1) -- acquirer	0.013	0.006	0.081	-0.675	1.456	7,721
CAR (-5, +5) -- acquirer	0.014	0.008	0.116	-0.972	1.603	7,721
CAR (-2, +2) -- target	0.265	0.230	0.250	-1.124	2.910	1,011
CAR (-1, +1) -- target	0.256	0.219	0.255	-0.988	3.044	1,011
CAR (-5, +5) -- target	0.286	0.245	0.261	-0.274	2.677	1,010
CAR (-2, +2) -- synergy	0.024	0.015	0.082	-0.035	0.458	1,011
CAR (-1, +1) -- synergy	0.023	0.014	0.077	-0.333	0.450	1,011
CAR (-5, +5) -- synergy	0.027	0.020	0.097	-0.423	0.459	1,010
GIM index	9.533	10	2.805	2	17	563
E-index	2.382	2	1.189	0	5	642
Management practices	0.539	0.539	0.126	0	0.968	7,721
Ln(acquirer size)	6.319	6.294	1.862	0.412	12.978	7,721
Run-up	0.123	0.100	0.225	-0.994	2.030	7,721
Sigma	0.030	0.027	0.016	0.007	0.192	7,721
Free cash flow	0.049	0.033	3.792	-6.621	332.817	7,721
Tobin's Q	2.194	1.655	2.368	0.258	48.839	7,721
Leverage	0.221	0.194	0.200	0	1.406	7,721
TECH	0.308	0	0.462	0	1	4,105
TECH (target)	0.379	0	0.485	0	1	4,105
Conglomerate	0.450	0	0.497	0	1	4,105
RD intensity	0.058	0.034	0.071	0	0.861	4,105
ROA	0.117	0.119	0.075	-0.057	0.249	7,022
ROE	0.277	0.269	0.214	-0.181	0.729	7,018
Annual stock return	1.376	1.071	8.904	0.022	730.446	6,751
CAPX	0.061	0.040	0.080	0	1.978	6,751
Net profit margin	0.004	0.051	0.687	-26.856	6.978	6,751
Industry sales Herfindahl	0.282	0.211	0.233	0.025	1	6,751
Relative size	0.223	0.088	0.437	0.010	9.817	7,721
Relatedness	0.602	1	0.489	0	1	7,721
Friendly merger	0.995	1	0.074	0	1	7,721
Hostile merger	0.003	0	0.059	0	1	7,721
Neutral merger	0.001	0	0.038	0	1	7,721
Public (paid with cash)	0.054	0	0.227	0	1	7,721
Public (paid with stocks)	0.045	0	0.208	0	1	7,721
Private (paid with cash)	0.123	0	0.329	0	1	7,721
Private (paid with stocks)	0.068	0	0.252	0	1	7,721
Subsidiary (paid with cash)	0.130	0	0.337	0	1	7,721
Above vice-president	4.996	5	1.605	1	11	1,611
Average age (above vice-president)	67.761	67.5	6.500	32	91	1,611
Average age (executives)	53.648	53.667	6.293	35.667	77	1,611
Cash pay for CEO (in thousand)	1,379.671	992.215	1,646.594	0	32,016.67	1,611
Total pay for CEO (in thousand)	4,860.047	2,364.47	9,321.433	0.001	134,437.2	1,611
Equity pay for CEO (in thousand)	3,087.509	989.555	8,357.176	0	131,348.9	1,611
Variables for accounting profitability models						
$\Delta ROE_{t \to t+3}$	-0.016	-0.000	0.193	-0.495	0.410	7,018
Tobin's Q	2.198	1.642	2.522	0.232	78.565	9,499
Management practices	0.538	0.538	0.127	0.093	0.968	7,018
Size	6.047	5.980	1.860	-1.470	13.590	7,018
Leverage	0.230	0.204	0.210	0	2.137	7,018
Cash	2,883.722	461.805	16,878.21	0.253	859,671	7,018
CAPX	0.063	0.040	0.076	-0.008	1.291	7,018
Friendly merger	0.994	1	0.076	0	1	7,018

Hostile merger	0.004	0	0.061	0	1	7,018
Private target	0.492	0	0.500	0	1	7,018
Public target	0.156	0	0.363	0	1	7,018
Cash M&A	0.299	0	0.458	0	1	7,018
Stock M&A	0.139	0	0.346	0	1	7,018
Relatedness	0.604	1	0.489	0	1	7,018
TECH (target)	0.286	0	0.452	0	1	7,018

Table 3: **Percentile statistics**

This table reports distribution characteristics for management practices and acquirer CAR measured over different time windows (2 days, 5 days, and 11 days). CAR is calculated based on the market model. We report characteristics for the whole sample, for frequent acquirers and for occasional acquirers. Definitions of all variables along with their sources are in Table 1.

Statistics	Management practices	CAR (-1, +1)	CAR (-2, +2)	CAR (-5, +5)
Panel A: Whole sample				
1st percentile	0.245	-0.187	-0.206	-0.290
5th percentile	0.334	-0.092	-0.114	-0.158
10th percentile	0.378	-0.060	-0.075	-0.107
25th percentile	0.453	-0.022	-0.029	-0.043
50th percentile (median)	0.539	0.006	0.007	0.007
75th percentile	0.625	0.041	0.049	0.062
90th percentile	0.701	0.093	0.109	0.138
95th percentile	0.746	0.137	0.160	0.198
99th percentile	0.838	0.262	0.290	0.356
p75-p25 (interquartile range)	0.172	0.063	0.078	0.105
Panel B: Frequent acquirers				
1st percentile	0.250	-0.156	-0.193	-0.285
5th percentile	0.343	-0.087	-0.113	-0.158
10th percentile	0.386	-0.061	-0.076	-0.105
25th percentile	0.454	-0.022	-0.030	-0.043
50th percentile (median)	0.548	0.007	0.007	0.006
75th percentile	0.634	0.040	0.049	0.059
90th percentile	0.698	0.086	0.100	0.126
95th percentile	0.746	0.118	0.147	0.194
99th percentile	0.843	0.226	0.266	0.323
p75-p25 (interquartile range)	0.179	0.063	0.079	0.102
Panel C: Occasional acquirers				
1st percentile	0.245	-0.171	-0.200	-0.275
5th percentile	0.333	-0.088	-0.109	-0.154
10th percentile	0.378	-0.058	-0.074	-0.104
25th percentile	0.452	-0.021	-0.028	-0.041
50th percentile (median)	0.539	0.006	0.007	0.008
75th percentile	0.627	0.039	0.048	0.060
90th percentile	0.702	0.090	0.105	0.133
95th percentile	0.745	0.131	0.154	0.192
99th percentile	0.840	0.246	0.279	0.324
p75-p25 (interquartile range)	0.175	0.060	0.076	0.102

Table 4: Benchmark regressions (without management)

This table reports OLS results from the estimation of equation (3) without management practices. The dependent variable is the bidder's CAR, based on a two-day event window (-2, +2) around the announcement date. The results are for the whole sample, for frequent acquirers (acquirers who have completed at least five acquisitions within a three-year event window), and for occasional acquirers (acquirers who have completed at least two acquisitions within a three-year period). CAR calculation is based on the market model. The t-statistics are clustered at the firm level (acquirer). Stars ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively. All regressions include a constant term. Definitions of all variables along with their sources are in Table 1.

	Whole sample	Frequent	Occasional
	(1)	(2)	(3)
Ln (acquirer size)	-0.0038***	-0.0065***	-0.0046***
	(0.001)	(0.002)	(0.001)
Run-up	-0.0127*	-0.0142	-0.0164**
	(0.007)	(0.015)	(0.008)
Sigma	0.2256	0.1141	0.0146
	(0.165)	(0.309)	(0.136)
Relative size	0.0270***	0.0203**	0.0203***
	(0.005)	(0.008)	(0.005)
Relatedness	0.0031	-0.0049	0.0030
	(0.002)	(0.005)	(0.002)
Friendly merger	0.0245	0.0179	0.0306
	(0.028)	(0.025)	(0.053)
Hostile merger	0.0127		0.0151
	(0.031)		(0.055)
Neutral merger	0.0284	-0.0109	0.0157
	(0.041)	(0.026)	(0.055)
Public (cash)	0.0025	0.0029	0.0033
	(0.004)	(0.010)	(0.005)
Public (stock)	-0.0297***	-0.0344***	-0.0300***
	(0.005)	(0.011)	(0.006)
Private (cash)	0.0013	0.0068	0.0006
	(0.003)	(0.007)	(0.003)
Private (stock)	0.0194***	0.0089	0.0216***
	(0.005)	(0.009)	(0.006)
Subsidiary (cash)	0.0107***	-0.0067	0.0089**
	(0.003)	(0.008)	(0.004)
Free cash flow	-0.0000**	0.0184	-0.0000***
	(0.000)	(0.013)	(0.000)
Tobin's q	-0.0022***	-0.0010	-0.0020***
	(0.001)	(0.001)	(0.001)
Leverage	0.0063	-0.0024	-0.0022
	(0.006)	(0.011)	(0.006)
Observations	7,721	1,339	5,328
R-squared	0.049	0.044	0.042
Adjusted R-squared	0.047	0.033	0.039

Table 5: Benchmark model with management

This table reports OLS results from the estimation of equation (3) with management practices. The dependent variable is the bidder's CAR, based on a two-day event window (-2, +2) around the announcement date. The results are for the whole sample, for frequent acquirers (acquirers who have completed at least five acquisitions within a three-year event window), and for occasional acquirers (acquirers who have completed at least two acquisitions within a three-year period). CAR calculation is based on the market model. Standard errors (in parentheses) are clustered at the firm level (acquirer). Stars ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively. The last three specifications include firm and year fixed effects. All regressions include a constant term. Definitions of all variables along with their sources are in Table 1.

	Whole sample	Frequent	Occasional	Whole sample	Frequent	Occasional
	(1)	(2)	(3)	(4)	(5)	(6)
Management practices	0.0876***	0.0366**	0.0650***	0.0592***	0.0178	0.0544***
	(0.009)	(0.017)	(0.010)	(0.010)	(0.021)	(0.011)
Ln (acquirer size)	-0.0039***	-0.0064***	-0.0046***	-0.0108***	-0.0233***	-0.0156***
	(0.001)	(0.002)	(0.001)	(0.003)	(0.006)	(0.003)
Run-up	-0.0130*	-0.0138	-0.0163**	-0.0103	-0.0123	-0.0065
	(0.007)	(0.015)	(0.008)	(0.009)	(0.020)	(0.010)
Sigma	0.2076	0.0995	-0.0002	0.0003	-0.1876	-0.0388
	(0.163)	(0.308)	(0.135)	(0.199)	(0.493)	(0.258)
Relative size	0.0257***	0.0207**	0.0194***	0.0194***	0.0243***	0.0176***
	(0.005)	(0.008)	(0.005)	(0.005)	(0.009)	(0.006)
Relatedness	0.0034	-0.0044	0.0032	0.0031	-0.0120*	0.0016
	(0.002)	(0.005)	(0.002)	(0.003)	(0.007)	(0.003)
Friendly merger	0.0151	0.0180	0.0296	0.0329	0.0425**	0.0461
	(0.032)	(0.026)	(0.057)	(0.042)	(0.019)	(0.051)
Hostile merger	0.0021		0.0129	0.0226	0.0279	0.0385
	(0.034)		(0.059)	(0.045)	(0.031)	(0.054)
Neutral merger	0.0197	-0.0072	0.0149	0.0316		0.0457
	(0.043)	(0.027)	(0.060)	(0.045)		(0.056)
Public (cash)	0.0017	0.0027	0.0024	-0.0015	0.0028	0.0032
	(0.004)	(0.010)	(0.005)	(0.005)	(0.014)	(0.005)
Public (stock)	-0.0293***	-0.0354***	-0.0296***	-0.0248***	-0.0410***	-0.0255***
	(0.005)	(0.011)	(0.006)	(0.007)	(0.013)	(0.008)
Private (cash)	0.0015	0.0070	0.0007	0.0003	0.0032	0.0024
	(0.003)	(0.007)	(0.003)	(0.004)	(0.008)	(0.004)
Private (stock)	0.0196***	0.0084	0.0215***	0.0195***	0.0022	0.0267***
	(0.005)	(0.009)	(0.006)	(0.006)	(0.014)	(0.008)
Subsidiary (cash)	0.0102***	-0.0071	0.0085**	0.0039	-0.0159	0.0020
	(0.003)	(0.008)	(0.004)	(0.003)	(0.010)	(0.004)
Free cash flow	-0.0000	0.0195	-0.0000	-0.0001**	0.0049	-0.0001**
	(0.000)	(0.013)	(0.000)	(0.000)	(0.034)	(0.000)
Tobin's q	-0.0022***	-0.0010	-0.0020***	-0.0016*	-0.0007	-0.0018*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Leverage	0.0040	-0.0044	-0.0041	-0.0121	-0.0501	-0.0243
	(0.006)	(0.011)	(0.006)	(0.012)	(0.030)	(0.015)
Firm FE	No	No	No	Yes	Yes	Yes
Year FE	No	No	No	Yes	Yes	Yes
Observations	7,721	1,339	5,328	6,570	1,294	5,136
R-squared	0.064	0.047	0.051	0.330	0.263	0.327
Adjusted R-squared	0.062	0.035	0.048	0.100	0.055	0.086

Table 6: **Controlling for governance, management characteristics, firm performance, and industry characteristics**
This table reports OLS results from the estimation of equation (3) with management practices and additional controls for corporate governance, management characteristics, firm performance, and industry characteristics. The dependent variable is the bidder's CAR, based on a two-day event window (-2, +2) around the announcement date. The results are for the whole sample. CAR calculation is based on the market model. Standard errors (in parentheses) are clustered at the firm level (acquirer). Stars ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively. All regressions include a constant term. Definitions of all variables along with their sources are in Table 1.

	(1)	(2)	(3)	(4)
Management practices	0.0672**	0.0359*	0.0598***	0.0645***
	(0.032)	(0.019)	(0.010)	(0.014)
G-index	-0.0016			
	(0.006)			
E-index	0.0027			
	(0.010)			
Average age (above VP)		-0.0010		
		(0.001)		
Average age (executives)		0.0014**		
		(0.001)		
# above vice-president		-0.0047**		
		(0.002)		
Cash pay		0.0000		
		(0.000)		
Total pay		-0.0000		
		(0.000)		
Equity pay		0.0000		
		(0.000)		
ROA			0.0215	
			(0.042)	
Low ROA			0.0021	
			(0.005)	
Annual stock return			-0.0001***	
			(0.000)	
CAPX			-0.0077	
			(0.021)	
Net profit margin			-0.0139***	
			(0.005)	
Industry sales Herfindahl			-0.0119*	
			(0.007)	
Conglomerate				-0.0088
				(0.006)
TECH (target)				-0.0172**
				(0.009)
TECH (both)				0.0079
				(0.010)
RD intensity				-0.0943
				(0.059)
RD high				0.0131*
				(0.007)
Firm controls	Yes	Yes	Yes	Yes
Deal controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	488	1,611	6,751	4,105
R-squared	0.47	0.37	0.349	0.386
Adjusted R-squared	0.145	0.105	0.133	0.141

Table 7: **Alternative CARs**.

This table reports OLS results from the estimation of equation (3) with management practices. Instead of acquirer's CAR (-2, +2), we now use CAR (-1, +1) and CAR (-5, +5). Each numbered line corresponds to a column in the previous tables. Specifically, lines [1] to [6] of *Panel A* correspond to columns (1) to (6) of Table 5. Lines [7] to [10] correspond to the columns of Table 6. Similarly, for *Panel B.* Standard errors are clustered at the acquirer level. Stars ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Definitions of all variables along with their sources are in Table 1.

		Coefficient	Standard error	R^2	R^2-adjusted	Observations
	Panel A: CAR (-1, +1)					
[1]	Full sample, FE = No	0.0931***	0.009	0.069	0.067	7,721
[2]	Frequent, FE = No	0.0427***	0.015	0.059	0.048	1,339
[3]	Occasional, FE = No	0.0683***	0.009	0.059	0.056	5,328
[4]	Full sample, FE = Yes	0.0664***	0.009	0.347	0.124	6,570
[5]	Frequent, FE = Yes	0.0307*	0.018	0.284	0.081	1,294
[6]	Occasional, FE = Yes	0.0613***	0.010	0.349	0.115	5,136
[7]	Governance	0.0589**	0.027	0.463	0.134	488
[8]	Management	0.0601***	0.016	0.404	0.152	1,611
[9]	Firm performance	0.0653***	0.009	0.368	0.159	6,751
[10]	Industry characteristics	0.0605***	0.012	0.405	0.167	4,105
	Panel B: CAR (-5, +5)					
[1]	Full sample, FE = No	0.0957***	0.012	0.058	0.056	7,721
[2]	Frequent, FE = No	0.0610**	0.028	0.047	0.036	1,339
[3]	Occasional, FE = No	0.0743***	0.013	0.049	0.046	5,328
[4]	Full sample, FE = Yes	0.0781***	0.013	0.345	0.122	6,570
[5]	Frequent, FE = Yes	0.0260	0.032	0.328	0.138	1,294
[6]	Occasional, FE = Yes	0.0670***	0.014	0.359	0.129	5,136
[7]	Governance	0.0658*	0.039	0.449	0.111	488
[8]	Management	0.0329	0.022	0.366	0.099	1,611
[9]	Firm performance	0.0719***	0.013	0.355	0.141	6,751
[10]	Industry characteristics	0.0878***	0.017	0.396	0.155	4,105

Table 8: Benchmark model with management and synergies

This table reports OLS results from the estimation of equation (3) for the whole sample. The dependent variable is synergistic CARs for acquirer and target. These are computed based on the market model with their respective weights based on their market capitalizations six days prior to the day of announcement. Standard errors (in parentheses) are clustered at the acquirer level. Stars ***, **, * denote statistical significance at the 1%, 5%, and 10% levels. All regressions include a constant term. Definitions of all variables along with their sources are in Table 1.

	Synergy CAR(-1, +1)		Synergy CAR(-2, +2)		Synergy CAR(-5, +5)	
Management practices	0.0630***	0.0612***	0.0726***	0.0683***	0.0686***	0.0685***
	(0.018)	(0.018)	(0.019)	(0.019)	(0.023)	(0.024)
Ln (acquirer size)	-0.0058***	-0.0085***	-0.0057***	-0.0085***	-0.0070***	-0.0095***
	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)
Run-up	-0.0415**	-0.0373**	-0.0504***	-0.0490***	-0.0551**	-0.0539**
	(0.016)	(0.017)	(0.016)	(0.016)	(0.023)	(0.024)
Sigma	-0.2805	-0.4075	-0.1165	-0.1647	0.1633	0.0536
	(0.288)	(0.376)	(0.308)	(0.396)	(0.345)	(0.445)
Relative size	0.0240***	0.0212***	0.0241***	0.0211***	0.0256***	0.0231***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)
Relatedness	0.0097**	0.0077*	0.0092**	0.0066	0.0146***	0.0117**
	(0.004)	(0.004)	(0.005)	(0.005)	(0.006)	(0.006)
Friendly merger	-0.0354	-0.0288	-0.0044	0.0079	0.0590	0.0671
	(0.062)	(0.041)	(0.084)	(0.066)	(0.117)	(0.101)
Hostile merger	-0.0143	0.0054	0.0157	0.0393	0.0683	0.0878
	(0.063)	(0.043)	(0.085)	(0.068)	(0.118)	(0.103)
Public (cash)	0.0179***	0.0114*	0.0174***	0.0102	0.0196***	0.0124*
	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)
Public (stock)	-0.0125*	-0.0156**	-0.0094	-0.0128*	-0.0119	-0.0171*
	(0.006)	(0.007)	(0.007)	(0.008)	(0.009)	(0.009)
Private (cash)	0.0421	0.0387	0.0526*	0.0509*	0.1163***	0.1116***
	(0.039)	(0.035)	(0.029)	(0.026)	(0.018)	(0.017)
Private (stock)	0.1024***	0.0903***	0.0119	0.0005	-0.0667***	-0.0715***
	(0.008)	(0.015)	(0.008)	(0.015)	(0.011)	(0.019)
Subsidiary (cash)	0.0644***	0.0704***	0.0505***	0.0596***	0.0663***	0.0839***
	(0.007)	(0.022)	(0.007)	(0.022)	(0.008)	(0.022)
Free cash flow	0.0196	0.0101	0.0225	0.0126	0.0147	0.0036
	(0.018)	(0.018)	(0.017)	(0.018)	(0.024)	(0.027)
Tobin's q	-0.0057***	-0.0054***	-0.0059***	-0.0058***	-0.0069***	-0.0072***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Leverage	0.0124	0.0078	0.0265*	0.0198	0.0196	0.0096
	(0.015)	(0.015)	(0.016)	(0.016)	(0.018)	(0.018)
Year FE	No	Yes	No	Yes	No	Yes
Observations	1,011	1,011	1,011	1,011	1,010	1,010
R^2-adjusted	0.193	0.212	0.178	0.191	0.159	0.169

Table 9: The effect of management practices on accounting profitability

This table shows the effect of management practices measure on acquirers' accounting profitability. Thedependent variables in columns (1) to (4) are ROE differences three- and five-years in the future compared to current ROE. The dependent variable in columns (5) and (6) is the current value of Tobin's Q. Standard errors, clustered at the firm level, in parentheses. . Stars ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Definitions of all variables along with their sources are in Table 1.

	$\Delta ROE_{t\to t+3}$	$\Delta ROE_{t\to t+3}$	$\Delta ROE_{t\to t+5}$	$\Delta ROE_{t\to t+5}$	Tobin's Q	Tobin's Q
	(1)	(2)	(3)	(4)	(5)	(6)
Management practices at t	0.0501**	0.0515**	0.0222	0.0202	0.5876*	0.6802**
	(0.021)	(0.021)	(0.029)	(0.029)	(0.314)	(0.324)
Size		-0.0141***		-0.0116*		-0.7753***
		(0.005)		(0.007)		(0.115)
Leverage		-0.1210***		-0.1674***		-0.0053
		(0.030)		(0.036)		(0.182)
Cash		-0.0000		0.0000		-0.0000
		(0.000)		(0.000)		(0.000)
CAPX		0.1063		0.2045*		0.6529
		(0.087)		(0.113)		(0.532)
Friendly merger		0.0066		-0.0202		1.5343
		(0.069)		(0.069)		(1.334)
Hostile merger		0.0060		0.0269		1.4057
		(0.078)		(0.082)		(1.315)
Private target		-0.0126**		-0.0020		-0.0612
		(0.006)		(0.007)		(0.051)
Public target		-0.0081		0.0061		-0.1159
		(0.008)		(0.010)		(0.072)
Cash M&A		0.0043		-0.0090		-0.0453
		(0.006)		(0.008)		(0.040)
Stock M&A		0.0043		-0.0027		0.9538***
		(0.010)		(0.011)		(0.180)
Relatedness		0.0048		0.0067		0.0210
		(0.006)		(0.007)		(0.048)
TECH (target)		-0.0156*		-0.0028		0.1475**
		(0.009)		(0.011)		(0.073)
Observations	7,179	7,018	5,724	5,599	9,698	9,499
R-squared	0.376	0.378	0.419	0.428	0.468	0.516
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	Firm	Firm	Firm	Firm	Firm	Firm

Table 10. Management practices and M&A frequency

The dependent variable is the number of M&A events for each firm in each year. Standard errors (in parentheses) are clustered at the acquirer's level. Stars, ***, **, and *, indicate significance levels at the 1%, 5%, and 10%, respectively.

Dependent variable	Number of annual events	
Estimation method	Negative binomial	
	(1)	(2)
Management practices	0.276**	0.422***
	(0.131)	(0.148)
Log assets	0.104***	0.125***
	(0.013)	(0.013)
Leverage	-0.382***	-0.472***
	(0.095)	(0.134)
PPE	0.604***	0.688***
	(0.171)	(0.155)
Taxes	0.058	0.028
	(0.087)	(0.10)
ROA	0.766***	0.745***
	(0.159)	(0.14)
Intangibles	1.683***	1.977***
	(0.143)	(0.155)
Cash	1.051***	0.877***
	(0.12)	(0.145)
Tobin's q		0.031***
		(0.011)
Stock return		0.221***
		(0.026)
Net profit margin		0.039***
		(0.010)
MB		-0.005
		(0.004)
Observations	69,637	59,781
Pseudo R^2	0.06	0.041
Log-likelihood	-36,909.4	-31,266.8

Table 11: Additional tests for Q-theory

For panel A, *Δ(Management practices)* is equal to the difference of management practices scores of the acquiring and target firms. The dependent variable in columns (1)-(3) is CAR(-2, 2), while the dependent variable in columns (4)-(6) is an indicator taking value one when the management practices (MP) score of the target company is lower than that of the acquiring firm. Fama-French fixed effects include 48 industries. For panel B, the dependent variable is the number of acquisition events in each Fama-French (12) industry for each year. The management practices score is the average value for each industry and year. For panel C, the dependent variable is CAR(-2, 2).The results are for the whole sample, for frequent acquirers (acquirers who have completed at least five acquisitions within a three-year event window), and for occasional acquirers (acquirers who have completed at least two acquisitions within a three-year period). CAR calculation is based on the market model. *Pre-1990* takes value one for all events that occurred before 1990. Standard errors are reported in parentheses. Stars, ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Definitions of all variables along with their sources are in Table 1.

Panel A: Management practices differentials between acquirers and targets on value creation, and the tendency of acquirers to acquire firms with lower management practices

Dependent variable	CAR(-2, 2)			$\mathbb{I}\{MP^{target} < MP^{acquirer}\}$		
Estimation method	OLS			Logit		
	(1)	(2)	(3)	(4)	(5)	(6)
Δ(Management practices)	0.0538**	0.0811***	0.0935***			
	(0.027)	(0.027)	(0.029)			
Management practices				2.8055***	3.1192***	3.2118***
				(0.264)	(0.254)	(0.411)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	No	Yes	Yes
Fama-French industry FE	No	No	Yes	No	No	Yes
Observations	344	344	339	344	328	314
R-squared	0.144	0.231	0.319			
Adjusted R-squared	0.113	0.106	0.115			
Log pseudolikelihood				-152.988	-130.331	-113.4
Pseudo R-squared				0.308	0.39	0.446

Panel B: Cross-sectional dispersion of management

Dependent variable	Number of acquisitions by FF12/year
Management practices (industry averages by year)	44.510**
	(22.128)
Constant	-0.532
	(10.712)
Year FE	Yes
Fama-French industry FE	Yes
Observations	455
R-squared	0.703
Adjusted R-squared	0.66

Panel C: Testing the potency of management practices on M&A value creation before 1990

Dependent variable	CAR(-2, 2)		
	Full sample	Frequent acquirers	Occasional acquirers
	(1)	(2)	(3)
Management practices (*) Pre-1990	0.0782**	0.2942**	0.0773*

	(0.032)	(0.115)	(0.041)
Controls	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	6,570	1,294	5,136
R-squared	0.33	0.264	0.327
Adjusted R-squared	0.10	0.054	0.085

Online Appendix

for

Management practices and M&A success

In this appendix, intended for online use only, we provide more information on the method used for Bayesian estimation and include additional statistics and sensitivity tests.

More information on our Bayesian method

We use an advance in sequential Monte Carlo methods known as the particle Gibbs (PG) sampler, as in Andrieu et al. (2010). The algorithm allows us to draw paths of the state variables in large blocks. Particle filtering is a simulation-based algorithm that sequentially approximates continuous, marginal distributions using discrete distributions. This is performed by using a set of support points called "particles" and probability masses; see Creal (2012) for a review.

The PG sampler draws a single path of the latent or state variables from this discrete approximation. As the number of particles *M* goes to infinity, the PG sampler draws from the exact full conditional distribution. As mentioned in Creal and Tsay (2015, p. 339): "The PG sampler is a standard Gibbs sampler but defined on an extended probability space that includes all the random variables that are generated by a particle filter. Implementation of the PG sampler is different than a standard particle filter due to the 'conditional' resampling algorithm used in the last step. Specifically, in order for draws from the particle filter to be a valid Markov transition kernel on the extended probability space, Andrieu et al. (2010) note that there must be positive probability of sampling the existing path of the state variables that were drawn at the previous iteration. The pre-existing path must survive the resampling steps of the particle filter. The conditional resampling step within the algorithm forces this path to be resampled at least once. We use the conditional multinomial resampling algorithm from Andrieu et al. (2010), although other resampling algorithms exist, see Chopin and Singh (2013)."

We follow Creal and Tsay (2015). Suppose the posterior is $p(\theta, \lambda_{1:T}|\boldsymbol{y}_{1:T})$ where $\lambda_{1:T}$ denotes the latent variables whose prior can be described by $p(\lambda_t|\lambda_{t-1}, \theta)$. In the PG sampler we can draw the structural parameters $\theta|\lambda_{1:T}, \boldsymbol{y}_{1:T}$ as usual, from their posterior conditional

distributions. This is important because, in this way, we can avoid mixture approximations or other Monte Carlo procedures that need considerable tuning and may not have good convergence properties. As such, we omit the details and focus on drawing the latent variables.

Suppose we have $\lambda_{1:T}^{(1)}$ from the previous iteration. The particle filtering procedure consists of two phases.

Phase I: Forward filtering (Andrieu et al., 2010).

- Draw a proposal $\lambda_{it}^{(m)}$ from an importance density $q(\lambda_{it}|\lambda_{i,t-1}^{(m)}, \theta), m = 2, \ldots, M$.
- Compute the importance weights:

$$w_{it}^{(m)} = \frac{p(y_{it}; \lambda_{it}^{(m)}, \theta) p(\lambda_{it}^{(m)}|\lambda_{i,t-1}^{(m)}, \theta)}{q(\lambda_{it}|\lambda_{i,t-1}^{(m)}, \theta)}, m = 1, \ldots, M.$$

- Normalize the weights: $\tilde{w}_{it}^{(m)} = \frac{w_{it}^{(m)}}{\sum_{m^f=1}^{M} w_{it}^{(m)}}, m = 1, \ldots, M.$
- Resample the particles $\{\lambda_{it}^{(m)}, m = 1, \ldots, M\}$ with probabilities $\{\tilde{w}_{it}^{(m)}, m = 1, \ldots, M\}$.

In the original PG sampler, the particles are stored for $t = 1, \ldots, T$ and a single trajectory is sampled using the probabilities from the last iteration. An improvement upon the original PG sampler was proposed by Whiteley (2010), who suggests drawing the path of the latent variables from the particle approximation using the backwards sampling algorithm of Godsill et al. (2004). In the forwards pass, we store the normalized weights and particles and we draw a path of the latent variables as we detail below (the draws are from a discrete distribution).

Phase II: Backward filtering (Chopin and Singh, 2013, Godsill et al., 2004).

- At time $t = T$ draw a particle $\lambda^* = \lambda^{(m)}$.

iT iT

- Compute the backward weights: $w_{t|T}^{(m)}$ a $\tilde{w}_t^{(m)} p(\lambda^*_{i,t+1} | \lambda_{it}^{(m)}, \theta)$.

- Normalize the weights: $\tilde{w}_{t|T}^{(m)} = \frac{w_{t|T}^{(m)}}{\sum_{m^F=1}^{M} w_{t|T}^{(m^F)}}, m = 1, \ldots, M.$

- Draw a particle $\lambda_{it}^{*} = \lambda_{it}^{(m)}$ with probability $\tilde{w}_{t|T}^{(m)}$.

Therefore, $\lambda_{i,1:T}^{*} = \{\lambda_{i1}^{*}, \ldots, \lambda_{iT}^{*}\}$ is a draw from the full conditional distribution. The backwards step often results in dramatic improvements in computational efficiency. For example, Creal and Tsay (2015) find that $M = 100$ particles is enough. There remains the problem of selecting an importance density $q(\lambda_{it}|\lambda_{i,t-1}, \theta)$. We use an importance density implicitly defined by $\lambda_{it} = a_{it} + \sum_{p=1}^{P} b_{it}\, \lambda_{i,t-1}^{p} + h_{it}\xi_{it}$ where ξ_{it} follows a standard (zero location and unit scale) Student-t distribution with $\nu = 5$ degrees of freedom. That is, we use polynomials in $\lambda_{i,t-1}$ of order P. We select the parameters a_{it}, b_{it} and h_{it} during the burn-in phase (using $P = 1$ and $P = 2$) so that the weights $\{\tilde{w}_{it}^{(m)}, m = 1, \ldots, M\}$ and $\{\tilde{w}_{t|T}^{(m)}, m = 1, \ldots, M\}$ are approximately not too far from a uniform distribution.

Chopin and Singh (2013) analyze the theoretical properties of the PG sampler, and show that the sampler is uniformly ergodic. They also show that the PG sampler with backwards sampling strictly dominates the original PG sampler in terms of asymptotic efficiency. Alternatively, when the dimension of the state vector is large, we can draw $\lambda_{i,1:T}$, conditional on all other paths $\lambda_{-i,1:T}$ that are not path i. Therefore, we can draw from the full conditional distribution $p(\lambda_{i,1:T}|\lambda_{-i,1:T}, \boldsymbol{y}_{1:T}, \theta)$.

Validation of our management practices index with Monte Carlo simulation

We setup the Monte Carlo using a frontier model of production inefficiency of the form:

$$Y = F(K, L) = K^{\alpha}L^{\beta}\exp(v - u), \quad \text{(A.1)}$$

where Y is firm output and K, L are capital and labor, whose relative prices are w_K, w_L, respectively. Further, v is the error term and u is the inefficiency component.

We prefer a frontier stochastic efficiency model to show that our findings hold within an environment unfavorable to our approach (that does not include an inefficiency component) and more favorable to the literature estimating management from a frontier approach. To derive realistic values for the exponents in equation (A.1), we actually estimate A.1 using our dataset in section 2 and set $\alpha = 0.623$ and $\beta = 0.344$.

Following the same literature estimating management from frontier efficiency models, we assume $u = 1\text{-}M$, where M is management practices with a price w_M. For simplicity, we normalize the price of output to unity (this does not affect our results) and generate relative prices of inputs as uniform numbers in the interval (0, 1). We generate technical inefficiency as $u \sim N_{+}(0, \sigma_u^2)$, where $\sigma_u^2 = 0.3$ and $v \sim N_{+}(0, \sigma_v^2)$, where $\sigma_v^2 = 0.3$, so that the signal-to-noise ratio is equal to unity. Again, this is assumption comes from the estimation of equations A.1 using our dataset and a stochastic frontier approach. Then, we generate M from $u = 1\text{-}M$ and the price of management $w_M = 10M\exp(\varepsilon_M)$, where $\varepsilon_M \sim N(0, 0{,}1^2)$.

The first-order conditions for profit maximization of the usual inputs are as follows:

$$K = aY/w_K,\ L = \beta Y/w_L. \quad \text{(A.2)}$$

For management, the first-order condition is:

$$K^{\alpha}L^{\beta}\exp(v - u) = w_M. \quad \text{(A.3)}$$

Substituting the first-order conditions in the production function, we can generate bank output from:

$$Y = \{(\frac{a}{w_K})^{\alpha}(\frac{\beta}{w_L})^{\beta}\exp(v-u)\}^{1-\alpha} . \quad \text{(A.4)}$$

Then, we generate inputs from equation (A.2), but for realism we allow some measurement error and generate inputs from:

$$K = aY/w_K\exp(\varepsilon_K),\ L = \beta Y/w_L\exp(\varepsilon_L), \quad \text{(A.5)}$$

where the error terms are distributed as $N(0, \sigma^2)$. Finally, we generate w_M from equation (A.3).

We consider 1,000 replications. In all cases we set the periods to T = 10 but conduct different exercises where the number of firms equals 100, 500, and 2,500. We also use different specifications, whereby (i) input prices on capital and labor are observed, (ii) the price of labor is missing (and thus is also latent), and (iii) the prices of labor and capital are missing. Of course, the last specifications introduce larger error.

We next estimate all variants using the simulated data and our approach discussed in section 2. In the table below, we report rank correlations between the simulated and the estimated management scores. For the larger dataset and when prices are observed, the rank correlations are as high as 92% and never fall below 85% for reasonably large datasets.

Rank correlations between simulated and estimated management practices

The table reports rank correlations between simulated management practices from the Monte Carlo method described in Section 4.1 and estimated management practices from the translog production function and the simulated samples. We report results from different sample sizes, where n is the number of cross-sections (firms). The number of periods T is fixed to T = 10. The first number (e.g., 0.85) reports the results from management practices estimated from uninformative priors in equation 2 and the second number (e.g., 0.83) from the informative priors specified in the previous section of this Appendix.

	All prices observed	Missing w_L	Missing w_L and w_F
n=1,500	0.85	0.80	0.75
n=2,000	0.89	0.83	0.79
n=2,500	0.92	0.88	0.85

References

Andrieu, C., Doucet, A., Holenstein, R., 2010. Particle Markov chain Monte Carlo methods (with discussion). J. R. Stat. Soc. Ser. B 72 (2), 1–33.

Chopin, N., Singh, S.S., 2013. On the particle Gibbs sampler. Working paper, ENSAE. http://arxiv.org/abs/1304.1887.

Creal, D.D., 2012. A survey of sequential Monte Carlo methods for economics and finance. Econometric Rev. 31 (3), 245–296.

Creal, D., and R. Tsay, 2015. High dimensional dynamic stochastic copula models. Journal of Econometrics 189 (2), 335-345.

Godsill, S.J., Doucet, A., West, M., 2004. Monte Carlo smoothing for nonlinear time series. J. Amer. Statist. Assoc. 99 (465), 156–168.

Whiteley, N., 2010. Discussion on particle Markov chain Monte Carlo methods. Journal of the Royal Statistical Society: Series B, 72(3), pp.306-307.

List of material presented and a short description

We have furnished several additional tests to check the robustness of the baseline findings. In most of these tests, our results hold. Specifically, for validation purposes, we provide results with fitted values for management based on the World Management Survey. We show results while accounting for extreme values. We also look at goodwill and the past acquisitiveness of the acquiring corporation. We provide results with additional governance characteristics (such as board characteristics and the presence of institutional blockholders). Finally, we provide results utilizing seven instead of four inputs in generating management practices scores. We provide more details of these additional tests below.

- Table A1 shows the average values of the management practices index by year and industry.

- Table A2 shows the average CAR (-2, +2) by year and Fama-French industry.

- Table A3 shows the relationship between fitted values of management practices obtained from on OLS regression of the available data from the World Management Survey and our M&A dataset.

- Table A4 presents standardized results of the baseline model in the main text.

- Table A5 presents results whereby continuous variables have been winsorized. The findings continue to be strongly statistically significant, indicating that our results are not driven by outliers.

- Table A6 is a replication of the baseline model, but it additionally includes two additional variables (i) the number of deals the past five years, and (ii) the ratio of the dollar value of past deals to acquirer market capitalization.

- In table A7, the *Relatedness* variable differs from that of the baseline model in that instead of comparing industries based on two-digit SIC codes, it utilizes four-digit codes.

- Table A8 presents the correlation table for the CAR values of acquirers and targets.

- Table A9 enhances table 8 in the main text by including additional industry control variables, while table A10 includes governance controls.

- Table A11 looks at how the management practices score performs in different industries (i.e., mining, manufacturing, transportation, communication, electric, wholesale trade, and services).

- Table A12 enhances the baseline model by including withdrawn deals, that is non-consummated deals.

- Table A13 presents several tests regarding the distribution of the error terms, while table A14 presents our baseline results (doubly-)clustered at different dimensions.

- Table A15 enhances the baseline model by controlling for pre-acquisition goodwill, while table A16 includes citations half-life. Both tables aim at securing that the baseline results are not driven by the acquirer's innovativeness or target goodwill that the baseline model could not capture.

- Table A17 includes additional governance controls, such as board characteristics, delta and vega, as well as the presence of institutional blockholders in the acquiring firm.

- Table A18 provides results by using seven inputs instead of four in the Bayesian model that generates management practices scores.

- Table A19 is replication of the baseline model, but instead of using OLS, it utilizes Bayesian inference (e.g., it uses the Stata prefix "bayes").

- Figure A1: A Q-Q plot distribution of the CAR residuals. The results are from the whole sample.

- Figure A2: A P-P plot distribution of the CAR residuals. The results are from the whole sample.

Table A1: **Average values of the management practices index by year and industry**

This table presents average values of the management practices index for the whole sample by each year for the twelve Fama-French industries. Some of the industries have empty cells, because in the process of calculating the management practices index we had missing observations from Compustat. Definitions of all variables along with their sources can be found in table 1.

Year	All	Non-durables	Durables	Manufacture	Oil, gas, coal	Chemicals	Business Equipment	Telephone, TV	Utilities	Wholesale, retail	Healthcare, drugs	Finance	Other
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1980	0.562			0.525	0.654	0.545	0.887	0.700		0.370	0.232		
1981	0.533	0.549	0.450	0.572	0.556	0.482	0.461	0.565		0.531	0.557	0.531	0.559
1982	0.523	0.521	0.591	0.472	0.513	0.296	0.577	0.510	0.539	0.538	0.552	0.496	0.476
1983	0.517	0.521	0.540	0.524	0.491	0.538	0.519	0.508	0.598	0.560	0.461	0.443	0.523
1984	0.524	0.515	0.497	0.527	0.540	0.531	0.488	0.462	0.406	0.479	0.646	0.537	0.571
1985	0.538	0.565	0.515	0.542	0.506	0.538	0.557	0.622	0.299	0.513	0.480	0.554	0.478
1986	0.526	0.495	0.592	0.502	0.366	0.508	0.536	0.626		0.512	0.542	0.538	0.528
1987	0.540	0.574	0.467	0.531	0.502	0.614	0.542	0.501		0.591	0.551	0.380	0.512
1988	0.539	0.528	0.600	0.524	0.568	0.548	0.507	0.554	0.308	0.555	0.486	0.496	0.584
1989	0.528	0.549	0.487	0.533	0.499	0.543	0.550	0.507	0.540	0.486	0.513	0.573	0.531
1990	0.539	0.549	0.536	0.574	0.467	0.439	0.514	0.584	.479	0.552	0.576	0.582	0.528
1991	0.552	0.493	0.577	0.551	0.555	0.568	0.580	0.592	0.564	0.548	0.519	0.514	0.561
1992	0.531	0.541	0.521	0.509	0.547	0.718	0.517	0.588		0.564	0.523	0.468	0.522
1993	0.538	0.543	0.497	0.524	0.603	0.587	0.565	0.522	0.470	0.540	0.519	0.543	0.517
1994	0.534	0.476	0.394	0.549	0.537	0.510	0.549	0.553	0.491	0.526	0.523	0.557	0.545
1995	0.543	0.576	0.548	0.536	0.549	0.591	0.539	0.560		0.557	0.522	0.535	0.538
1996	0.550	0.534	0.532	0.564	0.521	0.578	0.543	0.573	0.508	0.547	0.561	0.562	0.540
1997	0.551	0.583	0.527	0.554	0.590	0.535	0.545	0.575	0.577	0.536	0.530	0.567	0.549
1998	0.536	0.496	0.566	0.545	0.542	0.560	0.534	0.515	0.527	0.527	0.535	0.610	0.530
1999	0.546	0.538	0.495	0.545	0.539	0.540	0.556	0.509	0.597	0.548	0.507	0.584	0.544
2000	0.536	0.521	0.498	0.557	0.507	0.577	0.526	0.538	0.578	0.571	0.551	0.533	0.543
2001	0.544	0.499	0.570	0.515	0.575	0.600	0.550	0.521	0.546	0.573	0.545	0.483	0.561
2002	0.545	0.566	0.500	0.520	0.604	0.572	0.544	0.581	0.611	0.547	0.523	0.558	0.546
2003	0.540	0.544	0.569	0.534	0.545	0.584	0.549	0.502	0.489	0.554	0.517	0.505	0.537
2004	0.542	0.509	0.473	0.532	0.636	0.523	0.532	0.499	0.506	0.524	0.568	0.504	0.554
2005	0.535	0.529	0.455	0.539	0.526	0.640	0.536	0.518	0.312	0.516	0.547	0.520	0.548
2006	0.532	0.532	0.395	0.573	0.544	0.573	0.525	0.585	0.444	0.554	0.496	0.520	0.536
2007	0.543	0.564	0.573	0.541	0.581	0.606	0.521	0.536	0.546	0.562	0.534	0.549	0.544
2008	0.530	0.510	0.435	0.547	0.459	0.545	0.556	0.548	0.579	0.519	0.539	0.492	0.534
2009	0.538	0.570	0.519	0.492	0.604	0.577	0.542	0.591	0.590	0.525	0.510	0.690	0.530
2010	0.545	0.561	0.479	0.527	0.576	0.547	0.551	0.500	0.543	0.536	0.573	0.492	0.549
2011	0.516	0.567	0.483	0.500	0.525	0.573	0.497	0.510	0.451	0.584	0.551	0.456	0.515
2012	0.534	0.564	0.524	0.499	0.551	0.556	0.558	0.542	0.638	0.595	0.483	0.463	0.512

2013	0.534	0.517	0.485	0.535	0.507	0.514	0.521	0.539	0.425	0.586	0.538	0.571	0.554
2014	0.547	0.535	0.561	0.539	0.562	0.582	0.531	0.525	0.514	0.548	0.572	0.552	0.555
2015	0.545	0.550	0.558	0.529	0.522	0.564	0.534	0.496	0.622	0.600	0.559	0.503	0.539
2016	0.538	0.431	0.559	0.547		0.571	0.561			0.506	0.552	0.469	0.619
Average	0.538	0.534	0.516	0.533	0.541	0.553	0.546	0.546	0.510	0.540	0.527	0.526	0.539

Table A2: **Average CAR (-2, +2) by year and Fama-French industry**

Cumulative abnormal return, *CAR (-2, +2)*, is calculated two days around the event date. The calculation is based on the market model. Data regarding mergers and acquisitions, M&A, are obtained from the Thomson One Banker database for a period covering 1980 to 2016. The 12 industries are based on the Fama-French classification.

Year	All	Cons. non-durables	Cons. durables	Man.	Oil, gas, coal	Chem.	Business equip.	Tel./TV	Utilities	Whole. and retail	Health. and drugs	Finance	Other
1980	1.28%	-0.02%		-0.12%	-3.19%	-6.71%	26.39%	11.45%		-8.20%		1.23%	
1981	-0.90%	2.98%	1.17%	-1.25%	-0.74%	-5.42%	-1.16%	-1.49%	2.69%	-0.26%	-1.59%	-0.96%	-0.64%
1982	0.18%	1.21%	2.78%	0.47%	0.90%	-1.39%	0.48%	0.87%	1.18%	1.08%	-3.30%	-0.31%	2.09%
1983	0.27%	1.65%	-1.53%	0.14%	1.22%	1.16%	-1.33%	0.22%	0.20%	0.01%	-2.50%	0.89%	0.40%
1984	0.30%	1.57%	-0.34%	0.69%	1.65%	-1.52%	1.49%	-1.99%	1.26%	0.65%	5.58%	-0.64%	-0.17%
1985	0.55%	0.33%	1.76%	1.54%	0.39%	-0.74%	0.53%	2.68%	-2.45%	-0.44%	-0.35%	0.02%	2.04%
1986	1.03%	1.94%	7.10%	0.08%	3.08%	20.81%	-1.33%	1.81%	-0.52%	1.57%	-1.67%	-0.43%	1.59%
1987	-0.01%	2.04%	-0.64%	0.53%	-1.17%	-0.18%	2.99%	3.60%	-2.97%	7.62%	10.47%	-2.51%	-3.29%
1988	0.57%	-0.98%	-0.39%	0.18%	0.15%	1.62%	2.78%	1.80%	2.51%	1.21%	0.99%	-0.48%	2.13%
1989	0.16%	2.12%	0.37%	0.02%	4.36%	2.65%	-0.21%	3.03%	1.58%	-2.99%	-1.40%	-0.95%	4.02%
1990	0.59%	0.48%	3.22%	0.87%	3.38%	-1.67%	1.37%	-5.85%	-0.58%	1.85%	-2.66%	0.07%	0.89%
1991	2.05%	0.24%	5.28%	2.10%	1.06%	-1.45%	0.38%	16.53%	13.81%	0.59%	3.32%	1.54%	-0.24%
1992	1.77%	2.61%	4.18%	0.39%	3.98%	3.80%	4.75%	4.40%	9.12%	3.78%	0.21%	-0.12%	2.16%
1993	1.36%	-0.35%	0.83%	3.72%	0.69%	0.48%	3.14%	3.43%	1.32%	0.93%	1.99%	-0.06%	2.32%
1994	0.89%	-1.71%	1.68%	2.99%	4.92%	5.18%	1.69%	-0.88%	-3.84%	2.11%	0.34%	-0.34%	2.57%
1995	0.86%	0.18%	1.67%	1.14%	2.05%	1.70%	-0.57%	3.32%	1.22%	2.99%	1.79%	-0.04%	2.10%
1996	1.57%	2.02%	3.09%	2.62%	3.41%	-0.12%	2.44%	1.71%	0.22%	1.22%	1.24%	0.42%	2.79%
1997	1.14%	1.90%	1.81%	2.46%	0.71%	4.98%	1.51%	0.01%	-0.23%	1.18%	-1.10%	0.31%	3.27%
1998	-0.08%	-0.49%	3.40%	1.26%	-2.67%	-1.60%	0.10%	-0.73%	1.65%	1.41%	2.68%	-1.08%	-0.09%
1999	1.40%	2.31%	3.58%	2.28%	6.22%	2.71%	2.49%	-1.23%	-1.08%	2.13%	0.11%	-0.08%	1.98%
2000	-0.17%	0.80%	1.28%	1.13%	0.61%	-4.36%	-0.92%	-1.20%	0.10%	0.87%	-1.57%	0.10%	-0.07%
2001	0.71%	0.56%	-2.35%	2.20%	0.62%	3.52%	0.23%	2.09%	-0.67%	3.11%	1.29%	0.01%	2.44%
2002	0.47%	1.02%	0.05%	1.29%	1.79%	0.10%	0.76%	3.62%	-0.48%	1.88%	-0.01%	-0.63%	0.63%
2003	0.96%	3.05%	0.64%	3.28%	0.79%	5.32%	1.42%	-3.19%	-1.28%	0.33%	1.43%	-0.13%	2.43%
2004	0.50%	2.94%	7.06%	1.24%	0.37%	-1.08%	-0.44%	4.17%	-0.06%	2.18%	1.30%	-0.23%	2.36%
2005	0.62%	2.85%	-3.38%	2.35%	-0.22%	-1.37%	0.59%	-0.99%	1.61%	2.62%	-0.44%	0.07%	1.93%
2006	0.65%	2.16%	4.63%	2.25%	-3.22%	0.92%	0.61%	2.31%	1.31%	2.36%	1.90%	0.00%	0.71%
2007	0.63%	0.92%	0.28%	0.98%	2.98%	1.89%	0.03%	0.23%	0.48%	3.19%	1.53%	-0.01%	0.13%
2008	0.86%	6.67%	0.27%	1.86%	3.59%	-3.66%	-0.99%	-2.22%	-0.50%	0.10%	0.13%	0.79%	2.24%
2009	1.81%	10.53%	2.64%	1.17%	4.91%	7.92%	0.42%	8.22%	0.64%	2.38%	0.11%	2.66%	1.37%
2010	0.45%	-0.78%	2.66%	1.63%	-0.31%	0.37%	0.27%	-3.10%	-1.30%	4.13%	2.74%	-0.52%	1.04%
2011	0.36%	2.31%	-1.00%	-0.13%	0.64%	-1.19%	0.62%	4.34%	0.69%	0.31%	0.79%	-0.37%	1.00%

2012	1.04%	3.74%	0.47%	1.04%	1.29%	5.33%	1.34%	-1.70%	-0.58%	2.31%	-1.59%	0.74%	1.89%
2013	1.16%	0.53%	1.71%	1.83%	-0.16%	-0.45%	1.88%	4.78%	1.10%	4.13%	4.52%	-0.02%	1.52%
2014	1.40%	2.28%	-0.67%	2.41%	-0.64%	1.30%	0.17%	-2.04%	0.62%	1.05%	4.98%	0.80%	4.46%
2015	0.72%	3.06%	0.86%	-0.02%	-0.39%	3.10%	-1.04%	5.54%	-2.87%	3.69%	1.66%	0.41%	0.27%
2016	1.14%	-0.83%	8.20%	2.77%		-2.31%	0.69%			4.66%	0.10%	-0.13%	4.44%
Avg.	0.76%	1.67%	1.73%	1.34%	1.20%	1.07%	1.45%	1.77%	0.68%	1.56%	0.92%	0.00%	1.52%

Table A3: Comparing the effect of management practices measure with its fitted values on CARs.
This table compares the effect of our management practices measure on CARs against the equivalent effect of fitted values of management practices computed from the World Management Survey (WMS). Specifically, we first append the WMS data to our Compustat data and regress the WMS management scores on the independent variables of equation 2, specifically capital, number of employees, and the price of labor. We then use the prediction from this regression as a new estimate of management practices and examine its effect on M&A value creation. CAR calculation is based on the market model. Standard errors (in parentheses) are clustered at the firm level (acquirer). Stars ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively. All regressions include a constant term.

	CAR(-1, +1)		CAR(-2, -2)		CAR(-5, -5)	
	(1)	(2)	(3)	(4)	(5)	(6)
Management practices	0.0661***		0.0591***		0.0713***	
	(0.009)		(0.010)		(0.013)	
Management practices (fitted)		0.0136***		0.0132**		0.0095
		(0.005)		(0.006)		(0.007)
Ln (acquirer size)	-0.0084***	-0.0041	-0.0108***	-0.0066**	-0.0204***	-0.0173***
	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)
Run-up	-0.0075	-0.0134	-0.0117	-0.0175*	-0.0438***	-0.0481***
	(0.008)	(0.008)	(0.009)	(0.010)	(0.012)	(0.012)
Sigma	0.0806	0.0385	-0.0101	-0.0486	0.2224	0.1876
	(0.179)	(0.180)	(0.197)	(0.197)	(0.257)	(0.259)
Relative size	0.0155***	0.0170***	0.0186***	0.0201***	0.0191***	0.0205***
	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)
Relatedness	0.0036	0.0033	0.0039	0.0038	0.0006	0.0004
	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)
Friendly merger	-0.0352	-0.0318	0.0300	0.0332	0.0849	0.0879
	(0.029)	(0.026)	(0.043)	(0.040)	(0.070)	(0.066)
Hostile merger	-0.0405	-0.0380	0.0215	0.0240	0.0708	0.0721
	(0.031)	(0.028)	(0.045)	(0.042)	(0.072)	(0.068)
Neutral merger	-0.0441	-0.0402	0.0283	0.0322	0.0773	0.0806
	(0.034)	(0.031)	(0.047)	(0.044)	(0.074)	(0.070)
Public (cash)	0.0050	0.0056	0.0017	0.0023	0.0001	0.0008
	(0.004)	(0.004)	(0.005)	(0.004)	(0.005)	(0.005)
Public (stock)	-0.0287***	-0.0287***	-0.0242***	-0.0244***	-0.0288***	-0.0289***
	(0.006)	(0.006)	(0.007)	(0.007)	(0.008)	(0.008)
Private (cash)	0.0039	0.0033	0.0007	0.0002	-0.0026	-0.0032
	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)	(0.005)
Private (stock)	0.0164***	0.0150***	0.0186***	0.0174***	0.0289***	0.0277***
	(0.005)	(0.005)	(0.006)	(0.006)	(0.008)	(0.008)
Subsidiary (cash)	0.0073***	0.0078***	0.0045	0.0052	0.0037	0.0044
	(0.003)	(0.003)	(0.004)	(0.004)	(0.005)	(0.005)
Free cash flow	0.0001***	0.0001***	-0.0001***	-0.0001***	-0.0001***	-0.0001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Tobin's q	-0.0005	-0.0010	-0.0017**	-0.0022**	-0.0024*	-0.0027**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Leverage	-0.0177	-0.0104	-0.0077	-0.0011	-0.0136	-0.0080
	(0.011)	(0.011)	(0.012)	(0.013)	(0.015)	(0.015)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,956	6,946	6,956	6,946	6,956	6,946
R-squared	0.364	0.357	0.348	0.344	0.356	0.352
Adjusted R-squared	0.153	0.144	0.131	0.126	0.143	0.137

Table A4: Benchmark model with management – Standardized values

This table reports standardized coefficients from the estimation of equation (3) with management practices. The dependent variable is the bidder's CAR, based on a two-day event window (-2, +2) around the announcement date. The results are for the whole sample, for frequent acquirers (acquirers who have completed at least five acquisitions within a three-year event window), and for occasional acquirers (acquirers who have completed at least two acquisitions within a three-year period). CAR calculation is based on the market model. Standard errors (in parentheses) are clustered at the firm level (acquirer). Stars ***, **, * denote statistical significance at the 1%, 5%, and 10% levels respectively. All regressions include a constant term. Definitions of all variables along with their sources are in table 1.

	Whole sample	Frequent	Occasional	Whole sample	Frequent	Occasional
	(1)	(2)	(3)	(4)	(5)	(6)
Management practices	0.1212***	0.0506**	0.0899***	0.0819***	0.0247	0.0752***
	(0.013)	(0.024)	(0.013)	(0.014)	(0.029)	(0.015)
Ln (acquirer size)	-0.0784***	-0.1306***	-0.0922***	-0.2186***	-0.4720***	-0.3159***
	(0.015)	(0.036)	(0.017)	(0.051)	(0.120)	(0.069)
Run-up	-0.0329*	-0.0348	-0.0413**	-0.0260	-0.0311	-0.0165
	(0.018)	(0.037)	(0.019)	(0.022)	(0.050)	(0.026)
Sigma	0.0378	0.0181	-0.0000	0.0001	-0.0342	-0.0071
	(0.030)	(0.056)	(0.025)	(0.036)	(0.090)	(0.047)
Relative size	0.1678***	0.1352**	0.1265***	0.1264***	0.1587***	0.1150***
	(0.034)	(0.055)	(0.032)	(0.031)	(0.058)	(0.036)
Relatedness	0.0367	-0.0475	0.0352	0.0338	-0.1310*	0.0178
	(0.022)	(0.052)	(0.025)	(0.030)	(0.076)	(0.034)
Friendly merger	0.1652	0.1963	0.3233	0.3591	0.4648**	0.5032
	(0.349)	(0.280)	(0.626)	(0.459)	(0.203)	(0.555)
Hostile merger	0.0225		0.1412	0.2470	0.3051	0.4204
	(0.374)		(0.644)	(0.486)	(0.337)	(0.585)
Neutral merger	0.2147	-0.0790	0.1626	0.3453		0.4994
	(0.475)	(0.292)	(0.653)	(0.496)		(0.616)
Public (cash)	0.0185	0.0294	0.0267	-0.0164	0.0301	0.0354
	(0.041)	(0.110)	(0.051)	(0.050)	(0.150)	(0.059)
Public (stock)	-0.3196***	-0.3863***	-0.3233***	-0.2704***	-0.4479***	-0.2781***
	(0.057)	(0.119)	(0.067)	(0.072)	(0.143)	(0.083)
Private (cash)	0.0165	0.0767	0.0081	0.0032	0.0354	0.0258
	(0.029)	(0.075)	(0.034)	(0.039)	(0.086)	(0.044)
Private (stock)	0.2143***	0.0922	0.2349***	0.2133***	0.0245	0.2916***
	(0.055)	(0.100)	(0.063)	(0.071)	(0.156)	(0.083)
Subsidiary (cash)	0.1115***	-0.0774	0.0927**	0.0425	-0.1739	0.0220
	(0.033)	(0.087)	(0.038)	(0.038)	(0.109)	(0.046)
Free cash flow	-0.0002	0.7594	-0.0007	-0.0023**	0.1918	-0.0026**
	(0.001)	(0.523)	(0.000)	(0.001)	(1.330)	(0.001)
Tobin's q	-0.0958***	-0.0441	-0.0853***	-0.0701*	-0.0297	-0.0770*
	(0.024)	(0.033)	(0.024)	(0.041)	(0.069)	(0.045)
Leverage	0.0094	-0.0103	-0.0095	-0.0282	-0.1167	-0.0567
	(0.014)	(0.026)	(0.015)	(0.029)	(0.071)	(0.036)
Firm FE	No	No	No	Yes	Yes	Yes
Year FE	No	No	No	Yes	Yes	Yes
Observations	7,721	1,339	5,328	6,570	1,294	5,136
R-squared	0.064	0.047	0.051	0.330	0.263	0.327
Adjusted R-squared	0.062	0.035	0.048	0.100	0.055	0.086

Table A5: **Winsorized results**

This table reports OLS results from the estimation of equation (3) with management practices. All variables (except dummies) have been winsorized at the 1% level at both ends. Each numbered line corresponds to a column in the previous tables. Specifically, lines [1] to [6] correspond to columns (1) to (6) of Table 5. Lines [7] to [10] correspond to the columns of Table 6. Standard errors are clustered at the acquirer level. Stars ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Definitions of all variables along with their sources are in Table 1.

		Coefficient	Standard error	R^2	R^2-adjusted	Observations
Dependent variable: acquirer CAR (-2, +2)						
[1]	Full sample, fixed effects: No	0.0705***	0.007	0.057	0.054	7,721
[2]	Frequent acquirers, fixed effects: No	0.0294*	0.016	0.046	0.034	1,339
[3]	Occasional acquirers, fixed effects: No	0.0576***	0.009	0.051	0.048	5,328
[4]	Full sample, fixed effects: Yes	0.0505***	0.009	0.320	0.088	6,570
[5]	Frequent acquirers, fixed effects: Yes	0.0083	0.020	0.268	0.061	1,294
[6]	Occasional acquirers, fixed effects: Yes	0.0486***	0.010	0.324	0.081	5,136
[7]	Governance controls	0.0733**	0.031	0.474	0.151	488
[8]	Management team controls	0.0330*	0.018	0.358	0.088	1,611
[9]	Sales and assets controls	0.0529***	0.009	0.333	0.113	6,751
[10]	Technology and industry controls	0.0550***	0.012	0.372	0.122	4,105

Table A6: Results including past acquisitiveness and the ratio of the dollar value of past deals to acquirer market capitalization

This table reports OLS results from the regression of CAR(-2, +2) on management practices in different scenarios presented in the main text. The coefficient reported here is that of management practices. These models are enhanced in that they include two additional controls: (i) the number of deals the past five years, and (ii) the ratio of the dollar value of past deals to acquirer market capitalization. Lines [1] and [2] correspond to columns (1) and (4) of Table 5. Line [3] to [6] correspond to columns (3) of Table 6. Standard errors are clustered at the firm (acquirer) level. Stars, ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

		Coefficient	Std. error	R2	R^2-adjusted	Observations
[1]	Full sample, FE = No	0.0907***	0.009	0.065	0.063	8,094
[2]	Full sample, FE = Yes	0.0593***	0.010	0.348	0.132	6,956
[3]	Governance	0.0722**	0.032	0.476	0.150	488
[4]	Management	0.0348*	0.019	0.372	0.105	1,611
[5]	Firm performance	0.0601***	0.010	0.350	0.134	6,751
[6]	Industry characteristics	0.0648***	0.014	0.387	0.141	4,105

Table A7: Four-digit relatedness index

This table reports OLS results for the estimation of equation (3). The dependent variable is the bidder's CAR. CAR calculation is based on the market model. Standard errors (in parentheses) are clustered at the firm level (acquirer). Stars ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively. All regressions include a constant term. Definitions of all variables along with their sources are in table 1.

	CAR(-1, +1)	CAR(-2, +2)	CAR(-5, +5)
	(1)	(2)	(3)
Management practices	0.0662***	0.0590***	0.0781***
	(0.009)	(0.010)	(0.013)
Ln (acquirer size)	-0.0085***	-0.0108***	-0.0212***
	(0.002)	(0.003)	(0.003)
Run-up	-0.0058	-0.0105	-0.0447***
	(0.008)	(0.009)	(0.012)
Sigma	0.0783	-0.0024	0.1997
	(0.182)	(0.200)	(0.263)
Relative size	0.0156***	0.0195***	0.0186***
	(0.004)	(0.005)	(0.005)
Relatedness (4 digit SIC codes)	0.0019	0.0028	0.0002
	(0.002)	(0.003)	(0.004)
Friendly merger	-0.0329	0.0335	0.0872
	(0.028)	(0.041)	(0.069)
Hostile merger	-0.0417	0.0231	0.0711
	(0.030)	(0.044)	(0.071)
Neutral merger	-0.0418	0.0319	0.0791
	(0.033)	(0.045)	(0.074)
Public (cash)	0.0029	-0.0015	-0.0025
	(0.004)	(0.005)	(0.005)
Public (stock)	-0.0293***	-0.0248***	-0.0285***
	(0.006)	(0.007)	(0.008)
Private (cash)	0.0037	0.0002	-0.0034
	(0.003)	(0.004)	(0.005)
Private (stock)	0.0171***	0.0194***	0.0300***
	(0.005)	(0.006)	(0.008)
Subsidiary (cash)	0.0075***	0.0040	0.0027
	(0.003)	(0.003)	(0.005)
Free cash flow	0.0001***	-0.0001**	-0.0001***
	(0.000)	(0.000)	(0.000)
Tobin's q	-0.0005	-0.0016*	-0.0027*
	(0.001)	(0.001)	(0.002)
Leverage	-0.0214*	-0.0121	-0.0219
	(0.011)	(0.012)	(0.015)
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	6,570	6,570	6,570
Adjusted R-squared	0.124	0.100	0.122

Table A8: Correlations matrix for cumulative abnormal returns

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
[1]	CAR (-1, +1) acquirer	1								
[2]	CAR (-2, +2) acquirer	0.877	1							
[3]	CAR (-5, +5) acquirer	0.683	0.756	1						
[4]	CAR (-1, +1) target	0.070	0.055	0.049	1					
[5]	CAR (-2, +2) target	0.067	0.065	0.055	0.975	1				
[6]	CAR (-5, +5) target	0.058	0.062	0.105	0.917	0.941	1			
[7]	CAR (-1, +1) synergy	0.774	0.681	0.530	0.334	0.320	0.286	1		
[8]	CAR (-2, +2) synergy	0.691	0.798	0.609	0.288	0.308	0.279	0.903	1	
[9]	CAR (-5, +5) synergy	0.544	0.620	0.856	0.226	0.239	0.299	0.718	0.787	1

Table A9: Controls for industry characteristics in synergy equations

This table reports OLS results from the estimation of equation (3) using the whole sample and including additional controls for industry characteristics. The dependent variable is synergistic CARs for acquirer and target. These are computed based on the market model with their respective weights based on their market capitalizations six days prior to the day of announcement. Standard errors (in parentheses) are clustered at the acquirer level. Stars ***, **, * denote statistical significance at the 1%, 5%, and 10% levels. All regressions include a constant term. Definitions of all variables along with their sources are in Table 1.

	Synergy CAR(-1, +1)	Synergy CAR(-2, +2)	Synergy CAR(-5, +5)
Management practices	0.0749***	0.0794***	0.0716**
	(0.022)	(0.024)	(0.029)
Conglomerate	-0.0252***	-0.0302***	-0.0464***
	(0.008)	(0.009)	(0.012)
Tech (target)	-0.0123	-0.0112	-0.0060
	(0.009)	(0.010)	(0.011)
Tech (both)	-0.0013	0.0049	-0.0003
	(0.009)	(0.011)	(0.012)
RD intensity	-0.0351	-0.0848	-0.0088
	(0.063)	(0.064)	(0.073)
RD high	-0.0023	0.0066	0.0044
	(0.008)	(0.008)	(0.010)
Firm controls	Yes	Yes	Yes
Deal controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	753	753	752
Adjusted R-squared	0.296	0.269	0.254

Table A10: Controls for governance and synergies

This table reports OLS results from the estimation of equation (3) for the whole sample, including controls for governance indices developed by Gompers et al. (2003) and Bebchuk et al. (2009). The dependent variable is synergistic CARs for acquirer and target. These are computed based on the market model with their respective weights based on their market capitalizations six days prior to the day of announcement. Standard errors (in parentheses) are clustered at the acquirer level. Stars ***, **, * denote statistical significance at the 1%, 5%, and 10% levels. All regressions include a constant term. Definitions of all variables along with their sources are in Table 1.

	Synergy CAR(-1, +1)			Synergy CAR(-2, +2)			Synergy CAR(-5, +5)		
Management practices	0.0545	0.0537	0.0246	0.0851**	0.0506	0.0598	0.1164**	0.0691	0.1046*
	(0.039)	(0.036)	(0.043)	(0.042)	(0.039)	(0.048)	(0.048)	(0.050)	(0.055)
G-index	-0.0014		-0.0029	-0.0028		-0.0050	-0.0018		-0.0014
	(0.002)		(0.003)	(0.002)		(0.003)	(0.002)		(0.004)
E-index		-0.0004	0.0020		-0.0009	0.0070		-0.0076	-0.0048
		(0.003)	(0.005)		(0.004)	(0.007)		(0.005)	(0.009)
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Deal controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	157	183	139	157	183	139	156	182	138
Adjusted R-squared	0.156	0.123	0.131	0.128	0.082	0.052	0.115	0.096	0.046

Table A11: The effect of management practices on CAR(-2, +2) by different industries

This table reports OLS results on the effect of management practices measure on CAR(-2, +2). CAR calculation is based on the market model. Values from a Wald test for the equality of the coefficients between the manufacturing industry and the rest of the industries are reported below the standard error of the management practices coefficient—chi2 (in braces) and p-value (in brackets). Stars ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Definitions of all variables along with their sources are in Table 1.

	Mining		Manufacturing		Transportation Communication Electric		Wholesale Trade		Services	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Management practices	0.0638*	0.0548	0.0816***	0.0601***	0.0434	-0.0260	0.0391	0.1087**	0.1079***	0.0620***
	(0.038)	(0.044)	(0.013)	(0.014)	(0.032)	(0.036)	(0.055)	(0.052)	(0.019)	(0.020)
	{0.22}	{0.01}			{1.33}	{5.47}	{0.65}	{0.96}	{1.33}	{0.01}
	[0.64]	[0.90]			[0.25]	[0.02]	[0.42]	[0.33]	[0.25]	[0.94]
Ln (acquirer size)	-0.0060*	-0.0139	-0.0042***	-0.0072**	0.0007	-0.0106	-0.0084*	-0.0094	-0.0068***	-0.0192***
	(0.003)	(0.011)	(0.001)	(0.003)	(0.004)	(0.008)	(0.005)	(0.009)	(0.002)	(0.006)
Run-up	0.0082	0.0041	-0.0170	-0.0133	-0.0305	-0.0597**	0.0430	0.0564	-0.0076	-0.0072
	(0.048)	(0.069)	(0.010)	(0.013)	(0.036)	(0.030)	(0.037)	(0.047)	(0.012)	(0.016)
Sigma	0.8745	2.2093**	0.2027	-0.1714	1.5656	-0.4035	-0.1594	1.6525	0.0625	0.0160
	(0.554)	(0.884)	(0.210)	(0.281)	(1.055)	(0.741)	(0.638)	(1.217)	(0.255)	(0.378)
Relative size	0.0082	-0.0052	0.0291***	0.0231***	0.0266	0.0301**	0.0521**	0.0385	0.0114	0.0061
	(0.008)	(0.012)	(0.007)	(0.006)	(0.017)	(0.014)	(0.026)	(0.027)	(0.012)	(0.012)
Relatedness	0.0050	-0.0061	0.0040	0.0021	0.0097	0.0008	0.0071	0.0166	0.0053	0.0086
	(0.012)	(0.019)	(0.003)	(0.004)	(0.010)	(0.011)	(0.008)	(0.010)	(0.005)	(0.007)
Friendly merger	0.1446***	-0.0317	0.1143***	0.1048***	-0.0025	-0.0429	0.0398	-0.0822***	-0.0609***	-0.0468*
	(0.042)	(0.069)	(0.010)	(0.013)	(0.032)	(0.042)	(0.025)	(0.026)	(0.012)	(0.024)
Hostile merger	0.2033***		0.0892***	0.0879***				-0.1044***	-0.0660	-0.0433
	(0.067)		(0.016)	(0.017)				(0.035)	(0.042)	(0.056)
Neutral merger	-	-			-	-		-		
Public (cash)	-0.0041	-0.0432	-0.0002	0.0006	-0.0001	0.0267	0.0099	-0.0033	0.0169**	0.0071
	(0.035)	(0.047)	(0.004)	(0.005)	(0.026)	(0.036)	(0.025)	(0.031)	(0.009)	(0.011)
Public (stock)	0.0098	0.0371	-0.0340***	-0.0221***	-0.0249	-0.0177	-0.0149	-0.0373*	-0.0386***	-0.0377***
	(0.021)	(0.041)	(0.007)	(0.008)	(0.020)	(0.030)	(0.017)	(0.020)	(0.011)	(0.014)
Private (cash)	0.0057	0.0133	0.0017	0.0100**	-0.0113	-0.0054	-0.0133	-0.0236*	0.0026	-0.0106
	(0.025)	(0.031)	(0.004)	(0.004)	(0.011)	(0.014)	(0.011)	(0.013)	(0.006)	(0.007)
Private (stock)	-0.1041*	-0.0270	0.0120*	0.0179**	0.0028	-0.0098	-0.0285	-0.0400	0.0339***	0.0302**
	(0.055)	(0.028)	(0.007)	(0.008)	(0.026)	(0.028)	(0.019)	(0.025)	(0.009)	(0.012)

Subsidiary (cash)	-0.0005	0.0033	0.0145***	0.0125***	0.0012	0.0039	0.0090	-0.0006	0.0033	-0.0024
	(0.011)	(0.014)	(0.004)	(0.005)	(0.009)	(0.011)	(0.012)	(0.013)	(0.008)	(0.010)
Free cash flow	0.0094	0.0179	-0.0355*	-0.0252	-0.0708	0.0384	-0.2083	-0.0228	-0.0000	-0.0001
	(0.013)	(0.018)	(0.021)	(0.032)	(0.084)	(0.041)	(0.156)	(0.088)	(0.000)	(0.000)
Tobin's q	-0.0081	-0.0048	-0.0015**	-0.0019*	-0.0084***	-0.0165	0.0043	0.0026	-0.0035***	-0.0013
	(0.007)	(0.014)	(0.001)	(0.001)	(0.003)	(0.010)	(0.005)	(0.013)	(0.001)	(0.002)
Leverage	-0.0296	-0.0687	0.0087	0.0051	-0.0381**	-0.1297***	0.0069	0.0469	0.0102	0.0067
	(0.030)	(0.049)	(0.008)	(0.015)	(0.018)	(0.038)	(0.033)	(0.103)	(0.011)	(0.024)
Observations	423	364	3,990	3,437	620	545	345	297	2,112	1,809
R-squared	0.182	0.374	0.095	0.373	0.198	0.431	0.276	0.587	0.081	0.361
Firm FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm

Table A12: Model with withdrawn deals included

This table reports OLS results for an augmented sample including withdrawn deals. The dependent variable is the bidder's CAR based on a one-, two-, and five-day window around the announcement date. All results reported are for the whole sample. CAR calculation is based on the market model. Standard errors (in parentheses) are clustered at the firm level (acquirer). Stars ***, **, * denote statistical significance at the 1%, 5%, and 10% respectively. All regressions include a constant term. Definitions of all variables and their sources are in Table 1.

	CAR(-1, +1)	CAR(-2, +2)	CAR(-5, +5)
	(1)	(2)	(3)
Management practices	0.0670***	0.0621***	0.0699***
	(0.008)	(0.009)	(0.012)
Ln(acquirer size)	-0.0030***	-0.0041***	-0.0041***
	(0.001)	(0.001)	(0.001)
Run-up	-0.0094	-0.0133	-0.0419***
	(0.007)	(0.008)	(0.011)
Sigma	0.2265	0.1721	0.4907*
	(0.175)	(0.192)	(0.251)
Relative size	0.0072	0.0086*	0.0127**
	(0.004)	(0.005)	(0.005)
Relatedness	0.0039*	0.0046*	0.0019
	(0.002)	(0.003)	(0.003)
Friendly merger	-0.0106	-0.0190	-0.0145
	(0.012)	(0.012)	(0.018)
Hostile merger	-0.0285**	-0.0349***	-0.0202
	(0.012)	(0.013)	(0.017)
Neutral merger	-0.0010	0.0029	-0.0053
	(0.019)	(0.019)	(0.025)
Public (cash)	0.0036	0.0020	0.0016
	(0.004)	(0.004)	(0.005)
Public (stock)	-0.0244***	-0.0217***	-0.0243***
	(0.006)	(0.006)	(0.008)
Private (cash)	0.0029	-0.0005	-0.0041
	(0.003)	(0.003)	(0.005)
Private (stock)	0.0175***	0.0194***	0.0282***
	(0.005)	(0.006)	(0.008)
Subsidiary (cash)	0.0061**	0.0030	0.0027
	(0.003)	(0.004)	(0.005)
Free cash flow	0.0001***	-0.0001**	-0.0001***
	(0.000)	(0.000)	(0.000)
Tobin's q	-0.0011	-0.0025***	-0.0040***
	(0.001)	(0.001)	(0.001)
Leverage	-0.0186*	-0.0074	-0.0056
	(0.011)	(0.012)	(0.015)
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	7,288	7,288	7,305
R-squared	0.350	0.336	0.347
Adjusted R-squared	0.138	0.120	0.134

Table A13: Normality tests

This table reports normality tests for residuals. Two statistical tests are utilized, specifically the Shapiro-Wilkinson and a Skewness/Kurtosis test. The null hypothesis is that the distribution of residuals is normal.

Shapiro-Wilkinson test

	Obs.	W	V	Z	Prob>z
Whole sample					
Res CAR(-1, +1)	6,944	0.946	197.013	14.006	0.000
Res CAR(-2, +2)	6,944	0.950	183.443	13.817	0.000
Res CAR(-5, +5)	6,944	0.965	127.162	12.845	0.000
Frequent acquirers					
Res CAR(-1, +1)	1,286	0.973	21.866	7.725	0.000
Res CAR(-2, +2)	1,286	0.958	34.076	8.836	0.000
Res CAR(-5, +5)	1,286	0.960	32.782	8.739	0.000
Occasional acquirers					
Res CAR(-1, +1)	5,339	0.945	160.668	13.362	0.000
Res CAR(-2, +2)	5,339	0.949	149.674	13.176	0.000
Res CAR(-5, +5)	5,339	0.965	101.335	12.150	0.000

Skewness/Kurtosis test

	Obs.	Pr(skewness)	Pr(kurtosis)
Whole sample			
Res CAR(-1, +1)	6,944	0.001	0.000
Res CAR(-2, +2)	6,944	0.003	0.000
Res CAR(-5, +5)	6,944	0.456	0.000
Frequent acquirers			
Res CAR(-1, +1)	1,286	0.000	0.000
Res CAR(-2, +2)	1,286	0.684	0.000
Res CAR(-5, +5)	1,286	0.064	0.000
Occasional acquirers			
Res CAR(-1, +1)	5,339	0.607	0.000
Res CAR(-2, +2)	5,339	0.734	0.000
Res CAR(-5, +5)	5,339	0.000	0.000

Table A14: Baseline results clustered at different dimensions

This table reports OLS results for the baseline specification clustered at different dimensions. The dependent variable is the bidder's CAR based on a two-day window (-2, +2) around the announcement date. CAR calculation is based on the market model. Standard errors (clustered at the acquirer level), in parentheses. Stars ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Definitions of the variables along with their sources are in Table 1.

	(1)	(2)	(3)	(4)	(5)
Management practices	0.0592***	0.0592***	0.0592***	0.0592***	0.0592***
	(0.010)	(0.010)	(0.010)	(0.012)	(0.012)
Firm controls	Yes	Yes	Yes	Yes	Yes
Deal controls	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	6,570	6,570	6,570	6,570	6,570
R-squared	0.330	0.330	0.330	0.330	0.330
Cluster	Firm	Firm-Year	Firm-Event	Year-Industry	Event-Industry

Table A15: Benchmark model with management and pre-acquisition goodwill

This table reports OLS results from the estimation of equation (3) with management practices. The dependent variable is the bidder's CAR, based on a two-day event window (-2, +2) around the announcement date. CAR calculation is based on the market model. Standard errors (in parentheses) are clustered at the firm level (acquirer). Stars ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively. The last three specifications include firm and year fixed effects. All regressions include a constant term. Definitions of all variables along with their sources are in Table 1.

	(1)	(2)
Management practices	0.0592***	0.0527***
	(0.010)	(0.011)
Pre-acquisition goodwill		0.0196
		(0.021)
Ln (acquirer size)	-0.0108***	-0.0119***
	(0.003)	(0.003)
Run-up	-0.0103	-0.0113
	(0.009)	(0.011)
Sigma	0.0003	-0.0729
	(0.199)	(0.232)
Relative size	0.0194***	0.0160***
	(0.005)	(0.006)
Relatedness	0.0031	0.0044
	(0.003)	(0.003)
Friendly merger	0.0329	0.0407
	(0.042)	(0.052)
Hostile merger	0.0226	0.0201
	(0.045)	(0.053)
Neutral merger	0.0316	0.0505
	(0.045)	(0.055)
Public (cash)	-0.0015	0.0033
	(0.005)	(0.005)
Public (stock)	-0.0248***	-0.0176**
	(0.007)	(0.008)
Private (cash)	0.0003	-0.0010
	(0.004)	(0.004)
Private (stock)	0.0195***	0.0153**
	(0.006)	(0.007)
Subsidiary (cash)	0.0039	0.0032
	(0.003)	(0.004)
Free cash flow	-0.0001**	-0.0001***
	(0.000)	(0.000)
Tobin's q	-0.0016*	-0.0020**
	(0.001)	(0.001)
Leverage	-0.0121	0.0008
	(0.012)	(0.015)
Firm FE	Yes	Yes
Year FE	Yes	Yes
Observations	6,570	5,347
R-squared	0.330	0.349
Adjusted R-squared	0.100	0.114

Table A16: Benchmark model with management and citations half-life

This table reports OLS results from the estimation of equation (3) with management practices. The dependent variable is the bidder's CAR, based on a two-day event window (-2, +2) around the announcement date. CAR calculation is based on the market model. Standard errors (in parentheses) are clustered at the firm level (acquirer). Stars ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively. The last three specifications include firm and year fixed effects. All regressions include a constant term. Definitions of all variables along with their sources are in Table 1.

	(1)	(2)
Management practices	0.0683***	0.0823***
	(0.020)	(0.023)
Citations half-life		0.0025
		(0.003)
Ln (acquirer size)	-0.0106**	-0.0144**
	(0.005)	(0.006)
Run-up	-0.0209	-0.0133
	(0.019)	(0.021)
Sigma	0.0831	-0.2219
	(0.461)	(0.524)
Relative size	0.0076	0.0094
	(0.015)	(0.016)
Relatedness	-0.0004	-0.0022
	(0.005)	(0.005)
Friendly merger	0.1141***	0.1129***
	(0.016)	(0.018)
Hostile merger	0.1045***	0.1082***
	(0.017)	(0.019)
Neutral merger	0.1004***	0.0964**
	(0.032)	(0.042)
Public (cash)	-0.0042	-0.0054
	(0.007)	(0.007)
Public (stock)	-0.0129	-0.0117
	(0.010)	(0.011)
Private (cash)	0.0103	0.0126*
	(0.007)	(0.007)
Private (stock)	0.0177	0.0118
	(0.012)	(0.012)
Subsidiary (cash)	0.0113	0.0137*
	(0.007)	(0.008)
Free cash flow	-0.0086	0.0099
	(0.046)	(0.054)
Tobin's q	-0.0019*	-0.0023*
	(0.001)	(0.001)
Leverage	0.0050	-0.0121
	(0.024)	(0.026)
Firm FE	Yes	Yes
Year FE	Yes	Yes
Observations	1,936	1,631
R-squared	0.395	0.384
Adjusted R-squared	0.148	0.125

Table A17: Additional governance controls

This table reports OLS results from the estimation of equation (3) with management practices and additional controls for governance. The dependent variable is the bidder's CAR, based on a two-day event window (-2, +2) around the announcement date. CAR calculation is based on the market model. Standard errors (in parentheses) are clustered at the firm level (acquirer). Stars ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively. All regressions include a constant term and firm and year fixed effects. Definitions of all variables along with their sources are in Table 1.

	(1)	(2)	(3)
Management practices	0.0351**	0.0348***	0.0467
	(0.014)	(0.013)	(0.036)
Board size	-0.0023		
	(0.002)		
Majority of independent directors	-0.0004		
	(0.008)		
Majority of independent directors (audit committee)	0.0056		
	(0.010)		
CEO duality	0.0016		
	(0.005)		
Delta		-5.81e-07	
		5.26e-07	
Vega		2.03e-05**	
		(8.58e-06)	
Institutional blockholders			0.0001
			(0.000)
Firm controls	Yes	Yes	Yes
Deal controls	Yes	Yes	Yes
Firm FE	Yes	Yes	No
Year FE	Yes	Yes	Yes
Observations	2,470	3,178	457
R-squared	0.325	0.312	0.130
Adjusted R-squared	0.086	0.087	0.092

Table A18: Results with management practices index computed with seven inputs

This table reports OLS results from the estimation of equation (3) with management practices. Models reported here utilize a management practices index that is constructed with seven inputs. Each line represents an econometric model. For panels A to D rows (1) to (6) present the results of the benchmark model of Table 5. Rows (7) to (10) present results similar to those of Table 6. Panels E and F correspond to Tables 8 and online Table A10, respectively. Standard errors are clustered at the acquirer level. Stars ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

		Coefficient	Standard error	R^2	R^2-adjusted	Observations
Panel A: Dependent variable is CAR (-2, +2)						
[1]	Full sample, FE = No	0.1134***	0.013	0.074	0.071	5,745
[2]	Frequent, FE = No	0.0675***	0.022	0.051	0.036	998
[3]	Occasional, FE = No	0.0864***	0.012	0.057	0.053	4,000
[4]	Full sample, FE = Yes	0.0966***	0.013	0.338	0.094	4,805
[5]	Frequent, FE = Yes	0.0762**	0.032	0.280	0.065	955
[6]	Occasional, FE = Yes	0.0863***	0.015	0.342	0.091	3,806
[7]	Governance	0.1201***	0.040	0.503	0.148	368
[8]	Management	0.0473**	0.022	0.390	0.101	1,186
[9]	Firm performance	0.0978***	0.013	0.354	0.123	4,984
[10]	Industry characteristics	0.1028***	0.016	0.403	0.133	2,987
Panel B: Dependent variable is CAR (-1, +1)						
[1]	Full sample, FE = No	0.1134***	0.012	0.080	0.077	5,745
[2]	Frequent, FE = No	0.0606***	0.017	0.068	0.053	998
[3]	Occasional, FE = No	0.0857***	0.010	0.069	0.065	4,000
[4]	Full sample, FE = Yes	0.0894***	0.011	0.362	0.126	4,805
[5]	Frequent, FE = Yes	0.0600**	0.025	0.280	0.066	955
[6]	Occasional, FE = Yes	0.0807***	0.012	0.372	0.133	3,806
[7]	Governance	0.0891**	0.035	0.480	0.109	368
[8]	Management	0.0502***	0.017	0.439	0.173	1,186
[9]	Firm performance	0.0906***	0.011	0.376	0.153	4,984
[10]	Industry characteristics	0.0970***	0.014	0.430	0.172	2,987
Panel C: Dependent variable is CAR (-5, +5)						
[1]	Full sample, FE = No	0.1163***	0.015	0.065	0.062	5,745
[2]	Frequent, FE = No	0.0737**	0.031	0.045	0.030	998
[3]	Occasional, FE = No	0.0924***	0.014	0.054	0.050	4,000
[4]	Full sample, FE = Yes	0.0992***	0.015	0.366	0.131	4,805
[5]	Frequent, FE = Yes	0.1252***	0.036	0.362	0.172	955
[6]	Occasional, FE = Yes	0.0970***	0.018	0.378	0.141	3,806
[7]	Governance	0.1062**	0.049	0.536	0.204	368
[8]	Management	0.0591**	0.026	0.384	0.093	1,186
[9]	Firm performance	0.1025***	0.016	0.370	0.145	4,984
[10]	Industry characteristics	0.0995***	0.020	0.413	0.147	2,987
Panel D: Winsorized results; Dependent variable is CAR (-2, +2)						
[1]	Full sample, FE = No	0.0934***	0.009	0.067	0.064	5,745
[2]	Frequent, FE = No	0.0595***	0.020	0.053	0.037	998
[3]	Occasional, FE = No	0.0761***	0.010	0.057	0.053	4,000
[4]	Full sample, FE = Yes	0.0865***	0.012	0.332	0.085	4,805
[5]	Frequent, FE = Yes	0.0628**	0.028	0.288	0.076	955
[6]	Occasional, FE = Yes	0.0747***	0.013	0.336	0.082	3,806
[7]	Governance	0.1265***	0.042	0.500	0.143	368

[8]	Management	0.0415**	0.020	0.384	0.091	1,186
[9]	Firm performance	0.0884***	0.011	0.344	0.110	4,984
[10]	Industry characteristics	0.0911***	0.014	0.399	0.127	2,987
Panel E: Dependent variable is synergy CAR						
[1]	CAR(-1, +1); Year FE = No	0.0753***	0.022	0.266	0.250	673
[2]	CAR(-1, +1); Year FE = Yes	0.0767***	0.023	0.303	0.255	673
[3]	CAR(-2, +2); Year FE = No	0.0851***	0.025	0.246	0.229	673
[4]	CAR(-2, +2); Year FE = Yes	0.0855***	0.025	0.276	0.226	673
[5]	CAR(-5, +5); Year FE = No	0.0978***	0.031	0.205	0.187	672
[6]	CAR(-5, +5); Year FE = Yes	0.0954***	0.031	0.233	0.181	672
Panel F: Dependent variable is synergy CAR; These models include governance controls (G and E indexes)						
[1]	CAR(-1, +1)	0.0413	0.050	0.250	0.067	113
[2]	CAR(-2, +2)	0.0470	0.051	0.253	0.071	113
[3]	CAR(-5, +5)	0.0091	0.060	0.293	0.118	112

Table A19: Baseline models with Bayesian inference

This table reports results from using Bayesian analysis to estimate equation (3). The dependent variable in columns (1) to (3) is CAR(-1, +1), in columns (4) to (6) CAR(-2, +2), and in columns (7) to (9) CAR(-5, +5). We report coefficients, standard deviation in parentheses, Monte Carlo Standard Error (MCSE) in braces, and the 95% credible interval in brackets. We use a Gibbs sampling method and the same controls as in the baseline specification of Table 5. Reported results are for the whole sample of M&As, frequent acquirers (acquirers who have completed at least five acquisitions within a three-year event window), and occasional acquirers (acquirers who have completed at least two acquisitions within a three-year event window). CAR calculation is based on the market model. Definitions of all variables along with their sources are reported in Table 1.

	CAR (-1, +1)			CAR (-2, +2)			CAR (-5, +5)		
	Whole sample	Frequent	Occasional	Whole sample	Frequent	Occasional	Whole sample	Frequent	Occasional
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Management practices	0.0667	0.0330	0.0615	0.0597	0.0191	0.0544	0.0720	0.0200	0.0593
Std. Dev.	(0.008)	(0.0190)	(0.009)	(0.0093)	(0.0234)	(0.0110)	(0.0117)	(0.0312)	(0.0137)
MCSE	{0.0001}	{0.0003}	{0.0001}	{0.0002}	{0.0004}	{0.0002}	{0.0002}	{0.0005}	{0.0002}
95% cred. interval	[0.0510- 0.0822]	[-0.0046-0.0708]	[0.0434-0.0797]	[0.0414-0.0778]	[-0.027-0.0655]	[0.0330-0.0759]	[0.0489-0.0947]	[-0.0416-0.0820]	[0.0327-0.0860]
Deal controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations									
MCMC iterations	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500
Burn-in	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Sampling method	Gibbs	Gibbs	Gibbs	Gibbs	Gibbs	Gibbs	Gibbs	Gibbs	Gibbs
Acceptance rate	1	1	1	1	1	1	1	1	1

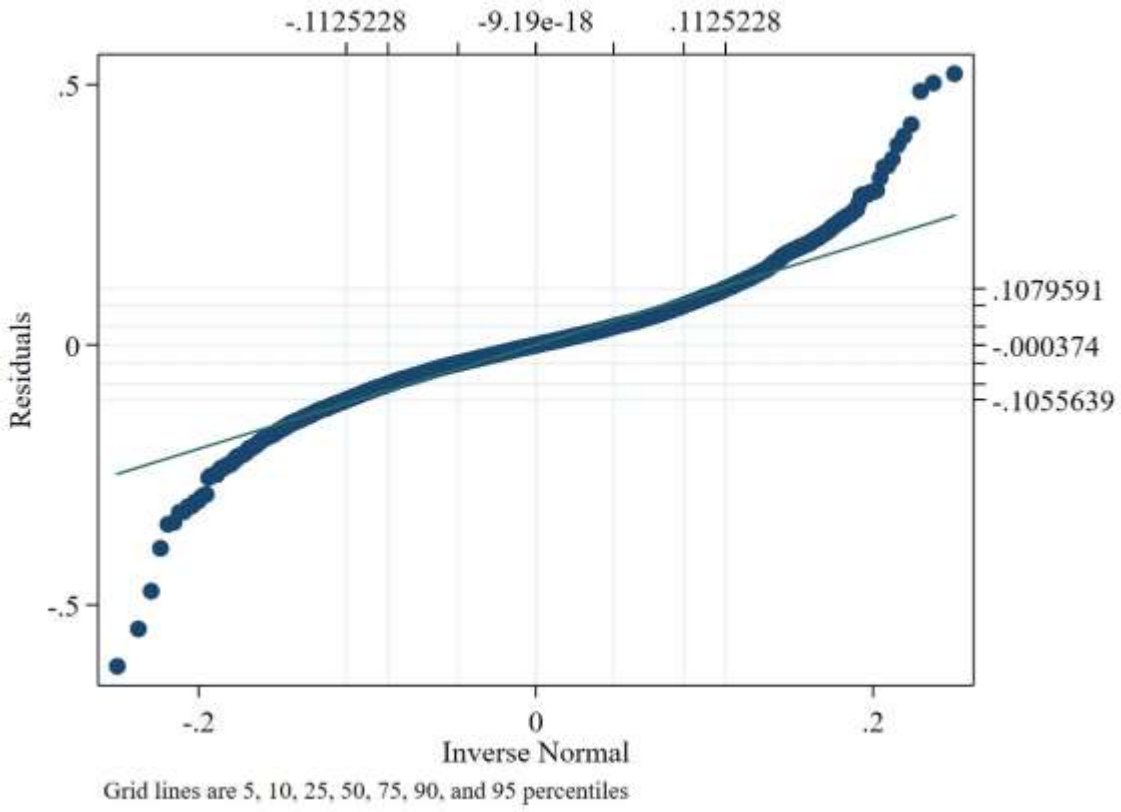

Figure A1: A Q-Q plot distribution of the CAR residuals. The results are from the whole sample.

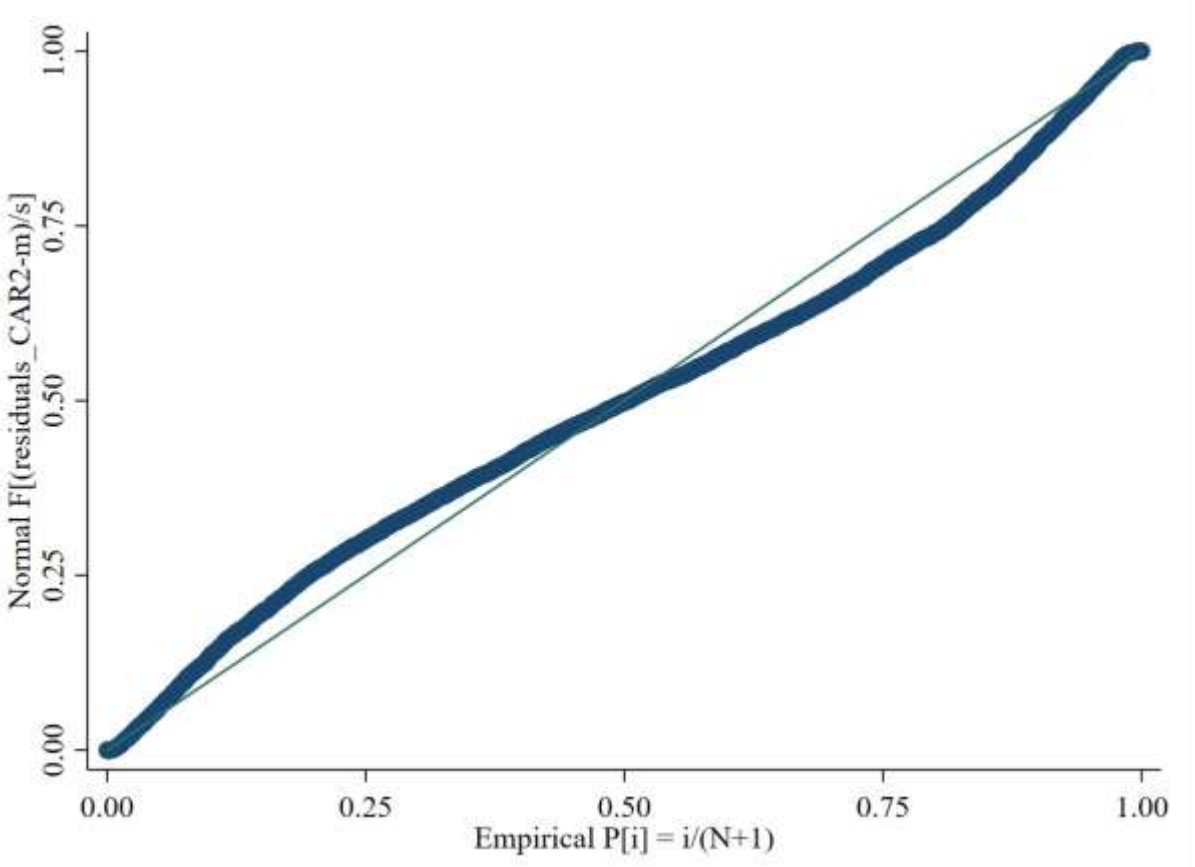

Figure A2: A P-P plot distribution of the CAR residuals. The results are from the whole sample.