

Management Quality, Certification,
And Initial Public Offerings *

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Abstract

We empirically examine the relationship between the quality and reputation of a firm's management and various aspects of its IPO and post-IPO performance, a relationship that has so far received little attention in the literature. We hypothesize that better and more reputable managers are able to convey the intrinsic value of their firm more credibly to outsiders, thereby reducing the information asymmetry facing their firm in the equity market. Therefore, IPOs of firms with higher management quality will be characterized by lower underpricing, greater institutional interest, more reputable underwriters, and smaller underwriting expenses. Further, if higher management quality is associated with lower heterogeneity in investor valuations, firms with better managers will have greater long-term stock returns. Finally, since better managers are likely to select better projects (having a larger NPV for any given scale) and implement them more ably, higher management quality will also be associated with larger IPO offer sizes and stronger post-IPO operating performance. We present evidence consistent with the above hypotheses.

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1. Introduction

The quality of a firm's management is widely used by venture capitalists and other practitioners in assessing that firm's viability in its early life. As the firm matures, it may attempt to add additional members to its management team, with varying degrees of success. One would expect to find considerable variation across firms in the strength of the management team that they have been able to build up by the time they go public. The quality and reputation of a firm's top management can also have a certifying effect on firm value, similar to the certification effect of venture capitalists.¹ In other words, better and more able managers can convey the intrinsic value of their firm more credibly to outsiders, thus reducing the informational asymmetry facing their firm in the equity market. This, in turn, implies that the quality and reputation of a firm's management will affect various aspects of its IPO and post-IPO performance. However, the relationship between the quality and reputation of a firm's management and various aspects of its IPO and post-IPO performance has received little attention in the academic literature. The objective of this paper is to remedy this gap in the literature by empirically examining the above relationship.

The quality and reputation of a firm's management can affect its IPO in several ways. First, better and more reputable firm management may be able to convey the value of their firm (i.e., "certify" their firm's value) more credibly to the equity market, thus reducing information asymmetry, resulting in lower underpricing in the IPOs of these firms (see, e.g., Allen and Faulhaber (1989), Chemmanur (1993), and Welch (1989)).²

¹ Several papers (see, e.g., Megginson and Weiss (1991)) find that venture-backed IPOs have a significantly lower underpricing than do non-venture-backed firms. They attribute this difference to the certification role of venture capitalists. See, however, the discussion in Loughran and Ritter (2001) on the relationship between venture-capital backing and IPO underpricing.

² This certification effect can arise for several reasons. Senior members of a firm's management team build up reputational capital over their career. These senior managers are involved in repeated dealings with the financial markets as part of their job (e.g., raising bank financing or arranging private placements of equity). Further, these managers know that there is a significant probability that they will leave their firm to join another (in other words, they have to interact with the labor market repeatedly) and that their future employer will be influenced by their reputation in dealing with the financial markets in deciding whether or not to hire them, as well as in deciding their compensation package. Overpricing or "hyping" their firm's

Second, given the importance of managerial reputation and quality in certifying firm value, it is possible that underwriters and other financial intermediaries use this variable, in addition to other measures of firm quality, when choosing firms to take public. This may be a particularly important variable for younger, smaller, and more obscure firms, which are likely to suffer from a considerable degree of informational asymmetry in the equity market. Thus, firms with higher management quality and reputation could be associated with more reputable underwriters. Further, given the reduction in information asymmetry resulting from managerial certification, underwriters and other intermediaries might incur lower costs in acquiring and transmitting information about firms with higher management quality and reputation. This, in turn, implies that such firms need to provide underwriters and other intermediaries less compensation for taking them public, thus reducing their costs of going public. The reduction in outsiders' information acquisition costs for firms with higher management quality could also lead to greater institutional interest in the IPOs of such firms.

Third, higher quality managers may be able to select better projects (characterized by a larger NPV for any given scale) for their firm. This means that firms with higher management quality are likely to have a larger equilibrium scale of investment, and therefore larger IPO offer sizes (*ceteris paribus*). Further, such firms are also likely to implement their projects more ably, resulting in better post-IPO operating performance.

Finally, the reputation and quality of a firm's management can also affect long-term post-IPO stock returns. Formalizing arguments made by Miller (1977), several authors (see, e.g., Morris (1996), Chen, Hong, and Stein (2002), and Duffie, Gârleanu, and Pedersen (2002)) have

stock (or deceiving the financial markets in other ways) may tarnish their personal reputation in the equity market, thereby diminishing their future value in the labor market. Consequently, the greater the personal reputation a manager has at stake, the greater is the future loss from mispricing his or her firm's equity. Thus, better and more reputable managers are more likely to price their firm's equity fairly. For a theoretical model of how long-lived players associated with a firm's IPO can help to reduce the information asymmetry facing it in the equity market (and thus increase its IPO offer price), see Chemmanur and Fulghieri (1994).

developed models that imply that the long-term underperformance of IPOs is due to heterogeneous expectations among investors about the firm's future cash flows and the fact that short-selling the shares of newly public firms is costly. To the extent that firms with higher management quality and reputation are more likely to attract greater interest from institutional investors (who are less likely to be subject to overoptimism), such firms are likely to experience a smaller dispersion in beliefs among investors. This, in turn, implies that management quality and reputation will be positively related to long-term stock price performance following the IPO.

The results of our empirical tests indicate that the quality and reputation of a firm's management indeed affects various aspects of its IPO. First, we find that (controlling for firm size and other firm quality variables) firms with better and more reputable managers have larger IPO offer sizes. Second, more reputable underwriters are associated with firms of higher management quality and reputation. Third, underwriting expenses (both the underwriting spread and other expenses of going public) are negatively related to management quality and reputation. Fourth, IPOs of firms with higher management quality and reputation attract more institutional investors. Fifth, management quality and reputation are negatively related to IPO underpricing. Finally, management quality and reputation explains some of the cross-sectional variation in post-IPO long-term stock returns and post-IPO operating performance.

Our paper is related to several strands of the IPO literature. First, a large body of literature has examined the influence of underwriter reputation on the performance of initial public offerings, in terms of both underpricing and long-term stock returns. Using different measures of underwriter reputation, Carter and Manaster (1990) and Megginson and Weiss (1991) find a negative relationship between underwriter reputation and underpricing. However, Cooney, Singh, Carter, and Dark (2001) find that in the 1990s, the negative relationship between underwriter reputation and underpricing holds only for firms whose offer price is within the original filing range; the relationship is positive for firms with offer prices above the filing range. This reversal in the relationship between underwriter reputation and underpricing has also been

documented by Loughran and Ritter (2001).³ Carter, Dark, and Singh (1998) find a positive relationship between underwriter reputation and the long-term performance of newly public firms.⁴

A closely related, even larger body of literature has studied the relationship between various firm-specific variables (e.g., size, as measured by the book value of a firm's outstanding equity or sales; or the age of the firm at the time of going public) and the performance of newly public firms, both in terms of initial IPO returns and, more recently, post-IPO long-term performance (stock returns as well as operating performance).⁵ A third literature has studied the certification role of venture capitalists in IPOs (see, e.g., Megginson and Weiss (1991) and Barry, Muscarella, Peavy, and Vetsuypens (1990)). A fourth literature has examined the different components of a firm's costs of going public (see, e.g., Ritter (1987)). Our paper contributes to all of the above four literatures by studying the relationship between the quality and reputation of a firm's management and various aspects of its initial public offering.

The rest of the paper is organized as follows. Section 2 summarizes our testable hypotheses. Section 3 describes the data and sample selection procedures. Section 4 describes various measures of management and firm quality. Section 5 presents the testing methodology and reports results. Section 6 concludes with a summary and interpretation of our results.

2. Hypotheses

The quality and reputation of a firm's management can affect various aspects of its IPO and post-IPO performance in a variety of ways, as discussed above. We now summarize the

³ Beatty and Welch (1996) investigate how the entire coalition (legal counsel, auditor, and investment banker) taking a firm public affects underpricing and other aspects of its IPO. They find that, among smaller firms, there is a negative relationship between lawyer quality and compensation on the one hand, and IPO underpricing and underwriter compensation on the other.

⁴ The long-run underperformance of newly public firms has received considerable attention in the IPO literature: see, e.g., Ritter (1991), Michaely and Shaw (1994), Brav and Gompers (1997), Brav, Geczy, and Gompers (2000), and Eckbo and Norli (2000).

hypotheses that will serve as the basis for our empirical tests. Our first set of hypotheses deals with offer size, underwriter reputation, and underwriting expenses (controlling for firm size and other firm quality measures).

H1: A firm's IPO offer size will be positively related to its management quality and reputation.

H2: The IPOs of firms with higher management quality and reputation will be associated with more reputable underwriters.

H3: The underwriting spread and other expenses connected with going public will be negatively related to a firm's management quality and reputation.

The next hypothesis deals with the relationship between management quality and IPO underpricing.

H4: IPO underpricing will be negatively related to management quality and reputation.

We then turn to the relationship between management quality and institutional interest in the firm.

H5: The institutional interest in a firm subsequent to its IPO will be positively related to its management quality and reputation.

Finally, we study the relationship between the quality of a firm's management and its post-IPO long-term stock price, as well as its post-IPO operating performance.

H6: Long-term post-IPO stock price performance will be positively related to management quality and reputation.

H7: The operating performance of firms subsequent to their IPO will be positively related to the quality and reputation of their management.

3. Data and sample selection

⁵ See, e.g., Ritter (1984), Ritter (1991), Mikkelsen, Partch, and Shah (1997), Jain and Kini (1994), and Michaely and Shaw (1994).

The data used in this study comes from several different databases. The list of initial public offerings of common equity between 1993 and 1996 is from the SDC/Platinum New Issue database. We eliminate REITs, closed-end funds, and unit offerings. After elimination of equity carve-outs, financial firms (all firms with SIC codes between 6000 and 6999), and foreign companies, we are left with 1,621 firms. We then exclude previous leveraged buyouts (LBOs) and roll-ups. There are 53 firms not found on the Center for Research in Security Prices (CRSP) and/or Compustat, while for six firms CRSP and SDC show different first dates of trading. For 18 firms, prospectuses or SEC filings are not available and for an additional 53 firms the data on top management compensation are not available. After elimination of these, we are left with 1,446 firms in our sample.⁶

The data on management quality are hand-collected from the prospectuses of firms going public. The prospectuses are from the Global Access database. In particular, information about the age, tenure, former work experience, education level, and board memberships of the team members are from the management section of the IPO prospectus.

In order to isolate the effects of management quality on IPO performance, and to remove any confounding effects arising from the presence of venture capitalists or institutional investors as backers of the firm, we confine our study to non-venture-backed firms and those having no institutional investors prior to the IPO. In addition to the direct effect of venture capitalists on IPO performance (through venture capital certification), venture capitalists can also significantly influence the management quality of venture-backed firms either by selecting members of the management team, or by performing various roles (e.g., selecting underwriters, legal representation) that would be performed by firm management in non-venture-backed firms. (See, for example, Hellman and Puri (2002), who find that venture capitalists play a significant role in

⁶ We did not explicitly screen out firms with offer prices below \$5. However, we have only 19 such firms in our sample. Excluding these firms does not alter our results.

the professionalization of start-up firms in general, and in the hiring of their top management in particular.) Similar arguments apply to institutional investors as well. We therefore eliminate from the sample venture-backed firms and firms that have significant shareholdings (greater than 5%) by corporations and financial institutions prior to the IPO (unless these institutional entities are explicitly mentioned as wholly owned by firm insiders). The information about shareholders is from the significant and selling shareholders section of the IPO prospectus. Table 1 shows how we arrive at our final sample.

*** [Place Table 1 about here] ***

Stock returns necessary to calculate IPO underpricing and long-term stock price performance subsequent to IPOs are from CRSP, while the accounting data necessary to calculate post-IPO operating performance are from Compustat. The number of institutional shareholders after the IPO and the percentage of the offering allocated to them are from a search of 13F and 13F-E filings.

4. Measures of management reputation and quality, and firm quality

In this section we discuss how we measure management quality and reputation, as well as proxies for other aspects of firm quality that we use as control variables in various regressions.

4.1. Measures of management quality and reputation

We measure management quality and reputation along three dimensions. The first is management team resources, which refers to the human and knowledge resources (including both education and relevant work experience) available to firm management. The second is management team structure, which measures the extent of uniformity or heterogeneity in the tenures of management team members, and their relative importance to the management team.

The third is management reputation outside of the business community, which measures the reputation built up by members of the management team.

The management team resources available to the firm depend in part upon the number of people in its management team. Therefore, our first measure of team resources is the size of the firm's top management team (TSIZE), measured by the number of officers with the rank of vice president or higher (listed in the management section of the IPO prospectus). Given the possibility that management team size may be correlated with firm size, and given that the relationship between the two could be nonlinear, we use three proxies to adjust management team size for firm size: the book value of the firm's assets (BVA), the natural logarithm of the book value of assets (LNBVA), and the book value squared (BVA2). We therefore regress management team size (TSIZE) on LNBVA, BVA, BVA2, and industry dummies (to control for the variation of management team size across industries), and use the residuals (XTSIZE) as our measure of team size.

Management team resources also depend upon the knowledge and education of its members. Our second measure of management team resources is the percentage of the management team with an MBA degree (PMBA). A larger management team and a higher percentage of the team with MBA degrees imply better management quality. Another contributing factor that increases management team resources is relevant work experience, which we measure in two ways. First, we look at the percentage of the management team who have served as vice presidents or higher prior to joining the IPO firm (PFTEAM). Second, we also look at the percentage of team members who have previously been partners in a law or accounting firm (PLAWACC). Clearly, expertise in law and accounting can be a useful asset to the firm at the time of going public as well as subsequently. In summary, the greater the values of the above variables, the better is the management quality.

We measure management team structure in three ways. First, we look at the average tenure of the management team (TENURE). Higher average tenure in the firm can indicate

cohesion and shared experiences, and thus would imply lower transaction costs among team members. We measure tenure as the average number of years team members have been working for the IPO firm. To avoid correlation with firm age, we use residuals from the regression of TENURE on the natural logarithm of firm age as our measure of tenure (XTENURE). In some cases, however, long tenures might also indicate the presence of complacency and a rigidifying effect on team interactions. An ideal team would have members from different cohorts, which would allow for an inflow of new ideas and perspectives. Thus, higher management quality might be associated not only with a long average tenure, but also with a higher dispersion of tenures. Our second measure of team structure, therefore, is tenure heterogeneity (TENHET), defined as the coefficient of variation of the team members' tenures.

The third measure of team structure is CEO dominance. There are two conflicting arguments that can be made about the influence of CEO dominance on management team quality. On the one hand, a strong-willed and dominating chief executive officer can severely diminish possible contributions from subordinate team members. On the other hand, a strong CEO might improve the cohesion of the management team, especially in the early stages of the team's formation, which can be particularly important for young firms. Thus, while we believe that CEO dominance is an important measure of team quality, we are agnostic about the direction of the expected impact (positive or negative) of this measure on management quality. Our measure of CEO dominance (FCEO) is the ratio of CEO salary and bonus in the most recent fiscal year preceding IPO to the average salary and bonus of other team members listed in the executive compensation section of the prospectus. Assuming that CEOs have a substantial influence over their own pay and nearly total influence over their subordinates' pay, this measure reflects the gap between the CEO's assessment of his or her own worth to the firm compared to other team members' worth, and is thus a good measure of CEO dominance.

Finally, we measure the reputation or prestige of the management team outside of the immediate business community by the number of non-profit boards that team members sit on

(BNP). These include boards of trustees or directors of charities, universities, or colleges. While the other proxies also serve as measures of management reputation, this variable is a better index of the reputation and visibility of firm management outside of the immediate business community. Again, the greater the value of this variable, the better is management quality and reputation.⁷

Table 2 summarizes our measures of management quality and reputation, as well as the dependent and control variables that will be used in the subsequent regressions. The mean (median) size of a firm's management team (TSIZE) is 5.31 (5), with the smallest management team consisting of two members and the largest of 13 members. On average, 6.9% of managers have an MBA degree (PMBA), 36.2% have held a top management position at another firm prior to joining the IPO firm (PFTEAM), and 3% have been partners in a law or accounting firm (PLAWACC). The average tenure of management team members ranges from one to 24.5 years, with a mean (median) of 7.36 (6.17) years. The average CEO of an IPO firm earns 43.2% more than the average member of their management team (FCEO).

*** [Place Table 2 about here] ***

Panel B of Table 2 reports correlations between independent variables, while Panel C reports the relationship between management quality and reputation and firm size. While some of our management quality and reputation proxies are uncorrelated with firm size (e.g., PMBA, PLAWACC, and BNP), other variables show some correlation with firm size. We control for this correlation either by adjusting our proxies for firm size and using these adjusted proxies in various regressions (e.g., XTSIZE) or by using proxies of firm size (LNBVA, BVA, and BVA2) as control variables in these regressions. Also, since TENURE has a higher correlation with firm age than with firm size (correlation coefficients of 0.765 and 0.420, respectively), we adjust this

⁷ Similar measures have been used in the strategy and organizational behavior literature to study the influence of management team quality and reputation on firm performance: see, e.g., D'Aveni (1990) and Hambrick and D'Aveni (1992), who use such measures to study the deterioration of management team quality around bankruptcies.

variable for firm age and use the adjusted tenure (XTENURE) in various regressions.⁸ As can be seen in Panel B of Table 2, XTENURE is virtually uncorrelated with the firm size proxies.

Though the variables described above are expected to measure management quality, each of them will have unique limitations as a measure of the underlying unobservable construct. Therefore, we use common factor analysis to construct a single variable for each of the management team quality dimensions described above to capture variation common to our observable proxies of management quality.⁹ Further, some of our management quality and reputation proxies are correlated with firm size, as discussed above. Therefore, in order to ensure that various factors are capturing only the effects of management quality (and not firm size), we use firm-size-adjusted proxy variables to extract factors. We use LNBVA, BVA, and BVA2 as proxies for firm size in our firm-size adjustment of management quality variables. Thus, the team resources factor (TRF) score is obtained using common factor analysis on the firm-size-adjusted TSIZE, MBA, LAWACC, and FTEAM variables. Similarly, the team structure factor (TSF) score is obtained using common factor analysis on the firm-size-adjusted TENURE, TENHET, and FCEO variables.

Table 3 presents the results of the common factor analysis. Panel A presents starting communalities, calculated as the squared multiple correlations obtained from regressing each of the management quality measures on the other measures within the same dimension, while Panel B reports the eigenvalues of the reduced correlation matrices. As suggested by Harman (1976), the number of factors needed to approximate the original correlations among individual measures is equal to the number of summed eigenvalues needed to exceed the sum of communalities. In our sample, the summed communalities are less than the eigenvalues for the first factor in the factor

⁸ Our results are qualitatively unchanged when firm-size-adjusted TENURE is used instead of XTENURE.

⁹ A number of papers in the empirical corporate finance and accounting literature make use of factor analysis to isolate the unobservable construct underlying several proxy variables. See, e.g., Gaver and Gaver (1993) and Guay (1999), who make use of factor analysis to study the size of a firm's investment opportunity set.

analysis for each dimension of management quality and reputation, suggesting that one factor in each of the dimensions parsimoniously explains the intercorrelations among the individual measures. Correlations between the common factor scores and their respective original (firm-size-adjusted) measures of management quality are reported in Panel C, while Panel D reports summary statistics of the team resources factor (TRF) and the team structure factor (TSF) scores.

*** [Place Table 3 about here] ***

4.2. Proxies for other aspects of firm quality

In order to separate the effects of management quality and reputation from those of other dimensions of firm quality, we control for these other dimensions by using various proxies. Two common firm quality variables used in many IPO studies are firm size and firm age. As discussed above, given the possibility of a nonlinear relationship between various IPO characteristics and firm size, we use the following three proxies to control for firm size: the book value of the firm's assets in constant 1993 dollars (BVA), BVA squared (BVA²), and the natural logarithm of BVA (LNBVA). Firm age (FAGE) is defined as the natural log of one plus the number of years between the year of incorporation or start of operations (whichever is earlier), and the time of going public. The larger and older the firm, the higher is firm quality. These measures of firm quality have been widely used in the IPO literature (see, e.g., Ritter (1984) and Michaely and Shaw (1994)).

The number of outside directors (ODIR) is defined as the number of directors that are listed in the management section of the prospectus and are not executive officers of the company. There are two ways in which the presence of outside directors influences firm quality. First, outside directors provide an additional knowledge base (inputs and perspectives) to the management team. Second, they also provide linkages to external parties, such as underwriters, financial institutions, and auditors. The greater the number of outside directors, the better is firm quality. This is consistent with studies in the corporate control literature which have shown that

outside directors enhance firm value: see, e.g., Cotter, Shivdasani, and Zenner (1997) and Borokhovich, Parrino, and Trapani (1996).

Free cash flow as a percentage of the book value of assets (FCF) is calculated for the fiscal year preceding the IPO as operating income (annual Compustat item 13) minus taxes (annual Compustat item 16), interest expense (annual Compustat item 15), and dividends (annual Compustat items 19 and 21), divided by the book value of the firm's assets (annual Compustat item 6). We use FCF as a control for the financial condition of the firm immediately before going public (this measure is used, among others, by McLaughlin, Safieddine, and Vasudevan (2000)). The greater the value of this variable, the higher is firm quality.

5. Empirical tests and results

In this section, we discuss the empirical methodology used to test the hypotheses presented in Section 2, and report the results. In Section 5.1, we discuss the univariate tests designed to assess the differences in IPO characteristics between firms of low and high management quality. We describe the testing methodology and report results for our multivariate tests from Section 5.2 onwards. Finally, in Sections 5.6 and 5.7, we report the results of our tests regarding post-IPO long-term stock price performance and long-term operating performance, respectively.

5.1. Univariate tests

Table 4 reports the results of our univariate tests of the relationship between management quality and reputation and IPO characteristics. We split the sample by management quality factor score (TRF and TSF) quintiles and by firm size quintiles. From now on we will refer to firms in the lower management quality quintiles as “low management quality firms” and those in the upper management quality quintiles as “high management quality firms.”

*** [Place Table 4 about here] ***

We find that the team resources factor (TRF) score has a statistically significant influence on most IPO characteristics. In particular, we find that high management quality firms (i.e., firms in the top TRF score quintile) are associated with more reputable underwriters, incur lower expenses of going public (both in terms of underwriting spread and other expenses of going public), and attract greater institutional interest. For example, the difference between the average market share of the lead underwriters of firms in the top and the bottom TRF score quintiles is 0.846%. Fig. 1 depicts the relationship between underwriter reputation and the team resources factor (TRF) score. Notice that, as expected, underwriter reputation is increasing in management quality, as measured by the TRF score. We also find that high management quality firms pay 1.71% less in other expenses of going public and have lower underwriting spreads than do low management quality firms. Finally, average institutional holdings in the firms in the top TRF score quintile are 3.50% higher than those in firms in the lowest TRF score quintile. All of the results are consistent across different firm size quintiles.

*** [Place Figure 1 about here] ***

The team structure factor (TSF) score has a much weaker influence on various IPO characteristics. Our main finding is that underpricing of firms in the top TSF score quintile is lower by 5.5% than that of firms in the lowest TSF score quintile. This relationship is depicted in Fig. 2. The TSF score also significantly affects the long-term post-IPO stock returns and operating performance of firms, which we will discuss in Sections 5.6 and 5.7, respectively.

*** [Place Figure 2 about here] ***

5.2. Management quality and offer size

To test the relationship between IPO offer size and management quality and reputation (hypothesis H1), we run the following regression:

$$\begin{aligned}
LNOFF_i = & \beta_0 + \beta_1 XTSIZE_i + \beta_2 XTENURE_i + \beta_3 PLAWACC_i + \\
& + \beta_4 PMBA_i + \beta_5 PFTEAM_i + \beta_6 BNP_i + \beta_7 FCEO_i + \\
& + \beta_8 LNBVA_i + \beta_9 BVA + \beta_{10} BVA2 + \beta_{11} FAGE_i + \beta_{12} ODIR_i + \varepsilon_i,
\end{aligned} \tag{1}$$

where $LNOFF_i$ is the natural log of the offer size (in millions).¹⁰ The coefficients on the first six independent variables are expected to be positive, while we are agnostic about the sign of the coefficient on $FCEO$.¹¹ If a strong CEO diminishes the contributions from other team members, the coefficient is expected to be negative, whereas if team cohesion is increased due to a strong CEO, the coefficient is expected to be positive. The remaining independent variables are unrelated to management quality and are used to control for other aspects of firm quality. We expect coefficients on $FAGE$ and the firm size proxies ($LNBVA$, BVA , and $BVA2$) to be positive, as older and larger firms are more likely to be of higher quality. Also, a higher number of outside directors indicates better corporate governance, and therefore higher firm quality, so that we expect the coefficient on $ODIR$ to be positive.

*** [Place Table 5 about here] ***

Table 5 reports the results of regressions with offer size as the dependent variable. We find that firms with better and more reputable managements have a larger IPO offer size. In particular, we find that firms with larger management teams ($XTSIZE$), higher percentages of team members with prior top management experience ($PFTEAM$), longer tenures ($XTENURE$), more dominant CEOs ($FCEO$), and more non-profit board memberships (BNP) have significantly larger offer sizes.^{12 13} Our results are also economically significant. For the average firm, a one-

¹⁰ We also run this and the following regressions replacing the book value of assets with the market capitalization of various firms. Our results are essentially unchanged.

¹¹ Because of the high correlation between $TENURE$ and $TENHET$, in all regressions we use these two variables interchangeably. The results are qualitatively similar and for the sake of brevity we report only the results with $XTENURE$ as the independent variable.

¹² We also control for the fraction of equity held by the firm's CEO in various regressions. Our results remain essentially unchanged.

¹³ We also study whether further refinements of our measure of prior top management experience ($PFTEAM$) have an effect on IPO characteristics or post-IPO performance. To accomplish this, we create three subcategories of prior top management experience. Our first subcategory consists of managers whose prior top management experience was at a public rather than a private company. Our second subcategory consists of managers who have held a "top five" position with their prior employer: CEO (or president),

standard-deviation increase in XTSIZE leads to an approximately \$3.8 million increase in the offer size, while one-standard-deviation increases in non-profit board memberships (BNP) and the percentage of the management team with prior top management experience (PFTEAM), respectively, lead to \$1.68 million and \$1.39 million increases in the offer size.

5.3. Management quality, underwriter reputation, and underwriting expenses

In order to test our second hypothesis (H2), namely that more reputable underwriters are associated with better management quality firms, we run the following censored (tobit) regression:

$$\begin{aligned}
 SREP_i = & \beta_0 + \beta_1 XTSIZE_i + \beta_2 XTENURE_i + \beta_3 PMBA_i + \beta_4 BNP_i + \beta_5 FCEO_i \\
 & + \beta_6 PFTEAM_i + \beta_7 PLAWACC_i + \beta_8 ODIR_i + \beta_9 LNBVA_i + \\
 & + \beta_{10} BVA_i + \beta_{11} BVA2_i + \beta_{12} FAGE_i + \beta_{13} FCF_i + \varepsilon_i.
 \end{aligned} \tag{2}$$

Here $SREP_i$ is the reputation of the underwriting syndicate, measured by the log of one plus the average market share of the lead underwriters (similar to the underwriter reputation measure used by Megginson and Weiss (1991)). Market shares are calculated as follows. We use all IPOs listed in the SDC / Platinum New Issue database between 1993 and 1996. If there is more than one lead underwriter, we allocate offering proceeds equally between the lead underwriters. To calculate market share we divide the proceeds allocated to each underwriter by the total money raised in the IPO market between 1993 and 1996.

We expect the coefficients on XTSIZE, XTENURE, PMBA, BNP, PFTEAM, and PLAWACC to be positive, indicating that higher management quality firms are associated with

COO (or vice president of operations), CFO (or vice president of finance), vice president of sales and marketing, or vice president of research and development. Our third and final subcategory consists of managers who fall into *both* of the above subcategories: i.e., who have held a top five position at a public company. Thus, while 712 managers (33.17%) of the total of 2,183 managers of IPO firms in our sample have prior top management experience, the membership of the above three subcategories is as follows: 169 (7.74%) have worked for a public firm; 473 (21.67%) have served as top five corporate officers; and 101 (4.63%) have served as top five corporate officers at public firms. However, the proportion of a firm's managers who belong to these subcategories of PFTEAM does not have a significant influence either on its IPO characteristics or on its post-IPO performance.

more reputable underwriters. While we expect the coefficient of FCEO to be significant, we are agnostic about the sign of this coefficient. The remaining independent variables control for other aspects of firm quality. The coefficients on the firm size proxies and FAGE are also expected to be positive, indicating that larger and older firms are likely to be associated with more reputable underwriters. We expect the coefficient of FCF to be positive, since firms in better financial condition are more likely to attract more reputable underwriters.

Table 6 reports the results of the regressions of underwriter reputation on the proxies for management quality. We find that higher management quality firms do indeed attract more reputable underwriter syndicates. In particular, we find that firms with larger management teams (XTSIZE), higher percentages of MBAs (PMBA), more non-profit board memberships (BNP), and more dominant CEOs (FCEO) are brought public by more reputable underwriting syndicates. The coefficients of these variables are significant at the 1% level, except for PMBA, which is significant at the 10% level. It is interesting to note that the coefficient of FCEO is positive and significant, implying that firms with more dominant CEOs attract more reputable underwriting syndicates.

*** [Place Table 6 about here] ***

Our results indicate that a one-standard-deviation increase in XTSIZE leads to a 10.7% increase in the market share of the firm's lead underwriters. Similarly, one-standard-deviation increases in the percentage of the management team with MBA degrees (PMBA) and the number of non-profit board memberships (BNP) lead to a 5.4% and a 6.1% increase, respectively, in the lead underwriters' market share. Our results thus indicate that management quality is one of the variables underwriters use in choosing firms to take public.

To test whether underwriting spreads and other expenses of going public are negatively related to management quality and other proxies of firm quality (hypothesis H3), we run two regressions. The first regression is:

$$\begin{aligned}
SPREAD_i = & \beta_0 + \beta_1 XTSIZE_i + \beta_2 XTENURE_i + \beta_3 PMBA_i + \\
& + \beta_4 PLAWACC_i + \beta_5 PFTEAM_i + \beta_6 BNP_i + \beta_7 FCEO_i + \\
& + \beta_8 LNBVA_i + \beta_9 BVA_i + \beta_{10} BVA2_i + \beta_{11} FAGE_i + \beta_{12} ODIR_i + \varepsilon_i,
\end{aligned} \tag{3}$$

where $SPREAD_i$ is the underwriting spread as a percentage of the offer price. The second regression is:

$$\begin{aligned}
EXPR_i = & \beta_0 + \beta_1 XTSIZE_i + \beta_2 XTENURE_i + \beta_3 PMBA_i + \\
& + \beta_4 PLAWACC_i + \beta_5 PFTEAM_i + \beta_6 BNP_i + \beta_7 FCEO_i + \\
& + \beta_8 LNBVA_i + \beta_9 BVA_i + \beta_{10} BVA2_i + \beta_{11} FAGE_i + \beta_{12} ODIR_i + \varepsilon_i,
\end{aligned} \tag{4}$$

where $EXPR_i$ denotes other offering expenses as a percentage of the offer size.

The coefficients on the first six independent variables in Eqs. (3) and (4) are expected to be negative, implying that higher management quality firms incur lower costs of going public. As before, we expect FCEO to be significant, with no predictions about its sign. The coefficients on other measures of firm quality (FAGE, ODIR, and the firm size proxies) are expected to be negative as well.

Table 7 reports the results of regressions of the underwriting spread and other expenses of going public on the proxies of management quality. Panel A of Table 7 shows that firms with larger management teams (XTSIZE), and those with higher percentages of MBAs (PMBA) or former law and accounting partners (PLAWACC) in their management teams, as well as those with a more dominant CEO (FCEO), incur lower underwriting spreads.¹⁴ The coefficients on XTSIZE and FCEO are significant at the 1% level, while the coefficients on PMBA and PLAWACC are significant at the 5% level.¹⁵

*** [Place Table 7 about here] ***

¹⁴ The negative and significant relationship between underwriting spread and the percentage of the management team that had previously been partners in a law or accounting firm (PLAWACC) could also be consistent with accountants and lawyers being better negotiators, and thus able to get better terms for the firm from the underwriting syndicate.

¹⁵ Even though there has been a trend toward a uniform 7 percent underwriting spread (see, e.g., Chen and Ritter (2000)), there is some degree of variation in the spread around this 7 percent figure. Our results suggest that proxies for management quality can explain some of this variation.

Panel B of Table 7 shows that higher management quality firms also incur a lower amount of other expenses related to going public. In particular, we find that firms with larger and more reputable management teams (*XTSIZE* and *BNP*), as well as those with higher percentages of MBAs (*PMBA*) and former executive officers on their management teams (*PFTEAM*), incur lower costs of going public.

Previous studies have found a negative relationship between underwriting expenses and offer size, and have interpreted this result as the evidence of economies of scale in underwriting. Since we have shown that offer size is positively related to management quality and reputation and therefore is not an exogenous variable, we also run regressions using the offer size not explained by management quality and other firm quality variables (i.e., residuals from Eq. (1)), denoted by *XOFFER*, as a substitute for the firm size proxies. The results of these regressions are reported in Panels A and B of Table 7 (regression 2). We find that underwriting spread and other expenses of going public are negatively related to management quality and reputation, as well as to the residual offer size not explained by management quality.

Our results indicate that management quality and reputation have an economically as well as a statistically significant influence on the costs of going public. In particular, we find that a one-standard-deviation increase in *XTSIZE* results in a decrease of about 0.20% in the underwriting spread and a decrease of 0.49% in the ratio of other expenses to the offer size. For the median firm (with an offer price of \$11 and two million shares offered), this results in a savings of \$44,000 (2.85%) on underwriting spread and \$107,800 (17%) on other expenses of going public. Similarly, a one-standard-deviation increase in the percentage of the management team with MBA degrees (*PMBA*) results in a 0.097% reduction in the underwriting spread (savings of about \$21,340) and a 0.34% decline in the ratio of other expenses to the offer size (savings of about \$74,800). Finally, a one-standard-deviation increase in the percentage of the management team with prior top management experience (*PFTEAM*) leads to about \$115,000 in savings on the other expenses related to going public. Our results suggest that better and more

reputable management teams have a certifying effect on firm quality and thus incur lower costs of going public, as measured by both the underwriting spread and other expenses of going public.

5.4. Management quality and IPO underpricing

In this subsection we study the impact of management quality and reputation on IPO underpricing (hypothesis H4) by running the following regression:

$$\begin{aligned} \text{UNDERP}_i = & \beta_0 + \beta_1 \text{XTFSIZE}_i + \beta_2 \text{XTENURE}_i + \beta_3 \text{PLAWACC}_i + \\ & + \beta_4 \text{PMBA}_i + \beta_5 \text{PFTEAM}_i + \beta_6 \text{BNP}_i + \beta_7 \text{FCEO}_i + \beta_8 \text{LNBVA}_i + \\ & + \beta_9 \text{BVA}_i + \beta_{10} \text{BVA2}_i + \beta_{11} \text{FAGE}_i + \beta_{12} \text{XSREP}_i + \beta_{13} \text{DTECH}_i + \varepsilon_i, \end{aligned} \quad (5)$$

where UNDERP_i is the return on the first day of trading, defined as the ratio of the difference between the closing price on the first day of trading and the offer price, to the offer price. XSREP_i is underwriter reputation not explained by firm quality, i.e., residuals from Eq. (2). We use the usual control variables for firm size and age, and also DTECH_i , a dummy variable that takes on a value of one if the firm belongs to the technology sector (SIC codes between 7370 and 7390) and zero otherwise. We use DTECH_i to control for the hot issue market in Internet and computer-related IPOs. The coefficients on the first six independent variables are expected to be negative, while we do not have strong a priori expectations about the sign of the coefficient of FCEO . The coefficients of the firm size proxies and FAGE are expected to be negative, indicating that larger and older firms are more likely to have a lower level of informational asymmetry and therefore lower underpricing.

As reported in regression 1 of Table 8, we find that higher management quality firms experience lower underpricing. The coefficient of PLAWACC is negative and statistically significant at the 5% level, while the coefficients of PFTEAM and XTENURE are negative and significant at the 10% level. We also find that older firms experience lower underpricing as reflected in the negative and statistically significant coefficient of FAGE . The results hold up

when we control for the underwriter reputation not explained by management quality and other measures of firm quality, XSREP (see regression 2 in Table 8).¹⁶

*** [Place Table 8 about here] ***

Our results indicate an economically meaningful relationship between management quality and reputation on the one hand, and IPO underpricing on the other. For example, one-standard-deviation increases in tenure (XTENURE) and the percentage of the management team with prior top management experience (PFTEAM), respectively, result in 1.50% and 1.74% declines in IPO underpricing. For a median firm, these declines in underpricing translate into reductions of \$330,000 (20%) and \$383,000 (23%), respectively, in the “money left on the table” by the firm in the IPO, defined as the first-day price gain multiplied by the number of shares sold (see Loughran and Ritter (2002)). Also, a one-standard-deviation increase in the percentage of the management team that are former partners in a law or accounting firm (PLAWACC) reduces money left on the table by about \$264,000 (16%). Our findings provide evidence that better and more reputable management teams are able to certify firm quality more credibly, thus lowering the level of information asymmetry facing their firm, leading to a smaller degree of IPO underpricing for higher management quality firms.

5.5. Management quality and institutional interest

In this subsection we study the influence of management quality on institutional interest (hypothesis H5) using the following censored (tobit) regression:

$$\begin{aligned}
 INSTP_i = & \beta_0 + \beta_1 XTSIZE_i + \beta_2 XTENURE_i + \beta_3 PLAWACC_i + \\
 & + \beta_4 PMBA_i + \beta_5 BNP_i + \beta_6 PFTEAM_i + \beta_7 FCEO_i + \beta_8 XSREP_i + \\
 & + \beta_9 FAGE_i + \beta_{10} LNBVA_i + \beta_{11} BVA_i + \beta_{12} BVA2_i + \varepsilon_i,
 \end{aligned} \tag{6}$$

¹⁶ We also run this regression with partial adjustment of the IPO offer price (defined as the percentage change between the midpoint of the indicative price range and the offer price) as an additional control variable (results not reported). The significance of the coefficients on the management quality and reputation proxies are unchanged, though there is a significant increase in the adjusted R-squared.

where $INSTP_i$ is institutional holdings in the IPO firm at the end of the first quarter after going public, expressed as a percentage of the shares offered. We also repeat the above regression using the number of institutional holders (INSTN) at the end of the first quarter after the IPO as the dependent variable (instead of INSTP). Notice that, in addition to proxies for firm age and firm size, we use XSREP as a control variable, since the reputation of the IPO underwriting syndicate can also influence the extent of institutional interest in the firm's IPO. The coefficients on the first six independent variables are expected to be positive, while we do not have strong a priori expectations about the sign of the coefficient of FCEO. The coefficients of the control variables (XSREP, FAGE, and firm size proxies) are also expected to be positive.

Table 9 reports the results of the estimation of Eq. (6). We find that management quality is indeed positively related to institutional interest. In particular, we find that firms with larger management teams (XTSIZE) and higher percentages of team members with MBA degrees (PMBA), as well as those with more dominant CEOs (FCEO), have significantly higher institutional interest. The result holds for both institutional holdings (INSTP) and the number of institutional shareholders (INSTN). The coefficients are significant at the 1% level, except for PMBA in regression 1.

*** [Place Table 9 about here] ***

Again, our results are statistically as well as economically significant. A one-standard-deviation increase in XTSIZE increases the fraction of equity held by institutional investors by 1.8%, more than doubling the holdings of institutional investors in the median firm. Also, a one-standard-deviation increase in the percentage of the management team with MBA degrees (PMBA) leads to an increase of about 1.06% in the holdings of institutional shareholders, again nearly doubling them. The results are also economically significant for regressions with the number of institutional investors (INSTN) as the dependent variable. Our results suggest that the certification of a firm's quality by a better and more reputable management team results in a

reduction in outsiders' information acquisition costs about that firm, leading to an increase in institutional interest in the firm's IPO.

5.6. Management quality and long-term stock returns

In this subsection, we study the relationship between management reputation and quality and long-term post-IPO stock returns (hypothesis H6). We use four different benchmarks to adjust the three-year holding period returns of IPOs. The benchmarks are the CRSP value- and equally-weighted indexes, and the returns on samples of industry-and-size and industry-and-market-to-book matched firms. The matching samples serving as our benchmarks are obtained as follows. For the industry-and-size matched sample we first match by the two-digit SIC code and then look for the firm closest to the IPO firm by the market value of equity at the end of the first fiscal year after going public. We require the matched firm's market value of equity to be within 25% of the IPO firm's market value of equity. Similarly, for the industry-and-market-to-book matched sample we first match by the two-digit SIC code and then by the market-to-book ratio at the end of the first fiscal year after going public. We also require the matched firm's market-to-book ratio to be within 25% of that of the IPO firm. Finally, we also require matched firms to be public for at least five years prior to the IPO date of the firm they are matched to. This matching procedure is similar to that suggested by Barber and Lyon (1997). However, we do not require a simultaneous match along all three dimensions (industry, size, and market-to-book ratio), since most IPO firms are in small industries and such a requirement leads to a large reduction in the sample size.

Panel A of Table 10 reports the results of our univariate tests of the relationship between management quality and reputation and long-term post-IPO stock returns. We split the sample into management quality factor score (TRF and TSF) quintiles and into firm size quintiles. We find that firms with high management quality and reputation do indeed perform better than do low management quality firms, and that the difference is statistically significant when the sample is

split into the team structure factor (TSF) score quintiles. In particular, we find that the average difference in the three-year holding period returns between high and low management quality firms varies between 65.1% and 88.3% depending upon the benchmark used to adjust the holding period returns. Also, firms in the top management quality quintile consistently perform better than do those in the lowest management quality quintile, for all firm size quintiles but one. Our multivariate results, which we have omitted for the sake of brevity, are generally consistent with the univariate results reported above.¹⁷

*** [Place Table 10 about here] ***

We also test whether high management quality firms (defined as those with above-median management quality and reputation factor scores) experience significantly positive abnormal long-term stock returns while low management quality firms experience significantly negative abnormal returns. We conduct these tests using the calendar time portfolio approach with the Fama and French (1993) three factor model as the benchmark for expected returns (see, e.g., Ritter and Welch (2002)). In this approach, the estimates of intercepts serve as measures of monthly abnormal returns, with negative intercepts indicating underperformance and positive ones indicating outperformance.

The results are reported in Table 11. In Panel A we have split the sample by the median team resources factor (TRF) score. As can be seen from regressions 1 and 2, low management quality firms underperform by 0.470% per month, while the high management quality firms outperform by 0.554% per month. Our results are similar when we use weighted least squares (WLS) regressions with the weights based on the number of IPO firms in the monthly portfolio (see regressions 3 and 4). We find a 0.382% per month underperformance for the low

¹⁷ The relationship between management quality at the time of IPO and post-IPO performance (long-term stock returns as well as operating performance) could be affected by management turnover after IPO. We do not study the effect of post-IPO management turnover due to data limitations. However, it seems reasonable to expect that, as long as management turnover is not too large, management quality at the time of IPO will continue to affect the post-IPO performance of the firm, consistent with our findings.

management quality firms and outperformance of 0.40% per month for the high management quality firms. As can be seen from Panel B of Table 11, the results are similar when we split the sample by the median TSF score and use WLS regressions.

*** [Place Table 11 about here] ***

Even though none of the intercepts reported in Panels A and B are statistically significant, we find economically meaningful underperformance for low management quality firms and outperformance for high management quality firms. Estimates of economic significance are reported in Panel C of Table 11. We find an annual abnormal performance of between -5.52% and -0.026% for low management quality firms and between -2.02% and 6.85% for high management quality firms. Also, the difference between the annual abnormal performance of high and low management quality firms ranges from -1.998% to 12.35% (depending on the management quality factor and the estimation technique used), which is clearly economically significant. In summary, we find that management quality has a positive influence on long-term post-IPO stock price performance, as expected.

5.7. Management quality and operating performance

Finally, we study the relationship between management quality and reputation and the operating performance of firms in the first three years after going public (hypothesis H7). We measure the operating performance by the operating return on assets, ROA, defined as operating income before depreciation (annual Compustat item 13) divided by the book value of assets (annual Compustat item 6).¹⁸ To control for the variation in ROA across industries, we calculate the median ROA for the firms with the same two-digit SIC code as the sample firm and subtract it

¹⁸ Using other measures of operating performance, such as return on sales, defined as the ratio of operating income before depreciation (annual Compustat item 13) to net sales (annual Compustat item 12), or an operating cash flow based measure of return on assets, namely the ratio of operating income before depreciation (annual Compustat item 13) less capital expenditures (annual Compustat item 128) to the book value of assets (annual Compustat item 6), yield results that are qualitatively similar.

from the IPO firm's ROA. We look at the operating performance in the year of going public (defined as year 0) and the following three years.

We also study changes in operating performance following the IPO. Following Barber and Lyon (1996), we construct a matched sample based on industry and past performance. In particular, we match the IPO firm to a firm with the same two-digit SIC code and with a return on assets within 90%-110% of the IPO firm's performance in the year before going public. When no matching firm with similar performance in the year before going public is available, we look for a matching firm with performance within 90%-110% of the IPO firm's performance using all firms in the same one-digit SIC code.

The results of our univariate tests regarding the relationship between management quality and reputation and the industry-median-adjusted levels of operating performance (ROA) are reported in Panel B of Table 10. We find that firms in the top TSF score quintile do indeed have significantly stronger post-IPO operating performance. In particular, the difference in the median industry-adjusted return on assets (ROA) for firms in the top and the bottom TSF score quintiles is between 1.81% and 3.58% (depending upon the year after IPO). Our results are largely consistent across different firm size quintiles. Our multivariate results (omitted for the sake of brevity) are consistent with the univariate results. We find that firms with higher percentages of former law and accounting partners on their management teams (PLAWACC) and longer tenures of their top managers (XTENURE) have significantly higher industry-median adjusted ROAs.

We also study the relationship between operating underperformance subsequent to going public and management quality (results not reported), and find that none of the management quality proxies have a significant influence on changes in the operating performance of firms subsequent to going public or on their performance relative to a sample of industry-and-past-performance matched firms. In summary, we find that firms with higher management quality and

reputation have higher levels of ROA, but that changes in ROA subsequent to going public are unrelated to management quality.¹⁹

6. Summary, interpretation of results, and conclusion

The quality of a firm's management has long been used by venture capitalists and other practitioners in assessing that firm's viability in its early life. However, the question remained: Does the quality of a firm's management have a significant impact on its IPO characteristics and its post-IPO performance? In this paper we attempt to answer this question empirically. Our main findings are as follows. First, controlling for firm size and other aspects of firm quality, we find that firms with better and more reputable managers have larger IPO offer sizes. Second, more reputable underwriters are associated with firms of higher management quality and reputation. Third, underwriting expenses (both the underwriting spread and other expenses of going public) are negatively related to management quality and reputation. Fourth, firms with higher management quality and reputation attract more institutional investors. Fifth, management quality and reputation are negatively related to IPO underpricing. Finally, management quality and reputation explain some of the cross-sectional variation in the post-IPO long-term stock returns and the post-IPO operating performance of firms.

Our findings suggest that management quality and reputation are indeed important dimensions of firm quality, and that measures of these variables provide additional information about intrinsic firm value over and above that provided by firm quality variables such as firm age and firm size. Many of our findings are consistent with better and more reputable firm management being able to convey the value of their firm more credibly to outsiders, thus reducing the information asymmetry facing the firm in the equity market. The negative

¹⁹ Our results are analogous to those of Mikkelsen, Partch, and Shah (1997), who find that firm-specific variables (such as a fraction of shares sold by existing shareholders and percentage of outside directors on the firm's board of directors) explain the cross-sectional variation among firms in their levels of ROA, but not the changes in ROA through time.

relationship we document between the quality and reputation of a firm's management and the extent of underpricing in its IPO could be a consequence of this reduction in information asymmetry.

A lower degree of information asymmetry will also be associated with a reduction in outsiders' costs of evaluating a firm, be they financial intermediaries evaluating a firm prior to deciding whether or not to underwrite its IPO, or institutional investors evaluating the firm from the point of view of investing in its equity. The positive relationship we find between the quality and reputation of a firm's management and the reputation of the syndicate of investment banks underwriting its IPO is thus consistent with a reduced cost to outsiders of evaluating the firm when its management is of high quality. The negative relationship we document between the quality and reputation of a firm's management and its costs of going public also supports this notion: if underwriters incur lower costs to acquire information about firms with higher management quality and reputation and to transmit this information to the IPO market, they will accept lower fees to take such firms public. The positive relationship we find between the management quality of a firm and the extent of post-IPO institutional holdings in that firm is also consistent with this notion.

Our findings also indicate that higher quality firm management is capable of selecting better projects and implementing them more ably. The positive relationship we find between the quality and reputation of a firm's management and its long-term post-IPO operating performance provides direct evidence supporting this notion. Further, since better quality projects have larger net present values for any given scale, the equilibrium scale (level of investment) in such projects will be larger, so that the amount raised at IPO will also be larger. Thus, the positive relationship we document between the quality and reputation of a firm's management and the amount raised in its IPO provides indirect evidence that firms with better management quality are able to select better projects.

Finally, the positive relationship we find between management quality and long-term stock returns is consistent with the notion that the long-term underperformance of IPOs arises from heterogeneous expectations among investors in an environment of costly short-selling. In such an environment, the share price on the first day of trading in the secondary market will be determined by the most optimistic investors, which results in long-term stock price underperformance as additional information about the firm is revealed over time. If, as we have documented, firms with higher management quality and reputation attract greater interest from institutional investors (who are less likely to be subject to overoptimism), then such firms are likely to experience a smaller dispersion in beliefs among investors, and therefore yield better long-term stock returns following the IPO.

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Table 1
Number of IPOs by year

	1993	1994	1995	1996	<i>Total</i>
total	526	408	455	698	2087
financial	40	26	40	58	164
carve-outs	107	74	30	67	278
foreign firms	5	0	5	14	24
former LBOs	33	0	1	0	34
roll-ups	0	0	2	9	11
CRSP/Compustat not available	9	10	14	20	53
prospectus not available	16	0	1	1	18
incomplete data	10	15	9	19	53
unclear	2	1	1	2	6
venture-backed	178	147	216	315	856
significant shareholders	27	29	48	75	179
<i>Final sample</i>	99	106	88	118	411

Table 2

Summary statistics. The sample consists of 411 initial public offerings between 1993 and 1996. TSIZE is the size of a firm's management team, defined as managers with a rank of vice president or higher. XTSIZE are residuals from a regression of TSIZE on LNBVA, BVA, BVA2, and industry dummies, where LNBVA is the natural log of the book value of the firm's assets, BVA is the book value of assets (in \$millions), and BVA2 is BVA squared. TENURE is the average number of years management team members have been working for the company. XTENURE is the average number of years management team members have been working for the company, adjusted for firm age. TENHET is the coefficient of variation of the team members' tenures. PMBA is the percentage of a firm's management team with MBA degrees. BNP is the number of non-profit boards that management team members sit on. FCEO is the ratio of CEO salary and bonus in the fiscal year preceding IPO to the average salary and bonus of the other management team members. PFTEAM is the percentage of the management team who have served as vice presidents and above prior to joining the IPO firm. PLAWACC is the percentage of management team who have previously been partners in a law or accounting firm. ODIR is the number of directors that are not executive officers of the company. FAGE is the natural log of one plus firm age, where firm age is defined as the number of years between the year of incorporation or start of operations (whichever is earlier), and the time of going public. LNOFF is the natural logarithm of the offer size. SREP is underwriter syndicate reputation, measured by the log of one plus the average market share of the lead underwriters. SPREAD is the underwriting spread as a percentage of the offer price. EXPR is the offering expenses as a percentage of the offer size. UNDERP is the first-day return in percentage terms, defined as the closing price on the first day of trading less the offer price, divided by the offer price. INSTP is the natural logarithm of the percentage of the offer allocated to institutional investors at the end of the first quarter after the IPO. INSTN is the natural logarithm of the number of institutional investors holding shares in the IPO at the end of the first quarter after going public.

Panel A: Summary statistics

	min	mean	median	max	std. dev.
TSIZE	2	5.311	5	13	1.969
XTSIZE	-4.018	0.000	-0.258	7.467	1.812
PMBA	0	0.069	0	0.75	0.145
PFTEAM	0	0.362	0.333	1	0.274
PLAWACC	0	0.030	0	0.75	0.087
TENURE	1	7.358	6.17	24.5	4.929
XTENURE	-12.547	0.000	-0.273	12.749	3.174
TENHET	0	3.211	2.202	21.201	3.316
FCEO	0.030	1.432	1.270	5.425	0.060
BNP	0	0.073	0	4	0.419
ODIR	0	2.321	2	12	1.866
LNBVA	11.999	16.629	16.826	20.399	1.499
BVA	0.184	42.154	18.905	717.824	74.052
BVA2	0.034	7,247.32	357.412	515,271.9	34,397.24
FAGE	0	2.537	2.565	4.977	0.883
LNOFF	14.557	16.848	16.911	19.368	0.891
SREP	0.003	0.640	0.413	2.315	0.612
SPREAD	5.5	7.547	7	16.36	1.192
EXPR	0	3.959	2.883	38.5	3.275
UNDERP	-23.9	14.348	9.4	98.8	17.410
INSTP	0	0.045	0.011	0.409	0.069
INSTN	0	0.629	0.693	2.485	0.651

Panel B: Correlations between independent variables

	XTSIZE	PMBA	PFTEAM	PLAWACC	XTENURE	FCEO	BNP	LNBVA	BVA	BVA2	LFAGE	ODIR
XTSIZE	1											
PMBA	-0.0313	1										
PFTEAM	-0.0835	-0.0172	1									
PLAWACC	-0.1125	-0.0627	0.0337	1								
XTENURE	-0.1732	0.0053	-0.2596	-0.1163	1							
FCEO	0.0121	0.0029	-0.0755	0.0525	0.0269	1						
BNP	0.0345	0.0214	0.0364	0.0090	-0.0013	0.1119	1					
LNBVA	0.0000	0.0048	-0.1665	0.0319	0.0221	0.3251	0.0524	1				
BVA	0.0000	0.0501	-0.1474	0.0784	-0.0172	0.2473	0.0172	0.6727	1			
BVA2	0.0000	0.0987	-0.0923	0.0607	-0.0396	0.1419	-0.0040	0.3914	0.8804	1		
LFAGE	0.0240	-0.0724	-0.3971	-0.0506	0.0000	0.1845	0.0013	0.4955	0.3192	0.1686	1	
ODIR	-0.0766	-0.0424	-0.0166	-0.0068	-0.0746	-0.0614	-0.0488	0.0245	0.0391	0.0015	0.0224	1

Panel C: Relationship between firm size and proxies for management quality and reputation

	FIRM SIZE QUINTILES					
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>Average</i>
TSIZE	4.4337	5.0732	5.5488	5.5732	5.9390	5.3114
PMBA	0.0473	0.0851	0.0918	0.0676	0.0520	0.0687
PFTEAM	0.4475	0.3788	0.3538	0.3531	0.2732	0.3615
PLAWACC	0.0212	0.0410	0.0320	0.0154	0.0380	0.0295
TENURE	4.0053	5.9514	7.5685	9.2189	10.0891	7.3585
TENHET	1.8356	2.4029	3.3504	3.6915	4.7934	3.2114
FCEO	1.1431	1.2742	1.5032	1.5298	1.7136	1.4321
BNP	0.0482	0.0610	0.0854	0.0732	0.0976	0.0730

Table 3

Selected statistics related to a common factor analysis of seven measures of management quality. The sample consists of 411 initial public offerings between 1993 and 1996. TRF is the management team resources factor score obtained using common factor analysis on the firm-size-adjusted TSIZE, MBA, LAWACC, and FTEAM. TSF is the management team structure factor score obtained using common factor analysis on the firm-size-adjusted TENURE, TENHET, and FCEO. TSIZE is the size of a firm's management team, defined as the number of managers with a rank of vice president or higher. LAWACC is the number of management team members who have previously been partners in a law or accounting firm. FTEAM is the number of management team members who have served as vice presidents or above prior to joining the IPO firm. MBA is the number of management team members with MBA degrees. TENURE is the average number of years management team members have been working for the company. TENHET is the coefficient of variation of the team members' tenures. BNP is the number of non-profit boards that management team members sit on. FCEO is the ratio of CEO salary and bonus in the fiscal year preceding IPO to the average salary and bonus of the other management team members.

Panel A: Estimated communalities of seven management quality measures				
	TSIZE	LAWACC	FTEAM	MBA
TRF	0.1174	0.0087	0.1093	0.0182
	TENURE	TENHET	FCEO	
TSF	0.1648	0.1676	0.0046	

Panel B: Eigenvalues of the reduced correlation matrix of seven management quality measures				
	1	2	3	4
TRF	0.45740	0.10548	-0.07733	-0.23189
TSF	0.58121	-0.00242	-0.24182	

Panel C: Correlations between the common factors and seven management quality measures				
	TSIZE	LAWACC	FTEAM	MBA
TRF	0.8160	0.0878	0.8029	0.1597
	TENURE	TENHET	FCEO	
TSF	0.8309	0.8394	0.1482	

Panel D: Descriptive statistics of the common factors extracted from seven management quality measures		
	TRF	TSF
Maximum	2.177	2.316
Third quartile	0.373	0.368
Median	-0.036	-0.107
First quartile	-0.448	-0.438
Minimum	-1.189	-1.561
Mean	0.000	0.000

Table 4

IPO characteristics split into firm size and management quality and reputation factor quintiles. TRF is the management team resources factor score obtained using common factor analysis on firm-size-adjusted TSIZE, MBA, LAWACC, and FTEAM. TSF is the management team structure factor score obtained using common factor analysis on firm-size-adjusted TENURE, TENHET, and FCEO. OFFSIZE is the IPO offer size in millions of dollars. SREP is underwriter syndicate reputation, measured by the log of one plus the average market share of the lead underwriters. SPREAD is the underwriting spread as a percentage of the offer price. EXPR is the offering expenses as a percentage of the offer size. UNDERP is the first-day return in percentage terms, defined as the closing price on the first day of trading less the offer price, divided by the offer price. INSTP is the natural logarithm of the percentage of the offer allocated to institutional investors at the end of the first quarter after the IPO. INSTN is the natural logarithm of the number of institutional investors holding shares in the IPO at the end of the first quarter after going public. The results of *t*-tests for the difference in means are reported in parenthesis. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Underwriter reputation, IPO offer size, and underwriting spread split into firm size and management quality quintiles

		MANAGEMENT QUALITY QUINTILES													
		TRF							TSF						
FIRM SIZE QUINTILES	SREP	1	2	3	4	5	average	1st less 5th	1	2	3	4	5	average	1st less 5th
		1	0.271	0.159	0.377	0.676	0.524	0.414		0.662	0.499	0.451	0.133	0.208	0.414
	2	0.160	0.162	0.902	0.888	1.019	0.663		0.337	1.228	0.679	0.495	0.144	0.663	
	3	0.578	0.923	0.690	2.010	2.325	1.361		1.128	2.075	1.188	1.847	0.746	1.361	
	4	1.003	1.711	1.812	1.020	1.720	1.443		1.679	1.184	0.952	1.894	1.435	1.443	
	5	2.306	2.407	3.144	2.754	3.589	2.797		3.531	2.087	2.854	2.676	2.233	2.797	
	average	0.940	1.161	1.343	1.442	1.786		-0.8462 (-3.05)***	1.704	1.230	0.969	1.602	1.158		0.5457 (1.96)**
	OFFSIZE														
	1	8.868	8.592	12.097	18.531	16.171	13.042		15.773	14.016	12.203	12.127	11.700	13.042	
	2	8.790	10.258	18.365	19.132	23.445	16.477		14.144	16.738	20.018	18.631	9.550	16.477	
	3	17.952	25.154	25.284	26.382	37.074	27.111		29.095	35.807	27.205	27.701	17.177	27.111	
	4	24.962	37.969	36.534	30.643	41.800	34.018		28.546	35.116	29.591	47.808	27.990	34.018	
	5	59.242	52.573	61.179	78.915	72.169	64.177		90.524	46.047	77.804	49.908	48.478	64.177	
	average	25.659	28.735	29.693	33.552	37.033		-11.3735 (-2.34)**	41.891	25.068	26.696	34.431	26.389		15.5022 (2.63)***
	SPREAD														
	1	9.306	9.375	8.868	8.377	8.232	8.805		8.460	8.884	8.786	8.667	9.200	8.805	
	2	8.185	8.338	8.445	7.173	7.227	7.829		8.246	7.696	7.335	7.689	8.651	7.829	
	3	7.561	7.498	7.156	7.126	6.972	7.261		7.303	7.090	7.300	7.086	7.464	7.261	
	4	7.146	6.937	7.031	6.882	7.000	7.006		7.002	7.071	7.000	6.936	7.016	7.006	
	5	6.848	6.917	6.763	6.749	6.804	6.820		6.645	7.000	6.716	6.912	6.927	6.820	
	average	7.800	7.666	7.722	7.282	7.263		0.5367 (3.24)***	7.365	7.726	7.715	7.345	7.587		-0.2222 (-1.31)

Panel B: Underwriting expenses, holdings of institutional shareholders, and number of institutional shareholders split into firm size and management quality quintiles

		<i>MANAGEMENT QUALITY QUINTILES</i>													
<i>FIRM SIZE QUINTILES</i>	<i>EXPR</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>TRF</i>			<i>1st less 5th</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>TSF</i>			<i>1st less 5th</i>
	<i>1</i>	7.384	6.231	5.790	5.482	5.630	6.107		5.345	6.110	6.269	5.724	6.873	6.107	
	<i>2</i>	8.954	5.685	4.369	3.234	4.518	5.261		6.011	5.899	4.561	3.967	6.021	5.261	
	<i>3</i>	3.644	3.926	3.609	3.486	2.435	3.438		3.209	3.056	2.329	3.393	4.580	3.438	
	<i>4</i>	3.760	2.508	2.396	3.701	2.226	2.942		3.479	2.889	2.955	2.651	2.817	2.942	
	<i>5</i>	1.998	2.034	2.253	2.207	1.889	2.071		1.901	3.388	1.959	2.039	2.153	2.071	
	<i>average</i>	5.127	3.852	3.741	3.650	3.416		1.7104 (2.72)***	3.601	4.614	4.297	3.281	3.993		-0.3923 (-0.90)
	<i>UNDERP</i>														
	<i>1</i>	19.868	12.973	10.419	20.340	13.115	15.422		21.938	11.869	16.989	17.943	9.153	15.422	
	<i>2</i>	14.255	20.698	17.932	15.646	18.262	17.145		16.631	18.082	11.848	27.105	11.975	17.145	
	<i>3</i>	13.497	19.594	12.596	13.985	15.867	15.795		18.624	18.344	14.195	14.608	12.288	15.795	
	<i>4</i>	7.781	9.008	18.037	16.320	13.264	12.711		10.107	20.967	14.227	6.346	11.605	12.711	
	<i>5</i>	6.588	10.112	10.209	5.388	22.389	10.652		14.447	21.087	11.102	8.160	7.775	10.652	
	<i>average</i>	12.061	14.755	13.889	14.522	16.539		-4.4786 (-1.83)*	15.990	17.212	14.238	13.782	10.495		5.4957 (1.99)**
	<i>INSTIT</i>														
	<i>1</i>	0.008	0.013	0.023	0.024	0.027	0.019		0.026	0.011	0.030	0.012	0.010	0.019	
<i>2</i>	0.015	0.016	0.008	0.057	0.079	0.037		0.046	0.039	0.044	0.029	0.020	0.037		
<i>3</i>	0.070	0.037	0.035	0.055	0.100	0.057		0.045	0.065	0.092	0.045	0.053	0.057		
<i>4</i>	0.049	0.038	0.100	0.050	0.064	0.060		0.044	0.075	0.043	0.060	0.071	0.060		
<i>5</i>	0.054	0.053	0.063	0.103	0.089	0.071		0.081	0.063	0.065	0.076	0.058	0.071		
<i>average</i>	0.037	0.034	0.045	0.057	0.072		-0.0350 (-2.67)***	0.053	0.046	0.047	0.049	0.049		0.0038 (0.30)	
<i>INSTN</i>															
<i>1</i>	0.333	0.333	0.474	0.941	0.529	0.530		0.600	0.591	0.552	0.667	0.100	0.530		
<i>2</i>	0.529	0.417	0.412	1.056	1.389	0.793		0.643	1.091	0.850	0.800	0.273	0.793		
<i>3</i>	1.111	1.200	0.786	1.824	2.471	1.512		1.333	1.824	2.400	1.714	0.850	1.512		
<i>4</i>	1.053	1.500	1.824	1.400	2.467	1.622		1.267	1.556	1.308	2.353	1.526	1.622		
<i>5</i>	1.600	2.529	2.533	2.667	2.467	2.317		2.739	3.000	2.500	2.125	1.909	2.317		
<i>average</i>	0.928	1.293	1.171	1.549	1.829		-0.9016 (-3.52)***	1.506	1.280	1.207	1.646	1.122		0.3841 (1.57)*	

Table 5

Relationship between offer size and management quality and reputation. The estimation is done using a censored (tobit) regression. The dependent variable is the natural logarithm of the offer size. XTSIZE are residuals from a regression of TSIZE on LNBVA, BVA, BVA2, and industry dummies, where LNBVA is the natural log of the book value of the firm's assets, BVA is the book value of assets (in \$millions), and BVA2 is BVA squared. XTENURE is the average number of years management team members have been working for the company, adjusted for firm age. PMBA is the percentage of the management team with MBA degrees. BNP is the number of non-profit boards that management team members sit on. FCEO is the ratio of CEO salary and bonus in the fiscal year preceding IPO to the average salary and bonus of the other management team members. PFTEAM is the percentage of the management team who have served as vice presidents or above prior to joining the IPO firm. PLAWACC is the percentage of the management team who have previously been partners in a law or accounting firm. FAGE is the natural log of one plus firm age, where firm age is defined as the number of years between the year of incorporation or start of operations (whichever is earlier), and the time of going public. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	1	2	3	4
Intercept	10.358 (21.15)***	10.408 (20.49)***	10.475 (20.18)***	10.499 (20.14)***
XTSIZE	0.093 (5.88)***	0.091 (5.73)***		
PMBA	0.409 (2.15)**			
PFTEAM	0.238 (2.05)**			
PLAWACC	0.428 (1.31)			
XTENURE	-0.007 (-0.75)			
FCEO	0.175 (3.59)***		0.191 (3.71)***	
BNP	0.186 (2.81)***			0.232 (3.29)***
LNBVA	0.363 (11.19)***	0.390 (11.70)***	0.370 (10.76)***	0.383 (11.18)***
BVA	0.004 (3.09)***	0.004 (3.06)***	0.004 (2.78)***	0.004 (3.01)***
BVA2	-0.000 (-3.46)***	-0.000 (-3.33)***	-0.000 (-3.09)***	-0.000 (-3.23)***
FAGE	-0.035 (-0.88)	-0.074 (-1.98)**	-0.072 (-1.88)*	-0.064 (-1.68)*
ODIR	0.010 (0.67)	0.003 (0.18)	0.001 (0.04)	-0.001 (-0.09)
LR	386.04	351.33	333.31	330.42
N	411	411	411	411

Table 6

Relationship between underwriter reputation and management quality and reputation. The estimation is done using a censored (tobit) regression. The dependent variable is underwriter syndicate reputation, measured by the log of one plus the average market share of the lead underwriters. XTFSIZE are residuals from a regression of TFSIZE on LNBVA, BVA, BVA2, and industry dummies, where LNBVA is the natural log of the book value of the firm's assets, BVA is the book value of assets (in \$millions), and BVA2 is BVA squared. XTENURE is the average number of years management team members have been working for the company, adjusted for the firm's age. PMBA is the percentage of the management team with MBA degrees. BNP is the number of non-profit boards that management team members sit on. FCEO is the ratio of CEO salary and bonus in the fiscal year preceding IPO to the average salary and bonus of the other management team members. PFTEAM is the percentage of the management team who have served as vice presidents or above prior to joining the IPO firm. PLAWACC is the percentage of management team who have previously been partners in a law or accounting firm. ODIR is the number of directors that are not executive officers of the company. FAGE is the natural log of one plus firm age, where firm age is defined as the number of years between the year of incorporation or start of operations (whichever is earlier), and the time of going public. FCF is free cash flow as a percentage of book value, calculated as a ratio of operating income less taxes, interest expense, and dividends to the book value of firm's assets at the end of the fiscal year preceding IPO. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	1	2	3	4	5
Intercept	-2.320 (-5.66)***	-2.366 (-5.58)***	-2.349 (-5.43)***	-2.332 (-5.47)***	-2.325 (-5.41)***
XTFSIZE	0.059 (4.56)***	0.060 (4.66)***			
PMBA	0.371 (2.33)**		0.358 (2.14)**		
PFTEAM	0.068 (0.71)				
PLAWACC	-0.139 (-0.52)				
XTENURE	-0.002 (-0.29)				
FCEO	0.158 (3.97)***			0.169 (4.08)***	
BNP	0.145 (2.66)***				0.179 (3.14)***
ODIR	0.025 (2.00)**	0.019 (1.47)	0.015 (1.14)	0.018 (1.41)	0.016 (1.23)
LNBVA	0.163 (6.02)***	0.186 (6.70)***	0.182 (6.42)***	0.170 (6.03)***	0.182 (6.46)***
BVA	0.004 (3.77)***	0.004 (3.70)***	0.004 (3.78)***	0.004 (3.41)***	0.004 (3.64)***
BVA2	-0.000 (-3.51)***	-0.000 (-3.37)***	-0.000 (-3.53)***	-0.000 (-3.14)***	-0.000 (-3.29)***
FAGE	-0.087 (-2.68)***	-0.099 (-3.21)***	-0.088 (-2.81)***	-0.098 (-3.16)***	-0.091 (-2.91)***
FCF	0.066 (1.31)	0.068 (1.31)	0.055 (1.04)	0.058 (1.12)	0.054 (1.02)
LR	239.45	208.66	192.09	203.86	197.30
N	411	411	411	411	411

Table 7

Relationship between underwriting expenses and management quality and reputation. The dependent variables in Panels A and B are the underwriting spread as a percentage of the offer price and the offering expenses as a percentage of the offer size, respectively. XTFSIZE are residuals from a regression of TSIZE on LNBVA, BVA, BVA2, and industry dummies, where LNBVA is the natural log of the book value of the firm's assets, BVA is the book value of assets (in \$millions), and BVA2 is BVA squared. XTENURE is the average number of years management team members have been working for the company, adjusted for firm age. PMBA is the percentage of the management team with MBA degrees. BNP is the number of non-profit boards that management team members sit on. FCEO is the ratio of CEO salary and bonus in the fiscal year preceding IPO to the average salary and bonus of the other management team members. PFTEAM is the percentage of the management team who have served as vice presidents or above prior to joining the IPO firm. PLAWACC is the percentage of the management team who have previously been partners in a law or accounting firm. ODIR is the number of directors that are not executive officers of the company. FAGE is the natural log of one plus firm age, where firm age is defined as the number of years between the year of incorporation or start of operations (whichever is earlier), and the time of going public. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Relationship between underwriting spread and management quality

	1	2	3	4	5
Intercept	18.670 (14.07)***	9.500 (38.07)***	18.628 (13.87)***	18.562 (13.63)***	18.562 (13.64)***
XTFSIZE	-0.110 (-5.39)***	-0.111 (-4.99)***	-0.105 (-5.49)***		
PMBA	-0.672 (-2.33)**	-0.856 (-3.24)***		-0.589 (-1.97)**	
PFTEAM	-0.065 (-0.37)	-0.260 (-1.34)			
PLAWACC	-0.914 (-2.06)**	-1.108 (-2.50)**			
XTENURE	0.006 (0.52)	-0.005 (-0.39)			
FCEO	-0.127 (-2.45)**	-0.384 (-5.98)***			-0.142 (-2.73)***
BNP	-0.094 (-1.33)	-0.145 (-2.03)**			
LNBVA	-0.654 (-7.25)***		-0.672 (-7.40)***	-0.664 (-7.18)***	-0.657 (-7.02)***
BVA	0.007 (2.93)***		0.007 (2.76)***	0.007 (2.55)**	0.007 (2.84)***
BVA2	-0.000 (-1.83)*		-0.000 (-1.85)*	-0.000 (-1.51)	-0.000 (-1.88)*
FAGE	-0.066 (-0.93)	-0.462 (-6.57)***	-0.042 (-0.57)	-0.058 (-0.77)	-0.046 (-0.62)
ODIR	-0.008 (-0.37)	-0.014 (-0.57)	-0.002 (-0.08)	0.005 (0.22)	0.003 (0.13)
XOFFER		-0.823 (-10.96)***			
Adjusted R-square	48.86	35.36	47.21	45.18	45.14
N	411	411	411	411	411

Panel B: Relationship between other expenses of going public and management quality

	1	2	3	4	5	6
Intercept	21.818 (7.01)***	9.550 (10.93)***	21.640 (6.87)***	21.423 (6.94)***	21.418 (6.96)***	21.355 (6.82)***
XTSIZE	-0.270 (-3.47)***	-0.274 (-3.71)***	-0.236 (-3.05)***			
PMBA	-2.379 (-3.54)***	-2.600 (-4.21)***		-2.224 (-3.04)***		
PFTEAM	-1.909 (-2.44)**	-2.189 (-2.78)***				
PLAWACC	2.009 (0.60)	1.244 (0.38)				
XTENURE	-0.072 (-1.62)	-0.093 (-2.30)**				
FCEO	-0.512 (-3.04)***	-1.054 (-6.09)***			-0.533 (-3.13)***	
BNP	-0.420 (-2.43)**	-0.510 (-4.05)***				-0.578 (-3.35)***
LNBVA	-0.906 (-4.49)***		-1.037 (-5.05)***	-1.007 (-4.99)***	-0.979 (-4.80)***	-1.015 (-4.96)***
BVA	-0.003 (-0.49)		-0.001 (-0.20)	-0.002 (-0.41)	-0.000 (-0.08)	-0.001 (-0.23)
BVA2	0.000 (1.17)		0.000 (0.91)	0.000 (1.28)	0.000 (0.82)	0.000 (0.92)
FAGE	-0.308 (-1.58)	-1.059 (-5.48)***	-0.044 (-0.25)	-0.095 (-0.55)	-0.050 (-0.30)	-0.071 (-0.41)
ODIR	-0.144 (-2.57)**	-0.175 (-3.00)***	-0.112 (-2.02)**	-0.099 (-1.72)*	-0.106 (-1.86)*	-0.100 (-1.74)*
XOFFER		-2.338 (-10.39)***				
Adjusted R-square	28.92	32.33	24.37	23.62	23.54	23.22
N	407	407	407	407	407	407

Table 8

Relationship between underpricing and management quality and reputation. The dependent variable is the first-day return in percentage terms, defined as the closing price on the first day of trading less the offer price, divided by the offer price. XTFSIZE are residuals from a regression of TFSIZE on LNBVA, BVA, BVA2, and industry dummies, where LNBVA is the natural log of the book value of the firm's assets, BVA is the book value of assets (in \$millions), and BVA2 is BVA squared. TENURE is the average number of years management team members have been working for the company, adjusted for firm age. PMBA is the percentage of the management team with MBA degrees. BNP is the number of non-profit boards that management team members sit on. FCEO is the ratio of CEO salary and bonus in the fiscal year preceding IPO to the average salary and bonus of the other management team members. PFTEAM is the percentage of the management team who have served as vice presidents or above prior to joining the IPO firm. PLAWACC is the percentage of management team who have previously been partners in a law or accounting firm. FAGE is the natural log of one plus firm age, where firm age is defined as the number of years between the year of incorporation or start of operations (whichever is earlier), and the time of going public. DTECH is a dummy variable that takes on a value of one if the firm is in a technology-related industry (SIC code between 7370 and 7390) and zero otherwise. XSREP is the underwriting syndicate reputation not explained by management quality and reputation (i.e., residuals from the regressions reported in Table 6). The dependent variable is winsorized at the 1st and the 99th percentile. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	1	2	3	4
Intercept	24.623 (1.80)*	24.805 (1.80)*	23.627 (1.72)*	21.897 (1.57)
XTFSIZE	0.521 (1.24)	0.565 (1.35)		
PMBA	1.385 (0.25)	1.755 (0.31)		
PFTEAM	-6.360 (-1.94)*	-6.408 (-1.97)**	-5.107 (-1.67)*	
PLAWACC	-13.776 (-2.14)**	-13.895 (-2.13)**		-13.528 (-2.08)**
XTENURE	-0.473 (-1.94)*	-0.477 (-2.02)**		
FCEO	0.486 (0.41)	0.510 (0.43)		
BNP	1.759 (1.65)*	1.787 (1.65)		
LNBVA	-0.036 (-0.04)	-0.055 (-0.06)	-0.000 (-0.00)	-0.089 (-0.10)
BVA	-0.029 (-1.03)	-0.029 (-1.04)	-0.034 (-1.15)	-0.028 (-0.95)
BVA2	0.000 (0.73)	0.000 (0.72)	0.000 (0.84)	0.000 (0.72)
FAGE	-2.636 (-2.72)***	-2.674 (-2.77)***	-2.313 (-2.49)**	-1.810 (-2.16)**
XSREP		3.356 (2.12)**	3.103 (1.98)**	3.104 (1.98)**
DTECH	3.800 (1.46)	2.977 (1.13)	3.788 (1.47)	3.982 (1.56)
Year dummies	Yes	Yes	Yes	Yes
Adjusted R-squared	10.84	11.76	9.40	9.31
N	402	402	402	402

Table 10

Long-term post-IPO stock returns and post-IPO operating performance split into firm size and management quality factor quintiles. TRF is the management team resources factor score obtained using common factor analysis on the firm-size-adjusted TSIZE, MBA, LAWACC, and FTEAM. TSF is the management team structure factor score obtained using common factor analysis on the firm-size adjusted TENURE, TENHET, and FCEO. EWARET, MBARET, and ISARET are three-year holding period returns, adjusted using CRSP equally weighted index, industry-and-market-to-book and industry-and-size matched firm returns, respectively. ROA0, ROA1, ROA2, and ROA3 are industry-adjusted returns on assets in the year of going public and the following three years, respectively. ROA is defined as a ratio of operating income (COMPUSTAT item 13) to book value of assets (COMPUSTAT item 6). Median ROAs are reported in Panel B. The results of *t*-tests for the difference in means and nonparametric Wilcoxon signed rank tests for the difference in medians are reported in Panels A and B, respectively. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Long-term post-IPO stock returns split into firm size and management quality quintiles

		<i>MANAGEMENT QUALITY QUINTILES</i>													
		<i>TRF</i>						<i>TSF</i>							
<i>EWARET</i>		<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>average</i>	<i>1st less 5th</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>average</i>	<i>1st less 5th</i>
	<i>1</i>	-1.9172	-1.1167	-0.9155	-0.9059	-1.3456	-1.2479		-1.2272	-1.2437	-1.3990	-1.9173	-0.0366	-1.2479	
	<i>2</i>	-1.1739	-1.5459	-1.1872	-0.6332	-1.2127	-1.1209		-1.8258	-0.9859	-1.0953	-0.9396	-0.7876	-1.1209	
	<i>3</i>	0.1598	-1.0170	-1.0929	-0.7764	-1.0860	-0.8652		-1.2749	-0.6254	-0.9415	-1.0276	-0.4872	-0.8652	
	<i>4</i>	-0.9677	-0.7857	-0.0617	-0.3629	-1.2845	-0.6917		-0.8840	-1.0130	-0.6063	-0.1541	-0.7748	-0.6917	
	<i>5</i>	-0.9417	-0.7475	-0.9002	-1.2127	-1.2779	-1.0049		-1.2033	-0.9645	-1.4542	-0.9321	-0.6783	-1.0049	
	<i>average</i>	-1.0873	-1.0080	-0.8223	-0.7760	-1.2390		0.1517 (0.67)	-1.2716	-0.9855	-1.1502	-0.9327	-0.5905		-0.68113 (-2.55)***
<i>FIRM SIZE QUINTILES</i>	<i>MBARET</i>														
	<i>1</i>	-0.6518	-1.6234	0.1416	-0.9420	-0.5155	-0.6320		-0.7244	-0.8793	-0.5421	-1.4747	1.0382	-0.6320	
	<i>2</i>	0.5849	-1.0827	-0.2857	0.1335	-0.1677	-0.1061		-0.5996	-0.0564	-0.3475	0.1249	0.9003	-0.1061	
	<i>3</i>	0.2793	0.4246	-0.9701	-0.0033	0.0506	-0.0175		-0.4307	-0.2291	0.6382	0.5359	-0.0123	-0.0175	
	<i>4</i>	0.0089	0.4418	0.1203	0.1101	-0.8439	-0.0311		-0.1630	-0.2278	-0.2280	-0.0830	0.5584	-0.0311	
	<i>5</i>	0.2058	-0.2578	-0.4675	-0.3772	-0.3544	-0.2254		-0.7776	-0.8214	-0.8402	0.2462	0.0989	-0.2254	
	<i>average</i>	0.0803	-0.2157	-0.2586	-0.2413	-0.3527		0.4331 (1.65)*	-0.5322	-0.3652	-0.3333	-0.0702	0.3511		-0.8834 (-3.43)***
	<i>ISARET</i>														
	<i>1</i>	-0.6032	-1.3466	0.6173	-0.2478	-0.2163	-0.2867		0.4300	-0.9819	-0.4425	-0.6294	2.0161	-0.2867	
	<i>2</i>	0.3035	-1.0805	-0.0159	0.3232	0.0139	-0.0295		-0.6811	0.1272	-0.3161	0.3488	0.7120	-0.0295	
<i>3</i>	0.4597	0.2269	-0.9786	-0.0972	0.0688	-0.0644		0.0129	-0.2557	0.6604	-0.2451	-0.1582	-0.0644		
<i>4</i>	-0.2173	0.4197	0.0865	0.8999	-0.3468	0.1482		0.1217	0.1754	0.2605	-0.0659	0.2428	0.1482		
<i>5</i>	-0.2951	-0.2365	-0.2320	-0.2880	-0.3731	-0.2801		-0.7600	-0.9025	-1.2680	0.2075	0.3201	-0.2801		
<i>average</i>	-0.1179	-0.2807	-0.0573	0.1048	-0.1420		0.0241 (0.11)	-0.2612	-0.2893	-0.2454	-0.0339	0.3899		-0.65102 (-2.32)**	

Panel B: Post-IPO operating performance split into firm size and management quality quintiles

		MANAGEMENT QUALITY QUINTILES														
FIRM SIZE QUINTILES	ROA0	TRF						TSF								
		1	2	3	4	5	median	1 st less 5 th	1	2	3	4	5	median	1 st less 5 th	
		1	-0.1208	-0.0854	-0.2407	-0.1042	-0.1317	-0.1674		-0.0796	-0.2084	-0.1607	-0.2627	-0.0671	-0.1674	
		2	0.0770	0.0391	0.0010	0.0108	0.0669	0.0346		0.0082	0.0299	0.0346	0.0532	0.0773	0.0346	
		3	0.0786	0.0502	0.1014	0.0588	0.0861	0.0761		0.0433	0.1187	0.0928	0.0541	0.0809	0.0761	
		4	0.0505	0.0956	0.0812	0.0504	0.0865	0.0758		0.0620	0.0515	0.0993	0.0812	0.0933	0.0758	
		5	0.0656	0.0443	0.0685	0.0263	0.0296	0.0421		0.0261	-0.0005	0.0307	0.0828	0.0541	0.0421	
		median	0.0275	0.0438	0.0302	0.0215	0.0575		-0.0300 (-0.21)	0.0254	0.0197	0.0200	0.0536	0.0612		-0.0358 (-1.70)**
		ROA1														
		1	-0.1339	-0.0746	-0.3136	-0.1750	-0.3092	-0.2119		-0.1089	-0.2277	-0.2431	-0.3994	-0.0253	-0.2119	
		2	-0.0166	0.0240	0.0305	0.0119	0.0274	0.0167		-0.0698	0.0185	0.0325	0.0264	-0.0269	0.0167	
		3	0.0378	0.0220	0.0531	0.0328	0.0384	0.0328		0.0183	0.0915	0.0330	0.0531	0.0335	0.0328	
		4	0.0064	0.0583	0.0562	0.0477	0.0528	0.0489		0.0134	0.0528	0.0489	0.0598	0.0547	0.0489	
		5	0.0228	0.0177	0.0512	0.0078	-0.0058	0.0136		-0.0080	-0.0256	0.0158	0.0363	0.0193	0.0136	
		median	0.0009	0.0230	0.0102	0.0001	-0.0030		0.0039 (0.18)	-0.0127	-0.0240	-0.0032	0.0307	0.0169		-0.0296 (-2.58)***
	ROA2															
	1	-0.1498	-0.2986	-0.1953	-0.2580	-0.4114	-0.2071		-0.0874	-0.2762	-0.1974	-0.4017	-0.2012	-0.2071		
	2	-0.0370	-0.0498	0.0362	0.0022	0.0507	-0.0060		-0.0160	-0.0250	0.0022	-0.0038	-0.0032	-0.0060		
	3	0.0804	0.0149	0.0565	0.0251	0.0134	0.0251		-0.0110	0.0583	0.0791	0.0575	0.0152	0.0251		
	4	0.0043	0.0629	0.0373	0.0097	0.0592	0.0244		0.0015	-0.0177	0.0490	0.0553	0.0501	0.0244		
	5	0.0399	0.0031	0.0385	0.0190	0.0234	0.0286		0.0105	-0.0299	0.0410	0.0549	0.0259	0.0286		
	median	0.0036	-0.0020	0.0118	0.0019	0.0120		-0.0083 (-0.76)	-0.0088	-0.0289	0.0095	0.0162	0.0149		-0.0237 (-1.08)	
	ROA3															
	1	-0.0480	-0.2496	-0.1247	-0.1679	-0.2335	-0.1044		-0.0655	-0.0779	-0.1677	-0.4687	-0.0605	-0.1044		
	2	-0.0372	-0.0064	-0.1633	-0.0155	0.0267	-0.0323		-0.0446	-0.0662	-0.0001	-0.0476	0.0178	-0.0323		
	3	0.0640	-0.0029	-0.0209	0.0680	0.0034	0.0056		-0.0088	0.0121	0.0895	-0.0466	0.0054	0.0056		
	4	0.0070	0.0451	0.0391	-0.0023	0.1055	0.0228		-0.0279	0.0061	0.0600	0.0613	0.0218	0.0228		
	5	0.0291	-0.0036	0.0277	-0.0162	0.0172	0.0144		-0.0115	-0.0348	0.0463	0.0291	-0.0172	0.0144		
	median	0.0017	-0.0059	-0.0215	-0.0191	0.0082		-0.0064 (-0.29)	-0.0195	-0.0284	-0.0115	0.0058	-0.0014		-0.0181 (-1.09)	

Table 11

Relationship between long-term post-IPO stock returns and management quality, estimated using calendar time portfolios. The dependent variable is the equally weighted monthly percentage return on a portfolio of IPO firms that have gone public during the prior 36 months. The sample is split by the median management quality and reputation factor scores, with LOW indicating a below-median factor score and HIGH indicating an above-median factor score. The number of firms in the portfolio ranges from two to 152 for the firms with an above-median TRF score and from one to 155 for the firms with below-median TRF score, while the ranges are from two to 153 and from two to 151 for the above- and below-median TSF scores, respectively. Regressions 1 and 2 in Panels A and B are estimated using ordinary least squares (OLS), and regressions 3 and 4 are estimated using weighted least squares (WLS), with the weights based on the number of IPO firms in the monthly portfolio. R_{mt} is the realization of the market risk premium in month t . SMB_t is the return on a portfolio of small stocks minus the return on a portfolio of big stocks in month t . HML_t is the return on a portfolio of high book-to-market stocks minus the return on a portfolio of low book-to-market stocks in month t . The factor returns are supplied by Kenneth French. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Long-term post-IPO stock returns and team resources factor (TRF) score

	1	2	3	4
<i>TRF score</i>	LOW	HIGH	LOW	HIGH
Estimator	OLS	OLS	WLS	WLS
Intercept	-0.470 (-1.11)	0.554 (1.08)	-0.382 (-1.04)	0.400 (1.06)
R_{mt}	0.948 (9.97)***	0.990 (8.27)***	0.935 (11.46)***	0.964 (10.59)***
R_{mt-1}	0.146 (1.32)	-0.175 (-1.24)	0.027 (0.24)	-0.239 (-2.36)**
SMB_t	0.870 (7.40)***	1.378 (11.23)***	1.027 (10.95)***	1.359 (14.57)***
SMB_{t-1}	0.141 (1.00)	0.339 (1.90)*	0.284 (2.85)**	0.225 (2.03)**
HML_t	0.062 (0.38)	-0.108 (-0.52)	-0.079 (-0.64)	-0.094 (-0.65)
HML_{t-1}	0.245 (1.19)	-0.292 (-1.05)	0.029 (0.21)	-0.235 (-1.47)
Adjusted R-squared	67.29	75.59	82.12	83.93
N	83	82	83	82

Panel B: Long-term post-IPO stock returns and team structure factor (TSF) score

	1	2	3	4
<i>TSF score</i>	LOW	HIGH	LOW	HIGH
Estimator	OLS	OLS	WLS	WLS
Intercept	-0.002 (-0.00)	-0.170 (-0.46)	-0.192 (-0.48)	0.093 (0.28)
R_{mt}	0.939 (9.19)***	1.007 (10.27)***	0.941 (10.50)***	0.961 (12.07)***
R_{mt-1}	0.122 (1.03)	-0.087 (-0.80)	-0.053 (-0.47)	-0.130 (-1.37)
SMB_t	1.124 (9.10)***	0.993 (8.27)***	1.219 (12.22)***	1.069 (13.29)***
SMB_{t-1}	0.134 (0.76)	0.349 (1.92)*	0.296 (2.75)***	0.196 (1.68)*
HML_t	0.047 (0.28)	0.117 (0.71)	-0.158 (-1.19)	0.020 (0.15)
HML_{t-1}	0.183 (0.76)	0.005 (0.02)	-0.072 (-0.46)	-0.085 (-0.66)
Adjusted R-squared	64.95	73.46	83.00	81.50
N	82	83	82	83

Panel C: Economic significance of the relationship between management quality and long-term post-IPO stock returns

	OLS		WLS	
	Intercept	Annual abnormal performance	Intercept	Annual abnormal performance
<i>TRF score</i>				
High	0.554	6.849	0.400	4.904
Low	-0.470	-5.502	-0.382	-4.488
difference		12.351		9.392
<i>TSF score</i>				
High	-0.170	-2.023	0.093	1.122
Low	-0.002	-0.026	-0.192	-2.283
difference		-1.998		3.405

The relationship between management quality, underwriter reputation, and firm size

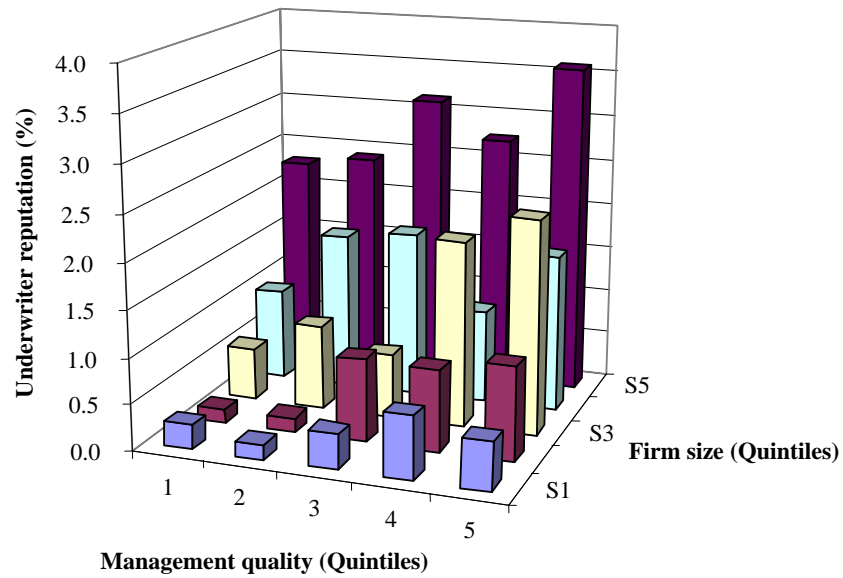


Fig. 1.

The relationship between management quality, underwriter reputation, and firm size. The sample consists of 411 firms that completed an initial public offering (IPO) between January 1993 and December 1996. Underwriter reputation is measured as the average market share of lead underwriters. Management quality is measured by the team resources factor score (TRF), with 1 denoting the bottom quintile and 5 denoting the top quintile. Firm size is measured by the book value of the firm's assets, with S1 denoting the bottom quintile and S5 denoting the top quintile, respectively.

The relationship between management quality, underpricing, and firm size

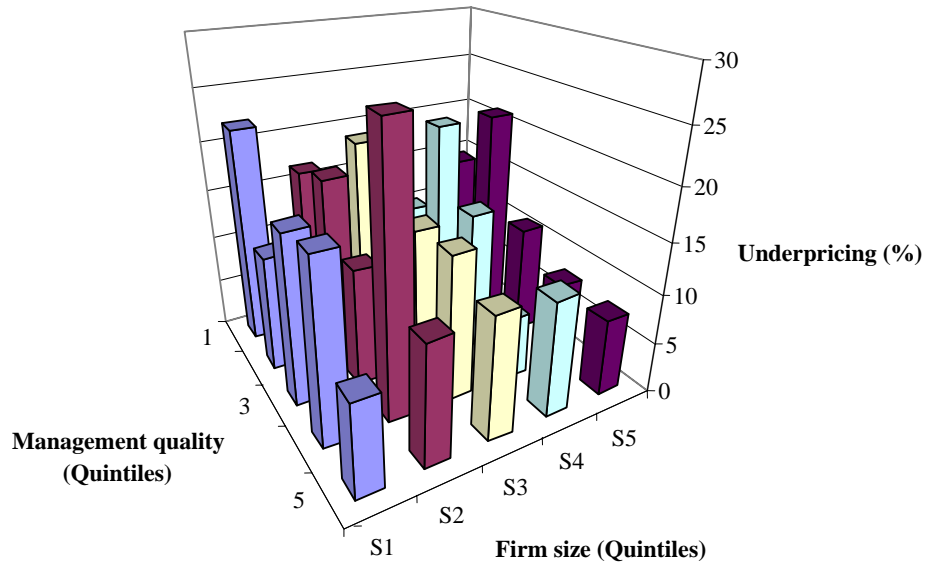


Fig. 2.

The relationship between management quality, IPO underpricing, and firm size. The sample consists of 411 firms that completed an initial public offering (IPO) between January 1993 and December 1996. IPO underpricing is the first-day return in percent, defined as the closing price on the first day of trading less the offer price, divided by the offer price. Management quality and reputation is measured by the team structure factor score (TSF), with 1 denoting the bottom quintile and 5 denoting the top quintile, respectively. Firm size is measured by the book value of the firm's assets, with S1 denoting the bottom quintile and S5 denoting the top quintile, respectively.