CEO Reputation and Earnings Quality*

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1. Introduction

A substantial body of research is dedicated to understanding the determinants of firms' reporting and disclosure decisions (for surveys, see Fields, Lys, and Vincent 2001; Healy and Palepu 2001). This literature primarily analyzes the effects of firm characteristics such as size, market-to-book ratios, and leverage on earnings management and disclosure choices. Two results that consistently emerge from this literature are that there is considerable heterogeneity in accounting choices and disclosure practices across firms, and that much of this heterogeneity is not explained by firm-level characteristics and proxies for corporate governance, even after controlling for industry effects (Bowen, Rajgopal, and Venkatachalam 2008; Larcker, Richardson, and Tuna 2005). The contribution of our paper is to explicitly consider a managerial human capital dimension in explaining the quality of firms' reporting decisions. In particular, we focus on the role of the chief executive officer's (CEO's) reputation on earnings quality. Our primary objective is to provide evidence on whether "reputed CEOs" are associated with higher, or lower, quality earnings.

Our examination of the link between CEO reputation and earnings quality is motivated by three sources. First, users of financial statements (see American Institute of Certified Public Accountants [AICPA] Special Committee on Financial Reporting 1994) consider the external reputation of top management to be a key factor in assessing the quality of financial reporting. Second, chief financial officers (CFOs) indicate that managers' career concerns, especially those related to external reputation, exert a significant influence on the financial reporting decisions they take (see Graham, Harvey, and Rajgopal 2005). Third, anecdotal evidence on

Jack Welch's alleged tendency to routinely manage earnings of General Electric during his tenure raise broader questions about whether highly reputed managers rely on earnings management to maintain their reputation for "delivering" earnings to the market. In a recent paper, Malmendier and Tate (2007) argue that superstar CEOs manage earnings to report strong financial performance to the stock market.

We investigate three explanations for a link between CEO reputation and earnings quality. In understanding and testing these explanations (described shortly), it is important to distinguish between whether the explanation speaks primarily to the portion of earnings quality that is attributable to innate features of the firm's operating environment and production technology (we term this innate earnings quality) or the portion that can be influenced by actions taken in the short run (we term this discretionary earnings quality). Two of our three explanations (efficient contracting and rent extraction) speak more to discretionary earnings quality, while the third (matching) pertains more to innate earnings quality. We note this distinction to make clear to the reader that tests of each explanation depend on our ability to distinguish between the portion of earnings quality that can be influenced by the CEO in the short run and the portion that cannot. Because these components of earnings quality are estimated, not observed, our inferences are subject to caveats about the estimation procedures used to characterize the innate versus discretionary components of earnings quality.[1] In this regard, our proxies for discretionary earnings quality suffer from the same criticisms raised about earnings management proxies (see, for example, Guay, Kothari, and Watts 1996; Bernard and Skinner 1996).

Turning to the first explanation for a link between CEO reputation and earnings quality, economic theory suggests that managers with significant reputations at stake will not indulge in opportunistic rent-seeking behavior (e.g., Fama 1980; Kreps, Milgrom, Roberts, and Wilson 1982; Kreps 1990). In a reputation context, this "efficient contracting" perspective predicts that reputed CEOs are less likely to take actions that result in poor discretionary quality reporting for two reasons. First, reputed CEOs have more to lose, in terms of their own human capital, if they make accounting and disclosure choices that result in poor discretionary quality. Second, given prior studies' evidence that firms with good quality earnings are associated with lower costs of capital,[2] we expect that reputed CEOs — to the extent that they are more knowledgeable than CEOs without established reputations — avoid actions that result in higher costs of capital for their firms (unless such actions bring commensurate increases in returns). Hence, the efficient contracting hypothesis predicts that firms managed by reputed CEOs have better discretionary earnings quality.

In contrast, the "rent extraction" perspective argues that reputed CEOs overemphasize their personal career enhancement and, in so doing, take actions that may worsen discretionary earnings quality. For example, in striving to meet earnings targets, managers may reduce the quality of accruals. Malmendier and Tate (2007) argue that one consequence of being a celebrity CEO is that investors' and analysts' expectations of future firm performance increase. If CEOs use their reputations to extract rents from their firms and allow their perks of success to distract them from effectively running the company, they may find it difficult to meet or

exceed analyst expectations. Because repeatedly underperforming expectations will damage a CEO's reputation, we expect reputed CEOs to manipulate earnings more than nonreputed CEOs. Thus, the rent extraction hypothesis predicts the opposite relation to the efficient contracting hypothesis: firms managed by reputed CEOs have poorer discretionary earnings quality.

Our tests of the efficient contracting and rent extraction hypotheses are complicated by two issues. First, CEOs are not randomly assigned to firms; rather, firms likely select CEOs with specific attributes based on the needs of the firm (see, e.g., Rosen 1990, who argues that larger firms require the skills of more talented managers); we term this a matching explanation. In our setting, we expect boards of directors of firms with poor earnings quality will seek out more reputed CEOs because the characteristics of these firms that give rise to poor earnings quality (e.g., more volatile operating environments) require the superior skills and talents of more reputed managers. The fact that firms select CEOs based on characteristics of both the CEO and the firm indicates that the relation between earnings quality (both the innate and discretionary components) and CEO reputation is endogenous, and should be modeled as a set of simultaneous equations. Specifically, we model total earnings quality as a function of CEO reputation and firm-specific variables that capture innate features of the firm's operating environment (such as size, cash flow and sales variability, length of operating cycle, and incidence of losses), and we model CEO reputation as a function of total earnings quality and attributes of both the CEO (his or her age, tenure, and prior position) and the firm (such as firm size, performance, and intangible intensity) that are expected to influence the perception of higher reputation.

Second, and as noted earlier, it is not possible to devise a set of variables that perfectly disentangles the innate portion of earnings quality from the discretionary portion. In our case, the potential incompleteness of the set of innate factors does not likely affect inferences concerning the efficient contracting or rent extraction explanations, because these explanations predict opposite relations between CEO reputation and discretionary earnings quality. However, factor incompleteness may affect our ability to distinguish between the rent extraction and matching explanations, because both explanations predict that CEO reputation is associated with poorer earnings quality — poorer discretionary quality in the case of rent extraction and poorer innate earnings quality in the case of matching. In particular, omitted innate factors likely bias our tests toward observing rent extraction. To address this limitation of the simultaneous equations tests, we perform additional small-sample tests, the results of which are more consistent with matching than with rent extraction.

Our main tests are performed on about 2,000 firm-year observations for Standard & Poor's (S&P) 500 firms over 1992–2001. We proxy for CEO reputation using the number of articles containing the CEO's name that appear in the major U.S. and global business newspapers and business wire services as identified through searches of the Dow Jones Interactive database. We follow Milbourn 2003 and Rajgopal, Shevlin, and Zamora 2006 and argue that more reputed CEOs are cited by the business press more often than less reputed CEOs. To ensure that the number of articles is not merely a reflection of CEO infamy as opposed to reputation, we

conduct three validation checks. First, we code the tone of coverage for 50 articles picked at random every year over 1992 to 2001 (for a total of 500 articles) and find that the tone is favorable toward the CEO 95 percent of the time. Second, we find that the number of articles is correlated with CEOs appointed from outside the firm, a proxy for reputation used by Milbourn 2003 and Rajgopal et al. 2006. Third, the number of articles is highly correlated with explicit recognition of the CEO by the "top CEO" lists compiled by various sources. Results of these validity tests (described in section 3) generally support the use of press coverage as a measure of the CEO's reputation. We follow Francis et al. 2005 and measure (total) earnings quality in two ways: as the standard deviation of the firm-specific residuals obtained from Dechow and Dichev 2002 regressions of current accruals on lagged, current, and future cash flows and, separately, as the firm's five-year average of the absolute value of performance-matched abnormal accruals. Firms with larger standard deviations of residuals and larger absolute abnormal accruals have poorer total earnings quality than firms with smaller values of these metrics.

Results from the simultaneous equations analysis indicate that reputed CEOs are associated with both poorer discretionary earnings quality and poorer total earnings quality; this finding is consistent with either the rent extraction hypothesis or the matching hypothesis. Additional tests are not consistent with the rent extraction explanation. In particular, if entrenched CEOs exploit their power to manipulate earnings numbers (as suggested by rent extraction), we expect the association between CEO reputation and poor discretionary earnings quality to be more pronounced for firms with weak governance (i.e., where the CEO has more power and influence over earnings quality). We do not find this to be the case: firms where the board of directors is less independent (our proxy for CEO power) exhibit the same association between CEO reputation and discretionary earnings quality as firms where there is more board independence. Further, if matching explains the link between CEO reputation and poor total earnings quality, we expect that when poor earnings quality firms change their CEO, they will replace the prior CEO with a more reputed CEO. Consistent with this conjecture, we find that poor quality firms are more likely to "trade up" in the sense that they hire new CEOs who are more reputed than the prior CEOs. Finally, we find no evidence that earnings quality deteriorates after hiring CEOs who are more reputed than the prior CEO; this evidence is also not consistent with a rent extraction explanation.

Aggregating results across our tests, we draw several conclusions. First, although our tests point to firm-specific factors as providing most of the explanatory power for earnings quality, we find that the human capital component of the top executive officer is also important. In particular, we find that the CEO's reputation (which is, in part, determined by characteristics of the CEO, such as his or her age, tenure with the firm, and prior position) is a significant (at the 0.001 level) factor explaining firms' earnings quality. Our second conclusion relates to how and why the CEO's human capital component affects earnings quality. The results indicate that the reason more reputed CEOs are associated with poorer earnings quality firms is not because these CEOs take discretionary actions to reduce earnings quality; rather, it is because poor earnings quality firms require the talents of more

reputed CEOs. That is, the factors that give rise to poor earnings quality (such as volatile operating environments) are the same factors that require the superior skills of more reputed CEOs. On the basis of the combined evidence, we conclude that matching provides the best explanation for why firms with poor earnings quality have more reputed CEOs: boards of directors hire specific managers due to the reputation and expertise these individuals bring to managing the more complex and volatile operating environments of these firms.

Our paper presents some of the first evidence on whether managers affect their firms' accounting outcomes. The effect of managers on other firm outcomes is the subject of a large literature in finance, economics, and organizational theory (but is virtually absent in accounting). An early reference in the organizational theory literature on the view that they do not matter is Lieberson and O'Connor 1972, who find that CEO effects have little additional explanatory power for firm profitability (Finkelstein and Hambrick 1996; Pfeffer 1997). In contrast, work by Child 1972, Hambrick and Mason 1984, and Tushman and Romanelli 1985 argues that executives do matter. Many papers in finance and economics address similar questions. For example, Hermalin and Weisbach (1988), and Agrawal and Knoeber (2001) find evidence consistent with firms optimally choosing directors on the basis of director-specific characteristics. Denis and Denis (1995), Weisbach (1995), Parrino (1997), and Huson, Malatesta, and Parrino (2004) show that CEO turnover is related to firm outcomes. Malmendier and Tate (2007), Bertrand and Schoar (2003), and Adams, Almeida, and Ferreria (2005) identify characteristics of top executives related to firm outcomes. We contribute to this literature by documenting that CEO characteristics matter to a firm's reporting outcomes.

The remainder of the paper is organized as follows. Section 2 reviews prior research, develops the hypotheses, and details the research design. Section 3 describes the sample and data, and reports the results of validity tests of our proxy for CEO reputation. Section 4 reports the results of the simultaneous equations, and section 5 augments these tests with two additional analyses aimed at distinguishing between the rent extraction and matching explanations. Section 6 summarizes the results and concludes.

2. Prior research, hypothesis development, and research design

In this section, we begin by summarizing research on managerial reputation (under the heading "Prior Research"). We then describe theories as to why reputation is expected to influence the quality of the firm's financial reporting (under the heading "Hypothesis Development"). We finish by describing the research design that we use to test the hypotheses generated by these theories (under the heading "Research Design").

Prior research

While accounting research rarely examines the effects of managerial traits on firms' reporting decisions, a fairly large body of work in the organizational theory, finance, and economics literatures has considered the effects of managerial characteristics on firms' investment and financing decisions. Whether managers matter for

firm's decisions and outcomes is contentious in the organizational theory literature. Finkelstein and Hambrick (1996) argue that managerial ego, biases, and experiences affect firm behavior because of the ambiguity and complexity that characterize the task of top managers. According to Mischel 1977, strategic decision making in firms is a "weak situation", one in which the choices of decision makers vary widely and are hard to predict. Hannan and Freeman (1977) de-emphasize the impact of managerial choices on firm performance because of organizational and environmental constraints that limit the scope of managerial actions.

In the finance and economics literatures, Bertrand and Schoar (2003) find that managerial style affects firms' corporate policy decisions, with such differences also reflected in managers' compensation levels. Malmendier and Tate (2007) find significant underperformance in stock returns, higher executive compensation, and higher earnings management after CEOs are recognized as "superstars" by the media. Richardson, Tuna, and Wysocki (2005) find that firms that share common directors also share governance, financial, disclosure, and strategic policy choices. In their investigation of the effect of mutual fund managers' age and schooling on fund performance, Chevalier and Ellison (1999) find that younger managers and managers who have attended better schools earn higher rates of return. Graham and Harvey (2001) provide survey-based evidence that CFOs with a a master of business administration (MBA) degree use more sophisticated valuation techniques compared with those without an MBA degree.

CEO reputation can be thought of as the totality of enduring images that major stakeholders form based on perceived CEO performance, his or her ability, and values. However, identifying empirical proxies for this construct is not a trivial task, especially because a CEO's reputational assessment is realistically multidimensional, encompassing perceived competence at the task, credibility, charisma, integrity, honesty, and vision, among other attributes that are typically difficult to quantify. To our knowledge, Milbourn (2003) and Rajgopal et al. (2006) are the only papers that have attempted to empirically proxy for CEO reputation. In particular, these papers rely on the number of press articles citing the CEO.[3] Milbourn (2003) shows that compensation contracts given to reputed CEOs (i.e., those with more media counts) exhibit greater pay-for-performance sensitivity. Rajgopal et al. (2006) find that compensation of CEOs with greater reputation, proxied by media counts, is systematically subject to lower relative performance evaluation. Because data on media-count proxies for CEO reputation are available for all firms (because all firms are potential candidates for press coverage), whereas data on other potential proxies are not,[4] we use press-coverage-based proxies in our analyses.

Hypothesis development

The directional association between earnings quality and CEO reputation depends on the economic perspective one takes. In this section, we consider three such perspectives based on theories of efficient contracting, rent extraction, and matching managers with firms. Under the efficient contracting perspective, more reputed CEOs are more likely to be associated with better discretionary earnings quality than are less reputed CEOs because the former have more to lose, in terms of credibility and

future wages, if they systematically exploit reporting discretion to portray their firm in a more favorable light than warranted by underlying economic circumstances. This hypothesis builds on Fama's 1980 model, where observers use an agent's prior record and past history to infer some personal trait, such as credibility. Knowing this, the agent has incentives to act in ways that affect the market's beliefs. That is, an agency value of reputation arises because current behavior has a memory when the past is used to update current beliefs. Loss of reputation serves as a deterrent to reporting poor quality earnings when the capital value of the consequences of such an action is greater than the benefit of reporting low quality earnings.[5] Recent evidence also suggests that the capital market consequences of poor earnings quality are not trivial: firms with the worst earnings quality have significantly larger costs of capital than firms with the best earnings quality (Francis et al. 2004, 2005). To the extent that a CEO creates poor earnings quality by opportunistically exploiting reporting discretion, we expect the labor market to compensate for the attendant increase in the firm's cost of capital by reducing the CEO's future wages.

The rent extraction perspective argues that an emphasis on career enhancement motivates reputed CEOs to manage earnings to meet performance expectations. Malmendier and Tate (2007) suggest that one external effect of having a celebrity CEO is that market and analyst expectations for future firm performance likely increase. If CEOs use their celebrity status to extract rents from the firm and allow the perks of success to distract them from effectively running the company, they may find it increasingly difficult to meet or exceed these expectations. Moreover, repeatedly underperforming expectations is likely to undermine the CEO's status. Thus, we hypothesize that reputed CEOs are more likely to manipulate earnings than other CEOs. To the extent that actions taken to meet or beat targets reduce earnings quality, these arguments suggest that reputed CEOs are associated with poorer discretionary earnings quality.[6]

The matching argument is predicated on the notion that CEOs are selected by boards of directors. The selection criteria used by boards encompass many factors, including the existing reputation of the CEO and firm-specific factors (see, e.g., Bizjak, Brickley, and Coles 1993; Hermalin and Weisbach 1988; Allgood and Farrell 2003; Joos, Leone, and Zimmerman 2003). In terms of earnings quality, we expect that firms with poor innate earnings quality hire reputed CEOs because they (reputed CEOs) are better able to manage these firms than are CEOs with little or no reputation. Selection, therefore, induces the same association as that of the rent extraction hypothesis (more reputed CEOs are associated with firms with lower earnings quality) but for a decidedly different reason.[7]

In summary, the three explanations lead to different predictions about the relation between CEO reputation and earnings quality:

HYPOTHESIS 1. *Under the efficient contracting hypothesis, more reputed CEOs are associated with better discretionary earnings quality than are less reputed CEOs.*

HYPOTHESIS 2. *Under the rent extraction hypothesis, more reputed CEOs are associated with poorer discretionary earnings quality than are less reputed CEOs.*

HYPOTHESIS 3. *Under the matching explanation, more reputed CEOs are associated with poorer innate earnings quality than are less reputed CEOs.*

We note that while Hypothesis 1 and Hypothesis 2 are intended to be mutually exclusive (insofar as we investigate which effect dominates, in a broad sample), Hypothesis 3 is not mutually exclusive of either Hypothesis 1 or Hypothesis 2. That is, matching Hypothesis 3 may occur at the same time that CEOs engage in efficient contracting or rent extraction behavior.

Research design

To address the potential reverse causality induced by the selection of reputed CEOs by firms with poor earnings quality, we estimate the following system of simultaneous equations:

$$\textit{Earnings Quality}_{t+n} = \text{f}(\textit{CEO Reputation}_t, \text{Control}(k)_t) \qquad (1).$$

$$\textit{CEO Reputation}_t = \text{f}(\textit{Earnings Quality}_{t+n}, \text{Control}(l)_t) \qquad (2).$$

The first equation models *total* earnings quality as a function of CEO reputation and a set of k firm-specific factors that have been shown to affect innate earnings quality (e.g., firm size and variability of cash flows). By including these k firm-specific factors in the *Earnings Quality* regression, we can then interpret the coefficient on the proxy for *CEO Reputation* in (1) as capturing the influence of the CEO's reputation on the unexplained (or discretionary) portion of the firm's earnings quality. Because our earnings quality proxies (described in section 4) are scaled such that larger (smaller) values represent worse (better) earnings quality, a finding of a negative coefficient relating *CEO Reputation* to *Earnings Quality* in (1) is consistent with reputed CEOs being associated with better discretionary earnings quality (the efficient contracting hypothesis, Hypothesis 1). In contrast, a positive coefficient is consistent with reputed CEOs being associated with poorer discretionary earnings quality (the rent extraction hypothesis, Hypothesis 2). Note that we relate CEO reputation at time t to *Earnings Quality* in the future to address concerns about the direction of plausible causality. That is, we would like to examine the association between current CEO reputation and future earnings quality.

The second equation in the system addresses the selection of CEOs. Specifically, (2) allows for the possibility that CEO reputation is a function of future total earnings quality (that is, both the innate and discretionary components) and a set of l control variables consisting of both CEO-specific instrumental variables (such as CEO age and prior position) and firm-specific variables (such as size, profitability, and intangible intensity) hypothesized to influence CEO reputation. Both the

matching explanation and the rent extraction explanation predict a positive coefficient relating total *Earnings Quality* to *CEO Reputation*.

We find qualitatively similar results (not reported) if we use a measure of innate (rather than total) earnings quality as the independent variable in (2); for this purpose, our measure of innate earnings quality equals the predicted value from a regression of total earnings quality on the innate factors. We believe using total earnings quality in (2) is more appropriate (than using a measure of innate earnings quality) for two reasons. First, using total earnings quality in (2) preserves the potential simultaneous relation modeled in (1), where the dependent variable is also total earnings quality. Second, because it is impossible to ensure the completeness of the set of innate factors, we believe that reporting results that are based on a measure of total earnings quality is more cautious insofar as it does not create the impression (in the reader's mind) that we have, in fact, isolated the uncontrollable-by-the-CEO portion of earnings quality.

Our ability to distinguish between rent extraction and matching as explanations for a positive association between CEO reputation and earnings quality depends on our ability to isolate the discretionary portion of earnings quality in (1). Because we operationalize the discretionary component as the portion that is not explained by the innate factors, Control(k), the critical issue is the completeness of the k control variables. To the extent that there are omitted factors, the coefficient on *CEO Reputation* in (1) will reflect the effects of both rent extraction and matching. To address this issue, section 5 reports the results of two additional analyses aimed at distinguishing between the rent extraction and matching explanations.

3. Sample, data, and validity tests

Our sample consists of the top ranking officer of all S&P 500 companies over the 10-year period 1992–2001, as identified from the ExecuComp database. Our default assumption is that the chief executive officer position is the top ranking position in the firm. Therefore, when a CEO is named, we exclude individuals holding the positions of president, chief operating officer, and chair of the board (unless one or more of those positions is also held by the CEO, in which case we continue to retain the named CEO in our sample). We further exclude CEOs of subsidiaries and divisions. When the position of CEO is held by more than one person in a given year, ExecuComp reports the name of the individual who held the position for most of the fiscal year. In total, our sample consists of 4,238 CEO-years, or an average of 424 observations per year. The range in sample observations is 232 in 1992 to 490 in 1999 (not reported).

For each CEO-year, we collect data on how parties external to the firm view the CEO, as reflected in the number of articles containing the CEO's name and company affiliation that appear in the major U.S. and global newspapers and newswires in calendar year *t*.[8] The major U.S. newspapers we examine are *Wall Street Journal* (both weekday and Sunday editions), *New York Times*, *Washington Post*, and *USA Today*. The major international newspapers we consider are the *Financial Times*, *Asian Wall Street Journal*, *Wall Street Journal Europe*, and *International Herald Tribune*. Finally, information on press releases is obtained from *PrNewswire*

and *Business Wire*.[9] We identify the number of articles of each type, where type is U.S. newspaper articles (*USNews*), international newspaper articles (*IntlNews*), and newswire press releases (*PressReleases*), by searching the full text of these articles on the Dow Jones Interactive database. Our text search uses both the CEO's full name and company name.[10] We include an article once, irrespective of how many times the CEO's name appears in the article. Consistent with Milbourn's 2003 and Rajgopal et al.'s 2006 use of media counts as a proxy for reputation, we classify CEOs with larger values of *USNews*, *IntlNews, PressReleases*, and their sum, *AllArticles*, as more reputed than CEOs with smaller values of these variables. Note that media counts likely include rebroadcasts of the same underlying news event. We argue that rebroadcasts are consistent with greater reputation for the CEO. Invoking an analogy from academe, more citations of the same underlying finding in a paper are generally considered to add to a researcher's reputation.

Descriptive statistics on the press coverage variables are reported in Table 1, panel A. In a given year, the average CEO received 24.3 mentions in the press (*AllArticles*). Of these, 12.8 mentions reflect press releases initiated by the firm. Excluding the effect of press releases (as captured by the variable *AllArticles2*, which excludes press releases from the calculation of *AllArticles*), the average CEO received 11.5 external mentions, consisting of 7.5 references in major U.S. newspapers and 4 mentions in major international newspapers. As is evident from these data, the sample distribution of press coverage is highly skewed: for example, the median CEO has only two mentions in U.S. newspapers and one mention in international newspapers. Panel B reports information on the pairwise correlations among these variables; we do not report *p*-values because all correlations are significant at the 0.001 level. Given the high pairwise correlations between the two aggregate measures, *AllArticles* and *AllArticles2* (the Pearson correlation is 0.95 and the Spearman rank correlation is 0.79), we conclude that the inclusion of *PressReleases* does not affect the identification of CEO reputation. We therefore restrict attention to only one summary measure, *AllArticles*. Untabulated robustness tests show that the reported inferences are insensitive to this choice.

Because a CEO likely develops his or her reputation over several years, measures of CEO reputation based on data in any individual year may be noisy measures of their true reputations. We address this issue by examining the correlation between individual-year measures of the press coverage proxies and multiyear specifications of these same variables. Specifically, for each CEO where we have data for years $t - 3$ to t, we sum the press coverage proxies over this four-year interval; we denote the four-year summed measures of each disclosure variable with the prefix Σ — for example, $\Sigma USNews$. Panel C shows that the correlations between the single and multiyear measures are significantly positive (at the 0.001 level) and large in economic terms, with correlations ranging from 0.83 to 0.92. These results indicate that our yearly reputation measures do capture the CEO's accumulated stock of reputation.

We report three validity tests of our press-coverage-based proxy for CEO reputation. The first investigates the implicit assumption that the content of media coverage is favorable with respect to the CEO. We provide information about the

TABLE 1

Descriptive statistics on proxy variables for CEO reputation

Panel A: Proxies for CEO reputation[*]

Variable	No. of obs.	Mean	s.d.	10%	25%	Median	75%	90%
USNews	4,238	7.50	17.44	0	1	2	7	18
IntlNews	4,238	3.97	11.20	0	0	1	3	10
PressReleases	4,238	12.85	12.82	1	5	10	17	27
AllArticles	4,238	24.33	35.98	2	7	15	27	51
AllArticles2	4,238	11.47	27.67	0	1	3	10	27

Panel B: Correlations among CEO reputation measures[†]

Variable	*USNews*	*IntlNews*	*PressReleases*	*AllArticles*	*AllArticles2*
USNews	1.00	0.85	0.49	0.92	0.97
IntlNews	0.79	1.00	0.49	0.90	0.94
PressReleases	0.47	0.44	1.00	0.75	0.51
AllArticles	0.77	0.73	0.87	1.00	0.95
AllAricles2	0.98	0.88	0.48	0.79	1.00

Panel C: Correlations between multi-year and annual reputation measures[‡]

	Spearman	Pearson
US News and $\Sigma USNews$	0.91	0.87
IntlNews and $\Sigma IntlNews$	0.88	0.83
Press Releases and $\Sigma PressReleases$	0.90	0.90
AllArticles and $\Sigma AllArticles$	0.92	0.91

Notes:

Variable definitions are as follows: *USNews* = the number of articles appearing in major U.S. newspapers that mention the CEO's name in calendar year *t*; *IntlNews* = the number of articles appearing in major international newspapers that mention the CEO's name in calendar year *t*; *PressReleases* = the number of press releases that mention the CEO's name in calendar year *t*; *AllArticles* = *USNews* + *IntlNews* + *PressReleases*; and *AllArticles2* = *USNews* + *IntlNews*.

[*]   We report the mean value of each variable, where the mean is calculated across all firm-year observations.

[†]   Panel B reports Pearson (above the diagonal) and Spearman (below the diagonal) correlations. All correlations are statistically significant at the 0.01 level or better (*p*-values not reported).

[‡]   Panel C reports the correlations between the individual-year and four-year aggregate measures of each measure of press coverage; aggregate measures are prefixed by Σ. All correlations are significant at the 0.01 level (*p*-values not reported).

extent to which press coverage reflects favorable information by reporting results of a coded analysis of a random selection of 500 press articles for our sample. Specifically, we randomly select five CEOs in each of our 10 sample years, and for each CEO we read and code the tone of 10 randomly selected articles in that year. We classify the tone of the resulting 500 articles as favorable, neutral, or unfavorable, with respect to comments made about the CEO, and separately, with respect to comments made about the firm; we also assess the overall (CEO and firm, combined) tone of the article. Results of this analysis, shown in Table 2, panel A, indicate that media coverage is overwhelmingly neutral to positive with respect to the CEO (99 percent). In the same articles, the company is also mentioned in a neutral to favorable light over 94 percent of the time; the overall analysis shows that the firm and CEO are portrayed in a neutral to positive light about 95 percent of the time. F-tests (not reported) reject the equality of proportions of favorable, neutral, and unfavorable news for each subject category (CEO, firm, and overall) at the 0.001 level. Although the analysis of tone of the articles covered is informative, one could envisage a situation where the firm has low earnings quality due to, say, an earnings restatement event or a Securities and Exchange Commission (SEC) enforcement action, and the CEO and management are constantly mentioned in the press. To assess this possibility, we intersect the list of firms restating earnings (and SEC-induced restatements) as per the General Accounting Office's (GAO's) study on financial statement restatements over 1997–2002. We find that 52 firm-year observations in our sample are restating firms. Eliminating these 52 firm-years from the sample leaves our results unchanged.

Our second validity check examines whether press coverage is positively associated with the likelihood that the CEO is explicitly recognized by a business publication as one of the "top" CEOs in calendar year t. Several business publications develop such annual lists, including *Worth*'s list of the "best CEOs" (available 1999–2001), the *Financial Times* list of the "world's most respected business leaders" (available 1998–2001), *Fortune*'s list of the "50 most powerful women in business" (available 1998–2001), and *Time*'s list of "the Time/CNN 25 most influential" (available for 2001).[11] For each year of its existence, we identify the CEOs included on each list. We classify a CEO as being recognized by these listings if he or she is named on any list in year t (i.e., *Recognition* = 1 in year t if the CEO is named on any of these lists, and 0 otherwise). Our results are not sensitive to using the number of lists on which the CEO's name appears (e.g., *Recognition* = 3 if the CEO is included on three lists in year t) or to using specifications that incorporate the ranking of the CEO on a given list.[12]

Table 2, panel B reports the coefficient estimates and White-Huber t-statistics clustered by firm from logistic regressions of *Recognition* on the press coverage proxies. These regressions also include controls for the size of the firm (measured by the log of sales in year t) and its profitability (measured as return on assets in year t) because some of the business press listings explicitly rate CEOs on the size of the enterprise under their management and its performance. We estimate two specifications of the resulting regression: model 1 includes *USNews*, *IntlNews*, and *PressReleases* as independent variables, while model 2 replaces these variables

with *AllArticles*. We note first that, as expected, *Recognition* is associated with firms that are large (chi-square $= 35.11$, $p < 0.0001$) and profitable (chi-square $= 9.23$, $p = 0.002$). The results for model 1 show that when the component measures are considered jointly, *Recognition* is weakly positively associated with media counts: *USNews* is significant at the 0.0968 level, *IntlNews* is significant at the 0.1822 level, and *PressReleases* is significant at the 0.0227 level. Results for model 2

TABLE 2

Validation tests of CEO reputation proxy

Panel A: Descriptive information on tone of press coverage[*]

Subject	No. of articles	% favorable	% neutral	% unfavorable	% non-negative
CEO	500	12.40%	86.60%	1.00%	99.00%
Company	500	29.20%	65.00%	5.80%	94.20%
Overall	500	27.00%	67.80%	5.20%	94.80%

Panel B: Logistic regressions of *Recognition* on CEO reputation proxies[†]

	Model 1 ($n = 1,318$)			Model 2 ($n = 1,318$)		
Indep. variable	Coef. est.	Chi-square	Pr > Chi-square	Coef. est.	Chi-square	Pr > Chi-square
USNews	0.013	2.757	0.0968			
IntlNews	0.015	1.780	0.1822			
PressReleases	0.013	5.190	0.0227			
AllArticles				0.014	45.573	<0.0001
log(*Sales*)	0.850	34.048	<0.0001	0.656	35.105	<0.0001
ROA	3.248	9.162	0.0025	5.287	9.228	0.0024
Likelihood ratio		181.810	<0.0001		181.797	<0.0001

Panel C: Descriptive data and correlation of CEO *Tenure*, *PriorPosition*, and *Age*[‡]

	No. of obs.	Mean	s.d.	10%	25%	Median	75%	90%
Tenure	4,238	7.84	6.72	2	3	6	11	17
PriorPosition	2,760	0.33	0.47	0	0	0	1	1
Age	2,568	55.20	6.84	47	51	55	59	63

	No. of obs.	*AllArticles*	
		Spearman	Pearson
Tenure	4,238	-0.016 ($p = 0.311$)	-0.006 ($p = 0.659$)
PriorPosition	2,760	0.050 ($p = 0.008$)	0.106 ($p = 0.001$)
Age	2,568	0.135 ($p = 0.494$)	-0.045 ($p = 0.024$)

(The table is continued on the next page.)

TABLE 2 (Continued)

Notes:

Variables are as defined in Table 1; other variables are as follows: log(*Sales*) = log of sales
in year *t*; *ROA* = return on average assets in year *t*; *Recognition* = 1 (0) if the CEO is
recognized (not recognized) in one or more lists of "top" CEOs in calendar year *t*;
Tenure = the length of time the CEO has been in the position of CEO as of year *t*;
Age = CEO's age in year *t*; and *PriorPosition* = 1 if the CEO was appointed from
outside the firm, and zero otherwise.

* Panel A reports the coded analysis of 500 randomly selected articles mentioning
CEOs. Article tone is classified as favorable, neutral, or unfavorable with respect
to comments made about the CEO and, separately, about the firm.

† Panel B shows the results of logistic regressions of *Recognition* on the proxies for
CEO reputation and two firm-characteristics (size and performance). Model 1
includes the three components of press coverage as separate variables; Model 2
includes the aggregate press coverage variable, *AllArticles*.

‡ Panel C reports descriptive data about CEO tenure and prior position; we also report
the pairwise correlations between these measures and *AllArticles*.

are stronger, where we observe a positive and highly significant association (chi-
square = 45.57, $p < 0.0001$) between *Recognition* and *AllArticles*.

   Our third and final validity test examines the correlation between *AllArticles*
and the tenure, age, and prior position of the CEO. In terms of the first of these
variables, we expect that reputed CEOs have longer tenure with their firms because
boards of directors are more inclined to retain good executives. We measure CEO
tenure (*Tenure*) as the number of years the CEO has held the firm's top ranking
position, as of year *t*. Because data on the appointment year of the CEO are reported
on ExecuComp for only 1,819 of the sample firm-years, we augment the sample by
hand-collecting information on appointment years from proxy statement filings;
this process increases the sample with data on *Tenure* to 4,238 firm-year observa-
tions. Table 2, panel C shows that the mean (median) CEO has been in office for
7.84 (6) years. In contrast to our conjecture that reputed CEOs have longer tenure,
we find no reliable association between *AllArticles* and *Tenure*: specifically, both
the Pearson and Spearman correlations are indistinguishable from zero.

   We also examine the association between CEO reputation and CEO age, based
on Joos et al.'s 2003 arguments that age proxies for characteristics that are poten-
tially attractive in the CEO hiring process. Although these arguments do not imply
that older CEOs should have better (or worse) reputations than younger CEOs, we
provide descriptive evidence on our sample's correlation between these variables.
Data on the CEO's age (*Age*) in year *t* are hand-collected from proxy statement
filings; these data are available for 2,568 firm-year observations. For this sample,
panel C shows that the average and median CEO age is 55, with an interquartile
range of 51 (25th percentile) and 59 (75th percentile). The correlation between *Age*
and *AllArticles* is negative based on Pearson tests (−0.046, significant at the 0.024

level) and zero for Spearman tests (0.014, *p*-value of 0.494). Additional tests (not reported) reveal that the significant negative association is driven entirely by the *PressRelease* component of *AllArticles* (indicating that younger CEOs issue more press releases than older CEOs).

Finally, we consider whether the CEO was appointed from inside or outside the firm. We expect that outside appointments are associated with more reputed CEOs because the hurdle for hiring an outside CEO is higher than hiring an inside CEO (because insiders have the advantage of possessing firm-specific knowledge).[13] We hand-collect data about CEO appointments from Dun and Bradstreet's (D&B's) Million Dollar Database, which reports information that allows us to discern whether the CEO was appointed from a position outside of the firm. We set the variable *PriorPosition* equal to 1 if the CEO was appointed from outside the firm, and 0 otherwise. Because D&B covers only current CEOs, data on *PriorPosition* are available for only a subset of the sample observations (2,760 firm-years). Panel C shows that about one-third of the sample CEOs were hired from outside the firm. Consistent with outside appointments being more reputed CEOs, panel C shows that the Pearson and Spearman correlations between *AllArticles* and *PriorPosition* are significantly positive at better than the 0.01 level.

On the whole, we view the results in Table 2 as providing relatively strong evidence that our press-coverage-based proxies for CEO reputation capture economically meaningful aspects of the CEO's reputation. Further, because we generally find high correlations between measures of press coverage that include and exclude firm-initiated press releases, and because we find that the aggregate measures show stronger associations with external measures of recognition, we focus all subsequent tests on the *AllArticles* proxy for CEO reputation.

4. Empirical work

We begin by estimating the following system of equations relating earnings quality to CEO reputation and firm-specific factors, and relating CEO reputation to earnings quality and CEO-specific factors:

$$Earnings\ Quality_{j,\ t+4} = \alpha_0 + \alpha_1 CEO\ Reputation_{j,\ t} + \Sigma\gamma_k Control(k)_{j,\ t} + \epsilon_{j,\ t+4} \quad (3),$$

$$CEO\ Reputation_{j,\ t} = \beta_0 + \beta_1 Earnings\ Quality_{j,\ t+4} + \Sigma\lambda_k Control(l)_{j,\ t} + \epsilon_{j,\ t} \quad (4),$$

where   *Earnings Quality*$_{j,\ t+4} \in \sigma(\nu_{j,\ t+4}), |AA_{j,\ t+4}|$;

CEO Reputation$_{j,\ t}$ = *AllArticles*$_{j,\ t}$ is described in section 3 (results that are based on *AllArticles2* are similar and not reported);

Control(k)$_{j,\ t} \in$ [log(*Assets*), *M/B*, σ(*CFO*), σ(*Sales*), *OperCycle*, *NegEarn*, *Industry*, and *Year* dummy variables]; and

Control(l)$_{j,\ t} \in$ [log(*Assets*), *M/B*, *Current and past stock returns*, *ROA*, *Tenure*, *PriorPosition*, *Age*, *RD/Sales*, *Adv/Sales*, *Industry*, and *Year* dummy variables].

Definitions of the variables are as follows. We measure earnings quality (*Earnings Quality*) using attributes of the mapping of the firm's accruals into cash flows. Our first measure is based on Dechow and Dichev's 2002 model, which regresses working capital accruals on cash from operations in the current period, prior period, and future period.[14] The unexplained portion of the variation in working capital accruals is an inverse measure of earnings quality; that is, a greater unexplained portion implies lower quality. We estimate (5) for each year t for each of the 48 Fama-French 1997 industry groups with at least 20 observations:[15]

$$\frac{TCA_{j,t}}{Assets_{j,t}} = \phi_0 + \phi_1 \frac{CFO_{j,t-1}}{Assets_{j,t}} + \phi_2 \frac{CFO_{j,t}}{Assets_{j,t}} + \phi_3 \frac{CFO_{j,t+1}}{Assets_{j,t}} + \nu_{j,t} \quad (5),$$

where $TCA_{j,t}$ = firm j's total current accruals in year $t = (\Delta CA_{j,t} - \Delta CL_{j,t} - \Delta Cash_{j,t} + \Delta STDEBT_{j,t})$; $Assets_{j,t}$ = firm j's average total assets in year t and $t-1$; and all other variables are as previously defined. These estimations yield firm- and year-specific residuals, which form the basis for the earnings quality metric, $Earnings\ Quality_{j,t+4} = \sigma(\nu_{j,t+4})$, equal to the rolling five-year standard deviation of firm j's estimated residuals over years t to $t+4$. Note that poorer quality earnings are characterized by larger values of $\sigma(\nu_{j,t+4})$.

Our second measure of earnings quality is based on the absolute value of performance-matched abnormal accruals, $|AA_{j,t+4}|$, where abnormal accruals are estimated from the Jones 1991 model (as modified by Dechow, Sloan, and Sweeney 1995) and the performance matching is based on results obtained by Kothari, Leone, and Walsey 2005. Specifically, for each of the 48 Fama and French 1997 industries, we estimate (6) for all industries with at least 20 firms in year t:

$$\frac{TA_{j,t}}{Assets_{j,t-1}} = \kappa_1 \frac{1}{Assets_{j,t-1}} + \kappa_2 \frac{\Delta Rev_{j,t}}{Assets_{j,t-1}} + \kappa_3 \frac{PPE_{j,t}}{Assets_{j,t-1}} + \epsilon_{j,t} \quad (6),$$

where $Assets_{j,t-1}$ = firm j's total assets (COMPUSTAT #6) at the beginning of year t;

$\Delta Rev_{j,t}$ = firm j's change in revenues (COMPUSTAT #12) between year $t-1$ and year t; and

$PPE_{j,t}$ = firm j's gross value of property plant and equipment (COMPUSTAT #7) in year t.

The industry- and year-specific parameter estimates obtained from (6) are used to estimate firm-specific normal accruals (as a percentage of lagged total assets),

$$NA_{j,t} = \kappa_1 \frac{1}{Assets_{j,t-1}} + \kappa_2 \frac{(\Delta Rev_{j,t} - \Delta AR_{j,t})}{Assets_{j,t-1}} + \kappa_3 \frac{PPE_{j,t}}{Assets_{j,t-1}}$$

where $\Delta AR_{j,t}$ = firm j's change in accounts receivable (COMPUSTAT #2) between year $t - 1$ and year t. Abnormal accruals ($AA_{j,t}$) in year t is the difference between total accruals and normal accruals, $TA_{j,t}/Assets_{j,t-1} - NA_{j,t}$. Performance-adjusted abnormal accruals are calculated as the difference between firm j's $AA_{j,t}$, and the median value of $AA_{j,t}$ for its industry return-on-assets decile, where the median calculation excludes firm j. Because both large negative values and large positive values of performance-adjusted abnormal accruals indicate a greater disparity between earnings and accounting fundamentals, we use the absolute value of this measure averaged over years t to $t + 4$, $|AA_{j,t+4}|$, as our second measure of earnings quality.[16] As with *Earnings Quality*$_{j,t+4}$ = $\sigma(\nu_{j,t+4})$, larger values of $|AA_{j,t+4}|$ indicate poorer earnings quality.

We refer to $\sigma(\nu_{j,t+4})$ and $|AA_{j,t+4}|$ as measures of earnings quality, understanding that there are other dimensions of earnings quality that one might examine. We choose these two measures both because they are widely used in the literature as proxies for earnings quality (see, e.g., Francis et al. 2005; Aboody, Hughes, and Liu 2005; Klein 2002) and because prior research shows that they dominate other measures (such as persistence, predictability, smoothness, value-relevance, timeliness, and conservatism) in terms of the statistical and economic association with measures of the firm's cost of capital (Francis et al. 2004).

Descriptive data on both measures of earnings quality are reported in panel A of Table 3. We note that the data requirements imposed by (5) and (6) are substantial, reducing the sample from 4,238 observations to 2,316 observations for the Dechow-Dichev specification and to 2,234 observations for the absolute discretionary accruals specification. The mean (median) standard deviation of residuals from the Dechow-Dichev regressions is 0.0298 (0.0244), while the mean (median) value for the five-year average absolute value of performance-adjusted abnormal accruals for years t to $t + 4$ is 0.0442 (0.0366). These values are roughly similar to values reported by Francis et al. 2005 for a broader sample of firms over a longer time period — that is, they report a mean (median) value of $\sigma(\nu_{j,t+4})$ of 0.0448 (0.0321) and a mean (median) value of $|AA_{j,t+4}|$ of 0.0626 (0.0420).

Equation (3) requires information about firm-specific characteristics that affect the innate portion of a firm's earnings quality — that is, Control(k). By innate we mean the portion of earnings quality that is not easily influenced by management in the short run; intuitively, we think of innate earnings quality as being driven by the firm's operating environment and business strategy. Following Dechow and Dichev 2002, we control for innate determinants of earnings quality using measures of firm size, cash flow variability, sales variability, operating cycle, and incidence of negative earnings realizations. All variables are measured over rolling five-year periods, consistent with the measures of earnings quality. Firm size, $Size_j$, equals the log of the firm's average total assets; we obtain similar results (not reported) using total sales revenues. Cash flow variability, $\sigma(CFO)_j$, is measured as the standard deviation of firm j's cash flow from operations scaled by total assets. Sales variability, $\sigma(Sales)_j$, is the standard deviation of firm j's sales scaled by total assets. The firm's operating cycle, $OperCycle_j$, equals the log of the sum of firm j's days accounts receivable and days inventory. Incidence of negative earnings

TABLE 3

Descriptive statistics about earnings quality and selected firm-specific variables

Panel A: Summary statistics on earnings quality, *Earnings Quality*

Earnings Quality measure	No. of obs.	Mean	s.d.	10%	25%	Median	75%	90%
$\sigma(v_{j,\,t+4})$	2,316	0.0298	0.0225	0.0087	0.0152	0.0244	0.0373	0.0562
$|AA_{j,\,t+4}|$	2,234	0.0442	0.0320	0.0143	0.0225	0.0366	0.0564	0.0824

Panel B: Descriptive information about firm-level variables of sample firms

Control variables	No. of obs.	Mean	s.d.	10%	25%	Median	75%	90%
log(Assets)	4,219	8.399	1.573	6.454	7.342	8.415	9.410	10.356
log(Sales)	4,220	8.378	1.263	6.784	7.526	8.397	9.221	9.945
log(Market value)	4,214	8.803	1.168	7.468	8.010	8.670	9.442	10.380
$\sigma(CFO)$	3,361	0.056	0.057	0.016	0.026	0.041	0.068	0.109
$\sigma(Sales)$	4,201	0.218	0.267	0.022	0.055	0.132	0.276	0.511
OperCycle	3,612	4.991	1.077	3.974	4.381	4.790	5.253	6.120
NegEarn	4,232	0.351	0.785	0.000	0.000	0.000	0.000	1.000
ROA	4,220	0.057	0.107	0.005	0.019	0.050	0.091	0.135
R&D/Sales	2,301	0.060	0.096	0.000	0.006	0.029	0.081	0.150
Adv/Sales	1,338	0.036	0.040	0.000	0.009	0.022	0.048	0.098
M/B	4,217	4.420	7.895	1.359	1.864	2.934	4.892	8.579
Current_Stock_Returns (RET)	4,180	0.272	0.890	−0.260	−0.068	0.139	0.415	0.799
Past_Stock_Returns (PASTRET)	4,127	0.320	0.904	−0.231	−0.038	0.175	0.466	0.888

(The table is continued on the next page.)

TABLE 3 (Continued)

Panel C: Pearson (above diagonal) and Spearman (below diagonal) correlations among firm-specific variables

	log(Assets)	σ(CFO)	σ(Sales)	OperCycle	NegEarn	ROA	R&D/Sales	Adv/Sales	M/B	RET	PASTRET
log(Assets)	1.00	−0.35	−0.43	0.32	−0.06	−0.17	−0.28	−0.01	−0.16	−0.16	−0.13
σ(CFO)	−0.43	1.00	0.32	0.07	0.18	0.07	0.38	−0.07	0.19	0.12	0.16
σ(Sales)	−0.57	0.49	1.00	−0.24	−0.03	0.11	−0.03	−0.07	0.16	0.12	0.16
OperCycle	0.09	0.19	−0.21	1.00	−0.15	0.00	0.25	0.12	−0.03	0.01	0.03
NegEarn	−0.02	0.19	0.02	−0.11	1.00	−0.21	0.28	−0.10	0.01	0.09	0.10
ROA	−0.42	0.24	0.37	0.07	−0.27	1.00	−0.23	0.18	0.13	0.04	0.05
R&D/Sales	−0.17	0.33	−0.04	0.52	0.20	0.14	1.00	−0.06	0.10	0.17	0.16
Adv/Sales	0.08	0.02	0.02	0.14	−0.11	0.26	−0.01	1.00	0.15	−0.01	−0.01
M/B	−0.34	0.33	0.39	0.09	−0.12	0.55	0.29	0.29	1.00	0.20	0.12
RET	−0.12	0.10	0.05	0.03	0.05	0.10	0.10	−0.07	0.32	1.00	0.07
PASTRET	−0.10	0.19	0.12	0.05	0.03	0.16	0.14	−0.06	0.26	0.05	1.00

TABLE 3 (Continued)

Notes:

Variables are as defined in Tables 1 and 2; other variables are as follows: $\sigma(v_{j, t+4})$ = the
    rolling five-year (t to $t+4$) standard deviation of firm-specific residuals from
    regressions of total current accruals on past, current, and future cash flows; $|AA_{j, t+4}|$
    = the absolute value of the firm's performance-adjusted abnormal accruals over the
    years t to $t+4$; log($Assets$) = the log of the firm's average total assets over the past
    five years; $\sigma(CFO)$ = the standard deviation of the firm's cash flow from operations
    in the past five years, scaled by assets; $\sigma(Sales)$ = the standard deviation of the firm's
    sales revenues in the past five years, scaled by assets; $OperCycle$ = the log of the
    firm's average operating cycle (over the past five years), where operating cycle equals
    the sum of days accounts receivable and days inventory; $NegEarn$ = incidence of
    negative earnings realizations in the past five years; ROA = earnings before
    extraordinary items divided by average assets during year t; $R\&D/Sales$ = ratio of
    R&D expense to sales; $Adv/Sales$ = ratio of advertising expense to sales; M/B =
    market value of equity/book value of equity; RET = current year's stock return; and
    $PASTRET$ = past year's stock return.

realization, $NegEarn_j$, is the number of years (out of the past five) where firm j
reported negative values of net income before extraordinary items. The investment
opportunity set, proxied by the market-to-book ratio, M/B, is measured as of firm j.
Our predictions for the relations between these variables and earnings quality follow
those in Dechow and Dichev 2002: we expect that smaller firms and firms with
greater cash flow or sales variability, longer operating cycles, greater incidence of
losses, and larger investment opportunity sets have poorer earnings quality. Finally,
we include industry dummies (based on two-digit SIC codes) and year dummies to
control for omitted variables that covary with industry membership and time.

    Equation (4) requires information on variables ("instruments") that help iden-
tify the set of simultaneous equations — that is, Control(l). Ideally, we would
include in (4) only variables that affect CEO reputation but not earnings quality. As
discussed by Ittner and Larcker 2001, identifying such instruments is a nontrivial
task in practice. Hence, we acknowledge that the set of instruments we use is likely
incomplete. Subject to this caveat, we include CEO-specific characteristics, such
as the CEO's age (Age), his or her prior position ($PriorPosition$), and his or her
tenure with the firm ($Tenure$), with all variables defined as described in section 3.
We expect that older CEOs, CEOs hired from outside the firm, and CEOs with
longer tenure with the firm are more likely to have developed better reputations
than younger, internally promoted, and less seasoned CEOs. On the basis of the
previous argument, we predict positive coefficients relating CEO reputation to Age,
$PriorPosition$, and $Tenure$.[17]

    In addition to these CEO-specific factors, we include several firm-specific
factors that prior research shows influence reputation.[18] In particular, Himmelberg
and Hubbard (2000) argue that the labor market is likely to sort highly talented

CEOs into firms where their marginal value is the highest; according to these authors, firms where the marginal value of talent is high are large, profitable, and intangible-intensive. Hence, we expect a positive association between CEO reputation and each of the following variables: (a) firm size (as measured by the log of assets); (b) performance (as measured by return on assets, *ROA*, current year's stock returns, *RET*, and last year's stock returns, *PASTRET*); and (c) intangible intensity, as measured by the ratio of research and development (R&D) spending to sales (*R&D/Sales*), the ratio of advertising expenditures to sales (*Adv/Sales*), and the market-to-book ratio (*M/B*). Given that many firms do not report R&D and/or advertising expenditures, we interact the continuous measures of intangible intensity with a dummy variable that tracks missing observations. This procedure (called modified zero-order regression: Greene 1993) addresses selection bias (in terms of which firms choose to separately disclose R&D and advertising) and maintains sample size. In particular, for each measure of intangible intensity, we introduce two terms in the regression: *R&D_Dummy* and *R&D_Dummy*R&D/ Sales*, where *R&D_Dummy* is set to 1 if a value for R&D is reported on COM-PUSTAT, and 0 otherwise. (Analogous terms are created for advertising expenditures, *Adv_Dummy* and *Adv_Dummy*Adv/Sales*.) Our pooled cross-sectional estimations of (3) and (4) are subject to the concern that correlated errors lead to inflated *t*-statistics. To address this issue, we estimate (3) and (4) and use Huber-White standard errors clustered at the CEO-firm level.

Summary statistics about all firm-level variables are reported in Table 3, panel B. The sample firms are large (unreported median market value of equity is $5.9 billion) and profitable (median ROA is 5 percent, with an average of about 65 percent of the firms having no losses in the past five years). For firms with nonmissing observations on intangibles intensity, the median firm spends 2.9 percent and 2.2 percent of its sales revenue on R&D and advertising, respectively; the mean firm spends 6.0 percent and 3.6 percent, respectively. Panel C reports pairwise correlation statistics for all firm-specific control variables included in (3) and (4). In general, the pairwise correlations are relatively low except for those between *R&D/Sales* and *OperCycle*, *R&D/Sales* and $\sigma(CFO)$, and $\sigma(CFO)$ and $\sigma(Sales)$, and between *ROA* and *M/B* where both Pearson and Spearman correlations range between 0.33 and 0.55.

The results of estimating the system of simultaneous equations are presented in Table 4. The sample for these tests consists of all firm-year observations with data on all variables for (3) and (4). Panel A reports the results of estimating (3) and (4) using *Earnings Quality* = $\sigma(v)$ (n = 2,102 observations) and panel B reports results for *Earnings Quality* = $|AA|$ (n = 2,062 observations). To address outlier concerns, we winsorize the extreme (99th percentile) observations. (In unreported tests, we verify that our results are not sensitive to other outlier identification methods, such as removing observations with studentized residuals greater than two in absolute value. Retaining all observations in the tests also does not have any qualitative effect on our inferences.) In both panels, we report the coefficient estimates and *t*-statistics obtained from pooled cross-sectional regressions. Both panels show that the adjusted R^2s from the first-stage regression range from 32.33 percent to 60.07 percent, indicating that the chosen instruments have substantial

TABLE 4

Simultaneous estimation of CEO reputation and earnings quality

Panel A: *Earnings Quality = $\sigma(v_{j,t+4})$; CEO Reputation = AllArticles*[*]

Indep. variable	Earnings Quality equation (n = 2,102)			CEO Reputation equation (n = 2,102)		
	Pred. sign	Coef. est.	t-stat.	Pred. sign	Coef. est.	t-stat.
Intercept	?	0.0757	5.71	?	−133.9890	−11.46
Endogenous variables						
Earnings Quality				+	869.5047	10.04
AllArticles	+/−	0.0004	2.95			
Other variables						
log(*Assets*)	−	−0.0039	−3.74	+	9.0747	20.13
Market to Book	−	0.0000	0.47	+	0.0282	0.30
σ(*CFO*)	+	0.0766	4.43			
σ(*Sales*)	+	0.0102	3.62			
OperCycle	+	0.0030	2.52			
NegEarn	+	0.0020	3.70			
Current_Stock_Returns (*RET*)				+	−0.2228	−0.53
Past_Stock_Returns (*PASTRET*)				+	0.4764	0.72
ROA				+	2.2653	0.28
Tenure				+	0.0006	0.01
PriorPosition_Dummy				?	−1.9417	−1.92
PriorPosition_Dummy* PriorPosition				+	4.0879	3.50
Age_Dummy				?	6.1844	1.16
Age_Dummy*Age				+	−0.0999	−1.04
R&D_Dummy				?	6.9263	4.80
R&D_Dummy*R&D/ Sales				+	−44.7963	−3.57
Adv_Dummy				?	6.4691	5.07
Adv_Dummy*Adv/Sales				+	−29.4549	−1.58
First-stage adjusted R^2 (%)		32.36			32.33	
Second-stage adjusted R^2 (%)		31.18			32.27	
p-value for Hausman statistic		0.0271			<0.001	

(The table is continued on the next page.)

TABLE 4 (Continued)

Panel B: *Earnings Quality* = $|AA_{j, t+4}|$; *CEO Reputation* = *AllArticles*[†]

Indep. variable	Earnings Quality equation (n = 2,062)			CEO Reputation equation (n = 2,062)		
	Pred. sign	Coef. est.	t-stat.	Pred. sign	Coef. est.	t-stat.
Intercept	?	0.0717	5.05	?	−83.9718	−8.77
Endogenous variables						
Earnings Quality				+	302.2155	10.13
AllArticles	+/−	0.0003	2.80			
Other variables						
log(*Assets*)	−	−0.0042	−3.90	+	8.7090	19.70
Market to Book	−	−0.0000	−0.28	+	0.1470	1.60
σ(*CFO*)	+	0.3123	16.85			
σ(*Sales*)	+	0.0267	8.82			
OperCycle	+	−0.0016	−1.27			
NegEarn	+	0.0013	2.34			
Current_Stock_Returns (*RET*)				+	−0.1809	−0.38
Past_Stock_Returns (*PASTRET*)				+	0.3992	0.41
ROA				+	−9.7341	−1.16
Tenure				+	−0.0590	−0.86
PriorPosition_Dummy				?	−1.1909	−1.18
PriorPosition_Dummy* PriorPosition				+	4.9156	4.19
Age_Dummy				?	2.9233	0.54
Age_Dummy*Age				+	−0.0564	−0.58
R&D_Dummy				?	4.1072	2.79
R&D_Dummy*R&D/ Sales				+	20.7181	1.93
Adv_Dummy				?	6.0971	4.69
Adv_Dummy*Adv/Sales				+	−6.1082	−0.33
First-stage adjusted R^2 (%)	60.07			33.53		
Second-stage adjusted R^2 (%)	59.33			33.41		
p-value for Hausman statistic	<0.001			<0.001		

TABLE 4 (Continued)

Notes:

Variables are as defined in Tables 1–3.

*   Panel A reports the coefficient estimates and *t*-statistics from estimating (3) and (4) as
        a system of simultaneous equations. Panel A shows the results using *Earnings
        Quality* $= \sigma(\nu_{j, t + 4})$. We use *AllArticles* at *t* as the proxy for CEO reputation. For
        brevity, we do not report the coefficient estimates and *t*-statistics for the industry
        and year dummies included in each regression.

†   Panel B reports the coefficient estimates and *t*-statistics from estimating (3) and (4) as
        a system of simultaneous equations. Panel B shows the results using *Earnings
        Quality* $= |AA_{j, t + 4}|$. We use *AllArticles* at *t* as the proxy for CEO reputation. For
        brevity, we do not report the coefficient estimates and *t*-statistics for the industry
        and year dummies included in each regression.

explanatory power. The Hausman tests of simultaneity (reported in the last row of
each panel) indicate that both earnings quality and CEO reputation are endogenous
variables.

 We now turn to interpreting the results of each equation. Recall that for the
Earnings Quality regression, given by (3), the efficient contracting hypothesis
(Hypothesis 1) predicts that more reputed CEOs are associated with better dis-
cretionary earnings quality than are less reputed CEOs; evidence in support of
Hypothesis 1 would be indicated by a negative value of α_1. In contrast, evidence
supporting the rent extraction explanation (Hypothesis 2) would be indicated by a
positive value of α_1. For both measures of *Earnings Quality*, the results show sig-
nificant positive values of α_1: $\alpha_1 = 0.0004$ (*t*-statistic $= 2.95$) in the regression
using *Earnings Quality* $= \sigma(v)$, and $\alpha_1 = 0.0003$ (*t*-statistic $= 2.80$) for the regres-
sion using *Earnings Quality* $= |AA|$. The positive values of α_1 indicate that more
reputed CEOs are associated with poorer discretionary earnings quality, consistent
with Hypothesis 2 and inconsistent with Hypothesis 1. To gauge the economic sig-
nificance of the effect of CEO reputation on earnings quality, note that *AllArticles*,
our proxy for CEO reputation, has an interquartile range of 20 (panel A, Table 1)
and the mean *Earnings Quality* $= \sigma(v)$ is 0.0318, while the mean *Earnings Quality*
$= |AA|$ is 0.0442. Thus, moving *AllArticles* from the first quartile to the third quar-
tile threshold increases the average *Earnings Quality* $= \sigma(v)$ by 25 percent
[(0.0004*20)/0.0318] and increases the average *Earnings Quality* $= |AA|$ by 14
percent [(0.0003*20/0.0442)].

 With the exception of the negative coefficient on *OperCycle* in the regression
using (*Earnings Quality* $= |AA|$), all of the coefficient estimates on the firm-specific
control variables used to proxy for the innate portion of earnings quality are signif-
icantly different from zero in the predicted directions. In particular, we find that
firms with poorer earnings quality are smaller (*t*-statistics are -3.74 and -3.90 for
the two *Earnings Quality* measures) and have higher cash flows variability (*t*-statistics
are 4.43 and 16.85), higher sales variability (*t*-statistics are 3.62 and 8.82), and

more negative earnings realizations (*t*-statistics are 3.70 and 2.34) than firms with better earnings quality. The effect of operating cycle on earnings quality is ambiguous, with the coefficient positive in the regression using *Earnings Quality* $= \sigma(v)$ (*t*-statistic is 2.52) and weakly negative in the regression using *Earnings Quality* $= |AA|$ (*t*-statistic is -1.27).

Next we turn to the *CEO Reputation* regression given by (4). Here our primary interest is in the coefficient estimate (β_1) relating total *Earnings Quality* to the CEO's reputation, as proxied by *AllArticles*. For both measures of *Earnings Quality*, we find that $\beta_1 > 0$, with *t*-statistics of 10.04 for *Earnings Quality* $= \sigma(v)$ and 10.13 for *Earnings Quality* $= |AA|$. The positive values of β_1 indicate that reputed CEOs are more likely to be employed by firms with poorer total earnings quality, consistent with either a matching explanation (Hypothesis 3) or a rent extraction explanation (Hypothesis 2).

In terms of the CEO-specific control variables in (4), we find that reputed CEOs are more likely to be hired from outside the firm (*t*-statistics on *PriorPosition dummy*PriorPosition* are 3.5 and 4.19 in panels A and B, respectively). We do not observe meaningful relations between CEO reputation and their tenure with the firm, performance, and *Age*.[19] As a set, the CEO-specific variables explain a significant portion of the variation in CEO reputation, as evidenced by unreported tests that reveal *F*-statistics of 4.63 (*p*-value of 0.0031) and 6.13 (*p*-value of 0.0004) for panels A and B, respectively. In terms of the firm-specific characteristics affecting CEO reputation, the results show that reputed CEOs are attracted to larger firms (*t*-statistics on log(*Assets*) are 20.13 and 19.70) and to firms that advertise (*t*-statistics on *Adv_Dummy* are 5.09 and 4.69) and report R&D spending (*t*-statistics on *R&D_Dummy* are 4.80 and 2.79). We do not find consistent evidence of a relation between R&D spending and CEO reputation.

In summary, the results in Table 4 show that both CEO-specific and firm-specific factors are important in explaining earnings quality and CEO reputation. Moreover, our tests show that these constructs (earnings quality and CEO reputation) jointly explain each other. Controlling for this endogoneity, our results show that more reputed CEOs are associated with firms with poorer discretionary earnings quality and poorer total earnings quality. This result is inconsistent with Hypothesis 1 (efficient contracting), but is consistent with Hypothesis 2 (rent extraction) and Hypothesis 3 (matching).[20]

As discussed in section 2, both rent extraction and matching may coexist such that each explains a portion of the patterns observed between CEO reputation and earnings quality. That is, boards of directors may select more reputed CEOs to manage firms with poorer innate earnings quality at the same time that these more reputed CEOs engage in rent extraction behavior that leads to worse discretionary earnings quality. However, it is also possible that the results in Table 4 are due to the omission of one or more innate factors affecting earnings quality. Such an omission could create the appearance that more reputed CEOs are associated with poor discretionary earnings quality when, in fact, the association is really one of pure matching and no rent extraction. Because it is not possible to perfectly capture the elements influencing innate earnings quality, we augment our simulta-

neous equations approach with two tests that are less susceptible to this concern. These tests are described in the next section.

5. Further tests of the rent extraction and matching explanations

This section describes two additional analyses that assist in distinguishing between rent extraction and matching as explanations for the finding in Table 4 that reputed CEOs are associated with poorer earnings quality. The first test (described under the heading "CEO Power") is based on the argument that rent-seeking behavior on the part of the CEO is more likely to occur in firms with poor governance structures because, in such firms, the CEO is likely to have more power and influence over financial reporting (see, e.g., Bertrand and Mullainathan 2001). The second test (discussed under the heading "CEO Turnover") focuses on the subsample of firms where the CEO changed during the sample period (the "CEO change sample"). For these firms, we examine the association between the difference between the prior CEO's reputation and the new CEO's reputation and the level of change in the firm's earnings quality between the prior and new CEO regimes. If matching drives the choice of CEO, we expect that firms with poor earnings quality will replace prior CEOs with more reputed new CEOs. Further, if rent extraction is the true explanation, then earnings quality should deteriorate following the hiring of more reputed CEOs.

CEO power

If the documented association between CEO reputation and poor discretionary earnings quality in Table 4 is indicative of reputed managers exploiting their status to manipulate earnings numbers (i.e., rent extraction), we expect such behavior to be pronounced in firms where CEOs have more power. If we do not observe this pattern, it is more likely that this result is due to incompleteness of the set of innate factors. In this case, the significant positive α_1 is more likely to reflect matching of more reputed CEOs with poorer innate earnings quality firms.

We identify four proxies for CEO power. The first three are based on Hermalin and Weisbach's 2003 argument that the most important factor affecting the board of directors' effectiveness is its independence from the CEO. As proxies for board dependence (i.e., the inverse of board independence), we collect data on whether the CEO is also the chair of the board (*CEO_Chair* = 1 if the CEO is the chair, 0 otherwise), on the proportion of the top five managers on the board of directors (*OnBoard*), and on the proportion of executives with an interlocked relation (*Interlock*).[21] The fourth proxy is 1/*Meetings*, where *Meetings* indicates the number of board meetings. The inclusion of the meeting variable is based on Adams 2000 and Vafeas 1999, who argue that the frequency of board meetings is a proxy for the monitoring effort expended by directors. Larger values of each of the four governance proxies indicate that the CEO has greater power.

Descriptive statistics related to the governance variables are reported in panel A of Table 5. Consistent with other research that uses governance data from the ExecuComp database (e.g., Hanlon, Rajgopal, and Shevlin 2002), we find that the CEO is the chair of the board about 80 percent of the time. The median value

TABLE 5
Additional tests of rent extraction versus matching explanations: CEO power

Panel A: Descriptive data on governance structure

	No. of obs.	Mean	s.d.	10%	25%	Median	75%	90%
CEO_Chair	4,238	0.7975	0.4019	0.0000	1.0000	1.0000	1.0000	1.0000
Interlock	4,238	0.0246	0.0894	0.0000	0.0000	0.0000	0.0000	0.0000
OnBoard	4,238	0.3508	0.1952	0.1429	0.2000	0.3333	0.4286	0.6000
1/Meetings	4,153	0.1503	0.0601	0.0833	0.1111	0.1429	0.1667	0.2500

(The table is continued on the next page.)

TABLE 5 (Continued)

Panel B: The interaction of CEO power, CEO reputation, and earnings quality[*]

Indep. variable	*Earnings Quality* equation (n = 2,072)			*CEO Reputation* equation (n = 2,072)		
	Pred. sign	Coef. est.	t-stat.	Pred. sign	Coef. est.	t-stat.
Intercept	?	0.0742	5.55	?	−132.1491	−11.38
Endogenous variables						
Earnings Quality =						
$\sigma(\nu_{j,\,t+4})$				+	847.9628	10.04
AllArticles	+/−	0.0003	2.85			
Interaction with CEO power						
*AllArticles*CEO Power*	+	−0.0000	−1.27			
Other variables						
log(*Assets*)	−	−0.0039	−3.66	+	9.0388	20.03
Market to Book	−	0.0000	0.50	+	0.0322	0.34
$\sigma(CFO)$	+	0.0825	4.68			
$\sigma(Sales)$	+	0.0106	3.74			
OperCycle	+	0.0030	2.56			
NegEarn	+	0.0019	3.48			
Current_Stock_Returns (*RET*)				+	−0.1791	−0.42
Past_Stock_Returns (*PASTRET*)				+	0.4817	0.73
ROA				+	0.3070	0.04
Tenure				+	0.0006	0.01
PriorPosition_Dummy				?	−1.8288	−1.80
PriorPosition_Dummy PriorPosition*				+	4.1310	3.51
Age_Dummy				?	5.7181	1.05
*Age_Dummy*Age*				+	−0.0920	−0.95
R&D_Dummy				?	6.8886	4.74
*R&D_Dummy*R&D/ Sales*				+	−44.0844	−3.51
Adv_Dummy				?	6.5719	5.10
*Adv_Dummy*Adv/Sales*				+	−30.5163	−1.62
First-stage adjusted R^2 (%)		32.49			32.00	
Second-stage adjusted R^2 (%)		31.34			31.99	
p-value for Hausman statistic		0.002			<0.001	

(The table is continued on the next page.)

TABLE 5 (Continued)

Notes:

Variables are defined as follows: *CEO Power* is the common factor formed on the basis of the common variation in four variables: (a) *CEO_Chair* = 1 if the CEO is also the chair of the board, 0 otherwise; (b) *OnBoard* is the proportion of top five managers who are on the board of directors; (c) *Interlock* is the proportion of the top five managers who are subject to an interlocked relationships; and (d) 1/*Meetings* is the inverse of the number of board meetings. For other variable definitions, see notes to earlier tables.

*   We report the coefficient estimates and *t*-statistics from estimating (3) and (4) as a system of simultaneous equations, where we augment (3) with a variable interacting *AllArticles* with the common factor capturing CEO power. For brevity, we do not report the coefficient estimates and *t*-statistics for the industry and year dummies included in the regressions.

of 1/*Meetings* is 0.1429, indicating that the average board of directors meets about seven times a year. An average of 2.46 percent of executives have interlocking relationships, and approximately 35 percent of the top five management team are on the board of directors.

We perform a factor analysis using these four proxies for CEO power and retain the only common factor whose eigenvalue exceeds 1, which we label *CEO Power* (actual eigenvalue = 1.20). To test whether greater CEO power facilitates rent-seeking behavior, we interact *CEO Power* with the measure of CEO reputation, *AllArticles*, and repeat the tests in Table 4. If the association between CEO reputation and poorer discretionary earnings quality is a manifestation of rent extraction behavior, we expect this behavior to be more pronounced in the presence of greater CEO power. Hence, we expect to observe positive coefficients on the interaction of *AllArticles* with *CEO Power*.[22] Results of these tests are reported in panel B of Table 5, where we tabulate results for *Earnings Quality* = $\sigma(v)$ (n = 2,072 observations); results for *Earnings Quality* = |*AA*| are similar and are not reported. These tests show that the coefficient on *AllArticles*CEO Power* is not reliably different from zero (*t*-statistic = −1.27), indicating that the association between poor discretionary earnings quality and CEO reputation does not worsen with greater CEO power. In unreported tests, we also find no association using other methods of combining the four proxies for CEO power. In particular, we repeated our tests (a) using a measure of CEO power equal to the sum of the values of the four proxies (note that all of these variables range between zero and one); and (b) by interacting each of the individual proxies with *AllArticles*. Regardless of how CEO power is operationalized, we find no evidence that the association between CEO reputation and earnings quality is more intense for firms where the CEO has more power.

CEO turnover

Our second analysis focuses on CEO turnover. We begin by investigating whether firms with poorer total earnings quality hire more reputed CEOs to replace less reputed former CEOs. For this analysis, we compute the change in CEO reputation as the difference between (a) the three-year sum of the *AllArticles* measure for the new CEO (over years t to $t + 2$ where t is the CEO change year); and (b) the three-year sum of *AllArticles* measure for the prior CEO (over years $t - 3$ to $t - 1$). A positive (negative) difference, $\Delta AllArticles$, indicates that the new CEO is a more (less) reputed CEO than the prior CEO. We regress $\Delta AllArticles$ on the level of earnings quality in years $t - 3$, $t - 2$, and $t - 1$ (i.e., over the period of the prior CEO). A positive (negative) coefficient on earnings quality implies that the firms with poorer earnings quality seek to hire new CEOs who are more (less) reputed than prior CEOs; such a finding would be consistent with a matching explanation.

Our sample for this test is limited to observations with CEO changes and data on the earnings quality variables. In total, there are 110 CEO change events with data on *Earnings Quality* $= \sigma(v)$, and 114 events with data on *Earnings Quality* $= |AA|$.[23] Results of estimating separate regressions of $\Delta AllArticles$ on each of the earnings quality metrics are reported in Table 6, panel A. For both measures, we find a significant positive coefficient relating the earnings quality of the firm with the change in CEO reputation: the *t*-statistic is 3.55 for *Earnings Quality* $= \sigma(v)$ and 1.89 for *Earnings Quality* $= |AA|$.

A natural question that arises from examining CEO changes is whether firms with poor earnings quality that hire more reputed CEOs experience improvements in earnings quality. The key feature of this test is that it holds constant the firm; to the extent that innate earnings quality is firm-specific and slow to change, any change in total earnings quality between the prior CEO and new CEO regimes can be attributed to a change in discretionary earnings quality associated with the new CEO. In this setting, a worsening of earnings quality is associated with rent extraction, while an improvement is consistent with efficient contracting. We compute the change in earnings quality after the CEO change as the difference between (a) the three-year average value of each *Earnings Quality* metric over years t, $t + 1$, and $t + 2$ (the new CEO period) and (b) the three-year average of the measure over years $t - 3$, $t - 2$, and $t - 1$ (the prior CEO period). Because *Earnings Quality* is scaled such that larger values indicate worse earnings quality, a negative (positive) value of $\Delta Earnings\ Quality$ means that earnings quality improved (deteriorated) after the CEO change. We regress $\Delta Earnings\ Quality$ on the change in CEO reputation, $\Delta AllArticles$. If new, more reputed CEOs improve (worsen) earnings quality, we expect to observe a negative (positive) coefficient relating $\Delta Earnings\ Quality$ to $\Delta AllArticles$. The samples for these tests are small ($n = 87$ for *Earnings Quality* $= \sigma(v)$ and $n = 69$ for *Earnings Quality* $= |AA|$), so caution should be exercised in drawing inferences from these results. The results reported in panel B of Table 6 show a weakly negative coefficient on *AllArticles* for *Earnings Quality* $= \sigma(v)$ (*t*-statistic $= -1.32$), and no significant coefficient on *AllArticles* for *Earnings Quality* $= |AA|$ (*t*-statistic $= -0.95$).

Summary of results of additional tests

On the whole, we believe the results in Tables 5 and 6 are more consistent with a matching explanation than with a rent extraction explanation for the finding that reputed CEOs are associated with firms with poorer earnings quality. Specifically, we find no evidence that the association between more reputed CEOs and poorer discretionary earnings quality is concentrated in firms with weak governance. Further, we find that when CEO turnover occurs, there is a significant association between the firm's total earnings quality prior to the change and whether the firm replaces the prior CEO with a more, or a less, reputed current CEO: our results show that poor earnings quality firms "trade up" in that they replace current CEOs

TABLE 6

Additional tests of rent extraction versus matching explanations: CEO turnover

Panel A: Regression of $\Delta AllArticles$ on earnings quality prior to the CEO change*

Indep. variable	Pred. sign	Coef. est.	t-statistic	Adjusted R^2
Earnings Quality $= \sigma(v)$	+	324.846	3.55	0.096
Earnings Quality $= |AA|$	+	144.267	1.89	0.022

Panel B: Regression of $\Delta EarningsQuality$ on $\_AllArticles$†

Indep. variable	Pred. sign	Coef. est.	t-statistic	Adjusted R^2
$\Delta Earnings\ Quality = \Delta\sigma(v_{j,\,t+4})$	−	−0.0001	−1.32	0.0086
$\Delta Earnings\ Quality = \Delta|AA_{j,\,t+4}|$	−	−0.0042	−0.95	−0.0014

Notes:

Variables are defined as follows: $\Delta AllArticles$ = change in CEO reputation, measured as the difference between the sum of three-year $AllArticles$ measure for the new CEO (in years t, $t+1$, and $t+2$, where t is the CEO change year) and the sum of the three-year $AllArticles$ measure of the old CEO (in years $t-3$, $t-2$, and $t-1$). $\Delta Earnings\ Quality$ = the change in earnings quality, calculated as the difference between the average earnings quality measure in years $t-3$, $t-2$, and $t-1$ (prior CEO period) and the current CEO period (years t, $t+1$, and $t+2$).

[*]   Panel A reports the results of estimating regressions of the change in CEO reputation (proxied by $\Delta AllArticles$) on the firm's earnings quality prior to the change in CEO. The regressions are estimated separately for each measure of earnings quality. The sample consists of 110–114 firms with CEO changes and data on the quality metrics.

[†]   Panel B reports the results of estimating regressions of the change in CEO reputation (proxied by $\Delta AllArticles$) on the change in the firm's earnings quality metric, measured before and after the change in CEO. The regressions are estimated separately for each measure of earnings quality. $\Delta Earnings\ Quality = \Delta|AA|$ contains 69 observations; $\Delta Earnings\ Quality = \Delta\sigma(v)$ sample contains 87 observations.

with more reputed CEOs. Finally, we find no evidence that hiring a more reputed CEO worsens the firm's discretionary earnings quality (as would be consistent with rent extraction); if anything, our tests show weak evidence that discretionary earnings quality improves in these cases.

We note that our conclusion of no evidence of rent extraction is based on accepting the null hypothesis rather than rejecting it. We acknowledge that such tests are of low power and do not provide strong evidence in support of the matching argument. We note, however, that a matching explanation for why more reputed CEOs work for poorer earnings quality firms is broadly consistent with Joos et al.'s 2003 evidence that matching explains their documented relation between CEO age and firm complexity. In particular, Joos et al. (2003) find that CEOs with greater human capital (as proxied by their age) work for more complex and larger firms. Our results complement these insofar as we find that CEOs with greater human capital (as proxied by their reputations) are hired by larger firms and, controlling for size, by firms that are characterized by more uncertain operating environments, which has been shown to be linked to poorer earnings quality.

Robustness tests

Our results are robust to several checks listed below (for brevity, we summarize but do not tabulate these results).

a. *CEO wealth*: One potential concern with our empirical analyses is that the CEO reputation measure may capture effects of CEO wealth, mostly by means of stock options and restricted stock, on earnings quality. To address this issue, we compute CEO wealth, measured as the sum of salary, bonus, market value of new option grants, and restricted stock grants for the year *t* and the Black-Scholes value of unexercised stock options at the beginning of the year *t*, and include this CEO wealth measure as an independent variable in (3) and (4). Thus, we allow CEO wealth both to affect earnings quality and to serve as an instrumental variable that explains cross-sectional variation in CEO reputation. Results indicate that the coefficient on CEO wealth is positive and significant only in the CEO reputation regression, as expected if CEO wealth serves as an instrumental variable for CEO reputation. More importantly, we continue to observe a positive and statistically significant association between earnings quality and CEO reputation in (3). That is, even controlling for the effects of CEO wealth, there is a significant relation between earnings quality and CEO reputation.

b. *Annual measure of absolute abnormal accruals*: To address concerns that our measure of earnings quality, which is based on years t through $t + 4$, imposes a survivorship requirement on the sample, we repeat our tests using the annual value of the firm's absolute abnormal accruals in year *t*, $|AA_{j,\,t}|$. Results of these tests (not tabulated) are similar in all respects to those reported.

c. *CEO future employment with firm*: Our measures of earnings implicitly assume that the CEO of firm *j* in year *t* maintains this position through year

$t + 4$. To determine whether this future employment relationship affects our results, we note two results. First, examination of the data show that 58 percent of CEOs in year t are also CEOs of the same firm in year $t + 4$. Repeating our tests on this subsample of firms yields results that are similar in all respects to the full sample. Second, earnings quality measures based on only year t data are not susceptible to a concern of future employment; and as noted in point (b), we find similar results using the annual measure of absolute abnormal accruals.

d. *Skewness in the CEO reputation measure*: Another potential concern is that the skewed nature of the CEO reputation variable drives the reported results. To address this issue, we substitute the raw measure of *AllArticles* in (3) and (4) with an empirical measure normalized to lie between 0 and 1. In particular, we rank all observations of *AllArticles* in ascending order and then scale each rank by N such that each observation assumes a value between 0 and 1. Results based on this empirical transformation of the CEO reputation measure are consistent in all respects with the untransformed measure.

e. *Ordinary least squares results:* As acknowledged previously, some of the instrumental variables used in (3) and (4) may themselves be endogenous. In such a setting, it is unclear whether two-stage least squares estimation is superior to ordinary least squares (OLS) estimation. As a sensitivity check, we reestimate (3) and (4) using OLS; our reported inferences remain unchanged.

6. Summary and conclusion

We examine the relation between CEO reputation and measures of the firm's earnings quality. Using press coverage (media counts) to proxy for CEO reputation, we find that more reputed CEOs are associated with poorer earnings quality. This finding is inconsistent with an efficient contracting view, which predicts that reputed CEOs take actions that result in good earnings quality. This seemingly counterintuitive result is, however, consistent with two other theories: a rent extraction hypothesis (which predicts that reputed managers are more likely to use their discretion to manipulate earnings in order to manage labor and stock market perceptions) and a matching hypothesis (which predicts that selection on the part of firms gives rise to a demand for reputed CEOs for firms where earnings quality is inherently poor). Further analyses provide little support for the rent extraction explanation and some support for the matching explanation.

Our inferences rest on the presumption that our proxies for CEO reputation and earnings quality tests are valid measures of these constructs. While many empirical studies suffer from some concern about the validity of proxies for the constructs they are intended to capture, our study is particularly susceptible to this concern because both earnings quality and CEO reputation are multidimensional and unobservable. In the case of earnings quality, we rely on previous research that has explored the properties of the two earnings quality measures we consider to support the presumption that these two measures are valid proxies. To address concerns about the validity of our CEO reputation measure, we provide a battery of

validity assessments. Both of these steps increase our confidence that our results and inferences are both sound and reliable; however, we recognize that inferences based on our results are premised on the validity of our empirical measures. Future research might want to investigate the association between CEO reputation and their firm's investment, financing, and operating decisions.

Endnotes

1. In addition to estimating its components, total earnings quality itself must be estimated. Our results, therefore, are also subject to the caveat that our proxies for earnings quality meaningfully capture this construct. On this point, we note that (a) we follow prior studies' operationalizations of earnings quality; and (b) we find similar results using multiple measures of earnings quality.

2. Analytical research supporting this association is provided by Easley and O'Hara 2004 and Lambert, Leuz, and Verrecchia 2007. Empirical evidence of higher costs of capital for firms with poorer information quality is reported by Barth and Landsman 2003; Barone 2003; Bhattacharya, Daouk, and Welker 2003; and Francis, LaFond, Olsson, and Schipper 2004, 2005.

3. Other potential ways to measure CEO reputation include the market reaction of the firm that hires the CEO around the CEO's hiring announcement date or the CEO's past performance record. We did not pursue the event-study approach because only a few CEO hiring decisions are likely to be available relative to the CEOs already in place. We also did not use the CEO's past operating performance record because earnings quality and operating performance are likely endogenous.

4. In particular, we collected data on where the CEO went to school and the maximum education level of the CEO (high school, undergraduate degree, master's degree, doctoral degree). Because education data were not available or were incomplete for most of the CEOs in our sample, we do not pursue these measures.

5. Besides adverse financial consequences in the form of declines in wages, loss of reputation may result in a decline in social prestige, disapproval from one's peers, and loss of self-esteem.

6. Francis et al. (2005) and Aboody, Hughes, and Liu (2005) argue that poor earnings quality, as proxied by the Dechow-Dichev 2002 measure of earnings quality and absolute discretionary accruals, is associated with a higher cost of equity and debt capital and greater rents appropriated by insiders. On the basis of these findings, we argue that if reputed CEOs influence earnings quality to make reported earnings look good to maintain their reputations, cost of capital and insider rent appropriation increase. Francis et al. (2006) further document an association between earnings quality and managerial incentives in the form of stock options. In particular, they show that as the sensitivity of top managers' option packages to returns volatility increases, so too does the extent of discretionary accruals behavior that results in poor earnings quality. In effect, they show one mechanism through which a CEO might benefit from engaging in behaviors that worsen earnings quality, despite the fact that a worsening of earnings quality has detrimental effects on the firm's overall cost of capital.

7. Note that the matching explanation does not argue that firms with good earnings quality are not motivated to hire reputable CEOs. The matching explanation only says

that firms with poor earnings quality have a greater incentive to seek more reputed managers than do firms with good earnings quality.

8. We use calendar years rather than fiscal years to simplify the search. Because most of the S&P 500 firms have December year-ends (366, or 74 percent), differences between calendar and fiscal years should be small for our sample. Moreover, we see no reason non-December fiscal year-ends should bias the results in either direction.

9. We recognize that press releases are internally, not externally, motivated coverage. That is, the firm initiates the coverage, not a reporter. In unreported tests, we confirm that the inclusion of firm-initiated media coverage does not drive any results.

10. As our starting point, we use the CEO's name as reported in ExecuComp. To avoid understating the press coverage variables, we also search for shortened names (e.g., Bill for William) and common nicknames (e.g., Jack for John). We require a concurrent reference to the company name to avoid overstated counts potentially associated with common names, such as Smith.

11. Three of the lists provide explicit guidance as to the criteria examined. *Worth*'s list is based on interviews with Wall Street analysts and fund managers and identifies the top CEOs in terms of delivering long-term shareholder value and high integrity. The *Financial Times* list is based on survey evidence from CEOs around the world, who were asked to identify the three business leaders they admire and respect most. *Fortune* evaluates women executives on four measures: revenues and profits she controls, the importance of her business in the global economy, the arc of her career, and her impact on culture and society. Beginning in 2002 (i.e., after our sample period), *Fortune* also began preparing a list of the "most powerful black executives in America".

12. We prefer the indicator ($0-1$) specification because it avoids concerns that not all executives are eligible for inclusion on all lists. For example, male CEOs are not eligible for inclusion on *Fortune*'s list of powerful women executives.

13. Further evidence in support of the view that managers hired from other firms are more valued is provided by Hayes and Schaefer 1999. They find that firms losing managers to other firms experience average abnormal returns of -1.5 percent at the announcement of their resignation; this compares with $+3.82$ percent average abnormal returns when the separation is due to the unexpected death of a CEO.

14. Bowen et al. (2008) argue that researchers could extract the portion of earnings quality attributable to governance in the first stage and then evaluate whether such governance-related earnings quality is negatively associated with future operating performance such as future cash flows in the second stage to conclude that some aspect of governance (such as CEO reputation) is related to rent extraction. Recall, however, that the Dechow-Dichev measure already strips out the portion of accruals related to future cash flows in the first stage. Hence, the Bowen et al. methodology will not work if earnings quality is measured as per the Dechow-Dichev 2002 model.

15. Consistent with the prior literature and throughout our analyses, we winsorize the extreme values of the distribution to the 1 and 99 percentiles. The results are not affected by whether and how we identify outliers. Our results are also not sensitive to using McNichols's 2002 modification, which adds change in revenues and gross property, plant, and equipment as additional independent variables (both scaled by assets).

16. We average the absolute abnormal accruals measures over five years to maintain consistency with the measurement period used for the Dechow-Dichev measure of earnings quality. In addition, because there is sufficient criticism of measurement error in abnormal accruals measures, we believe we enhance the power of this variable to capture earnings quality by averaging its value over multiple years. In sensitivity tests (described under the heading "Robustness Tests", below) we also examined the absolute abnormal accruals measure calculated at the annual level.

17. Prior research provides support for *Age* as a factor considered by boards of directors in selecting CEOs. See, for example, Joos et al. 2003 and Bizjak et al. 1993.

18. As in (3), we also include industry and year dummy variables in (4) to control for omitted variables that covary with industry membership and time.

19. On the basis of prior research, which argues that reputation is likely to play a smaller role in contract enforcement as the agent gets older and there is less to lose (Rosen 1990), we also examined the sensitivity of our results to imminent retirements. Specifically, we redefine the variable *Age* to equal 1 if the CEO is 63 years of age or older, and 0 otherwise. Results of these tests (not reported) show that the coefficient on *AllArticles*Age* is not significantly different from zero. We conclude from this result that the horizon problem is not a first-order driver of our results.

20. A better test of matching would use a measure of the firm's prior (or contemporaneous) earnings quality rather than a future measure (such as the one used in our main tests). To address this concern, we repeat our tests using a measure of the firm's prior earnings quality (based on years t through $t - 4$) and, separately, using a contemporaneous measure of earnings quality (the annual measure of the firm's absolute abnormal accruals in year t). Results using both the prior and the contemporaneous measure are similar and not reported.

21. ExecuComp codes an interlocking relationship as existing if a top-five officer serves on the board committee that makes his or her compensation decisions, or if the top-five officer serves on the board (and possibly compensation committee) of another company that has an executive officer serving on the compensation committee (and/or the board) of the current officer's company.

22. To keep the empirical modeling simple, we treat *CEO Power* as an exogenous variable for purposes of this test.

23. Another way to examine the effect of CEO reputation on financial reporting choices, following Bertrand and Schoar 2003, would be to assess whether CEOs who move from one firm to another alter the financial reporting policies of the new firm so as to make them similar to the reporting policies of the old firm. Unfortunately, the limited number of CEO changes in our sample prevents a meaningful application of the Bertrand and Schoar 2003 approach to our setting.

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