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How does corporate culture affect IPO price formation?

Douglas Cumming [a,b], Gerrit Köchling [c,*], Daniel Neukirchen [c], Peter N. Posch [c]

[a] Florida Atlantic University, College of Business, United States of America
[b] Birmingham Business School, University of Birmingham, United Kingdom [1]
[c] Technical University of Dortmund, Faculty of Business and Economics, Chair of Finance, Germany

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ABSTRACT

We examine the relationship between corporate culture and initial public offering (IPO) price formation. Using a sample of 935 US IPOs and data on corporate culture from Li et al. (2021b), we find that IPOs of strong culture firms are associated with more positive price revisions and higher initial returns, i.e., more underpricing. These findings hold using an alternative measure of corporate culture, matched samples, and a large set of control variables. Consistent with key theories, the effects appear to be driven by underwriters deliberately compensating investors for revealing information about their perceptions of the firm's culture during bookbuilding.

1. Introduction

Every company has its own culture. As defined by O'Reilly and Chatman (1996), this culture is "a system of shared values (that define what is important) and norms that define appropriate attitudes and behaviors for organizational members" (p. 160).

Previous theoretical and empirical research has shown that firms with a strong corporate culture, that is, where these norms and values are widely shared and strongly held throughout the firm (O'Reilly, 1989), are associated with better firm performance, especially in times of crisis (see e.g., Barney, 1986; Camerer and Vepsalainen, 1988; Carmeli and Tishler, 2004; Denison and Mishra, 1995; Gordon and DiTomaso, 1992; Graham et al., 2022b,a; Hall, 1993; Li et al., 2021a,b; Kotter and Heskett, 1992; Sørensen, 2002). Recent survey evidence by Graham et al. (2022a) also suggests that 92% of corporate executives are convinced that creating and maintaining a strong corporate culture will raise the value of their company. According to them, the main reasons why a strong corporate culture is superior are better coordination, stronger goal alignment, and increased employee effort (Graham et al., 2022a).

However, although corporate culture appears to be important for firm performance, it is an intangible asset (see e.g., Li et al., 2021a,b) and its value is difficult for investors to accurately assess. In this respect, Edmans (2011) documents that market participants even tend to underprice intangibles of large firms, such as employee satisfaction, which can be verified by independent and highly visible surveys.

Building on this, we argue in this paper that this mispricing of intangibles is also likely to affect the pricing of corporate culture in the context of IPOs, where substantial information asymmetry between the firm, underwriters, and investors is typically prevalent (Lowry et al., 2017). Specifically, we argue that IPOs of strong-culture firms are underpriced on average because underwriters, who set the initial price range and also the final offer price, may not fully incorporate corporate culture into these prices, which in turn leads to a higher first-day return, i.e., more underpricing.

Based on previous literature, there are two main reasons why underwriters may neither fully incorporate corporate culture into the initial price range nor into the final offer price. First, corporate culture may not be on the underwriters' radar during the early-stage price formation. Instead, underwriters may focus on the firm's fundamentals when setting the initial price of a firm (Kim and Ritter, 1999; Rau et al., 2023). Some investors, however, may know that the firm's culture is important to its future performance, and that the initial price does not reflect the true value of the firm as it neglects the value of its corporate culture. Building on one of the most fundamental theories in the IPO literature (Benveniste and Spindt, 1989), these informed investors would how-

* Corresponding author.
E-mail address: gerrit.koechling@udo.edu (G. Köchling).
[1] Visiting Professor.

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ever only reveal this information to the underwriter if the underwriter was willing to offer them a premium on the first day of trading by not fully adjusting the offer price.

Yet, while it may be that corporate culture is not on the underwriters' radar when setting the initial price range, a second possible explanation, which does not require such a strong assumption, could be that accurately pricing a firm's corporate culture is perhaps too costly for underwriters relative to the benefits of lower initial returns (Hanley and Hoberg, 2010), or even impossible (see e.g., Cohen and Lou, 2012; Plumlee, 2003).[2] This is because pricing corporate culture poses two challenges for underwriters. The first challenge is that corporate culture is typically not easily verifiable for outsiders, and underwriters may thus have to rely on management's assertions about the firm's culture. These assertions may, however, be subject to window dressing, and it may be too costly or even impossible for underwriters to distinguish between the values and norms *claimed* by the managers and the values and norms *lived* in the IPO firm. But even if we assume a situation in which the underwriters knew the *true* values and norms of the firm, a second challenge that nevertheless arises is that corporate culture would still not be easily quantifiable with respect to a variety of different investors, since their perceptions of corporate culture may vary widely (e.g., due to individual preferences and beliefs). Hence, underwriters may be more conservative and (deliberately) choose to price corporate culture based on the information gathered during bookbuilding. Similar to our first explanation, this would then again lead to a situation where underwriters need to incentivize investors to reveal information about their assessments of the value of the firm by only partially adjusting the final offer price.

Therefore, even though it is difficult to disentangle these two possible explanations ex ante, it is important to note that both point to the same results: (i) initial prices of IPO firms with strong cultures are, on average, too low because they do not (fully) incorporate the value of a strong corporate culture; (ii) as informed investors reveal their assessment during bookbuilding, offer prices are, on average, revised upward, but only partially; and (iii) this in turn allows informed investors to earn a premium on the first day of trading.

To investigate these conjectures, we use a sample of 935 US IPOs covering the period from 2001 to 2018 and a measure of corporate culture from Li et al. (2021b). This culture measure is based on a semisupervised machine learning algorithm applied to the extemporaneous question-and-answer (Q&A) section of the firms' earnings call transcripts. Specifically, the authors begin by training a neural network model that learns the meaning of all words and phrases in the transcripts based on their respective contexts. Then, using their model, the authors construct a dictionary of words that capture five different cultural dimensions (i.e., innovation, integrity, quality, respect, and teamwork). The aggregate culture measure we use is then ultimately the sum of the scores for each of the firm's cultural dimensions, which are based on the weighted frequency count of the relevant words and phrases in the firm's earnings call transcripts (see e.g., Bonsall et al., 2021; Datta et al., 2023; Zaman, 2024).

Using our sample and the culture measure of Li et al. (2021b), we find strong empirical support for our conjectures in our baseline tests. Specifically, we find that IPOs of strong-culture firms are associated with more positive price revisions and higher first-day returns, which are economically meaningful. For instance, a one standard deviation increase in our measure of corporate culture is associated with a 3.024 percentage point increase in underpricing, which corresponds to an about 18% (12%) increase relative to the mean (standard deviation). Moreover, using the test proposed in Bauguess et al. (2018), in which we decompose offer price revisions into its positive and negative components, also allows us to rule out the alternative explanation that these results are only due to strong investor demand for IPOs of strong-culture firms (i.e., investor awareness and demand for shares). Therefore, consistent with IPO theory (Benveniste and Spindt, 1989), we conclude that our baseline results rather suggest that underwriters compensate informed investors for revealing information about an IPO firm's corporate culture.

To assess the robustness of these results, we conduct several additional tests. First, we use three different matching algorithms to rule that out that systematic differences between IPOs of firms with a strong culture and those with a weak culture affect our findings. Second, since our main measure of corporate culture may be subject to a look-ahead bias, we rerun our regressions using an alternative culture measure, which we construct using IPO prospectuses and following the methodology of Li et al. (2021b). Third, to address remaining concerns about omitted variables, we also estimate regressions including additional control variables and perform an analysis of the Impact Threshold of a Confounding Variable (ITCV) (Frank, 2000). Fourth and finally, we use different dependent variables, independent variables, and alternative clustering of the standard errors. And yet, in all of these tests, we find results that are similar to our baseline results.

However, while the results of our baseline and robustness tests are consistent with our conjectures and IPO theory, an important question that remains is whether underwriters do not have corporate culture on their radar during the early-stage price formation, or whether they deliberately choose to price corporate culture based on the information gathered during bookbuilding. To address this question, we also examine initial prices. Although corporate culture is intangible and generally difficult for outsiders to observe, elements of it can be identified through cultural artifacts such as art, technology, observable patterns of behavior, language, rituals, and ceremonies (Alavi et al., 2005; Gagliardi, 1990; Schein, 1996, 2010). It seems likely that these artifacts will not only be more visible to underwriters the older and larger the firm, due to less information asymmetry (Camerer and Vepsalainen, 1988), but also that may serve as an important verification of the firm's culture. Therefore, we argue that if corporate culture is not on the underwriters' radar during the early-stage price formation, having information easily available (in terms of artifacts) should not affect initial prices. If, on the other hand, it is only on average too expensive for underwriters to collect the necessary information on corporate culture that is needed to price the issue more accurately in light of a variety of different investors, we would expect that in cases, where the information is relatively easy to obtain, verify, and thus perhaps also quantify, corporate culture should be incorporated into the initial price, at least to some extent. The results of our tests are consistent with this latter view, i.e., initial prices of old and large firms with a strong culture are significantly higher. Thus, it appears that underwriters are only more likely to deliberately choose to price corporate culture based on the bids in the bookbuilding process when identifying corporate culture and quantifying its value is particularly difficult or even impossible for them, in line with the second explanation.

To test this even further, we next examine whether a CEO's experience also matters in this context. Building on previous literature, there are several reasons why a seasoned CEO may serve as verification mechanism of the firm's culture and can alleviate underwriters' concerns about incorporating corporate culture into initial prices. First, Blankespoor et al. (2017) find that underwriters do incorporate their perceptions of the CEO in initial prices of IPOs. It seems therefore reasonable to assume that underwriters may also believe that a firm with a seasoned CEO is more likely to have developed a profound culture and that window dressing is less likely. Second, as CEOs are the most influential in shaping the culture (Graham et al., 2022b,a), and seasoned and especially longer tenured CEOs may have a better understanding of

[2] For instance, Plumlee (2003) and Cohen and Lou (2012) provide some evidence in the context of analysts valuing complex firms. They show that valuation errors are more likely for complex firms, i.e., firms with higher information processing costs. Thus, underwriters may not be well positioned to accurately price corporate culture, which is a highly intangible asset. For an overview of how complexity and uncertainty can affect the valuation of firms, see also Nguyen and Kecskés (2020).

the firm's culture (Gupta et al., 2017), they may also be able to more effectively communicate the firm's culture to the underwriter, which may lead the underwriter to (partially) include corporate culture in the initial pricing of the offering. Third, a track record of successfully leading a firm through growth and development can also inspire confidence in the management's ability to maintain a strong corporate culture. In this respect, Guiso et al. (2015) show that firms tend to change their culture after an IPO, and that especially the integrity dimension drops. Underwriters may thus expect that this is less likely for firms with experienced CEOs. Finally, a CEO's prior experience in taking a firm public may have helped build relationships with underwriters (Chemmanur and Paeglis, 2005), making them more likely to believe the CEO's assertions about the importance of the firm's culture for future performance.

The results of our tests show that there is some evidence that management experience can serve as a verification mechanism of corporate culture, as underwriters appear to set higher initial prices for strong-culture firms led by seasoned CEOs and to rely on less information production during bookbuilding. Consistent with this, we also find that there is less underpricing for these firms. However, we note that the results, especially those for initial returns, are weak in terms of statistical significance.

Finally, having addressed the potential mechanisms, we conclude our empirical analysis with a set of tests aimed at ruling out the alternative explanation that markets simply overreact on the first day of trading due to increased awareness, and that underwriters thus do not compensate for information production during the bookbuilding. Specifically, we run regressions where the dependent variables are different measures of post IPO stock performance. But in line with our previous interpretation, we find no evidence of such an overreaction in these tests.

Taken together, our results are thus generally well aligned with the theoretical literature on IPO pricing, but we of course acknowledge the main limitation of our study, which is the challenge of isolating the effects of corporate culture on IPO pricing. If there are (unobservable) factors that affect the relationship and are not accurately captured by our controls variables, the results may differ; and even our matching approaches can only alleviate such concerns to a limited extent. However, we believe that we have used the best widely available measure of corporate culture to date and included several different control variable across a variety of specifications to mitigate this issue. Against this background, we therefore believe that our study can indeed serve as a stimulus for future research and contributes to the existing literature along three main lines.

First, our study extends the literature investigating the phenomenon of IPO underpricing (for an overview, see e.g., Lowry et al., 2017). While previous research has shown that corporate culture matters for firm performance (see e.g., Gordon and DiTomaso, 1992; Guiso et al., 2015; Li et al., 2021a,b), our results suggest a mispricing of corporate culture in the early stages of IPO valuation.

Second, and relatedly, our findings also contribute to the extensive literature on whether markets fully price intangibles (see e.g., Chan et al., 2001; Edmans, 2011, 2012; Gompers et al., 2003; Lev and Sougiannis, 1996; Nguyen and Agrawal, 2023). As mentioned earlier, prior literature has shown that markets underprice intangibles, even when they can be verified by independent surveys (Edmans, 2011). Edmans (2012) therefore argues that it is even more likely that other intangible assets, such as corporate culture, which are not easily verifiable, are also not immediately priced. Our results provide some evidence for this notion in the context of IPOs.

Third and finally, our study contributes to the literature which examines the importance of corporate culture for firm outcomes (see e.g., Bianchi et al., 2021; Byun, 2022; Fang et al., 2023; He and Hu, 2016; Li et al., 2021a,b), and especially to the nascent strand focusing on IPO firms. For instance, employing a text-based measure of corporate culture, Cumming et al. (2024) show that firms with a highly competition and creation-oriented culture have better post-IPO firm performance (in terms of return on assets or earnings before interest and tax) and lower distress risk. We extend this literature by using a novel culture measure based on a semi-supervised machine learning approach and by focusing on the relationship between corporate culture and IPO underpricing.

The remainder of this paper is organized as follows. Section 2 describes the IPO pricing process, related theories, and develops our hypotheses. Section 3 presents the construction of our sample and the main variables. Section 4 describes our empirical strategy and discusses the results. Finally, Section 5 concludes.

2. Institutional background, theory, and development of hypotheses

2.1. The IPO pricing process

The IPO pricing process can be briefly described as follows. The first step is that, after conducting due diligence on the firm, the underwriter of the offering sets an initial price range for the firm's shares. In the past, this initial price range has been disclosed in the mandatory registration, i.e., the S-1 filing,[3] but in recent years the price ranges have been set approximately one month after the S-1 is filed.

Once the S-1 has been reviewed by the SEC, the offering becomes effective and the second step, commonly referred to as bookbuilding, begins. During this process, the underwriter seeks to generate interest among potential investors through road shows and other marketing channels, while gathering information from them about their preferences for the firm's stock. Based on the information gathered during the bookbuilding process, the underwriter then sets the final offer price and allocates shares among the initial investors.

After the allocation of shares, trading finally begins and the public can buy shares. Typically, IPOs close well above their offer prices on the first day of trading. This phenomenon is called underpricing, because the stock price did not accurately reflect investor demand for the stock. Lowry et al. (2017) note that average underpricing of US IPOs amounts to 17.4%. Given the value of some IPOs, this can result in millions of dollars in lost proceeds for the pre-IPO owners of the firm. As this has puzzled finance scholars, several theories have been developed to explain this phenomenon.

2.2. Fundamental theory and related literature

According to Ljungqvist (2007), these theories can be summarized along four main lines: (i) asymmetric information theories, (ii) institutional theories, (iii) control theories, and (iv) behavioral theories. However, it should be noted that most of the fundamental theoretical work and most of the empirical work, to which we also refer in this paper, has focused on the asymmetric information to explain underpricing (Lowry et al., 2017).

For instance, building on the well-known Rock (1986) model, Beatty and Ritter (1986) propose that underpricing is more pronounced when the ex ante uncertainty about the value of an IPO firm is high. This is because investors facing greater uncertainty about the firm's performance potential due to information asymmetry will only place buy orders at a discount relative to the expected value of the share price. This leads to a situation where informed investors commit to buying all available shares of high-quality firms, while uninformed investors only have the option of buying shares of firms with greater uncertainty about the firm's performance prospects. As uninformed investors, however, know that, on average, they will receive a below-average return, underwriters must discount new issues in order to attract uninformed investors as well.

[3] The purpose of this filing is to provide the public with adequate and reliable information about the firm's business, management, performance, expected growth opportunities, and other matters.

In a similar vein, Benveniste and Spindt (1989) posit that investors with optimistic views of the firm's value do not want to reveal this information during the bookbuilding process as this will induce the underwriters to raise the offer price. Thus, to incentivize investors to reveal information about their true assessments of the firm's value, underwriters must give investors a favorable allocation of shares and only partially raise the offer price. Strong empirical support for the theory proposed by Benveniste and Spindt (1989) is provided by Hanley (1993). She finds that issues with final offer prices that exceed the limits of the offer price range exhibit greater underpricing than all others.

In a recent paper, Rau et al. (2023) also build on information asymmetry to explain underpricing. Specifically, the authors argue that underpricing can also arise in situations where underwriters set IPO prices on the basis of "comparable" firms in terms of cash flows and beta, but not on the basis of soft information. In their paper, they show that IPOs of firms with gender-diverse boards exhibit significantly more underpricing, suggesting that underwriters do not fully incorporate soft information and investor preferences into the offer price.

2.3. Development of main hypotheses

A similar argument can be made for corporate culture. This is because while corporate culture appears to be very important for firm performance, it is intangible and its value is difficult to assess. In this respect, Edmans (2011), for example, shows that the stock market does not fully value employee satisfaction, despite independent verification by a highly visible survey of large firms. In the context of IPO pricing, underwriters, who typically focus on fundamental information (Kim and Ritter, 1999; Roosenboom, 2012) and sometimes even neglect public information when setting the initial price range (Lowry and Schwert, 2004), may therefore also not fully incorporate corporate culture into the initial price range.

While there may be a number of reasons for this, three of them may be the most important. First, in line with Edmans (2011), corporate culture may not be on the underwriters' radar during the initial pricing process. Second, valuing corporate culture may be too expensive relative to the benefit of more accurate pricing and lower initial returns (Hanley and Hoberg, 2010) or even impossible for underwriters, so they opt to price corporate culture based on the perceptions of the investors gathered during bookbuilding.[4] Third and finally, underwriters may intentionally set the initial price range of IPOs of strong-culture firms low in order to create momentum and increase investor demand (Lowry and Schwert, 2004). Yet, as Lowry and Schwert (2004) note, there is evidence by Loughran and Ritter (2002) that runs counter to the argument that underwriters deliberately set price ranges low. Therefore, we conclude that the first two reasons may be the most likely.

Although it is difficult to disentangle (ex ante) whether corporate culture is not even on the underwriters' radar when setting the initial price range, or whether the underwriters prefer to let the investors price the culture themselves through their bids in the bookbuilding process, either view suggests that initial price ranges for strong-culture firms are set too low, especially given that, on average, firms with strong cultures tend to outperform firms with weak cultures (see e.g., Li et al., 2021a). If informed investors, who know about this relationship, then reveal this information during the bookbuilding period, the offer prices of strong-culture firms will be revised upward on average. Therefore, our first hypothesis is as follows:

Hypothesis 1 (H1): *All else equal, IPOs of strong-culture firms are associated with more positive offer price revisions.*

However, to incentivize informed investors to reveal their information during bookbuilding, the theory by Benveniste and Spindt (1989) suggests that underwriters can only partially adjust the offer price. This allows informed investors to earn a premium when the firm's shares are traded publicly for the first time. Following this logic, we therefore formulate our second and final hypothesis as follows:

Hypothesis 2 (H2): *All else equal, IPOs of strong-culture firms are associated with higher first-day returns, or in other words, with more underpricing. This effect is stronger when positive information was revealed during bookbuilding.*

3. Data

In the next section, we first describe the construction of our sample and the definition of our key variables used to test our hypotheses. We then present summary statistics and correlations for these variables.

3.1. Sample construction

We construct our sample of US IPOs using data from Thomson Financial's SDC New Issues database and the corrections provided on Jay Ritter's website.[5] We follow the literature and exclude real estate investment trusts (REITs), American depository receipts (ADRs), unit offerings, closed-end funds, and IPOs priced below $5.00 (see e.g., Loughran and McDonald, 2013; Lowry et al., 2017). We then merge the data with accounting data from Compustat, stock data from the Center for Research in Security Prices (CRSP), IPO prospectus data from the Electronic Data Gathering and Retrieval System (EDGAR), and corporate culture data based on Li et al. (2021b). After merging the data, our final sample consists of 935 US IPOs from 2001 to 2018.

3.2. Definition of key variables

3.2.1. Dependent variables

There are two main dependent variables in our baseline regressions. The first is *Price Revision*, which is the percentage change from the midpoint of the initial price range to the final offer price, and the second is *First-Day Return*, which we define as the percentage change from the offer price to the first closing price.

3.2.2. Independent variables

Our main independent variable of interest is *Culture Score*, which is the sum of the five culture dimension scores (i.e., innovation, integrity, quality, respect, and teamwork) obtained from Li et al. (2021b).[6] While we acknowledge that this measure of corporate culture is prone to a look-ahead bias because we use data for the fiscal year after the IPO,[7] we argue that corporate culture tends to be stable and evolve slowly over time (Li et al., 2021b). For example, the correlation between *Culture Score* and its lagged value across all Compustat firms is 74%. Thus, using data for the fiscal year after the IPO should not have a major impact on our results.

However, we also address this issue by constructing an alternative corporate culture score (*Culture Score Prospectus*) based on the initial prospectuses of the IPOs and using this score in our robustness checks. To construct this alternative score, we use the word lists and follow the

[4] Note that we do not argue that investors are better able to assess the company's culture than underwriters, who may even have in-depth interactions with firm personnel, but rather that it is too costly for underwriters to put an exact price tag on corporate culture in the early stage price formation, as this would ideally be the weighted average of the different valuations by the investors.

[5] For more information, see https://site.warrington.ufl.edu/ritter/ipo-data/.

[6] While Li et al. (2021a) use a dummy variable, which equals one if the firm's sum of all five cultural scores falls into the top quartile of all Compustat firms in a given year, in most of their tests, other recent studies (see e.g., Bonsall et al., 2021; Datta et al., 2023; Zaman, 2024) use the continuous variable as we do because it preserves more variation. The latter is particularly important in our setting with IPOs.

[7] Corporate culture data for the IPO year are available for only a few firms in our sample.

methodology of Li et al. (2021b), i.e., we use the term frequency-inverse document frequency (tf.idf) weighted count of the number of words belonging to each cultural dimension. Since we apply this method to the initial prospectuses of the IPOs, this score does not suffer from the aforementioned look-ahead bias.[8] Nevertheless, we believe that the scores obtained from Li et al. (2021b) are more appropriate for measuring corporate culture because the authors show that applying their method to earnings calls is superior to applying the method to the Management's Discussion and Analysis (MD&A) section of annual reports (10-Ks), for example. One reason for this is that earnings calls are held by top managers who are likely to live and communicate the values in their companies (Graham et al., 2022b; Guiso et al., 2015). A second reason is that using the extemporaneous Q&A section of an earnings call rather than the scripted management presentation section has the advantage of mitigating the self-promotion to which IPO prospectuses are also likely to be prone. For these reasons, applying the method to IPO prospectuses may not provide an as accurate measure of corporate culture, and we therefore use the Li et al. (2021b)-based culture measure as our primary measure.

3.2.3. Control variables

We control for a number of variables in our baseline regressions that are common in the IPO literature (see e.g., Loughran and McDonald, 2013; Lowry et al., 2017). These variables include firm, IPO, and market characteristics, i.e., firm age at IPO (*ln(Age)*), firm size (*ln(Sales)*), firm leverage (*Leverage*), an indicator variable taking the value of one if the IPO firm had positive earnings per share (*Positive EPS*), an indicator variable taking the value of one if the IPO was venture-backed (*Venture Backed*), the market share of the bookrunner and the lawyer (*Bookrunner Market Share* and *Lawyer Market Share*),[9] an indicator variable that takes the value of one if one of the big 4 auditing firms was involved in the IPO process (*Big 4 Auditor*), and the buy-and-hold market return (*Market Return*) as well as the market volatility (*Market Volatility*) over the last 30 days prior to the IPO. We note that in the regressions where *First-Day Return* is the dependent variable, we additionally control for *Price Revision*, following Hanley (1993). Table A.1 in the Appendix provides detailed definitions of all variables.

3.3. Summary statistics and correlations

Table 1 reports descriptive statistics and pairwise correlations for the variables in our sample. We note that the continuous variables are winsorized at the 1st and 99th percentiles to account for outliers.

As can be seen from the descriptive statistics in Panel A, the average first-day return is approximately 16.7%, with a standard deviation of 24.8%. Thus, not only are the IPOs in our sample significantly underpriced on average, but there is also a large amount of variation in the first-day returns, which is consistent with previous literature (see e.g., Loughran and McDonald, 2013; Lowry et al., 2017). Regarding offer price revisions, there is also considerable variation in the data. While the mean is -2.9%, the standard deviation amounts to 19.4%. Further, the descriptive statistics show that the average *Culture Score* is 6.6. As a point of reference, the average *Culture Score* across all Compustat firms over the period from 2001 to 2018 is 5.6. We can therefore conclude that the firms in our sample have a slightly higher average score. Finally, in terms of control variables, it is worthwhile to mention that the average firm size as measured by sales is $537.3 million, average firm age is 22.3 years, and average leverage is 36.4%.

Regarding the pairwise correlations reported in Panel B, we find them to be rather low among our control variables. The only notable correlations are between *ln(Sales)* and *Venture Backed* and between *ln(Sales)* and *ln(Age)*, but they do not exceed 70%. We therefore assume that multicollinearity does not affect our results.[10] Perhaps more interestingly, however, Panel B also shows positive and significant pairwise correlations between *Culture Score* and the two IPO pricing variables – i.e., 14% and 29% for *Price Revision* and *First-Day Return*, respectively. This may provide some initial support for our hypotheses.

4. Empirical strategy and results

4.1. Baseline results

We now turn to our multivariate analyses. First, we test whether IPOs of firms with strong cultures are associated with more positive offer price revisions (H1). Consistent with our reasoning in Section 2, this would suggest that (i) underwriters do not fully incorporate investor demand for strong-culture firms into initial prices, and (ii) that, on average, positive information or optimistic views about strong-culture firms are revealed during the bookbuilding process. To test this, we run an ordinary least squares (OLS) regression where *Price Revision* is the dependent variable and *Culture Score* is the main independent variable of interest. We also include our previously mentioned control variables as well as industry (based on two-digit SIC codes) and year fixed effects. Column (1) of Table 2 presents the results of this regression with *t*-statistics based on standard errors clustered at the industry-level in parentheses. As can be seen, we find a positive and significant coefficient on *Culture Score*, which is in line with our hypothesis. Since we standardize *Culture Score* before running the regression, the economic magnitude can be easily interpreted in terms of standard deviations. Thus, the coefficient estimate suggests that a one standard deviation increase in our measure of corporate culture is associated with an economically meaningful increase of 1.889 percentage points in *Price Revision*, which corresponds to about 10% of a standard deviation.

However, one concern about our interpretation could be that the results only reflect demand for IPOs with strong cultures (i.e., investor awareness and demand for shares), but not information production. To rule this out, we follow Bauguess et al. (2018) and use two subsamples of our IPOs – a subsample consisting of IPOs with positive price revisions and a subsample consisting of IPOs with negative price revisions. By dividing the price revision into its positive and negative components, we can distinguish between a pure demand story and one that also includes information production. This is because in a pure demand story, we should observe an unambiguously positive effect of our measure of corporate culture on price revision. In contrast, if information about corporate culture is generated during bookbuilding and corporate culture has not been incorporated into initial prices, we should observe that the sign of the coefficient on our measure of corporate culture differs depending on whether the information generated is either good or bad. For example, managers may window dress their corporate culture in corporate announcements and earnings calls. If informed investors reveal this information during bookbuilding, this should lead to a decrease in investor demand, especially for those firms that have claimed a strong corporate culture, and consequently to a negative adjustment of the offer price by the underwriters. Further, while a strong corporate culture may be value-enhancing on average, it may also restrict managerial flexibility (Sørensen, 2002). For some firms, this may be problematic, especially in a changing environment that an IPO certainly is, and the firm's culture may thus have a negative impact on future firm performance. Again, if informed investors reveal this information during bookbuilding, underwriters will have to lower the

[8] We report pairwise correlations between the measures of corporate culture of Li et al. (2021b) and the alternative measures based on the IPO prospectuses in Table A.2 in the Appendix. We find that our alternative measures strongly correlate with those obtained from Li et al. (2021b).

[9] Bookrunner reputation, for example, may have a signaling effect in mature markets as opposed to nascent markets (Zhang et al., 2022).

[10] We also check the variance inflation factors for our variables. They are all well below 10.

Table 1
Descriptive Statistics and Correlations.

Panel A: Descriptive Statistics

	Obs.	Mean	25th	50th	75th	Stdev.
Dependent Variables:						
First-Day Return	935	16.696	0.143	10.125	25.083	24.786
Price Revision	935	-2.866	-16.667	0.000	9.375	19.425
Independent Variables:						
Culture Score	935	6.609	4.170	5.981	8.446	3.272
Control Variables:						
Age	935	22.296	8.000	12.000	25.000	24.536
ln(Age)	935	2.666	2.079	2.485	3.219	0.900
Sales	935	537.271	44.676	131.688	445.528	997.035
ln(Sales)	935	4.746	3.799	4.880	6.099	2.100
Leverage	935	0.364	0.053	0.269	0.556	0.408
Positive EPS	935	0.464	0.000	0.000	1.000	0.499
Venture Backed	935	0.464	0.000	0.000	1.000	0.499
Bookrunner Market Share	935	0.275	0.092	0.248	0.444	0.208
Lawyer Market Share	935	0.021	0.001	0.009	0.029	0.028
Big 4 Auditor	935	0.847	1.000	1.000	1.000	0.360
Market Return	935	0.211	-0.018	0.184	0.423	0.354
Market Volatility	935	0.121	0.089	0.109	0.141	0.047
Price Revision$_{>0}$	935	0.416	0.000	0.000	1.000	0.493

Panel B: Correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) First-Day Return	1.00													
(2) Price Revision	0.49*	1.00												
(3) Culture Score	0.29*	0.14*	1.00											
(4) ln(Age)	-0.10*	-0.01	-0.22*	1.00										
(5) ln(Sales)	-0.05	0.16*	-0.20*	0.56*	1.00									
(6) Leverage	-0.16*	-0.11*	-0.13*	0.25*	0.14*	1.00								
(7) Positive EPS	0.02	0.10*	-0.18*	0.24*	0.39*	-0.04	1.00							
(8) Venture Backed	0.22*	0.03	0.39*	-0.39*	-0.49*	-0.27*	-0.31*	1.00						
(9) Bookrunner Market Share	0.17*	0.18*	0.20*	0.03	0.24*	-0.07*	0.00	0.04	1.00					
(10) Lawyer Market Share	-0.01	0.00	0.10*	-0.02	0.07*	0.07*	-0.07*	-0.00	0.15*	1.00				
(11) Big 4 Auditor	0.07*	0.09*	0.08*	0.06	0.12*	-0.07*	-0.07*	0.05	0.23*	0.04	1.00			
(12) Market Return	0.06	0.09*	-0.02	0.00	-0.02	-0.03	-0.00	0.02	-0.01	-0.01	-0.00	1.00		
(13) Market Volatility	-0.02	-0.04	-0.06	-0.01	0.03	0.00	0.08*	0.03	0.02	-0.05	0.02	-0.11*	1.00	
(14) Price Revision$_{>0}$	0.49*	0.75*	0.10*	-0.01	0.13*	-0.10*	0.08*	0.08*	0.17*	0.01	0.12*	0.08*	-0.03	1.00

Note: This table reports descriptive statistics for the variables in our sample in Panel A and pairwise correlations in Panel B. 5% statistical significance (or better) is indicated by *.

price.[11] Therefore, if the information about the firm's culture generated during bookbuilding is bad, we should observe a negative and significant coefficient on our measure of corporate culture in the subsample with negative price revisions. On the contrary, if the information about the firm's culture generated during bookbuilding is good (e.g., investors verify the firm's culture and believe that it is value-enhancing), we should observe a positive and significant coefficient on our measure in the subsample with positive price revisions.

Columns (2) and (3) report the results of the regressions based on these subsamples. Consistent with the view that information about corporate culture is produced during bookbuilding, we find a negative and significant coefficient on *Culture Score* in the subsample consisting of negative price revisions, but a positive and significant coefficient in the subsample consisting of positive revisions. We therefore conclude that those investors invited to the bookbuilding process appear to produce information about the culture of the IPO firms.[12]

Having examined how corporate culture affects the adjustment of the offer price, we next examine the first trading day. If information is produced during bookbuilding, Benveniste and Spindt (1989) suggest that underwriters must compensate informed investors by only partially adjusting the offer price. Thus, as stated in H2, and given our previous findings, we expect IPOs of strong-culture firms to be associated with higher initial returns, or in other words, with more underpricing. To test this, we run a regression where the dependent variable is *First-Day Return* and the main independent variable is *Culture Score*, and where we also include the same control variables and fixed effects as before.[13] Column (4) presents the results. Consistent with H2, we find a positive and significant coefficient on *Culture Score*. Regarding the economic magnitude, the coefficient estimate implies that a one standard deviation increase in our measure of corporate culture is associated with a 3.024 percentage points higher return on the first trading day. This is economically meaningful given that this corresponds to about 18% (12%) of the mean (standard deviation) of *First-Day Return*, and thus allows us to confirm H2.

Yet, to further strengthen our interpretation, we finally run a regression similar to column (4), but where we interact *Culture Score* with a dummy variable indicating whether the offer price was revised up-

[11] Although these two reasons may be the most intuitive, there may also be other reasons why a firm's culture may be problematic, but all of these reasons should lead to the same result.

[12] In Table S3 in our online appendix, we also report the results of regressions where we use *absolute* offer price revisions as the dependent variable, following Loughran and McDonald (2013), for example. Consistent with the view that information about an IPO firm's culture is produced during bookbuilding, we find a positive and significant coefficient on *Culture Score*.

[13] As mentioned earlier, we also control for *Price Revision* in this regression. However, the results are qualitatively similar when excluding this variable.

Table 2
Baseline Results.

Sample:	Full Sample	Price Revision$_{<0}$	Price Revision$_{>0}$	Full Sample	
Dependent Variable:	Price Revision			First-Day Return	
	(1)	(2)	(3)	(4)	(5)
Culture Score	1.899***	-1.503**	3.255***	3.024***	1.418*
	(3.280)	(-2.296)	(6.832)	(3.425)	(1.705)
Price Revision$_{>0}$					13.309***
					(5.588)
Price Revision				0.547***	0.290***
				(11.941)	(6.514)
ln(Age)	-2.215**	0.603	-0.662	-0.919	-0.742
	(-2.400)	(0.696)	(-0.657)	(-0.975)	(-0.784)
ln(Sales)	1.297***	0.480	-0.127	-0.579	-0.824**
	(2.738)	(0.977)	(-0.321)	(-1.349)	(-2.006)
Leverage	-3.488***	-2.200**	-0.415	-4.251**	-3.704**
	(-2.819)	(-2.362)	(-0.205)	(-2.461)	(-2.232)
Positive EPS	1.861	1.443	0.722	1.404*	1.532*
	(1.573)	(1.338)	(0.793)	(1.686)	(1.884)
Venture Backed	4.064***	-2.827	3.322**	5.614***	4.616**
	(2.699)	(-1.441)	(2.526)	(2.931)	(2.178)
Bookrunner Market Share	14.113***	5.944**	5.127*	5.704*	5.139
	(6.014)	(2.021)	(1.687)	(1.696)	(1.516)
Lawyer Market Share	-9.032	-19.408	-19.059*	-30.945	-35.923
	(-0.616)	(-0.834)	(-1.861)	(-1.380)	(-1.577)
Big 4 Auditor	1.705	1.793	0.310	0.154	-0.511
	(1.305)	(1.122)	(0.188)	(0.074)	(-0.285)
Market Return	6.860***	2.593**	3.228**	3.084*	3.262*
	(3.404)	(2.284)	(2.326)	(1.779)	(1.781)
Market Volatility	-32.274	-31.242	-1.078	32.095	29.680
	(-1.142)	(-1.211)	(-0.096)	(1.454)	(1.552)
Culture Score × Price Revision$_{>0}$					4.239***
					(4.430)
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	935	409	389	935	935
Adjusted R^2	0.164	0.071	0.136	0.331	0.366

Note: This table reports the results of regressions where the dependent variable is either *Price Revision* or *First-Day Return* and the main independent variable is *Culture Score*. The regressions also include a set of control variables, industry fixed effects (based on 2-digit SIC codes), and year fixed effects. All variables are defined in detail in Table A.1 in the Appendix. *t*-statistics based on standard errors clustered at the industry-level are reported in parentheses below the coefficient estimates. 1%, 5%, and 10% statistical significance is indicated by ***, **, and *, respectively.

ward (*Price Revision*$_{>0}$). Finding a positive and significant coefficient on the interaction term would allow us to confirm that underwriters specifically compensate investors for revealing *positive* information about the firm's culture during bookbuilding, which would be consistent with Benveniste and Spindt (1989). Column (5) presents the results. While we still find a positive and significant effect on *Culture Score*, the magnitude and level of significance are much lower compared to the results presented in column (4). The coefficient on the interaction term, however, is highly significant and large, as expected. Therefore, we conclude that our baseline findings are very consistent with our main hypotheses.

4.2. Robustness

To assess the robustness of these results, we run several additional tests. Of course, a potential concern with our previous results is that IPOs of firms with strong cultures may differ systematically from IPOs of firms with weak cultures. To address this concern, we use three different matching algorithms. Table 3 reports the results.

Panel A shows the results of the same regression specifications as in Table 2, but on a sample that has been balanced using the non-parametric covariate balancing algorithm by Imai and Ratkovic (2014) and Fong et al. (2018). We believe this algorithm is particularly appropriate in our context because it allows us to balance on a continuous treatment variable.[14] Obviously, we use our main independent variable of interest, *Culture Score*, as the treatment variable and balance on all other covariates. The results show that our previous findings persist.

Panel B shows the results of the same regressions based on an entropy-balanced sample. Compared to our first matching algorithm, entropy balancing is an algorithm that allows "to achieve covariate balance in observational studies with binary treatments" (Hainmueller, 2012, p.25). In our tests, we use a dummy variable indicating whether the firm's *Culture Score* is above the sample median as our treatment to apply the algorithm. We then rerun the same regressions on this entropy-balanced sample[15] and find that this does not qualitatively change our results.[16]

Finally, Panel C shows the results of the same regressions based on a propensity-score matched sample. Again, we use the sample median as the threshold for defining the treatment, and we match with replacement. We find that the results are similar to those found earlier. The

[14] We implement this matching algorithm using the R package *CBPS*.

[15] This is consistent with the methodology in Rau et al. (2023). However, we note that we find qualitatively similar results when we use the dummy variable in the regressions instead of the continuous variable as the main independent variable of interest.

[16] We note that a table reporting the covariate balance before and after implementing the algorithm is available upon request.

Table 3
Covariate Balancing.

Sample:	Full Sample	Price Revision$_{<0}$	Price Revision$_{>0}$	Full Sample	
Dependent Variable:	Price Revision			First-Day Return	
	(1)	(2)	(3)	(4)	(5)
Panel A: Non-Parametric Covariate Balancing Propensity Score					
Culture Score	2.985***	-1.587***	2.581***	1.739**	1.076
	(3.231)	(-2.978)	(6.347)	(2.053)	(1.226)
Culture Score × Price Revision$_{>0}$					1.959*
					(1.904)
Controls	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	935	409	389	935	935
Adjusted R^2	0.202	0.087	0.160	0.299	0.335
Panel B: Entropy Balancing					
Culture Score	2.455***	-1.961**	3.649***	2.796***	1.644*
	(3.074)	(-2.473)	(9.533)	(3.048)	(1.680)
Culture Score × Price Revision$_{>0}$					3.155***
					(3.584)
Controls	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	935	409	389	935	935
Adjusted R^2	0.199	0.058	0.179	0.340	0.376
Panel C: Propensity Score Matching					
Culture Score	1.619	-1.720**	3.790***	2.877**	1.718**
	(1.497)	(-2.561)	(8.662)	(2.432)	(2.020)
Culture Score × Price Revision$_{>0}$					3.187***
					(2.865)
Controls	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	1,154	626	517	1,141	1,141
Adjusted R^2	0.223	0.254	0.256	0.370	0.407

Note: This table reports the results of regressions similar to Table 2, but using several matched samples. Panel A shows the results of the regressions on samples to which the non-parametric covariate balancing algorithm by Imai and Ratkovic (2014) and Fong et al. (2018) has been applied. As this algorithm allows for a continuous treatment, *Culture Score* is used as the treatment. The samples are balanced on all remaining covariates shown in Table 2. Panel B shows the results of the regressions on entropy-balanced samples (Hainmueller, 2012). A dummy variable indicating whether the firm's *Culture Score* is above the sample median is used as the treatment. Again, the samples are balanced on all remaining covariates. Panel C shows the results of the regressions on propensity-score matched samples. Similar to Panel B, a dummy variable indicating whether the firm's *Culture Score* is above the sample median is used as the treatment, and the samples are balanced on all remaining covariates. We also note that we match with replacement. All variables are defined in detail in Table A.1 in the Appendix. *t*-statistics based on standard errors clustered at the industry-level are reported in parentheses below the coefficient estimates. 1%, 5%, and 10% statistical significance is indicated by ***, **, and *, respectively.

only exception is column (1), where the coefficient on *Culture Score* is not significant at conventional levels. Thus, we conclude that our results do not appear to be driven by systematic differences between IPOs of firms with strong cultures and those with weak cultures.

Yet, another concern with our baseline results could be that our measure of corporate culture suffers from a look-ahead bias. As mentioned in Section 3, we tackle this concern by using an alternative measure of corporate culture based on IPO prospectuses. Table 4 reports the results of regressions similar to Tables 2 and 3, but where our main independent variable of interest is *Culture Score Prospectus*. Although the sample is significantly larger, covering the period 1996 to 2018 instead of 2001 to 2018, we find results consistent with our previous results.[17] For instance, Panel A reports the results of OLS regressions on the raw sample. As can be seen, the effects for offer prices and initial returns are very similar, not only in terms of the sign and statistical significance but also in terms of magnitude.[18] We also find that the underpricing effect appears to be driven by underwriters compensating informed investors for revealing positive information about strong-culture firms, as indicated by the positive and significant coefficient on the interaction term in column (5). As Panels B through D further document that these results are robust to using different matching algorithms, we therefore rule out that our baseline findings are the result of a look-ahead bias.

Although we have shown so far that neither accounting for systematic differences nor using an alternative culture measure affects

[17] We also find qualitatively similar results when using the same sample as in our baseline regressions. These results are available upon request.

[18] We note that we also standardize *Culture Score Prospectus* for ease of comparison.

Table 4
Alternative Culture Measure & Sample.

Sample:	Full Sample	Price Revision$_{<0}$	Price Revision$_{>0}$	Full Sample	
Dependent Variable:	Price Revision			First-Day Return	
	(1)	(2)	(3)	(4)	(5)
Panel A: Baseline					
Culture Score Prospectus	2.281***	-1.073**	2.950***	3.090***	0.491
	(3.386)	(-2.223)	(5.820)	(2.972)	(0.655)
Culture Score Prospectus × Price Revision$_{>0}$					5.191***
					(4.170)
Controls	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	2,657	1,119	1,125	2,657	2,657
Adjusted R^2	0.225	0.128	0.258	0.489	0.493
Panel B: Non-Parametric Covariate Balancing Propensity Score					
Culture Score Prospectus	1.856***	-0.503	2.677***	2.873***	1.827**
	(3.937)	(-1.042)	(5.028)	(5.019)	(2.501)
Culture Score Prospectus × Price Revision$_{>0}$					2.776**
					(2.094)
Controls	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	2,657	1,119	1,125	2,657	2,657
Adjusted R^2	0.213	0.129	0.247	0.489	0.490
Panel C: Entropy Balancing					
Culture Score Prospectus	2.441***	-1.157**	3.239***	2.795***	1.306
	(3.322)	(-2.315)	(7.018)	(2.997)	(1.404)
Culture Score Prospectus × Price Revision$_{>0}$					2.637***
					(3.877)
Controls	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	2,657	1,119	1,125	2,657	2,657
Adjusted R^2	0.227	0.124	0.260	0.515	0.515
Panel D: Propensity Score Matching					
Culture Score Prospectus	2.690***	-1.853***	2.943***	2.890***	1.628**
	(2.886)	(-3.535)	(5.435)	(2.685)	(2.503)
Culture Score Prospectus × Price Revision$_{>0}$					2.249*
					(1.775)
Controls	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	2,655	905	1,368	2,642	2,642
Adjusted R^2	0.236	0.149	0.301	0.529	0.529

Note: This table reports the results of regressions similar to Tables 2 and 3, but using *Culture Score Prospectus* as an alternative measure of corporate culture as the main independent variable of interest. Panel A shows the results of the regressions on raw samples. Panel B shows the results of the regressions on samples to which the non-parametric covariate balancing algorithm by Imai and Ratkovic (2014) and Fong et al. (2018) has been applied. As this algorithm allows for a continuous treatment, *Culture Score Prospectus* is used as the treatment. The samples are balanced on all remaining covariates shown in Table 2. Panel C shows the results of the regressions on entropy-balanced samples (Hainmueller, 2012). A dummy variable indicating whether the firm's *Culture Score Prospectus* is above the sample median is used as the treatment. Again, the samples are balanced on all remaining covariates. Finally, Panel D shows the results of the regressions on propensity-score matched samples. Similar to Panel C, a dummy variable indicating whether the firm's *Culture Score Prospectus* is above the sample median is used as the treatment, and the samples are balanced on all remaining covariates. We also note that we match with replacement. All variables are defined in detail in Table A.1 in the Appendix. *t*-statistics based on standard errors clustered at the industry-level are reported in parentheses below the coefficient estimates. 1%, 5%, and 10% statistical significance is indicated by ***, **, and *, respectively.

our results, concerns related to omitted variables may still remain. We address these by rerunning our baseline regressions with several additional controls. For instance, we include measures capturing the firm's strategy as well as the industry's strategy because there is strong evidence that a firm's culture is purposefully designed and correlates with its strategy (Graham et al., 2022b,a). We also control for the firm's intangible assets, capital expenditures, research and development expenditures, as well as its property, plant, and equipment (all scaled by assets) to rule out that our measure of corporate culture rather captures differences in well-established firm markers. Furthermore, we control for dummy variables indicating whether the firm has a dual-class share structure, is an internet firm, or is a technology firm to address concerns that our measure of corporate culture may correlate with any of these. Finally, we also control for a dummy variable indicating whether the firm has filed a DRS-filing, the offer price, and other measures of market sentiment.

Table 5 Panel A reports the results of the regressions including these control variables on the raw sample. While the sample is significantly smaller due to the additional controls, the results remain qualitatively similar. The only exception is column (2). Although the coefficient on *Culture Score* is still negative, statistical significance vanishes.

Panel B shows that employing a sample that has been balanced using the non-parametric covariate balancing algorithm also yields similar results. We note, however, that the coefficient on the interaction term in column (5) loses its significance. Nevertheless, the results generally support our previous findings.

We also note that we conduct several other robustness tests to ensure the validity of our findings. However, for the sake of brevity, we report and discuss the results of these tests in detail only in our online appendix. To provide a brief overview, we re-estimate our regressions using alternative independent variables, dependent variables, fixed effects structures, and clustering of standard errors and find that our results hold. Moreover, we conduct an analysis of the ITCV (Frank, 2000), which allows us to assess the impact that an omitted variable would have to have in order to render the effects of corporate culture on price revisions and initial returns invalid. We find that the thresholds for *Culture Score* are substantially above those of the remaining control variables included in our regressions, suggesting that omitted variables would have to be very highly correlated with both our measure of corporate culture and the dependent variable, which seems unlikely. Therefore, we conclude that the results of our baseline and robustness tests suggest that the demand for a strong corporate culture neither appears to be fully incorporated into the initial price nor into the final offer price, and that underwriters appear to compensate informed investors for revealing information about an IPO firm's corporate culture.

4.3. Why do underwriters not fully incorporate corporate culture into initial prices?

As argued in Section 2, there are mainly two potential explanations for why this may be the case. First, corporate culture may not be on the underwriters' radar when setting initial prices. Informed investors, however, may know that some IPO firms have a strong culture, which can enhance future firm performance and thus constitutes an intangible asset that has not been included in the initial price. As already mentioned earlier, in order for these informed investors to reveal their information, Benveniste and Spindt (1989) suggest that underwriters may only partially adjust the offer price to allow informed investors to earn a premium.

The second explanation is based on a more relaxed assumption and is consistent with the view in Hanley and Hoberg (2010). This view suggests that gathering reliable information about the IPO firm's culture and, more importantly, quantifying the information is perhaps too expensive relative to the benefit of more accurate pricing and lower initial returns or even impossible for underwriters, so they opt to price corporate culture based on the information gathered during bookbuilding. But again, this would lead to a situation where underwriters need to incentivize informed investors to reveal information about the true value of the firm by only partially adjusting the final offer price (Benveniste and Spindt, 1989).

In an attempt to disentangle these two mechanisms, we examine the early-stage price formation. If corporate culture is not on the radar of underwriters during the early-stage price formation, we should not observe any significant effects of our measure of corporate culture on initial prices, regardless of whether information about a firm's corporate culture may be relatively easy to obtain and verify. In contrast, if gathering information on corporate culture is only too expensive for underwriters on average, we would expect that in cases where the information is relatively easy to obtain, verify, and thus perhaps also quantify, corporate culture should be incorporated into the initial price, at least to some extent.

While corporate culture is intangible and generally difficult for outsiders to observe, elements of it can be identified through cultural artifacts such as art, technology, observable patterns of behavior, language, rituals, and ceremonies (Alavi et al., 2005; Gagliardi, 1990; Schein, 1996, 2010). It seems likely that these artifacts will not only be more visible to underwriters the older and larger the firm due to less information asymmetry (Camerer and Vepsalainen, 1988), but that they may also serve as an important verification of the firm's culture. But even if it is not the artifacts that underwriters can more easily observe in old and large firms, underwriters may also question whether small and especially young firms have already developed a strong corporate culture and are therefore merely window dressing their culture. Thus, if our first explanation was not true, but rather our second, we would expect corporate culture to be incorporated into the initial prices of IPOs of old and large firms, i.e., IPOs of these firms would be associated with higher initial prices.

Table 6 reports the results of regressions testing these two explanations. In all columns, the dependent variable is *Mid-Point of Initial File Price Range* following Rau et al. (2023), for example. Column (1) reports the results of a regression where *Culture Score* is the main independent variable of interest. Although not shown for brevity, the control variables are similar to Table 2, except that we exclude *Market Return* and *Market Volatility* due to a potential look-ahead bias.[19] The results show that the coefficient on *Culture Score* is negative but not statistically significant. Consistent with both explanations, this suggests that, on average, corporate culture is not reflected in initial prices.

Column (2) presents the results of a regression where we interact *Culture Score* with *ln(Age)*. Most interestingly, the coefficient on the interaction term is positive and significant, which is consistent with our second explanation and suggests that for firms with less information asymmetry, corporate culture appears to be reflected in initial prices. It is also important to note that the coefficient on *Culture Score* is negative as in column (1), but becomes significant when the interaction term is included. Given that the magnitude of the coefficient on *Culture Score* is larger than that of the interaction, this suggests that underwriters are more conservative in setting the initial prices for young strong-culture firms, potentially due to a lack of verification of their cultures.

Column (3) displays the results of a regression where we interact *Culture Score* with *ln(Size)*. Similar to column (2) and consistent with our second explanation, the coefficient on the interaction term is positive. However, it should be noted that it is not significant at conventional levels.

Columns (4) and (5) present the results of regressions where we interact *Culture Score* with the dummy variables *Old Firm* and *Large Firm*[20] to ensure that the results shown in columns (2) and (3) are not driven by outliers. The results are similar to those found earlier and consistent with our second explanation. As can be seen, the coefficients on

[19] We also run regressions including these variables and find similar results.
[20] We use the top quartile as a threshold for defining these variables.

Table 5
Additional Control Variables.

Sample:	Full Sample	Price Revision$_{<0}$	Price Revision$_{>0}$	Full Sample	
Dependent Variable:	Price Revision			First-Day Return	
	(1)	(2)	(3)	(4)	(5)
Panel A: Baseline					
Culture Score	0.912*	-0.368	2.928***	2.879***	0.926
	(1.687)	(-0.504)	(4.949)	(3.175)	(1.262)
Firm Strategy	1.292*	1.014	-0.387	1.330**	1.294*
	(1.761)	(1.594)	(-0.352)	(2.099)	(1.780)
Firm Strategic Distinctiveness	-0.509	-0.614	0.376	-0.822**	-0.665*
	(-1.378)	(-1.274)	(0.851)	(-2.409)	(-1.846)
Industry Strategy	-0.657	-1.385	-1.013	-0.485	-1.126
	(-0.624)	(-1.462)	(-0.762)	(-0.349)	(-0.922)
R&D	-0.464	0.263	-0.762	-13.627***	-12.966***
	(-0.143)	(0.073)	(-0.173)	(-2.855)	(-2.773)
Intangibles	-6.481***	-4.975	-5.101**	-5.006	-4.371
	(-3.294)	(-1.594)	(-2.264)	(-1.126)	(-0.911)
Capex	15.700	20.560*	24.268**	16.597	21.839*
	(1.586)	(1.899)	(2.013)	(1.332)	(1.932)
Property	-8.033*	-12.037***	-5.936	-6.372	-7.308
	(-1.935)	(-4.031)	(-1.108)	(-0.909)	(-0.999)
Dual Class	2.077*	2.570	1.740	4.610	3.977
	(1.709)	(1.298)	(1.030)	(1.534)	(1.364)
Internet	1.509	-0.762	3.658	-2.982	-3.395
	(1.052)	(-0.705)	(1.149)	(-1.366)	(-1.368)
Tech	-0.031	1.824	1.838	-0.920	-1.303
	(-0.021)	(1.573)	(1.180)	(-0.823)	(-1.450)
DRS	3.476	5.976	-0.943	3.676	2.784
	(1.416)	(1.649)	(-0.424)	(1.657)	(1.153)
Offer Price	2.026***	2.654***	0.306***	-0.138	-0.287
	(8.754)	(13.930)	(3.155)	(-0.613)	(-1.168)
# Previous IPOs	-0.076	-0.072	0.056	-0.027	0.014
	(-1.240)	(-1.116)	(0.739)	(-0.326)	(0.177)
Avg. First-Day Return	0.170	0.111	0.187**	-0.244**	-0.252**
	(1.447)	(1.491)	(2.170)	(-2.356)	(-2.643)
Avg. Price Revision	27.438	-18.735	20.904	-3.365	-3.444
	(1.599)	(-0.819)	(1.636)	(-0.207)	(-0.225)
Culture Score x Price Revision$_{>0}$					4.800***
					(4.126)
Baseline Controls	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	686	276	310	686	686
Adjusted R^2	0.225	0.128	0.258	0.489	0.493
Panel B: Non-Parametric Covariate Balancing Propensity Score					
Culture Score	1.000*	-0.497	2.382***	2.895***	3.293***
	(1.678)	(-0.745)	(3.118)	(3.787)	(3.242)
Firm Strategy	2.046**	2.660***	-1.738	0.659	0.295
	(2.288)	(4.109)	(-1.409)	(0.639)	(0.307)
Firm Strategic Distinctiveness	-0.647	-0.479	0.934	-0.756	-0.529
	(-1.371)	(-0.995)	(1.483)	(-1.531)	(-1.123)
Industry Strategy	0.485	-1.433	1.928	-1.164	-1.628
	(0.423)	(-1.174)	(1.135)	(-0.761)	(-1.175)
R&D	-3.191	4.179**	-6.840*	-15.155***	-15.440***
	(-0.777)	(2.389)	(-1.912)	(-3.301)	(-3.180)
Intangibles	-5.907*	-13.223***	-7.563***	-0.730	-0.150
	(-1.750)	(-4.411)	(-2.796)	(-0.193)	(-0.037)
Capex	32.171***	20.129*	48.981***	-15.317	-11.114
	(2.760)	(1.828)	(3.363)	(-0.851)	(-0.639)
Property	-12.836*	-19.806***	-15.923***	12.795*	12.980*
	(-1.800)	(-3.840)	(-2.978)	(1.705)	(1.724)
Dual Class	3.935***	3.908	3.802*	7.191**	6.955**
	(2.904)	(1.234)	(1.922)	(2.247)	(2.103)
Internet	1.906	1.999	2.041	-1.070	-1.384
	(0.868)	(0.855)	(0.731)	(-0.366)	(-0.465)
Tech	1.145	2.524***	1.209	-2.462	-2.867
	(0.523)	(2.937)	(0.828)	(-0.912)	(-1.233)
DRS	0.246	3.256	-3.471	-2.265	-2.285
	(0.075)	(0.603)	(-0.929)	(-0.812)	(-0.803)

(*continued on next page*)

Table 5 (*continued*)

Sample:	Full Sample	Price Revision$_{<0}$	Price Revision$_{>0}$	Full Sample	
Dependent Variable:	Price Revision			First-Day Return	
	(1)	(2)	(3)	(4)	(5)
Offer Price	2.015***	2.957***	0.130	-0.212	-0.398**
	(7.628)	(15.627)	(1.316)	(-1.192)	(-2.150)
# Previous IPOs	-0.131*	-0.080	-0.037	-0.056	-0.058
	(-1.834)	(-1.222)	(-0.511)	(-0.664)	(-0.672)
Avg. First-Day Return	0.131	0.077	-0.062	-0.207	-0.204
	(1.001)	(0.614)	(-0.567)	(-1.149)	(-1.316)
Avg. Price Revision	33.008	-16.536	38.741**	-26.553	-24.040
	(1.291)	(-0.887)	(2.249)	(-0.955)	(-0.926)
Culture Score × Price Revision$_{>0}$					0.235
					(0.168)
Baseline Controls	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	686	276	310	686	686
Adjusted R^2	0.581	0.603	0.572	0.488	0.505

Note: This table reports the results of regressions similar to those in Table 2 in Panel A, but with additional control variables. Panel B reports the results of regressions similar to those in Panel A of Table 3, but also include additional control variables. All variables are defined in detail in Table A.1 in the Appendix. Although not shown for brevity, all regressions include the same set of control variables as in Table 2, industry fixed effects (based on 2-digit SIC codes), and year fixed effects. *t*-statistics based on standard errors clustered at the industry-level are reported in parentheses below the coefficient estimates. 1%, 5%, and 10% statistical significance is indicated by ***, **, and *, respectively.

Table 6
Early-Stage Price Formation.

Dependent Variable:	Mid-Point of Initial File Price Range				
	(1)	(2)	(3)	(4)	(5)
Culture Score	-0.148	-1.022***	-0.519	-0.258**	-0.256**
	(-0.996)	(-3.069)	(-1.464)	(-2.405)	(-2.498)
Old Firm				1.683***	
				(4.452)	
Large Firm					1.454*
					(1.920)
ln(Age)	0.005	0.127	0.023	-0.438*	0.0002
	(0.023)	(0.447)	(0.099)	(-1.820)	(0.001)
ln(Sales)	0.791***	0.798***	0.800***	0.795***	0.628***
	(4.232)	(4.401)	(4.387)	(4.494)	(2.796)
Culture Score x ln(Age)		0.359**			
		(2.226)			
Culture Score x ln(Sales)			0.090		
			(1.241)		
Culture Score x Old Firm				0.882**	
				(2.162)	
Culture Score x Large Firm					0.920**
					(2.037)
Controls	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	935	935	935	935	935
Adjusted R^2	0.353	0.356	0.353	0.362	0.363

Note: This table reports the results of regressions where the dependent variable is *Mid-Point of Initial File Price Range* and the main independent variable is *Culture Score* and its interaction terms, respectively. All variables are defined in detail in Table A.1 in the Appendix. Although not shown for brevity, all regressions include the same set of control variables as in Table 2, industry fixed effects (based on 2-digit SIC codes), and year fixed effects. *t*-statistics based on standard errors clustered at the industry-level are reported in parentheses below the coefficient estimates. 1%, 5%, and 10% statistical significance is indicated by ***, **, and *, respectively.

the interaction terms are positive and significant, and the coefficients on *Culture Score* are negative and significant.

Overall, the results presented in Table 6 suggest that underwriters do take corporate culture into account when setting initial prices. However, only when corporate culture appears to be observable and, perhaps more importantly, verifiable through artifacts and a long track record, do they set the initial price higher. When this is not possible, underwriters are more conservative in setting the initial price of a firm with a strong culture. In fact, it appears that they deliberately set the initial price low in order to generate information production during bookbuilding.

If this was true, we would expect to find that this also affects price revisions and ultimately the level of underpricing, i.e., price revisions should be less positive and there should be less underpricing for old and large firms, since there is less information production needed during bookbuilding and thus underwriters do not have to compensate informed investors. To test this, we run regressions similar to our baseline regression shown in columns (1) and (4) of Table 2, but where we include the interaction terms of Table 6. Table 7 reports the results.

Panel A displays the results of the regressions where *Price Revision* is the dependent variable. We find results consistent with our conjecture in columns (1) and (3), where we interact our measure of corporate culture with *ln(Age)* and *Old Firm*, respectively. As can be seen, the interaction terms are negative and significant. However, we note that we do not find results consistent with our conjecture in columns (2) and (4), where we interact our measure of corporate culture with measures of firm size.

Panel B shows the results of the regressions where *First-Day Return* is the dependent variable. Except for column (4),[21] the coefficients on the interaction terms are negative and significant. This is in line with our expectation and further supports the proposed mechanism that underwriters only rely on and compensate for the production of information about corporate culture when it is too expensive for them to produce the information themselves in the pre-market period.

As an interesting side note, Table S3 in the online appendix also provides the results of regressions where we use *absolute* offer price revisions as the dependent variable and include the same interactions. The results are very consistent with our interpretation since we find negative and significant coefficients on the interaction terms, suggesting that information production regarding corporate culture is less important for old and large firms.

Table 7
Information Asymmetry.

Panel A:	(1)	(2)	(3)	(4)
Dependent Variable:	Price Revision			
Culture Score	4.904***	1.506	2.225***	1.938***
	(2.966)	(1.447)	(3.824)	(3.484)
Old Firm			-1.579	
			(-0.667)	
Large Firm				-3.788**
				(-2.320)
ln(Age)	-2.634***	-2.196**	-2.355*	-2.197**
	(-3.014)	(-2.404)	(-1.817)	(-2.353)
ln(Sales)	1.273***	1.307**	1.317***	1.806***
	(2.812)	(2.664)	(2.811)	(3.458)
Culture Score x ln(Age)	-1.233*			
	(-1.956)			
Culture Score x ln(Sales)		0.095		
		(0.410)		
Culture Score x Old Firm			-3.560*	
			(-1.785)	
Culture Score x Large Firm				-0.216
				(-0.124)
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	935	935	935	935
Adjusted R^2	0.165	0.163	0.165	0.165
Panel B:				
Dependent Variable:	First-Day Return			
Culture Score	8.124**	6.100**	3.604***	3.176***
	(2.284)	(2.613)	(3.757)	(3.312)
Old Firm			-5.183**	
			(-2.231)	
Large Firm				-1.587
				(-0.956)
ln(Age)	-1.637	-1.066	0.129	-0.923
	(-1.465)	(-1.107)	(0.091)	(-0.952)
ln(Sales)	-0.614	-0.659	-0.565	-0.411
	(-1.325)	(-1.400)	(-1.300)	(-0.830)
Culture Score x ln(Age)	-2.090*			
	(-1.773)			
Culture Score x ln(Sales)		-0.743*		
		(-1.947)		
Culture Score x Old Firm			-4.336***	
			(-2.700)	
Culture Score x Large Firm				-1.237
				(-0.854)
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	935	935	935	935
Adjusted R^2	0.334	0.334	0.334	0.330

Note: This table reports the results of regressions similar to columns (2) to (5) of Table 6, but where the dependent variable is either *Price Revision* (Panel A) or *First-Day Return* (Panel B). All variables are defined in detail in Table A.1 in the Appendix. Although not shown for brevity, all regressions include the same set of control variables as in Table 2, industry fixed effects (based on 2-digit SIC codes), and year fixed effects. *t*-statistics based on standard errors clustered at the industry-level are reported in parentheses below the coefficient estimates. 1%, 5%, and 10% statistical significance is indicated by ***, **, and *, respectively.

4.4. Can management experience also serve as a verification mechanism for corporate culture?

While firm age and size appear to serve as a verification mechanism for underwriters of the IPO firm's culture, management experience may also serve as such a mechanism. Previous research has already shown that seasoned and experienced top managers can generally serve as a valid signal of value to potential IPO investors, leading to a reduction in underpricing (see e.g., Chemmanur and Paeglis, 2005; Cohen and Dean, 2005; Lester et al., 2006). In our context, a seasoned CEO may alleviate underwriters' concerns about incorporating corporate culture into initial prices for several reasons. First, underwriters may believe that it is more likely that a firm with a seasoned management, and especially a seasoned CEO, is more likely to have developed a strong culture, or in other words, that window dressing is less likely. In this respect, Blankespoor et al. (2017), for instance, find that underwriters do incorporate their perceptions of the CEO in initial prices of IPOs. Second, as CEOs are the most influential in shaping the culture (Graham et al., 2022b,a), and seasoned and especially longer tenured CEOs may have a better understanding of the firm's culture (Gupta et al., 2017), they may also more effectively communicate the firm's culture to the underwriter, which can help the underwriter determine an appropriate initial price for the IPO. Third, a track record of successfully leading a firm through growth and development can also inspire confidence in the management's ability to maintain a strong corporate culture. In this respect, there is evidence that firms may change their culture after an IPO, and that especially the integrity dimension drops (Guiso et al., 2015). Underwriters may thus expect that this is less likely for firms with experienced CEOs. Finally, a CEO's prior experience in taking a firm public might have helped build relationships with underwriters

[21] We find significant results using the median as an alternative threshold.

(Chemmanur and Paeglis, 2005), making them more likely to believe the CEO's assertions about the importance of the firm's culture.

Based on these arguments, we employ four different proxies for CEO experience, which we construct using the Kenney and Patton (2020) database and hand-collection: (i) a dummy variable indicating whether the CEO's age is in the top quartile of our sample (*High CEO Age*), (ii) a dummy variable indicating whether the CEO's tenure with the firm in her position is in the top quartile of our sample, (iii) a dummy variable indicating whether the CEO has prior IPO experience (*IPO Experience*), and (iv) a dummy variable indicating whether the firm's CEO has previously held the position of CEO in another firm (*CEO Experience*). We then run several regressions where we interact our measure of corporate culture with these proxies. Table 8 displays the results.

Panel A shows the results of regressions where *Mid-Point of Initial File Price Range* is the dependent variable. Except for column (1), we find positive and significant coefficients on the interaction terms, suggesting that underwriters set higher initial prices for IPOs of strong-culture firms led by experienced CEOs.

Panel B displays the results of regressions where *Price Revision* is the dependent variable. As can be seen, we do not find any significant effects on the interaction terms.

Finally, Panel C presents the results of regressions where *First-Day Return* is the dependent variable. In all columns, we find negative coefficients on the interaction terms, suggesting that there is less underpricing for IPOs of strong-culture firms led by seasoned CEOs. However, we note that the coefficients are only significant at conventional levels in columns (1) and (4).

Taken together, we conclude that our results provide some evidence that management experience moderates the relationship between an IPO firm's corporate culture and its pricing.

4.5. Do markets simply overreact?

In the previous sections, we have shown that investor demand for a strong corporate culture is, on average, neither fully incorporated into the initial price nor into the final offer price because it appears to be too expensive for underwriters to accurately assess corporate culture in the early stages of an IPO, and they therefore rely on the information produced during bookbuilding. To compensate for the information production, they do not fully adjust the final offer price; thus they allow for underpricing. Consistent with this explanation, we have found that this is less pronounced in cases where the underwriters may have verification of the firm's culture.

Before concluding, however, we aim to rule out an alternative explanation that markets simply overreact on the first day of trading due to an increased awareness, and that underwriters thus do not compensate for information production during bookbuilding. To do so, we run regressions where the dependent variables are post-IPO buy-and-hold abnormal returns calculated over a period of 60, 120, and 250 days.[22] If markets overreacted, we should observe a negative and significant coefficient on our measure of corporate culture in these regressions. Table 9 displays the results.

Yet, as can be seen, we do not find any significant effects on *Culture Score*. In line with our interpretation of the results throughout this paper, this suggests that the demand for a strong corporate culture is not fully incorporated into final offer prices, but only on the first trading day. Thus, underwriters appear to compensate informed investors by allowing them to earn a premium.

[22] To calculate the abnormal returns, we use the Fama-French size and book-to-market portfolios.

5. Conclusion

In this paper, we investigate the relationship between corporate culture and IPO pricing. Using a sample of 935 IPOs covering the period from 2001 to 2018, we find that IPOs of firms with strong cultures are associated with more positive offer price revisions and significantly higher returns on the first trading day. These effects appear to be driven by underwriters compensating informed investors for revealing their perceptions about the firm's culture during bookbuilding. Consistent with the view in Hanley and Hoberg (2010), our additional tests suggest that the reason why underwriters do not already incorporate corporate culture into initial prices is that it may generally be too costly or even impossible for them in the early stages of the IPO process.

Our study contributes to the literature along three main lines. First, we contribute to the literature on IPO underpricing. To the best of our knowledge, there is no study to date that has shown that corporate culture is an important factor in explaining IPO underpricing, and our results suggest that the impact is economically meaningful.

Second, our study extends the literature examining whether and how markets price intangibles (see e.g., Chan et al., 2001; Edmans, 2011, 2012; Gompers et al., 2003; Lev and Sougiannis, 1996). As mentioned above, our results show that underwriters rely on information production during bookbuilding to price corporate culture, especially in cases where corporate culture is not easily observable and, perhaps more importantly, verifiable and quantifiable.

Third and finally, our study contributes to the literature examining the importance of corporate culture for firm outcomes (see e.g., Fang et al., 2023; Li et al., 2021a,b), and especially to the nascent strand focusing on IPO firms (see e.g., Cumming et al., 2024).

While we believe our study presents interesting and novel findings, we conclude by noting some limitations. Obviously, the main limitation of our study is related to how we measure corporate culture. Although we perform several robustness tests to mitigate concerns about omitted variable bias and also use an alternative measure of corporate culture, we cannot completely rule out the possibility that endogeneity (particularly related to measurement error) affects our results. Moreover, while our findings are consistent with IPO theory, there may be alternative explanations that affect our conclusions, at least to some extent. Future research could therefore attempt to address these limitations and further advance our understanding of the relationship between corporate culture and IPO pricing.

CRediT authorship contribution statement

Douglas Cumming: Conceptualization, Supervision, Writing – review & editing. **Gerrit Köchling:** Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. **Daniel Neukirchen:** Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. **Peter N. Posch:** Conceptualization, Project administration, Resources, Supervision, Writing – review & editing.

Declaration of competing interest

The authors assure that there are no conflicts of interest.

Data availability

The authors do not have permission to share data.

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Table 8
Seasoned Management.

Panel A:	(1)	(2)	(3)	(4)
Dependent Variable:	Mid-Point of Initial File Price Range			
Culture Score	-0.085	-0.163	-0.107	-0.125
	(-0.738)	(-1.383)	(-0.863)	(-1.142)
High CEO Age	-0.531**			
	(-2.110)			
High CEO Tenure		-0.700**		
		(-2.315)		
IPO Experience			0.104	
			(0.270)	
CEO Experience				-0.872***
				(-2.981)
ln(Age)	-0.267	-0.188	-0.266	-0.314
	(-0.738)	(-0.511)	(-0.774)	(-0.837)
ln(Sales)	0.719***	0.753***	0.743***	0.741***
	(3.338)	(3.257)	(3.151)	(3.136)
Culture Score x High CEO Age	0.131			
	(0.727)			
Culture Score x High CEO Tenure		0.351*		
		(1.895)		
Culture Score x IPO Experience			0.619***	
			(3.085)	
Culture Score x CEO Experience				0.621**
				(2.186)
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	624	627	627	627
Adjusted R^2	0.248	0.252	0.249	0.253
Panel B:				
Dependent Variable:	Price Revision			
Culture Score	1.956**	2.038**	1.603**	1.306
	(2.296)	(2.163)	(2.187)	(1.539)
High CEO Age	-1.732			
	(-0.897)			
High CEO Tenure		-1.722		
		(-1.381)		
IPO Experience			2.535	
			(1.291)	
CEO Experience				2.458
				(1.319)
ln(Age)	-4.010***	-3.966***	-4.139***	-4.211***
	(-2.746)	(-2.729)	(-2.951)	(-2.871)
ln(Sales)	2.291***	2.337***	2.353***	2.316***
	(5.500)	(5.720)	(5.155)	(5.450)
Culture Score x High CEO Age	-0.889			
	(-0.728)			
Culture Score x High CEO Tenure		-1.012		
		(-1.089)		
Culture Score x IPO Experience			1.082	
			(1.303)	
Culture Score x CEO Experience				2.399
				(1.428)
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	624	627	627	627
Adjusted R^2	0.169	0.178	0.177	0.180
Panel C:				
Dependent Variable:	First-Day Return			
Culture Score	4.057***	3.525**	3.399***	3.614***
	(3.338)	(2.482)	(2.693)	(3.116)
High CEO Age	-0.518			
	(-0.309)			
High CEO Tenure		0.723		
		(0.595)		
IPO Experience			-4.080**	
			(-2.554)	
CEO Experience				-4.301*
				(-1.951)

(*continued on next page*)

Table 8 (*continued*)

ln(Age)	-1.060	-1.009	-1.188	-1.072
	(-0.649)	(-0.593)	(-0.697)	(-0.634)
ln(Sales)	-1.073	-1.027	-1.129*	-1.066
	(-1.568)	(-1.488)	(-1.705)	(-1.630)
Culture Score x High CEO Age	-3.861**			
	(-2.026)			
Culture Score x High CEO Tenure		-1.378		
		(-1.090)		
Culture Score x IPO Experience			-3.786	
			(-1.246)	
Culture Score x CEO Experience				-3.796*
				(-1.702)
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	624	627	627	627
Adjusted R^2	0.307	0.305	0.310	0.311

Note: This table reports the results of regressions where the dependent variable is either *Mid-Point of Initial File Price Range* (Panel A), or *Price Revision* (Panel B), or *First-Day Return* (Panel C), and the main independent variable is *Culture Score* and its interaction terms, respectively. All variables are defined in detail in Table A.1 in the Appendix. Although not shown for brevity, all regressions include the same set of control variables as in Table 2, industry fixed effects (based on 2-digit SIC codes), and year fixed effects. *t*-statistics based on standard errors clustered at the industry-level are reported in parentheses below the coefficient estimates. 1%, 5%, and 10% statistical significance is indicated by ***, **, and *, respectively.

Table 9
Post-IPO Stock Performance.

Dependent Variable:	Post-IPO Return		
	60 days	120 days	250 days
	(1)	(2)	(3)
Culture Score	-0.633	-0.787	-1.329
	(-0.795)	(-0.530)	(-0.519)
First-Day Return	-0.013	-0.045	-0.122
	(-0.278)	(-0.869)	(-1.103)
Price Revision	-0.140***	-0.238***	-0.281*
	(-2.678)	(-2.930)	(-1.872)
ln(Age)	-1.092	1.900	3.816
	(-0.714)	(0.749)	(1.132)
ln(Sales)	-0.903	-2.195	-2.980*
	(-0.777)	(-1.499)	(-1.767)
Leverage	-3.889**	-3.777**	-8.107***
	(-2.604)	(-2.149)	(-2.868)
Positive EPS	7.065***	8.315***	16.597***
	(2.998)	(2.965)	(3.851)
Venture Backed	-2.268	-3.494	-1.328
	(-0.657)	(-0.907)	(-0.286)
Bookrunner Market Share	0.576	0.828	5.356
	(0.115)	(0.107)	(0.396)
Lawyer Market Share	-6.943	29.686	233.053**
	(-0.150)	(0.417)	(2.008)
Big 4 Auditor	2.470	1.372	0.486
	(0.832)	(0.315)	(0.054)
Market Return	-5.086*	-12.387***	-22.309***
	(-1.836)	(-4.445)	(-3.821)
Market Volatility	46.000**	24.244	30.874
	(2.441)	(0.631)	(0.748)
Controls	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	899	899	899
Adjusted R^2	0.007	0.024	0.036

Note: This table reports the results of regressions where the dependent variable is *Post-IPO Return* and the main independent variable is *Culture Score*. All variables are defined in detail in Table A.1 in the Appendix. Although not shown for brevity, all regressions include industry fixed effects (based on 2-digit SIC codes) and year fixed effects. *t*-statistics based on standard errors clustered at the industry-level are reported in parentheses below the coefficient estimates. 1%, 5%, and 10% statistical significance is indicated by ***, **, and *, respectively.

Appendix A

Table A.1
Variable Definitions and Sources.

Variable	Description	Source
Dependent Variables:		
First-Day Return	The percentage change from the offer price to the first closing price	SDC, CRSP
Post-IPO Return	The percentage change from the closing price five days after the offering to T days after the offering or the delisting date, adjusted for returns from Fama-French 25 portfolios formed on size and book-to-market.	CRSP, FF
Price Revision	The midpoint of the initial price range to the final offer price	E, SDC
Independent Variables:		
Culture Score	The sum of the values for each of the five cultural dimensions (i.e., innovation, integrity, quality, respect, and teamwork) based on Li et al. (2021b)	
Culture Score Prospectus	The sum of the values for each of the five cultural dimensions (i.e., innovation, integrity, quality, respect, and teamwork) calculated based on Li et al. (2021b) and the IPO prospectus	
Control Variables:		
Avg. First-Day Return	The average return on the first day of trading of all IPOs in the last 60 days prior to the IPO	SDC, CRSP
Avg. Price Revision	The average price revision of all IPOs in the last 60 days prior to the IPO	E, SDC
Big 4 Auditor	Dummy variable that equals one if the accounting firm is one of PwC, EY, KPMG, or Deloitte, and zero otherwise	SDC
Bookrunner Market Share	Two-year trailing market share (based on IPO proceeds) of the (first) lead underwriter	SDC
Capex	The firm's capital expenditures divided by its total assets	CS
CEO Experience	Dummy variable that equals one if the CEO has been the CEO of another firm in the past, and zero otherwise	KP
DRS	Dummy variable that equals one if the IPO firm has filed a Draft Registration Statement with the SEC, and zero otherwise	E
Firm Strategy	Measure capturing the firm's strategy following Carpenter (2000) and Finkelstein and Hambrick (1990)	CS
Firm Strategic Distinctiveness	Measure capturing the firm's strategic distinctiveness following Carpenter (2000) and Finkelstein and Hambrick (1990)	CS
High CEO Age	Dummy variable that equals one if the age of the CEO at the time of the IPO is in the top quartile of our sample, and zero otherwise	KP
High CEO Tenure	Dummy variable that equals one if the tenure of the CEO at the time of the IPO is in the top quartile or our sample, and zero otherwise	KP
Industry Strategy	Measure capturing an industry's strategy following Carpenter (2000) and Finkelstein and Hambrick (1990)	CS
Intangibles	The firm's intangible assets divided by its total assets	CS
Internet	Dummy variable that equals one if the firm is an internet firm, and zero otherwise	R
IPO Experience	Dummy variable that equals one if the CEO has taken part in another IPO in the past, and zero otherwise	
Lawyer Market Share	Two-year trailing market share (based on IPO proceeds) of the lawyer	SDC
Leverage	The firm's long and short-term debt divided by its total assets	CS
ln(Age)	The natural logarithm of the difference between the issue year in the SDC Database and the founding year provided by Jay Ritter	SDC, R
ln(Sales)	The natural logarithm of one plus the firm's sales (in million USD)	CS
Market Return	The trailing annualized 30-day return based on daily data, where the market portfolio is the CRSP value-weighted index	CRSP
Market Volatility	The trailing annualized 30-day standard deviation based on daily data, where the market portfolio is the CRSP value-weighted index	CRSP
Offer price	The IPO's final offer price	SDC
Positive EPS	Dummy variable that equals one if the firm's earnings per share are positive, and zero otherwise	CS
# Previous IPOs	The number of all IPOs in the last 60 days prior to the IPO	SDC
Price Revision$_{>0}$	Dummy variable that equals one if the percentage change from the midpoint of the first filed price range to the final offer price is positive, and zero otherwise	E, SDC
Property	The firm's property, plant, and equipment divided by total assets	CS
R&D	The firm's research and development expenditures divided by its total assets	CS
Venture Backed	Dummy variable that equals one if the issuer is backed by a venture capital firm, and zero otherwise	SDC

Note: This table provides definitions and sources of the variables used throughout the paper. "SDC" refers to the Thomson Financial's SDC New Issues database. "CRSP" refers to The Center for Research in Security Prices. "E" refers to the Electronic Data Gathering And Retrieval System (EDGAR). "CS" refers to Compustat/Capital IQ. "R" refers to Jay Ritter's website. "FF" refers to the Fama/French data library and "KP" to data provided by Kenney and Patton (2020).

Table A.2
Correlations between Baseline and Initial Prospectus Measures.

	Initial Prospectus Measures					
	Integrity	Teamwork	Innovation	Respect	Quality	Culture Score
Integrity	0.14*	0.14*	-0.02	0.04	-0.10*	0.04
Teamwork	0.05	0.46*	0.10*	-0.04	0.00	0.18*
Innovation	0.04	0.18*	0.56*	0.19*	0.22*	0.49*
Respect	0.13*	0.06	0.18*	0.35*	0.13*	0.28*
Quality	-0.06	0.04	0.37*	0.12*	0.59*	0.45*
Culture Score	0.08*	0.27*	0.46*	0.24*	0.32*	0.53*

Note: This table shows the Pearson correlation coefficients between the baseline corporate culture variables and our measures based on the initial prospectuses of the IPOs. The asterisks indicate statistical significance at the 5% level or lower.

Appendix B. Supplementary material

Supplementary material related to this article can be found online at https://doi.org/10.1016/j.jbankfin.2024.107158.

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