Corporate Culture: Evidence from the Field*

JOHN R. GRAHAM
Duke University & NBER

JILLIAN GRENNAN
Duke University

CAMPBELL R. HARVEY
Duke University & NBER

SHIVARAM RAJGOPAL
Columbia University

October 10, 2018

ABSTRACT

Does corporate culture matter? Can differences in corporate culture explain why similar firms diverge, with one succeeding and the other failing? To address these difficult questions, we conduct a novel survey and interview-based analysis of 1,348 North American firms. Over half of senior executives believe that corporate culture is a top-three driver of firm value and 92% believe that improving culture would increase their firm's value. Surprisingly, only 16% of executives believe their corporate culture is where it should be. Executives also link culture to ethical choices (compliance, short-termism), innovation (creativity, taking appropriate risk), and value creation (productivity, acquisition premia). For example, 85% believe a poorly implemented, ineffective culture increases the chance that an employee might act unethically or even illegally. We assess these links within a framework that implies cultural effectiveness depends on interactions between cultural values, norms, and formal institutions.

JEL classification: G3, Z1, D23, G23, G30, K22, M14, O16.
Keywords: Corporate Culture, Values, Norms, Leadership, Corporate Governance, Incentive Compensation, Informal Institutions, Intangible Assets, Valuation, Finance, Risk-taking, Short-termism, Myopia, Innovation, Firm Value, Productivity, M&A valuation, Integrity, Trust, Ethics, Compliance, Earnings Management, Intrinsic Motivation, Expectation Formation.

* Authors: Graham, Duke University (e-mail: john.graham@duke.edu); Grennan, Duke University (e-mail: jillian.grennan@duke.edu); Harvey, Duke University (e-mail: cam.harvey@duke.edu); Rajgopal, Columbia University (e-mail: sr3269@columbia.edu). We thank CFO magazine, Fuqua's Center on Leadership and Ethics (COLE), and Columbia Business School External Relations for their partnership in conducting the survey; the results presented herein do not necessarily reflect their views. We are especially grateful to our research team of 56 RAs who helped transcribe interviews, discover CXO emails, and send personal invitations to participants. We thank the following people for providing helpful feedback on the survey instrument: Sigal Barsade, Charles Calomiris, John Core, Cesare Fracassi, Paul Ingram, Simi Kedia, Hamid Mehran, Thomas Noone, Susan Ochs, Charles O'Reilly, and Suraj Srinivasan. We thank Alon Brav, Francois Brochet, Diego Garcia, Simon Gervais, Marina Niessner, Kelly Shue, David Yermack, Luigi Zingales, workshop participants at American Finance Association Meetings, Utah Winter Finance Conference, American Accounting Association Meetings, NBER Summer Institute, Tel Aviv Finance Conference, Conference on Financial Economics and Accounting, Mountain Finance Conference, Journal of Accounting and Economics/Federal Reserve Bank of New York Conference, International Atlantic Economic Society Conference, Duke University, University of Virginia, Rice University, Yale University, Aalto University, Hanken School of Economics, Washington University in St. Louis, University of Illinois, Indian School of Business, Temple University, Rutgers University, Norges Bank, Baruch College, and Fordham University for their helpful comments on an earlier draft of the paper.

Stories in the financial press often claim that flaws in corporate culture are responsible for major calamities or great success in the corporate arena. The question of how corporate culture relates to firm performance is also of considerable interest in economics (Kreps (1990)). Some economists argue that the majority of performance variation across firms is due to unobserved forces within the firm (Syverson (2011); Backus (2015)). Corporate culture is a difficult-to-observe force within companies that may be a part of these differences in performance. And yet it is difficult to investigate culture because it is hard to scientifically measure. Adding to this challenge is the scarcity of large-sample, high-quality data about corporate culture.

In this paper, we seek to address these issues by building a large, comprehensive database that documents managements' views about which elements of culture they believe are most important, when, and why. We gather data using a survey of nearly 1,900 chief executive and financial officers (CEOs and CFOs, referred to interchangeably as executives or managers) across a wide range of public and private firms; we supplement the survey data with 18 in-depth interviews. The richness of our data allows us to explore how an effective corporate culture works, and, in turn, the relations between culture and three different types of business outcomes: ethics, innovation, and productivity/value.

In the first part of our paper, we thoroughly document executive views on what corporate culture is, how it works, what it affects, and the magnitude of its influence. Business executives strongly believe that having an effective corporate culture enhances firm value: 91% of executives consider corporate culture to be "important" or "very important" at their firm, and 92% believe that improving corporate culture would increase firm value. Cultural fit in merger and acquisition (M&A) deals is so important that 54% of executives would walk away from a target that is culturally misaligned, while another one-third would require discounts between 10%–30% of the purchase price of the target. Executives also link culture to a wide range of decisions including ethical choices (compliance, short-termism), innovation (creativity, taking appropriate risk), and value creation (productivity, investment). For example, 85% believe a poorly implemented, ineffective culture increases the chance that an employee might act unethically or even illegally. Also, many executives believe that their firms take on too little risk because of poorly performing corporate culture.

In the second half of the paper, we interpret our culture findings within the broader literature on corporate institutions (e.g., North (1991); Guiso, Sapienza, and Zingales (2015a)). We follow precedent and dichotomize corporate institutions into two branches (Figure 1). One branch is tangible and consists of formal policies such as governance and compensation. Corporate culture is in the other branch, which is less tangible and more informal. The literature further divides culture into cultural values and norms. Cultural values are ideals employees strive to fulfill, while cultural norms are the day-to-day practices that reflect these values (Schein (1990)).[1] Figure 1 is our attempt to illustrate how these complex forces relate to each other, and it suggests that the effectiveness of corporate culture depends on the alignment of values and norms, as well as possible interactions with formal institutions. Figure 1 also shows that an effective culture, defined as one that promotes the behaviors needed to successfully execute the firm's strategies and achieve its goals, may enable successful business outcomes.

In the context of this framework, we draw several broad conclusions. First, we find that formal institutions such as governance and compensation can either reinforce or work against the corporate culture. Second, it appears that cultural norms play an important role in establishing an effective culture and that the interactions between values, norms, leadership and formal institutions explain the effectiveness of a firm's current culture. Third, an effective culture significantly relates to firm value, innovation and ethical outcomes. Finally, given that an effective culture is positively associated with value creation and economic efficiency, we ask executives what is preventing their firm's culture from being effective in practice: 69% blame their firms' underinvestment in culture.

We perform a number of reality checks on our data and analyses. We compare the cultural values across firms in different industries and find patterns that conform to intuition. For example, technology firms exhibit higher levels of adaptability and the cultural value of customer-orientation is most evident in service firms. For external validation, among respondents we are able to match to publicly available financial data, we find that stronger cultural norms are significantly associated with higher profitability and Tobin's Q. Moreover, we also externally validate the culture measures

[1] Guiso, Sapienza, and Zingales (2015b) give the example of impeccable customer service being a value, while the associated norm would be lived out by employees exhibiting a day-to-day positive attitude towards customers.

by matching the survey responses to data from crowd-sourced employee reviews from Glassdoor and find that an effective culture (as described by executives in our data) is significantly associated with a higher Glassdoor culture rating. Also, as explained below, we attempt to statistically address a possible "halo effect" (carry-over in judgment from one question to the next) using the approach suggested by Guiso, Sapienza, and Zingales (2015b). Finally, to address potential framing from a "culture" survey, we conduct a follow-on survey that was not framed as a study of culture. The results from this follow-on survey are consistent with the findings from our primary culture survey.

Our work relates to a number of strands in the literature. First, our research highlights the vital, but underappreciated, role that corporate culture plays in value creation (Hermalin (2001); Guiso, Sapienza, and Zingales (2015b)). Our evidence links corporate culture to ethics (Guiso, Sapienza, and Zingales (2006)), myopia (Graham, Harvey, and Rajgopal (2005); Dichev, Graham, Harvey, and Rajgopal (2013)), whistle-blowing (Bowen, Call, and Rajgopal (2010); Dyck, Morse, and Zingales (2010)), risk (Fahlenbrach, Prilmeier, and Stulz (2012)), and compliance (Kedia, Luo, and Rajgopal (2018)). Our data also suggest incentive compensation (Lazear (2000); Cheng, Hong, and Scheinkman (2015)) and corporate governance (Shleifer and Vishny (1997); Grennan (2018)) can change the effectiveness of corporate culture. More broadly, our research complements findings from research on CEO style (Bertrand and Schoar (2003); Graham, Harvey, and Puri (2013)), middle management practices (Bloom and Van Reenen (2007); Bloom, Sadun, and Van Reenen (2012)), social capital (Guiso, Sapienza, and Zingales (2004); Servaes and Tamayo (2017)), relational contracts (Macaulay (1963); Gibbons (1998); Baker, Gibbons, and Murphy (2002), Gibbons and Henderson (2013)), and reputation (La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997)).

It is worth contrasting our paper with those that study societal culture (Guiso, Sapienza, and Zingales (2008); Fernndez (2011); Algan and Cahuc (2013); Karolyi (2016)). Meaningful differences exist between societal and corporate culture. The speed of change and element of purposeful design in corporate culture do not exist in societal culture, where social norms and beliefs transmit fairly unchanged over decades (Guiso, Sapienza, and Zingales (2006); Fernndez (2013)). In this sense, cultural differences and their association with business outcomes may be easier to observe given the simpler, more controlled corporate environment (Guiso, Sapienza, and Zingales (2015a)). Further,

studies of societal culture often examine moral and social values (e.g., preference for redistribution) which are known to weaken in market settings (Roth, Prasnikar, Okuno-Fujiwara, and Zamir (1991); Falk and Szech (2013)). Thus, an important contribution of our paper is to highlight the cultural values and norms that are positively associated with economic outcomes in for-profit settings. Finally, rather than inferring culture with external data, our survey provides a granular measure of corporate culture that varies by firm, as described by the executives that lead the firm.

The rest of the paper proceeds as follows. Section 1 discusses the corporate culture literature. Section 2 describes how we gather the data and measure corporate culture. Section 3 presents our findings. Some concluding remarks are offered in the final section. The online appendices contain a copy of the survey, variable definitions, a discussion of econometric issues, and additional tables.

1 Framework and Related Literature

Early research defined corporate culture as an intangible asset designed to meet unforeseen contingencies (Kreps (1990)). Culture is built upon the values and norms widely shared and strongly held throughout the firm that help employees understand which behaviors are and are not appropriate (O'Reilly and Chatman (1996)). As discussed in the introduction and Figure 1, research embeds this earlier definition of culture into a broader context of corporate institutions (Guiso, Sapienza, and Zingales (2015a)) in which culture is characterized by cultural values (ideals that employees strive to fulfill) and cultural norms (the day-to-day practices that attempt to live out these values).

While researchers agree that corporate culture consists of cultural values and norms, theorists are split as to which is the primitive. This disagreement in the literature helps to illustrate what makes culture so difficult to measure and demonstrates the usefulness of using interviews and detailed, open-ended survey responses to explore culture. One set of theories falls under the idea of interpretivism, which views culture through a network of shared beliefs or values that then determine the day-to-day activities in the firm. This argument runs from the stated values of a firm to the cultural norms that help to implement the values. An example of this view is the

theory of Bénabou and Tirole (2003) who put forward the idea that empowerment and collaboration increase the intrinsic motivation of employees. To implement such values, the firm needs cultural norms of trust and coordination between employees. An alternative set of theories relates to the evolutionary view (Hermalin (2001)), in which cultural values are not pre-determined but learned after routines and norms are established.

The unresolved nature of how corporate culture originates can lead to disagreements about exactly what mechanism and/or combination of values and norms connects culture to business outcomes. To gather data in the context of an unresolved theoretical literature, we employ a variety of survey techniques. In particular, our survey instrument defines an effective culture ("promotes the behaviors needed to successfully execute the firm's strategies and achieve its goals"), and then based on respondents' assessment of their current culture's effectiveness, we examine whether there is a link between an effective culture and business outcomes. This second step is represented by the link in Figure 1 from an effective culture to business outcomes. Then to get to this second step, the first step we explore involves the other elements in Figure 1. Specifically, we examine what combination of values, norms, formal institutions, and leadership are associated with an effective culture. By using this two-step procedure to conduct the empirical tests, we let the data guide our understanding of the various culture interrelations, which we then interpret in the context of the theory.

To provide intuition for why cultural values and norms could complement each other in explaining corporate outcomes, we draw from prior research. The importance of norms that dictate actual behavior shares similarities with the notion of intensity discussed in the management literature on strong culture (O'Reilly (1989); Chatman and Cha (2003)). For a culture to be strong, employees need to both agree upon what the cultural values are and to have a high level of intensity about the values. If however, employees agree about what is important but lack intensity and, as such, are unwilling to exert effort to live out the values or to sanction others for a failure to uphold the values, this leads to a weak or vacuous culture. According to this view, a culture that is mostly lip service from leadership is likely to have defined values but it takes appropriate intensity or norms to actually affect business outcomes.

Cultural values and norms are not the only factors that may be associated with an effective culture. Theoretically, formal institutions such as corporate governance can offset, complement and/or substitute for corporate culture when it comes to business outcomes. Formal institutions may be associated with business outcomes or they may indirectly influence outcomes via culture. In our empirical analyses, we explore the importance of four formal institutions that can interact with corporate culture: corporate governance, the finance function, hiring-firing-promotion, and incentive compensation. The influence of senior leadership may also work for or against the effectiveness of corporate culture, while having its own independent association with business outcomes. While not the focus of our analysis, we account for leadership and formal institutions in our econometric specifications through the use of control variables.

The unresolved nature of the theory has not surprisingly led to a variety of empirical approaches. Within the management literature, small-scale surveys are common. Four popular survey tools exist (Denison (1984); Cameron, Quinn, DeGraff, and Thakor (2006); O'Reilly, Chatman, and Caldwell (1991); Cooke and Rousseau (1988)) but a recurring critique of these tools is that they can confound constructs (Chatman and O'Reilly (2016)). For example, by including outcomes such as employee productivity or formal institutions such as compensation in their measurement of culture, they potentially cloud statistical inferences about culture itself. Our survey approach offers two distinct advantages to what exists. First, the size of our sample is large. Second, the detail of our survey and inclusion of open-ended questions allows us to differentiate between potentially confounded constructs while also mapping the open-ended responses to the same cultural values and norms established by the prior literature.

Within the economics literature, researchers have focused either on time-invariant features of culture such as firm fixed-effects (Cronqvist, Low, and Nilsson (2009); Fahlenbrach, Prilmeier, and Stulz (2012)) or have attempted to construct time-varying measures of culture using publicly available data. Such data include: (1) a firm's appearance in the top 100 Great Places to Work (Edmans (2011); Guiso, Sapienza, and Zingales (2015b)); (2) analysis of employee-generated reviews of their firms from career intelligence websites (Grennan (2018); Makridis (2018)); (3) analysis of corporate financial reports or conference calls (Audi, Loughran, and McDonald (2016); Li,

Mai, Shen, and Yan (2018)); (4) personal values of senior management (Davidson, Dey, and Smith (2015); Biggerstaff, Cicero, and Puckett (2015); Pan, Siegel, and Wang (2017); Nguyen, Hagendorff, and Eshraghi (2018)); (5) the diversity of the workforce (Merkely, Michaely, and Pacelli (2018)); (6) middle management practices with regards to operations, monitoring, targets, and incentives (Bloom and Van Reenen (2007); Bloom, Sadun, and Van Reenen (2012)); and (7) relational contracts in environments with limited or no formal contract enforcement (Banerjee and Duflo (2000); Macchiavello and Morjaria (2015)). The detailed nature of our interviews and survey enables us to explore both time-varying and time-invariant aspects of culture. Further, by cross-checking our data against career intelligence websites, we externally corroborate their usefulness as measures.

2 Measuring Corporate Culture

In this section, we discuss how we quantify the cultural values and cultural norms that underlie corporate culture. Given that we measure corporate culture based on a survey, we also discuss data reliability and other econometric issues associated with data gathered from surveys.

2.1 Interview and Survey Methods

To measure corporate culture, we began by interviewing 18 corporate executives, mostly CFOs and CEOs. To learn about culture in a variety of settings, we interviewed executives that lead public and private firms, those in early and late lifecycle stages, conglomerates, singularly-focused firms, and holding companies. Some executives compared and contrasted their experience at multiple firms. Overall, the current and past employment of the executives comprise a set of firms that contribute meaningfully to the U.S. economy and reflect about 20% of the market capitalization of the NYSE plus NASDAQ. The average firm in the interview sample is much larger (mean sales of $47 billion), has more leverage, greater profitability, lower sales growth, and higher credit ratings than the typical Compustat firm.

We incorporated the knowledge gained about corporate culture from the interviews into the

design of our survey instrument. Then, we sent survey requests to a list of CFO and CEO email addresses maintained by the Fuqua School of Business at Duke University and the Columbia Business School. From this list, we received 762 responses, representing a 13.4% response rate. This is a higher response rate than in most previous corporate field studies (Graham and Harvey (2001)). We supplemented the business school email lists with emails from external sources such as *CFO* magazine, from which we collected an additional 1,136 responses. We include additional interview and survey details as well as a copy of the survey instrument in Appendix A. For example, details such as how we randomly scramble the order of choices within a question, so as to mitigate potential order-of-presentation effects, are included in Appendix A.

2.2 Corporate Culture Measures

In total, we collected 1,898 responses. We eliminate responses from participants located outside the United States and Canada to attenuate effects of possibly confounding influences from national cultures. We also remove respondents working for the government and non-profits and responses that do not fill out the first question of the survey. Applying these filters produces 1,348 observations from North American executives at public and private firms. To assess the generalizeability of our findings, we benchmark the demographics from our public survey firms to Compustat firms. These results are available in Appendix Table C.1. Our public firm respondents work for larger firms with more employees and sales revenue. These firms are also more likely to report an after-tax profit but they have similar leverage and return on equity.

We begin the survey with an open-ended question asking respondents to briefly describe their firm's current culture: "Briefly, what words or phrases best describe the current corporate culture at your firm?". We hand-code 1,348 written responses and find that 90% of respondents describe their current culture as a values-based culture with 85% of respondents listing specific cultural values. We map each written response to the six well-known cultural values established by O'Reilly, Chatman, and Caldwell (1991) and Chatman, Caldwell, O'Reilly, and Doerr (2014)).[2] We add a seventh

[2]These six cultural values are adaptability, collaboration, customer-orientation, detail-orientation, integrity, and results-orientation.

cultural value "community," which reflects the notion of caring for the community through social and environmental responsibility, good citizenship, respect and diversity to map to the values as identified by Guiso, Sapienza, and Zingales (2015b).[3] Thus, our measure of corporate values aligns with that in the established literature, and we allow the executives' own words to define their firms' values.

Panel A of Table 1 provides descriptive statistics for individual cultural values as well as for an aggregate measure (i.e., the mean of the individual values). We create the aggregate variable to solve an econometric issue discussed below and to later test if cultural values broadly are associated with firm performance. The most commonly listed values are community, results-orientation, and collaboration. The cultural values variables are coded as -1, 0, or 1 to reflect that an executive might describe a given value in positive or negative terms. For example, a firm with a strong team-oriented culture receives a score of one for the "collaboration" value, while a firm with a competitive or every-employee-for-himself culture receives a score of negative one. Firms that do not mention collaboration receive a score of zero. Thus, when we aggregate, the overall sign of a given value is preserved. See Appendix B for additional details on construction and a tabulation of frequently recurring words associated with each value.

Our measures of the cultural values are similar to the sample statistics for cultural values reported in Guiso, Sapienza, and Zingales (2015b). They analyze cultural values advertised on the websites of firms that are in Fortune's "100 Best Companies to Work For" list. Advertised values, however, are more likely to include aspirational rather than current, actual values. By asking directly, our measures of culture are more granular in that we specifically ask about the current culture and separately ask about how well the current culture tracks the aspirational culture. A company's website would not describe their culture as "non-inclusive, political and backstabbing" or advertise that they value "noncooperation." Yet some of our respondents use descriptions like these to indicate their firm does not value collaboration. We carefully explore the reliability of our

[3]We also hand-code responses to the open-ended subpart of our 14th question to supplement the culture information we gather from question 1. Question 14 states "Please provide a specific example of how culture affects X," where X is various business outcomes (e.g., productivity). We code these written answers to identify the existence of any of same seven cultural values as in the first question.

measures in the next subsection.

Panel B of Table 1 provides descriptive statistics for the cultural norms as well as for an aggregate measure (the mean of the norms). The most commonly listed norms are trust, decision-making that reflects long-term corporate interests, agreement about goals and values, and coordination among employees. The norms are extracted from survey question 6 which asks "in the context of your firm's current culture, please indicate which factors determine the effectiveness of your culture." A score of one indicates a norm that enhances cultural effectiveness, a score of zero indicates no effect, and a score of negative one indicates a norm that works against culture being effective. Other norms include urgency with which employees work, employees' comfort in suggesting critiques, consistency and predictability of employees' actions, employees' willingness to report compliance risks or unethical behavior, and new ideas develop organically.

We highlight an important difference in how we define cultural values versus norms. The cultural values are derived by mapping open-ended responses into values defined in the literature. This approach tends to elicit responses about well-established and aspirational values. The norms, in contrast, are ascertained via direct questions about the actual behaviors employees exhibit on a day-to-day basis. This feature of the survey design helps to separate cultural values from norms and allows for a more nuanced construct of culture than is possible without a detailed survey tool. Having said this, we acknowledge that while conceptually there is logic behind separating cultural values and norms, there is not always a sharp distinction in practice. Even if despite our best efforts our measures do not cleanly distinguish the effects of values separately from the effects of norms, one can still interpret our findings to indicate that some combination of values and norms is associated with an effective corporate culture.

Panel C of Table 1 provides descriptive statistics for leadership and formal institutions, which include corporate governance, the finance function, the human resources function, and incentive compensation. The leadership and formal institutions represent responses to question 13 which asks "do the following items reinforce or work against the effectiveness of your corporate culture?" A score of one indicates a formal institution that reinforces an effective corporate culture, a score of zero indicates no effect, and a score of negative one means it works against effective culture.

Leadership plays a prominent role in determining the effectiveness of corporate culture: Nearly two-thirds of respondents indicate that leadership reinforces an effective culture, while nearly one-fifth indicate that their company's leadership works against the firm's corporate culture being effective.

Panel D of Table 1 provides descriptive statistics about corporate outcomes grouped by ethics, innovation, and productivity/value. The responses stem from question 14 which asks, "To what extent does the corporate culture at your firm affect the following items:" where a score or 4 = big effect, 3 = moderate effect, 2 = little effect, and 1 = no effect. In addition, we include one outcome asked as a separate question, "How important is meeting or beating earnings at your firm?" Because we use a survey, these are the perceptions of executives about outcomes affected by culture. The ethics outcomes include compliance, tax aggressiveness, quality of financial reporting, and importance of meeting or beating earnings. The innovation outcomes include creativity and amount of project risk. The productivity and firm value outcomes include firm value, profitability, and productivity. The aggregate for all outcomes is the simple average of the ethics, innovation, and productivity/firm value aggregate outcomes. The survey responses indicate that more than 40% of executives believe corporate culture has a big effect on whether a firm is compliant with accounting standards, creativity, project risk, productivity, profitability, and firm value. 60% of public firms say culture affects their desire to meet or beat EPS targets.

Table 2 shows that the measures of culture that we construct appear to vary intuitively across industries. For example, high levels of adaptability and the community ideals that millennials embrace are most evident in technology firms, whereas the cultural value of customer-orientation is tied most closely with service firms. When we analyze by the firm's competitive position within its industry, we see firms that are industry leaders and near-leaders, on average, exhibit significantly higher scores for cultural values and norms than those firms in the middle of the pack. At the other end of the scale, challengers also have higher scores for values and norms than middle-of-the-pack firms, which reveals an overall pattern that is U-shaped.

2.3 Econometric Issues and Validation of Measures

Before analyzing the data, we evaluate how useful our survey responses are for research and consider related econometric issues. In particular, we examine the extent to which the "halo" effect and multicollinearity may alter our inferences about the relation between culture and performance. See Appendix D for discussion of measurement error, selection, and multicollinearity test results.

Halo effect. The "halo effect" can arise when there is carry-over in judgment from one survey question to the next. For example, a respondent's sentiment from answering question one may lead her to answer question two in a different way than if she answered question two in isolation. This halo effect could manifest itself econometrically as classical measurement error and lead to attenuation bias in the coefficient estimate. Classical measurement error occurs if, for example, an executive's response to question two is always δ more positive when her answer to question one is positive. In this sense, measurement error produces an errors-in-variables problem. To address this potential problem, we include as a control the response to a question that, though possibly containing the halo effect, in theory is orthogonal to the questions about the firm's underlying true culture. We note that Guiso, Sapienza, and Zingales (2015b) adopt a similar procedure to address the potential for a halo effect in their study of cultural values. Specifically, we use question 11, which is a hypothetical question about a potential M&A deal that elicits a response about a hypothetical firm that has "an effective, strong" culture, yet not all respondents work at firms with "an effective, strong" culture. By disconnecting from the firm's underlying true culture, this addresses the halo effect because this response will not have the same systematic correlation with the firm's underlying true culture.

Causality. Causal inference is not possible in a single cross-section of data without an instrument. Without claiming causality, we describe the associations that we uncover with our data, emphasizing those that are significant at the 1% level and robust across specifications (Harvey (2017)). While we cannot show statistical causality, we can document that executives believe there is a causal relation between corporate culture, business outcomes, and value.

Multicollinearity. Multicollinearity can limit the validity of statistical inferences when two or more independent variables are highly correlated. A common approach to deal with multicollinearity involves aggregating variables to reduce the number of highly correlated variables, a technique we employ in our main analysis. The approach of aggregating across many variables by using the mean has been used successfully in prior field studies (e.g., Bloom and Van Reenen (2007); Bloom, Sadun, and Van Reenen (2012)). See Appendix D for more details.

3 Corporate Culture and Firm Performance

3.1 Firm value

We now explore in detail the valuation effects of corporate culture. Table 3 summarizes the four survey questions linking culture to firm value. The first question (Q2), "how important is corporate culture at your firm?" reveals that 91% of survey respondents consider corporate culture to be "important" or "very important" at their firms. This result is corroborated by responses to the next question (Q3),"in terms of all of the things that make your firm valuable, where would you place corporate culture?" 54% of respondents consider culture to be among the "top 3" factors affecting firm value and 79% rank culture as at least a "top 5" contributor. In another question (Q4c), 92% of executives believe that improving corporate culture would increase their firm's value.

To understand the extent to which conducting a survey about "culture" primed respondents to make culture seem extra important, we included a single question about value creation on the 2016Q3 Duke quarterly CFO survey. This survey explored various corporate finance issues and included only one question related to culture. Specifically, we asked "Of all the things that contribute to long-term firm value, for my firm I rank the following items as a 'Top 3 Value Driver,'" and culture was a choice among many. Other than as one choice on this question, the words corporate culture did not occur on this additional survey. Based on 484 responses, 47.9% of respondents listed culture in the Top 3 value creators. The confidence interval on this mean response puts it within the range of the 53.5% elicited in Q3 of the culture survey. In addition, of

all 12 possible choices, culture was the most popular with strategic plan coming in second at 39.7%. Further, culture was deemed more important than CEO leadership, incentive compensation, and corporate governance. The additional survey results are in Appendix Table C.2.

Our interviews help to explain why so many executives believe culture is important for firm value. As one interviewee said, "culture can be described as foundational. It is the most important thing because in some ways it can influence your ability to come to solutions to all the unknown problems and challenges that you will face from inception to growth." Another executive echoed that, "culture is the foundation of all companies, and can make or break the success of a company."

The final question (Q11) presented in Table 3 explores value effects in a hypothetical setting: "You work at a firm with an effective, strong culture. You are evaluating two acquisition targets, A and B. Both of these targets would bring the same strategic and operational benefits if acquired, and the targets are identical in all dimensions except corporate culture. Company A's culture is very aligned with your firm's culture, whereas company B's culture is not at all aligned. Relative to how much you would offer for A, how much less would you offer for company B due to the culture misalignment?"

Our results indicate that cultural fit in M&A deals is so important that 54% of executives would walk away from culturally misaligned target, while another 23% of respondents would discount the offer price for the culturally misaligned target by 20% or more. At least in the M&A context, this indicates that the valuation effect of culture is large. This is consistent with economic theory of the costs and benefits of corporate culture and the effects of "culture clash" in mergers and acquisitions (Van den Steen (2010)).

The interviews offer insight into why executives would walk away from acquisitions lacking cultural fit: "we would test for cultural fit. If the gap is wide enough it does not matter if it is a great price. We won't move forward." Another manager put it this way: "I would definitely pay more for the company whose culture is closer. Less friction and assimilation cost, we can get it all done easier, faster and at lower cost." When we asked how cultural fit is tested, one executive responded, "we had a checklist set of questions that we would ask about the elements of the culture and we would compare them with the key elements of our culture. For example, we would look for

strong focus on customer, high levels of integrity, open door communication and so on ... among a list of 10-12 items." For this firm, a deal would be abandoned for targets scoring low on the culture checklist.

3.2 Risk and ethics

While transactions involving the boundary of the firm highlight the value of culture, theory indicates that corporate culture also relates to firm value via routine corporate actions. To understand the variety of actions potentially associated with culture, Table 4 summarizes six survey questions that link culture to employees' actions. They explore risk-taking, short-termism, ethics, and earnings management.

The first question (Q7) in Table 4,"Do you think your company takes the right amount of risk in its investments to achieve its goals?" reveals that that 60% believe that their firms take on the "right amount of risk," 29% believe their firms take "too little risk," and 11% believe that their firms take "too much risk." In a follow-up question (Q7b), we asked respondents whether their culture was a "very important," "important," "somewhat important," or "not a reason" that their firm takes on that amount of risk. Averaging across the three risk levels, we observe that 55% of respondents think culture plays an important or very important role in their risk decisions. While a strong positive association between risk decisions and culture (Q7) could be attributable to a third common factor, the follow-up question (Q7b) suggests a direct link between culture and actions. (Later, we connect the willingness to take on risky investments to corporate innovation.)

The next question (Q8) in Table 4 examines the role of culture in long-term vs. short-term decision-making. This hypothetical question asks respondents to choose between two otherwise identical projects with a five year duration. Project A has a greater NPV but reports negative cash flows for the first two years, whereas B reports positive cash flows throughout the duration. A surprising 41% of respondents said they would choose the NPV-inferior project. In a follow-up question (Q8b), four-out-of-five of the 59% who choose the project with the greater NPV say culture plays a role in their preference for the greater NPV project.

Theory predicts that culture is likely to have its strongest association with actions that cannot properly be regulated ex ante (Kreps (1990); Akerlof and Kranton (2005)). To explore this possibility, we ask whether an ineffective culture can lead to unethical behavior (Q10): "do you think having a poorly implemented/ineffective culture at a company increases the chances that an employee would do something unethical (or even illegal)?" Table 4 shows that 85% of respondents indicate that "yes", ineffective corporate culture can lead to unethical behavior. As a test for the truthfulness of this response, we compare those respondents who provide contact information after the survey is complete with those who do not. This test suggests respondents are being honest because those that did not leave any contact information are significantly more likely to agree that an employee would do something unethical (or even illegal).

The final question (Q12) in Table 4 explores end-of-quarter earnings management: "sometimes companies engage in end-of-quarter practices such as delaying valuable projects in order to hit market expected earnings. How likely is it that an effective corporate culture would reduce the chance that such actions are taken?" 56% of executives believe that it is very likely or extremely likely that an effective corporate culture would reduce real earnings management. Only 19% of respondents believe that an effective culture would not reduce real earnings management.[4]

The interviews highlight several channels that link corporate culture to firm performance. First, culture enhances firm performance because it enables superior execution: "Culture is very important because it allows you to execute. Culture is like the tendons and ligaments that hold the body together and allow it to be healthy as a body and execute daily." Second, culture enhances firm performance through reduced agency costs. "When corporate culture is working at its best, it reduces dramatically the agency costs within an organization because you have an invisible hand at work inside of each of the employees that helps to guide their decisions and judgments in a way that the overall corporation would desire it to be." For additional details on the transcribed recordings from our interviews, see Graham, Grennan, Harvey, and Rajgopal (2017).

[4]Real earnings management is the manipulation of business activities to smooth earnings and meet or beat analysts' consensus forecasts.

3.3 External validation of survey responses

With our detailed survey data, we quantify executives' views on how corporate culture relates to business outcomes. However, an important issue is how to interpret the views of executives about culture. To assess potential measurement error, we cross-check our findings using external data. Using a sample of respondents that identified themselves, we match their survey responses to their publicly available data. We first explore the reliability of our survey measure of an effective culture. Figure 2 illustrates the relationship between our measure of an effective culture and an external rating of culture, which we obtain from crowd-sourced employee reviews of culture on Glassdoor. This sample is limited to 164 firms, but the line of best fit shows a positive linear relationship ($R^2 = 3.5\%$). This correlation suggests that rank and file employees who review their firm on Glassdoor perceive a culture that is generally similar to that described by corporate executives. While Glassdoor and other data can be used to analyze culture, we emphasize that our survey elicits executives' views about which elements of culture are most important, when, and why. These extra dimensions allow us to contribute to the literature in ways that Glassdoor data cannot.

In Panel A of Table 5 we further analyze the statistical relationship between our survey measure of culture and Glassdoor culture. In Column 1 we report the coefficient estimate from using an OLS regression and noise controls. The estimate indicates that our measure of culture is positively and statistically significantly associated with the external measure. The point estimate shows that a 0.2 standard deviation increase in effectiveness as measured by our survey is associated with a one star increase in the Glassdoor star rating. Column 2 reports the coefficient estimate from an OLS regression that includes noise controls and a control for the number of employee reviews. The point estimate and its significance are the same. Finally, column 3 limits the sample to only those firms with more than 50 current employee reviews in the survey year. Even with only 77 observations, the point estimate of 0.22 is statistically significant at the 90th percentile.

Next, we externally validate our measures of business outcomes. We explore the relation between values, norms, and business outcomes using publicly available financial data. This sample is limited to 189 firms, so to reduce noise we look at external outcomes averaged over 3, 4, and 5 years,

respectively. The results show cultural norms from our survey are positively associated with Tobin's Q and profitability. We report these findings in Table 5, Panel B and C, respectively. The external validations suggest that our survey measures are representative proxies of true corporate culture and related outcomes.

3.4 Regression evidence that links culture to business outcomes.

Having documented the executive perspective on corporate culture within the firm and benchmarked the external validity of our survey data, we now interpret the data in the context of the framework discussed in Section 1. Specifically, we use regressions to explore whether firm value and performance are tied to effective corporate culture and if so, whether the channel by which this occurs is associated with cultural values, cultural norms, and/or leadership and formal institutions. We realize this is challenging because there is not always a discrete way to separate these elements. Nevertheless, we believe that highlighting potential associations is worthwhile given the economic importance of corporate culture.

3.4.1 Specific values and norms associated with specific outcomes.

We start by exploring a pathway between cultural values and norms and a specific outcome. In particular, we examine whether the outcome of a variable we label *BeingCompliant* is associated with integrity and trust, values and norms argued for in prior studies (Shleifer and Summers (1988); Edmans (2011); Guiso, Sapienza, and Zingales (2015b)). Panel A of Table 6 presents results from regressing *BeingCompliant* on explanatory variables that include all of the cultural values, norms, and formal institutions, plus various control variables. Consistent with intuition and theory, we find evidence that firms with an integrity value accompanied by cultural norms that express integrity (willingness to report unethical behavior, trust among employees) have a culture positively correlated with executives perceiving their culture as being compliant.[5]

[5]With 16 values and norms and with multiple specifications, we should expect some of the coefficients to be "significant" by chance (see Harvey, Liu, and Zhu (2016) for the effect of data mining on statistical inference). To mitigate this problem, we focus on results significant at the 1% level as well as results that are robust across specifications. Of the 12 values and norms not shown in Panel A, four are significant at

One advantage that we have over prior studies is that we can examine multiple specific business outcomes. To provide a sense of the comprehensiveness of our data, Panel B focuses on a second outcome – that of creativity. Panel B in Table 6 shows results from regressing the *Creativity* outcome on the full set of cultural values, norms, and formal institutions as well as various control variables. Previous research (Dessein and Santos (2006)) indicates that the creativity outcome should be tied to the adaptability value, which is what we find. We also document a negative relation between creativity and a results-oriented value. This is consistent with firms that embrace the ability to adapt to new circumstances fostering creativity, while promoting bottom-line results may reduce creativity. The norms that are associated with creativity are employee comfort in suggesting critiques and new ideas develop organically (Bénabou, Ticchi, and Vindigni (2015)). Organic idea creation is strongly associated with creativity. The specifications in Table 6 include a host of control variables. In particular, column 2 attempts to correct for the potential error-in-variables problem that could be introduced via the halo effect. Controlling for the halo effect weakens the results slightly.

Next, we explore external validation of these findings by replicating Table 6 with a non-survey based outcome variable. For the external ethics outcome, we use the firm's reputation as measured by RepRisk, and as an external innovation outcome, we us an indicator for whether a firm was granted a U.S. patent. We report these findings in Appendix Table C.3. We see that the cultural value of adaptability is significantly associated with patenting and the cultural norm of consistency of actions is significantly associated with reputation, but other values and norms suggested by theory are insignificant. Much of the reduced significance appears to occur because of the smaller sample size: When we run the Table 6 regression specifications on the smaller set of observations in Table C.3, we find only a couple of significant values and norms in this smaller-sample Table 6. In this sense, these external validations generally corroborate our main findings.

the 10% level but we do not report them because we focus on those relations predicted by theory. Similarly, of the 12 values and norms not shown in Panel B, two are significant at the 10% level but we do not report them.

3.4.2 Aggregate values and norms associated with aggregate outcomes.

Overall Table 6 links specific business outcomes to specific cultural values and norms, lending confidence to the underlying connections in the survey data. We now investigate the connections more broadly: do cultural values and norms relate to business outcomes? We use aggregate variables to address this question. Recall from Section 2 that using aggregate data also helps address multicollinearity and the possibility that we failed to include some underlying values and norms.

In Table 7, we use OLS regressions with aggregate dependent variables that measure business outcomes broadly. The dependent variable in column 1 measures an aggregation of all outcomes, while in columns 2 through 4 the dependent variables separately aggregate, respectively, ethical, innovation, and productivity/value outcomes (see Appendix B for variable definitions). The key explanatory variables are aggregate measures of cultural values and cultural norms. As additional explanatory variables, we include formal institutions, leadership, noise controls, demographic controls, and additional question controls.

As we report in Panel A of Table 7, cultural norms are an important channel by which corporate culture connects to business outcomes. The coefficient estimates for aggregate cultural norms are positive and significant at the 1% level in all columns except for ethics outcomes. The economic magnitude of the point estimates are similar across all, innovation, and productivity/value outcomes. In contrast to the norms results, there is little aggregate evidence in Panel A that values independently enhance business outcomes. The statistical evidence is consistent with the theoretical prediction that having cultural values is a necessary but not sufficient condition for maximum corporate performance.

In Panel B of Table 7, we test for complementarity between selected cultural values and the norms that express them on a day-to-day basis more explicitly by allowing for values to interact with norms. The evidence is consistent with the implication that the norms that reinforce cultural values enhance performance. The coefficient estimate on the interaction term is positive and significant at the 1% level for our aggregate "All" outcome. The coefficients on the cultural norms term also remain positive and significant at the 1% level. These findings are consistent with the conclusion

that broadly speaking, cultural values and norms have an important association with business outcomes. Moreover, the results support the theoretical argument that selecting cultural values in isolation is not as effective as when the day-to-day living of those values (that is, cultural norms) is functioning properly.

3.5 Regression evidence on cultural effectiveness.

The previous section links cultural values and norms and business outcomes. In this section, we explore the channel by which this occurs. Based on the theoretical literature, and as described in Section 1 and illustrated in Figure 1, we consider a two-step process in which 1) a company's values and norms and possibly formal institutions like compensation determine whether the firm has an effective culture, and 2) the effectiveness of the firm's culture determines whether business outcomes are positive or not. In Table 8, we analyze these two steps, starting with the second.

Step 2: In Panel A of Table 8, we use OLS regressions with dependent variables that measure aggregate business outcomes and the key explanatory variable being whether a firm has an effective corporate culture. We find that having an effective corporate culture is associated with ethics, productivity/value, and overall aggregate outcomes. Next in Step 1, we attempt to explain an effective corporate culture with cultural values and norms.

Step 1: In Panel B Table 8, we regress survey responses to whether a respondent firm has an effective culture on aggregate values, norms, formal institutions, and leadership. Column 1 shows that as a stand-alone variable, aggregate values are positively associated with the effectiveness of corporate culture. Columns 2, 3, and 4 show similar results for cultural norms, formal institutions, and leadership, respectively. Column 5 includes values, norms, formal institutions and leadership in the same specification. Formal institutions lose economic and statistical significance but cultural values, norms, and leadership remain significant and positively associated with effectiveness. Coefficients are standardized for comparison and suggest that enhancing leadership has an economic magnitude of about 60% of enhancing cultural norms. Together, our aggregate measures of cultural values, norms, formal institutions and leadership without any other controls explains 37% of the

variation in cultural effectiveness.

Step 1 (specific values and norms): In Appendix Table C.4, we repeat the analysis in Table 8 with the goal of determining which specific values and norms are associated with an effective culture. Our findings align with theory. We find that cultural values and norms tied to intrinsic motivation and expectation alignment are correlated with cultural effectiveness. Consistent with the intrinsic motivation theory by Bénabou and Tirole (2003), trust, coordination among employees, and collaboration are among the most important cultural values and norms. The norm of consistency and predictability of action is also significantly related to cultural effectiveness, which ties closely to theory suggesting that culture aligns expectations (Akerlof and Kranton (2005); Van den Steen (2010)). As Kreps (1990) first argued, "culture works in unforeseen events by giving hierarchical inferiors an idea before the event how the organization will react."

3.6 Establishing an effective culture

What role does leadership play in establishing an effective culture? And what are factors that work against a culture being effective? Table 9 summarizes three additional survey questions that seek to investigate ways to ameliorate an ineffective culture. The first question (Q5), "which of the following have been most influential in setting your firm's current culture?" reveals leadership and marketplace reputation are the two most influential factors in setting the culture. Among potential leaders, the current CEO (55%), the owners (32%), the founder (30%), and past CEOs (18%) are identified as responsible for shaping the current culture. Formal institutions such as corporate governance (12%) and incentive compensation (12%) are not perceived as primary creators of the firm's current culture, nor are non-management employees (13%). These results largely corroborate theory suggesting that culture is set by leadership (Hermalin (2013)). The results about the marketplace are consistent with prior empirical research suggesting the marketplace may influence executive investment in culture (Edmans (2011); Guiso, Sapienza, and Zingales (2015b)) and the core cultural values that leaders promote (Grennan (2018)).

The next question (Q4d) "what is preventing your firm's culture from being exactly where

it should be?" again highlights the importance of leadership: 69% agree or strongly agree that "leadership needs to invest more time in the culture." Day-to-day norms also play an important role, with 48% citing inefficient workplace interactions as preventing an effective culture. Finally, 39% believe cultural values are misaligned with business needs and 38% believe corporate policies prevent the culture from being exactly where it should be. These results are consistent with the regression evidence that the combination of values, norms, formal institutions and leadership explain cultural effectiveness.

The final question in Table 9 explores the role of formal institutions in more detail. Question (Q13a/b) asks "what are the most important ways incentive compensation (or separately, the finance function) works against your corporate culture?" To reduce the time required to complete the survey, we randomly selected approximately 20% of respondents to answer the question about incentive compensation and another 20% to answer about the finance function. The presented results are for firms at which the finance function (or separately, incentive compensation) works against the effectiveness of the culture. Respondents indicate the finance function may subvert the effectiveness of the firm's culture by focusing employees too much on short-term objectives (56%) and imperfect metrics (27%). Respondents believe incentive compensation can work against the effectiveness of culture by attracting/retaining the wrong type of people to the firm (47%), focusing employees too much on short-term objectives (27%), and encouraging insufficient risk-taking (26%). Taken together, these questions demonstrate that a multitude of factors can undermine the effectiveness of culture. Given that these factors have important economic consequences for value creation and economic efficiency, these results suggest that designing and implementing mechanisms to help leadership align cultural values, norms, and formal institutions would be beneficial.

3.7 Other robustness checks

Earlier we presented several external validations of our results. Given that some inferences are derived from regressing survey data on survey data, we now explore out-of-sample predictive power using a 10-fold cross-validation procedure (Efron (2004)). While we use only survey data in the

analyses, the procedure rotates through 10 random partitions of the data to evaluate the stability of coefficient estimates. Our data perform well out of sample. For the second step from effectiveness to outcomes, the mean absolute percentage error is only 12% for all outcomes, and in the first step the error is only 17%. We report these findings in Appendix Table C.5.

Next, given that we hand-code the written responses to the open-ended question 1 and question 14 into cultural values, we analyze two alternative cuts of the data. Appendix Table C.6 studies the subsample of firms that indicated that their current culture tracks stated culture. The evidence is somewhat weaker statistically, perhaps due to smaller sample size, but like the main results, documents the statistical significance of cultural norms and lesser so for values. Table C.7 analyzes whether the culture closely tracking stated values (rather than an effective culture, as in Table 8) is associated with aggregate outcomes. The results are similar to Table 8 but statistically weaker. Together these results suggest that our measure of cultural effectiveness is reasonable.[6]

Finally, earlier in the paper we treated answers to question 14 (which has the preamble "on this question, we'd like to learn about the effect of corporate culture") as indications of a positive effect of culture. We confirm that this is a reasonable assumption by analyzing textual responses from the follow-on prompt, "Please provide a specific example of how culture affects firm value." We find only 7% of the responses describe a negative effect. We also obtain similar findings when we test the connection between cultural values and norms using survey responses that are not part of question 14: the responses to the survey questions about the value of corporate culture (Table 3). We present these findings in Appendix Table C.8.

4 Conclusion

Corporate culture is arguably the most under-researched value driver among the important contributors to firm performance. Our field study attempts to quantify the value of culture and its influence on employee decisions. 91% of executives believe culture is important to their firms

[6] Also see Appendix E for a discussion of interpreting data, like that from Q14, in the context of analyzing an association between culture and business outcomes.

and 79% place culture among the top value drivers of their company. 54% of executives would just walk away from an acquisition target that is a poor cultural fit, while another 33% would require discounts between 10%-30% of the purchase price of the target. Culture influences a wide range of financial decisions such as investment and risk-taking. For example, 41% of executives do not choose to maximize NPV when the NPV-superior investment requires short-term challenges (negative cash flows) and 80% indicate this short-termism is driven by culture. Similarly, 61% believe culture is an important force behind their firm's chosen level of investment risk. Culture influences actions that are hard to contract on, such as ethical decisions. An overwhelming 85% of executives believe an ineffective culture increases the chances that an employee might act unethically or even illegally.

Our field study builds a data infrastructure for the analysis of culture across firms. Given the many challenges to measuring corporate culture, the empirical literature is still developing. We gather a large, comprehensive database of survey responses and use the questions to construct measures of corporate culture (values and cultural norms), firm outcomes for three general categories (ethics, innovation, and productivity/firm value), and formal institutions (e.g., governance, compensation). We assess potential links within a framework that implies cultural effectiveness depends on interactions between cultural values, norms, and formal institutions. In the context of this framework, we observe that formal institutions such as governance and compensation can either reinforce or work against the corporate culture, and an effective culture significantly relates to firm value, innovation and ethical outcomes. Given that an effective culture is positively associated with value creation, we ask executives what is preventing their firm's culture from being effective in practice: 69% blame their firms' underinvestment in culture.

While economists are increasingly aware of the importance of corporate culture (e.g., Bloom, Sadun, and Van Reenen (2012); Guiso, Sapienza, and Zingales (2015b)), our unique data gives us both the detailed responses and scale necessary to contribute and guide policy on this topic. Before we started this project, we thought culture might be too amorphous to quantify. After interviewing CEOs and CFOs, we heard loudly and repeatedly how important culture is, notably from CFOs who are typically the numbers people and those one might expect to be suspicious of hard-to-quantify aspects of the business environment. We believe that our paper conveys a powerful message that

corporate culture does matter, a lot. We are aware that our study is just a first cut at this very difficult but important problem. We also fully realize that causal inference is not possible in a one-shot survey. Nevertheless, we believe that our detailed examination of executives' views provides new and nuanced information about corporate culture. Moreover, the economic magnitude of the topic suggests that it deserves substantial research going forward and we hope our paper helps build a bridge to enable such future work.

There are many future directions for research on corporate culture. One may be extending the survey to rank and file employees to understand how much of the cultural variation between firms stems from choosing employees versus variation in norms. Another may be studying in detail when formal institutions substitute for and when they complement the existent cultural values and norms. This could involve running field experiments that vary compensation or governance. An additional direction might explore why 92% of executives believe improving culture would increase firm value yet many also indicate that they significantly underinvest in culture. Recent work suggests incorporating informal measures into formal contracts may help (Gibbons and Kaplan (2015)) but more theoretical and empirical work is needed to identify factors that contribute to successful cultural change as well as what tools investors and executives can use to gauge the effectiveness of a firm's culture.

References

Akerlof, G. A., and R. E. Kranton. 2005. Identity and the economics of organizations. *Journal of Economic Perspectives* 19:9–32. doi:10.1257/0895330053147930.

Algan, Y., and P. Cahuc. 2013. Trust and growth. *Annual Review of Economics* 5:521–49. doi:10.1146/annurev-economics-081412-102108.

Audi, R., T. Loughran, and B. McDonald. 2016. Trust, but verify: Md&a language and the role of trust in corporate culture. *Journal of Business Ethics* 139:551–61. doi:10.1007/s10551-015-2659-4.

Backus, M. 2015. Why is productivity correlated with competition? Unpublished working paper.

Baker, G., R. Gibbons, and K. J. Murphy. 2002. Relational contracts and the theory of the firm. *The Quarterly Journal of Economics* 117:39–84. doi:10.1162/003355302753399445.

Banerjee, A. V., and E. Duflo. 2000. Reputation effects and the limits of contracting: A study of the indian software industry. *The Quarterly Journal of Economics* 115:989–1017. doi:10.1162/003355300554962.

Bénabou, R., D. Ticchi, and A. Vindigni. 2015. Religion and innovation. *American Economic Review* 105:346–51. doi:10.1257/aer.p20151032.

Bénabou, R., and J. Tirole. 2003. Intrinsic and extrinsic motivation. *The Review of Economic Studies* 70:489–520.

Bertrand, M., and S. Mullainathan. 2001. Do people mean what they say? implications for subjective survey data. *The American Economic Review* 91:67–72.

Bertrand, M., and A. Schoar. 2003. Managing with style: The effect of managers on firm policies. *The Quarterly Journal of Economics* 118:1169–208. doi:10.1162/003355303322552775.

Biggerstaff, L., D. C. Cicero, and A. Puckett. 2015. Suspect ceos, unethical culture, and corporate misbehavior. *Journal of Financial Economics* 117:98–121. doi:10.1016/j.jfineco.2014.12.001.

Bloom, N., R. Sadun, and J. Van Reenen. 2012. Americans do it better: Us multinationals and the productivity miracle. *American Economic Review* 102:167–201. doi:10.1257/aer.102.1.167.

Bloom, N., and J. Van Reenen. 2007. Measuring and explaining management practices across firms and countries. *The Quarterly Journal of Economics* 122:1351–408. doi:10.1162/qjec.2007.122.4.1351.

Bowen, R. M., A. C. Call, and S. Rajgopal. 2010. Whistle-blowing: Target firm characteristics and economic consequences. *The Accounting Review* 85:1239–71.

Bradburn, N., and S. Sudman. 1982. *Asking questions: A practical guide to questionnaire design.* San Francisco: Jossey Bass.

Cameron, K., R. Quinn, J. DeGraff, and A. Thakor. 2006. *Competing values leadership: Creating value in organizations.* London: Edward Elgar.

Chatman, J., and C. O'Reilly. 2016. Paradigm lost: Reinvigorating the study of organizational culture. *Research in Organizational Behavior* 38:199–224. doi:10.1016/j.riob.2016.11.004.

Chatman, J. A., D. F. Caldwell, C. A. O'Reilly, and B. Doerr. 2014. Parsing organizational culture: How the norm for adaptability influences the relationship between culture consensus and financial performance in high-technology firms. *Journal of Organizational Behavior* 35:785–808. doi:10.1002/job.1928.

Chatman, J. A., and S. E. Cha. 2003. Leading by leveraging culture. *California Management Review* 45:20–34. doi:10.2307/41166186.

Cheng, I.-H., H. Hong, and J. Scheinkman. 2015. Yesterday's heroes: Compensation and risk at financial firms. *The Journal of Finance* 70:839–79. doi:10.1111/jofi.12225.

Cooke, R. A., and D. M. Rousseau. 1988. Behavioral norms and expectations: A quantitative approach to the assessment of organizational culture. *Group & Organization Studies* 13:245–73. doi:10.1177/105960118801300302.

Cronqvist, H., A. Low, and M. Nilsson. 2009. Persistence in firm policies, firm origin, and corporate culture: Evidence from corporate spin-offs. Unpublished working paper.

Davidson, R., A. Dey, and A. Smith. 2015. Executives' "off-the-job" behavior, corporate culture, and financial reporting risk. *Journal of Financial Economics* 117:5–28. doi:10.1016/j.jfineco.2013.07.004.

Denison, D. R. 1984. Bringing corporate culture to the bottom line. *Organizational Dynamics* 13:5–22. doi:10.1016/0090-2616(84)90015-9.

Dessein, W., and T. Santos. 2006. Adaptive organizations. *Journal of Political Economy* 114:956–95.

Dichev, I. D., J. R. Graham, C. R. Harvey, and S. Rajgopal. 2013. Earnings quality: Evidence from the field. *Journal of Accounting and Economics* 56:1–33. doi:10.1016/j.jacceco.2013.05.004.

Dyck, A., A. Morse, and L. Zingales. 2010. Who blows the whistle on corporate fraud? *The Journal of Finance* 65:2213–53. doi:10.1111/j.1540-6261.2010.01614.x.

Edmans, A. 2011. Does the stock market fully value intangibles? employee satisfaction and equity prices. *Journal of Financial Economics* 101:621–40. doi:10.1016/j.jfineco.2011.03.021.

Efron, B. 2004. The estimation of prediction error: Covariance penalties and cross-validation [with comments, rejoinder]. *Journal of the American Statistical Association* 99:619–42.

Fahlenbrach, R., R. Prilmeier, and R. M. Stulz. 2012. This time is the same: Using bank performance in 1998 to explain bank performance during the recent financial crisis. *The Journal of Finance* 67:2139–85. doi:10.1111/j.1540-6261.2012.01783.x.

Falk, A., and N. Szech. 2013. Morals and markets. *Science* 340:707–11. doi:10.1126/science.1231566.

Fernndez, R. 2011. *Handbook of social economics*, chap. Does Culture Matter?, 481–510. North-Holland. doi:10.1016/B978-0-444-53187-2.00011-5.

———. 2013. Cultural change as learning: The evolution of female labor force participation over a century. *American Economic Review* 103:472–500. doi:10.1257/aer.103.1.472.

Gibbons, R. 1998. Incentives in organizations. *Journal of Economic Perspectives* 12:115–32. doi:10.1257/jep.12.4.115.

Gibbons, R., and R. Henderson. 2013. *Handbook of organizational economics*, chap. What Do Managers Do? Exploring Persistent Performance Differences among Seemingly Similar Enterprises, 680–731. Princeton University Press.

Gibbons, R., and R. S. Kaplan. 2015. Formal measures in informal management: Can a balanced scorecard change a culture? *American Economic Review* 105:447–51. doi:10.1257/aer.p20151073.

Graham, J. R., J. Grennan, C. R. Harvey, and S. Rajgopal. 2017. Corporate culture: Evidence from the field. Working Paper 23255, National Bureau of Economic Research. doi:10.3386/w23255.

Graham, J. R., and C. R. Harvey. 2001. The theory and practice of corporate finance: evidence from the field. *Journal of Financial Economics* 60:187–243. doi:10.1016/S0304-405X(01)00044-7.

Graham, J. R., C. R. Harvey, and M. Puri. 2013. Managerial attitudes and corporate actions. *Journal of Financial Economics* 109:103–21. doi:10.1016/j.jfineco.2013.01.010.

Graham, J. R., C. R. Harvey, and S. Rajgopal. 2005. The economic implications of corporate financial reporting. *Journal of Accounting and Economics* 40:3–73. doi:10.1016/j.jacceco.2005.01.002.

Grennan, J. 2018. A corporate culture channel: How increased shareholder governance decreases firm value. Unpublished working paper.

Guiso, L., P. Sapienza, and L. Zingales. 2004. The role of social capital in financial development. *American Economic Review* 94:526–56. doi:10.1257/0002828041464498.

———. 2006. Does culture affect economic outcomes? *Journal of Economic Perspectives* 20:23–48. doi:10.1257/jep.20.2.23.

———. 2008. Social capital as good culture. *Journal of the European Economic Association* 6:295–320. doi:10.1162/JEEA.2008.6.2-3.295.

———. 2015a. Corporate culture, societal culture, and institutions. *American Economic Review* 105:336–39. doi:10.1257/aer.p20151074.

———. 2015b. The value of corporate culture. *Journal of Financial Economics* 117:60–76. doi:10.1016/j.jfineco.2014.05.010.

Harvey, C. R. 2017. Presidential address: The scientific outlook in financial economics. *Journal of Finance* 72:1399–440.

Harvey, C. R., Y. Liu, and H. Zhu. 2016. and the cross-section of expected returns. *The Review of Financial Studies* 29:5–68. doi:10.1093/rfs/hhv059.

Hermalin, B. 2001. *The international handbook of organizational culture and climate*, chap. Economics and Corporate Culture. New York: John Wiley & Sons.

Hermalin, B. E. 2013. *Handbook of organizational economics*, chap. Leadership and Corporate Culture, 432–78. Princeton University Press.

Hoerl, A. E., and R. W. Kennard. 1970. Ridge regression: Biased estimation for nonorthogonal problems. *Technometrics* 12:55–67.

Kang, M. J., A. Rangel, M. Camus, and C. F. Camerer. 2011. Hypothetical and real choice differentially activate common valuation areas. *Journal of Neuroscience* 31:461–8. doi:10.1523/JNEUROSCI.1583-10.2011.

Karolyi, G. A. 2016. The gravity of culture for finance. *Journal of Corporate Finance* 41:610–25. doi:10.1016/j.jcorpfin.2016.07.003.

Kedia, S., S. Luo, and S. Rajgopal. 2018. Compliance history: Effect on financial reporting risk,. Unpublished working paper.

Kreps, D. M. 1990. *Corporate culture and economic theory*, 90143. Political Economy of Institutions and Decisions. Cambridge University Press. doi:10.1017/CBO9780511571657.006.

La Porta, R., F. Lopez-de-Silanes, A. Shleifer, and R. W. Vishny. 1997. Trust in large organizations. *The American Economic Review* 87:333–8.

Lazear, E. P. 2000. Performance pay and productivity. *American Economic Review* 90:1346–61. doi:10.1257/aer.90.5.1346.

Li, K., F. Mai, R. Shen, and X. Yan. 2018. Measuring corporate culture using machine learning. Unpublished working paper.

Macaulay, S. 1963. Non-contractual relations in business: A preliminary study. *American Sociological Review* 28:55–67.

Macchiavello, R., and A. Morjaria. 2015. The value of relationships: Evidence from a supply shock to kenyan rose exports. *American Economic Review* 105:2911–45. doi:10.1257/aer.20120141.

Makridis, C. 2018. Does culture pay? evidence from crowd-sourced employee engagement data. Unpublished working paper.

Merkely, K., R. Michaely, and J. Pacelli. 2018. Cultural diversity on wall street: Evidence from sell-side analysts' forecasts. Unpublished working paper.

Nguyen, D. D., J. Hagendorff, and A. Eshraghi. 2018. Does a ceo's cultural heritage affect performance under competitive pressure? *The Review of Financial Studies* 31:97–141. doi:10.1093/rfs/hhx046.

North, D. C. 1991. Institutions. *Journal of Economic Perspectives* 5:97–112. doi:10.1257/jep.5.1.97.

O'Reilly, C. 1989. Corporations, culture, and commitment: Motivation and social control in organizations. *California Management Review* 31:9–25. doi:10.2307/41166580.

O'Reilly, C. A., J. Chatman, and D. F. Caldwell. 1991. People and organizational culture: A profile comparison approach to assessing person-organization fit. *Academy of Management Journal* 34:487–516. doi:10.5465/256404.

O'Reilly, C. A., and J. A. Chatman. 1996. *Research in organizational behavior: An annual series of analytical essays and critical reviews*, chap. Culture as social control: Corporations, cults, and commitment., 157–200. Elsevier/JAI Press.

Pan, Y., S. Siegel, and T. Y. Wang. 2017. Corporate risk culture. *Journal of Financial and Quantitative Analysis* 52:2327–67. doi:10.1017/S0022109017000771.

Roth, A. E., V. Prasnikar, M. Okuno-Fujiwara, and S. Zamir. 1991. Bargaining and market behavior in jerusalem, ljubljana, pittsburgh, and tokyo: An experimental study. *The American Economic Review* 81:1068–95.

Schein, E. H. 1990. Organizational culture. *American Psychologist* 45:109–19. doi:10.1037/0003-066X.45.2.109.

Servaes, H., and A. Tamayo. 2017. The role of social capital in corporations: a review. *Oxford Review of Economic Policy* 33:201–20. doi:10.1093/oxrep/grx026.

Shleifer, A., and L. H. Summers. 1988. *Breach of trust in hostile takeovers*, 33–68. University of Chicago Press.

Shleifer, A., and R. W. Vishny. 1997. A survey of corporate governance. *The Journal of Finance* 52:737–83. doi:10.1111/j.1540-6261.1997.tb04820.x.

Syverson, C. 2011. What determines productivity? *Journal of Economic Literature* 49:326–65. doi:10.1257/jel.49.2.326.

Tibshirani, R. 1996. Regression shrinkage and selection via the lasso. *Journal of the Royal Statistical Society. Series B (Methodological)* 58:267–88.

Van den Steen, E. 2010. Culture clash: The costs and benefits of homogeneity. *Management Science* 56:1718–38.

Figure 1.
Diagram linking corporate culture to outcomes
According to North (1991), institutions can be classified as informal and formal. We define corporate culture as an informal institution comprised of cultural values and cultural norms. The values and norms characterize the structure in place that guides employees' actions when they face unforeseen contingencies. A cultural value represents an ideal state of behavior such as integrity or adaptability. Cultural norms are the day-to-day living out of the cultural values via the typical patterns of conduct. An effective culture is one that promotes the behaviors needed to successfully execute the firm's strategies and achieve its goals. The effectiveness of culture is determined by alignment of and interactions between values, norms, and formal institutions.

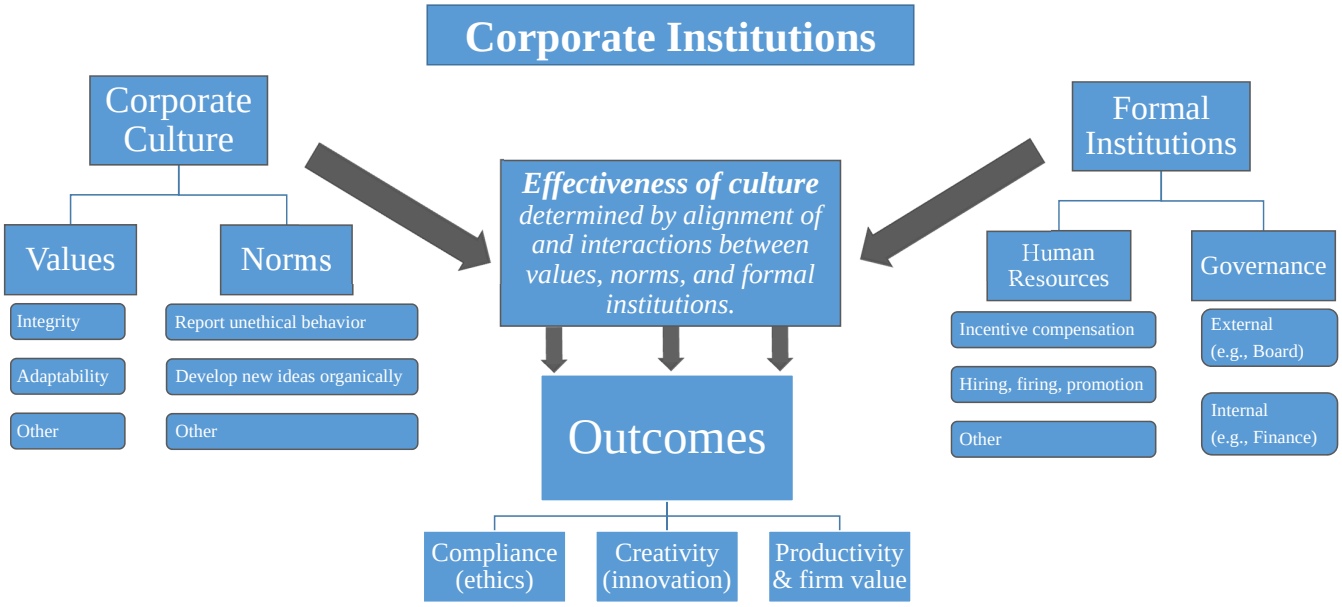
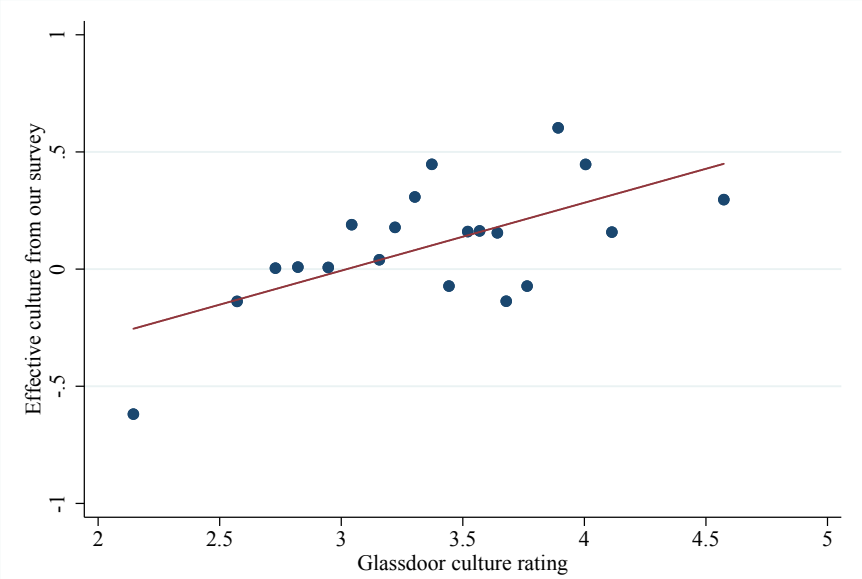


Figure 2.
External validation of effective culture measure
This figure plots the relationship between our survey measure of an effective culture and an external culture rating. Our survey defines an effective culture as one that "promotes the behaviors needed to successfully execute the firm's strategies and achieve its goals." The external culture rating is derived from crowd-sourced employee reviews on Glassdoor. Each dot shows the average effective culture for a given external culture rating, after controlling for the number of current employee reviews in the survey year. The plotted line represents the best linear approximation to the conditional expectation function.



Source: 164 survey responses from executives at public firms matched to external data.

Table 1.
Corporate culture summary statistics

This table shows summary statistics of the values (Panel A) and norms (Panel B) that comprise corporate culture, as well as formal institutions (Panel C). Panel D presents summary statistics on three different types of business outcomes affected by corporate culture. The sample consists of survey responses from executives at public and private North American firms. For a detailed description of each variable, see Appendix B. The survey questions are presented in Appendix A.

Cultural values from Q1 "Briefly, what words or phrases best describe the current corporate culture at your firm?"
-1 = Described value is opposite, 0 = No mention of value, 1 = Indicated this value

		Percent of respondents					
Panel A. Cultural values	Obs.	-1	0	1	Mean	Std. dev.	Median
Adaptability	1348	14%	53%	33%	0.19	0.66	0
Collaboration	1348	9%	58%	33%	0.24	0.60	0
Community	1348	6%	56%	38%	0.31	0.58	0
Customer-oriented	1348	1%	77%	23%	0.22	0.43	0
Detail-oriented	1348	2%	82%	15%	0.13	0.40	0
Integrity	1348	2%	69%	29%	0.27	0.49	0
Results-oriented	1348	3%	57%	39%	0.36	0.54	0
Agg. cultural values	**1348**				**0.25**	**0.27**	**0.29**

Cultural norms from Q6, "In the context of your firm's current culture, please indicate which factors determine the effectiveness of your culture." -1 = Works against, 0 = No effect, 1 = Key factor

		Percent of respondents					
Panel B. Cultural norms	Obs.	-1	0	1	Mean	Std. dev.	Median
Agreement about goals and values	1348	8%	30%	62%	0.54	0.64	1
Consistency and predictability of actions	1348	8%	45%	47%	0.39	0.63	0
Coordination among employees	1348	10%	23%	67%	0.57	0.66	1
Decision-making reflects long-term	1348	10%	27%	63%	0.53	0.67	1
Employees comfort in suggesting critiques	1348	13%	33%	54%	0.42	0.71	1
New ideas develop organically	1348	8%	41%	52%	0.44	0.63	1
Trust among employees	1348	9%	15%	76%	0.68	0.63	1
Urgency with which employees work	1348	12%	39%	49%	0.37	0.69	0
Willingness to report unethical behavior	1348	7%	44%	49%	0.42	0.62	0
Agg. cultural norms	**1348**				**0.48**	**0.43**	**0.56**

Formal institutions and leadership from Q6/Q13, "Do the following items reinforce or work against the effectiveness of your corporate culture." -1 = Works against, 0 = No impact, 1 = Reinforces

		Percent of respondents					
Panel C. Formal institutions and leadership	Obs.	-1	0	1	Mean	Std. dev.	Median
Corporate governance	1348	9%	42%	48%	0.39	0.65	0
Finance function	1348	7%	50%	43%	0.36	0.61	0
Hiring, firing, and promotion	1348	13%	35%	52%	0.38	0.71	1
Incentive compensation	1348	17%	33%	50%	0.32	0.75	0
Agg. formal institutions	**1348**				**0.39**	**0.47**	**0.40**
Leadership	1348	17%	18%	65%	0.48	0.77	1

Firm outcomes extracted from Q14, "To what extent does the corporate culture at your firm affect the following items:"
1 = No Effect, 2 = Little effect, 3 = Moderate effect 4 = Big effect

		Percent of respondents						
Panel D. Outcomes Culture Affects	Obs.	1	2	3	4	Mean	Std. dev.	Median
Compliance	1119	9%	14%	30%	47%	3.15	0.97	3
Tax aggressiveness	1020	32%	32%	25%	10%	2.14	0.99	2
Quality of our financial reporting	1118	10%	21%	33%	36%	2.94	0.99	3
Beat EPS	302	11%	29%		60%	3.24	1.03	4
Aggregate ethics	**1152**					**2.80**	**0.77**	**3.00**
Creativity	1136	2%	9%	32%	57%	3.43	0.76	4
Willingness to take on risky projects	1129	5%	11%	43%	41%	3.21	0.82	3
Aggregate innovation	**1150**					**3.32**	**0.61**	**3.50**
Firm value	1124	3%	8%	31%	57%	3.43	0.78	4
Profitability	1137	1%	8%	36%	54%	3.44	0.69	4
Productivity	1126	1%	8%	29%	62%	3.51	0.70	4
Agg. productivity & value outcomes	**1153**					**3.46**	**0.54**	**3.67**
Agg. all outcomes	**1162**					**3.20**	**0.46**	**3.22**

Table 2.
Corporate culture by industry

This table provides descriptive statistics of the values and norms that comprise corporate culture by industry. Columns 1 through 6 display the mean response from executives in the specific industries for which we obtain at least 50 responses. Columns 7 through 10 display the mean response from executives conditional on their competitive position in the industry. The sample consists of survey responses from executives at public and private North American firms. For a detailed description of each variable, see the definitions in Appendix B.

	Specific Industry						**Competitive Position in Industry**			
	Finance	Health	Manu.	Retail	Services	Tech.	Leader	Among Leading	Middle of Pack	Challenger
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Cultural values (-1 = Described value is opposite, 0 = No mention of value, 1 = Indicated this value)										
Adaptability	0.22	0.07	0.07	0.07	0.27	0.39	0.35	0.20	-0.01	0.32
Collaboration	0.28	0.23	0.14	0.12	0.45	0.30	0.33	0.32	0.08	0.28
Community	0.29	0.37	0.31	0.34	0.32	0.49	0.43	0.35	0.24	0.33
Customer-oriented	0.28	0.24	0.19	0.25	0.29	0.17	0.26	0.28	0.15	0.20
Detail-oriented	0.09	0.21	0.12	0.03	0.21	0.10	0.19	0.15	0.09	0.19
Integrity	0.36	0.28	0.19	0.25	0.33	0.27	0.33	0.30	0.19	0.27
Results-oriented	0.42	0.43	0.32	0.33	0.35	0.27	0.43	0.39	0.16	0.38
Cultural norms (-1 = Works against, 0 = No effect, 1 = Key factor)										
Agreement about goals and values	0.58	0.52	0.52	0.62	0.59	0.52	0.67	0.61	0.40	0.53
Consistency and predictability of actions	0.45	0.41	0.41	0.28	0.43	0.32	0.46	0.45	0.33	0.38
Coordination among employees	0.53	0.64	0.64	0.58	0.72	0.68	0.65	0.67	0.46	0.65
Decision-making reflects long-term	0.52	0.55	0.55	0.53	0.61	0.52	0.66	0.60	0.39	0.56
Employees comfort in suggesting critiques	0.36	0.38	0.38	0.37	0.57	0.57	0.52	0.45	0.28	0.55
New ideas develop organically	0.36	0.40	0.40	0.41	0.67	0.53	0.52	0.47	0.28	0.61
Trust among employees	0.73	0.67	0.67	0.65	0.77	0.80	0.82	0.75	0.56	0.74
Urgency with which employees work	0.31	0.44	0.44	0.40	0.46	0.45	0.43	0.42	0.29	0.45
Willingness to report unethical behavior	0.58	0.49	0.49	0.33	0.43	0.39	0.52	0.48	0.34	0.41
Aggregate cultural measures										
Agg. cultural values	0.43	0.41	0.41	0.30	0.44	0.42	0.45	0.45	0.23	0.35
Agg. cultural norms	0.21	0.21	0.21	0.14	0.30	0.28	0.28	0.26	0.06	0.25
Culture in practice (1 = No, 4 = Yes)										
Tracks stated values	3.39	3.28	3.28	3.16	3.51	3.38	3.50	3.40	2.90	3.32
Effective culture	2.82	2.70	2.70	2.58	3.02	2.90	2.91	2.87	2.37	2.83
Observations	174	191	191	111	150	105	258	484	227	128

Table 3.
The value of corporate culture
This table provides descriptive statistics on the value placed on corporate culture by surveyed executives at public and private North American firms. The question is listed along with the percentage of responses in each category. For details on all survey questions, please see Appendix A.

Q2, "How important do you believe corporate culture is at your firm?"

Obs.	Mean	Std. dev.	Median	1 = Not impt.	2 = Somewhat	3 = Impt.	4 = Very impt.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1335	3.52	0.77	4	4.2%	4.9%	25.4%	65.5%

Q3, "In terms of all of the things that make your firm valuable, where would you place corporate culture?"

Obs.	Mean	Std. dev.	Median	1 = Not top 10	2 = Top 10	3 = Top 5	4 = Top 3
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1345	3.22	1.00	4	10.0%	11.5%	25.0%	53.5%

Q4c, "Do you believe that improving your corporate culture would increase your firm's value?"

Obs.	Mean	Std. dev.	Median	0 = No	1 = Yes
(1)	(2)	(3)	(4)	(5)	(6)
1104	0.92	0.27	1	8.1%	91.9%

Q11, "You work at a firm with an effective, strong culture. You are evaluating two acquisition targets, A and B. A and B would bring the same strategic and operational benefits if acquired, and the targets are identical in all dimensions except corporate culture. Company A's culture is very aligned with your firm's culture, whereas company B's culture is not at all aligned. Relative to how much you would offer for A, how much less would you offer for company B due to the culture misalignment?"

Obs.	Mean	Std. dev.	Median	0 = Same amt.	1 = 5% discount	2 = 10% disc.	3 = 20% disc.	4 = 30+% disc.	5 = No offer
1000	3.69	1.71	5	10.3%	3.0%	10.5%	13.8%	8.8%	53.6%

Table 4.
Actions influenced by corporate culture
This table provides descriptive statistics on the value placed on corporate culture by surveyed executives at public and private North American firms. The actual question is listed along with the percentage of responses in each category. For details on all survey questions, please see Appendix A.

Q7, "Do you think your company takes the right amount of risk in its investments to achieve its goals?"

Obs.	Mean	Std. dev.	Median	-1 = Too little	0 = Right amount	1 = Too much
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1117	-0.18	0.61	0	28.8%	60.2%	11.0%

Q7b, "Our corporate culture is a (fill in the blank) reason that our company takes on this amount of risk."

Obs.	Mean	Std. dev.	Median	1 = Not a reason	2 = Somewhat	3 = Impt.	4 = Very impt.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
860	2.70	1.08	3	19.2%	19.8%	33.0%	28.0%

Q8, "Suppose your firm is considering two projects A and B:
·A and B are very similar in that they require the same capital up front, have the same expected life, and have the same probability of failure.
·A is more valuable than project B (A has greater NPV)
·A generates negative cash flows for the first two years, while B has positive cash flows in all years.
Assuming all cash flow forecasts are equally accurate, does your firm's culture make it more likely that project A or B will be chosen?"

Obs.	Mean	Std. dev.	Median	0 = Project B	1 = Project A
(1)	(2)	(3)	(4)	(5)	(6)
1025	0.59	0.49	1	40.6%	59.4%

Q8b, "Does your firm's culture pay a role in the preference for Project A?"

Obs.	Mean	Std. dev.	Median	0 = No	1 = Yes
(1)	(2)	(3)	(4)	(5)	(6)
629	0.80	0.40	1	20.0%	80.0%

Q10, "Do you think having a poorly implemented/ineffective culture at a company increases the chances that an employee would do something unethical (or even illegal)?"

Obs.	Mean	Std. dev.	Median	0 = No	1 = Yes
(1)	(2)	(3)	(4)	(5)	(6)
1126	0.85	0.36	1	15.5%	84.5%

Q12, "Sometimes companies engage in end-of-quarter practices such as delaying valuable projects in order to hit market expected earnings. How likely is it that an effective corporate culture would reduce the chance that such actions are taken?"

Obs.	Mean	Std. dev.	Median	1 = Not likely	2 = Somewhat likely	3 = Very likely	4 = Extremely likely
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1103	2.55	1.00	3	18.9%	25.6%	36.7%	18.8%
Q12 limited to only public companies:							
299	2.55	1.01	3	19.7%	24.4%	37.1%	18.7%

Table 5.
External validation

This table provides a robustness check of our OLS estimates by connecting our survey measures to external data sources. In Panel A, we examine how our survey responses about effective culture relate to an external culture rating derived from crowd-sourced employee reviews. The key explanatory variable is "current culture is effective?" Additional explanatory variables include the number of employee reviews in the survey year, noise controls, and additional question controls. In Panel B and C, we connect the values and norms that comprise corporate culture to publicly available financial data. The dependent variables are the three-year, four-year, and five-year averages of Tobin's Q and profitability, respectively. The key explanatory variables are the aggregate cultural values and cultural norms. Additional explanatory variables include aggregate formal institutions, leadership, noise controls (date, response delay, job title, and source of email), firm-level controls (firm size, number of employees, investment-to-capital, tangibility, SG&A and industry), and additional question controls (Q1, Q4, Q4b). Robust standard errors are in parentheses under coefficient estimates. For a detailed description of each variable, please see the definitions in Appendix B. ***, ** and * indicate p-values for a single test of 1%, 5%, and 10%, respectively.

	Survey year		
Panel A. Dependent variable = Glassdoor culture rating	(1)	(2)	(3)
Current culture is effective?	0.20***	0.20***	0.22*
	(0.07)	(0.07)	(0.12)
Noise Controls	Yes	Yes	Yes
Additional Question Controls	Yes	Yes	Yes
Number of reviews control	No	Yes	Yes
Limit to firms with 50 or more reviews	No	No	Yes
Observations	164	164	77
Adjusted R-squared	32.5%	32.6%	61.8%

	3-year avg.	4-year avg.	5-year avg.
Panel B. Dependent variable = Tobin's Q	(1)	(1)	(2)
Aggregate cultural values	0.36	0.37	0.18
	(0.35)	(0.33)	(0.30)
Aggregate cultural norms	0.35*	0.42**	0.35*
	(0.20)	(0.19)	(0.19)
Firm-level Controls	Yes	Yes	Yes
Formal Institution & Leadership Controls	Yes	Yes	Yes
Noise Controls	Yes	Yes	Yes
Additional Question Controls	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes
Observations	189	189	189
Adjusted R-squared	50.9%	50.0%	51.9%

	3-year avg.	4-year avg.	5-year avg.
Panel C. Dependent variable = profitability	(1)	(1)	(2)
Aggregate cultural values	-0.00	-0.04	-0.08
	(0.36)	(0.35)	(0.34)
Aggregate cultural norms	0.28*	0.33*	0.38**
	(0.17)	(0.18)	(0.17)
Firm-level Controls	Yes	Yes	Yes
Formal Institution & Leadership Controls	Yes	Yes	Yes
Noise Controls	Yes	Yes	Yes
Additional Question Controls	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes
Observations	189	189	189
Adjusted R-squared	61.0%	61.3%	60.1%

Table 6.
Specific values, norms, and outcomes

This table presents OLS estimates demonstrating an association between specific values and norms and company outcomes. Panel A shows an example ethics outcomes (i.e., being compliant) and Panel B shows an example innovation outcome (i.e., creativity). In Column 1 and 2, the key explanatory variables are the displayed values and norms. Additional explanatory variables include all other values, norms, formal institutions, leadership, noise controls, and demographic controls. Column 2 includes our "halo effect" control (hypothetical Q11) and additional question controls (Q1, Q4, and Q4b). Robust standard errors clustered by industry are in parentheses under coefficient estimates. All explanatory variables are standardized, so that the coefficients can be interpreted as the conditional impact from a one-standard-deviation increase in the explanatory variable. For a detailed description of each variable, please see the definitions in Appendix B. ***, ** and * indicate p-values for a single test of 1%, 5%, and 10%, respectively.

	Dependent variable = Being Compliant (Q14)	
Panel A. Example Ethics Outcome	(1)	(2)
Cultural values		
Integrity	0.20***	0.19***
	(0.02)	(0.02)
Cultural norms		
Consistency and predictability of actions	0.08***	0.08***
	(0.03)	(0.03)
Trust among employees	0.11*	0.11*
	(0.06)	(0.06)
Willingness to report unethical behavior	0.09**	0.09**
	(0.03)	(0.03)
Other Cultural Values & Cultural Norms	Yes	Yes
Formal Institution & Leadership Controls	Yes	Yes
Noise & Demographic Controls	Yes	Yes
Additional Question Controls	No	Yes
"Halo Effect" Specification	No	Yes
Observations	1115	937
Adjusted R-squared	23.2%	25.7%

	Dependent variable = Creativity (Q14)	
Panel B. Example Innovation Outcome	(1)	(2)
Cultural values		
Adaptability	0.07**	0.07**
	(0.02)	(0.03)
Results-oriented	-0.05*	-0.10***
	(0.03)	(0.03)
Cultural norms		
Employees comfort in suggesting critiques	0.11***	0.10**
	(0.03)	(0.04)
New ideas develop organically	0.11**	0.14**
	(0.05)	(0.05)
Other Cultural Values & Cultural Norms	Yes	Yes
Formal Institution & Leadership Controls	Yes	Yes
Noise & Demographic Controls	Yes	Yes
Additional Question Controls	Yes	Yes
"Halo Effect" Specification	No	Yes
Observations	1132	949
Adjusted R-squared	21.1%	24.4%

Table 7.
Aggregate values, norms, and outcomes

This table presents OLS estimates connecting the values and norms that comprise corporate culture to company outcomes. Column 1 is the aggregate mean for all firm outcomes. The dependent variable in Column 2, 3, and 4 are, respectively, the aggregate among all ethical outcomes, innovation outcomes, and productivity/firm value outcomes. The key explanatory variables are the aggregate cultural values and cultural norms. Additional explanatory variables include noise controls (date, response delay, job title, and source of email), demographic controls (profitability, employee turnover, CEO turnover, family firm, ownership (public vs. private), firm location, CEO age, CEO tenure, CEO incentive compensation, revenue, number of employees, industry, and credit rating), and additional question controls (Q1, Q4, Q4b). Robust standard errors clustered by industry are in parentheses under coefficient estimates. All explanatory variables are standardized, so that the coefficients can be interpreted as the conditional impact from a one-standard-deviation increase in the explanatory variable. Panel A examines cultural values and norms in isolation while Panel B allows for an interaction. For a detailed description of each variable, please see the definitions in Appendix B. ***, ** and * indicate p-values for a single test of 1%, 5%, and 10%, respectively.

	Dependent variable = Aggregate outcome			
	All	Ethics	Innovation	Productivity & Firm Value
Panel A. No interaction term	(1)	(2)	(3)	(4)
Aggregate cultural values	-0.06	0.09	-0.18	-0.05
	(0.10)	(0.11)	(0.11)	(0.09)
Aggregate cultural norms	0.17***	0.08	0.18***	0.13***
	(0.04)	(0.06)	(0.03)	(0.04)
Noise & Demographic Controls	Yes	Yes	Yes	Yes
Formal Institution & Leadership Controls	Yes	Yes	Yes	Yes
Additional Question Controls	Yes	Yes	Yes	Yes
Observations	1138	1128	1126	1129
Adjusted R-squared	19.2%	20.2%	14.3%	15.2%

	Dependent variable = Aggregate outcome			
	All	Ethics	Innovation	Productivity & Firm Value
Panel B. Adding an interaction term	(1)	(2)	(3)	(4)
Aggregate cultural values	-0.05	0.10	-0.18	-0.04
	(0.09)	(0.10)	(0.11)	(0.09)
Aggregate cultural norms	0.24***	0.13**	0.21***	0.18***
	(0.04)	(0.06)	(0.03)	(0.04)
Agg. cultural values x agg. cultural norms	0.27***	0.23**	0.14	0.20**
	(0.06)	(0.08)	(0.10)	(0.07)
Noise & Demographic Controls	Yes	Yes	Yes	Yes
Formal Institution & Leadership Controls	Yes	Yes	Yes	Yes
Additional Question Controls	Yes	Yes	Yes	Yes
Observations	1138	1128	1126	1129
Adjusted R-squared	19.9%	20.7%	14.5%	15.5%

Table 8.

Two-step connection of corporate culture to outcomes

This table presents OLS estimates connecting an effective culture to company outcomes in Panel A. Panel B presents OLS estimates connecting cultural values, cultural norms, and formal institutions to an effective culture. In the survey, we define an effective culture as one that promotes the behaviors needed to successfully execute the firm's strategies and achieve its goals. The dependent variable in Column 1 of Panel A is the aggregate mean for all firm outcomes. The dependent variables in Column 2, 3, and 4 are, respectively, the aggregate among all ethical outcomes, innovation outcomes, and productivity/firm value outcomes. The key explanatory variable is "current culture is effective?" Additional explanatory variables include noise controls and demographic controls. In Panel B, Column 1, 2, 3, and 4, the key explanatory variable of interest is aggregate cultural values, cultural norms, formal institutions, and leadership, respectively. In Column 5, all explanatory variables are combined. Additional explanatory variables include noise controls (date, response delay, job title, and source of email), demographic controls (profitability, employee turnover, CEO turnover, family firm, ownership (public vs. private), firm location, CEO age, CEO tenure, CEO incentive compensation, revenue, number of employees, industry, and credit rating), and additional question controls (Q1, Q4). Robust standard errors clustered by industry are in parentheses under coefficient estimates. All explanatory variables are standardized, so that the coefficients can be interpreted as the conditional impact from a one-standard-deviation increase in the explanatory variable. For a detailed description of each variable, please see the definitions in Appendix B.

	Dependent variable = Aggregate outcome			
	All	Ethics	Innovation	Productivity & Firm Value
Panel A. Effectiveness and outcomes	(1)	(2)	(3)	(4)
Current culture is effective?	0.08***	0.09***	-0.00	0.08*
	(0.03)	(0.03)	(0.03)	(0.04)
Noise & Demographic Controls	Yes	Yes	Yes	Yes
Observations	1158	1148	1146	1149
Adjusted R-squared	13.3%	15.9%	10.8%	11.2%

	Dependent variable = current culture is effective?				
Panel B. Determinants of effectiveness	(1)	(2)	(3)	(4)	(5)
Aggregate cultural values	0.21***				0.12**
	(0.07)				(0.06)
Aggregate cultural norms		0.20***			0.15***
		(0.02)			(0.02)
Aggregate formal institutions			0.11***		0.02
			(0.02)		(0.02)
Leadership				0.13***	0.09***
				(0.02)	(0.02)
Noise & Demographic Controls	Yes	Yes	Yes	Yes	Yes
Additional Question Controls	Yes	Yes	Yes	Yes	Yes
Observations	1310	1310	1310	1310	1310
Adjusted R-squared	58.1%	59.1%	58.6%	58.9%	59.9%
R-squared (excl. noise & demo. controls)	53.9%	54.4%	53.6%	54.0%	56.1%
R-squared (excl. all controls)	25.0%	18.2%	16.8%	23.1%	36.7%

Table 9.

Establishing culture and cultural effectiveness

This table provides descriptive statistics on influential factors in setting a firm's current culture (Panel A) and in preventing the firm's culture from being effective (Panel B). The sample consists of survey responses from executives at public and private North American firms. The actual question is listed along with the percentage of responses in each category. The results in the table for Q13a/b are for firms at which the finance function (or separately, incentive compensation) work against the effectiveness of the culture. For details on all survey questions, please see Appendix A.

Panel A. Q5, "Which of the following have been most influential in setting your firm's current culture? [Check up to 4]"

	Freq. (1)	Pct. (2)		Freq. (3)	Pct. (4)
Current CEO	743	55%	Past CEO	240	18%
Our reputation or image in the marketplace	478	35%	Changing needs of the market	229	17%
Owners	432	32%	Non-management employees	179	13%
Founder	410	30%	Incentive compensation	158	12%
Internal policies and procedures	332	25%	Board of Directors	157	12%
Hard times we experienced	268	20%	Peer firms	45	3%

Panel B. Q4d, "What is preventing your firm's culture from being exactly where it should be?"

	Obs. (1)	Mean (2)	Std. dev. (3)	Median (4)	-2 = Strongly Disagree (5)	-1 = Disagree (6)	0 = (7)	1 = Agree (8)	2 = Strongly Agree (9)
Leadership									
Leadership needs to invest more time in the culture	1130	0.79	1.20	1	6%	11%	13%	36%	33%
Formal Institutions									
Firm policies work against the intended culture	1120	-0.04	1.27	0	16%	23%	24%	25%	13%
Cultural Values and Cultural Norms									
Our cultural values are not fully aligned with our business needs	1125	-0.12	1.32	0	19%	26%	17%	27%	12%
Our firm has inefficient workplace interactions	1123	0.20	1.25	0	11%	21%	19%	33%	15%
Our employees are not fully committed to the culture	1125	-0.03	1.26	0	14%	26%	20%	27%	12%
Our culture has not caught up with recent business changes	1117	0.24	1.31	0	13%	18%	20%	30%	19%

Q13a/b, "What are the most important ways incentive compensation/the finance function works against your corporate culture?"

Incentive Compensation Works Against	Freq. (1)	Pct. (2)	**Finance Function Works Against**	Freq. (3)	Pct. (4)
Atracts/retains the wrong type of people to the firm	120	47%	Focuses employees too much on short-term objectives	186	56%
Focuses employees too much on short-term objectives	69	27%	Focuses employees on imperfect metrics	90	27%
Leads to fear of failure and insufficient risk taking	68	26%	Finance employees operate in a separate silo	56	17%

A Survey Questions and Logistics

For our interviews, we promised the executives anonymity to encourage frank discussion. With the interviewee's permission, we recorded and transcribed each interview to ensure accuracy in quotations. We began the interviews on October 22, 2014 and concluded them on April 3, 2015. We began each interview with open-ended questions such as, "What, in your view, is corporate culture?" and "How would you describe the corporate culture at your firm?"[7] This allowed us to initially capture broad themes and then we narrowed the focus as the interview proceeded, without leading the interviewee by our presenting predetermined definitions of corporate culture. We also used interviews to identify under-researched topics and as input to develop our survey instrument. All but one of the executives that we contacted agreed to be interviewed (and he told us, "read my book!"). The interviews occurred over the phone or in-person and vary in length, lasting from 40 to 90 minutes. The executives seemed thoughtful and forthcoming in their responses.

Reliable survey tools require careful design and sample planning. To minimize measurement error, we consulted 12 experts to vet the survey design and administered 20 beta tests prior to launching the survey. After beta-testing and receiving feedback from survey design specialists, the final survey contains 14 main questions, some with sub-parts dependent on the initial answer selected, and was administered over the Internet. The survey is anonymous and does not require subjects to disclose their names or their corporate affiliation and is IRB approved at the authors' home institutions. One advantage of online administration is the ability to randomly scramble the order of choices within a question, so as to mitigate potential order-of-presentation effects. Specifically, the survey scrambles the order of answers in questions 4d, 6, 13 and 14. For the remaining questions, order of sub-questions is deemed not to be a first-order issue (demographic questions, qualitative questions) or there is a natural order to the presented alternatives (e.g., 3, 7 and 11). Participants were allowed to skip questions if they did not want to answer them, which is why the number of observations varies across questions. Most multiple-choice questions included a free-text response option, so that survey takers could provide answers that were not explicitly

[7] We conduct interviews according to the scientific practices described in Bradburn and Sudman (1982).

specified in the question.

Invitations to take the survey were sent via email to a diverse sample of corporate executives and invitations were sent in a staggered manner. We used two key databases of email addresses of CFOs supplied by (i) a list of CFO email addresses the Fuqua School of Business at Duke University maintains for their quarterly survey; and (ii) a list of CEO and CFO email addresses from among the alumni of the Columbia Business School. We staggered our initial event invitation on two dates (September 15 or September 22, 2015) to take the survey, a reminder was sent a week or more later to these sub-groups (September 29, October 6, October 20). The survey closed on October 31, 2015. We supplemented the main email list from Duke's quarterly survey and Columbia Business School with additional email lists from CFO magazine, the Center for Leadership and Ethics (COLE) at Duke University, the Fuqua School of Business Board of Visitors, and Fortune 1000 CEOs and CFOs. Our baseline summary results do not vary whether we include all of these groups or not.

Duke University/Columbia University/CFO Magazine Corporate Culture Survey 2015

Participation in this survey is voluntary. You do not have to answer every question and you can withdraw from participation at any time by closing your internet browser. The survey is anonymous and we will only report aggregated data. At the end of the survey, you can indicate whether you would like to receive a copy of our report.

1. Briefly, what words or phrases best describe the current corporate culture at your firm?

2. How important do you believe corporate culture is at your firm? (choose best option)

Very important	Important	Somewhat important	Not important	Don't know
○	○	○	○	○

3. In terms of all of the things that make your firm valuable, where would you place corporate culture? (choose best option)

- ○ Top 3
- ○ Top 5
- ○ Top 10
- ○ Not in Top 10

4. How closely does your current corporate culture track with your stated firm values?

Very closely	Somewhat	Not very closely	Not at all
○	○	○	○

4b. Our firm's corporate culture: (choose best option)

- ○ Is exactly where it should be
- ○ Needs some work but is close to where it should be
- ○ Needs considerable work to get to where it should be
- ○ Needs a substantial overhaul

Continue

4c. Do you believe that improving your corporate culture would increase your firm's value?

- ○ Yes
- ○ No

4d. What is preventing your firm's culture from being exactly where it should be?

	Strongly disagree				Strongly agree
	-2	-1	0	+1	+2
Our cultural values are not fully aligned with our business needs	○	○	○	○	○
Our firm has inefficient workplace interactions (e.g., too much time spent building consensus, etc.)	○	○	○	○	○
Our employees are not fully committed to the culture	○	○	○	○	○
Firm policies work against the intended culture (e.g., compensation, governance, etc.)	○	○	○	○	○
Leadership needs to invest more time to develop the culture	○	○	○	○	○
Our culture has not caught up with recent changes in the business environment	○	○	○	○	○

Other reasons why your corporate culture is not where it should be:

Continue

5. Which of the following have been most influential in setting your firm's current culture? (Check up to 4):

- ☐ Peer firms
- ☐ Board of Directors
- ☐ Owners
- ☐ Non-management employees
- ☐ Founder
- ☐ Past CEO
- ☐ Current CEO
- ☐ Our reputation or image in the marketplace
- ☐ Hard times we experienced
- ☐ Changing needs of the marketplace
- ☐ Incentive compensation
- ☐ Internal policies and procedures
- ☐ Other:

For the remaining questions, define an effective corporate culture as one that promotes the behaviors needed to successfully execute the firm's strategies and achieve its goals.

6. In the context of your firm's current culture, please indicate which factors determine the effectiveness of your culture.

	Key factor helping our culture to be more effective	Little or no effect on culture	**Works against** our culture being effective	Don't know
Urgency with which employees work	○	○	○	○
Coordination among employees	○	○	○	○
Trust among employees	○	○	○	○
Employees' comfort in suggesting critiques	○	○	○	○
Consistency and predictability of employees' actions	○	○	○	○
Employees' willingness to report compliance risks or unethical behavior	○	○	○	○
Hiring, firing, and promotion decisions	○	○	○	○
Broad agreement about goals and values	○	○	○	○
Decision-making reflects firm's long-term interests	○	○	○	○
New ideas develop organically	○	○	○	○
Other:	○	○	○	○

Continue

7. Do you think your company takes the right amount of risk in its investments to achieve its goals?
○ Yes, right amount of risk ○ No, too little risk ○ No, too much risk ○ Don't know

8. Suppose your firm is considering two projects A and B.

- **A and B are very similar in that they require the same capital up front, have the same expected life, and have the same probability of failure.**
- **A is more valuable than project B (A has greater NPV).**
- **A generates negative cash flows for the first two years, while B has positive cash flows in all years.**

Assuming all cash flow forecasts are equally accurate, does your firm's culture make it more likely that project A or B will be chosen?
◉ A ○ B ○ Not Sure

Does your firm's culture play a role in your company's preference for project A?
○ Yes ○ No

9. The potential for: (choose best option)
○ value destruction from ineffective culture is greater than value creation from effective culture ○ value destruction from ineffective culture and value creation from effective culture are about the same ○ value creation from effective culture is greater than value destruction from ineffective culture

Continue

10. Do you think having a poorly implemented/ineffective culture at a company increases the chances that an employee would do something unethical (or even illegal)?

- ○ Yes
- ○ No

11. You work at a firm with an effective, strong culture. You are evaluating two acquisition targets, A and B.

- **A and B would bring the same strategic and operational benefits if acquired, and the targets are identical in all dimensions except corporate culture.**
- **Company A's culture is very aligned with your firm's culture, whereas company B's culture is not at all aligned.**

Relative to how much you would offer for A, how much less would you offer for company B due to the culture misalignment? (choose one)

- ○ We would offer the same amount for B as for A
- ○ We would offer 5% less for B
- ○ 10% less for B
- ○ 20% less for B
- ○ 30+% less for B
- ○ We would not make an offer for B
- ○ Don't know

12. Sometimes companies engage in end-of-quarter practices such as delaying valuable projects in order to hit market expected earnings. How likely is it that an effective corporate culture would reduce the chance that such actions are taken?

Extremely likely	Very likely	Somewhat likely	Not likely	Don't know
○	○	○	○	○

13. Do the following items reinforce or work against the effectiveness of your corporate culture:

	Works against	No impact	Reinforces
Incentive compensation	◉	○	○
Finance function / department	○	○	○
Governance/Board of Directors	○	○	○
Senior management behavior	○	○	○
Other:	○	○	○

What are the most important ways incentive compensation works against your corporate culture? [check all that apply]

- ☐ Focuses employees too much on short-term objectives
- ☐ Leads to fear of failure and insufficient risk taking
- ☐ Attracts/retains the wrong type of people to the firm
- ☐ Other

You are almost done! Hang in there!

On this question, we'd like to learn about the effects of corporate culture

14. To what extent does the corporate culture at your firm affect the following items:

	No effect	Little	Moderate	Big effect	Don't know or NA
Firm Value	○	○	○	◉	○
Profitability	○	○	○	◉	○
Quality of our financial reporting	○	○	○	◉	○
Creativity	○	○	◉	○	○
Tax aggressiveness	○	○	◉	○	○
How much debt we use	○	○	◉	○	○
Willingness to take on risky projects	○	○	○	○	○
Management of downside risk	○	○	○	◉	○
Our rate of growth	○	○	○	◉	○
Compliance	○	○	◉	○	○
Productivity	○	◉	○	○	○
Other:	○	○	○	○	○

Please provide a specific example of how culture affects firm profitability.

Please provide a specific example of how culture affects management of downside risk.

Continue

Thank you for your help!

Demographics (Important to complete!)

1. In your particular industry, how would you characterize your firm's competitive position? (choose best option)

- ○ Market leader
- ○ One of the leading firms
- ○ In the middle of the pack
- ○ Challenger

2. My company's credit rating is approximately: (e.g., AA-, BBB+, no rating, etc.)

▼ ☐ Check here if you do not have a rating, and please estimate what your rating would be.

3. During the last year, we earned an after-tax profit.

- ○ True
- ○ False

4. Over the last 3 years, what is your company's approximate:

- _____ % ROE (e.g., 11%)
- _____ % Annual growth in revenue (e.g., 8%)
- _____ % Total debt / total assets (e.g., 25%)

5. Approximate proportion of your employees that have worked at your firm less than 3 years _____ %

6. Managers own approximately _____ **% of my company.**

7. Our employee turnover is ▼ **the industry average.**

8. Our rate of CEO turnover is ▼ **the industry average.**

9a. Ownership (choose one)	9b. Family (choose one)
◉ Public	○ Family ownership and operational influence
○ Private	○ Family ownership but no operational influence
○ Government or non-profit	○ No family ownership nor operational influence

10. How important is meeting or beating quarterly earnings estimates to your company?

Very important	Somewhat important	Not important	Not applicable
○	○	○	○

11a. Our company is approximately _____ years old.	11b. Where is your firm located? ▼

12. What is your job title?

- ○ CEO
- ○ CFO, Treasurer, or similar
- ○ Other: _____

13a. CEO Age	13b. CEO time in job	13c. Percentage of CEO pay that is incentive based (stock, options, bonus):
○ < 40	○ < 4 years	○ None
○ 40-49	○ 4-9 years	○ 1-24%
○ 50-59	○ 10-19 years	○ 25-49%
○ 60 +	○ 20 + years	○ 50-74%
		○ 75% +

14. Sales Revenue

- ○ Less than $25 million
- ○ $25-$99 million
- ○ $100-$499 million
- ○ $500-$999 million
- ○ $1-$4.9 billion
- ○ $5-$9.9 billion
- ○ More than $10 billion

15. Number of Employees

- ○ Fewer than 50
- ○ 50-99
- ○ 100-499
- ○ 500-999
- ○ 1000-2499
- ○ 2500-4999
- ○ 5000-9999
- ○ More than 10,000

16. Industry

- ○ Retail/Wholesale
- ○ Banking/Finance/Insurance/Real Estate
- ○ Mining/Construction
- ○ Transportation & Public Utilities
- ○ Energy
- ○ Services, Consulting
- ○ Agriculture, Forestry, & Fishing
- ○ Public Administration
- ○ Communication/Media
- ○ Technology [Software/Hardware/Biotech]
- ○ Manufacturing
- ○ Healthcare/Pharmaceutical
- ○ Other Industry _____

17. How many distinct business segments does your firm have? ▼

Click here to finish

B Variable Definitions

Aggregate ethics outcomes is the mean of the following four components:

1. **Compliance** which is part of question 14 "To what extent does the corporate culture at your firm affect the following items: compliance" where 1 = no effect, 2 = little effect, 3 = moderate effect, and 4 = big effect.
2. **Tax Aggressiveness** which is part of question 14 "To what extent does the corporate culture at your firm affect the following items: tax aggressiveness" where 1 = no effect, 2 = little effect, 3 = moderate effect, and 4 = big effect.
3. **Reporting Quality** which is part of question 14 "To what extent does the corporate culture at your firm affect the following items: reporting quality" where 1 = no effect, 2 = little effect, 3 = moderate effect, and 4 = big effect.
4. **Rescale Beat EPS** which is a demographic variable, "How important is meeting or beating quarterly earnings estimates to your company?" where 1 = Not important, 2.5 = Somewhat important, 4 = Very important. Please note we rescale this question to correspond to the [1, 4] scale of question 14 variables. Specifically, we transform [-1, 1] scale to -1 = 1, 0 = 2.5, and 1 = 4.

Aggregate innovation outcomes is the mean of the following two components:

1. **Creativity** which is part of question 14 "To what extent does the corporate culture at your firm affect the following items: creativity" where 1 = no effect, 2 = little effect, 3 = moderate effect, and 4 = big effect.
2. **Project Risk** which is part of question 14 "To what extent does the corporate culture at your firm affect the following items: project risk" where 1 = no effect, 2 = little effect, 3 = moderate effect, and 4 = big effect.

Aggregate productivity and firm value outcomes is the mean of the following three components:

1. **Firm Value** which is part of question 14 "To what extent does the corporate culture at your firm affect the following items: firm value" where 1 = no effect, 2 = little effect, 3 = moderate effect, and 4 = big effect.
2. **Profitability** which is part of question 14 "To what extent does the corporate culture at your firm affect the following items: profitability" where 1 = no effect, 2 = little effect, 3 = moderate effect, and 4 = big effect.
3. **Productivity** which is part of question 14 "To what extent does the corporate culture at your firm affect the following items: productivity" where 1 = no effect, 2 = little effect, 3 = moderate effect, and 4 = big effect.

Aggregate all outcomes is the mean of the aggregate ethics, aggregate innovation, and aggregate productivity and firm value outcomes. **Aggregate cultural values** is the mean of seven cultural values hand-coded from the open-ended question 1, "Briefly, what words or phrases best describe the current corporate culture at your firm?" and the open-ended part of question 14, "Please provide a specific example of how culture affects X." Cultural values can take on a score of 1, 0 or -1 where a negative value indicates the antonym. We hand-code to categorize the written responses into seven individual cultural values that align with the principal components of culture (O'Reilly, Chatman, and Caldwell (1991); Chatman et al. (2014)), when the respondents write descriptions consistent with the following:

1. **Adaptability**: willing to experiment, fast-moving, quick to take advantage of opportunities, taking initiative
2. **Collaboration**: team-oriented, supportive, not aggressive, low levels of conflict
3. **Community**: respectful of diversity, community, and the environment, inclusive, caring, and open
4. **Customer-orientation**: listening to customers, being market driven, taking pride in service
5. **Detail-orientation**: paying attention to detail, being precise, emphasizing quality, being analytical
6. **Integrity**: high ethical standards, being honest, accountable

7. **Results-orientation**: high expectations for performance, focus on achievement, not easy going, not calm

Aggregated cultural norms is the mean of the nine cultural norms extracted from question 6, "In the context of your firm's current culture, please indicate which factors determine the effectiveness of your culture," where -1 = Works against our culture being effective, 0 = Little or no effect on culture, 1 = Key factor helping our culture to be more effective. The individual cultural norms are:

1. **Agreement about goals and values**
2. **Consistency and predictability of actions**
3. **Coordination among employees**
4. **Decision-making reflects long-term**
5. **Employees comfort in suggesting critiques**
6. **New ideas develop organically**
7. **Trust among employees**
8. **Urgency with which employees work**
9. **Willingness to report unethical behavior**

Aggregate formal institutions is the mean response about the four formal institutions that are options in question 13 and question 6 "Do the following items reinforce or work against the effectiveness of your corporate culture" where the scale is -1 = Works against, 0 = No impact, and 1 = Reinforces.

1. Corporate governance
2. Finance function
3. Hire, fire, promote (Please note this option comes from question 6 "In the context of your firm's current culture, please indicate which factors determine the effectiveness of your culture" but has the same scale -1 = Works against, 0 = No impact, and 1 = Key factor)
4. Incentive compensation

Demographic controls include profitability, employee turnover, CEO turnover, family firm, ownership (public vs. private), firm location, CEO age, CEO tenure, CEO incentive compensation, revenue, number of employees, industry, and credit rating. Non-response categorical variables included as its own category.

Noise controls include date of survey response, response delay from initial email, job title, and source of email (i.e., Duke, Columbia, *CFO* magazine)

Addition question controls include controls extracted from question 1, question 4, and question 4b.

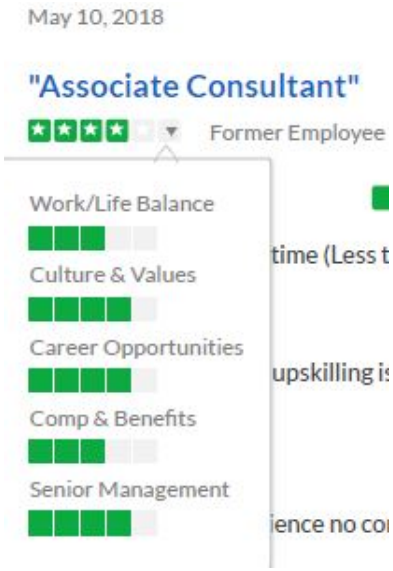
1. Question 1 controls are hand-coded from the open-ended response to "Briefly, in words or phrases best describe the current corporate culture at your firm?" The controls include an indicator for if the response is uninformative (e.g., wrote the definition of culture), for the emotion in question 1 response (1 = positive emotion, 0 = neutral, -1 = negative emotion), an indicator for saying the firm has no culture, the number of values mentioned (this also serves as a proxy for length of response), an indicator if the culture is changing, and an indicator if the culture is mixed/siloed.
2. Question 4 controls for the response to "How closely does your current corporate culture track with your stated firm values?" where 1 = Not at all, 2 = Not very closely, 3 = Somewhat, and 4 = Very closely"
3. Question 4b controls for the response to "Our firm's culture:" where 1 = Needs a substantial overhaul, 2 = Needs considerable work to get to where it should be, 3 = Needs some work but is close to where it should be, and 4 = Is exactly where it should be.

Formal institutions controls are either aggregate formal institutions if the regression involves aggregate independent variables or four different controls, one for each of the formal institutions (i.e., corporate governance, finance function, hire, fire, promote, and incentive compensation) if the regression involves individual independent variables.

Leadership control is the mean response to question 13 "Does senior management behavior reinforce or work against the effectiveness of your corporate culture" where the scale is -1 = Works against, 0 = No impact, and 1 = Reinforces.

"Halo Effect" specification includes response to the hypothetical asked in question 11 "You work at a firm with an effective, strong culture. You are evaluating two acquisition targets, A and B. A and B would bring the same strategic and operational benefits if acquired, and the targets are identical in all dimensions except corporate culture. Company A's culture is very aligned with your firm's culture, whereas company B's culture is not at all aligned. Relative to how much you would offer for A, how much less would you offer for company B due to the culture misalignment?" By disconnecting from the actual culture at the survey respondent's firm, this question will not be systematically correlated with the firm's true culture.

External culture rating is derived from crowd-sourced employee reviews on www.glassdoor.com. Each employee review has a "Culture & Values" star rating, which we convert into a count variable that ranges from 1 to 5, with 5 representing the best external culture rating. We limit our sample to the ratings provided by current employees who rated the firm during the survey year. The figure below helps to illustrate exactly which component (just the second row) that we use as our external culture rating.



Reputation is derived from RepRisk ratings. It is a proprietary algorithm developed by RepRisk that dynamically captures and quantifies a company's exposure to Environmental, Social, and Governance (ESG) and business conduct risks. The ratings range from AAA to D with 10 unique notches and where AAA is the lowest risk exposure. To translate this rating system into a numeric scale, we let AAA = 10 and D = 1. Thus, a firm with a good reputation has the lowest risk exposure.

Patenting firm is an indicator = 1 if the firm has been granted a patent by the U.S. Patent and Trademark Office.

Corporate accounting data are from the Compustat-CRSP fundamental annual database. Definitions are as follow.

Assets = AT

Credit Rating is a categorical variable that can take on one of three values: investment grade, high yield, and no rating. $SPLTICRM$ gives the letter rating. Investment grade requires a rating of BBB- or higher on S&P scale.

Debt-to-Assets = $(DLC + DLTT)/AT$

Firm Size = $log(AT)$, in which AT is in real 2010 dollars.

Investment-to-Capital = $((CAPX - SPPE) - (CAPX_{t-1} - SPPE_{t-1}))/PPENT_{t-1}$

Market Capitalization (MEQ) = $PRCC\_F \times CSHO$

Market Value of Assets (MVA) = $MEQ + DLC + DLTT + PSTKL - TXDITC$

Number of Employees = EMP

Profitability = $OIBDP/AT$

Return on Equity = NI/SEQ_{t-1}

Revenue = $REVT$

Revenue Growth = $REVT/REVT_{t-1}$

SG&A = $XSGA/AT$

Tangibility = $PPENT/AT$

Tobin's Q = MVA/AT

Management ownership data are from Execucomp. Definitions are as follow.

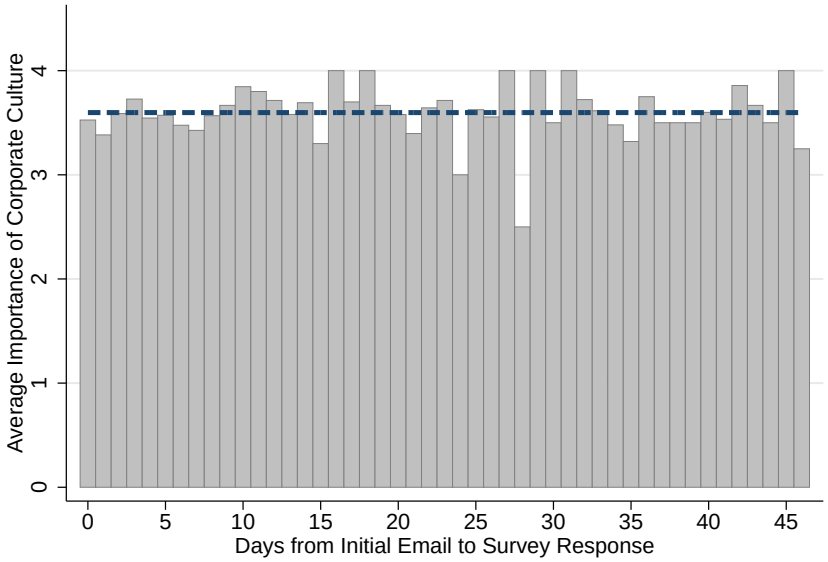
CEO Age = $PAGE$

CEO Time in Job = $(LEFTOFC - BECAMECEO)/365.25$. If the CEO did not leave office in the calendar year prior to the survey, then $LEFTOFC$ is the date of the survey. **Management Ownership** = $SHROWN\_TOT\_PCT$

C Additional Figures and Tables

Figure C.1.
Reliability of culture measures

The plot shows a histogram of the mean response to Q2, "How important do you believe corporate culture is at your firm?" where 1 = not important, 2 = somewhat important, 3 = important, 4 = very important. The x-axis represents the delay in days from when the initial survey invitation is sent to when the survey is filled out. The dashed blue line shows the mean response across all observations. The responses are statistically indistinguishable across days. The sample consists of survey responses from executives at public and private North American firms.



Source: 1348 survey responses from executives at public and private North American firms.

Table C.1.

Benchmarking survey responses to Compustat

This table provides descriptive statistics from the survey demographic questions. All Compustat variables have been coded to match the survey categories. Column 1 summarizes the public firms from the survey and Column 2 summarizes public firms from Compustat or Execucomp for the most recent fiscal year end that occurred before the date of the survey (i.e., October 2015). Both samples are limited to North American firms. For a detailed description of each variable, see the definitions in Appendix B.

Sales Revenue	**Survey Public Firms (N = 314)**	**Compustat Public Firms**	**Number of Employees**	**Survey Public Firms (N = 314)**	**Compustat Public Firms**
1 = Less than $25 million	2%	13%	1 = Fewer than 100	6%	20%
2 = $25-$99 million	8%	13%	2 = 100-499	10%	21%
3 = $100-$499 million	12%	21%	3 = 500-999	7%	10%
4 = $500-$999 million	10%	11%	4 = 1000-2499	8%	13%
5 = $1-$4.9 billion	26%	19%	5 = 2500-4999	12%	10%
6 = $5-$9.9 billion	17%	5%	6 = 5000-9999	15%	9%
7 = More than $10 billion	25%	17%	7 = More than 10,000	44%	16%
Mean	5.00	3.94	Mean	5.29	3.68
T-stat on mean difference	-9.21		T-stat on mean difference	-12.89	
Credit Rating			**Profitability**		
0 = No Rating or High Yield	87%	87%	0 = No after-tax profit	12%	21%
1 = Investment Grade	13%	13%	1 = After-tax profit	88%	79%
Mean	0.13	0.13	Mean	0.88	0.79
T-stat on mean difference	0.11		T-stat on mean difference	-3.71	
CEO Age		Execucomp	**CEO Time in Job**		Execucomp
1 = Less than 40	1%	2%	1 = Less than 4 years	39%	35%
2 = 40 - 49	17%	26%	2 = 4-9 years	32%	34%
3 = 50 - 59	54%	53%	3 = 10-19 years	22%	24%
4 = 60 or greater	28%	19%	4 = 20 years or more	8%	8%
Mean	3.09	2.89	Mean	1.98	2.05
T-stat on mean difference	-4.99		T-stat on mean difference	1.05	
Debt-to-Assets			**Return on Equity**		
Mean	0.25	0.23	Mean	0.14	0.12
T-stat on mean difference	-1.34		T-stat on mean difference	-1.10	
Revenue Growth			**Management Ownership**		Execucomp
Mean	0.08	0.15	Mean	9%	3%
T-stat on mean difference	2.02		T-stat on mean difference	-16.86	

Table C.2.

External validation: Question on quarterly survey

This table presents the response to a one-off culture question included on the 2016Q3 Duke Quarterly CFO Global Business Outlook survey. The question provides responses consistent with culture survey Q3, "In terms of all things that make your firm valuable, where would you place corporate culture?" where answers include Top 3, Top 5, Top 10, or Not in Top 10. Column 1 reports the results from the Quarterly Survey and Column 2 summarizes from most important to least important the findings from the culture survey.

CFO Quarterly Survey Question, "Of all the things that contribute to long-term firm value, for my firm I rank the following items as a:"		
	CFO Quarterly Survey, Top 3 Value Driver	Culture Survey Q3, Top 3 Value Driver
	(1)	(2)
Corporate Culture	47.9%	53.5%
Strategic Plan	39.7%	
Operating Plan	39.0%	
CEO	37.4%	
Marketing	20.5%	
Production Process	19.0%	
Finance Function	17.6%	
Incentive Compensation	14.3%	
Regulatory Environment	14.0%	
Human Resources	11.4%	
Governance/Board	8.9%	
Other	8.0%	
Obs.	484	1348

Table C.3.

External validation: Specific business outcomes

This table provides a robustness check of our OLS estimates connecting specific cultural values and norms to specific firm outcomes. As in Table 5, we use example ethics and innovation outcomes, however, instead of using survey outcomes, in this table we use publicly available data. In Panel A, we examine an example external ethics outcome (i.e., reputation) that is publicly available from RepRisk, and in Panel B, we examine an external innovation outcome (i.e., firm awarded at least one patent) that relies on U.S. Patent and Trademark Office data. To facilitate comparison, we display the same values and norms as in Table 5. Additional explanatory variables include other values, norms, formal institutions, leadership, noise controls, and demographic controls. Robust standard errors clustered by industry are in parentheses under coefficient estimates. All explanatory variables are standardized, so that the coefficients can be interpreted as the conditional association from a one-standard-deviation increase in the explanatory variable. For a detailed description of each variable, please see the definitions in Appendix B. ***, ** and * indicate p-values for a single test of 1%, 5%, and 10%, respectively.

Panel A. Example External Ethics Outcome	Dependent variable = Reputation
Cultural values	
Integrity	0.09
	(0.09)
Cultural norms	
Consistency and predictability of actions	0.16**
	(0.07)
Trust among employees	-0.03
	(0.17)
Willingness to report unethical behavior	0.01
	(0.11)
Other Cultural Values & Cultural Norms	Yes
Formal Institution & Leadership Controls	Yes
Noise & Demographic Controls	Yes
Additional Question Controls	Yes
Observations	149
Adjusted R-squared	87.8%

Panel B. Example External Innovation Outcome	Dependent variable = Patenting Firm
Cultural values	
Adaptability	0.07**
	(0.03)
Results-oriented	-0.08
	(0.10)
Cultural norms	
Employees comfort in suggesting critiques	-0.03
	(0.05)
New ideas develop organically	0.05
	(0.08)
Other Cultural Values & Cultural Norms	Yes
Formal Institution & Leadership Controls	Yes
Noise & Demographic Controls	Yes
Additional Question Controls	Yes
Observations	185
Adjusted R-squared	77.5%

Table C.4.

What cultural values and norms link to cultural effectiveness?

This table presents estimates connecting a firm's specific cultural values and norms to an effective culture using model selection econometric techniques. In the survey, we define an effective culture as one that promotes the behaviors needed to successfully execute the firm's strategies and achieve its goals. Column 1 presents Ridge Regression estimates (Hoerl and Kennard (1970)). Ridge Regression is like OLS but shrinks the estimated coefficients towards zero. Such a technique helps with the problem of picking out the relevant cultural values and norms from a larger set (i.e., variable selection) by pushing estimates of some coefficients to be exactly zero. Column 2 presents LASSO Regression estimates (Tibshirani (1996)). LASSO Regression is another variable selection technique. In each column, additional explanatory variables include noise controls (date, response delay, job title, and source of email), demographic controls (profitability, employee turnover, CEO turnover, family firm, ownership (public vs. private), firm location, CEO age, CEO tenure, CEO incentive compensation, revenue, number of employees, industry, and credit rating), and additional question controls (Q1, Q4). Bootstrapped standard errors using 100 replications are in parentheses under coefficient estimates. All explanatory variables are standardized, so that the coefficients can be interpreted as the conditional impact from a one-standard-deviation increase in the explanatory variable. We include all cultural values, norms, and formal institutions in our analysis. Ridge Regression selected four cultural variables, and LASSO Regression selected eleven cultural variables. For a detailed description of each variable, please see the definitions in Appendix B.

	Variable Selection Approach	
	Ridge Regression	LASSO Regression
Dependent variable = current culture is effective?	(1)	(2)
Cultural Values		
Collaboration	0.06***	0.05***
	(0.02)	(0.02)
Cultural Norms		
New ideas develop organically	0.04***	0.04**
	(0.02)	(0.02)
Urgency with which employees work	0.04***	0.03**
	(0.01)	(0.01)
Consistency and predictability of actions	0.04**	0.02
	(0.02)	(0.02)
Trust among employees	Not Selected	0.02
		(0.03)
Coordination among employees	Not Selected	0.02
		(0.02)
Other Cultural Values & Cultural Norms	Yes	Yes
Noise & Demographic Controls	Yes	Yes
Additional Question Controls	Yes	Yes
Observations	1310	1310
Adjusted R-squared	59.2%	59.4%

Table C.5.

Robustness: Cross-fold validation of two-step connection

This table presents OLS estimates from a 10-fold cross-validation procedure connecting an effective culture to company outcomes in Panel A, and connecting cultural values, cultural norms, and formal institutions to an effective culture in Panel B. The 10-fold cross-validation procedure randomly partitions the data into 10 subsamples. Of the 10 subsamples, a single subsample is retained as the validation data for testing the model and the remaining 9 subsamples are used to train the data. This procedure is then repeated 10 times, with each subsample used exactly once as the validation data. The reported statistics are an average of the 10 tests of the model. The mean absolute percentage error measures how close the model predicted values are to the actual outcomes as a percentage deviation from the actual outcome. The dependent variable in Panel A, Column 1 is the aggregate mean for all firm outcomes. The dependent variables in Column 2, 3, and 4 are, respectively, the aggregate among all ethical outcomes, innovation outcomes, and productivity/firm value outcomes. The key explanatory variable in Panel A is "current culture is effective?" Additional explanatory variables include noise controls and demographic controls. In Panel B, Column 1, 2, 3, and 4, the key explanatory variable of interest is aggregate cultural values, cultural norms, formal institutions, and leadership, respectively. Additional explanatory variables include noise controls (date, response delay, job title, and source of email), demographic controls (profitability, employee turnover, CEO turnover, family firm, ownership (public vs. private), firm location, CEO age, CEO tenure, CEO incentive compensation, revenue, number of employees, industry, and credit rating), and additional question controls (Q1, Q4). For a detailed description of each variable, please see the definitions in Appendix B.

	Dependent variable = Aggregate outcome			
	All	Ethics	Innovation	Productivity & Firm Value
Panel A. Effectiveness and outcomes	(1)	(2)	(3)	(4)
Current culture is effective?	0.08**	0.09**	0.00	0.07*
	(0.04)	(0.04)	(0.04)	(0.04)
Cross-validation: Mean Absolute Percentage Error	11%	23%	15%	12%
Noise & Demographic Controls	Yes	Yes	Yes	Yes
Observations	1158	1148	1146	1149
Adjusted R-squared	13.3%	15.9%	10.8%	11.2%

	Dependent variable = current culture is effective?				
Panel B. Determinants of effectiveness	(1)	(2)	(3)	(4)	(5)
Aggregate cultural values	0.20***				0.13**
	(0.07)				(0.07)
Aggregate cultural norms		0.19***			0.15***
		(0.03)			(0.04)
Aggregate formal institutions			0.13***		0.02
			(0.02)		(0.03)
Leadership				0.14***	0.10***
				(0.03)	(0.03)
Cross-validation: Mean Absolute Percentage Error	21%	21%	22%	19%	24%
Noise & Demographic Controls	Yes	Yes	Yes	Yes	Yes
Additional Question Controls	Yes	Yes	Yes	Yes	Yes
Observations	1310	1310	1310	1310	1310
Adjusted R-squared	58.1%	59.1%	59.0%	59.7%	59.7%

Table C.6.

Robustness: Subsample of firms that track stated values

This table presents OLS estimates connecting the values and norms that comprise corporate culture to company outcomes. Instead of using the full sample of firms, we only use firms that indicate in Q4 that they very closely track their stated values and in Q4b say that their culture is either exactly where it should be or close to where it should be. The dependent variable in column 1 is the aggregate mean for all firm outcomes. The dependent variable in column 2, 3, and 4 are, respectively, the aggregate among all ethical outcomes, innovation outcomes, and productivity/firm value outcomes. The key explanatory variables are the aggregate cultural values and cultural norms. Additional explanatory variables include noise controls (date, response delay, job title, and source of email), demographic controls (profitability, employee turnover, CEO turnover, family firm, ownership (public vs. private), firm location, CEO age, CEO tenure, CEO incentive compensation, revenue, number of employees, industry, and credit rating), and additional question controls (Q1 and Q4b). Standard errors that are robust to heteroskedasticity are in parentheses under coefficient estimates. For a detailed description of each variable, please see the definitions in Appendix B. ***, ** and * indicate p-values for a single test of 1%, 5%, and 10%, respectively.

	Dependent variable = Aggregate outcome			
	All	Ethics	Innovation	Productivity & Firm Value
	(1)	(2)	(3)	(4)
Aggregate cultural values	0.31	0.43*	-0.04	0.27
	(0.22)	(0.24)	(0.24)	(0.24)
Aggregate cultural norms	0.43***	0.18	0.41***	0.40***
	(0.13)	(0.12)	(0.14)	(0.14)
Noise & Demographic Controls	Yes	Yes	Yes	Yes
Formal Institution & Leadership Controls	Yes	Yes	Yes	Yes
Additional Question Controls	Yes	Yes	Yes	Yes
Obs. (Sample limited to firms that very closely track stated values (Q4) and have a culture that is at least close to where it should be (Q4b))	575	570	572	573
Adjusted R-squared	32.5%	33.6%	24.8%	27.5%

Table C.7.

Robustness: Alternative definitions of cultural values

This table presents OLS estimates connecting cultural values to company outcomes. The dependent variable in column 1 is the aggregate mean for all firm outcomes. The dependent variable in column 2, 3, and 4 are, respectively, the aggregate among all ethical outcomes, innovation outcomes, and productivity/firm value outcomes. Instead of using aggregate cultural values as the key explanatory variable, we examine the responses to question Q4 "how closely does your current corporate culture track with your stated firm values" and Q4d "our cultural values are fully aligned with our business needs." Additional explanatory variables include noise controls (date, response delay, job title, and source of email) and demographic controls (profitability, employee turnover, CEO turnover, family firm, ownership (public vs. private), firm location, CEO age, CEO tenure, CEO incentive compensation, revenue, number of employees, industry, and credit rating). Robust standard errors clustered by industry are in parentheses under coefficient estimates. For a detailed description of each variable, please see the definitions in Appendix B. ***, ** and * indicate p-values for a single test of 1%, 5%, and 10%, respectively.

	Dependent variable = Aggregate outcome			
	All	Ethics	Innovation	Productivity & Firm Value
Panel A. Alternative cultural values measure #1	(1)	(2)	(3)	(4)
Current culture tracks stated values? (Q4)	0.06	0.07*	-0.01	0.08**
	(0.04)	(0.04)	(0.04)	(0.04)
Noise & Demographic Controls	Yes	Yes	Yes	Yes
Observations	1138	1128	1126	1129
Adjusted R-squared	13.6%	16.0%	11.1%	11.6%

	Dependent variable = Aggregate outcome			
	All	Ethics	Innovation	Productivity & Firm Value
Panel B. Alternative cultural values measure #2	(1)	(2)	(3)	(4)
Cultural values align with business needs? (Q4d)	-0.00	0.04	-0.09**	0.01
	(0.04)	(0.04)	(0.04)	(0.04)
Noise & Demographic Controls	Yes	Yes	Yes	Yes
Observations	955	949	945	946
Adjusted R-squared	14.6%	17.4%	12.5%	12.5%

Table C.8.
Robustness: Internal validation of outcomes

This table provides a robustness check of our OLS estimates connecting the values and norms that comprise corporate culture to firm outcomes. Instead of using the items in Q14 as our outcome variables, we examine the responses to our direct questions about the "value of corporate culture" reported in Table 3. The dependent variables are, respectively, Q2, Q3, Q4c, with the mean response to those three questions standardized to have the same scale. The key explanatory variables are the aggregate cultural values and cultural norms. Additional explanatory variables include noise controls (date, response delay, job title, and source of email), demographic controls (profitability, employee turnover, CEO turnover, family firm, ownership (public vs. private), firm location, CEO age, CEO tenure, CEO incentive compensation, revenue, number of employees, industry, and credit rating), and additional question controls (Q1, Q4, Q4b). Robust standard errors clustered by industry are in parentheses under coefficient estimates. For a detailed description of each variable, please see the definitions in Appendix B. ***, ** and * indicate p-values for a single test of 1%, 5%, and 10%, respectively.

	Dependent variable = Value of culture from Q2, Q3, and Q4c			
	Q2	Q3	Q4c	Agg. value questions
Alternative Dependent Variable for Outcomes	(1)	(2)	(3)	(4)
Aggregate cultural values	-0.08	0.11	-0.01	-0.04
	(0.11)	(0.09)	(0.09)	(0.07)
Aggregate cultural norms	0.11*	0.20***	0.02	0.12***
	(0.06)	(0.05)	(0.05)	(0.04)
Noise & Demographic Controls	Yes	Yes	Yes	Yes
Formal Institution & Leadership Controls	Yes	Yes	Yes	Yes
Additional Question Controls	Yes	Yes	Yes	Yes
Observations	1297	1307	1075	1310
Adjusted R-squared	28.5%	39.9%	11.4%	33.8%

Table C.9.

Correlation matrix for survey variables

This table reports some cross-correlations among the variables in the survey. The sample is limited to survey responses from executives at public and private North American firms. For a detailed description of each variable, please see the definitions in Appendix B.

Culture, Formal Institutions, and Leadership	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
Cultural values																				
(1) Adaptability	1.00																			
(2) Collaboration	0.21	1.00																		
(3) Community	0.24	0.18	1.00																	
(4) Customer-oriented	0.09	0.14	0.08	1.00																
(5) Detail-oriented	0.12	0.08	0.05	0.15	1.00															
(6) Integrity	0.09	0.15	0.10	0.12	0.15	1.00														
(7) Results-oriented	0.12	0.10	0.10	0.09	0.12	0.11	1.00													
Cultural norms																				
(8) Agreement about goals and values	0.15	0.23	0.14	0.12	0.10	0.19	0.09	1.00												
(9) Consistency and predictability of actions	0.10	0.15	0.06	0.13	0.08	0.15	0.06	0.35	1.00											
(10) Coordination among employees	0.19	0.21	0.12	0.13	0.08	0.10	0.11	0.40	0.35	1.00										
(11) Decision-making reflects long-term	0.17	0.20	0.14	0.11	0.12	0.14	0.10	0.50	0.34	0.39	1.00									
(12) Employees comfort in suggesting critiques	0.22	0.19	0.16	0.12	0.10	0.12	0.10	0.38	0.33	0.45	0.41	1.00								
(13) New ideas develop organically	0.23	0.19	0.17	0.12	0.06	0.10	0.04	0.41	0.29	0.38	0.43	0.46	1.00							
(14) Trust among employees	0.21	0.26	0.18	0.12	0.07	0.16	0.10	0.46	0.35	0.62	0.44	0.47	0.38	1.00						
(15) Urgency with which employees work	0.16	0.12	0.05	0.09	0.08	0.07	0.09	0.23	0.30	0.40	0.27	0.33	0.27	0.41	1.00					
(16) Willingness to report unethical behavior	0.10	0.13	0.07	0.11	0.08	0.15	0.08	0.34	0.33	0.29	0.32	0.39	0.29	0.31	0.17	1.00				
Formal Institutions																				
(17) Corporate governance	0.15	0.18	0.12	0.14	0.12	0.20	0.09	0.29	0.17	0.21	0.27	0.18	0.15	0.23	0.10	0.24	1.00			
(18) Finance function	0.08	0.11	0.09	0.08	0.06	0.13	0.09	0.14	0.17	0.16	0.15	0.13	0.09	0.16	0.12	0.15	0.35	1.00		
(19) Hire, fire, promote	0.20	0.18	0.13	0.10	0.10	0.13	0.07	0.41	0.38	0.38	0.51	0.40	0.40	0.46	0.33	0.31	0.20	0.15	1.00	
(20) Incentive compensation	0.17	0.22	0.12	0.11	0.12	0.14	0.08	0.23	0.20	0.24	0.22	0.22	0.14	0.26	0.22	0.13	0.33	0.30	0.23	1.00
Leadership																				
(21) Senior management	0.23	0.29	0.22	0.21	0.20	0.25	0.12	0.35	0.25	0.30	0.34	0.25	0.22	0.36	0.18	0.21	0.51	0.30	0.27	0.46

Table C.10.

Corporate culture by public ownership

This table provides descriptive statistics by public ownership. Panel A summarizes the corporate culture measures. Panel B summarizes the value of corporate culture. Panel C summarizes the actions influenced by corporate culture. Panel D summarizes business outcomes affected by corporate culture. The sample consists of survey responses from executives at public and private North American firms. For a detailed description of each variable, see the definitions in Appendix B.

		Public Firms	Public Firm Mean	Private Firms	Private Firm Mean	T-stat on Public vs. Private Mean Difference
Panel A. Cultural Measures						
Q1/Q14	Aggregate cultural values	314	0.27	743	0.27	-0.27
Q6	Aggregate cultural norms	314	0.54	743	0.51	0.98
Q6/Q13	Aggregate formal institutions	314	0.43	743	0.45	-0.79
Q13	Leadership	314	0.54	743	0.58	-0.77
Q4	Tracks stated values	308	3.31	729	3.32	-0.24
Q4b	Effective culture	314	2.75	743	2.79	-0.71
Panel B. The Value of Corporate Culture						
Q2	How important?	311	3.60	735	3.53	1.40
Q3	Top issue?	314	3.25	742	3.25	0.05
Q4c	Improve culture increases value?	262	0.93	594	0.91	1.08
Q11	Discount for misaligned culture?	261	3.47	649	3.83	-2.90
Panel C. Actions Influenced by Corporate Culture						
Q7	Take right amount of investment risk	293	-0.24	676	-0.15	-2.02
Q7b	Culture is reason for investment risk	227	2.74	525	2.69	0.62
Q8	Choose greater NPV project	275	0.60	622	0.59	0.29
Q8b	Culture influences NPV project preference	176	0.80	377	0.79	0.43
Q10	Increases chance do something unethical	298	0.87	712	0.84	1.13
Q12	Earnings management	299	2.55	690	2.57	-0.28
Panel D. Business Outcomes						
Q14	Firm Value	301	3.44	722	3.43	0.12
Q14	Profitability	299	3.45	732	3.43	0.50
Q14	Quality of our financial reporting	302	3.08	716	2.86	3.30
Q14	Creativity	302	3.33	727	3.44	-2.15
Q14	Tax aggressiveness	269	2.16	663	2.10	0.86
Q14	How much debt we use	277	2.44	691	2.41	0.40
Q14	Willingness to take on risky projects	304	3.23	723	3.18	0.98
Q14	Management of downside risk	297	3.15	715	3.08	1.30
Q14	Our rate of growth	296	3.39	728	3.39	-0.05
Q14	Compliance	300	3.32	716	3.05	4.01
Q14	Productivity	298	3.48	724	3.52	-0.72

Table C.11.

Corporate culture by family ownership

This table provides descriptive statistics by family ownership. Family ownership includes both those with and without operational influence at their firm. Panel A summarizes the corporate culture measures. Panel B summarizes the value of corporate culture. Panel C summarizes the actions influenced by corporate culture. Panel D summarizes business outcomes affected by corporate culture. The sample consists of survey responses from executives at public and private North American firms. For a detailed description of each variable, see the definitions in Appendix B.

		Family Firm	Family Firm Mean	Non-family Firms	Non-family Firm Mean	T-stat on Family vs. Non-family Mean Difference
Panel A. Cultural Measures						
Q1/Q14	Aggregate cultural values	429	0.25	358	0.29	1.91
Q6	Aggregate cultural norms	429	0.50	358	0.51	0.24
Q6/Q13	Aggregate formal institutions	429	0.46	358	0.41	-1.29
Q13	Leadership	429	0.60	358	0.51	-1.51
Q4	Tracks stated values	422	3.30	349	3.33	0.44
Q4b	Effective culture	429	2.73	358	2.81	1.28
Panel B. The Value of Corporate Culture						
Q2	How important?	426	3.50	355	3.56	1.12
Q3	Top issue?	429	3.17	357	3.28	1.57
Q4c	Improve culture increases value?	351	0.89	288	0.94	2.10
Q11	Discount for misaligned culture?	372	3.82	311	3.65	-1.33
Panel C. Actions Influenced by Corporate Culture						
Q7	Take right amount of investment risk	393	-0.16	332	-0.16	-0.16
Q7b	Culture is reason for investment risk	312	2.70	257	2.69	-0.03
Q8	Choose greater NPV project	370	0.59	305	0.59	0.01
Q8b	Culture influences NPV project preference	219	0.78	189	0.81	0.82
Q10	Increases chance do something unethical	410	0.85	344	0.81	-1.47
Q12	Earnings management	401	2.67	333	2.46	-2.93
Panel D. Business Outcomes						
Q14	Firm Value	416	3.36	349	3.50	2.39
Q14	Profitability	424	3.46	350	3.39	-1.47
Q14	Quality of our financial reporting	415	2.91	348	2.86	-0.72
Q14	Creativity	422	3.46	348	3.41	-0.91
Q14	Tax aggressiveness	389	2.19	318	2.02	-2.30
Q14	How much debt we use	406	2.58	323	2.25	-4.22
Q14	Willingness to take on risky projects	421	3.21	350	3.15	-1.05
Q14	Management of downside risk	416	3.09	345	3.09	0.02
Q14	Our rate of growth	424	3.38	344	3.45	1.36
Q14	Compliance	415	3.11	341	3.11	-0.01
Q14	Productivity	418	3.51	347	3.58	1.36

Table C.12.

Corporate culture by firm size

This table provides descriptive statistics by firm size. Small firms are defined as those with less than 1000 employees while large firms are defined as those with 1000 or more employees. Panel A summarizes the corporate culture measures. Panel B summarizes the value of corporate culture. Panel C summarizes the actions influenced by corporate culture. Panel D summarizes business outcomes affected by corporate culture. The sample consists of survey responses from executives at public and private North American firms. For a detailed description of each variable, see the definitions in Appendix B.

		Small Firms	Small Firm Means	Large Firms	Large Firm Means	T-stat on Small vs. Large Mean Difference
Panel A. Cultural Measures						
Q1/Q14	Aggregate cultural values	971	0.24	377	0.25	0.51
Q6	Aggregate cultural norms	971	0.48	377	0.51	1.18
Q6/Q13	Aggregate formal institutions	971	0.38	377	0.41	1.22
Q13	Leadership	971	0.47	377	0.52	1.14
Q4	Tracks stated values	953	3.29	366	3.31	0.38
Q4b	Effective culture	971	2.76	377	2.85	-1.59
Panel B. The Value of Corporate Culture						
Q2	How important?	962	3.49	373	3.61	2.57
Q3	Top issue?	968	3.22	377	3.22	0.10
Q4c	Improve culture increases value?	784	0.91	320	0.93	0.92
Q11	Discount for misaligned culture?	684	3.77	316	3.51	-2.19
Panel C. Actions Influenced by Corporate Culture						
Q7	Take right amount of investment risk	764	-0.15	353	-0.24	-2.14
Q7b	Culture is reason for investment risk	588	2.66	272	2.78	1.56
Q8	Choose greater NPV project	696	0.61	329	0.56	-1.56
Q8b	Culture influences NPV project preference	435	0.80	194	0.79	-0.46
Q10	Increases chance do something unethical	768	0.83	358	0.87	1.65
Q12	Earnings management	746	2.57	357	2.52	-0.67
Panel D. Business Outcomes						
Q14	Firm Value	761	3.40	363	3.48	1.77
Q14	Profitability	776	3.43	361	3.46	0.73
Q14	Quality of our financial reporting	754	2.87	364	3.08	3.23
Q14	Creativity	772	3.48	364	3.31	-3.47
Q14	Tax aggressiveness	697	2.09	323	2.25	2.47
Q14	How much debt we use	726	2.43	333	2.51	1.23
Q14	Willingness to take on risky projects	768	3.19	361	3.26	1.25
Q14	Management of downside risk	753	3.08	356	3.21	2.51
Q14	Our rate of growth	771	3.39	359	3.41	0.34
Q14	Compliance	756	3.08	363	3.29	3.32
Q14	Productivity	768	3.55	358	3.44	-2.51

Table C.13.

Test of non-response bias: Respondents versus universe of invited firms

This table compares the demographic information for people who respond to the culture survey and the universe of firms invited to participate for which we knew demographic information (those that respond to the Duke Quarterly CFO survey). Column 1 summarizes responses from those that took the culture survey. Column 2 summarizes responses from Duke Quarterly CFO survey respondents since 2011 who we asked to take the culture survey. Industry classifications reflect those used in the Duke Quarterly CFO survey, which is less refined than that used in the culture survey. For a detailed description of each variable, see the definitions in Appendix B.

	Culture Survey Respondents	CFO Survey Respondents
Panel A. Revenue		
1 = Less than $25 million	33%	27%
2 = $25-$99 million	24%	25%
3 = $100-$499 million	19%	24%
4 = $500-$999 million	7%	7%
5 = $1-$4.9 billion	8%	8%
6 = $5-$9.9 billion	3%	3%
7 = More than $10 billion	6%	5%
Mean	2.67	2.74
T-stat on mean difference	0.72	
Panel B. Number of Employees		
1 = Fewer than 100	39%	32%
2 = 100-499	25%	32%
3 = 500-999	10%	11%
4 = 1000-2499	8%	8%
5 = 2500-4999	4%	5%
6 = 5000-9999	4%	3%
7 = More than 10,000	9%	9%
Mean	2.62	2.71
T-stat on mean difference	0.82	
Panel C. Credit Rating		
0 = No rating	21%	21%
1 = High yield	15%	17%
2 = Investment grade	65%	63%
Mean	1.44	1.42
T-stat on mean difference	-0.52	
Panel D. Profitability		
0 = No after-tax profit	15%	12%
1 = After-tax profit	85%	88%
Mean	0.85	0.88
T-stat on mean difference	1.35	
Panel E. Industry		
Communication	2%	3%
Energy	2%	6%
Finance	14%	12%
Healthcare	5%	5%
Manufacturing	23%	26%
Mining	3%	5%
Retail	12%	15%
Services	15%	14%
Technology	8%	5%
Other	16%	10%

Table C.14.

Culture measures by job title

This table provides tests of differences in mean response by job title. Panel A summarizes the corporate culture measures. Panel B summarizes the value of corporate culture. Panel C summarizes the actions influenced by corporate culture. Panel D summarizes business outcomes affected by corporate culture. The sample consists of survey responses from executives at public and private North American firms. For a detailed description of each variable, see the definitions in Appendix B.

								T-stat on CEO vs.	T-stat on CEO vs.	T-stat on CFO vs.	T-stat on CFO vs.	Joint F-test for Mean
Panel A. Cultural Measures		CEO N	Mean	CFO N	Mean	Other N	Mean	CFO	Otr.	Otr.	Non-CFO	Differences
Q1/Q14	Aggregate cultural values	183	0.39	474	0.24	408	0.25	-6.57	-5.75	-0.69	0.54	21.26
Q6	Aggregate cultural norms	183	0.69	474	0.49	408	0.49	-5.61	-5.65	0.00	-0.09	17.02
Q6/Q13	Aggregate formal institutions	183	0.65	474	0.44	408	0.36	-5.50	-7.06	2.35	-3.05	24.05
Q13	Leadership	183	0.92	474	0.52	408	0.46	-6.43	-7.14	1.11	-1.37	24.23
Q4	Tracks stated values	180	3.77	462	3.22	403	3.23	-7.75	-7.51	-0.09	2.09	30.68
Q4b	Effective culture	183	3.08	474	2.67	408	2.75	-5.75	-4.61	-1.38	2.08	15.91
Panel B. The Value of Corporate Culture												
Q2	How important?	183	3.76	467	3.49	404	3.52	-4.19	-3.73	-0.45	1.00	8.64
Q3	Top issue?	182	3.63	474	3.15	408	3.19	-5.83	-5.33	-0.63	1.92	17.20
Q4c	Improve culture increases value?	140	0.93	397	0.91	327	0.91	-0.53	-0.51	0.00	0.46	0.15
Q11	Discount for misaligned culture?	167	4.22	426	3.67	323	3.55	-3.74	-4.24	0.92	0.23	9.22
Panel C. Actions Influenced by Corporate Culture												
Q7	Take right amount of investment risk	171	-0.18	441	-0.11	366	-0.25	1.24	-1.31	3.16	-2.90	5.24
Q7b	Culture is reason for investment risk	120	2.83	365	2.61	275	2.78	-1.95	-0.41	-1.99	2.19	2.99
Q8	Choose greater NPV project	153	0.66	412	0.63	342	0.52	-0.64	-2.91	3.08	-1.98	6.47
Q8b	Culture influences NPV project preference	103	0.83	266	0.77	188	0.80	-1.07	-0.56	-0.60	1.35	0.61
Q10	Increases chance do something unethical	177	0.87	452	0.85	388	0.84	-0.66	-0.84	0.27	-0.31	0.36
Q12	Earnings management	167	2.68	448	2.56	382	2.52	-1.27	-1.74	0.64	-0.20	1.49
Panel D. Business Outcomes												
Q14	Our rate of growth	178	3.60	465	3.37	389	3.44	-3.26	-2.31	-1.36	2.01	5.49
Q14	Profitability	180	3.51	467	3.43	394	3.42	-1.29	-1.42	0.20	0.40	1.06
Q14	Productivity	173	2.95	466	2.89	388	2.97	-0.76	0.14	-1.18	1.54	0.76
Q14	How much debt we use	179	3.57	463	3.37	397	3.39	-2.95	-2.65	-0.37	1.94	4.58
Q14	Quality of our financial reporting	165	1.97	454	2.02	324	2.34	0.62	3.98	-4.51	3.35	12.66
Q14	Creativity	170	2.19	460	2.42	347	2.54	2.36	3.51	-1.62	0.95	6.07
Q14	Management of downside risk	178	3.17	463	3.16	396	3.27	-0.26	1.25	-2.01	1.99	2.12
Q14	Willingness to take on risky projects	176	3.07	464	3.06	380	3.18	-0.08	1.46	-2.02	1.95	2.26
Q14	Firm Value	180	3.39	467	3.40	387	3.42	0.21	0.40	-0.27	-0.27	0.09
Q14	Tax aggressiveness	176	3.26	467	2.99	383	3.25	-3.07	-0.19	-3.69	4.51	8.82
Q14	Compliance	174	3.54	466	3.49	391	3.52	-0.82	-0.25	-0.71	0.93	0.44

Table C.15.
Respondents by job title and firm size
This table provides the percentage of respondents by job title and firm size. Panel A summarizes when firm size is measured by number of employees and Panel B summarizes when firm size is measured by sales revenue. The sample consists of survey responses from executives at public and private North American firms. For a detailed description of each variable, see the definitions in Appendix B.

	Job Title		
Number of Employees	CEO	CFO	Other
1 = Fewer than 100	27%	45%	28%
2 = 100-499	10%	63%	27%
3 = 500-999	7%	52%	41%
4 = 1000-2499	13%	44%	43%
5 = 2500-4999	11%	42%	48%
6 = 5000-9999	28%	26%	45%
7 = More than 10,000	10%	23%	67%

	Job Title		
Sales Revenue	CEO	CFO	Other
1 = Less than $25 million	29%	44%	27%
2 = $25-$99 million	16%	56%	28%
3 = $100-$499 million	7%	61%	33%
4 = $500-$999 million	7%	51%	42%
5 = $1-$4.9 billion	17%	34%	48%
6= $5-$9.9 billion	21%	21%	57%
7 = More than $10 billion	7%	20%	74%

Table C.16.

Culture measures by email source

This table provides tests of differences in mean response for the main sample of Duke CFO survey participants and Columbia alumni. Panel A summarizes the corporate culture measures. Panel B summarizes the value of corporate culture. Panel C summarizes the actions influenced by corporate culture. Panel D summarizes business outcomes affected by corporate culture. The sample consists of survey responses from executives at public and private North American firms. For a detailed description of each variable, see the definitions in Appendix B.

		Duke Firms	Duke Firm Mean	Columbia Firms	Columbia Firm Mean	T-stat on Duke vs. Columbia Mean Difference
Panel A. Cultural Measures						
Q1/Q14	Aggregate cultural values	446	0.24	137	0.28	1.52
Q6	Aggregate cultural norms	446	0.48	137	0.52	0.97
Q6/Q13	Aggregate formal institutions	446	0.41	137	0.43	0.51
Q13	Leadership	446	0.52	137	0.62	1.41
Q4	Tracks stated values	436	3.33	134	3.46	1.54
Q4b	Effective culture	446	2.78	137	2.85	0.93
Panel B. The Value of Corporate Culture						
Q2	How important?	441	3.50	135	3.69	2.66
Q3	Top issue?	445	3.18	136	3.44	2.73
Q4c	Improve culture increases value?	359	0.91	111	0.88	-0.69
Q11	Discount for misaligned culture?	356	3.60	97	3.55	-0.27
Panel C. Actions Influenced by Corporate Culture						
Q7	Take right amount of investment risk	389	-0.18	111	-0.11	1.07
Q7b	Culture is reason for investment risk	313	2.78	82	2.65	-0.97
Q8	Choose greater NPV project	370	0.61	96	0.66	0.91
Q8b	Culture influences NPV project preference	232	0.79	65	0.82	0.39
Q10	Increases chance do something unethical	398	0.86	108	0.82	-0.98
Q12	Earnings management	392	2.52	105	2.38	-1.27
Panel D. Business Outcomes						
Q14	Firm Value	393	3.34	110	3.47	1.46
Q14	Profitability	396	3.43	110	3.34	-1.23
Q14	Quality of our financial reporting	391	2.87	110	2.76	-0.99
Q14	Creativity	389	3.38	112	3.60	2.68
Q14	Tax aggressiveness	369	2.12	98	1.82	-2.76
Q14	How much debt we use	379	2.49	102	2.13	-3.05
Q14	Willingness to take on risky projects	393	3.22	109	3.17	-0.67
Q14	Management of downside risk	395	3.12	107	3.17	0.55
Q14	Our rate of growth	392	3.38	110	3.39	0.17
Q14	Compliance	392	3.08	107	3.08	0.02
Q14	Productivity	396	3.44	108	3.56	1.56

D Econometric Issues

Measurement error. Survey data potentially suffer from multiple sources of measurement error that could bias toward zero the association of firm outcomes with corporate culture. First, measurement error in the construction of our data could occur if respondents do not understand the question. To avoid such errors, 12 individuals including academic experts, regulators, culture consultants, and one professional expert on survey design vetted the instrument. In addition, we conducted a beta test of the survey with 20 respondents and modified the wording of some questions accordingly. To test for this type of measurement error more explicitly, we compare responses from individuals that both completed the survey at least six months after they spoke to us at-length in an interview. We find a strong correlation between the survey responses and interview responses. Finally, our sample includes repeat observations from 18 firms where more than one corporate executive responded. While it is hard to draw inferences from such a small sample, to the extent that our survey is truly measuring corporate culture, the repeat responses should correlate. We find a strong pairwise positive correlation between the multiple responses among the repeat firms.

A second type of measurement error could occur if unintentionally we omit important cultural values and norms on the survey. While we attempt to include the cultural values and norms that management scholars have repeatedly found to be important (O'Reilly, Chatman, and Caldwell (1991)) and our interviews were designed to detect anything missing, we may unintentionally exclude other relevant choices. A potential correction for this type of error involves studying aggregated results. If the firm's cultural values and norms are correlated, which they are in the 16 cultural values and norms that we examine, then our aggregate measures will serve as representative proxies of the firm's true cultural values and norms. Appendix Table C.9 shows the correlation matrix for our measures. In addition, respondents are allowed to write in norms beyond those we list (and the cultural value question is entirely open-ended), and we do not detect any frequently mentioned choices outside of our seven values and listed norms.

In addition, we cross-validate our cultural measures by benchmarking our responses to existing research. Appendix Table C.10, Table C.11, and Table C.12 summarize the responses across public

and private firms, family and non-family firms, and small and large firms, respectively. We find no difference across measures of culture for public and private firms but find public firms believe that culture plays less of a role affecting the firms' choice of investment risk and creativity, and plays a bigger role in being compliant. We find family firms and non-family firms exhibit no differences, on average, in measures of culture. Non-family firms, however, are more likely than family firms to believe culture influences employees' actions and that culture has a big effect on firm value.

A third type of possible measurement error concerns whether the presentation of the questions could bias respondents' answers (e.g., Bertrand and Mullainathan (2001)). One advantage of online administration is the ability to randomly scramble the order of choices within a question, so as to mitigate potential order-of-presentation effects. Specifically, the survey scrambles the order of answers in the questions used to construct our measures of cultural norms (Q6), formal institutions (Q13), and business outcomes (Q14). We do not detect any ordering effects. By framing our survey about "culture," we may elicit bias in respondents' answers to all questions. To address potential framing effects, we test alternative wording for questions in a follow-on survey that was not framed as a culture survey. We do not detect any framing effects. In addition, we include redundant questions about cultural values, cultural norms, and formal institutions that rephrase and reframe issues of interest. These additional questions help attenuate the effect of noise attributable to potential respondent behavioral biases. Nevertheless, we also include controls for the date of survey response, response delay, and source of email (i.e., Duke, Columbia, *CFO* magazine, etc.).

Selection. Selection may alter statistical inferences when data are not gathered via randomization or quasi-random assignment. In our context, selection would be present if those who respond to the survey are those that "drank the kool-aid" on culture and/or those that engage in "cheap talk" about culture. From a survey design standpoint, we attempt to mitigate these concerns with a mix of questions that elicit hypothetical and real business decisions. Neuroscience research suggests these two types of questions when asked in isolation activate different parts of the brain. When the neuroscience researchers switched back and forth between hypothetical and real choices, they discovered brain activity was stronger in the region associated with real choices, serving to reduce differences in response (Kang, Rangel, Camus, and Camerer (2011)). Thus, by requiring

respondents to switch back and forth between real and hypothetical decisions, our survey design tries to mitigate selection concerns.

We conduct several tests to explore the extent of non-response bias in our data. First, because one of our email lists includes respondents that regularly participate in the Duke quarterly survey of CFOs, we compare the responses of executives that routinely respond to that survey to those that occasionally respond. Appendix Table C.13 shows that the culture survey respondents do not differ statistically from the regular responders. Given that we find no statistically significant difference across these sampling frames, this suggests minimal selection. Second, we test the time to response to see if it suggests differences. On one hand, those that respond early to the survey may be very enthusiastic about the topic of culture. On the other hand, those that respond closer to the end of the open window may be more negative and want to get their final word in on culture. This study of responses over time also serves as a classic test of nonresponse bias. Figure C.1 shows a bar graph of the mean response to Question 1 ("how important is corporate culture") broken down by the number of days from the initial survey invitation to when the survey is completed. The dashed blue line shows the mean response across all observations. Unreported joint F-tests indicate that the responses are statistically indistinguishable across days.

Third, we test for response differences by job title. Because the modal respondent in our survey is a CFO, we compare the responses of CFOs to CEOs and non-executives. We see CEOs are more positive on the importance of culture than CFOs, who show no significant difference from non-executives. Appendix Table C.14 details the responses by job title across all questions. A variant of this type of selection by job title could occur if there was significant variation in response by firm size. Appendix Table C.15 shows that there is some variation in the rate of response by firm size and job title. An analysis of the job titles for those non-CEOs in larger firms indicate they are primarily members of the board or directors and other high-level non-financial executives (e.g., Chief Operating Officer). To account for the noise these issues may bring to the data in our econometric specifications we include controls for job title and firm size. Finally, Appendix Table C.16 lists the mean response by email source (i.e., Duke or Columbia) and shows little statistical difference between the groups. In conclusion, while selection has the potential to be a problem in

our data, we find no evidence that it is a significant issue. Further, we account for potential "noise" through the use of control variables.

Multicollinearity tests. Multicollinearity can inflate variance, leading researchers to fail to reject the null hypotheses of no effect too often because the standard errors are large. We test for multicollinearity in our data in two ways. First, we analyze the variance inflation factors (VIFs) among the seven cultural values, nine cultural norms, four formal institutions, and leadership. The VIF estimates how much the variance of a coefficient is inflated because of linear dependence with other explanatory variables. Authorities differ on how high the VIF has to be to constitute a problem, with an excess of 2.5 for key explanatory variables to an excess of 10 being considered problematic. Our average VIF is 4, and six cultural elements have VIFs greater than 10. Second, we analyze the eigenvalues in the correlation matrix of the explanatory variables. Eigenvalues close to zero indicate a problem and we have six eigenvalues less than 0.1. The condition index, which is the square root of the ratio of largest to smallest eigenvalues, is 16.9 for our data. A value above 10 indicates moderate multicollinearity problems while a value over 20 indicates a severe problem.

E Culture and Firm Value

Given that the preamble to Q14 (which we use to measure business outcomes) states "on this question, we'd like to learn about the effect of corporate culture," our respondents may be telling us about the slope between outcomes and culture rather than the outcome level. This appendix assesses what can and cannot be learned from analyzing these data. We use firm value as an example of a business outcome but the results generalize across responses: "Does culture affect firm value?" Let V represent value, C represent culture, and β represent the effect of culture on expected firm value. Assume this conditional expectation takes the standard linear form:

$$E[V|C] = C\beta \tag{E.1}$$

We are interested in the null hypothesis:

H_0**:** Culture does not affect firm value, i.e. $E[V|C] = 0 \Leftrightarrow \beta = 0$.

The standard test for this null hypothesis would be observing data vectors V and C for many firms, and solving for β as the least squares estimator for the regression:

$$V = E[V|C] + \epsilon = C\beta + \epsilon \tag{E.2}$$

where the least squares estimator of β is given by $\beta^{OLS} = (C'C)^{-1}C'V$. And we can use the mean ($E[\beta^{OLS}|C] = \beta$) and variance ($Var[\beta^{OLS}|C] = (C'C)^{-1}Var(\epsilon^{OLS})$ where $\epsilon^{OLS} = V - C\beta^{OLS}$ are the regression residuals) of this estimator to test the null hypothesis that the true β is equal to zero. Under the standard identification condition $E[\epsilon|C] = 0$, then $E[V|C] = 0 \Leftrightarrow \beta = 0$.

In our case, we do not have data on firm value V, but we have data from the question "To what extent does the culture at your firm affect firm value?" to test whether the effect β is nonzero. The potential responses are: "0 = No effect," "1 = Little effect," "2 = Moderate effect," and "3 = Big effect." There are two ways we can use this:

1. First, we can use it directly. We can create an indicator variable representing a selection

other than "0 = No effect." That is, we have data of the indicator $\mathbf{1}_{\{\beta\neq 0\}}$. Let $\beta := \alpha \mathbf{1}_{\{\beta\neq 0\}}$ where $\alpha \neq 0$ is a (constant) scale of β.[8] Then it is clear that $\beta = 0 \Leftrightarrow \mathbf{1}_{\{\beta\neq 0\}} = 0$. So we can test the original null hypothesis directly by testing the equivalent null hypothesis:

H_0**:** Culture does not affect firm value, i.e. $\mathbf{1}_{\{\beta\neq 0\}} = 0$.

This test can be done directly with two pieces of data, using the mean ($E[\mathbf{1}_{\{\beta\neq 0\}}]$) and variance ($Var[\mathbf{1}_{\{\beta\neq 0\}}]$). The results of the direct test are included below. The direct tests reject the null hypotheses that culture has no effect on business outcomes at a significance level of 1% for all business outcomes.

Direct Test of H_0: $\beta = 0$	$\mathbf{1}_{\{\beta \neq 0\}}$
Being Compliant	0.92***
	(0.01)
Creativity	0.98***
	(0.00)
Firm Value	0.97***
	(0.00)
How much debt we use	0.80***
	(0.01)
Management of downside risk	0.96***
	(0.01)
Our rate of growth	0.98***
	(0.00)
Productivity	0.99***
	(0.00)
Profitability	0.99***
	(0.00)
Quality of our financial reporting	0.91***
	(0.01)
Tax aggressiveness	0.76***
	(0.01)
Willingness to take on risky projects	0.96***
	(0.01)

2. Second, we could extend the idea above to the full range of survey values and make inferences that incorporate additional data and controls for noise, as we do in the body of the paper. One reason to do this would be to determine whether the null hypothesis holds after a

[8] That α is nonzero is without loss of generality; the functional form here and the linear form above are not. This proof generalizes to other reasonable functional forms, but for simplicity the setup here seems sufficient.

survey respondent's perception of their own culture or other observable explanatory variables have been accounted for. To understand how to interpret such tests, consider a proof of unbiasedness for an OLS estimator under the standard identification condition $E[\epsilon|C] = 0$. We have $E[\hat{\beta}] = E[(C'C)^{-1}C'V] = (C'C)^{-1}C'E[V] = (C'C)^{-1}C'C\beta = \beta$. If in our case, we have $E[V] = C\theta$ rather than $E[V] = C\beta$, when $\theta = \beta$, tests of the original null hypothesis go through exactly. If $\theta = \alpha\beta$ where $\alpha \neq 0$ is a (constant) scale of β, then $E[V] = C\alpha\beta$ and $E[\hat{\beta}] = \alpha\beta$. Again the original null hypothesis can be tested. In this case, however, alternative hypotheses cannot be tested because respondents did not report a sign for the effect. For example, [H_a:] Culture positively affects firm value, (i.e. $E[V|C] > 0$ is not testable.) Hence, the appropriate interpretation of the conditional tests is that they reject the null hypotheses that culture has no effect on business outcomes.