Corporate Culture: Evidence from the Field*

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ABSTRACT

We use interviews and a novel survey tool to study corporate culture at more than 1,300 North American firms. More than 90% of executives believe that culture is important or very important at their firms and 92% believe improving culture would increase firm value. Only 16% believe their firm's culture is exactly where it should be. Executives link culture to ethical choices (including compliance and short-termism), innovation (creativity, taking on appropriate business risk), and value creation (productivity, acquisition premia) at their firms. We study these issues within a framework that implies that the effectiveness of corporate culture is determined not just by stated cultural values but also by whether employees act according to social norms that are consistent with the values, and whether formal institutions such as governance reinforce the values. Key cultural values include integrity, collaboration, and adaptability.

JEL classification: G3, Z1, D23, G23, G30, K22, M14, O16.

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Why do some firms generate great wealth for investors and offer innovative solutions to problems, while seemingly similar firms are much less successful? Economists have traditionally explained persistent differences in outcomes across firms using production inputs but recently some 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 explain these differences in performance. In this paper, we seek to empirically address questions related to what is corporate culture, does culture affect firm value and decision-making, and if so, how?

Economists who study corporate culture often embed it within the broader political economy literature on corporate institutions (e.g., Guiso, Sapienza, and Zingales (2015b); Hermalin (2013)). We follow this precedent and, as shown in Figure 1, dichotomize corporate institutions into formal and informal branches. Formal institutions are tangible and consist of policies such as governance and compensation. Informal institutions, which we refer to as corporate culture, are less tangible and consist of cultural values and social norms. Cultural values are standards employees strive to fulfill, while social norms are the day-to-day practices that reflect these values. Figure 1 illustrates that the effectiveness of corporate culture depends on the alignment of and the interaction between values and norms, as well as possible interactions with formal institutions. These interactions determine the effectiveness of corporate culture which, in turn, enables successful outcomes. Two primary empirical findings of our paper are that social norms are at least as important as stated cultural values, and that the interaction between values, norms, and formal institutions explain the effectiveness of a firm's current culture.

Despite decades of research arguing for culture's prominent role in fixing contractual inefficiencies (Kreps (1990)) and the many anecdotes that policymakers, executives and the press provide to suggest corporate culture is very important, empirical researchers have less to say about culture with a few notable exceptions (e.g., Guiso, Sapienza, and Zingales (2015a)). One reason for limited empirical research is the absence of large-sample, high-quality data about corporate culture. While early work suggested that "culture is a complex phenomenon, and we should not rush to measure things until we understand better what we are measuring" (Schein (1990)), the theory is now rel-

atively mature. For research to progress and to guide policy, it is critical to know which elements of culture are most important, when, and why.

One of the purposes of this paper is to gather a large, comprehensive database of corporate culture, beyond just anecdotes, that allows us to explore culture in the context of the values, norms, and formal institutions framework described above. 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 the roles played by cultural values, norms, and formal institutions in determining the effectiveness of corporate culture, and, in turn, the effect of culture on three different types of business outcomes: ethics, innovation, and productivity/firm value.

Business executives indicate that having an effective corporate culture impacts value: 91% of executives consider corporate culture to be "very important" or "important" at their firm, and 79% rank culture as at least a "top 5" factor among all of the things that make their firm valuable. 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 33% would require discounts between 10%–30% of the purchase price of the target. 92% of corporate executives believe that improving corporate culture would increase firm value.

Executives also believe that culture influences a wide range of decisions and actions. 85% believe a poorly implemented, ineffective culture increases the chance that an employee might act unethically or even illegally. Similarly, we find that nearly half of corporate officers indicate that they would choose a "short-term" project over one that maximizes NPV. Among those officers that select the NPV-superior investment, 80% indicate their firm's culture plays a key role in the decision. 70% believe effective culture is an important reason their firm takes on the appropriate amount of investment risk, while 29% indicate that ineffective culture leads them to take on *too little* investment risk to achieve their firm's goals. Finally, 53% believe that an effective culture reduces the tendency of companies to engage in end-of-quarter earnings management practices (such as delaying valuable projects) to deliver the market's expected earnings numbers.

Figure 2 illustrates an interesting feature of the raw data. Only 16% of respondents indicate their firm's culture is exactly where it should be, yet 52% indicate their firm's culture very closely tracks their stated cultural values. Assuming the stated cultural values are the aspirational or ideal values for the firm, if choosing cultural values optimally is all that matters for effectiveness, then adhering to stated values should also lead to effectiveness. To the contrary, we do not find a strong relation between tracking stated values and business outcomes. We argue that for stated cultural values to have full impact on business outcomes, they must be complemented by norms that dictate actual behavior and formal institutions. Later in the paper, we present empirical results which indicate that norms are at least as important as the values themselves in driving outcomes, and that formal institutions can either reinforce or work against these informal corporate institutions.

More specifically, our econometric investigation into the effects of culture on business outcomes suggest several important findings. First, for culture to have full impact, values should be complemented by reinforcing norms and formal institutions. Second, formal institutions and social norms substantially explain the effectiveness of corporate culture. These factors alone can explain almost 50% of the variation in the effectiveness of culture. Third, an effective culture impacts firm value significantly, and influences many specific examples of innovation and ethical outcomes. Fourth, when we use a quantile regression approach to examine the impact of culture on firms in the upper and lower end of the outcome distribution, we see the impact of culture is economically and statistically much more meaningful for firms in the low end. This suggests the frequency with which the popular press blames culture for corporate shortcomings may be justified.[1]

We also investigate specific channels by which culture might affect specific business outcomes. By using clustering and variable selection algorithms, we learn that culture is not 'one size fits all.' Certain cultural values and norms are more likely to be associated with specific business outcomes. For example, we find that creativity (an innovation outcome) is positively associated with the cultural value of adaptability and the social norms of "new ideas develop organically" and "comfort in suggesting critiques." We also find that being compliant (an ethical outcome) is associated with a value of integrity and social norms of long-run decision-making and willingness to report unethical

[1]Corporate culture has recently been blamed for negative performance at VW, Toshiba, and Wells Fargo.

behavior. Thus, multiple mechanisms appear to be at work connecting corporate culture to different business outcomes. Key cultural values include integrity (for ethical outcomes), collaboration (for firm value and productivity outcomes), and adaptability (for innovation outcomes).

To understand the robustness and generalizability of our findings, we conduct a thorough evaluation of the quality of the data. To minimize measurement error, we consulted 11 experts to vet the survey design and administered 20 beta tests prior to launching the survey. Given that the presentation of questions may bias respondent's answers, we scramble the order of choices within a question. Examining correlations across multiple respondents within the same firm, and comparing survey responses for those firms we also interviewed supports internal validity. We cross-validate our cultural measures by examining cultural values at an industry level, which produces patterns that conform to intuition. For a sample of respondents that identified themselves, we match their survey responses to their publicly available financial data and we find that stronger cultural norms are significantly associated with higher profitability and Tobin's Q. Finally, we conduct several tests to explore the extent of selection in our data. We test for response differences by job title, delay in survey response (a test for non-response bias), and by comparing characteristics of respondents with the characteristics of the population from which they are drawn. There is little statistical difference across these categories, thus we do not find evidence of selection problems. As described below, we attempt to statistically address a possible "halo effect" (carry-over in judgment from one question to the next) using the approach used by Guiso, Sapienza, and Zingales (2015a). Finally, to address potential framing from a "culture" survey, we explore different wording in a follow-on survey. The results from this follow-on question are consistent with our findings from our primary culture survey.

Our work relates to a number of strands in the literature. First, our findings are consistent with recent research pointing to the first-order importance of internal company practices for determining productivity and performance (Bloom and Van Reenen (2007); Bloom, Sadun, and Van Reenen (2012); Martinez et al. (2015)). Second, our research highlights the vital, but underappreciated, role that corporate culture plays in value creation (Guiso, Sapienza, and Zingales (2006); Guiso, Sapienza, and Zingales (2015a); Guiso, Sapienza, and Zingales (2015b)). Third, our results suggest

that formal institutions such as corporate leadership (Bertrand and Schoar (2003); Gibbons and Henderson (2013)), incentive compensation (Lazear (2000)), and corporate governance (Popadak (2016)) meaningfully interact with the underlying corporate culture. Finally, our evidence links culture to ethics (Guiso, Sapienza, and Zingales (2006)), myopia (Graham, Harvey, and Rajgopal (2005)), whistle-blowing (Bowen, Call, and Rajgopal (2010); Dyck, Morse, Zingales (2010)), and risk (Fahlenbrach, Prilmeier, and Stulz (2012)).

The rest of the paper proceeds as follows. Section I introduces the theoretical background and develops our hypotheses. Section II describes how we gather the data and measure corporate culture. Section III presents our findings. Some concluding remarks are offered in the final section. The online appendices contain a copy of the survey, variable definitions, and additional tables.

I. Theory and Hypotheses

A. Corporate Culture as an Informal Institution that Affects Firm Performance

Our definition of corporate culture builds on previous research and facilitates our tests connecting culture to business outcomes. Early research defined corporate culture as an intangible asset designed to meet unforeseen contingencies as they arise (Kreps (1990)). Culture includes 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)). Recent research embeds this earlier definition of culture into a broader context of corporate institutions and societal culture (Guiso, Sapienza, and Zingales (2015b)). As shown in Figure 1, corporate institutions consist of formal and informal institutions (the latter is what we refer to as corporate culture). Formal institutions are tangible and consist of corporate policies like governance and compensation. Corporate culture is less tangible and consists of cultural values and norms. Cultural values are standards that employees strive to fulfill, while norms are the day-to-day practices that attempt to live out these values.[2]

A central thesis of our paper is that simply declaring cultural values does not by itself lead to

[2] Guiso, Sapienza, and Zingales (2015a) 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.

successful business outcomes. Rather, these values must be complemented by norms that dictate actual behavior. We also posit that formal institutions such as compensation policy can either reinforce or work against the effectiveness of cultural values and norms. We attempt to separately measure these different elements and their effects on business outcomes. The rest of this section puts these basic ideas into the broader literature and develops our testable hypotheses.

We begin by connecting the elements in Figure 1 to business outcomes. Both formal institutions and corporate culture relate to economic outcomes through the incentive structures that they provide (North (1991)). Formal and informal influences can motivate employees in different ways. Formal institutions such as compensation contracts provide pecuniary rewards or extrinsic motivation while, in contrast, culture creates a desire to perform for its own sake, that is, culture provides intrinsic motivation (Benabou and Tirole (2003)). The distinction between extrinsic and intrinsic motivation is important in distinguishing when the effects of corporate culture on firm outcomes may be most evident. Given that employees face choices that cannot fully be regulated ex ante (i.e., incomplete contracts), the intrinsic motivation provided by culture is likely to have its strongest effects when such choices arise. One way to think of this is that if you applied the exact same formal inputs (technology, contracts, etc.) to two similar firms and two different outputs were to result, the difference in output is likely attributable to culture.

The values and social norms that comprise culture characterize the incentive structure in place that guides employees' actions when they face unforeseen contingencies. A firm will try to promote understanding of its selected values and norms, and employees will be judged by their diligence in applying the values and norms. A cultural value represents an ideal state of behavior such as integrity or teamwork (Guiso, Sapienza, and Zingales (2015a)). Social norms are expressions of cultural values via the accepted patterns of "right" and "wrong" conduct (Posner (2000)). For example, the importance of "honoring one's word" is a social norm that operationalizes an integrity value. A firm's cultural values and social norms connect to firm performance through the intrinsic motivation they create (Akerlof (2015)). Put another way, the reason that values and norms influence performance is that they reduce moral hazard.

We expand upon the economic links from cultural values and norms to firm performance in the

following example.

Technology firm example: Consider a technology firm with a reputation for delivering innovative products and a strategy of frequent new product releases. To maximize value, the firm needs employees to be highly innovative. But employees may be tempted to save on the effort necessary to think creatively and avoid implementing risky design projects. For the employees, it may be easier to simply produce products that *appear* innovative (i.e., have an incremental change) but are actually only minimally innovative. To avoid the outcome of less-than-innovative products and the negative effect they would eventually have on firm value, corporate leadership attempts to instill a cultural value that leads to true innovation. In this example, the technology firm may elevate the ideal of adaptability to the level of a cultural value. The associated pattern of action (social norm) is to embrace flexible attention. Instead of demanding routine work for a full eight hours, employees are encouraged to make time for activities that at first glance might seem unproductive. If they are stuck on a design challenge and need inspiration, they may play a game of pinball. The employees are intrinsically motivated to think creatively when exploring new opportunities.

B. Determinants of an Effective Culture: Values and Norms

The previous subsection describes how an effective culture may lead to superior business outcomes relative to what the same production inputs, technology, and formal institutions would deliver at another firm. We refer to an "effective culture" as one that promotes the behaviors needed to successfully execute the firm's strategies and achieve its goals. In this subsection, we explore the theoretical reasons that not all firms have effective cultures, given that an effective culture is beneficial for firm performance. To begin, we focus on the role played by cultural values and social norms. In the next subsection we focus on formal institutions and more traditional frictions such as implementation costs and agency considerations.

The following example contrasts effective and ineffective cultures, highlighting the roles played by cultural values and social norms in affecting corporate performance.

Banking example: Compliance is a desired business outcome for two hypothetical large financial institutions. Both banks state integrity as one of their cultural values. Leadership at the first

bank promotes the integrity value by communicating a legalistic, check-the-box approach. The second bank promotes integrity by communicating an intent of "never compromise," a spirit of "honor your word," and a willingness to speak up when others violate their word. Either norm could lead to a desired compliance outcome. In the second bank, the value of integrity is expressed through the norms of employees' actions while in the first bank an opportunistic norm of "getting through the day without being indicted" may be established. Given that compliance outcomes often result from choices employees make when they face unforeseen contingencies, developing norms that best achieve the integrity value in those instances is where culture has its greatest impact. The social norms established at the first bank frame the integrity value in terms of extrinsic legal factors rather than intrinsic motivation, and this may not be effective when employees are not in a standard check-the-box situation. In contrast, the norms at the second bank present the choice employees must make to live out the integrity value in a way that may lead to an effective culture in dynamic situations (Tversky and Kahneman (1981)).

We rely upon previous theoretical research to determine which cultural values and norms are likely to generate an effective culture. In economic theory, culture is often modeled as a characteristic of people that facilitates different equilibrium actions (Crémer (1993); Lazear (1995); Akerlof and Kranton (2005); Van den Steen (2010a)). Because people are different and the payoffs that they assign to outcomes differ, culture serves as a mechanism to simplify communication and facilitate the actions preferred by the firm. These models suggest specific cultural values and norms will produce more effective cultures. Broadly speaking, when culture exhibits certain values (adaptability, collaboration, and integrity) or norms (decision-making that reflects the long-term, and consistency/predictability of actions), the cultural mechanism that makes firms more efficient is working. We detail three values that play a prominent role in the literature.

First, Erhard and Jensen (2014) focus on the cultural value of integrity. Having an integrity value is viewed as a necessary but not a sufficient condition for maximum performance. Without integrity, the opportunity-set for firm performance shrinks but implementation challenges can limit a firm's outcomes as well. Social norms are part of the implementation process because they embody employees' actions in living out the ideal. In our bank example, both banks had the

sufficient condition for being compliant by stating integrity as a value but the second bank had a norm that enabled its implementation.

Second, O'Reilly and Tushman (2013) focus on the value of adaptability, which encompasses quick reactions and rapid experimentation, not only with products and services but also with business models, processes, and strategies. Adaptability, however, is more than the ability to change to meet changing future circumstances. It also includes attending to the products and processes of the past, while simultaneously preparing for the innovations that will define the future. In a sense, it is the mental balancing act of exploring new opportunities while diligently exploiting existing capabilities.

Third, Van den Steen (2010b) asserts that collaboration is a critical cultural value for firm performance. The social norm that expresses collaboration can be described as "we don't show up at work to hit home runs, we show up at work to help advance the runner. There's that sense of working together to help the company rather than of individual stars." The norm facilitating a collaboration value can also be expressed more simply through coordination among employees.

On the norms side, decision making that reflects the long-term is an important norm for expressing certain cultural values (Kreps (1990)). In a repeated game, the firm attempts to implement its selected cultural values and norms even when their application might not be optimal in the short-run. Selected cultural values are elevated to such a high level that they are nonnegotiable, like the Ten Commandments, and therefore a norm of decision-making that reflects the long-term must be established to support this ideal.

Consistency and predictability of actions is a second norm that the literature highlights as broadly important for economic outcomes (e.g., Guiso, Sapienza, and Zingales (2006)). As employees are heterogeneous, aligning expectations requires a norm of consistent and predictable behavior, so that employees starting from a diverse set of prior beliefs will update their beliefs in a way that leads to the same expected action. We note the literature typically does not link norms with specific outcomes (e.g., creativity), but norms may be tied directly to specific cultural values. For this reason, we look at norms tied to the cultural values that the literature highlights as important when examining specific outcomes (e.g., willingness to report unethical behavior is a norm associated

with an integrity value).

The discussion above leads to several hypotheses. First, we hypothesize that it is a combination of cultural values and their associated norms that produce an effective culture and are positively associated with firm performance. A natural corollary of the first hypothesis is that selecting values in isolation, even when the values are advertised and promoted, will not be as effective as a combination of aligned values and norms in generating firm outcomes. Put another way, stated culture alone is not what affects outcomes, rather the culture needs to be effective to impact outcomes. This hypothesis can be tested in two steps: The first step explores whether business outcomes are associated with an effective culture; the second step explores the combination of values, norms, and formal institutions that are associated with an effective culture.

The three cultural values highlighted in the literature are integrity, adaptability, and collaboration, and the two cultural norms are decision-making that reflects the long-term and consistency/predictability of actions. In some of our empirical analysis, we will link certain values to certain outcomes (e.g., an adaptability value may lead to an innovative outcome). However, the equilibrium selection models suggest there is more than one combination of values and norms that can lead to the same desired outcome. Therefore, in other empirical analyses, we explore the extent to which values and norms broadly affect outcomes.

C. Other Determinants of an Effective Culture

Formal institutions such as corporate governance may complement and/or substitute for corporate culture when it comes to firm outcomes. As illustrated in Figure 1, an effective culture depends on the alignment of and the interaction between the values, norms, and formal institutions. Formal institutions may have their own independent effect on outcomes or they may indirectly affect outcomes through their impact on culture.

In our empirical analyses, we explore five formal institutions that can interact with corporate culture: corporate governance, corporate leadership, the finance function, hiring-firing-promotion, and incentive compensation. Formal institutions may play an important role in supporting values and developing norms and, ultimately, in the effectiveness of the culture. Given the various possible

effects and interactions of formal institutions, we explore their broad effect rather than make specific predictions for specific institutions.

Theoretically, the relationships between culture and formal institutions are ambiguous. For example, consider the interaction between incentive compensation and culture as discussed in Lazear (1995) and Akerlof and Kranton (2005). On one hand, if firms through culture are able to inculcate employees with intrinsic motivation, then culture would flatten the optimal wage schedule. This suggests culture and incentive compensation are substitutes. On the other hand, if culture via increased intrinsic motivation reduces employees' effort costs, then compensation could be used to further motivate employees and thus complement the effects of culture.

Finally, we note that other frictions such as implementation, learning costs, the endowment of human capital, agency problems and industry considerations play a role in determining whether a firm has an effective culture. For example, learning how best to communicate cultural values and promote the development of norms that embody the values may take time. Ineffective cultures may be attractive to some leaders because the status quo involves less effort than changing to and managing an effective culture. Finally, firms may not have an effective culture because they are in an industry where the supply of talent limits the set of values and norms firms can implement (e.g., a multigenerational workforce where older employees find it more difficult to live out an adaptability value). Such a constraint may force some firms to adopt suboptimal cultural values or not enforce appropriate norms. We consider these ideas in our econometric specifications through the use of control variables.

II. Measuring and Identifying the Effects of Corporate Culture

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

A. Introduction to Interview and Survey Methodology

To measure corporate culture, we began by interviewing 18 corporate executives, mostly CFOs and CEOs. Given the potentially sensitive nature of these interviews and to encourage frank discussion, we promised the executives anonymity. 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. To learn about culture in a variety of settings, we interviewed executives that lead public and private firms, early and late lifecycle stage firms, 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 make up about 20% of the market capitalization of the NYSE plus NASDAQ. The average executive's current position was with a firm that is much larger than the typical Compustat firm, with mean sales of $47 billion, more leverage, greater profitability, lower sales growth, and higher credit ratings.

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?" 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 of the executives that we contacted agreed to be interviewed. The interviews occured over the phone or in-person and vary in length, lasting from 40 to 90 minutes. The executives appeared to be forthcoming in their responses.

We incorporated the knowledge gained about corporate culture from the interviews into the design of our survey instrument. After beta-testing and modifying the instrument, we sent survey invitations via email to a diverse sample of corporate executives. 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. In total, we sent requests to approximately 5,668 email addresses from these two sources and received 762 response (representing

a 13.4% response rate). We supplemented the primary email lists with emails from external sources such as em CFO magazine, from which we collected an additional 1,136 responses. We include the survey details as well as a copy of the survey instrument in Appendix A.

B. Corporate Culture Measures

In total, we collected 1,898 total responses. We eliminate responses from participants located outside the United States and Canada to avoid possibly confounding influences from national cultures. Similarly, we remove respondents working for the government and non-profits because we are primarily interested in the relation between culture and company outcomes and government and non-profit objectives may not be consistent with value maximization. Finally, we remove 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 firms to Compustat firms. These results are available in Appendix Table C.I. Similar to the firms that we interviewed, our public firm survey respondents work for larger firms with more employees and sales revenue. These firms are also more likely to report an after-tax profit and to have an investment-grade credit rating.

We use the survey questions to define our key variables, which include cultural values, social norms, and formal institutions. In addition, we use the survey to define our key dependent variables, which include firm outcomes related to ethics, innovation, and productivity and firm value. Finally, we use the survey to define intermediate outcomes such as how well the firm tracks its stated cultural values and how effective the firm's current culture is.

We begin each survey with an open-ended question asking respondents to briefly describe their firm's current culture. We hand-code to categorize the 1,348 written responses into seven individual cultural values.[3] The first six hand-coded cultural values align with the principal components of cultural values as determined by O'Reilly, Chatman, and Caldwell (1991) and confirmed in their

[3] 90% of respondents describe their current culture as a values-based culture with 85% of respondents listing specific cultural values. 30% of respondents describe their culture with adjectives that reflect positive and negative emotions (e.g., good and healthy vs. toxic and stressful). 9% describe their culture as currently changing and 7% indicate that their culture is a mix of different subcultures.

follow-up research O'Reilly et al. (2014). The seventh cultural value we label as "community," which reflects the notion of caring for the community through social responsibility, good citizenship, respect and diversity; this seventh value maps to Guiso, Sapienza, and Zingales (2015a) study of advertised corporate values which finds that "community" is a popularly cited corporate value. We also hand-code responses to the open-ended part of Q14. It states "Please provide a specific example of how culture affects X," where X is 2 of 11 business outcomes (e.g., productivity). We code these written answers to identify the same cultural values as in Q1.

Panel A of Table I provides descriptive statistics (the mean, standard deviation, and median) for individual cultural values as well as for an aggregate measure (i.e., the mean of the individual values). We create an aggregate variable to later test if cultural values matter, broadly speaking, for firm performance. The most commonly listed values are community, results-orientation, and collaboration. The cultural values variables are coded from -1.0 to 1.0 to reflect that an executive might describe a given value in positive or negative terms. For example, a firm with a strong team-orientated or cooperative 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 for the "collaboration" value. Firms that do not mention collaboration receive a score of zero. Similarly, a firm that is innovative or where employees are resourceful in finding solutions when problems arise receives a score of one for the "adaptability" value, while a firm with a lot of red tape and bureaucracy that works against adaptability receives a score of negative one for this cultural value. For additional details on construction and a tabulation of frequently recurring words associated with each value, please see the variable definitions in Appendix B.

Panel B of Table I provides descriptive statistics for the cultural norms as well as for an aggregate measure that represents the mean of the norms. The most commonly listed norms are trust, decision-making that reflects long-term corporate interests, 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 key factor that enhances cultural effectiveness, a score of zero indicate 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, broad agreement about goals and values, and new ideas develop organically.

We note that our measures of the cultural values and social norms are similar to the sample statistics for cultural values reported in Guiso, Sapienza, and Zingales (2015a). 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 authentic values. For this reason, we specifically ask about the current culture and later ask about how well the current culture tracks the aspirational culture. A company website would not describe their culture as "non-inclusive, political and backstabbing," yet some of our respondents use descriptions like these. We carefully explore the reliability of our measures in the next subsection.

Panel C of Table I provides descriptive statistics for formal institutions, which include corporate leadership, corporate governance, the finance function, the human resources function, and incentive compensation. The formal institutions represent responses to question 13 which asks "do the following items reinforce or work against the effectiveness of your corporate culture?" (Human resources is part of question 6.) 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. We note that 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 I provides descriptive statistics about corporate outcomes grouped by ethics, innovation, and productivity/value, as well as aggregate outcome measures. 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?" The ethics outcomes include compliance, tax aggressiveness, quality of financial reporting, and importance of meeting or beating earnings. The innovation

outcomes include creativity and 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 being compliant, creativity, project risk, productivity, profitability, and firm value. 60% of public firms say culture affects their desire to meet or beat EPS targets.

C. Econometric Issues and Validation of Measures

Before analyzing the data, we evaluate the quality of the survey responses and consider related econometric issues. In particular, we examine the extent to which measurement error, selection, multicollinearity, and the "halo" effect may alter our inferences about the relationship between culture and performance.

Measurement error. Survey data potentially suffer from multiple sources of measurement error that could bias the association of firm outcomes with corporate culture toward zero. 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 analyzed 20 beta tests of the survey and modified the wording of a few questions accordingly. To test for this type of measurement error more explicitly, we compare responses that both completed the survey and 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 make inferences from such a small sample to the extent that our survey is truly measuring corporate culture, these measure should correlate. We find a strong pairwise correlation between the multiple responses among the repeat firms.

A second type of measurement error could occur if the cultural values and social norms we include in the survey are a subset of all the relevant cultural values and social norms. While we attempt to include the cultural values and social norms that theory predicts are most relevant, 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.II 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 examining the industry breakdown. Table II shows that the measures of culture that we construct appear to vary intuitively across industries. For example, technology firms exhibit high levels of adaptability and the community ideals that millennials embrace, whereas service firms' cultural values are tied more closely to customer-orientation. When we analyze by the firm's competitive position within 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. The revealed pattern is U-shaped with challengers showing more evidence of values and norms than middle-of-the-pack firms. To further benchmark our responses to existing research, Appendix Table C.III and Table C.IV summarize the responses across public and private firms and family and non-family firms, respectively. We find no difference across measures of culture for public and private firms but find public firms take on less investment risk and are less creativite. This is consistent with findings in Guiso, Sapienza, and Zingales (2015a). We find family firms and non-family firms exhibit no differences, on average, in measures of culture. Non-family firms, however, are more likely to believe culture influences employees' actions and ultimately 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 social norms (Q6), formal institutions (Q13), and business outcomes (Q14). In addition, we include redundant questions about cultural

values, social norms, and formal institutions that rephrase and reframe issues of interest. These additional questions help us to attenuate the effect of noise attributable to potential respondent behavioral biases. Finally, we include a range of "noise" controls in all of our regression specifications that attempt to capture the potential for systematic bias in the survey data. They include the date of survey response, response delay, job title, and source of email (i.e., Duke, Columbia, *CFO* magazine).

Selection. Selection may alter statistical inferences when data are not gathered via randomization or quasi-random assignment. In our context, selection will 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 mitigate this concern with a mix of hypothetical and real questions. Prior research from neuroscience suggests these two type of questions complement each other. The neuroscience findings suggest that the difference between real and hypothetical choice is primarily attributable to variations in the value computations of a specific part of the brain and not attributable to the use of different valuation systems. Thus, requiring the respondent to switch back and forth integrated the value computation (Kang et al. (2011)).

We also conduct several tests to explore the extent of selection 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.V shows that the culture survey respondents do not differ statistically from the regular responders. Given that we find no statistical 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 3 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 non-CFOs in Figure 3. The responses are statistically indistinguishable across job title for the four survey questions related to the value of corporate culture. Appendix Table C.VI details the responses by job title across all questions, again there are few differences. Appendix Table C.VII 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.

Multicollinearity. Multicollinearity can limit the validity of statistical inferences when two or more independent variables are highly correlated. Multicollinearity can inflate variance, leading analysis to fail to reject the null hypotheses of no effect too often because the standard errors are so large. Common approaches to deal with multicollinearity include aggregating variables to reduce the number of highly correlated variables, data dimension reduction techniques such as clustering, and variable selection techniques such as least absolute shrinkage and selection operator (LASSO). We use all of these approaches with the goal of understanding the stability of our findings across a variety of statistical assumptions. In our main analyses, we rely on aggregating across variables. This allows us to use theory to guide the aggregation. We note the approach of using the "mean" to aggregate across many variables has been used successfully in prior field studies (e.g., Bloom and Van Reenen (2007); Bloom, Sadun, and Van Reenen (2012)).

Causality. Causal inference is not possible in a single cross-section of data without an instrument. Nevertheless, we describe the associations that we uncover with our data that are significant at the 1% level and robust across specifications.

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. For example, if an executive's response to question two is always δ more positive when her answer to question one is positive. In this sense, measure-

ment error produces an errors-in-variables problem. It is possible, however, to uncover the true response when the true response has a functional relationship with the observed response (such as in the observed response equals true response plus δ). 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 current corporate culture. We note that Guiso, Sapienza, and Zingales (2015a) adopt a similar procedure in their study of cultural values. Specifically, we use Q11, which is a hypothetical question about a potential M&A deal. It is an ideal control to absorb the halo effect because the response to Q11 will be correlated with the respondent's bias if the responder is biased. In contrast, Q11 elicits a response about a firm that has "an effective, strong" culture, which by definition cannot be systematically correlated with the respondent's underlying true culture.

III. Corporate Culture and Firm Performance

A. Firm value, risk, and ethics.

Having established reasonable variation in our measures of corporate culture, we now explore other aspects of the survey responses. Table III 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 "very important" or "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% of respondents 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.

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."

While the responses to the first three survey questions in Table III indicate a strong positive association between culture and firm value, our final question (Q11) 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. 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?"

We find cultural fit in M&A deals is so important that 54% of executives would walk away from culturally misaligned target, while another 22% 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.

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."

While transactions involving the boundary of the firm highlight the value of culture, theory indicates that corporate culture also affects firm value via routine corporate actions. To understand the variety of actions potentially impacted by culture, Table IV 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 IV,"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 or 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. 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 could be attributable to a third common factor, the follow-up question suggests a direct link between culture and actions. (Later, we link the willingness to take on risky investments to corporate innovation.)

The next question (Q8) in Table IV 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. This result further supports the directional link from culture to action.

Theory predicts that culture is likely to have its strongest effect over actions that cannot properly be regulated ex ante. 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 IV shows that 85% of respondents indicate that "yes", ineffective corporate culture can lead to unethical behavior.

The final question (Q12) in Table IV 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.

The interviews highlight specific 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."

Third, executives highlight that culture can circumvent mistakes in a way that other executive actions, formal institutions, or corporate assets cannot. They provide comparisons to other factors typically thought of as critical for superior performance. Many executives believe culture contributes more to firm value than strategy does. For example, a company performs better with a strong culture and weak strategy than the other way around: "culture helps even if you don't have a great strategy and you're not communicating well because culture helps tremendously to make sure that you are continuing to do the right things for the company in the long run." Another CFO says that culture adds more to market value than the finance function. He believes "a good finance function can contribute 20% in added market value if it's done right and that a strong culture can add 20-30% to market value."

B. Regression evidence that links cultural values and norms to business outcomes.

The responses in the previous two tables indicate executives believe that corporate culture affects firm value and corporate decisions. We now use regression analysis to explore whether firm value and performance are tied to effective corporate culture and if so, whether the channel by which this occurs is via cultural values, social norms, and/or formal institutions (as discussed in Section I).

We start in Table V using OLS regressions to explore the channels by which specific values and norms affect specific outcomes. Following the banking and technology examples introduced

in Section I, we focus on *BeingCompliant* as a specific ethics outcome and *Creativity* as specific innovation outcome. Panel A of Table V presents results from regressing *BeingCompliant* on explanatory variables that include all of the cultural values, social norms, and formal institutions, plus various control variables. The presented results are for the cultural values and norms that theory suggests are most closely link to ethical outcomes. We find significant evidence that firms with an integrity value accompanied by social norms that express integrity (willingness to report unethical behavior, trust among employees, decision-making that reflects the long-term, the actions of employees are consistent and predictable) are likely to have a cultural effect that is significantly greater for compliance.[4]

The specifications in Table V 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. Including the controls weaken the results slightly, but integrity, decision-making that reflects the long-term, and willingness to report unethical behavior all remain significant at the 5% level. Overall, Panel A indicates that, while firms with cultures that are more effective may have better overall performance, they are particularly good at achieving compliance when they have an integrity value and norms that express that value.

Panel B in Table V shows results from regressing the *Creativity* outcome on the full set of cultural values, social norms, and formal institutions as well as various control variables. We present the coefficient estimates for the values and norms that theory most closely tie to innovation outcomes. We find a significantly positive association between creativity and the adaptability value (as expected) and a negative association with a results-oriented value. Said differently, this is consistent with firms that embrace the ability to change to fit 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, new ideas develop organically, and the urgency with which employees work. Organic idea creation is strongly associated with creativity and strengthens in magnitude and statistically significance as additional controls are added.

[4]With 16 values and norms and with multiple specifications, we should expect some of the coefficients to be "significant" by chance (see Harvey, Liu, 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.

By finding that creativity (one measure of innovation) is positively associated with the cultural value of adaptability and the social norm of new ideas develop organically, and also finding compliance (one measure of ethics) is associated with the value of integrity and the social norm of willingness to report unethical behavior, we have confidence that the data we collect is capturing what we are trying to measure with regards to culture. Given that the data produce patterns that conform to intuition, we turn to the broader question – do cultural values and social norms affect business outcomes? We use aggregate variables to address these issues (see Appendix B).

In Table VI we use OLS regressions with aggregate dependent variables that measure business outcomes broadly, which is described in Section II and use to improve statistical inference by reducing data dimensionality. The dependent variable in column (1) measures an aggregation of all outcomes, while in columns (2) through (4) the dependent variable aggregates, respectively, ethical, innovation, and productivity/value outcomes separately (see Appendix B for variable definitions). The key explanatory variables are also aggregate measures of cultural values and social norms. As additional explanatory variables, we include formal institutions, noise controls, demographic controls, and additional question controls.

As we report in Panel A of Table VI, social norms are an important channel by which corporate culture affects business outcomes. The coefficient estimates for aggregate social norms are positive and significant at the 1% level in all columns. The economic magnitude of the point estimate is similar across ethical, innovation, and productivity/value outcomes. In contrast to the social norms results, there is little evidence that stated cultural values enhances 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. Moreover, the results support our argument that selecting cultural values in isolation, even when the values are advertised and the firm is tracking the values that are stated, are not as effective as the day-to-day living of those values (that is, social norms) is functioning properly.

In Panel B of Table VI, we test for this 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 strongly supports the conclusion that the norms that express

and reinforce the selected cultural values enhance performance. The coefficient estimate on the interaction term is positive and significant at the 1% level in all columns. The coefficients on the social norms term also remain positive and significant at the 1% level in all columns. Overall, these findings are consistent with conclusion that broadly speaking cultural values and norms have an important impact on business outcomes.

C. Regression evidence on cultural effectiveness.

One can think of a two-step process for corporate culture to affect business outcomes. First, cultural values, social norms, and formal institutions combine to create an effective culture. Second, effective culture affects business outcomes. Our next analysis is these two steps. In Panel A of Table VII, we use OLS regressions with dependent variables that measure business outcomes broadly, which we describe in Section II and use to improve statistical inference by reducing data dimensionality. This time explores whether having an effective corporate culture impacts corporate outcomes. We find having an effective corporate culture is strongly associated with our outcome measures. Next, we examine whether linking the implementation of the selected cultural values to an effective corporate culture.

In Panel B Table VII, we regress survey responses to whether a respondent firm has an effective culture on aggregate values, norms, and formal institutions. Column (1) shows that as a stand-alone variable, aggregate values are positively associated with the effectiveness of corporate culture. Columns (2) and (3) show similar results for social norms and formal institutions, respectively. Our aggregate measure of formal institutions without any other controls explains 43% of the variation in cultural effectiveness. This represents a meaningful increase the R^2 in comparison to values and norms which each explain about 20% of the variation and indicates formal institutions are very important. Column (4) of Table VII includes values, norms, and formal institutions in the same specification. In this specification, cultural values lose their economic and statistical significance but norms and formal institutions remain significant and positively associated with effectiveness. Finally, in column (5), we include values, norms, and formal institutions as stand-alone variables, and we also include formal institutions separately interacted with values and norms. The idea is

that formal institutions such as governance may reinforce or work against the values and norms. The negative coefficient for values interacted with formal institutions is consistent with formal institutions working more as substitutes than complements with informal institutions (and in particular, with cultural values).

Having used aggregate variables to establish broadly that norms and formal institutions are associated with the effectiveness of corporate culture, we now use disaggregated measures to explore more specific channels. The specification in Table VIII regresses whether a firm's current culture is effective on all of the values, norms, and formal institution variables. Column (1) and (2) show the explanatory power of these values, norms, and formal institutions in isolation using OLS regression. Column (2) shows the estimates from 100 iterations of a 10-fold cross-validation procedure (**?**). This procedure splits the data randomly into 10 partitions, then for each partition it fits the regression model using the other 9 groups and uses the resulting estimates to predict the dependent variable in the unused group. The results are then averaged over the splits. The cross-validation test shows only a weak association between values, social norms, formal institutions and effectiveness. The mean absoluate error from the validation sets is 0.5 when predicting effectiveness. A potential challenge to making statistical inferences with these data stems from multicollinearity, which makes OLS estimates' variances so large that standard errors may be far from the true value.

We test for multicollinearity in several ways. First, we analyze the variance inflation factors (VIFs). 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 6 of our explanatory variables have VIFs greater than 10. Second, we analyze the eigenvalues in the correlation matrix of the explanatory variables. Eigenvalues close to 0 indicate a problem and we have 6 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. Finally, we calculate the Gleason-Staelin redundancy measure; our measure of 0.64, is again suggestive of multicollinearity in the data.

The remaining columns of Table VIII analyze the full set of values, norms, and formal institutions but apply two different statistical techniques for analyzing data that suffer from multicollinearity. Column (3) and (4) applies a Ridge Regression approach (Hoerl and Kennard (1970)). Column (5) and (6) uses a LASSO regression approach (Tibshirani (1996)). Both methods reduce the variability of coefficient estimates by shrinking the coefficients with penalties when estimating the minimum least squares. In Ridge Regression, the "penalty" applies to the sum of the squares of the coefficients. This means ridge regression shrinks the coefficients of correlated explanatory variables equally towards zero. For the LASSO, the "penalty" applies to the sum of the absolute values of the coefficients. By using an absolute value penalty, LASSO forces coefficients to zero. Hence, LASSO is also well-known method for variable selection (Efron et al. (2004)).

The Ridge Regression and LASSO analyses isolate a stable set of values, social norms, and formal institutions that are positively and statistically significantly associated with cultural effectiveness. Specifically, Table VIII shows that some of the norms and values past theory has focused on (and described in Section I) have a strong association with cultural effectiveness. Collaboration is the more prominent cultural value while consistency and predictability of actions is a pronounced social norm. On the formal institutions side, leadership and incentive compensation exhibit a strong statistical association. While only one cultural value turns out to be economically and statistically significant, three social norms are. Consistency and predictability of action, one of the economically and statistically meaningful norms, supports the theory that suggests culture plays an important role in expectation formation (e.g., Guiso, Sapienza, and Zingales (2006)). We note, however, that other social norms such as organic idea creation and urgency among employees also have a strong association with cultural effectiveness. These findings are again consistent with social norms being at least as important as the social values in determining cultural effectiveness and ultimately business outcomes. Finally, the statistical stability of our findings is important. The LASSO analysis generates the exact same variables that Ridge Regression indicate are statistically significant. This statistical stability bodes well for out-of-sample predictability. To further test the predictive power of the estimated relationship, we use 100 repetitions of a ten-fold cross validation procedure. Column (4) and (6) show these results and they support our conclusions. An examination of the

mean absolute errors from the cross-validation exercise indicates a 6% improvement in predictive power relative to OLS errors.

Having established that a set of cultural values, social norms, and formal institutions often combine to create an effective culture. We now compare our regression evidence to our open-ended responses to Q14, "Please provide a specific example of how culture affects X," where X is 2 of 11 randomly selected business outcomes (e.g., creativity or being compliant). This evidence is reported in Appendix Table C.VIII. Two key findings emerge. First, in accordance with the regression evidence, the cultural value of collaboration, the social norms of consistency and predictability of actions and new ideas develop organically, and the formal institutions of incentive compensation are the most commonly mentioned across all outcomes. Second, the specific values, norms, and formal institutions respondents discuss exhibit heterogeneity across three broad categories of business outcomes – ethics, innovation, and productivity and firm value.

The idea that certain cultural values, social norms, and formal institutions may play a more prominent role for certain business outcomes is evident in our earlier example where we focus on the values and norms that theory associates with creativity (an innovation outcome) and being compliant (an ethics outcome). In Table IX we use OLS regressions with aggregate dependent variables that measure business outcomes broadly, which is described in Section II and use clusters of specific values and norms respondents suggest in their open-ended responses to Q14. This test serves to refine our prior conclusion that broadly norms and values matter for cultural effectiveness and outcomes. The dependent variable in Columns (1) and (2) measure an aggregation of ethical outcomes, and Columns (3) and (4) and Columns (5) and (6) measure innovation, and productivity/value outcomes, respectively. The key explanatory variables are specific clusters of values, norms, and formal institutions derived from open-ended text. As additional explanatory variables, we include noise controls, demographic controls, and additional question controls.

Table IX reveals that specific clusters of cultural values and social norms facilitate strong positive associations with business outcomes. The clusters of complementing norms have a more pronounced economic effect on outcomes but cultural values also play a statistcally significant role. The strong positive associations apply across the full sample of firms rather than just the small

random sample of open-ended responses. This generalization of our prior analyses supports the notion that corporate culture is not one size fits all. Rather corporate culture, as an informal institution, is similar to the formal institution of corporate governance. In order to achieve certain business outcomes, different types of corporate culture may be optimal. For example, integrity is a key cultural value in the cluster for ethical outcomes. For innovation outcomes, adaptability is a key cultural value in the cluster. And for productivity and firm value outcomes, collaboration is a key cultural value in the cluster. Overall, the fact that our results are consistent across a battery of approaches including clustering, variable aggregation, LASSO, Ridge regression, and OLS regression, and because each strategy uses different assumptions, this suggests our conclusions are not fragile to any single assumption.

D. Economic implications.

A common argument is that variations in corporate culture lead to both huge successes and major failures. Since there are reasons to believe the effects of culture may differ between firms with more effective and less effective cultures, we use quantile regression techniques to investigate this hypotheses. In particular, we are interested in knowing whether the strong positive association we report between culture and firm outcomes, on average, is being driven by tail events or if cultural values and norms matter across the full distribution of companies. Quantile regression provides a way to test this hypothesis. Unlike OLS, where the coefficients represent the conditional mean of the outcome variable given the independent variables selected, quantile regression provides coefficients estimates for the independent variables at specific quantiles of the outcome variable. That is, we estimate a model in which quantiles of the conditional distribution of the outcome variable are expressed as functions of the observed independent variables (e.g., see Koenker and Hallock (2001)).

Table X investigates the relationship between firm outcomes and culture away from the mean using the quantile regression approach. For this exercise, we focus on our composite measure that aggregates all firm outcomes including ethics, innovation, productivity and firm value related outcomes. Comparing firms at the median of the distribution of performance with firms at the

25th and 10th percentile of the distribution of performance, we see that social norms play a much more pronounced role for firms in the bottom of the distribution. In contrast, comparing firms at the median of the distribution of performance to firms at the 75th and 90th percentiles of the distribution of the dependent variable, we see that social norms plays a much smaller role for firms at the top of the distribution. The coefficient estimate is much more economically and statistically as one moves toward the lowest percentiles of aggregate outcomes. F-tests of the equality of the coefficient estimate on cultural norms across the different quantile regressions are rejected at the 5% level of significance. One potential interpretation of these findings is that successful firms are already at their optimal culture so there is not enough variation in the effectiveness of stated values and norms to meaningfully impact performance.

E. Robustness checks

The inferences from our regressions rely on the reasonableness of the variables we construct. We check how robust our inferences are by considering various alternative constructions. We have more confidence in our findings if the results are consistent across these various checks. First, to understand the extent to which having a survey about "culture" primed respondents to make culture seem extra important, we included a single question on the 2016Q3 Duke Quarterly CFO Survey that had culture as a potential answer among many. 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." Based on 484 responses, 47.9% of respondents listed culture in the Top 3. The confidence interval on this mean response puts it within the range of the 53.5% elicited in the culture survey. In addition, of all of the choices, culture was the most popular with strategic plan coming in second at 39.7%. These results are in Appendix Table C.IX.

Second, given that we hand-code the written responses to the open-ended Q1/Q14 into cultural values, we analyze two alternative cuts of the data. First, we only look at the subsample of 600 respondents that indicate in Q4 that their current corporate culture very closely tracks their stated firm values. Second, we examine two close-ended questions about cultural values. We report these findings in Appendix Table C.X and Table C.XI, respectively. Consistent with our

previous findings, we see weak statistical evidence that stated cultural values in isolation matter for performance. Social norms as well as the interaction between norms and values remain highly significant. Overall, this is consistent with the theoretical prediction that having cultural values is a necessary but not sufficient condition for optimal outcomes.

Next, 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 responding about the slope between outcomes and culture rather than the outcome level. The slope is a functional transformation of the level, so the sample moments needed to test the null hypotheses of the slope being equal to zero are available. We, however, cannot test whether the non-zero slop has a positive or negative sign (for a detailed discussion see Appendix D). To try and ascertain if the sign is negative or positive, we explore the relation between values, norms, and business outcomes using externally verifiable data. Specifically, using a sample of respondents that identified themselves, we match their survey responses to their publicly available financial data. We find that stronger cultural norms are significantly associated with higher profitability and Tobin's Q at 3-year and 5-year intervals. These results remain statistically and economically significant even after controls for fixed capital and investment in materials and employees. We report these findings in Appendix Table C.XII. Finally, we repeat the analysis by examining general survey questions that are worded differently: the responses to the survey questions about the value of corporate culture (Table III) and the actions influenced by corporate culture (Table IV). We include these findings in Appendix Table C.XIII. We observe the social norms are significantly and positively associated with these alternative outcomes while aggregate values are weakly associated. This robustness check is consistent with our finding that at a broad level, a firm needs norms that reinforce the selected cultural values to enhance performance.

IV. Conclusion

Corporate culture is perhaps the most under-researched value driver among the important contributors to firm performance. The first contribution of our field study is to quantify the value of culture and its influence on employee decisions. 91% of executives believe culture is important

to their firms and 79% place culture among the top 3 or the top 5 value drivers of their company. 54% of executives would just walk away from an acquisition target that is a cultural misfit 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 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.

A second contribution of our field study is to provide data infrastructure for the analysis of culture across firms. Despite many theoretical advances, the empirical literature on corporate culture is still developing. We gather a large, comprehensive database of survey responses and use the questions to construct measures of corporate culture (values and social norms), firm outcomes for three general categories (ethics, innovation, and productivity/firm value), and formal institutions (e.g., governance, compensation). A key finding of our paper is that stated cultural values, even among firms that track those values, do not by themselves guarantee a successful outcome. Rather, cultural values must be complemented by social norms that dictate actual behavior. We also find strong evidence that formal institutions can either reinforce or work against cultural values and norms. Finally, our evidence shows the impact of culture is most pervasive for firms at the low end of the performance distribution.

While economists are increasingly aware of the importance of corporate culture (e.g., Edmans (2011); Bloom, Sadun, and Van Reenen (2012); Guiso, Sapienza, and Zingales (2015a)), limited empirical work exists on the topic, in part because it is difficult to measure. Before we started this project, we thought culture might be too amorphous to quantify. Then in interviews with CEOs and CFOs, we heard loudly and repeatedly, how important culture is, especially from CFOs who are typically the numbers people and among 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. Nevertheless, we believe the magnitude of the topic means 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 determining 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. Another direction might explore why 92% of executive believe improving culture would increase firm value yet they also indicate that they significantly underinvest in culture. Recent work suggest that a firm's investors play a role in this decision, but more theoretical and empirical work is needed to identify factors that contribute to successful cultural change as well as what tools that investors and executives could use to gauge the effectiveness of a firm's culture.

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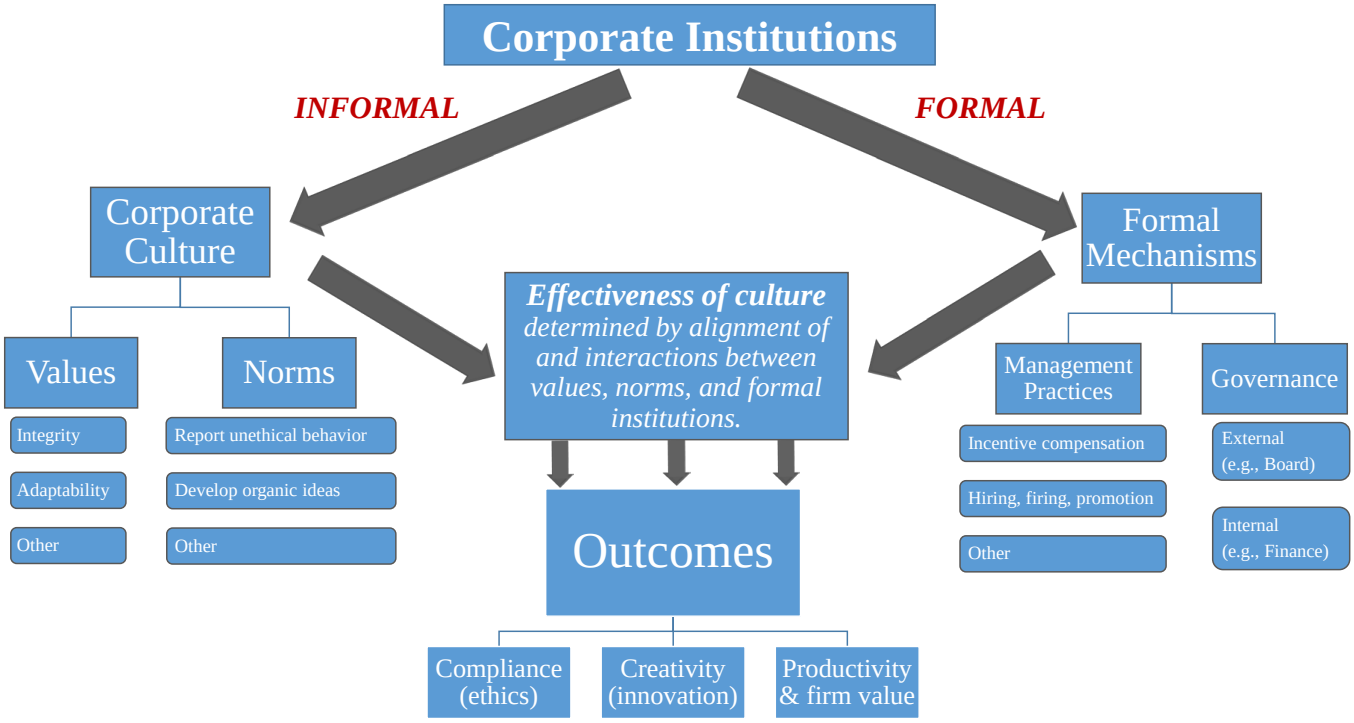

Figure 1. Diagram linking corporate culture to outcomes: According to North (1991), institutions can be classified as informal and formal. We define corporate culture as an informal institution comprised of values and social norms. The values and social norms characterize the incentive structure in place that guides employees' actions when they face unforeseen contingencies. A cultural value represents an ideal state of behavior such as adaptability or integrity. Social 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 and it is determined by alignment of and interactions between values, norms, and formal institutions.

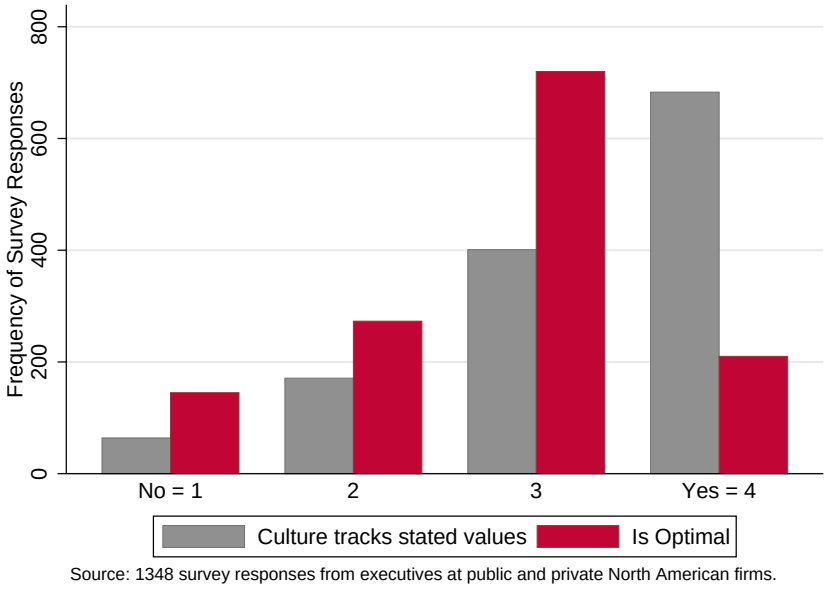

Figure 2. How effective is corporate culture in practice? The histogram shows the frequency of responses to Q4 (see Appendix A), "How closely does your current corporate culture track with your stated firm values?" where 1 = Not at all, 2 = Not very closely, 3 = Somewhat, and 4 = Very closely and Q4b, "Our firm's corporate 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." The sample consists of survey responses from executives at public and private North American firms.

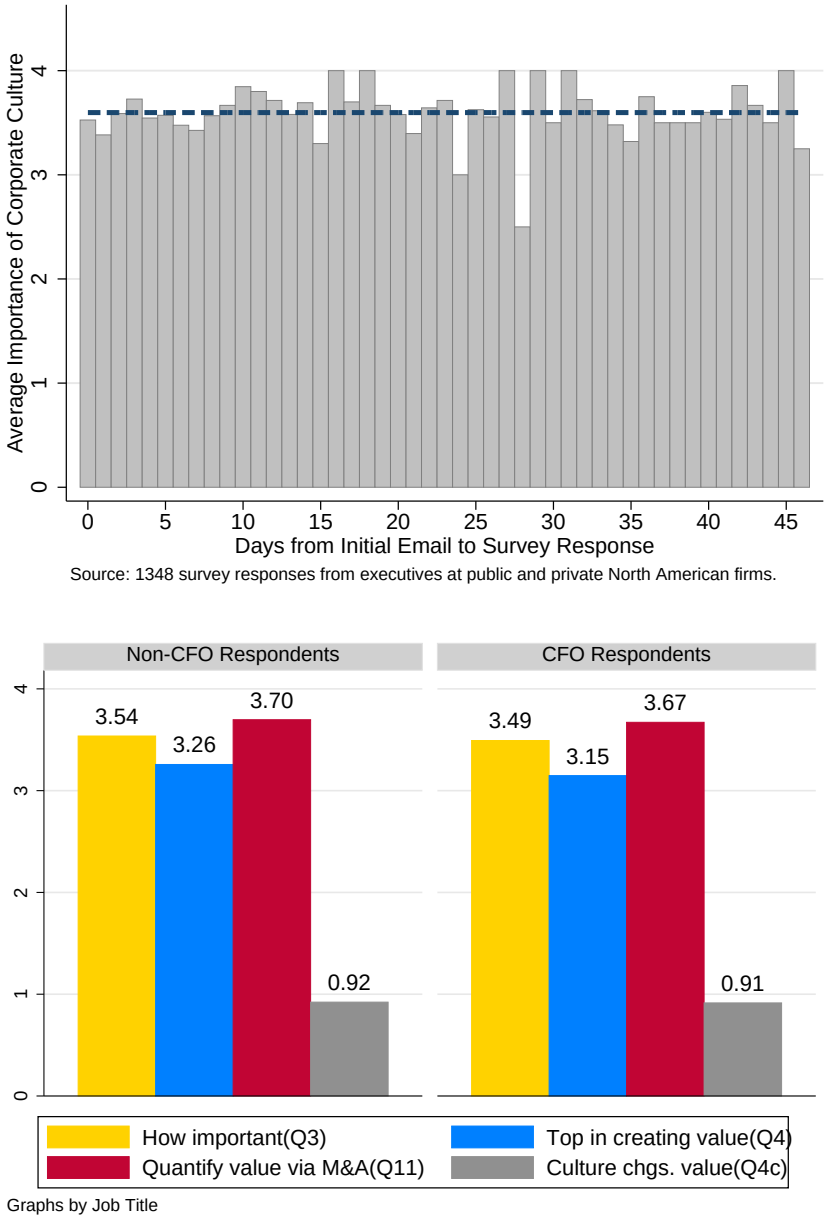

Figure 3. Reliability of culture measures: The top plot shows a histogram of the mean response to Q2, "How important do you believe corporate culture is at your firm?" where 1 = not important, 2 = somewhat important, 3 = important, 4 = very important. The x-axis represents the delay in days from when the initial survey email 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 bottom plot is a bar graph of the four survey questions related to the value of corporate culture. Each bar represents the mean response by job title where respondents are separated into CFO respondents and non-CFO respondents. The responses are statistically indistinguishable across job title. The sample consists of survey responses from executives at public and private North American firms.

Table I 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). Later tables explore the the effect of culture on three different types of business outcomes (Panel D). 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 = Opposite value, 0 = No mention of value, 1 = Stated 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**

Social 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. Social 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. social norms	**1348**				**0.48**	**0.43**	**0.56**

Formal institutions 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	Obs.	-1	0	1	Mean	Std. dev.	Median
Corporate governance	1348	9%	42%	48%	0.39	0.65	0
Corporate leadership	1348	17%	18%	65%	0.48	0.77	1
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**				**0.08**	**0.65**	**0.10**

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 II 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 had 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 = Opposite value, 0 = No mention of value, 1 = Stated 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
Social 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. social 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)	3.39	3.28		3.16	3.51	3.38	3.50	3.40	2.90	3.32
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 III The Value of Corporate Culture

This table provides descriptive statistics on the value placed on corporate culture by surveyed executives. The sample consists of survey responses from 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 IV Actions Influenced by Corporate Culture

This table provides descriptive statistics on the value placed on corporate culture by surveyed executives. The sample consists of survey responses from executives at public and private North American firms. The precise 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 V Values, Norms, and Outcomes

This table presents OLS estimates demonstrating an association between specific values and norms and firm outcomes. Panel A shows an example ethics outcomes (i.e., compliance) 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, and formal institutions, noise controls, and demographic controls. Column (2) includes our "halo effect" control (hypothetical Q11) and additional question controls (Q1, Q4, and Q4b). Standard errors are in parentheses under coefficient estimates; they are bootstrapped with 100 replications. 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 of 1%, 5%, and 10%, respectively.

	Dependent variable = Being Compliant (Q14)	
Panel A. Example Ethics Outcome	(1)	(2)
Cultural values		
Integrity	0.20***	0.17***
	(0.03)	(0.04)
Social norms		
Consistency and predictability of actions	0.08**	0.05
	(0.03)	(0.04)
Decision-making reflects long-term	0.07*	0.08*
	(0.04)	(0.04)
Trust among employees	0.11***	0.08
	(0.04)	(0.05)
Willingness to report unethical behavior	0.09***	0.09**
	(0.03)	(0.04)
Other Cultural Values & Social Norms	Yes	Yes
Formal Institution 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%	25.2%

	Dependent variable = Creativity (Q14)	
Panel B. Example Innovation Outcome	(1)	(2)
Cultural values		
Adaptability	0.07**	0.07*
	(0.03)	(0.04)
Results-oriented	-0.05*	-0.10***
	(0.03)	(0.04)
Social norms		
Employees comfort in suggesting critiques	0.11***	0.10**
	(0.04)	(0.04)
New ideas develop organically	0.11***	0.14***
	(0.04)	(0.04)
Urgency with which employees work	0.08**	0.06
	(0.03)	(0.04)
Other Cultural Values & Social Norms	Yes	Yes
Formal Institution Controls	Yes	Yes
Noise & Demographic Controls	Yes	Yes
Additional Question Controls	No	Yes
"Halo Effect" Specification	No	Yes
Observations	1132	949
Adjusted R-squared	21.1%	24.5%

Table VI Aggregate Values, Norms, and Outcomes

This table presents OLS estimates connecting the values and norms that comprise corporate culture to firm 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 social 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). Standard errors are in parentheses under coefficient estimates; they are bootstrapped with 100 replications. 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 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	-0.04	0.11	-0.16	-0.04
	(0.11)	(0.10)	(0.11)	(0.11)
Aggregate social norms	0.22***	0.12**	0.20***	0.16***
	(0.06)	(0.06)	(0.06)	(0.06)
Noise & Demographic Controls	Yes	Yes	Yes	Yes
Formal Institution Controls	Yes	Yes	Yes	Yes
Additional Question Controls	Yes	Yes	Yes	Yes
Observations	1138	1128	1126	1129
Adjusted R-squared	18.4%	19.3%	14.2%	14.9%

	Dependent variable = Aggregate outcome			
	All	Ethics	Innovation	Productivity & Firm Value
Panel B. Adding an interaction term	(1)	(2)	(3)	(4)
Aggregate cultural values	-0.03	0.12	-0.16	-0.03
	(0.11)	(0.10)	(0.11)	(0.11)
Aggregate social norms	0.28***	0.18***	0.24***	0.21***
	(0.07)	(0.06)	(0.07)	(0.06)
Agg. cultural values x agg. social norms	0.26***	0.22**	0.15	0.19**
	(0.10)	(0.09)	(0.10)	(0.09)
Noise & Demographic Controls	Yes	Yes	Yes	Yes
Formal Institution Controls	Yes	Yes	Yes	Yes
Additional Question Controls	Yes	Yes	Yes	Yes
Observations	1138	1128	1126	1129
Adjusted R-squared	19.1%	19.8%	14.4%	15.2%

Table VII Two-step Connection of Corporate Culture to Outcomes

This table presents OLS estimates connecting an effective culture to firm outcomes in Panel A. 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 variable is "current culture is effective?" Additional explanatory variables include noise controls and demographic controls. Panel B presents OLS estimates connecting cultural values, social 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. In Panel B, Column (1), (2), and (3), the key explanatory variable of interest is aggregate cultural values, social norms, and formal institutions, respectively. In Column (4), all explanatory variables are combined and Column (5) includes their interactions. 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). Standard errors are in parentheses under coefficient estimates; they are bootstrapped with 100 replications. 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**
	(0.04)	(0.04)	(0.04)	(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*	0.08
	(0.07)			(0.06)	(0.07)
Aggregate social norms		0.20***		0.12***	0.11***
		(0.03)		(0.03)	(0.04)
Aggregate formal institutions			0.22***	0.17***	0.18***
			(0.03)	(0.03)	(0.03)
Agg. cultural values x agg. formal institutions					-0.12**
					(0.05)
Agg. social norms x agg. formal institutions					-0.03
					(0.04)
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%	59.7%	60.3%	60.5%
R-squared (excl. noise & demo. controls)	53.9%	54.4%	55.3%	56.7%	57.0%
R-squared (excl. all controls)	25.0%	18.2%	34.3%	41.0%	43.0%

Table VIII What Determines Cultural Effectiveness?

This table presents estimates connecting a firm's current culture 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. Column (1) and (2) present OLS estimates. Columns (3) and (4) present Ridge regression estimates. Columns (5) and (6) present LASSO estimates. 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). Standard errors are in parentheses under coefficient estimates. There is no simple way to estimate standard errors using the LASSO, so we rely on bootstrapping as suggested by (Efron et al. (2004)). All explanatory variables are standardized, so that the OLS coefficients can be interpreted as the conditional impact from a one-standard-deviation increase in the explanatory variable. We include all values, social norms, and formal institutions but only report those selected by the models. All unreported values, norms, and formal institutions are statistical indistinguishable from zero. For a detailed description of each variable, please see the definitions in Appendix B.

	Dependent variable = current culture is effective?					
	OLS		Ridge		LASSO	
	(1)	(2)	(3)	(4)	(5)	(6)
Cultural Values						
Collaboration	0.04*	0.04*	0.06***	0.06***	0.05***	0.05**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Social Norms						
Consistency and predictability of actions	0.04*	0.04*	0.04*	0.03*	0.02	0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
New ideas develop organically	0.03	0.03	0.04**	0.04**	0.04*	0.03*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Urgency with which employees work	0.04**	0.04*	0.04**	0.04*	0.03*	0.03*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Formal Institutions						
Corporate Leadership	0.09***	0.09***	0.06***	0.06**	0.06***	0.06***
	(0.03)	(0.03)	(0.02)	(0.03)	0.02	(0.02)
Incentive Compensation	0.04*	0.04*	0.04**	0.04*	0.04*	0.04*
	(0.02)	(0.02)	(0.02)	(0.02)	0.02	(0.02)
Other Cultural Values & Social Norms	Yes	Yes	Yes	Yes	Yes	Yes
Noise & Demographic Controls	Yes	Yes	Yes	Yes	Yes	Yes
Additional Question Controls	Yes	Yes	Yes	Yes	Yes	Yes
Ten-Fold Cross Validation	No	Yes	No	Yes	No	Yes
Observations	1310		1310		1310	
Adjusted R-squared	59.7%		59.2%		60.0%	

Table IX Clusters of Cultural Characteristics and Outcomes

This table presents OLS estimates connecting clusters of cultural values, social norms, and formal institutions to business outcomes. The dependent variable in Column (1) and (2) is the aggregate among all ethical outcomes. The dependent variable in Column (3) and (4) is the aggregate among all innovation outcomes, and the dependent variable in Column (5) and (6) is the aggregate among productivity/firm value outcomes. The key explanatory variables are clusters of cultural values, social norms, and formal institutions, respectively, that open-ended responses from Q14 indicated were the most relevant for firm performance. Even columns allow for formal institutions to interact with cultural values and norms. 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, Q4b). Standard errors are in parentheses under coefficient estimates; they are bootstrapped with 100 replications. 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					
	Ethics		Innovation		Productivity & Firm Value	
	(1)	(2)	(3)	(4)	(5)	(6)
Q14 Cultural values cluster	0.30***	0.33***	0.20**	0.21**	0.04	0.04
	(0.09)	(0.11)	(0.08)	(0.08)	(0.08)	(0.09)
Q14 Social norms cluster	0.41***	0.41***	0.31***	0.36***	0.21***	0.35***
	(0.07)	(0.07)	(0.07)	(0.07)	(0.08)	(0.07)
Q14 Formal institutions cluster	0.08**	0.08**	0.04	0.06	0.07**	0.12***
	(0.04)	(0.04)	(0.03)	(0.04)	(0.03)	(0.04)
Q14 Cultural values cluster x Q14 Formal institutions cluster		-0.07		-0.08		0.00
		(0.12)		(0.08)		(0.08)
Q14 Social norms cluster x Q14 Formal institutions cluster		0.06		0.01		-0.16**
		(0.08)		(0.08)		(0.07)
Noise & Demographic Controls	Yes	Yes	Yes	Yes	Yes	Yes
Additional Question Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1128	1128	1126	1126	1129	1129
Adjusted R-squared	21.9%	22.0%	16.8%	16.6%	16.4%	16.6%

Table X Success, Failure, and Corporate Culture

This table presents quantile regression estimates that examine the role of cultural values and social norms in determining firm outcomes. Standard errors are in parentheses under coefficient estimates; they are bootstrapped with 100 replications. 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. Noise controls include date, response delay, job title, and source of email (i.e., Duke, Columbia, CFO magazine). Additional question controls are from Q1, Q4, and Q4b. For a detailed description of each variable, please see the definitions in Appendix A. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	Dependent variable = Aggregate All Outcomes				
	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
	(1)	(3)	(4)	(5)	(7)
Aggregate cultural values	0.08	0.00	0.11	-0.02	-0.15
	(0.18)	(0.14)	(0.11)	(0.12)	(0.13)
Aggregate social norms	0.30***	0.37***	0.33***	0.12**	0.12*
	(0.10)	(0.08)	(0.07)	(0.06)	(0.07)
Aggregate formal institutions	0.18	0.17**	0.10**	0.13**	0.13*
	(0.17)	(0.07)	(0.05)	(0.06)	(0.07)
Noise & Demographic Controls	Yes	Yes	Yes	Yes	Yes
Formal Institution Controls	Yes	Yes	Yes	Yes	Yes
Additional Question Controls	Yes	Yes	Yes	Yes	Yes
Observations	1138	1138	1138	1138	1138
Pseudo R-squared	26.2%	13.8%	12.8%	14.1%	21.4%

Appendix A. Survey Questions and Additional Logistics

The 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. That 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 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 emailed an invitation to sub-sections of these email addresses 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

Appendix B. Variable Definitions

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

1. **Compliance** which is part of Q14 "To what extent does the corporate culture at your firm affect the following items:" where 1 = no effect, 2 = little effect, 3 = moderate effect, and 4 = big effect.
2. **Tax Aggressiveness** which is part of Q14 "To what extent does the corporate culture at your firm affect the following items:" where 1 = no effect, 2 = little effect, 3 = moderate effect, and 4 = big effect.
3. **Reporting Quality** which is part of Q14 "To what extent does the corporate culture at your firm affect the following items:" 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 Q14 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 Q14 "To what extent does the corporate culture at your firm affect the following items:" where 1 = no effect, 2 = little effect, 3 = moderate effect, and 4 = big effect.
2. **Project Risk** which is part of Q14 "To what extent does the corporate culture at your firm affect the following items:" 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 Q14 "To what extent does the corporate culture at your firm affect the following items:" where 1 = no effect, 2 = little effect, 3 = moderate effect, and 4 = big effect.

2. **Profitability** which is part of Q14 "To what extent does the corporate culture at your firm affect the following items:" where 1 = no effect, 2 = little effect, 3 = moderate effect, and 4 = big effect.
3. **Productivity** which is part of Q14 "To what extent does the corporate culture at your firm affect the following items:" 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.

We hand-code to categorize the written responses into seven individual cultural values, when the respondents wrote descriptions consistent with the following:

Aggregate cultural values is the mean of seven cultural values hand-coded from the open-ended Q1, "Briefly, in words or phrases best describe the current corporate culture at your firm?" and the open-ended part of Q14, "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, when the respondents wrote 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 social norms is the mean of the nine social norms extracted from the open-ended Q6, "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 social 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 of the following two components:

1. **Rescale negatively-phrased formal institutions** is the mean response about the two formal institutions that are options in Q4d "What prevents from being where you should be?" where respondents select from a likert scale with -2 = strongly disagree and 2 = strongly agree. Please note we rescale this question to correspond to the [-1, 1] scale of the positively-phrased formal insitutions question. Specifically, we transform [-2, 2] scale to -2 = 1, -1 = .5, 0 = 0, 1 = -.5, 2 = 1.
   (a) Leadership needs to invest more time to develop the culture
   (b) Firm policies work against the intended culture (e.g., compensation, governance, etc. . .)
2. **Positively-phrased formal institutions** is the mean response about the five formal institutions that are options in Q13/Q6 "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.

(a) Corporate governance

(b) Corporate leadership

(c) Finance function

(d) Hire, fire, promote (Please note this option comes from Q6 "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)

(e) Incentive compensation

Q14 cultural values cluster is integrity and results-orientation for ethics; adaptability and results-orientation for innovation, and is collaboration and results-orientation for firm value and productivity. Clusters are derived based on open-ended responses to Q14, "Please provide a specific example of how culture affects X," where X is 2 of 11 randomly selected business outcomes (e.g., creativity or being compliant).

Q14 social norms cluster is willingness to report unethical behavior, consistency and predictability of actions, Trust among employees, and decision-making reflects long-term for ethics; is New ideas develop organically, employees comfort in suggesting critiques, and coordination among employees for innovation; is agreement about goals and values, coordination among employees, trust among employees, and urgency with which employees work. Clusters are derived based on open-ended responses to Q14m "Please provide a specific example of how culture affects X," where X is 2 of 11 randomly selected business outcomes (e.g., creativity or being compliant).

Q14 formal institutions cluster is corporate leadership for ethics; is hiring, firing, and promotion for innovation, and is incentive compensation for firm value and productivity. Clusters are derived based on open-ended responses to Q14, "Please provide a specific example of how culture affects X," where X is 2 of 11 randomly selected business outcomes (e.g., creativity or being compliant).

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 Q1, Q4, and Q4b.

1. Q1 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 q1 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. Q4 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. Q4b 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 five different controls, one for each of the formal institutions (i.e., corporate governance, corporate leadership, finance function, hire, fire, promote, and incentive compensation) if the regression involves individual independent variables.

"Halo Effect" Specification includes response to 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?"

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

Assets = AT

Book Leverage = $(DLC + DLTT)/AT$

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) = $MEQ + DLC + DLTT + PSTKL - TXDITC$

Profitability = $OIBDP/AT$

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

Sales Growth Rate = $REVT/REVT_{t-1}$

SG&A = $XSGA/AT$

Tangibility = $PPENT/AT$

Tobin's Q = MVA/AT

Appendix C. Additional Tables

Table C.I Benchmarking Survey Response 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 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.

	Survey Public Firms	Compustat Public Firms		Survey Public Firms	Compustat Public Firms
Sales Revenue	**(N = 314)**		**Number of Employees**	**(N = 314)**	
1 = Less than $25 million	2%	14%	1 = Fewer than 100	6%	21%
2 = $25-$99 million	8%	15%	2 = 100-499	10%	24%
3 = $100-$499 million	12%	22%	3 = 500-999	7%	10%
4 = $500-$999 million	10%	10%	4 = 1000-2499	8%	13%
5 = $1-$4.9 billion	26%	17%	5 = 2500-4999	12%	9%
6 = $5-$9.9 billion	17%	4%	6 = 5000-9999	15%	8%
7 = More than $10 billion	25%	17%	7 = More than 10,000	44%	14%
Mean	5.00	3.83	Mean	5.29	3.48
T-stat on mean difference	-10.07		T-stat on mean difference	-14.74	
Credit Rating			**Profitability**		
0 = No rating	6%	70%			
1 = High yield	20%	18%	0 = No after-tax profit	12%	23%
2 = Investment grade	75%	12%	1 = After-tax profit	88%	77%
Mean	1.69	0.43	Mean	0.88	0.77
T-stat on mean difference	-30.33		T-stat on mean difference	-4.46	
CEO Age			**CEO Time in Job**		
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	0.33	Mean	0.14	0.13
T-stat on mean difference	2.96		T-stat on mean difference	-0.87	
Revenue Growth			**Management Ownership**		
Mean	0.08	0.19	Mean	9%	3%
T-stat on mean difference	2.31		T-stat on mean difference	-16.86	

Appendix Table C.II Correlation Matrix among 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.

Values, Norms, and Formal Institutions	(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																			
(3) Community	0.24	0.18																		
(4) Customer-oriented	0.09	0.14	0.08																	
(5) Detail-oriented	0.12	0.08	0.05	0.15																
(6) Integrity	0.09	0.15	0.10	0.12	0.15															
(7) Results-oriented	0.12	0.10	0.10	0.09	0.12	0.11														
Social norms																				
(8) Agreement about goals and values	0.15	0.23	0.14	0.12	0.10	0.19	0.09													
(9) Consistency and predictability of actions	0.10	0.15	0.06	0.13	0.08	0.15	0.06	0.35												
(10) Coordination among employees	0.19	0.21	0.12	0.13	0.08	0.10	0.11	0.40	0.35											
(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										
(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									
(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								
(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							
(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						
(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					
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				
(18) Corporate leadership	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			
(19) 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	0.30		
(20) 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	0.27	0.15	
(21) 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	0.46	0.30	0.23

Table C.III 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. 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 social norms	314	0.54	743	0.51	0.98
Q6/Q13	Aggregate formal institutions	314	0.11	743	0.15	-0.97
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.IV 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. 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 social norms	429	0.50	358	0.51	0.24
Q6/Q13	Aggregate formal institutions	429	0.12	358	0.15	0.56
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.V Test of Non-response Bias: Regular Survey Respondents

This table compares the demographic information for people who respond to the culture survey and those that respond to the Duke Quarterly CFO survey. Column (1) summarizes responses from Duke Quarterly CFO survey respondents since 2011 who we asked to take the culture survey. Column (2) summarizes responses from those that took 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.VI Reliability of Culture Measures: Tests 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. 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 CFO vs. Non-CFO Mean Difference
Panel A. Cultural Measures		CFO Obs.	CFO Mean	Non-CFO Obs.	Non-CFO Mean	
Q1/Q14	Aggregate cultural values	474	0.24	874	0.25	0.54
Q6	Aggregate social norms	474	0.49	874	0.48	-0.09
Q6/Q13	Aggregate formal institutions	474	0.10	874	0.07	-0.78
Q4	Tracks stated values	462	3.22	857	3.33	2.09
Q4b	Effective culture	474	2.67	874	2.77	2.08
Panel B. The Value of Corporate Culture						
Q2	How important?	467	3.49	868	3.54	1.00
Q3	Top issue?	474	3.15	871	3.26	1.92
Q4c	Improve culture increases value?	397	0.91	707	0.92	0.46
Q11	Discount for misaligned culture?	426	3.67	574	3.70	0.23
Panel C. Actions Influenced by Corporate Culture						
Q7	Take right amount of investment risk	441	-0.11	676	-0.22	-2.90
Q7b	Culture is reason for investment risk	365	2.61	495	2.77	2.19
Q8	Choose greater NPV project	412	0.63	613	0.57	-1.98
Q8b	Culture influences NPV project preference	266	0.77	363	0.82	1.35
Q10	Increases chance do something unethical	452	0.85	674	0.84	-0.31
Q12	Earnings management	448	2.56	655	2.55	-0.20
Panel D. Business Outcomes						
Q14	Our rate of growth	467	3.40	663	3.39	-0.27
Q14	Profitability	467	3.43	670	3.44	0.40
Q14	Productivity	466	3.49	660	3.53	0.93
Q14	How much debt we use	460	2.42	599	2.48	0.95
Q14	Quality of our financial reporting	466	2.89	652	2.98	1.54
Q14	Creativity	463	3.37	673	3.46	1.94
Q14	Management of downside risk	464	3.06	645	3.16	1.95
Q14	Willingness to take on risky projects	463	3.16	666	3.25	1.99
Q14	Firm Value	465	3.37	659	3.46	2.01
Q14	Tax aggressiveness	454	2.02	566	2.23	3.35
Q14	Compliance	467	2.99	652	3.26	4.51

Table C.VII Reliability of Culture Measures: Tests By Email Source

This table provides tests of differences in mean response for the main sample of Duke 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. 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 social norms	446	0.48	137	0.52	0.97
Q6/Q13	Aggregate formal institutions	446	0.11	137	0.15	0.60
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

Table C.VIII Summary of Q14 Open-ended Responses

This table summarizes the hand-coded survey responses from the open-ended Q14, "Please provide a specific example of how culture affects X," where X is 2 of 11 randomly selected business outcomes (e.g., creativity or being compliant)." For comparison, responses to similar survey questions elsewhere are included in Column (1). The Q14 response across all categories is included in Column (2). Columns (3) through (5) report only the response to Q14 when it was associated with a business outcome in the aggregate categories of ethics, innovation, or productivity and firm value, respectively.

			Avg. of Q14 Text for Big Effect On:		
Panel A. Cultural values (-1 = Opposite value, 0 = No mention of value, 1 = Stated value)	Avg. Q1 Response	Avg. Q14 Response	Ethics	Innovation	Productivity & Firm Value
	(1)	(2)	(3)	(4)	(5)
Adaptability	0.14	0.14	0.13	0.22	0.14
Collaboration	0.18	0.20	0.19	0.21	0.21
Community	0.27	0.16	0.14	0.17	0.19
Customer-oriented	0.18	0.15	0.11	0.11	0.18
Detail-oriented	0.06	0.12	0.21	0.08	0.11
Integrity	0.16	0.22	0.48	0.14	0.20
Results-oriented	0.25	0.29	0.32	0.24	0.30

			Avg. of Q14 Text for Big Effect On:		
Panel B. Social norms (-1 = Works against, 0 = No effect, 1 = Key factor)	Avg. Q6 Response	Avg. Q14 Response	Ethics	Innovation	Productivity & Firm Value
	(1)	(2)	(3)	(4)	(5)
Agreement about goals and values	0.58	0.27	0.24	0.25	0.31
Consistency and predictability of actions	0.43	0.23	0.28	0.22	0.23
Coordination among employees	0.63	0.14	0.09	0.16	0.15
Decision-making reflects long-term	0.57	0.07	0.11	0.06	0.07
Employees comfort in suggesting critiques	0.45	0.07	0.08	0.15	0.06
New ideas develop organically	0.46	0.20	0.20	0.35	0.18
Trust among employees	0.73	0.05	0.07	0.05	0.06
Urgency with which employees work	0.40	0.06	0.06	0.01	0.06
Willingness to report unethical behavior	0.46	0.15	0.38	0.11	0.12

			Avg. of Q14 Text for Big Effect On:		
Panel C. Formal institutions (-1 = Works against, 0 = No impact, 1 = Reinforces)	Avg. Q6/Q13 Response	Avg. Q14 Response	Ethics	Innovation	Productivity & Firm Value
	(1)	(2)	(3)	(4)	(5)
Corporate governance	0.44	0.02	0.03	0.01	0.01
Corporate leadership	0.55	0.02	0.08	0.00	0.00
Finance function	0.40	0.01	0.02	0.01	0.01
Hiring, firing, and promotion	0.40	0.05	0.02	0.04	0.05
Incentive compensation	0.36	0.05	0.04	0.04	0.04
Observations	**858**	**858**	**272**	**330**	**552**

Table C.IX External Validation: Culture Question on Quarterly Survey

This table presents the response to a one-off culture question included on the 2016Q3 Duke Quarterly CFO 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%
Operating Plan	39.0%	
Strategic Plan	39.7%	
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.X Robustness: Subsample of Firms that Track Stated Values

This table presents OLS estimates connecting the values and norms that comprise corporate culture to firm 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. 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 social 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 are in parentheses under coefficient estimates; they are bootstrapped with 100 replications. 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 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	0.32	0.44*	-0.03	0.27
	(0.23)	(0.24)	(0.24)	(0.24)
Aggregate social norms	0.49***	0.24**	0.46***	0.41***
	(0.13)	(0.11)	(0.13)	(0.14)
Noise & Demographic Controls	Yes	Yes	Yes	Yes
Formal Institution 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	31.6%	32.6%	24.1%	26.8%

Table C.XI Robustness: Alternative Definitions of Cultural Values

This table presents OLS estimates connecting cultural values to firm 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. 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). Standard errors are in parentheses under coefficient estimates; they are bootstrapped with 100 replications. For a detailed description of each variable, please see the definitions in Appendix B. ***, ** and * indicate p-values 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.XII Robustness: External 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 use publicly available financial data to examine the extent to which culture influences business outcomes. In Panel A, the dependent variables are, respectively, the three-year average of profitability and Tobin's Q. In Panel B, the dependent variables are, respectively, the five-year average of profitability and Tobin's Q. The key explanatory variables are the aggregate cultural values and social norms. Additional explanatory variables include aggregate formal institutions, noise controls (date, response delay, job title, and source of email), firm-level controls (firm size, number of employees, investment-to-capital, tangibility, and SG&A), and additional question controls (Q1, Q4, Q4b). Standard errors are in parentheses under coefficient estimates; they are bootstrapped with 100 replications. For a detailed description of each variable, please see the definitions in Appendix B. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	Dependent variable = 3-year average of			
	Tobin's Q		Profitability	
Panel A. 3-year average	(1)	(2)	(3)	(4)
Aggregate cultural values	0.12	0.09	0.07	0.00
	(0.09)	(0.10)	(0.10)	(0.09)
Aggregate social norms	0.10**	0.09**	0.09**	0.08*
	(0.05)	(0.05)	(0.04)	(0.04)
Firm and Industry Controls	No	Yes	No	Yes
Noise Controls	Yes	Yes	Yes	Yes
Formal Institution Controls	Yes	Yes	Yes	Yes
Additional Survey Question Controls	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Observations	189	189	189	189
Adjusted R-squared	35.9%	48.6%	37.5%	59.0%

	Dependent variable = 5-year average of			
	Tobin's Q		Profitability	
Panel B. 5-year average	(1)	(2)	(3)	(4)
Aggregate cultural values	0.12	0.08	0.04	-0.01
	(0.08)	(0.09)	(0.09)	(0.09)
Aggregate social norms	0.08*	0.08*	0.11***	0.09**
	(0.04)	(0.04)	(0.04)	(0.04)
Firm-level Controls	No	Yes	No	Yes
Noise Controls	Yes	Yes	Yes	Yes
Formal Institution Controls	Yes	Yes	Yes	Yes
Additional Survey Question Controls	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Observations	189	189	189	189
Adjusted R-squared	34.4%	49.9%	36.1%	59.0%

Table C.XIII 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 III and "actions influenced by corporate culture" reported in Table IV. In Panel A, the dependent variables are, respectively, Q2, Q3, Q4c, and the mean response to those three questions standardized to have the same scale. In Panel B, the dependent variables are an indicator based on Q7 response of "right risk," Q8, Q12, and the mean response to those three questions standardized to have the same scale. We exclude Q10 and Q11 because they are hypothetical questions. The key explanatory variables are the aggregate cultural values and social 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). Standard errors are in parentheses under coefficient estimates; they are bootstrapped with 100 replications. For a detailed description of each variable, please see the definitions in Appendix B. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	Dependent variable = Value of culture			
	Q2	Q3	Q4c	Agg. value questions
Panel A. Alternative outcome mesures #1	(1)	(2)	(3)	(4)
Aggregate cultural values	-0.09	0.10	0.01	-0.03
	(0.11)	(0.09)	(0.09)	(0.07)
Aggregate social norms	0.10*	0.19***	0.07	0.13***
	(0.06)	(0.05)	(0.05)	(0.04)
Noise & Demographic Controls	Yes	Yes	Yes	Yes
Formal Institution Controls	Yes	Yes	Yes	Yes
Additional Question Controls	Yes	Yes	Yes	Yes
Observations	1297	1307	1075	1310
Adjusted R-squared	28.5%	39.9%	11.9%	33.8%

	Dependent variable = Actions influenced			
	Q7	Q8	Q12	Agg. action questions
Panel B. Alternative outcomes measures #2	(1)	(2)	(3)	(4)
Aggregate cultural values	0.00	0.24**	-0.01	0.00
	(0.11)	(0.11)	(0.11)	(0.08)
Aggregate social norms	0.07	-0.01	0.10*	0.05
	(0.06)	(0.06)	(0.06)	(0.04)
Noise & Demographic Controls	Yes	Yes	Yes	Yes
Formal Institution Controls	Yes	Yes	Yes	Yes
Additional Question Controls	Yes	Yes	Yes	Yes
Observations	1093	1002	1081	1188
Adjusted R-squared	26.7%	26.0%	14.9%	23.4%

Appendix D. 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. To answer "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:

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

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:

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

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 $E[V|C] = 0 \Leftrightarrow \beta = 0$.

Instead, 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.[5] 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. One reason to do this would be to determine if the null hypothesis holds after a 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

[5] 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.

under the standard identification condition $E[\epsilon|C] = 0$. We have $E[\hat{\beta}] = E[(C'C)^{-1}C'V] = (C'C)^{-1}C'E[V] = (C'C)^{-1}C'C\beta = \beta$. Instead of $E[V] = C\beta$, the wording of the question implies we have $E[V] = C\theta$. 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.