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CORPORATE CULTURE:
EVIDENCE FROM THE FIELD

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ABSTRACT

Does corporate culture matter? Can differences in corporate culture explain why similar firms diverge with one succeeding and the other failing? To answer these questions, we use a novel survey and interview-based analysis of 1,348 North American firms. Over half of senior executives believe that corporate culture is a top-three driver of firm value and 92% believe that improving their culture would increase their firm's value. Surprisingly, only 16% believe their culture is where it should be. Executives link culture to ethical choices (compliance, short-termism), innovation (creativity, taking appropriate risk), and value creation (productivity, acquisition premia). We assess these links within a framework that implies cultural effectiveness depends on interactions between cultural values, norms, and formal institutions. Our evidence suggests that cultural norms are as important as stated values in achieving success.

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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 argued persistent differences in outcomes across firms emanate from 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 literature on corporate institutions (e.g., Guiso, Sapienza, and Zingales (2015b); North (1991)). We follow this precedent and dichotomize corporate institutions into formal and informal branches (Figure 1). 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 norms. Cultural values are ideals employees strive to fulfill, while cultural norms are the day-to-day practices that reflect these values. For example, having integrity is the cultural value to strive for, while fostering a “willingness to report unethical outcomes” is a cultural norm or action that reflects this value. 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 cultural 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 suggesting corporate culture is very important, empirical research has 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 relatively 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 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/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 firms 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 one-third 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. 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. 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. Among firms that choose projects that enhance long-term value (over projects that enhance “short-term” objectives), 80% indicate their firm’s culture influences their choices.

The rightmost bars in [Figure 2](#) illustrate 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. If stating ideal cultural values is all that matters for having an effective culture, then adhering to stated values should produce an effective culture. To the contrary, in the evidence presented below 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 by formal institutions. Consistent with this argument, we find 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 suggests several important findings. First, for culture to have full impact, values should be complemented by reinforcing norms and by formal institutions. Second, formal institutions and cultural norms substantially explain the effectiveness of corporate culture. These factors alone explain almost 36% 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, we find evidence consistent with an effective culture working by intrinsically motivating employees to perform and shaping the way their expectations are formed. Finally, given that an effective culture is positively associated with value creation and economic efficiency, we ask executives what is preventing their firm's culture from being effective in practice. 69% blame their firms' underinvestment in culture.

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 12 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 questions. 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 survey are consistent with the 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 ([Hermalin \(2001\)](#); [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 ([Shleifer and Vishny \(1997\)](#); [Popadak \(2016\)](#)) meaningfully interact with the underlying corporate culture. Fourth, our results indicate culture works by intrinsically motivating employees, consistent with theory showing trade-offs among systems of incentives within organizations ([Akerlof and Dickens \(1982\)](#); [Gibbons \(1998\)](#); [Bénabou and Tirole \(2003\)](#)) and the literature suggesting contract incompleteness depends on the firms’ internal organizations ([Macaulay \(1963\)](#); [Levin \(2003\)](#)). Finally, our evidence links culture to ethics ([Guiso, Sapienza, and Zingales \(2006\)](#)), myopia ([Graham, Harvey, and Rajgopal \(2005\)](#); [Dichev et al. \(2013\)](#)), whistle-blowing ([Bowen, Call, and Rajgopal \(2010\)](#); [Dyck, Morse, Zingales \(2010\)](#)), risk ([Fahlenbrach, Prilmeier, and Stulz \(2012\)](#)), and compliance ([Kedia, Luo, and Rajgopal \(2015\)](#)).

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*

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 ([Guiso, Sapienza, and Zingales \(2015b\)](#)). This definition of corporate culture facilitates our tests connecting culture to business outcomes. 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 ideals that employees strive to fulfill, while cultural norms are the day-to-day practices that attempt to live out these values.¹

Our paper examines if declared cultural values by themselves lead to successful business outcomes, or if, these values must be complemented by cultural norms that dictate actual behavior and day-to-day practices. We also test if formal institutions such as compensation policy either reinforce or work against the effectiveness of cultural values and norms. A novel feature of our survey instrument is that we 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

¹ [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.

and corporate culture relate to business 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 a task for its own sake, that is, culture provides intrinsic motivation. The distinction between extrinsic and intrinsic motivation is important in distinguishing when the effects of corporate culture on business 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. This echoes arguments from Gibbons and Henderson (2013) suggesting differences in firm performance stem from actions that cannot be specified in advance, so research should focus on workplace interactions (i.e., relational contracts) to explain such differences.

The values and norms that comprise culture guide employees' actions, especially when they face choices that cannot fully be regulated ex ante, and this in turn impacts business outcomes. Culture influences employees' actions in the firm and outside the firm (i.e., with customers and suppliers). Firms that invest in culture try to promote understanding of their cultures, and one way employees are judged is by their diligence in applying the cultural values and norms in their actions. The reason that cultural values and norms may influence business outcomes is that they reduce employees' moral hazard as it arises. We expand upon the theoretical links from cultural values and norms to firm performance in more detail in the next subsection.

B. Determinants of an Effective Culture: Values and Norms

The previous subsection describes how culture may lead to superior business outcomes relative to what the same production inputs, technology, and formal institutions would deliver at another firm. But not all cultures will be equally effective in producing superior business results. We refer to an "effective culture" as one that promotes the behaviors needed to successfully execute the

firm's strategies and achieve its goals. We now 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 norms. Later, 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 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 establishing check-the-box practices with the goal of “getting through the day without being indicted.” The second bank promotes integrity by establishing an intent of “never compromise,” a spirit of “honor your word,” and a willingness to speak up when others violate their word. The cultural norm at either bank could lead to a desired compliance outcome in many situations. However, 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 when culture has its greatest impact. The 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.

We look to previous theoretical research to determine which cultural values and norms generate an effective culture. In the broadest sense, theory suggests more than one combination of cultural values and norms can lead to the same desired business outcomes (Crémer (1993)). To test this view, we examine cultural values and norms in aggregate and their relationships with an effective culture. Alternatively, some theories that apply broadly across business outcomes focus on how culture influences employees' behavior and actions. The idea is that employees' behaviors are acquired through conditioning, and conditioning occurs through interaction with the corporate culture. The aspects of behavior these theories center on are intrinsic motivation and expectation formation. To test this view, we examine the specific cultural values and norms these theories suggest positively influence employee behavior and, in turn, an effective culture.

One way that theory suggests culture works is by intrinsically motivating employees. Bénabou and Tirole (2003) show intrinsic motivation increases when employees feel empowered. In their theory, employee empowerment involves both demonstrating confidence in the employee and delegating control of a task to an employee. To show confidence in the employee implies that a cultural

norm of **trust**² is present in day-to-day interactions between employees. To delegate tasks suggest **coordination** is evident in the daily environment. Second, the theory shows empowerment is especially important for increasing the intrinsic motivation associated with difficult tasks. Tasks requiring creative problem-solving are among the most difficult that employees face. Making progress on difficult tasks implies a cultural norm of personal creativity and the ability to **create ideas, connections, or alternatives organically** will be present in employees' day-to-day work lives. Third, the theory shows battles for dominance decrease intrinsic motivation. These clashes reduce employees' self-confidence and lower their desire to complete a task. For an executive to establish among employees that such battles for dominance are undesirable implies **collaboration** must be raised to the level of an ideal or cultural value.

Another strand of theory suggests culture aligns expectations (Guiso, Sapienza, and Zingales (2006)). Kreps (1990) first argued for such a framework by suggesting "culture works in unforeseen events by giving hierarchical inferiors an idea before the event how the organization will react." Subsequent theory formalizes this idea by modeling culture as an alignment of expectations (e.g., Lazear (1999); Akerlof and Kranton (2005); Van den Steen (2010)) and showing that aligned expectations produce consistent actions in unforeseen events. In these models because agents are heterogeneous and the payoffs that they assign to outcomes differ, culture serves to facilitate the actions preferred by the firm when not all actions can be contracted in advance. Aligning expectations implies that a cultural norm of **consistent and predictable actions** is present in employees' day-to-day actions. Second, these theories suggest that a culture where employees have aligned expectations makes firms more efficient. Aligned expectations simplify choices and remove delays to action such as spending time in meetings building consensus. Thus, a culture that works through aligned expectations exhibits a cultural norm of **urgency when employees work**.

The discussion above leads to several hypotheses. First, it is a combination of cultural values and their associated norms that produce an effective culture. Second, an effective culture is positively associated with firm performance. A natural corollary of these hypotheses is that selecting values in isolation, even when the values are advertised and promoted, will not be as effective as a combination

²Key cultural values and norms discussed below link back to the bolded words and phrases.

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. These hypotheses and corollary 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.

Our next set of hypotheses explore how an effective culture works. Given that some theory suggests more than one combination of cultural values and norms can lead to the desired business outcome, in our empirical analyses, we explore the extent to which values and norms *broadly* affect outcomes. Then, we turn to testing theory that suggests specific cultural values and norms alter employees' behavior and actions in a way that produces a more effective culture. We hypothesize that the cultural values and norms associated stronger intrinsic motivation and expectation alignment are associated with an effective culture. The *specific* cultural values and norms include: collaboration, trust, coordination, organic idea creation, consistency and predictability of action, and the urgency with which employees work.

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 effects 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 influence 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. We try to account for these forces 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 cultural 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. *Interview and Survey Methods*

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, those in early and late lifecycle stages, conglomerates, singularly-focused firms, and holding companies. Some executives compared

and contrasted their experience at multiple firms. Overall, the current and past employment of the executives comprise a set of firms that contribute meaningfully to the U.S. economy and reflect about 20% of the market capitalization of the NYSE plus NASDAQ. The average executive’s current position was with a firm that is much larger (mean sales of \$47 billion), has more leverage, greater profitability, lower sales growth, and higher credit ratings than the typical Compustat firm.

We 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?”³ This allowed us to initially capture broad themes and then we narrowed the focus as the interview proceeded, without leading the interviewee by our presenting predetermined definitions of corporate culture. We also used interviews to identify under-researched topics and as input to develop our survey instrument. All but one of the executives that we contacted agreed to be interviewed (and he told us, “read my book!”). The interviews occurred over the phone or in-person and vary in length, lasting from 40 to 90 minutes. The executives 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 responses (representing a 13.4% response rate). This is a higher response rate than in previous corporate field studies (Graham and Harvey (2001)). We supplemented the primary email lists with emails from external sources such as *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](#).

³We conduct interviews according to the scientific practices described in [Sudman and Bradburn \(1983\)](#).

B. Corporate Culture Measures

In total, we collected 1,898 responses. We eliminate responses from participants located outside the United States and Canada to attenuate effects of possibly confounding influences from national cultures. 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 generalizability of our findings, we benchmark the demographics from our public firms to Compustat firms. These results are available in Appendix [Table C.I](#). 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 but they have similar leverage and return on equity.

We use the survey questions to define our key variables, which include cultural values, cultural 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 the 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.⁴ 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 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. Adding this seventh value allows us to fully map to the values identified by [Guiso, Sapienza, and Zingales \(2015a\)](#) in their study of popularly advertised corporate values. We also hand-code responses to the open-ended subpart of Q14 to supplement the information from

⁴90% 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 positive and negative adjectives (e.g., good and healthy vs. toxic and stressful). 9% describe their culture as currently changing and 7% explicitly indicate that their culture is a mix of different subcultures.

Q1. Q14 states “Please provide a specific example of how culture affects X,” where X is various business outcomes (e.g., productivity). We code these written answers to identify the existence of any of same seven cultural values as in 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 also create an aggregate variable to later test if cultural values broadly affect 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-oriented 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](#).

Our measures of the cultural values 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 current, actual values. Our measure of cultural values is more granular in that we specifically ask about the current culture and later ask about how well the current culture tracks the aspirational culture. A company’s website would not describe their culture as “non-inclusive, political and backstabbing” or advertise that they value “noncooperation.” Yet some of our respondents use descriptions like these to indicate their firm does not value collaboration. We carefully explore the reliability of our measures in the next subsection.

Panel B of [Table I](#) provides descriptive statistics for the cultural norms as well as for an aggregate

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

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. 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. 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 of 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 amount of project risk. The productivity and firm value outcomes include firm value, profitability, and productivity. The aggregate for all outcomes is the simple average of the ethics, innovation,

and productivity/firm value aggregate outcomes. The survey responses indicate that more than 40% of executives believe corporate culture has a big effect on 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 relation between culture and performance.

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

A second type of measurement error could occur if unintentionally we omit important cultural values and norms on the survey. While we attempt to include the cultural values and norms that theory predicts are most relevant and our interviews were designed to detect anything missing, we may unintentionally exclude other relevant choices. A potential correction for this type of error involves studying aggregated results. If the firm’s cultural values and norms are correlated, which

they are in the 16 cultural values and norms that we examine, then our aggregate measures will serve as representative proxies of the firm’s true cultural values and norms. Appendix [Table C.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, high levels of adaptability and the community ideals that millennials embrace are most evident in technology firms, whereas the cultural values of customer-orientation is tied most closely with service firms. When we analyze by the firm’s competitive position within its industry, we see firms that are industry leaders and near-leaders, on average, exhibit significantly higher scores for cultural values and norms than those firms in the middle of the pack. 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 believe that culture plays less of a role affecting the firms’ choice of investment risk and creativity, and plays a bigger role in being compliant. We find family firms and non-family firms exhibit no differences, on average, in measures of culture. Non-family firms, however, are more likely than family firms to believe culture influences employees’ actions and that culture has a big effect on firm value.

A third type of possible measurement error concerns whether the presentation of the questions could bias respondents’ answers (e.g., [Bertrand and Mullainathan \(2001\)](#)). One advantage of online administration is the ability to randomly scramble the order of choices within a question, so as to mitigate potential order-of-presentation effects. Specifically, the survey scrambles the order of answers in the questions used to construct our measures of cultural norms (Q6), formal institutions (Q13), and business outcomes (Q14). We do not detect any effects from question order. In addition, we include redundant questions about cultural values, cultural norms, and formal institutions that

rephrase and reframe issues of interest. These additional questions help 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, etc.).

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

We also conduct several tests to explore the extent of non-response bias in our data. First, because one of our email lists includes respondents that regularly participate in the Duke quarterly survey of CFOs, we compare the responses of executives that routinely respond to that survey to those that occasionally respond. Appendix [Table C.V](#) shows that the culture survey respondents do not differ statistically from the regular responders. Given that we find no statistically significant difference across these sampling frames, this suggests minimal selection. Second, we test the time to response to see if it suggests differences. On one hand, those that respond early to the survey may be very enthusiastic about the topic of culture. On the other hand, those that respond closer to the end of the open window may be more negative and want to get their final word in on culture. This study of responses over time also serves as a classic test of nonresponse bias. [Figure 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 CEOs and non-executives. We see CEOs are more positive on the importance of culture than CFOs, who show no significant difference from non-executives. Appendix [Table C.VI](#) details the responses by job title across all questions. 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. Further, we account for the noise these issues may bring to the data in our econometric specifications through the use of control variables.

Multicollinearity. Multicollinearity can limit the validity of statistical inferences when two or more independent variables are highly correlated. Multicollinearity can inflate variance, leading researchers to fail to reject the null hypotheses of no effect too often because the standard errors are large. We test for multicollinearity in our data in two ways. First, we analyze the variance inflation factors (VIFs) of the 7 cultural values, 9 cultural norms, and 5 formal institutions. 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 but 6 cultural elements 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. A common approach to deal with multicollinearity involves aggregating variables to reduce the number of highly correlated variables, a technique we employ in our main analysis. The approach of 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 \(2012\)](#)). In additional tests, we also employ model selection techniques such as Ridge Regression ([Hoerl and Kennard \(1970\)](#)) and LASSO ([Tibshirani \(1996\)](#)). We use both of these approaches with the goal of understanding

the stability of our findings across a variety of statistical assumptions.

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

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

III. Corporate Culture and Firm Performance

A. *Firm value, risk, and ethics.*

We now explore in detail the value effects of corporate culture and how culture affects employee actions. [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.”

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

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

The interviews offer insight into why executives would walk away from acquisitions lacking cultural fit: “we would test for cultural fit. If the gap is wide enough it does not matter if it is a great price. We won’t move forward.” Another manager put it this way: “I would definitely pay more for the company whose culture is closer. Less friction and assimilation cost, we can get it

all done easier, faster and at lower cost.” When we asked how cultural fit is tested, one executive responded, “we had a checklist set of questions that we would ask about the elements of the culture and we would compare them with the key elements of our culture. For example, we would look for strong focus on customer, high levels of integrity, open door communication and so on ... among a list of 10-12 items.” For this firm, a deal would be abandoned for targets scoring low on the checklist.

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 of risk,” 29% believe their firms take “too little risk,” and 11% believe that their firms take “too much risk.” In a follow-up question (Q7b), we asked respondents whether their culture was a “very important,” “important,” “somewhat important,” or “not a reason” that their firm takes on that amount of risk. 55% of respondents think culture plays an important or very important role in their risk decisions. While a strong positive association between risk decisions and culture (Q7) could be attributable to a third common factor, the follow-up question (Q7b) suggests a direct link between culture and actions. (Later, we connect the willingness to take on risky investments to corporate innovation.)

The next question (Q8) in [Table 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.

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. 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 executive 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, cultural norms, and/or formal institutions (as discussed in [Section I](#)).

We start by exploring the channels by which specific values and norms affect specific outcomes. Following the banking example introduced in [Section I](#), we focus on *BeingCompliant* as a specific ethics outcome. Examining the values and norms that define corporate culture in this setting also helps to benchmark our data to prior studies that have looked at trust or integrity as sources of value for firm (Shleifer and Summers (1988); Edmans (2011); Guiso, Sapienza, and Zingales (2015a)). Panel A of [Table V](#) presents results from regressing *BeingCompliant* on explanatory variables that include all of the cultural values, norms, and formal institutions, plus various control variables. Consistent with theory and intuition, we find significant evidence that firms with an integrity value accompanied by cultural norms that express integrity (willingness to report unethical behavior, trust among employees, etc.) are likely to have a cultural effect that is significantly greater for compliance.⁵ These simple findings give us confidence in our data. But unlike prior studies, we are able to look at multiple specific business outcomes. To provide a sense of the comprehensiveness of our data, Panel B focuses on a different outcome – that of creativity – as a second example.

Panel B in [Table V](#) shows results from regressing the *Creativity* outcome on the full set of cultural values, norms, and formal institutions as well as various control variables. We present the coefficient estimates for the values and norms prior research indicates may tie to creative outcomes (Dessein and Santos (2006); Bénabou, Ticchi, and Vindigni (2015)). We find a significantly positive association between creativity and the adaptability value (as expected) and a negative association

⁵With 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.

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 and new ideas develop organically. Organic idea creation is strongly associated with creativity. 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. Controlling for the halo effect weakens the results slightly.

Overall [Table V](#) links specific business outcomes to specific cultural values and norms, lending confidence to the underlying connections in the data. We now investigate the connections more broadly: do cultural values and norms affect business outcomes? We use aggregate variables to address this question.

In [Table VI](#), we use OLS regressions with aggregate dependent variables that measure business outcomes broadly which, as described in [Section II](#), helps 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 variables separately aggregate, respectively, ethical, innovation, and productivity/value outcomes (see [Appendix B](#) for variable definitions). The key explanatory variables are aggregate measures of cultural values and cultural norms. As additional explanatory variables, we include formal institutions, noise controls, demographic controls, and additional question controls.

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

In Panel B of [Table VI](#), we test for complementarity between selected cultural values and the norms that express them on a day-to-day basis more explicitly by allowing for values to interact

with norms. The evidence supports the implication 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 cultural norms term also remain positive and significant at the 1% level in all columns. These findings are consistent with the conclusion that broadly speaking cultural values and norms have an important impact on business outcomes. Moreover, the results support our argument that selecting cultural values in isolation are not as effective as when the day-to-day living of those values (that is, cultural norms) are functioning properly.

C. Regression evidence on cultural effectiveness.

The previous section established a link between cultural values and norms and business outcomes. In this section, we explore more explicitly whether the effectiveness of corporate culture is what influences business outcomes, as described in [Section I](#). Specifically, we investigate our proposed two-step process for corporate culture to be associated with business outcomes. First, cultural values, cultural norms, and formal institutions combine to create an effective culture. Second, effective culture relates to business outcomes. In [Table VII](#) we analyze these two steps. In Panel A, we use OLS regressions with dependent variables that measure aggregate business outcomes and the key explanatory variable being whether a firm has an effective corporate culture. We find that having an effective corporate culture is associated with ethics, productivity/value, and overall aggregate outcomes. Next, we attempt to explain an effective corporate culture with cultural values and norms.

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 cultural norms and formal institutions, respectively. Column (4) includes values, norms, and formal institutions in the same specification; cultural values lose economic and statistical significance but norms and formal institutions remain significant and positively associated with effectiveness. Together our aggregate measure of cultural values,

norms, and formal institutions without any other controls explains 35% of the variation in cultural effectiveness, consistent with their importance. 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. While neither coefficient is significant, the negative signs are consistent with formal institutions working more as substitutes than complements with cultural values and norms.

Cultural values, cultural norms, and formal institutions influence desired business outcomes. In [Table VIII](#), we explore specific channels that tie cultural values and norms to cultural effectiveness using disaggregated cultural measures. Specifically, we test if the cultural values and norms that theory suggests provide stronger intrinsic motivation and expectation alignment are also associated with the effectiveness of corporate culture. The specific cultural values and norms suggested by theory are: collaboration, trust, coordination, organic idea creation, consistency and predictability of action, and the urgency with which employees work.

Our approach in [Table VIII](#) uses model selection techniques to help isolate the important cultural values and norms. Specifically, we focus on Ridge Regression ([Hoerl and Kennard \(1970\)](#)) and LASSO ([Tibshirani \(1996\)](#)). Both methods start by regressing whether a firm’s current culture is effective on all the cultural values, norms, and formal institutions. In comparison to OLS, however, each of these methods reduces the variability of coefficient estimates by shrinking some coefficient estimates with penalties. In Ridge Regression, the “penalty” applies to the sum of the squares of the coefficients. This means Ridge Regression shrinks the coefficients of highly correlated explanatory variables equally towards zero. In contrast to the highly correlated variables, the explanatory variables that account for more of the variation in the data do not shrink toward zero. The only difference between Ridge Regression and LASSO is that the “penalty” in LASSO applies to the sum of the absolute values of the coefficients. Both methods help to isolate the important explanatory variables and to reduce the prediction error of the model. Yet neither method diminishes the fact that multicollinearity inflates the standard errors ([Efron et al. \(2004\)](#)). Hence, for the purposes of interpretation, the focus should be on those explanatory variables that are selected as important

rather than the statistical significance of a single coefficient estimate.

Table VIII shows that many of the cultural values and norms past theory has focused on (and described in Section I) have a strong association with cultural effectiveness. Column (1) shows the Ridge Regression results and Column (2) shows the LASSO results. Ridge Regression produces a parsimonious model; it reduces the number of cultural values from 7 to 1 (collaboration) and the number of cultural norms from 9 to 3 (organic idea creation, the urgency with which employees work, and the consistency and predictability of action). LASSO regression produces a more inclusive model; it reduces the number of cultural values from 7 to 5 and the number of cultural norms from 9 to 6. LASSO includes two of the cultural variables associated with culture working through intrinsic motivation (trust and coordination among employees) that Ridge Regression does not include. Both models report the cultural attributes of collaboration and organic idea creation as being important and highly statistically significant. The importance of these attributes supports the conclusion that an effective culture works by intrinsically motivating employees. The cultural attributes of consistency and predictability of action and the urgency with which employees work are also significant and important. Their importance indicates culture also works through expectation formation. Overall, the model selection techniques reveal that the cultural values and norms shown to meaningfully explain cultural effectiveness closely parallel research that suggests culture works through intrinsic motivation (Bénabou and Tirole (2003)) and expectation formation (Guiso, Sapienza, and Zingales (2006)).

D. 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. 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 about value creation on the 2016Q3 Duke quarterly CFO survey that had culture as one choice 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.VIII](#).

Next, given that our main inferences come from regressing survey data on survey data, we explore the out-of-sample predictive power of our two-step connection linking an effective corporate culture to business outcomes. Specifically, we reproduce Table VII using a 10-fold cross-validation procedure (Efron (2004)). This procedure randomly partitions the data into 10 subsamples. Of the 10 subsamples, a single subsample is retained as the validation data for testing the model and the remaining 9 subsamples are used as training data. This procedure is then repeated 10 times, with each subsample used exactly once as the validation data. Inference is then based on an average of the 10 out-of-sample tests of the two-step connection. We evaluate both the stability of our coefficient estimates as well as the predictive power of two-step connection out-of-sample. Our coefficient estimates and inferences remain stable. Our two-step procedure also performs well out of sample. For the first step from effectiveness to outcomes, the mean absolute percentage error is only 12% for all outcomes. For the second step, we find the cultural values, norms, and formal institutions that determine cultural effectiveness have a mean absolute percentage error of 17%. We report these findings in Appendix [Table C.IX](#).

Next, 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 to ease concerns about our coding. First, we only look at the subsample of 600 respondents that say in Q4 their current corporate culture very closely tracks their stated firm values and in Q4b say their culture is close to where it should be. Focusing on this subsample mitigates the concern that the cultural values written in the open-ended responses are not the firm's actual cultural values. Second, we stop using our open-ended measures of cultural values. Instead, we examine survey questions that ask about the alignment of the firm's cultural values to its actual culture, Q4 and Q4d. We report these findings in Appendix [Table C.X](#) and [Table C.XI](#), respectively. Consistent with our previous findings, across both tests we see weak statistical evidence that stated cultural values in isolation matter for performance but cultural norms remain significant.

Finally, 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,” the Q14 responses may reflect 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 slope 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. This sample is limited to 189 firms, so to reduce noise we look at these outcomes in a single year and averaged over 2, 3, 4, and 5 years, respectively. The results show cultural norms are positively associated with Tobin’s Q and profitability. We report these findings in [Appendix Table C.XII](#). Finally, we examine the connection between cultural values and norms using business outcomes that are not part of Q14. Instead, we use the responses to the survey questions about the value of corporate culture ([Table III](#)). We include these findings in [Appendix Table C.XIII](#). We observe the cultural norms are significantly and positively associated with these alternative business outcomes while cultural values are not. 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.

E. Economic Implications

If cultural effectiveness is positively associated with many business outcomes and 92% of executives believe improving culture would increase firm value, why do so many executives report that their culture is ineffective in practice? Are companies underinvesting in culture? Did the current CEO inherit an ineffective culture from his predecessor that cannot be changed? Do shareholders underappreciate the value of an effective culture? Are other firm policies and procedures preventing employees from adhering to the aspirational culture?

To provide insight into ways to ameliorate an ineffective culture, [Table IX](#) summarizes three additional survey questions. The first question (Q5), “which of the following have been most

influential in setting your firm’s current culture? [check up to 4]” reveals leadership and markets are the two most influential factors in setting the culture. Among different potential leaders, the current CEO (55%), the owner (32%), the founder (30%), and past CEOs (18%) are identified as responsible for shaping the current culture. Formal institutions such as corporate governance (12%) and incentive compensation (12%) are not perceived as creators of the firm’s current culture. We also note non-management employees were not thought to be influential (13%). These results largely corroborates theory suggesting that culture is set by leadership (Hermalin (2013)). The results about the market participants are consistent with prior empirical research suggesting the marketplace may influence executives investment in culture (Edmans (2011); Guiso, Sapienza, and Zingales (2015a)) and the core cultural values that leaders promote (Popadak (2016)).

The next question (Q4d) “what is preventing your firm’s culture from being exactly where it should be?” again highlights the importance of leadership. 69% believe “leadership needs to invest more time in the culture.” Cultural norms also play an important role, with 48% citing norms that produce inefficient workplace interactions as preventing an effective culture. Finally, 39% believe cultural values are misaligned with business needs and 38% believe firm policies prevent the culture from being exactly where it should be. This survey question reinforces our regression evidence that the interactions between values, norms, and formal institutions explain cultural effectiveness.

The final question in Table IX explores the role of formal institutions in more detail. Question (Q13a/b) asks “what are the most important ways incentive compensation/the finance function works against your corporate culture?” To reduce the time required to complete the survey, we randomly selected approximately 20% of respondents to answer the question about incentive compensation and another 20% to answer about the finance function. The results in the table are for firms at which the finance function (or, separately, the incentive compensation) works against the effectiveness of the culture. Respondents indicate the finance function may subvert the effectiveness of the firm’s culture by focusing employees too much on short-term objectives (56%) and imperfect metrics (27%). Respondents believe incentive compensation works against the effectiveness of culture by attracting/retaining the wrong type of people to the firm (47%), focusing employees too much on short-term objectives (27%), and encouraging insufficient risk-taking (26%). Taken

together, these questions demonstrate that a multitude of factors can undermine the effectiveness of culture. Given these factors have important economic consequences for value creation and economic efficiency suggests that designing and implementing mechanisms to help leadership align cultural values, norms, and formal institutions would be beneficial.

IV. Conclusion

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

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 cultural 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 cultural norms that dictate actual behavior. We also find evidence that formal institutions can either reinforce or substitute for

cultural values and norms.

While economists are increasingly aware of the importance of corporate culture (e.g., 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. After interviewing CEOs and CFOs, we heard loudly and repeatedly how important culture is, notably from CFOs who are typically the numbers people and those one might expect to be suspicious of hard-to-quantify aspects of the business environment. We believe that our paper conveys a powerful message that corporate culture does matter, a lot. We are aware that our study is just a first cut at this very difficult but important problem. We also fully realize that causal inference is not possible in a one-shot survey. Nevertheless, we believe that 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 studying in detail when formal institutions substitute for and when they complement the existent cultural values and norms. This could involve running field experiments that vary compensation or governance. 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 suggests incorporating informal measures into formal contracts may help (Gibbons and Kaplan (2015)), but more theoretical and empirical work is needed to identify factors that contribute to successful cultural change as well as what tools investors and executives could use to gauge the effectiveness of a firm's culture.

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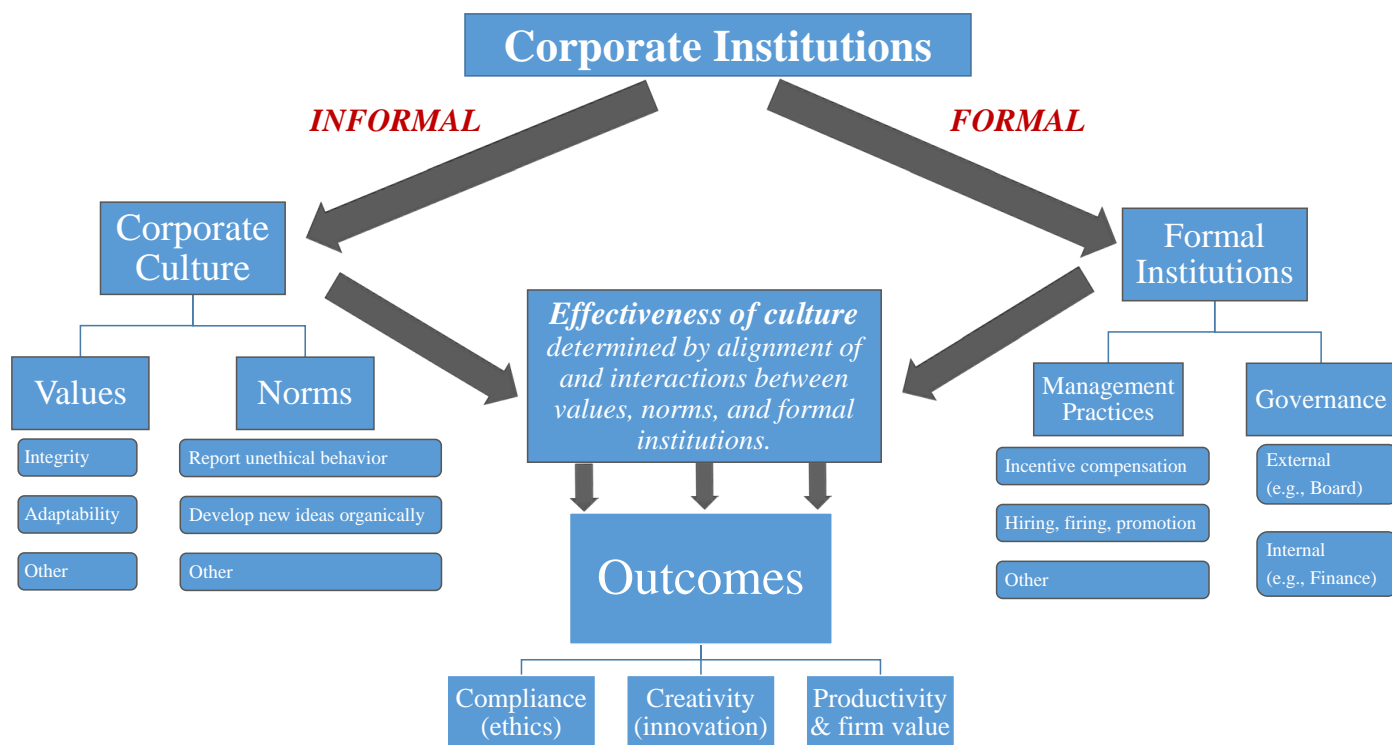
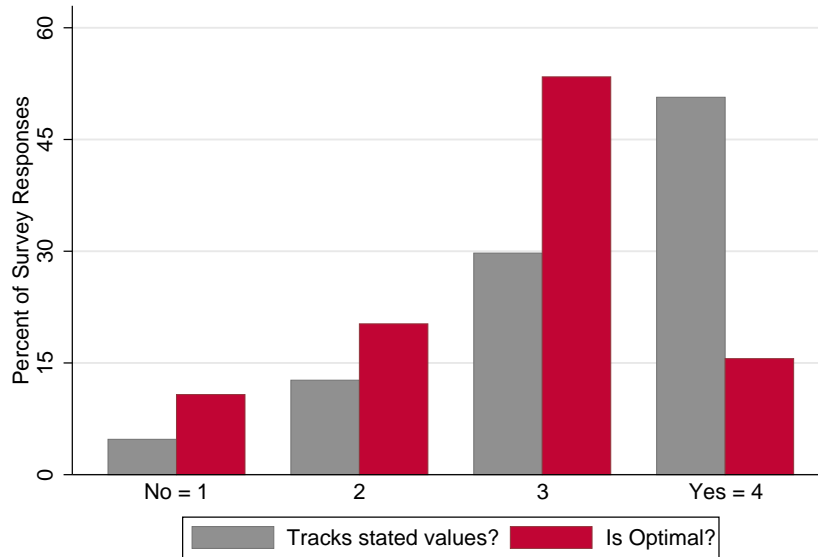
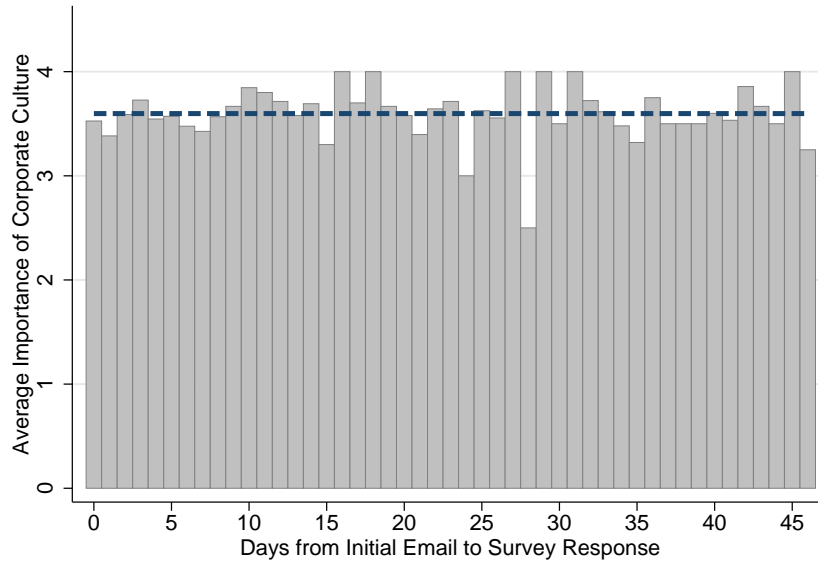


Figure 1. Diagram linking corporate culture to outcomes: According to North (1991), institutions can be classified as informal and formal. We define corporate culture as an informal institution comprised of cultural values and cultural norms. The values and norms characterize the structure in place that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



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

Figure 2. How effective is corporate culture in practice? The histogram shows the percent 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.



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

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

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). Panel D presents summary statistics on three different types of business outcomes affected by corporate culture. The sample consists of survey responses from executives at public and private North American firms. For a detailed description of each variable, see [Appendix B](#). The survey questions are presented in [Appendix A](#).

Cultural values from Q1 "Briefly, what words or phrases best describe the current corporate culture at your firm?"							
-1 = Described value is opposite, 0 = No mention of value, 1 = Indicated this value							
Percent of respondents							
Panel A. Cultural values	Obs.	-1	0	1	Mean	Std. dev.	Median
Adaptability	1348	14%	53%	33%	0.19	0.66	0
Collaboration	1348	9%	58%	33%	0.24	0.60	0
Community	1348	6%	56%	38%	0.31	0.58	0
Customer-oriented	1348	1%	77%	23%	0.22	0.43	0
Detail-oriented	1348	2%	82%	15%	0.13	0.40	0
Integrity	1348	2%	69%	29%	0.27	0.49	0
<u>Results-oriented</u>	1348	3%	57%	39%	0.36	0.54	0
Agg. cultural values	1348				0.25	0.27	0.29

Cultural norms from Q6, "In the context of your firm's current culture, please indicate which factors determine the effectiveness of your culture." -1 = Works against, 0 = No effect, 1 = Key factor							
Percent of respondents							
Panel B. Cultural norms	Obs.	-1	0	1	Mean	Std. dev.	Median
Agreement about goals and values	1348	8%	30%	62%	0.54	0.64	1
Consistency and predictability of actions	1348	8%	45%	47%	0.39	0.63	0
Coordination among employees	1348	10%	23%	67%	0.57	0.66	1
Decision-making reflects long-term	1348	10%	27%	63%	0.53	0.67	1
Employees comfort in suggesting critiques	1348	13%	33%	54%	0.42	0.71	1
New ideas develop organically	1348	8%	41%	52%	0.44	0.63	1
Trust among employees	1348	9%	15%	76%	0.68	0.63	1
Urgency with which employees work	1348	12%	39%	49%	0.37	0.69	0
<u>Willingness to report unethical behavior</u>	1348	7%	44%	49%	0.42	0.62	0
Agg. cultural 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
<u>Incentive compensation</u>	1348	17%	33%	50%	0.32	0.75	0
Agg. formal institutions	1348				0.39	0.47	0.40

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
<u>Beat EPS</u>	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
<u>Willingness to take on risky projects</u>	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
<u>Productivity</u>	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 obtain at least 50 responses. Columns (7) through (10) display the mean response from executives conditional on their competitive position in the industry. The sample consists of survey responses from executives at public and private North American firms. For a detailed description of each variable, see the definitions in [Appendix B](#).

	Specific Industry						Competitive Position in Industry			
	Finance (1)	Health (2)	Manu. (3)	Retail (4)	Services (5)	Tech. (6)	Leader (7)	Leading (8)	Pack (9)	Challenger (10)
<i>Cultural values (-1 = Described value is opposite, 0 = No mention of value, 1 = Indicated this value)</i>										
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
<i>Cultural norms (-1 = Works against, 0 = No effect, 1 = Key factor)</i>										
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
<i>Aggregate cultural measures</i>										
Agg. cultural values	0.43	0.41	0.41	0.30	0.44	0.42	0.45	0.45	0.23	0.35
Agg. cultural norms	0.21	0.21	0.21	0.14	0.30	0.28	0.28	0.26	0.06	0.25
<i>Culture in practice (1 = No, 4 = Yes)</i>										
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 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 at public and private North American firms. The actual question is listed along with the percentage of responses in each category. For details on all survey questions, please see [Appendix A](#).

Q7, "Do you think your company takes the right amount of risk in its investments to achieve its goals?"						
Obs.	Mean	Std. dev.	Median	-1 = Too little	0 = Right amount	1 = Too much
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1117	-0.18	0.61	0	28.8%	60.2%	11.0%

Q7b, "Our corporate culture is a (fill in the blank) reason that our company takes on this amount of risk."							
Obs.	Mean	Std. dev.	Median	1 = Not a reason	2 = Somewhat	3 = Impt.	4 = Very impt.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
860	2.70	1.08	3	19.2%	19.8%	33.0%	28.0%

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

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

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

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

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

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

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

Obs.	Mean	Std. dev.	Median	1 = Not likely	2 = Somewhat likely	3 = Very likely	4 = Extremely likely
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1103	2.55	1.00	3	18.9%	25.6%	36.7%	18.8%

Q12 limited to only public companies:

299	2.55	1.01	3	19.7%	24.4%	37.1%	18.7%
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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., being compliant) and Panel B shows an example innovation outcome (i.e., creativity). In Column (1) and (2), the key explanatory variables are the displayed values and norms. Additional explanatory variables include all other values, norms, 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 that are robust to heteroskedasticity are in parentheses under coefficient estimates. All explanatory variables are standardized, so that the coefficients can be interpreted as the conditional impact from a one-standard-deviation increase in the explanatory variable. For a detailed description of each variable, please see the definitions in [Appendix B](#). ***, ** and * indicate p -values of 1%, 5%, and 10%, respectively.

	Dependent variable =	
	Being Compliant (Q14)	
Panel A. Example Ethics Outcome	(1)	(2)
<u>Cultural values</u>		
Integrity	0.20*** (0.03)	0.17*** (0.04)
<u>Cultural norms</u>		
Consistency and predictability of actions	0.08** (0.03)	0.04 (0.04)
Trust among employees	0.11*** (0.04)	0.07 (0.05)
Willingness to report unethical behavior	0.09*** (0.03)	0.08** (0.04)
Other Cultural Values & Cultural 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%	25.7%
	Dependent variable =	
	Creativity (Q14)	
Panel B. Example Innovation Outcome	(1)	(2)
<u>Cultural values</u>		
Adaptability	0.07** (0.03)	0.07* (0.04)
Results-oriented	-0.05* (0.03)	-0.10*** (0.04)
<u>Cultural norms</u>		
Employees comfort in suggesting critiques	0.11*** (0.04)	0.10** (0.04)
New ideas develop organically	0.11*** (0.04)	0.14*** (0.04)
Other Cultural Values & Cultural Norms	Yes	Yes
Formal Institution Controls	Yes	Yes
Noise & Demographic Controls	Yes	Yes
Additional Question Controls	Yes	Yes
"Halo Effect" Specification	No	Yes
Observations	1132	949
Adjusted R-squared	21.1%	24.4%

Table 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 cultural norms. Additional explanatory variables include noise controls (date, response delay, job title, and source of email), demographic controls (profitability, employee turnover, CEO turnover, family firm, ownership (public vs. private), firm location, CEO age, CEO tenure, CEO incentive compensation, revenue, number of employees, industry, and credit rating), and additional question controls (Q1, Q4, Q4b). Standard errors that are robust to heteroskedasticity are in parentheses under coefficient estimates. All explanatory variables are standardized, so that the coefficients can be interpreted as the conditional impact from a one-standard-deviation increase in the explanatory variable. Panel A examines cultural values and norms in isolation while Panel B allows for an interaction. For a detailed description of each variable please see the definit

	Dependent variable = Aggregate outcome			
	All	Ethics	Innovation	Productivity & Firm Value
Panel A. No interaction term	(1)	(2)	(3)	(4)
Aggregate cultural values	-0.06 (0.11)	0.09 (0.10)	-0.18* (0.11)	-0.05 (0.11)
Aggregate cultural norms	0.17** (0.07)	0.08 (0.06)	0.17*** (0.07)	0.13** (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	19.2%	20.2%	14.3%	15.1%

	Dependent variable = Aggregate outcome			
	All	Ethics	Innovation	Productivity & Firm Value
Panel B. Adding an interaction term	(1)	(2)	(3)	(4)
Aggregate cultural values	-0.05 (0.11)	0.10 (0.10)	-0.17 (0.11)	-0.04 (0.11)
Aggregate cultural norms	0.24*** (0.07)	0.14** (0.07)	0.21*** (0.07)	0.18*** (0.07)
Agg. cultural values x agg. cultural norms	0.27*** (0.10)	0.23** (0.09)	0.14 (0.10)	0.19** (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	19.9%	20.7%	14.5%	15.5%

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. Panel B presents OLS estimates connecting cultural values, cultural norms, and formal institutions to an effective culture. In the survey, we define an effective culture as one that promotes the behaviors needed to successfully execute the firm’s strategies and achieve its goals. Column (1) of Panel A 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. In Panel B, Column (1), (2), and (3), the key explanatory variable of interest is aggregate cultural values, cultural 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 that are robust to heteroskedasticity are in parentheses under coefficient estimates. All explanatory variables are standardized, so that the coefficients can be interpreted as the conditional impact from a one-standard-deviation increase in the explanatory variable. For a detailed de

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***			0.13**	0.12*
	(0.07)			(0.07)	(0.07)
Aggregate cultural norms		0.20***		0.13***	0.12***
		(0.03)		(0.03)	(0.04)
Aggregate formal institutions			0.13***	0.08***	0.08***
			(0.02)	(0.03)	(0.03)
Agg. cultural values x agg. formal institutions					-0.03
					(0.04)
Agg. cultural norms x agg. formal institutions					-0.03
					(0.03)
Noise & Demographic Controls	Yes	Yes	Yes	Yes	Yes
Additional Question Controls	Yes	Yes	Yes	Yes	Yes
Observations	1310	1310	1310	1310	1310
Adjusted R-squared	58.1%	59.1%	59.0%	59.7%	59.7%
R-squared (excl. noise & demo. controls)	53.9%	54.4%	54.1%	55.9%	55.9%
R-squared (excl. all controls)	25.0%	18.2%	22.2%	34.8%	35.9%

Table VIII What Determines Cultural Effectiveness?

This table presents estimates connecting a firm’s specific cultural values and norms 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) presents Ridge Regression estimates. Ridge Regression is like OLS but shrinks the estimated coefficients towards zero. Such a technique helps with the problem of picking out the relevant cultural values and norms from a larger set (i.e., variable selection) by pushing estimates of some coefficients to be exactly zero. Column (2) presents LASSO Regression estimates. LASSO Regression is another variable selection technique. In each column, additional explanatory variables include noise controls (date, response delay, job title, and source of email), demographic controls (profitability, employee turnover, CEO turnover, family firm, ownership (public vs. private), firm location, CEO age, CEO tenure, CEO incentive compensation, revenue, number of employees, industry, and credit rating), and additional question controls (Q1, Q4). Bootstrapped standard errors using 100 replications are in parentheses under coefficient estimates. All explanatory variables are standardized, so that the coefficients can be interpreted as the conditional impact from a one-standard-deviation increase in the explanatory variable. We include all cultural values, norms, and formal institutions in our analysis but only report those the theoretical literature on intrinsic motivation and expectation formation suggest are most relevant. For a detailed description of each variable, please see the definitions in [Appendix B](#).

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

Table IX What Prevents Cultural Effectiveness?

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

Panel A. Q5, "Which of the following have been most influential in setting your firm's current culture? [Check up to 4]"					
	Freq. (1)	Pct. (2)		Freq. (3)	Pct. (4)
Current CEO	743	55%	Past CEO	240	18%
Our reputation or image in the marketplace	478	35%	Changing needs of the market	229	17%
Owners	432	32%	Non-management employees	179	13%
Founder	410	30%	Incentive compensation	158	12%
Internal policies and procedures	332	25%	Board of Directors	157	12%
Hard times we experienced	268	20%	Peer firms	45	3%

Panel B. Q4d, "What is preventing your firm's culture from being exactly where it should be?"									
	Obs. (1)	Mean (2)	Std. dev. (3)	Median (4)	-2 = Strongly Disagree (5)	-1 = Disagree (6)	0 = (7)	1 = Agree (8)	2 = Strongly Agree (9)
<i>Formal Institutions</i>									
Leadership needs to invest more time in the culture	1130	0.79	1.20	1	6%	11%	13%	36%	33%
Firm policies work against the intended culture	1120	-0.04	1.27	0	16%	23%	24%	25%	13%
<i>Cultural Values and Cultural Norms</i>									
Our cultural values are not fully aligned with our business needs	1125	-0.12	1.32	0	19%	26%	17%	27%	12%
Our firm has inefficient workplace interactions	1123	0.20	1.25	0	11%	21%	19%	33%	15%
Our employees are not fully committed to the culture	1125	-0.03	1.26	0	14%	26%	20%	27%	12%
Our culture has not caught up with recent business changes	1117	0.24	1.31	0	13%	18%	20%	30%	19%

Q13a/b, "What are the most important ways incentive compensation/the finance function works against your corporate culture?"					
	Freq. (1)	Pct. (2)		Freq. (3)	Pct. (4)
Incentive Compensation Works Against			Finance Function Works Against		
Attracts/retains the wrong type of people to the firm	120	47%	Focuses employees too much on short-term objectives	186	56%
Focuses employees too much on short-term objectives	69	27%	Focuses employees on imperfect metrics	90	27%
Leads to fear of failure and insufficient risk taking	68	26%	Finance employees operate in a separate silo	56	17%

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





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

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):

<input type="checkbox"/> Peer firms	<input type="checkbox"/> Our reputation or image in the marketplace
<input type="checkbox"/> Board of Directors	<input type="checkbox"/> Hard times we experienced
<input type="checkbox"/> Owners	<input type="checkbox"/> Changing needs of the marketplace
<input type="checkbox"/> Non-management employees	<input type="checkbox"/> Incentive compensation
<input type="checkbox"/> Founder	<input type="checkbox"/> Internal policies and procedures
<input type="checkbox"/> Past CEO	<input type="checkbox"/> Other: <input type="text"/>
<input type="checkbox"/> Current CEO	

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	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coordination among employees	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trust among employees	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Employees' comfort in suggesting critiques	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Consistency and predictability of employees' actions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Employees' willingness to report compliance risks or unethical behavior	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hiring, firing, and promotion decisions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Broad agreement about goals and values	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Decision-making reflects firm's long-term interests	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
New ideas develop organically	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other: <input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Finance function / department	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Governance/Board of Directors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Senior management behavior	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other: <input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Profitability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Quality of our financial reporting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Creativity	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tax aggressiveness	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
How much debt we use	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Willingness to take on risky projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Management of downside risk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Our rate of growth	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Compliance	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Productivity	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other: <input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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:

<input type="text"/>	% ROE (e.g., 11%)
<input type="text"/>	% Annual growth in revenue (e.g., 8%)
<input type="text"/>	% 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)

- Public
 Private
 Government or non-profit

9b. Family (choose one)

- Family ownership and operational influence
 Family ownership but no operational influence
 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 <input type="text"/> years old.	11b. Where is your firm located? <input type="text"/>
---	---

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):
<input type="radio"/> < 40 <input type="radio"/> 40-49 <input type="radio"/> 50-59 <input type="radio"/> 60 +	<input type="radio"/> < 4 years <input type="radio"/> 4-9 years <input type="radio"/> 10-19 years <input type="radio"/> 20 + years	<input type="radio"/> None <input type="radio"/> 1-24% <input type="radio"/> 25-49% <input type="radio"/> 50-74% <input type="radio"/> 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: compliance” 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: tax aggressiveness” 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: reporting quality” where 1 = no effect, 2 = little effect, 3 = moderate effect, and 4 = big effect.
4. **Rescale Beat EPS** which is a demographic variable, “How important is meeting or beating quarterly earnings estimates to your company?” where 1 = Not important, 2.5 = Somewhat important, 4 = Very important. Please note we rescale this question to correspond to the [1, 4] scale of 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: creativity” 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: project risk” where 1 = no effect, 2 = little effect, 3 = moderate effect, and 4 = big effect.

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

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

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

Aggregate all outcomes is the mean of the aggregate ethics, aggregate innovation, and aggregate productivity and firm value outcomes.

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, what 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 write descriptions consistent with the following:

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

Aggregated cultural norms is the mean of the nine cultural norms extracted from 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 cultural norms are:

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

Aggregate formal institutions is the mean response about the 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.

1. Corporate governance
2. Corporate leadership
3. Finance function
4. 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)
5. Incentive compensation

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

as its own category.

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

Addition question controls include controls extracted from 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 are from the Compustat-CRSP fundamental annual database. Definitions are as follow.

$$\mathbf{Assets} = AT$$

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

$$\mathbf{Debt-to-Assets} = (DLC + DLTT)/AT$$

$$\mathbf{Firm Size} = \log(AT), \text{ in which } AT \text{ is in real 2010 dollars.}$$

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

$$\mathbf{Market Capitalization (MEQ)} = PRCC_F \times CSHO$$

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

$$\mathbf{Number of Employees} = EMP$$

$$\mathbf{Profitability} = OIBDP/AT$$

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

$$\mathbf{Revenue} = REVT$$

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

$$\mathbf{SG\&A} = XSGA/AT$$

$$\mathbf{Tangibility} = PPENT/AT$$

$$\mathbf{Tobin's Q} = MVA/AT$$

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

$$\mathbf{CEO Age} = PAGE$$

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

$$\mathbf{Management Ownership} = SHROWN_TOT_PCT$$

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 or Execucomp for the most recent fiscal year end that occurred before the date of the survey (i.e., October 2015). Both samples are limited to North American firms. For a detailed description of each variable, see the definitions in [Appendix B](#).

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

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

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 definition in Appendix D.

	Public Firms	Public Firm Mean	Private Firms	Private Firm Mean	T-stat on Public vs. Private Mean Difference
Panel A. Cultural Measures					
Q1/Q14 Aggregate cultural values	314	0.27	743	0.27	-0.27
Q6 Aggregate cultural norms	314	0.54	743	0.51	0.98
Q6/Q13 Aggregate formal institutions	314	0.43	743	0.45	-0.79
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 D](#).

	Family Firm	Family Firm Mean	Non-family Firms	Non-family Firm Mean	T-stat on Family vs. Non-family Mean Difference
Panel A. Cultural Measures					
Q1/Q14 Aggregate cultural values	429	0.25	358	0.29	1.91
Q6 Aggregate cultural norms	429	0.50	358	0.51	0.24
Q6/Q13 Aggregate formal institutions	429	0.46	358	0.41	-1.29
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: Culture Respondents vs. Universe of Invited Firms

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

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

Table C.VI Culture Measures By Job Title

This table provides tests of differences in mean response by job title. Panel A summarizes the corporate culture measures. Panel B summarizes the value of corporate culture. Panel C summarizes the actions influenced by corporate culture. Panel D summarizes business outcomes affected by corporate culture. The sample consists of survey responses from executives at public and private North American firms. 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](#)

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

Table C.VII Culture Measures 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. Panel A provides a detailed definition of each variable and the definition is available in Appendix B.

	Duke Firms	Duke Firm Mean	Columbia Firms	Columbia Firm Mean	T-stat on Duke vs. Columbia Mean Difference
Panel A. Cultural Measures					
Q1/Q14 Aggregate cultural values	446	0.24	137	0.28	1.52
Q6 Aggregate cultural norms	446	0.48	137	0.52	0.97
Q6/Q13 Aggregate formal institutions	446	0.41	137	0.43	0.51
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 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 Global Business Outlook survey. The question provides responses consistent with culture survey Q3, “In terms of all things that make your firm valuable, where would you place corporate culture?” where answers include Top 3, Top 5, Top 10, or Not in Top 10. Column (1) reports the results from the Quarterly Survey and Column (2) summarizes from most important to least important the findings from the culture survey.

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

Table C.IX Robustness: Cross-fold Validation of Two-step Connection

This table presents OLS estimates from a 10-fold cross-validation procedure connecting an effective culture to firm outcomes in Panel A, and connecting cultural values, cultural norms, and formal institutions to an effective culture in Panel B. The 10-fold cross-validation procedure randomly partitions the data into 10 subsamples. Of the 10 subsamples, a single subsample is retained as the validation data for testing the model and the remaining 9 subsamples are used as training data. This procedure is then repeated 10 times, with each subsample used exactly once as the validation data. The reported statistics are an average of the 10 tests of the model. The mean absolute percentage error measures how close the model predicted values are to the actual outcomes as a percentage deviation from the actual outcome. 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. In Panel B, Column (1), (2), and (3), the key explanatory variable of interest is aggregate cultural values, cultural 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). For a detailed description of each variable, please see the de

	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**	0.000	0.07*	
	(0.04)	(0.04)	(0.04)	(0.04)	
Cross-validation: Mean Absolute Percentage Error	12%	24%	16%	13%	
Noise & Demographic Controls	Yes	Yes	Yes	Yes	
Observations	1158	1148	1146	1149	
Adjusted R-squared	13.3%	15.9%	10.8%	11.2%	
	Dependent variable = current culture is effective?				
Panel B. Determinants of effectiveness	(1)	(2)	(3)	(4)	(5)
Aggregate cultural values	0.20***			0.12*	0.10
	(0.07)			(0.07)	(0.07)
Aggregate cultural norms		0.19***		0.13***	0.12***
		(0.03)		(0.04)	(0.04)
Aggregate formal institutions			0.13***	0.08***	0.08***
			(0.02)	(0.03)	(0.03)
Agg. cultural values x agg. formal institutions					-0.03
					(0.05)
Agg. cultural norms x agg. formal institutions					-0.03
					(0.03)
Cross-validation: Mean Absolute Percentage Error	17%	17%	17%	17%	21%
Noise & Demographic Controls	Yes	Yes	Yes	Yes	Yes
Additional Question Controls	Yes	Yes	Yes	Yes	Yes
Observations	1310	1310	1310	1310	1310
Adjusted R-squared	58.1%	59.1%	59.0%	59.7%	59.7%

Table C.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 and in Q4b say that their culture is either exactly where it should be or close to where it should be. Column (1) is the aggregate mean for all firm outcomes. The dependent variable in Column (2), (3), and (4) are, respectively, the aggregate among all ethical outcomes, innovation outcomes, and productivity/firm value outcomes. The key explanatory variables are the aggregate cultural values and cultural norms. Additional explanatory variables include noise controls (date, response delay, job title, and source of email), demographic controls (profitability, employee turnover, CEO turnover, family firm, ownership (public vs. private), firm location, CEO age, CEO tenure, CEO incentive compensation, revenue, number of employees, industry, and credit rating), and additional question controls (Q1 and Q4b). Standard errors that are robust to heteroskedasticity are in parentheses under coefficient estimates. 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%,

	Dependent variable = Aggregate outcome			
	All (1)	Ethics (2)	Innovation (3)	Productivity & Firm Value (4)
Aggregate cultural values	0.31 (0.22)	0.43* (0.24)	-0.04 (0.24)	0.27 (0.24)
Aggregate cultural norms	0.43*** (0.13)	0.18 (0.12)	0.41*** (0.14)	0.40*** (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	32.5%	33.6%	24.8%	27.5%

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 that are robust to heteroskedasticity are in parentheses under coefficient estimates. For a detailed description of each variable, please see the definitions in [Appendix B](#). *** ** and * indicate *p*-values 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 (0.04)	0.07* (0.04)	-0.01 (0.04)	0.08** (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)	0.04 (0.04)	-0.09** (0.04)	0.01 (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 cultural 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 that are robust to heteroskedasticity are in parentheses under coefficient estimates. For a detailed description of each variable, please see the definitions in [Appendix B](#). ***, ** and * indicate p -values of 1%, 5%, and 10%, respectively.

	Survey year	2-year avg.	3-year avg.	4-year avg.	5-year avg.
Panel A. Tobin's Q	(1)	(2)	(3)	(4)	(5)
Aggregate cultural values	0.30 (0.39)	0.44 (0.33)	0.16 (0.41)	0.44 (0.31)	0.07 (0.31)
Aggregate cultural norms	0.25 (0.21)	0.29 (0.21)	0.40** (0.19)	0.39** (0.18)	0.39** (0.18)
Firm and Industry Controls	Yes	Yes	Yes	Yes	Yes
Noise Controls	Yes	Yes	Yes	Yes	Yes
Formal Institution Controls	Yes	Yes	Yes	Yes	Yes
Additional Survey Question Controls	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	189	189	189	189	189
Adjusted R-squared	45.0%	48.1%	48.5%	49.6%	50.1%
	Survey year	2-year avg.	3-year avg.	4-year avg.	5-year avg.
Panel B. Profitability	(1)	(2)	(3)	(4)	(4)
Aggregate cultural values	0.18 (0.38)	-0.02 (0.35)	0.01 (0.35)	-0.01 (0.34)	-0.07 (0.33)
Aggregate cultural norms	0.23 (0.20)	0.29* (0.18)	0.29* (0.17)	0.33* (0.18)	0.38** (0.17)
Firm-level Controls	Yes	Yes	Yes	Yes	Yes
Noise Controls	Yes	Yes	Yes	Yes	Yes
Formal Institution Controls	Yes	Yes	Yes	Yes	Yes
Additional Survey Question Controls	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	189	189	189	189	189
Adjusted R-squared	56.2%	59.0%	59.8%	60.2%	59.4%

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](#). The dependent variables are, respectively, Q2, Q3, Q4c, and the mean response to those three questions standardized to have the same scale. The key explanatory variables are the aggregate cultural values and cultural norms. Additional explanatory variables include noise controls (date, response delay, job title, and source of email), demographic controls (profitability, employee turnover, CEO turnover, family firm, ownership (public vs. private), firm location, CEO age, CEO tenure, CEO incentive compensation, revenue, number of employees, industry, and credit rating), and additional question controls (Q1, Q4, Q4b). Standard errors that are robust to heteroskedasticity are in parentheses under coefficient estimates. For a detailed description of each variable, please see the definitions in [Appendix B](#). ***, ** and * indicate *p*-values of 1%, 5%, and 10%, respectively.

Alternative Dependent Variable for Outcomes	Dependent variable = Value of culture from Q2, Q3, and Q4c			
	Q2 (1)	Q3 (2)	Q4c (3)	Agg. value questions (4)
Aggregate cultural values	-0.08 (0.11)	0.11 (0.09)	-0.01 (0.09)	-0.04 (0.07)
Aggregate cultural norms	0.11* (0.06)	0.20*** (0.05)	0.02 (0.05)	0.12*** (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%	11.4%	33.8%

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

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

1. First, we can use it directly. We can create an indicator variable representing a selection other than “0 = No effect.” That is, we have data of the indicator $\mathbf{1}_{\{\beta \neq 0\}}$. Let $\beta := \alpha \mathbf{1}_{\{\beta \neq 0\}}$

where $\alpha \neq 0$ is a (constant) scale of β .⁶ Then it is clear that $\beta = 0 \Leftrightarrow \mathbf{1}_{\{\beta \neq 0\}} = 0$. So we can test the original null hypothesis directly by testing the equivalent null hypothesis:

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

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

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

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

⁶That 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.

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