

NBER WORKING PAPER SERIES

CORPORATE CULTURE

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Working Paper 29322  
<http://www.nber.org/papers/w29322>

NATIONAL BUREAU OF ECONOMIC RESEARCH  
1050 Massachusetts Avenue  
Cambridge, MA 02138  
October 2021

Gorton, Grennan, and Zentefis have nothing to disclose. The views expressed herein are those of the authors and do not necessarily reflect the views of the National Bureau of Economic Research.

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NBER Working Paper No. 29322

October 2021

JEL No. D23,G30,L22,M14

### **ABSTRACT**

Corporate culture is an omnibus term that includes many elements like norms, values, knowledge, and customs that are relevant to a firm. Economists have made great progress recently in devising methods of measuring different aspects of corporate culture. These empirical measures of culture have explained mergers and acquisitions, corporate risk-taking, and unethical behaviors observed in corporations, among other topics. We argue that unpacking corporate culture into its components is the right way to research it empirically. Theories of corporate culture are still in development, and we discuss the major contributions thus far. We argue that a theory of the firm and of corporate decision-making that is based on corporate culture is more germane to the practical realities of firms' inner workings than prevailing theories based on agency costs. Corporate culture has the potential to set the theoretical paradigm for all corporate finance research.

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# 1 Introduction

Most people spend the majority of their lives working at firms (rather than spending or making savings-consumption decisions). Many firms have hundreds of thousands of employees who somehow cooperate to produce goods and services. In the United States, the volume of transactions (value added) that occurs inside firms alone is roughly equal to that which occurs in open markets (Lafontaine and Slade, 2007). Some firms generate expansive wealth for their investors, offer innovative solutions to problems, and are persistently more productive, while otherwise similar firms are much less successful. The predominance and vastness of firms in a capitalist economy makes understanding their *inner workings* important.

The nature of firms has absorbed the energies of economists since at least 1937. In the same year when Toyota Motors established itself as an independent company, Ronald Coase asked why firms emerge at all in a decentralized economy that is orchestrated by the price mechanism (Coase, 1937). Or, as the English economist D.H. Robertson put it, arousing the taste buds: Why do we find “islands of conscious power in this unconscious cooperation, like lumps of butter coagulating in a pail of buttermilk?” (Robertson, 1923, p. 85).

With its publication forty years later in 1976, Michael Jensen’s and William Meckling’s *Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure* supplied an answer, putting forth a theory of the firm based on agency costs (Jensen and Meckling, 1976). They argued that the separation of ownership and control observed in the modern organizations creates an agency relation between principals (the firm’s outside stockholders) and the agent they hire (an inside manager) to perform a service on their behalf. This relationship, bound by contract, automatically produces problems, as the principals cannot possibly ensure that the agent always acts in their best interests. Restricting the deviant behaviors of the agent would come at a cost, either through monitoring the agent like a prisoner, or paying him off like a mercenary.

This principal-agent relationship, Jensen and Meckling argued, sits comfortably at their definition of the firm as a “nexus of contractual relations”, and it explains both the behavior of managers and the firm’s relative amounts of ownership claims (i.e., its capital structure). Jensen and Meckling (1976)’s influence cannot be overstated. It *defined* the economic approach to corporate finance over the next forty years.

But the **Jensen and Meckling (1976)** description of the firm is deficient and needlessly bleak. “Agency problems,” Jensen and Meckling wrote, “exist in all organizations and in all cooperative efforts—at every level of management in firms . . .” (p. 309). In effect, the firm is an arena of competing interests in constant conflict that are only brought to balance by binding contracts enforceable in court. Firms are driven by a management that can only be inefficiently controlled—a management that seeks to maximize its own benefit. Jensen and Meckling ignore the possibility that managers are essentially well-intentioned people operating in a complex and uncertain environment. Their grim understanding of joint production failed to anticipate the research by Ernst Fehr and others on the innate capacity for human cooperation, driven by social norms existing outside the legal system and enforced by non-selfish motives (e.g., **Fehr, Fischbacher and Gächter, 2002; Fehr and Fischbacher, 2004; Gintis, Bowles, Boyd, Fehr et al., 2005; Fowler and Christakis, 2010**).

Calling the firm a “nexus of contracts” also disregards the observation that, at least in the United States, employment relationships are generally “at-will,” which means that either party can terminate the relationship for any or no cause and without notice (**Rothstein, Knapp and Liebman, 1987**). In fact, “a majority of employees in the United States are employed on an ‘at-will’ basis, without a written employment contract, and only with a written offer of employment that outlines the basic terms and conditions of their employment” (**L&E Global, 2013**). Calling the unwritten norms and expectations that govern employment relations the same as the “contracts” that Jensen and Meckling discuss would be a brazen misdirection, like a magician’s card trick.

The Jensen and Meckling approach has also not adequately explained a topic that has animated researchers over the past decade: Why do otherwise similar firms differ so much in productivity? Economists have traditionally argued that persistent differences in outcomes across firms emanate from production inputs, but recently some propose that the majority of performance variation is from unobserved forces within the firm (**Syverson, 2011; Backus, 2020**).

Finally, Jensen and Meckling’s argument that the availability of external funds which create the agency problems characterizing the firm exaggerates the role of outside financing in management’s decisions. Corporate investment worldwide overwhelmingly comes from internal retained earnings. In Germany, retained earnings is 80.6 percent of net sources of finance between 1970-1989. The corresponding percentages for Japan, England, and the United States are 69.3 percent, 97.3 percent, and 91.3 percent, respectively (**Corbett and Jenkinson, 1996**).

These criticisms of **Jensen and Meckling (1976)** does not imply that their theory is broken. Agency costs are real and exist in firms. The problems are particularly potent in countries where investor property rights and legal protections are weak or where the risk of expropriation by managers is high. (The body of work by Andrei Shleifer, Robert Vishny, Rafael La Porta, and Florencio Lopez-De-Silanes on law, finance, and corporate governance provides compelling evidence.) Principal-agent theory is also reasonable in characterizing the relation between a single CEO and outside shareholders. There, the transgressions that concern the separation of ownership and control—empire building, excess free cash flow splurging, extraction of private benefits, etc.—certainly are present. CEO scandals hitting the newswire are as routine as weather forecasts.

But we believe that the Jensen-Meckling framework is not a suitable explanation of an *entire* firm—that interdependent collection of individual motives and choices that somehow cooperate, at times clumsily, to perform a vital function. The proposition that the behaviors and motivations of the 2.2 million employees of Walmart are governed by principal-agent relations is simply not plausible.

The absence of any large-scale progress in corporate finance theory over the past two decades suggests that the agency-based theory of the firm has run out of steam. Indeed, economists have largely abandoned research in corporate finance theory altogether. With more and new data on various corporate finance questions emerging, the field has become almost entirely empirical.

A new paradigm for corporate finance is needed. We argue that one based on corporate culture can be the answer. In this review article, we selectively canvas the economics and finance literature on corporate culture. Research on culture in economics and finance remained in a nascent stage until recently. Empirical research on the subject has advanced, largely by using tools from other disciplines, and theoretical work is still in development.

What have been the obstacles for economists in studying corporate culture? One has been defining the term, both as an empirical matter and in theory. Economists are not comfortable with a concept that seems nebulous even if there is a sense in which they agree it is important. In **Section 2**, we discuss the notion of “corporate culture.” In **Section 3**, we provide a selective survey of the empirical literature to show how the issue of measuring corporate culture has been addressed. **Section 4** discusses empirical applications of corporate culture, including on mergers and acquisitions, risk-taking and ethics, and employee treatment.

In Section 5, we come to theory. One central issue in theory is the challenge in modeling “corporate culture.” It seems clear that corporate culture does not fit into the existing paradigm. Corporate finance’s reluctance to abandon the agency-based framework relates to the difficulties that Gary Becker endured when he put forth his economic model of discrimination. [Becker \(1957\)](#) proposed that some employers have a “taste for discrimination.” In an interview published in [Spence and MacPherson, eds \(2020\)](#), Becker discussed the resistance he received from economists. And in his 1992 Nobel address, Becker says that his advisors encouraged him to convert the ideas into a book. Becker argued, “It is only through widening of the usual assumptions that it is possible to begin to understand the obstacles to advancement encountered by minorities.” Corporate cultural theories face the same problem today. As we review in Section 5, among the few economic theories of corporate culture that there are, they are not standard.

Finally, in Section 6, we propose some future directions for both empirical and theoretical work on corporate culture, and we lay out some unresolved research questions.

## 2 What is Corporate Culture?

Before describing *corporate* culture, it is worth elaborating on “culture” generally. At least since the writings of the English anthropologist Edward Burnett Taylor in the late 19th century, social scientists have put forth various definitions and concepts of “culture.” [Minkov and Hofstede \(2013\)](#) propose one useful classification system: culture as (i) mental programming or software of the mind (e.g., [Hofstede, 2001](#)), (ii) institutions and artifacts (e.g., [Meyer and Rowan, 1977](#)), (iii) patterns of behaviors (e.g., [Brown, 1991](#)), and (iv) a set of meanings (e.g., [Geertz, 1973b](#)). Famously, the management theorist Edgar Schein argued that culture can be subdivided into three levels, ranging from the surface to the core: artifacts, espoused beliefs or values, and underlying beliefs ([Schein, 1985](#)).

The diversity of (sometimes incompatible) definitions and concepts of culture advanced by researchers over the years has made it a matter of custom that any scholarly review of the literature drops the name of Kroeber and Kluckhohn’s 1952 article that listed some 160 definitions of the term ([Kroeber and Kluckhohn, 1952](#)). “Culture” is complex. Capturing its variety in a single sentence would require hitching together trailers of clauses, conjunctions, and phrases stretched across the page. Faced with an account of this kind—altogether deprived of meaning—the reader would gasp

for air at the end of it, learn nothing, and walk away thinking that cultural studies are not worth, or worthy of, the bother. Writing yet another definition of culture that we vainly defend as conclusive would be futile. We think it best not to burden the reader with one of our own.

But the difficulty (or impossibility) of pinning down exactly what “culture” is does not mean the term should be replaced with another or that studying it does not deserve the effort. As the Austrian psychologist Gustav Jahoda put it in his ruminations on the subject, “simply abandoning the term ‘culture’ is not an option,” as “over the centuries, writers have struggled to convey something akin to our ‘culture’ by using other expressions,” dating back to Michel de Montaigne in the 16th century (Jahoda, 2012).

Instead, we advise that economics and finance treat culture in the way that anthropologists and cultural psychologists have advocated recently. Culture is a complex system that should be analyzed in terms of its elements and how those elements relate (Van de Vijver and Leung, 1997; Singelis, Bond, Sharkey and Lai, 1999; Leung, 2008; Minkov and Hofstede, 2013). In other words, “culture” should be unpacked.

A sensible list of elements in that package, though neither nearly exhaustive nor likely satisfactory to all, is as follows, adapted from a variety of such lists in the literature:

- unwritten codes, implicit rules, and regularities in interactions;
- identities, self-image, and guiding purpose;
- espoused values and evolving norms of behavior;
- conventions, customs, and traditions;
- symbols, signs, rituals, and group celebrations;
- knowledge, discourse, emergent understanding, doctrine, ideology;
- memes, jokes, style, and shared meaning;
- shared mental models, expectations, and linguistic paradigms.

Commenting on their similar list of cultural items, American sociologists Ron Jepperson and Ann Swidler wrote: “all of these items are certainly in the general semantic field of ‘culture.’ More important, it seems arbitrary to associate the concept with any one of these elements (though this is a persistent tendency in practice from [American sociologist Talcott] Parsons to the present)” (Jepperson and Swidler, 1994).

Economists should be grouped with Parsons, as they have regularly confined their definition of culture to two old friends: beliefs and preferences. In an important paper, [Guiso, Sapienza and Zingales \(2006\)](#) define culture as “those customary beliefs and values (preferences) that ethnic, religious, and social groups transmit fairly unchanged from generation to generation.” [Alesina and Giuliano \(2015\)](#) comment that most empirical papers in economics that followed adhered to this definition.

It is reasonable to argue that beliefs and preferences are part of culture, but constraining its *definition* solely to these two components crushes creative thinking and barricades us from the discovery of new ways in which culture explains economic behavior. Culture is no more beliefs and preferences alone as it is a “residual” that cannot be understood.

Culture is a mental construct. Like any construct, it reflects a complex set of observable behavior, and we use it to organize reality and predict other important behaviors ([Levintin, 1973](#)). Different people have different assumptions and biases about what is important. Across and within generations, some might lament a particular value or behavior while others might praise it. In practice, the content of culture—especially the values that people care about and the daily actions they take—has tremendous variety. Given such variation, the researcher’s perspective plays an important role in developing the construct of culture.

Economists should be open to thinking about different ways that other smart scholars conceptualize culture. There is no one “true” concept of culture, just as there is no one true model of long-run economic growth. Different constructs of culture serve different purposes. Ultimately, we agree with [Minkov and Hofstede \(2013\)](#) and [Jahoda \(2012\)](#) that the construct of culture which a researcher uses should be clearly articulated, justified for the particular context in which it is used, and explained how it will be measured—altogether in a way that makes sense to others.

Where does corporate culture differ from culture more broadly? Corporate culture, of course, is a culture of a group (in this case, a firm), just as broader culture is of larger society. We see the two separating from one another by the forces that shape them. Societal culture is propelled by potentially thousands of individual energies and choices. Corporate culture, at its core, is intentionally fashioned by at least one firm leader, such as a manager or CEO, to achieve some goal. This decisive power is not absolute, as culture is not something cooked up in a cauldron. Firm employees and market events inevitably sway the corporate culture away from the best written recipe of a manager.



Of course, societal leaders also have outsized influence on broader culture. But their goals typically are not as narrowly defined as those of firm leaders. When devising a culture, the managers' ambition normally is to choose one that she believes will optimize firm profits, shareholder or stakeholder value(s), private benefits, or some combination of all three. Corporate culture should then be thought of as “culture,” but one inside firms, purposefully but imperfectly designed by a manager to reach an objective.

When designing and forming the corporate culture, what do firm leaders do? Leaders often start by specifying some aspirational values (Graham, Grennan, Harvey and Rajgopal, 2021b). However, corporate culture can also emerge without those values being expressly stated. Upon observing employee actions, leaders might instead teach their employees the behaviors that are consistent or incompatible with the targeted values. In this sense, corporate culture reflects what the employees have learned in their efforts to achieve a leader's laid-out objective. If the firm faces challenges, expected behaviors are reinforced as the leader successfully guides the employees toward a goal. Similarly, through firm failures, leaders can teach their employees to recognize the undesirable behaviors that produced the failures. The collection of these learning events, the stories about them, and the memes that emerge from them altogether solidify a corporate culture as “the ropes,” “our purpose,” and “how we do things around here.”

A key aspect that we hope to convey is that culture emerges from social interactions. Culture is often guided by aspiration but also reinforced by systems (e.g., markets or incentive compensation) and people (e.g., leaders, teammates, and the collective talent of the group). Culture manifests in employees' daily activities and their expectations about how to behave to fit in socially and to successfully contribute to the firm. Culture has both persistent and time-varying components. Employee ideology might hold, or patterns of behavior might apply in many different work situations, and thus form a persistent component of the culture. But unwritten rules might only be pertinent during a transient period (e.g., the firm's young, entrepreneurial start) and need to alter as the firm evolves, as technology transforms, and as leadership switches.

### **3 Measurement**

A variety of empirical approaches for measuring corporate culture has emerged over the years. We broadly categorize the various measures of culture as: (i) field-based, (ii) experiment-based, (iii)

time-invariant, and (iv) time-varying, (v) societal and biological approaches, and (vi) network-based approaches.

### **3.1 Field-based surveys and interviews**

The original approach to studying corporate culture involved field-based studies and methods copied from anthropology to evaluate societal culture (Guiso et al., 2006). Then, beginning in the 1970s, researchers began conducting small-scale surveys of non-executive employees to measure culture (Denison, 1984; Cooke and Rousseau, 1988; O'Reilly, Chatman and Caldwell, 1991; Cameron, Quinn, DeGraff and Thakor, 2006). The survey questions, however, often did not draw on theory or clearly differentiate between potential mechanisms through which culture may work (Chatman and O'Reilly, 2016). For example, some of the surveys include questions that are better categorized as an outcome such as employee productivity or that are better categorized as a contractual incentive such as employee compensation and on-the-job training.

Kotter and Heskett (1992) sought to overcome the limitation of these early small-scale surveys by conducting a study of culture at dozens of companies over a ten year period. To gather information about culture without confining responses to preconceived notions defined by the researcher, Kotter and Heskett (1992) started their surveys with the simple open-ended question such as, "Briefly, what words or phrases best describe the current corporate culture at your firm?" A key result from their study was that the prevailing notion of a strong culture was limited, and a strong culture did not necessarily equate to better long-run performance. This finding implied that survey-based approaches to measuring culture needed to be broad and collect information on strategy, competition, and other economic forces to more fully explain how culture relates to performance.

More recently, Graham, Grennan, Harvey and Rajgopal (2021a) surveyed 1,348 CEOs and CFOs of North American companies using a mix of open-ended, multiple choice, and hypothetical questions to elicit top management's views on culture. An important contribution of this survey is both its scale and detail. The study considers many cultural values and norms, highlighting the importance of distinguishing between them for understanding the efficacy of culture. The authors also examine the interactions between cultural values, norms, leadership, and formal institutions (e.g., governance, compensation, and finance function), and find that the connection to business outcomes depends on all of these linkages. Finally, Graham et al. (2021a) connect the survey

responses to external, observational data to build a bridge between data sources. The survey-based measures of culture are associated with external measures of culture, numerous business outcomes, and the reported accounting numbers shared with capital markets.

Another recent contribution that survey-based measures of culture are making is to explain how exactly culture originates. [Adams and Licht \(2019\)](#) survey corporate leaders and directors in more than 50 countries and find that they hold a principled, ideology-like stances on corporate policies associated with their personal values. Practitioners' anecdotes often suggest current leadership is the most influential factor in setting the culture, and recent survey evidence confirms this ([Graham et al., 2021a](#)). Thus, what is striking from the [Adams and Licht \(2019\)](#) survey is that personal values rather than optimal design principles influence leadership's choices. Interview work remains more rare, but it can be useful for advancing knowledge of the antecedents and consequences of culture. For example, [Graham et al. \(2021b\)](#) use interviews to delineate the directional relation between culture and strategy and better understand how the two become misaligned. Importantly, recent advances in artificial intelligence (AI) and natural language processing (NLP) suggest many anecdotes about culture (e.g., from interviews of executives on podcasts) can be quantitatively analyzed. This technological progress suggests a potentially fruitful bridge between interview and computation work in the future.

While field-based approaches have benefits, they also have limitations. Without careful design, surveys and interviews can impression executives and employees through framing. For example, a survey about culture means those under scrutiny might create a favorable perception of their culture that is at odds with reality. Measurement error can also interfere in other ways, making it important to scramble the order of survey choices. Selection issues are also possible, whereby those that choose to respond are not representative of the company as a whole (e.g., a few disgruntled employees respond rather than the typical, happy employee). Finally, causal inference is typically not possible with a single cross-sectional survey instrument. Given these challenges, researchers have started using less obtrusive methods to gauge culture.

## **3.2 Experimental approaches**

Lab experiments are potentially very useful for isolating particular mechanisms that link culture to firm performance. [Weber and Camerer \(2003\)](#) use a lab experiment to study the tacit knowledge

developed in group work. In their setting, culture allows workers to coordinate activity tacitly without having to repeatedly reach agreement. The experiment involves a manager and employee forming a “firm” and then independently developing a culture using conversational norms for quickly describing a pre-specified set of pictures. Firms then “merge,” and one manager must work with the original and acquired” employee. Subjects then estimate how quickly the task can be completed post-merger, the difficulty of their job, and the quality of their co-workers. Using these estimates, [Weber and Camerer \(2003\)](#) find that managers tend to be overly optimistic about post-merger performance, implying an underestimation of cultural conflict. Further, the managers’ ratings meaningfully drop despite recognition of the task being more difficult post-merger. This finding is consistent with blame being excessively assigned to personal traits instead of culture or other contextual variables.

Experiments are also being conducted within firms. As firms increase their use of technology to track employee activity, researchers have started gaining access to these data and using them to test richer theories of corporate culture than was previously possible. The basic approach is to use micro-level data on workers inside firms along with rigorous econometric techniques to allow for causal inferences. As an example, the Banking Standards Board (BSB) in the United Kingdom began collecting such micro-level data on 26 banks and over 70,000 employees. The regulators then treated specific banks by promoting a “speak up” culture in the hopes of enabling employees to report wrongdoing. Surprisingly, the bankers found little measureable improvement from the speaking up treatment. Next, the researchers explore why the speak-up treatment had little impact, and they find that the presence of other factors like trust, responsiveness, and the target of the fraud (consumer versus employee) could meaningfully change the estimate. Taken together, the findings suggest that there are likely important complementarities between formal training, existing cultural norms, and the norms that leaders hope to establish. Much like Maslow’s hierarchy of needs taught in psychology, there may be a hierarchy of cultural norms. For example, some necessary cultural norms (e.g., trust) may need to be present before a higher-order norm (e.g., reporting unethical behavior) can be developed.<sup>1</sup>

As a second example, [Grennan, Makridis and Zator \(2021\)](#) use a company-based data set to understand the complementarities between developing better individual versus team-based cultural

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<sup>1</sup>Analysis of the BSB’s program can be found here: [Speaking Up and Listening](#).

norms. The researchers use the introduction of a novel productivity tracking app for workers and leaders and randomize the automated suggestions received by teams. Such experiments within firms help researchers to understand why and how culture relates to employee performance. Thus, while there are many challenges to conducting experiments and obtaining within-firm data, these approaches can illuminate nuanced aspects of culture and have a promising future.

### **3.3 Time-invariant approaches**

Fixed effects are the primary time-invariant measures of culture. The advantage of a time-invariant measure of culture is that it can be used to test theories that relate culture to time-varying economic factors, such as the business cycle. For example, if a persistent aspect of culture is linked to performance through its ability to guide employees during periods of great uncertainty, the time-invariant component should predict out-of-sample variation. This is the approach followed by [Fahlenbrach, Prilmeier and Stulz \(2012\)](#), who document that banks' buy-and-hold returns from the Savings and Loans Crisis are positively correlated with their buy-and-hold returns during the 2007-2008 Financial Crisis. A disadvantage of using this approach is that time-invariant aspects of culture are difficult to deconstruct into their components and separate from other firm traits, such as corporate strategy.

Helping understand how culture originates and transmits over time is another advantage of time-invariant approaches. [Cronqvist, Low and Nilsson \(2009\)](#) examine commonalities in firm fixed effects by studying parent and spin-off firms within two-digit SIC industries. They find that parent firms have more similar investment and financing policies compared to their spin-off firms than compared to their peer firms. The persistence is striking: Five years after the spin-off transaction, the fixed effects remain significantly correlated. Moreover, the firms that initially deviated from their parents' corporate policies drift back to the parents over time. Using a battery of tests, the authors then show the commonality cannot be explained by inertia, customer-supplier relations, technological know-how, or ties through the board of directors. They conclude that a key component of firm fixed effects is a persistent component of culture.

### 3.4 Time-varying approaches

While there is a persistent component of culture that can make culture stable over time, culture is never static. As the speed of technological change increases, so too does the speed of change in corporations, potentially bringing rapid cultural change. Big cultural changes can stem from crises that force executives to reevaluate the culture or from employee churn attributable to acquisitions, restructurings, and downsizings. More gradual changes are also possible. For example, simply overcoming challenges can lead to the creation of new day-to-day practices and shared cultural beliefs among employees. We next examine the time-varying approaches to measuring culture, keeping in mind that culture can undergo sharp or gradual change.

The first time-varying measure of culture was Fortune’s “100 Best Places to Work for in America” (BPTW) list. [Edmans \(2011\)](#) shows that BPTW firms have greater employee satisfaction than other firms and experienced significantly more positive earnings surprises and announcement returns. The BPTW data has the major advantage of being one of the longest time-series for culture. However, it is disadvantaged by a limited ability to explain theoretical nuance in culture and a susceptibility to selection problems. Firms must to participate in the study, and they view it as a marketing tool, which could lead current employees feeling pressured not to respond authentically to the survey for fear of reprisal.

In a major paper, [Guiso, Sapienza and Zingales \(2015\)](#) extend the scope of the BPTW data by obtaining the detailed survey questions underlying the rankings and matching companies to their cultural values advertised online. Doing so allowed the authors to determine which cultural values are important and whether there is a difference between advertised and actual culture. [Guiso et al. \(2015\)](#) find that advertised values are not important for firm performance but that the actual values perceived by employees are important. Interestingly, not all values are important or constant over time. Integrity—as measured from questions about employees’ perception of managers as trustworthy and ethical—have the strongest association with Tobin’s Q. Firms that transition from private to public ownership experience a meaningful drop in employees’ perception of integrity. This finding suggests that external forces such as ownership, governance, and regulation can influence and change culture.

Building on the idea that employees’ perceptions can be used to quantify culture, researchers

began examining employee-generated reviews and ratings from career intelligence websites such as Glassdoor, Vault, and Indeed (Popadak, 2016). Green, Huang, Wen and Zhou (2019) show that firms with ratings increases outperform those with declines. Furthermore, these increases are associated with higher sales growth, which the authors attribute to employees revealing insider information. Grennan (2021b) uses NLP methods to translate the text of employee reviews into well-known cultural values and norms specified in the organizational culture profile (OCP) survey (O'Reilly et al., 1991; Chatman, Caldwell, O'Reilly and Doerr, 2014). The various norms are then aggregated into cultural values. For example, six norms underlie the cultural value of adaptability: willingness to experiment, fast-moving pace, speed in exploiting opportunities, taking initiative, developing solutions organically, and adaptability. Grennan (2021b) uses WordNet, a database of word senses based on cognitive science and often used by search engines, to determine the closest synonyms, antonyms, and phrases for each cultural norm. She then calculates the cosine similarity between the idealized vector of each cultural value and the vector of actual employee text to map the text to a single interpretable number. She then uses her measures to show that culture is an important channel through which changes in governance alter firm performance.

There are many variants to the NLP approach, including selection of the cultural elements, the text analyzed, and the method for specifying an idealized culture. Li, Mai, Shen and Yan (2020) use analyst call transcripts and employ a similar procedure as Grennan (2021b). Except, instead of using WordNet's synonyms, they use *word2vec*, a machine-learning algorithm that uses a neural network model to learn word associations. The corpus of text that the algorithm is trained on is only earnings transcripts, which helps separate, for example, financial "liabilities" from lack of integrity. Other approaches that have been used include Fiordelisi, Renneboog, Ricci and Lopes (2019) using 10-ks to quantify the Competing Values Framework of Cameron et al. (2006) and Bellstam, Bhagat and Cookson (forthcoming) using analyst reports to quantify innovativeness via a Latent Dirichlet Allocation (LDA) method. Additional research using NLP techniques to quantify culture focus on a single element, such as trust (Loughran and McDonald, 2016), flexibility (Au, Dong and Tremblay, 2021a), sexual harassment (Au, Dong and Tremblay, 2021b), risk-taking Garcia, Harithsa and Owusu (2021), and workers access to interesting projects (Tambe, Ye and Cappelli, 2020).

Additional aspects of culture are also being quantified by looking at company websites. Grennan (2021a) finds that the cultural values described on websites differ depending on the target audience

(e.g., employees, investors, and customers). She then shows that this code-switching (e.g., advertising to investors that employees value integrity but excluding such ideals from the career page) predicts poor performance during business cycle downturns. [Graham et al. \(2021a\)](#) connect their survey responses from corporate executives with the company websites to quantify the degree of misalignment between website values and survey responses. As the two measures become more misaligned, surveyed executives are significantly more likely to indicate that their culture does not track aspirations and is not where it should be.

More recently, researchers have focused on quantifying the mechanisms that link culture to performance. To do so, researchers have combined data sets or explore text in new ways. For example, [Corritore, Goldberg and Srivastava \(2020\)](#) use employee reviews to quantify two types of cultural diversity. The first type of cultural diversity is the more traditional conceptualization from the literature in which diversity is characterized by differences between individuals about what is the dominant cultural value. Within-firm diversity then stems from distinct groups of employees having homogeneous beliefs but heterogeneity across the different groups. They then relate such greater within-firm diversity to innovativeness and creativity. They also introduce a new measure within-person cultural diversity. In the second definition, heterogeneity stems not from divergent beliefs across individuals, but instead from individuals having a multiplicity of cultural beliefs about the organization. They find that this second type of diversity is associated with poor firm performance based on a matching design. A promising channel for future research may be to better understand the forces causing a person to have discordant beliefs about the culture. For example, if good bosses teach employees to believe one thing but then they are rotated to a new boss that teaches employees to believe another thing this may result in discordant beliefs. It would also serve as a potential explanation for the "value" of bosses ([Lazear, Shaw and Stanton, 2015](#)) but also the quick reversal in performance once good bosses move on.

Another interesting insight from the work on cultural diversity is that it suggests that firm-wide goal agreement by itself may not characterize an effective culture in every situation. As a second example, [Grennan \(2021c\)](#) compares gaps between what executives, employees, and analysts say about culture to determine both the emotional intensity with which employees' beliefs are held and the agreement on such beliefs. She then categorizes cultures into different types (e.g., an effective, lip service, contested battle, and design-free culture) based on the alignment across sources. For



a culture to be effective, both agreement about what the cultural values are and a high level of intensity about the cultural values must be evident across the sources. Such a definition parallels the literature in management on strong culture (Chatman and Cha, 2003). If however, there appears to be agreement about what cultural values are important but employees lack emotional intensity and, as such, are unwilling to exert effort to live out the values or to sanction others for a failure to uphold the values, this leads to a culture that is classified as lip service from leadership. A culture characterized as a contested battle exhibits disagreement but emotional intensity about the disagreement. Employees or leaders are actively trying to convince those in disagreement to follow their beliefs. Finally, a design-free culture is one without agreement about the content of the cultural values or emotional intensity about such content. This definition of an effective culture does not prescribe certain cultural attributes to an optimal cultural recipe rather it focuses on characteristics of the behavioral patterns needed to successfully execute the firm's strategies, achieve its goals, and ultimately, be value-enhancing to the firm. The behavioral patterns could certainly be expanded beyond agreement and emotional intensity in future research; for example, by considering observable behavioral patterns like sparse vs. verbose communication.

### **3.5 Societal and biological approaches**

The discussion thus far has focused on looking at specific cultural values and norms, distinguishing between aspirational and actual culture, and identifying cultural archetypes such as an effective culture. An implicit assumption underlying this approach is that corporate culture is purposefully designed. An alternative viewpoint is that culture can be shaped by such design principals but the actual culture reflects an individual's contribution to that culture that comes from the "shared" meaning that they perceive. This interpretation suggests that both biological and developmental traits of employees and leaders influence the culture. These biological and developmental traits are likely to reflect elements of societal culture and more general knowledge than firm-specific human capital.

While this view can also lead to a time-varying measure of culture, it requires greater knowledge of the societal context of the corporation and by construction will likely reflect a slow-moving aspects of corporate culture. This is because, societal culture typically transmits fairly unchanged from generation to generation and as it reflects customary beliefs and values of the group (Guiso et

al., 2006). Thus, a natural conjecture is that the “rose-colored” glasses that shade an individual’s interpretation of the implicit norms and required knowledge to succeed in the firm are limited to individual principles of philosophical existence, such as a propensity for individualism vs. collectivism or regressive vs. progressive social policies. There is a growing literature testing these individual perceptions that builds off of the literature on societal culture affecting economic exchange (Guiso, Sapienza and Zingales, 2009; Lins, Servaes and Tamayo, 2017). This literature can be divided into those testing genetic traits and those testing learned traits.

The typical measurement approach is applying an algorithm to an employee name to predict the person’s race and ethnicity. Often, especially for small samples, this approach is supplemented with hand-coding from archival records (e.g., ancestry.com). Individual traits are then linked to a pre-established measure of societal culture (e.g., Hofstede, 1991; Schwartz, 1994; Gelfand, 2018). Grinblatt and Keloharju (2001) was a pioneer in this method. They focused on Finnish firms that, for cultural reasons, do not share the same native language. Pan, Siegel and Wang (2017); Pan, Siegal and Wang (2020) evaluate risk culture of CEOs in multiple contexts, looking for consistency and persistence with respect to corporate policies. Nguyen, Hagendorff and Eshraghi (2018) evaluate individualism and firm performance. Davidson, Dey and Smith (2015) consider executives off-the-job behavior (e.g., purchases of luxury goods and propensity to get speeding tickets) and link it to fraud and agency costs. Benmelech and Frydman (2015) consider executives military experience and link it to more ethical decisions within the firm. This line of research on cultural transmission is reinforced by a rich literature in behavioral finance showing that early life experiences have long lasting effects attributable to altered belief formation (e.g., Malmendier and Nagel, 2011).

### **3.6 Network-based approaches**

The final set of empirical approaches to measuring culture draw from network economics. These approaches require data with explicit network structure to calculate standard network measures like homophily, which categorizes employees by type. Indices are then created based on in-group and out-group links. Jeffers and Lee (2019) use LinkedIn graph data to create such measures and tie culture to hiring decisions. Tate and Yang (2015) uses Census establishment-level data and employee-boss relations to show the value of female-friendly cultures. Pacelli (2019) and Merkely, Michaely and Pacelli (2020) evaluate analysts’ networks to determine how culture shapes analysts’

forecasts. Finally, [Cho, Choi, Hertz and Wang \(2021\)](#) use data from a professional networking app and show that firms with more connected employees outperform.

### **3.7 Combining measurement approaches**

As researchers continue to improve the methods for measuring culture, new questions arise about measurement as a whole. Do different ways of measuring corporate culture lead to consistent implications for firm decision-making and outcomes? What is the correlation between cultural elements and the potential for specific cultural styles to emerge? Is there an optimal culture that is firm-specific? Or, is there a limited number of cultural prototypes that emerge from a set of cultural elements? Researchers might discover that a new paradigm is necessary in measurement, whereby culture is not measured based on individual firms but rather in relation to other firms in an industry. Such an approach better aligns with the choice that job applicants make in practice. Finally, another challenge associated with the measurement of culture is that culture's many elements can be highly correlated. Studying whether a particular element of culture is related to firm performance might require a better understanding of how all the cultural elements relate, the cultural prototype from which a single element emerges, and the economic trade-offs that link different elements to performance.

## **4 Empirical**

The previous section addressed measurement issues and organized the discussion around methods of measurement. In this section, we examine empirical work on corporate culture and organize the section around topics.

### **4.1 Mergers & Acquisitions**

The decision of firm management to acquire or merge with another firm is one of the most important decisions management can make. That M&A activity generally destroys value is a well-documented empirical observation in the corporate finance literature ([Andrade, Mitchell and Stafford, 2001](#); [Campa and Hernando, 2004](#); [Moeller, Schlingemann and Stulz, 2005](#); [Alexandridis, Antypas and Travlos, 2017](#)). Why is this? No doubt there are many reasons, but merger failures are often anecdotally associated with the notion of corporate culture clashes (e.g., see [Silverstein and Vrana,](#)

1998 and Doe, 2018). As Van den Steen (2010) writes: “Culture clash—the potentially destructive effects of combining two organizations with different cultures—is often considered a major cause for the failing of mergers and acquisitions” (p. 1718).<sup>2</sup> A culture clash (i.e., total incompatibility) may be part of the explanation, but researchers have focused on the narrower question of whether mere cultural *differences* matter.

Interestingly, it is not even clear that management considers corporate culture in M&A decisions. While Graham et al. (2021b) report that executives claim that corporate culture is important generally, consultants say that managers fail to adequately account for corporate culture issues in M&A. In a 2011 study interviewing 123 organizations from around the globe, Aon Hewitt found that cultural integration problems was the second most cited factor for deal failures, but less than half (44%) of respondents failed to track cultural alignment as part of their deal analysis, 58% said they did not have specific practices to assess and integrate cultures in a deal, and no respondent reported having effective ways to integrate another firm culturally (Aon Hewitt Consulting, 2011).

To study the effects of cultural differences on M&A, several studies have examined cross-border deals. In doing so, they implicitly presume that national cultures are distinct and a basis for corporate culture. Morosini, Shane and Singh (1998) find a positive relation between national cultural distance and sales growth over the two years following the acquisition. They argue that cross-border integration gives the acquirer access to the target’s set of routines that are embedded in its national culture. In another study, Ahern, Daminelli and Fracassi (2015) use cultural value measures from the World Values Survey—a standard data source in the literature—to measure cultural differences. They examine a large sample of mergers from 52 countries between 1991 and 2008, and the authors control for country-level fixed effects and a multitude of country-pair variables, including shared legal origin, language, religion, geographic distance, and more. They find that the volume of cross-border mergers is lower when countries are more culturally distant. Greater cultural distance also leads to lower combined announcement returns. They note that these findings are consistent with the hypothesis that cultural differences impose costly frictions between firms, which lead to fewer mergers. The authors conclude:

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<sup>2</sup>For example, see the 2020 article from the HR firm Toolbox, which gives the following examples of failed mergers or acquisitions: SAP and Qualtrics, Amazon and Wholefoods, WordPerfect and Novell, AOL and Time Warner, Sprint and Nextel, Hewlett-Packard and Compaq, and Google and Nest.

Our findings show that culture matters, even when the financial stakes are very large. These results and others in this literature question many of the assumptions that are made in classical economics and highlight the need for new theories that can account for behavior that does not follow that of the so-called 'Economic Man.' (p. 185)

Looking at within-country M&A, [Alexandridis, Hoepner, Huang and Oikonomou \(2021\)](#) study the relationship between corporate cultural divergence, which they measure as differences in a corporate social responsibility (CSR) index between bidder and targets. Their study covers 22 countries, and the authors control for broader national cultures, along with deal and firm characteristics. They find that a one standard deviation increase in the measure of corporate cultural difference reduces acquirers' cumulative abnormal returns by 1.5% over an 11 day window around the acquisition announcement. This return difference converts into a value destruction of \$528 million for an average-sized acquirer. These stock price effects persist. Over the initial post-acquisition period there is a cumulative return differential of -28.87% over two years. The authors also find that cultural incompatibility reduces the probability of deal completion, and it increases the time required for deal completion.

[Tremblay \(2020\)](#) uses textual analysis of firms' 10-k reports to form measures of corporate culture, and she examines the impact of such differences on merger outcomes. A measure of cultural difference is computed based on associating words in the 10-k text with the words *create*, *compete*, *collaborate*, and *control*. These associations are then combined to form a measure of cultural difference. For part of the analysis, Tremblay creates hypothetical matched pairs of firms, based on industry, market capitalization, and market-to-book ratio.

Based on the sample of hypothetically matched firms, Tremblay shows that the probability of being acquired decreases with the cultural differences with a potential acquirer. For example, a one-standard deviation increase in cultural difference is associated with a reduction of approximately 9.6% in the probability of being acquired. This result suggests that firm management takes cultural alignment into account when selecting a candidate firm to acquire. Acquisitions or mergers with firms that are very different do not take place.

Notably, however, in the sample of deals that occurred, cultural distance is *positively* related to acquisition synergy, which is measured by the combined announcement returns, long-run returns, and operating performance. She writes, "The effect is economically significant: a one-standard deviation increase in [cultural distance] translates into an increase of 70 basis points in combined

three-day abnormal returns, which amounts to approximately 18.9% of the mean announcement reaction (mean reaction = 1.67%)” (p. 5).

What explains the positive association? Tremblay defines a set of “culturally dominant” acquiring firms as those with the highest normalized cultural attributes of the four components that enter the computation of cultural difference relative to the targets. She also considers an alternative definition of “dominant” as the firms whose sum of the four components is higher than the sample median. With these definitions, she finds that in mergers by dominant acquirers, the three-day cumulative abnormal return increases by about 10%, but there is no such effect for dominant targets.

A similar textual analysis approach is undertaken by Yoo (2020). She analyzes CEO letters to shareholders contained in annual reports to determine the similarity of target and acquirer. Based on the words used in each firm’s CEO letter, pairwise cosine similarity scores are calculated for the acquirer and the target in a given merger and for any pair of firms. She finds that the similarity of target and acquirer CEO letters is positively associated with the likelihood of being targeted. Also, buyers’ announcement returns are positively associated with the similarity measure. Further, a one standard deviation change in the similarity measure increases the likelihood of being a target company by 9.34% to 13.56%, depending on the specification. The results provide evidence that cultural similarities have a substantial positive association with merger volume, and they imply that cultural alignment can stimulate merger attempts.

Overall, available evidence suggests that corporate cultural differences are significantly related to the success or failure of mergers and acquisitions, but the relation is nuanced. Both positive and negative effects are present and more research in this area to uncover the exact channels leading to the differences in performance is needed.

## **4.2 Risk-taking and ethics**

Risk-taking and ethics have received substantial attention in the literature, mostly because of the fascinating stories of behaviors so egregious that they destroyed firms. A common interpretation in the early literature was that toxic cultures were the byproduct of a few “bad apples” and groupthink (Janis, 1972). Enron is a classic example that epitomized ideas at the time. The company’s rapid demise was triggered by the excessive risk-taking of its leaders and further enabled by “yes men” who blindly followed orders. Yet only five years after the Sarbanes-Oxley Act went into effect to

prevent another Enron, the 2007-2008 Financial Crisis unfolded and changed the views of academics and practitioners about the nature of risk-taking and misconduct (Thakor, n.d.).

Shortly after the crisis, empirical evidence emerged confirming that failures in risk management were widespread and *not* the byproduct of a few bad apples or even misaligned compensation schemes (Fahlenbrach et al., 2012; Ellul and Yerramilli, 2013; Cheng, Hong and Scheinkman, 2015). First, Fahlenbrach et al. (2012) established that a persistent element such as culture could explain bank performance. Then, Ellul and Yerramilli (2013) showed that theories of hedging could not explain bank's risk exposures; rather, the best explanation was a combination of risk culture and business model. For example, conservative banks take lower risk and put in place stronger risk management systems. Finally, Cheng et al. (2015) showed that misaligned compensation schemes could not explain the high risk-taking of certain financial firms.

Next, researchers began exploring if changes in supervisory and regulatory requirements stemming from stress-testing and the Dodd-Frank Act had an impact on bank culture. Hirtle, Kovner and Plosser (2020) study detailed data on bank supervisor's use of time, and they find that increased supervisory time reduces risks. They argue that a change in culture is a likely channel through which the drop in risk-taking occurs. For example, supervisors can improve a bank's risk culture by increasing attention to risk as a balance against a focus on short-term profitability. Supervisory requests for risk and activity information may also lead banks to invest in data and technology systems that allow them to manage their businesses more efficiently over the long run. Finally, because supervisors oversee many banks, they may transmit knowledge of best practices in the industry when they provide feedback to banks about their risk management practices. (Garcia et al., 2021) evaluate the mandatory forward-looking disclosure requirements that came about as part of the regulatory stress tests. For banks near the asset threshold for mandatory disclosure, the authors find supportive evidence that risk culture improves as a result of the regulation. The improvement is driven by leadership strengthening the cultural values of integrity, respect, and quality, which the authors measure using textual analyses.

The relationship between risk, ethics, and misconduct has also been studied outside of financial services. Survey evidence from Graham et al. (2021a) shows that 55% of executives say culture plays an important role in their risk decisions, and 40% say that their firms do not take on the right amount of risk, with more executives admitting taking on too little risk rather than too much risk.

Graham et al. (2021a) find that strength and weakness of cultural values and norms such as integrity, trust, and goal agreement help explain the suboptimal risk-taking.

Pan et al. (2017) examine the development of leaders' risk preferences in relation to corporate risk cultures. They show that selection plays an important role. Candidates with risk preferences more similar to the founder candidates are more likely to be selected for top-level executive positions. This selection leads to the study's key finding about the differences in risk culture in the cross-section vs. within-firms over time. Namely, within-firm changes in risk culture are associated with changes in investment, whereas cross-sectional differences in risk culture are associated with more persistent policies. In a follow-up paper, Pan et al. (2020) examine M&A investments, showing that executives forgo M&A investment when they have uncertainty avoidance preferences. If they do engage in M&A activity, executives are more likely to pick an easy target, such as a smaller firm in the same industry, that can more easily integrate.

Finally, several papers show how unethical behavior or indiscretions by a CEO hurt the firm (Davidson et al., 2015; DeBacker, Heim and Tran, 2015; Biggerstaff, Cicero and Puckett, 2015). Moreover, it also appears that investors, suppliers, and customers view such behaviors as reflecting the culture in the firm generally. For example, Biggerstaff et al. (2015) find that CEOs who engage in malfeasance, apparently perceived as representative of an unethical corporate culture, come from firms that are more likely to commit financial fraud, and these CEOs acquire more companies, but with lower market responses. Cline, Walkling and Yore (2018) find that personal managerial indiscretions separate from the firm's business activities not only result in significant wealth loss for the CEO, but reduces operating margins and leads to both forced turnover of employees and pay cuts. Finally, a number of studies are linking discrimination risk with leadership choices (Lins, Servaes, Roth and Tamayo, 2021; Au et al., 2021b).

Compensation is an important tool that managers can use to reinforce or work against the culture. Ultimately, this interaction plays an important role in determining ethical decisions. Graham et al. (2021a) show that 85% of executives believe that having a poorly implemented or ineffective culture at a company increases the chances that an employee would do something unethical (or even illegal). Yet despite acknowledgements that an unethical culture exists, the probability of whistle-blowers coming forward to reveal misconduct is small. Interestingly, executives appear to use stock options to deter revelation. Call, Kedia and Rajgopal (2016) investigated thousands of class actions law suits



and found that management grants more stock compensation to rank-and-file employees exactly when reporting violations are committed.<sup>3</sup>

### 4.3 Employee benefits

One manifestation of a firm's corporate culture is its treatment of employees. One area that this can be seen is in the provision of non-wage benefits. These benefits have increased significantly in the last few decades and now contributes, on average, 30 percent of total employee compensation.<sup>4</sup>

Liu, Makridis, Ouimet and Simintzi (2019) examine firms' maternity policies, in particular paid maternity leave, a benefit that could attract and retain women. Paid maternity leave is not mandated under U.S. law. Adoption of such a policy can reflect a firm's family-friendly culture and the firm's attitude towards women. The authors use a data set provided by Glassdoor, which provides information on firms' coverage of different types of non-wage benefits, including maternity benefits. Also included are employee ratings of these benefits.

The authors find that firms in industries with a scarcity of college-educated female workers offer higher-rated maternity benefits. The authors also make use of plausibly exogenous variation in the introduction of legislation in New York, Washington, and the District of Columbia. These laws effectively subsidized some of the maternity benefits provided by firms in these locations. The laws also lead to a minimum paid maternity leave being offered by all firms, which would likely reduce the relative attractiveness of maternity plans already offered by firms voluntarily.

Indeed, that is what the authors show: Firms that offered more generous maternity benefits prior to the legislation lose value via a drop in stock price upon announcement of these government actions, particularly in industries with low female participation. This result is consistent with maternity benefits adding value for firms that voluntarily adopt them.

In a similar vein, Li and Nagar (2013) examine firm performance measures when firms adopt same-sex domestic partnership benefits. They show that firms initiating such same-sex benefits earn a four-factor annualized excess return (alpha) of approximately 10% over 1995-2008, beating 95% of all professional mutual funds in the United States. These results are similar to those by Edmans (2011), discussed above, who found that a value-weighted portfolio of the "100 Best Companies to

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<sup>3</sup>In recent theoretical work, Thanassoulis (2021) presents a model on how industry competition influences firm misconduct.

<sup>4</sup>See the US Bureau of Labor Statistics 2021 Economic News Release on employer costs for employee compensation: [here](#).

Work For in America” earned an annual four-factor alpha of 3.5% from 1984 to 2009, which was 2.1% above industry benchmarks.

For cultural researchers, a useful feature of employee benefits is that their exact market value is known. [Makridis and Schloetzer \(2021\)](#) worked with PayScale to develop a survey which is used to elicit a measure of culture and ultimately to construct a measure of an employee’s willingness-to-pay for culture. PayScale observes about 10 million visitors per month and provides information about what a person should receive as compensation. Firms also use PayScale’s benchmarks. Users visit the PayScale website, fill out a salary report, and then receive a predicted dollar amount corresponding to the market value of their human capital that is based on a proprietary Bayesian Hierarchical learning algorithm. [Makridis and Schloetzer \(2021\)](#) defines corporate culture as “the sum across three indices, each on a one-to-five scale, from survey respondents about their perception of workplace practices relating to clarity of communication, degree of recognition and appreciation, and managerial quality” (p. 3).

[Makridis and Schloetzer \(2021\)](#) find that the culture index is higher in occupations with greater cognitive and social skill intensities, but lower in manually intensive occupations; it is higher in metropolitan areas that are larger, more educated, and have lower unemployment rates; and it is higher in firms that are more productive and larger (in employment or assets). A one standard deviation increase in his index is associated with a 0.59 standard deviation increase in firm revenues and a 0.71 standard deviation increase in operating income before depreciation, even after controlling for employment, capital, and inventories. Companies with higher index value also earn monthly excess returns that are 7.5% greater than their counterparts.

PayScale provides users with a market valuation of their skill, which can be thought of as a proxy for an employee’s outside option. Using that measure, [Makridis and Schloetzer \(2021\)](#) find that employees are willing to pay approximately 1.7% of their earnings for a one standard deviation increase in the value of the index. This increase translates into \$1,159 per year for the average worker in the sample. The result is similar to [Mas and Pallais \(2017\)](#), who find that the average worker in their work scheduling experiment is willing to forego 20 percent of wages to avoid a work schedule set by an employer on short notice.

Together, this body of work suggests that corporate culture—measured in different ways and with respect to different ways that workers are treated—has significant valuation effects for the firm.

## 4.4 CEO effects on the firm

CEOs may be the source of specific corporate cultures, may influence corporate culture, or may be constrained by the existing corporate culture. [Cronqvist et al. \(2009\)](#), discussed above, find evidence that corporate culture is persistent. Does this mean the CEO cannot change the corporate culture? The evidence suggests there is significant heterogeneity across CEOs and that individual CEOs are associated with different corporate finance decisions. The role of the CEO and its relationship to the corporate culture appears complicated and under-explored.

[Bertrand and Schoar \(2003\)](#) study a matched panel of manager-firm pairs in which managers switch from one firm to another. Identification of CEO effects comes from the switchers. This allows firm and manager fixed effects to be separated. The authors examine the association of various corporate finance decisions with the CEO fixed effects, controlling for several other factors. CEO effects are significantly associated with many corporate decision variables: capital expenditures, the sensitivity of investment to Tobin's Q, sensitivity of investment to cash flow, acquisition policy, financial leverage, interest coverage, cash holdings, dividend payouts, R&D expenditures, advertising expenditures, diversification policy, cost-cutting policy, and performance. In other words, the results show that CEO fixed effects are empirically important determinants of a vast range of corporate variables.

[Malmendier and Tate \(2005\)](#) study the effects of CEOs on firm policy in a different context. They study "overconfident" CEOs, who are CEOs that persistently do not reduce their personal exposure to company-specific risk. They find that such overconfident CEOs overestimate the returns on investment projects and view external funds as excessively costly. These CEOs overinvest when retained earnings are high and underinvest when raising raise funds externally.

Overconfident CEOs overestimate the returns to their investment projects and view external funds as unduly costly. Thus, they overinvest when they have abundant internal funds, but curtail investment when they require external financing. [Guenzel and Malmendier \(2020\)](#) survey the literature on behavioral biases of CEOs.

## 5 Theory

In this section, we briefly review and comment on the important theoretical papers on corporate culture. Regardless of how it conceptualizes culture, an economic theory in this area makes contributions by the mathematical model of culture that it offers, together with the model's insights and the validity of the model's empirical predictions. The mathematical representations of corporate culture can be roughly grouped into four categories: (i) a stock of knowledge, (ii) shared beliefs, (iii) weights on cultural elements, and (iv) firm reputation. We review and comment on each category below.

### 5.1 Corporate culture as a stock of knowledge

Among the first important studies of corporate culture was [Crémer \(1993\)](#). Crémer defines corporate culture as “the part of the stock of knowledge that is shared by a substantial portion of the employees of the firm, but not by the general population from which they are drawn.” ([Crémer, 1993](#), p. 354). Crémer has a long discussion of the issues in thinking about corporate culture, which is certainly of interest. In fact, when he arrives at the model, he writes, “the reader can skip [the section] without loss of continuity.”

Crémer thinks of culture as containing three elements: (1) a common language or coding; (2) a shared knowledge of certain facts; and (3) a knowledge of certain established rules of behavior. Coding refers to a language that is specialized within the firm and corresponds to the specific type of activity of the firm. As Crémer points out, this notion of coding had appeared elsewhere in the literature, such as in [Arrow \(1974\)](#). The second element ranges from the knowledge of the location of staplers in the supply office to information gleaned from employee onboarding programs. The third element—rules of behavior—refers not so much to general etiquette, but to firm-specific directions for dealing with other people.

Crémer, however, is specifically interested in the question of how corporate culture contributes to firm efficiency by its organization of information. He describes his approach as using “team-theory in a pre-[Groves \(1973\)](#) sense”, which means that issues of incentives are assumed away (as in [Marschak and Radner, 1972](#)). He writes, “for the purposes of this paper, human beings are perfectly honest and trustworthy, but have limited capacity for processing, receiving, and transmitting information”

(p. 351). Crémer’s rationale is that, while incentive problems are important, there has been a neglect in researching aspects of human decisions unrelated to incentives, particularly bounded rationality.

Crémer presents a model in which better shared information leads to better coordination. He asks: How much shared knowledge is optimal? He considers a team of two people  $i \in \{1, 2\}$ . The task of each person is to specify a value for a real variable  $x_i$ . The team’s payoff is:

$$\Pi(x_1, x_2; A) = A(x_1 + x_2) - \frac{B}{2}(x_1 + x_2)^2 - \frac{C}{2}(x_1 - x_2)^2. \quad (1)$$

Team welfare depends both on the total output of the two people ( $x_1 + x_2$ ) and their coordination, which is represented by the proximity of their chosen values ( $x_1 - x_2$ ). Each team member will not know the value  $x_i$  chosen by the other team member. The team members act in good faith, and there are no agency problems. The parameters  $B$  and  $C$  are known to all, whereas  $A$  is imperfectly known. Both team members observe a public noisy signal about it, and each member is privy to private noisy signals about it. The question for Crémer is the extent to which knowledge about  $A$  should be shared among team members to optimize team welfare.

The optimal policy  $x_i^*$  is a linear function of the noisy signals. Crémer shows that there always exists an optimal plan in which all the information is shared between team members or none of the information is shared. Note that a large value for  $C$  favors sharing information because it reflects the benefits of coordination.

Crémer writes a rich explanation of the issues surrounding corporate culture, but his conceptualization of culture suffers from limitations that even he openly admits. For example, speaking of his definition of culture, he says it “is very one sided: Culture is seen as knowledge, not at all as values. This is partly due to the use of economic discourse, as standard economic methodology precludes us from assuming that the utility functions of the individuals are dependent on their environment” (p. 354). Crémer is onto something by suggesting that neoclassical economics wrongly restrains the modeling of corporate culture, but he chooses not to unfasten himself from the shackles.

The idea of coding as a part of shared knowledge is pursued further by Crémer, Garicano and Prat (2007). Using a specialized language in the firm economizes on communication costs, but limits employees’ ability to communicate with others outside the firm or with different divisions or subsidiaries. People are boundedly rational, which is taken to mean that they can only learn a limited number of words with respect to a specific problem. The firm is assumed to set the code,

which is represented mathematically as a partition of a set. Then, for example, one employee can communicate the partitioned subset that is relevant.

The authors offer the following example as an illustration: Two doctors work in a hospital, where one is a general practitioner; and the other, a specialist. Their problem at hand is to diagnose a patient with several symptoms. The patient sees the general practitioner first. Upon seeing the patient, the general practitioner then describes the symptoms in a referral to the specialist using a code. The more precise the code, the faster the specialist can diagnosis the sickness. But the two doctors can only learn so many words in a code. The less precise the code (i.e., the greater the number of broad words used that all describe distinct diseases), the more costly time the specialist spends diagnosing the patient's true illness. The basic trade-off between synergies and efficiency is exemplified by the organization choosing a general versus precise code of language.

## 5.2 Corporate culture as shared beliefs

Another important economic thinker about corporate culture has been Eric Van den Steen, who proposed modeling corporate culture not as shared knowledge, but as shared beliefs. Van den Steen (2010) proposes this definition of corporate culture: “[Corporate culture] is then defined as the degree to which members have similar beliefs about the best way of doing things” (p. 1718).

Van den Steen sees agency problems as arising from differences in objectives. And crucially, when beliefs are aligned via homogeneous culture, there are no such differences, which eliminates agency issues. Van den Steen writes, “This link between the general agency problem, on one hand, and corporate culture, on the other hand, is an important underlying insight of this paper.” (Van den Steen, 2010, p. 1718). But there are costs and benefits of homogeneity. The benefits stem from employees jointly focusing on the organization's goals, leading to less monitoring, faster coordination, higher motivation, and more communication. The costs are less experimentation and less information collection.

Van den Steen (2010) analyzes a model where a firm consists of a manager and several employees. They all must choose between two mutually exclusive actions  $A$  or  $B$ . Each action has a positive probability of a positive payoff,  $\rho_A$  and  $\rho_B$ , respectively, or else, zero. The object  $\rho_A$  is a random variable drawn from a known distribution. The value of  $\rho_B$  is unknown, but each person has a subjective belief about it. Person  $i$ 's expectation of  $\rho_B$  is  $r_{B,i}$ . The set of prior beliefs are known to

all (that is, they agree to disagree). People are risk neutral and care about the firm's overall payoff.

Distinct prior beliefs are exogenous and differentiate people. Van den Steen then introduces a measure of similarity between two people, the Euclidean distance of their priors. For persons  $i$  and  $j$ , that is

$$\delta_{ij} = |r_{B,i} - r_{B,j}|. \quad (2)$$

Van den Steen's first application concerns whether a manager wants to delegate a decision when centralization is costly. If the manager delegates, she can still influence the outcome by monitoring, which gives the manager some probability of ensuring the employee makes the decision the manager would have made. The first result is that the manager delegates the decision if the employee's beliefs are sufficiently similar to her own. Conditional on delegation, the manager monitors less when employees have similar beliefs. More important decisions are delegated to employees with similar beliefs.

To examine experimentation in firms, Van den Steen extends the model to allow a person to expend effort  $e$  at a cost to collect new information via an experiment on action  $B$ . The new information is observed with probability  $P(e)$  by both people. Van den Steen shows that the effort spent to collect the experimental information increases with the level of belief heterogeneity. The result derives from updating the other person's prior about  $B$ . The gain to convincing the other person is higher when the prior belief difference is larger. A benefit of having diverse beliefs in an organization is that it induces greater experimentation to convince others that the experimenter's belief is right. (Each person believes, by definition, that the experiment will, on average, confirm her prior belief over the other person's prior belief.) On the other hand, the price of diversity of opinions is that a culture based on homogeneous beliefs makes coordination easier, similar to [Cr mer \(1993\)](#).

Finally, Van den Steen discusses the issue of culture clashes in mergers. In this case, two managers, each running a separate firm, each draw several employees from a common distribution. As part of the hiring process, each manager selects employees who have similar priors to their own. Depending on the priors of the managers, the resulting distribution of employee priors within the two firms might be very different or very similar. Van den Steen shows that upon the firms merging, the average likelihood of delegation, communication, and fast coordination declines, but experimentation rises.

### 5.3 Corporate culture as weights on cultural elements

Both Cr mer (1993) and Van den Steen (2010) collapse the multidimensional concept of culture into a single dimension: knowledge in the case of Cr mer and beliefs in the case of Van den Steen. In contrast, Gorton and Zentefis (2019, 2020) retain the multi-level feature of culture. They remain agnostic on the exact underlying components that make up culture, instead relying on the existence of some set of cultural elements (e.g., values, norms, traditions, rituals, codes, etc.). Their novelty is to focus on shared weights that a group places on these elements in terms of how important they are to its culture. Weights range from zero to one. A larger weight signifies greater importance; a zero weight, no importance.

This mathematical representation of culture advances from prior theoretical work because it circumvents the unending back-and-forth about the indisputable definition of culture or what elements constitute it. Instead, energies shift to the relative importance that some groups place on certain cultural components over others. Their structure is flexible to accommodate a researcher's particular focus of inquiry, such as, say, examining corporate values related to social progress (e.g., inclusiveness, equal access to resources, and shared respect for personal dignity). Researchers need simply choose the cultural components to study and assign the appropriate weights.

Opinions may differ on which components are more worthy of analysis, and a mathematical representation such as Gorton and Zentefis's does not give allowance to throw *everything* into the set of cultural elements and call it culture. Researchers must explain the content of their choices, and those choices must make sense to their audiences.

For mathematical convenience, Gorton and Zentefis represent cultural weights by continuous densities. Each employee  $i$  is endowed with a cultural density  $f_i$  that may have formed over many years from personal experiences in a profession. For instance, a surgeon's cultural weight regarding bedside manner in the hospital might differ from a nurse's. For the analysis, they assume that these cultural densities can be characterized by parameter vectors  $\eta_i$ .

Gorton and Zentefis (2019) introduces this conceptualization of corporate culture and shows whether and when competitive pressures can cause corporate cultures to adapt to forces of progressive social change. Gorton and Zentefis (2020) continues with the formulation of corporate culture as a density, but there, the authors micro-found corporate culture's origination, and they demonstrate



how corporate culture affects a firm's internal organization and determines the boundary of the firm.

In effect, Gorton and Zentefis propose a theory of the firm based on corporate culture. Production occurs inside firms rather than through markets when corporate culture is the optimal means to allocate resources rather than contracts. In markets, prices aggregate people's information into numbers, which then govern their actions, often through contracts. In firms, people communicate to allocate resources. A manager who oversees production expresses views and directions on the manner she prefers productive tasks be carried out (e.g., the times people arrive, the safety standards that should be implemented, whether mistakes or critiques are tolerated, the amount of risk-taking that is acceptable, or how to foster innovation).

These expressions are communicated through spoken words, sent emails, extended gestures, or instituted policies. Employees interpret these instructions from their own perspective, interact, and communicate their views with each other. Out of this collection of interpretations forms a corporate culture of values, norms, and customs that establish tacitly agreed rules for behavior. This culture becomes a set of basic assumptions that guide social order in the firm and cooperative decisions during production in place of prices or contracts.

Corporate culture forms at a deep level. Like [Crémer et al. \(2007\)](#), [Gorton and Zentefis \(2020\)](#) consider language as a critical piece of corporate culture. But distinctively, [Gorton and Zentefis \(2020\)](#) argue that the formation of corporate culture and its transmission among employees centers around language itself. They follow a long literature in linguistics, psycholinguistics, and social cognition to model the process of cultural formation and transmission. ([Holtgraves and Kashima, 2008](#) provide a survey of this literature.) Individuals have personal cultural densities that then combine into a corporate culture via interactions involving language. In their model, a manager sets a "tone at the top" (i.e., a desired corporate culture) through speeches, written words, and actions. But language is inherently imprecise, and it can imply meanings based on context that beyond a manager literally expressed. These implied meanings complicate giving instructions, and the corporate culture that develops in part from a manager's espoused values can deviate from what she intended.

[Gorton and Zentefis \(2020\)](#) use these ideas from linguistics to analyze the outcome of conversations between employees upon hearing a manager's directions. These interactions micro-found the endogenous development of a corporate culture, which is the basis for an employee's behavioral

choice. Culture bears a direct effect on both production and the boundary of the firm. At the end of this communicative process, the corporate cultural density, represented by its parameter vector  $\eta_c$ , that forms is

$$\eta_c = \underbrace{\eta_m}_{\text{manager's desired culture}} + \underbrace{\xi_v}_{\text{employees' firsthand and secondhand interpretations}} \quad (3)$$

The corporate culture is anchored by the CEO's desired culture  $\eta_m$ . But employees' firsthand interpretations of the manager's instructions—along with their secondhand interpretations from communicating with each other about the manager's instructions—together shift the observed corporate culture away from the manager's intended one. Gorton and Zentefis show that greater cultural differences between employees lead to a sharper disparity between  $\eta_m$  and  $\eta_c$ . This communicative process generates both a corporate culture at the overall firm-level and individual team cultures across different divisions of a firm.<sup>5</sup>

Where Gorton and Zentefis (2020) differ from other theories of corporate culture is their focus on how corporate culture directly influences employee behavior. A *behavior* is conduct that materially affects the production process (e.g., exerting meticulous effort, creating quality standards, or inspecting processes). Behaviors are taken to be consistent with the values, norms, rules, etc. of a culture. This notion that a culture provides instructions for governing behaviors is consistent with the American anthropologist Clifford Gertz described as one of culture's functions (Geertz, 1973a).

Each employee  $i$  working in team  $k$  inelastically provides a single unit of labor at wage  $w$  and chooses a behavior  $b_i$  to maximize utility. In making her choice, she trades off straying from behavior consistent with her personal culture  $\eta_i$ , her team's culture  $\eta_k$ , and the corporate culture  $\eta_c$ . An employee's utility function is

$$U_i = \underbrace{w}_{\text{wage}} - \underbrace{\lambda_1 (b_i - b(\eta_i))^2}_{\text{personal conflict}} - \underbrace{\lambda_2 (b_i - b(\eta_k))^2}_{\text{team culture conflict}} - \underbrace{\lambda_3 (b_i - b(\eta_c))^2}_{\text{corporate culture conflict}} \quad (4)$$

Greater deviations from either of the three cultures lowers utility. The authors argue that inner

<sup>5</sup>Gorton and Zentefis's model implies a similar notion about firms as the one Bengt Holmström provides when he labels firms "subeconomies:" Managers of firms, unlike agents in markets, have the unique power to regulate employees through directives (Holmström, 1999). But Gorton and Zentefis suggest that such power is not absolute. It is naturally constrained by the inherent limitations in the language required to express the directives.

conflict may arise from behaving differently than suggested by one's personal values (Cote and Levine, 2002; Weinreich, 2003). Social pressure or threats to conform may create the loss in utility from deviating from a team or corporate culture (Asch, 1955; Kandel and Lazear, 1992).

The utility function of Eq. (4) displays sociality in that the employee's choice of behavior is affected by a team culture and the corporate culture. The social milieu matters in the person's decision. It is not that the employee's utility depends on the utility or even the behaviors of others. Rather, the cultural and social setting around the person matters to her choice. The utility function in (4) is key to their representation of corporate culture.

Gorton and Zentefis (2020) then apply these ideas to form a theory of the firm. For each input to production, the manager can regulate the behaviors of the people making the input in one of two ways: through contractual agreements or through corporate culture. The manager relies on the first system when buying an input from the market, rather than making it in house. In this system, incentives are aligned by the structure of compensation and the threat of litigation for breach of contract. But those contracts will inevitably have gaps, as the parties will have no realistic way of anticipating and translating unambiguously into words all possible conditions, needs, and contingencies when tailoring the terms of their agreement.

As an alternative to using detailed contracts, the manager can make the part internally and rely on a corporate culture to fill in the gaps that bedevil contracts (e.g., as the means to make adjustments, provide flexibility, or resolve uncertainty). In this system, by contrast, incentives are affected by a fixed wage and social pressures to abide by shared norms and values (i.e., the incentives implied by Eq. 4). When deciding whether to make or buy a part of production, a manager chooses which of the two systems achieves the highest output from her perspective. Firms exist because corporate culture at times is more efficient to carry out production than are detailed contracts. The boundary of the firm is drawn at the limits of corporate culture.

For the canonical integration problem (should two distinct parts of production operate under separate firms or a single firm?), Gorton and Zentefis (2020) enact a setting where (i) each part is produced by a single team, (ii) one team is already inside the firm, and (iii) a second team is outside the firm. A manager currently influences the behavior of team 1 and contemplates integrating team 2 versus signing an incomplete contract to purchase its part. The manager chooses the option that increases production more.

Gorton and Zentefis show that integration is less likely if doing so would (i) push the corporate culture further away from the manager's preference, (ii) if the two teams would not coordinate or cooperate well internally, or (iii) if personal cultural differences between the two teams are significant. A feature unique to a team's integration is the impact its members would have on the firm's existing corporate culture. If the distortion to the existing culture or the potential conflict with the first team is severe enough, better for the manager to sign an incomplete contract to purchase the second team's part. Alternatively, if the incentive structure that only accompanies a corporate culture (i.e., the social pressures to abide by norms and values) can improve upon an imperfect contract, better to integrate. They demonstrate that the three factors that influence the firm boundary with just two teams extend to more complex production systems as well.

#### **5.4 Corporate culture as firm reputation**

**Kreps (1990)** (and its important interpretation by **Hermalin, 2001**) defines corporate culture as a firm's reputation. This reputation is built over time through repeated behaviors and signals to employees about what decision the firm would take on the occasion of unforeseen contingencies. This concept of corporate culture aligns with early work by Thomas Schelling and others that envisioned cultural traditions or norms as forming focal points that selected an equilibrium when multiple ones were present (**Schelling, 1960**). The perspective of corporate culture as reputation has focused on trying to identify what culture is but has (as yet) limited empirical predictions. A difficulty of this framework has been modeling "unforeseen contingencies" rigorously (see **Dekel, Lipman and Rustichini, 1998**). Unable to overcome this hurdle, the **Kreps (1990)** framework for corporate culture has observed no further progress.

## **6 Future Directions**

This is an exciting time for culture research, as many advances on both theory and measurement have been made that will allow researchers to address several unanswered questions. Below, we identify and highlight a few fruitful areas for future research.

## 6.1 Corporate financing

Much of the literature has focused on showing that culture is important for firm value, but less is known about how culture relates to traditional corporate financing decisions that can ultimately drive value. For example, investment spikes, M&A decisions, capital structures at IPOs, and dividend initiations are all decisions that firms rarely reverse but that have long-term, persistent implications for firm value.

Can the mystery of zero leverage firms be explained by corporate culture and a shared belief that avoiding bankruptcy entirely is optimal? If so, is the decision to avoid debt rooted in the shared experiences of a startup overcoming challenges or the idiosyncratic tendencies of leadership? Similarly, (Lintner, 1956) notes that an important factor for payout is “management’s confidence in the soundness of earnings figures as reported by its accounting department and its confidence in its budgets and projections of future sales, profits, and so on.” Subcultures and silos exist within firms, and if an absence of interaction between departments leads to different interpretations of the same numbers, how does this influence payout or investment decisions? Do silos prevent firms from taking on the right amount of risk or do they actually help firms because the separation allows the financing arm of the firm to act as a steward of integrity?

## 6.2 Firm productivity

Management practices—which include performance feedback, target setting, meeting patterns, reward schemes, quality and inventory control methods, and human resource management systems—were linked to firm productivity nearly sixty years ago (Mundlak, 1961), but only within the past twenty years were such practices formally identified as influencing firm productivity (Ichniowski, Shaw and Prenzushi, 1995; Ichniowski and Shaw, 1999). In the past ten years, variation in these practices has become a leading explanation for the vast heterogeneity in productivity observed in the U.S. and around the globe (Bloom, Eifert, Mahajan, McKenzie and Roberts, 2013; Bloom and Van Reenen, 2007; Bloom et al., 2013; Gosnell, List and Metcalfe, 2020). But what is the relationship between management practices and culture? A manager might establish a practice, but an entire organization of employees ultimately must believe in it and execute it successfully. Schein (1985) argued that “leadership is the fundamental process by which organizational cultures are formed and changed.” Issues of leadership (and its practices) are fundamentally intertwined

with issues of culture.

As a management practice, clear targets might be set, but whether those targets are financial, operational, or multi-valued; or long-term or short-term, may be influenced by the culture. The reverse could also be true that the choice of targets may work for or against the existing culture. Similarly for promotion criteria (performance-based or tenure-based?), process documentation (is it customary for staff to suggest process improvements?), meeting outcomes (is it customary to build consensus?), performance review (do subordinates ever review managers?), and role clarity (does everyone know their responsibilities and how their duties compare to others?) Discovering when culture and management practices are complementary or not, and why, is an important area for future research.

A large body of work in organizational behavior has already documented that corporate culture affects firm performance (e.g., [Denison, 1984](#); [Gordon and DiTomaso, 1992](#); [Kotter and Heskett, 1992](#); [Sørensen, 2002](#)). Economists have also presented similar findings (e.g., [Guiso et al., 2015](#); [Martinez, Beaulieu, Gibbons, Pronovost and Wang, 2015](#); [Graham et al., 2021a](#)). Trust, another aspect of corporate culture embedded in social capital, has also been documented as improving firm performance and productivity ([Bloom, Sadun and Van Reenen, 2012](#); [Dupont and Karpoff, 2020](#)). Discovering which other elements of corporate culture drive productivity, and through which avenue, is a clear direction for future work.

### **6.3 Work-from-home**

The hybrid workforce is predicted to last long after the COVID-19 Pandemic ends ([Barrero, Bloom and Davis, 2021](#); [Choudhury, Khanna, Makridis and Schirmann, n.d.](#)), but the optimal work-from-home (WFH) design for maximizing long-term value is unknown. Is working in an office critical to building a corporate culture? What direct and indirect effects might WFH have on culture and firm value? For example, the U.S. Securities and Exchange Commission saw a 31% year-over-year increase as of September 2021 from employee whistleblowers alleging employer fraud ([Robinson and Bain, 2021](#)). The absence of routine contact with coworkers might reduce fears of retaliation against speaking out and break the habits of thought that perpetuate fraud. Does this imply that workers should be given periodic WFH sabbaticals to reduce corporate fraud?

It would be useful to understand if specific cultural values and norms should be adopted to

maximize the benefits of WFH. On one hand, WFH has the potential to enhance accessibility and allow for a broader talent pool and enhanced diversity. On the other hand, WFH has the potential to exacerbate inequity. For example, it is possible that employee biases may create a two-tiered system in which employees seeking status regularly attend the office to be part of the in-crowd and cultivate the fondness of leaders. Such a system could be detrimental to firm value, as it might increase attrition and job dissatisfaction, and reduce productivity. To a large extent, the mediating force between these two extremes is the cultural values that leaders use to inspire and focus their employees. Thus, would cultural values that are focused on adaptability and fairness better serve leaders than a focus on end results and entrepreneurial-ism in such an environment?

#### **6.4 Emerging technologies**

In a similar vein, emerging technologies, such as advanced communication systems, virtual reality, industrial robots, and AI-based decision-making, are going to alter the way workers and managers interact, their productivity, and how they contribute to firm value. As if now, machines cannot obtain the same types of mental models, linguistic paradigms, or shared habits of thinking that workers, managers, and outside stakeholders can. Given that communication is key to many theories of corporate culture and firm efficiency, how can these technologies be deployed in a way that does not impede effective work environments? Will these technologies displace or substitute for some elements of corporate culture? Will their systems have the same effect as formal systems like governance and compensation, or can their systems be designed to complement culture? What leadership interventions might redress the disruptive effects of emerging technologies (e.g., preemptive investment in culture rather than passive adaptation)?

#### **6.5 Cultures within industries**

The role of corporate culture within industries is potentially very important but not well understood. [Graham et al. \(2021b\)](#) document meaningful differences in the strength of the cultural values and norms between firms with leading or near-leading competitive positions and firms positioned in the middle-of-the-pack. What drives this relation between culture, competition, and performance? If firms in the same industry compete with contrasting corporate cultures, what are the economic outcomes? Lyft vs. Uber, Coke vs. Pepsi, and Home Depot vs. Lowe's are pairs of firms that have

similar business models but wildly different cultures. Does culture matter most to performance when firms are in non-competitive industries? Relatedly, what is the role of industry-level regulation in cultural formation? How many of the cultural failures in the banking and tech industry stem from regulation?

## 6.6 Theoretical models of corporate decision-making

Since [Jensen and Meckling \(1976\)](#), the dominant framework for corporate decision-making has been based on agency costs. We argue here that a promising future direction is developing a new model of decision-making inside firms that reflects the corporate cultural forces influencing management's choices.

Representing cultural conceptually and mathematically is important. As we discussed earlier, [Van den Steen \(2010\)](#) represents culture by people's exogenous prior beliefs. This is a simple modeling device and Van den Steen can derive a rich set of results. Alternatively, [Gorton and Zentefis \(2020\)](#) model culture as a density of weights, something each person is endowed with. Based on work in linguistics, the authors build up corporate culture by modeling communication between people with different cultures. In addition, Gorton and Zentefis have people maximize a function that is based on their personal cultures, their teams' cultures, and the overall corporate culture. In this sense, the firm is a social setting.

### 6.6.1 A simple model

Over the next few paragraphs, we propose some ideas that might be useful for future work in corporate theory. We present a simple example model of corporate decision-making based on corporate culture. The model relies on the formulation of culture developed in [Gorton and Zentefis \(2019, 2020\)](#). The decision-making process we outline borrows insights from the literature on multi-criteria decision making and social choice theory ([Arrow and Raynaud, 1986](#); [Triantaphyllou, 2000](#)). We believe that ideas from these two areas are well suited to capture the way that major decisions are actually made inside firms, which is generally by committee, evaluating alternative choices by several criteria and balancing the interests of multiple stakeholders ([Haka, 2006](#)).

A CEO  $c$  and Vice President  $v$  must make a decision among a set of alternatives. The CEO possesses ultimate decision power but takes the input of the Vice President into account. The VP might be a single person, a group of subordinates, or can stand in for the general views of firm



employees. The set of alternatives to choose from can be broadly interpreted as (i) which investment to undertake, (ii) whether to acquire another firm, (iii) which dividend policy to follow, (iv) how much leverage to take on, (v) which new product line of business to enter, (vi), which firm to select as a supplier, (vii) which risk management method to adopt, or (viii) any other of the various capital budgeting choices management encounters.

For the sake of the example, assume the decision is over investment opportunities and only two alternatives are available. The two investment opportunities are evaluated according to  $M$  distinct criteria. Each investment opportunity is characterized by an  $M$ -dimensional vector of attributes— $a_x$  for investment  $x$  and  $a_y$  for investment  $y$ —where each element of the vector measures the investment’s performance score when judged in terms of the particular criterion. Because decisions will be made in accordance with a culture, the criteria reflect subject matters that are germane to the customs, values, norms, etc. of a culture.

For instance, suppose that (i) the number of criteria  $M = 2$ , (ii) the two investment alternatives are building a new production plant in either one of two communities ( $x$  or  $y$ ), (iii) one criterion is “neutral impact on the environment,” and (iv) the other criterion is “equity in employment opportunities.” Both investments share the same lifetimes, payback periods, and net present value. There is no uncertainty over investment returns.

Along the first criterion, suppose investment in community  $x$  scores low and investment in community  $y$  scores high, making  $a_x(1) < a_y(1)$ . In contrast, along the second criterion, community  $x$  scores high but community  $y$  scores low, making  $a_x(2) > a_y(2)$ . The differences in scores could be due to the towns’ proximities to a major water reservoir and local residents’ access to other employment options. Community  $x$  might be closer to the reservoir and installing a factory there would create material risk of polluting a drinking source (making it score low in the “environment” criterion). But a new factory in that community would become a major employer of local labor, substantially cut down on existing commuting times, and facilitate residents’ upward economic mobility (making it score high in the “employment” criterion). Community  $y$  is farther from the reservoir (posing less of an environmental risk and scoring it higher in the environment), but local labor there does not suffer from the same kind of spatial mismatch with existing employers (making it score lower in employment).

Both the CEO and VP assign weights of importance to each of the two criteria. These weights

of importance originate from their personal cultures, as described in [Gorton and Zentefis \(2019, 2020\)](#), and are normalized to sum to one. So that the decision problem is interesting, suppose the CEO places more weight on the first criterion, whereas the VP places more weight on the second. Hence,  $w_c(1) > w_v(1)$ , but  $w_c(2) < w_v(2)$ . Having the set of alternatives, the performance scores of the alternatives in each criterion, and the weights of importance for each relevant party, all the ingredients for a multi-criteria decision problem are established.

The multi-criteria decision-making literature has offered several methods to rank competing alternatives when all decision criteria are considered simultaneously ([Triantaphyllou, Shu, Sanchez and Ray, 1998](#)). We assume here the simplest one, the weighted sum model first articulated in [Fishburn \(1967\)](#). The CEO's and VP's most preferred investment alternative is the one that maximizes their individual  $a \cdot w$ , which is the weighted average performance score across criteria using the person's cultural weights of importance.

The method produces interesting implications for the ranking of alternatives. A large, but not large enough, weight on the environment could be associated with investment in community  $x$  being a top choice, even if that option performed worse than investment in community  $y$  along that criterion. In another case, investment  $x$ 's high performance score on employment equity, if high enough, could drive a top ranking, even if a person put low weight on that criterion. To create some interesting disagreement between the CEO and Vice President in advance of the final investment decision, suppose the CEO ranks investment  $x$  first ( $x \succ_c y$ ), whereas the Vice President ranks investment  $y$  first ( $y \succ_v x$ ).<sup>6</sup>

Knowing the conflicting pair of rankings, the CEO balances her own interests with that of the VP's in making her decision. Suppose the CEO's utility from selecting her preferred investment  $x$  over the VP's is  $c_x - \gamma v_x$ , where  $c_x$  is the CEO's personal benefit from investment  $x$  and  $v_x$  is the CEO's loss from overruling the VP's preferred alternative. Having not gotten his way, the VP might commit less time in searching for future investment opportunities or shirk on vetting them before subsequent committee meetings, both of which are costly to the CEO. The parameter  $\gamma$  stands for the extent to which the VP's preferences influence the CEO's decision. Higher values of  $\gamma$  imply

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<sup>6</sup>A shortcoming of the weighted sum model is that the performance scores across criteria might have different units, and when combined linearly, "apples are added with oranges." Many other methods overcome this issue and several others are quite sophisticated; e.g., the weighted product model ([Miller and Starr, 1960](#)), the ELECTRE family of methods ([Benayoun, Roy and Sussman, 1966](#); [Figueira, Mousseau and Roy, 2016](#)), the Arrow-Raynaud method ([Arrow and Raynaud, 1986](#)), and the TOPSIS method ([Cheng and Hwang, 1992](#)).

greater VP power in the decision-making process.

Suppose next that the CEO's utility from selecting her least preferred alternative (investment  $y$ ) is  $c_y + \gamma v_y$ , where  $c_y$  is the CEO's personal benefit from investment  $y$  and  $v_y$  is the CEO's gain from proceeding with the VP's preferred choice (e.g., the VP's enhanced search intensity for future investments or higher quality analysis because his preferred option was chosen). Assume  $c_x > c_y$  so that the CEO's top-ranked choice also yields her the highest personal gain.

Facing this trade-off, the CEO overrides her own preferred investment if the condition  $\gamma(v_x - v_y) > c_x - c_y$  is met. This outcome is more likely if the gain  $c_y$  from opting for her least preferred choice is not too low, or if the loss  $v_x$  from passing over the VP's choice is large. Alternatively, if the condition is not met, the CEO picks her preferred alternative  $x$ . Overall, the example illustrates both how cultural factors influence corporate decision-making and how the preferences of multiple stakeholders in practice can sway one choice over another.

This simple model can easily be enriched in a variety of ways. For instance, the CEO might lack ultimate decision power and the choice can be made use a voting rule; or perhaps, distinct employees with differing views can take part in the decision; or employees can misrepresent their views to achieve a desired outcome; or the CEO might be uncertain of the views of others or the performance score of each alternative in every criterion, or even be unsure of exactly how to quantify her weights of importance based on her culture. Evaluating more than two alternatives would introduce many of the complications that inhabit social choice theory. If the decision involved risky undertakings, the model can even capture the idea of corporate culture representing a form of risk management that can constrain the CEO's moral hazard. We propose the model as a starting point of origin that we hope can stimulate a new path forward in corporate theory.

There is clearly theoretical work to be done in both corporate theory and corporate culture. What is clear, to us at least, is that to be successful, new theory will require deviating from neoclassical economics, preferences that rely exclusively on the expected utility hypothesis, and agency theory. These changes are natural to us because the topic of research that economics and finance have focused almost exclusively on is markets—where prices dictate outcomes, where people behave atomistically, where they make savings and investment decisions, and where they choose consumption baskets. But this is not what happens inside firms. The social nature of firms cannot be avoided, and this aspect of human interaction must be represented somehow.

## **7 Conclusion**

Research in corporate culture is at an exciting stage. New methods and new, big data have encouraged novel and creative measures of corporate culture's many elements. In turn, these new measures have explained several observed behaviors in firms. The right way to research culture empirically is to unpack it, articulate the component of culture studied, and explain how that component is measured. More theoretical work on corporate culture is needed, and sound theories of corporate culture have the potential to build a new framework for how economics and finance situates the firm within a market economy. Corporate culture can lay at the foundation of all corporate finance research. Much remains to be studied and developed on corporate culture, and we urge economists young and old to direct their energies to this flourishing area.

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