

Measuring Organizational Capital

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ABSTRACT

Prior research has pointed to differences in organizational capital as a reason for the persistent performance discrepancies among otherwise similar firms. In this paper, we develop and validate a new measure of organizational capital. Based on over a million crowd-sourced employee reviews scraped from Glassdoor, we construct the measure of organizational capital at the firm-year level using the word embedding model and ChatGPT-generated synthetic reviews. Our measure varies over time in accordance with macro trends, and differs both across and within firms, reflecting firm heterogeneity and major internal changes. We validate our measure by testing empirical predictions of the properties of organizational capital discussed in prior literature. Our findings suggest that this measure captures a slowly evolving intangible asset that is significantly associated with firm performance and top management's influence, aligning with the conceptualization of organizational capital by Dessein and Prat. We further showcase applications of our measure in accounting, economics, finance, and management literature. Taken together, the paper

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provides implications for various stakeholders who are interested in assessing and managing firms' organizational capital.

JEL codes: D23; J24; M12; M14; M40; M41

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1. Introduction

Some firms seem to do better (or worse) than other firms, despite being in the same industry and using similar capital and labor inputs (Syverson [2011]). For example, in narrowly defined U.S. manufacturing industries, firms in the 90th percentile achieve nearly double the output of firms in the 10th percentile, despite using the same inputs (Syverson [2004]). The leading explanation for this performance variation is that it is attributed to organizational factors, which are more difficult to define and observe than standard input factors (Gibbons and Henderson [2012]).

Organizational factors have been studied for decades. A partial list of factors that have been proposed and investigated includes management practices (Bloom and Van Reenen [2007]), relational contracts (Baker, Gibbons, and Murphy [2002]), corporate culture (Schein [2010]; Cai [2023]), firm-specific human capital (Prescott and Visscher [1980]), or firm capabilities (Teece, Pisano, and Shuen [1997]). All these factors can be understood as part of a broad class of firm-specific intangible assets: organizational capital (Prescott and Visscher [1980]).

Organizational capital is the organization-specific information or knowledge that is accumulated and possessed by the organization, such as human capital, worker-task match, or worker-worker match (Prescott and Visscher [1980]; Atkeson and Kehoe [2005]). According to Dessein and Prat [2022], organizational capital encompasses any intangible firm asset with four properties: (1) it affects firm performance; (2) it changes slowly over time; (3) being intangible, it is not perfectly observable; and (4) it must be produced at least partly inside the firm with the active participation of the firm's top management. All the factors above—and potentially more—can be viewed as forms of organizational capital.

We contribute to this literature by developing a novel measure of organizational capital based on the perceptions of workers found in Glassdoor employee reviews. Our measurement strategy rests on three considerations about the nature and observability of organizational capital. First, organizational capital is inherently tacit, residing in culture, routines, and coordination practices that are not directly observable from outside the firm and are difficult to infer from traditional disclosures such as 10-K filings. For instance, Guiso et al. [2015] show that values disclosed on corporate websites often fail to reflect true organizational culture. Second, these tacit organizational features are experienced by workers in the course of their day-to-day work within the firm. Third, workers articulate these otherwise

unobservable experiences in Glassdoor reviews, which provide large-scale, timely, and “inside-out” perspectives on these organizational features (Campbell and Shang [2022]; Cai et al. [2025]). Unlike financial statement proxies or infrequent surveys, these reviews capture employees’ lived experiences regarding management, collaboration, incentives, and culture, making them exceptionally well-suited to capture dimensions of organizational capital.

Furthermore, traditional textual analysis that relies on word frequency or averaging the vectors of all words in a document implies a bag-of-words assumption. A common drawback of the bag-of-words assumption is that it overlooks the sequence information. A negative descriptor preceding a key term could signify a weakness, a nuance lost in simple aggregation. The structure of Glassdoor reviews, however, overcomes this limitation by explicitly separating feedback into “Pros” and “Cons,” which gives us a cleaner signal of the polarity of a comment.

Our starting point is the definition of organizational capital proposed by Dessein and Prat [2022]. To operationalize this construct, we employ two complementary approaches: a word-embedding model and ChatGPT-generated synthetic reviews. Our first approach involves extracting seed words from the definition of organizational capital, including human capital, culture, relationship, intangible, and management. We then perform word embedding on preprocessed employee reviews to understand the contextual meaning of each word and identify 500 terms that are most similar to the seed words, which constitute the expanded dictionary of organizational capital.¹ Finally, for each employee review, we calculate the number of occurrences of the words in the expanded dictionary, weighted by the similarity of that word to the seed words, and aggregate these weighted frequencies to the firm-year level. We subtract the score for the “cons” section from the score for the “pros” section, which yields our first measure of organizational capital, Org Capital (Seed Word). This measure represents how often an employee mentions the strengths and weaknesses of the organizational capital in a review.

Our second approach involves the use of ChatGPT. We prompt ChatGPT to generate 100 synthetic employee reviews emblematic of strong organizational capital and another 100 reviews indicative of weak organizational capital based on the definition of organizational capital proposed by Dessein and Prat [2022]. We translate each word in these synthetic reviews into embedding vectors, and delineate representative vectors for strong and weak organizational capital, respectively, by averaging the vectors from the

¹ Word embedding transforms words or phrases into numerical representations, that is, high-dimensional vectors. These vectors capture semantic relations by positioning words with similar meanings or contextual usage closer to each other. This property enables the model to recognize linguistic patterns, synonyms, and thematic linkages between words. The mathematical properties of these embeddings facilitate various computational tasks, including similarity assessments and clustering.

positive or negative reviews. By comparing these vectors with those derived from the “pros” and “cons” sections of actual employee reviews using cosine similarity, we gauge the organizational capital depicted in each real review. We average the cosine similarities to the firm-year level and obtain our second measure of organizational capital, Org Capital (ChatGPT).

We validate our measure by testing empirical predictions motivated by the important characteristics of organizational capital discussed in Dessein and Prat [2022]. First, we find that our measure is strongly associated with firm performance such as profitability and market valuation. Second, we document that organizational capital is slow-moving: It is neither fixed nor rapidly fluctuating and has virtually no structural breaks, all indicating a gradual process of accumulation and erosion. Third, we show that our measure behaves like an intangible asset by correlating more strongly with culture- and management-related employee ratings than with more concrete job attributes, which we interpret as validation of the intangible nature of organizational capital. Finally, CEO fixed effects account for a substantial share of the variation, consistent with an important role for top management. Together, these patterns demonstrate that our measure of organizational capital is associated with firm performance, slow-moving, intangible, and influenced by top management, which is consistent with the properties of organizational capital described in Dessein and Prat [2022].

We also compare our measure of organizational capital based on Glassdoor reviews with the measure of organizational capital based on SG&A expenses proposed by Eisfeldt and Papanikolaou [2013]. Conceptually, SG&A is what the firm spends on selling, general, and administrative activities, but not all of this spending is directed toward building organizational capital. Moreover, even when such expenditures are intended to build organizational capital, the extent to which they successfully do so is often indeterminate. Firms may allocate substantial resources toward these activities yet fail to translate them into effective and productive organizational capabilities. SG&A expenditures may also be subject to managerial manipulation due to empire-building incentives. By contrast, our measure captures the realized manifestation of organizational capital and the effectiveness of organizational capital investment. Empirically, our measure captures additional explanatory power of organizational capital beyond the SG&A-based measure.

We then showcase the diverse applications of our measures of organizational capital in accounting, economics, finance, and management research, which helps to provide insights into those previously unanswered questions. Specifically, we follow the empirical predictions in Dessein and Prat [2022] and explore the determinants and implications of organizational capital. In terms of determinants, we find that organizational capital is positively associated with the current CEO's tenure, that firms with a sequence of short-lived CEOs display low organizational capital, that organizational capital declines subsequent to a CEO turnover, though the decline is smaller when a high ability CEO replaces a low ability CEO,

that the growth of organizational capital is negatively associated with entrenchment index and CEO-to-median-employee pay ratio, which proxies for the firm's corporate governance quality and feedback loop. In terms of implications, we find that organizational capital is negatively associated with the CEO's turnover probability, and that the CEO's first year's compensation in the new firm is positively associated with the organizational capital improvement in her prior firm. However, the analyses presented here are exploratory applications rather than definitive causal tests. Each determinant and implication test should be seen as a preliminary investigation, and we invite future research to rigorously establish causal interpretations.

Finally, we conduct an array of robustness tests. Specifically, we employ alternative specifications to examine the relation between organizational capital and firm performance, investigate how this relation varies over time and across industries, and explore additional firm outcomes. We also investigate whether Glassdoor ratings and organizational capital scored on other data sources, including website descriptions, job postings, and interview questions, could serve as alternative measures for organizational capital. Additionally, we conduct robustness tests excluding the firm-years with less than five reviews, and the results remain economically and statistically consistent.

Our study makes the following contribution to existing literature. First, we introduce a measure of employee-perceived organizational capital based on large-scale text data of employee reviews of the company, and validate the measure by testing whether our measure of organizational capital exhibits similar properties to those discussed in prior literature. Our measure of organizational capital has the following advantages. First, our measure is available for a large sample of companies. This includes private firms, which are often excluded from traditional archival accounting databases. It also includes subsidiary firms that are later acquired yet still retain their original names, thus enabling the analysis of the dynamics of organizational capital before and after mergers. Second, our measure can be constructed retroactively. This feature enables researchers to track changes in firms' organizational capital over time by analyzing historical employee reviews. As a result, it facilitates the use of panel data methods and quasi-experimental research designs that exploit within-firm variation. Third, as our measure does not rely on financial statements, it is less susceptible to the complex effects of financial reporting incentives. For instance, managers may have the incentive to describe spending on training, software, process redesign, or culture-building in a favorable light and frame it as long-lived investment rather than current expense, while selectively emphasizing successful initiatives and omitting failed ones. This helps explain why internally generated intangibles are generally not capitalized absent external validation, whereas acquired intangibles are recognized following a transaction. By contrast, our Glassdoor-based measure is not written by management alone. Although employees also have incentives and biases, their aggregated reviews provide a more independent signal of realized organizational capital.

Second, we add to the growing literature on the determinants and implications of organizational capital and provide applications of the measure of organizational capital in various accounting, economics, finance, and management settings. Prescott and Visscher [1980] first point out that organizational capital, that is, the accumulation of firm-specific knowledge, affects a firm's production possibility set and growth rate. A body of literature documents the role of organizational capital in corporate life cycles (Agarwal and Gort [2002]; Atkeson and Kehoe [2005]; McGrattan and Prescott [2010]). Eisfeldt and Papanikolaou [2014] incorporate organizational capital into firm valuation models. Recent theoretical research also highlights the importance of organizational capital and its relation with corporate leadership and calls for empirical evidence (Dessein and Prat [2022]). Our findings highlight the crucial role of current and previous CEOs' tenures, CEO turnover, corporate governance, and feedback loop in organizational capital, and how organizational capital in turn might be associated with the career paths of the CEOs.

More broadly, our paper relates to the literature that develops empirical proxies for firms' intangible capital across economics, finance, accounting, and marketing (e.g., Lev and Sougiannis [1996], Ewens et al. [2025], He et al. [2024]). Organizational capital is naturally part of that literature because one of its defining features is that it is intangible and therefore not perfectly observable. Our validation tests show that it is more strongly associated with softer, less directly observable dimensions such as culture and management than with more concrete job attributes, which is consistent with the intangible nature of the construct. We therefore view our measure as complementary to existing proxies for intangibles: It speaks to the same broad question of how to measure hard-to-observe intangible assets, while offering a distinct lens on the organizational component of those assets.

From a methodological perspective, we complement prior literature on the application of word embedding for textual analysis by introducing the use of Generative AI for generating synthetic text as a measurement benchmark. For example, Li et al. [2021] introduce a semi-supervised machine learning method for textual analysis, which guides the unsupervised word embedding model with seed words. By incorporating Generative AI, we offer a synthetic text generation benchmark that provides guidance more tailored to the target text than seed words.

2. *Theoretical Background*

2.1 IMPORTANCE OF ORGANIZATIONAL CAPITAL

Prior studies document the persistent performance difference among firms operating within the same industry and utilizing similar observable input factors, and attribute this variation in performance to the variation in organizational capital (Gibbons and Henderson [2012]; Syverson [2011]; Syverson [2004]). Organizational capital is the organization-specific

information or knowledge that is accumulated and possessed by the organization, such as human capital, worker-task match, or worker-worker match (Prescott and Visscher [1980]; Atkeson and Kehoe [2005]). According to Dessein and Prat [2022], organizational capital encompasses any intangible firm asset with four properties: (1) It affects firm performance; (2) it changes slowly over time; (3) being intangible, it is not perfectly observable; and (4) it must be produced at least partly inside the firm with the active participation of the firm's top management.

In practice, organizational capital encompasses factors such as management practices, relational contracts, corporate culture, firm-specific human capital, and firm capabilities. These factors have long attracted significant attention from academic researchers. For example, Bloom and Van Reenen [2007] collect innovative survey data on management practices, and find a strong association between these practices and firm-level productivity, profitability, Tobin's Q , and survival rates. For relational contracts, Baker, Gibbons, and Murphy [2002] develop repeated-game models to illustrate theories on relational contracts, that is, informal agreements sustained by the value of future relationships, which are prevalent both within and between firms. Schein [2010] proposes dimensions to analyze organizational culture and discusses how corporate leaders could manage and diffuse organizational culture. Cai [2023] empirically tests whether adopting a culture-fit test in the employee selection process could shape organizational culture. In terms of firm-specific human capital, Prescott and Visscher [1980] examine the choice of the firm between current output and the future stock of human capital among its employees. Additionally, Teece, Pisano, and Shuen [1997] develop the dynamic capabilities framework for analyses of firm-level strategies for sustaining and safeguarding extant competitive advantages. These studies highlight the critical importance of the above organizational factors, which collectively constitute a broad class of intangible assets known as organizational capital.

The definition in Dessein and Prat [2022] also provides clear boundaries for what does not qualify as organizational capital. The four properties exclude several categories of firm attributes. For example, tangible assets (e.g., a factory or valuable real estate) may be slow-moving and affect performance, but they fail Property 3 ("being intangible"). Short-term tactics, such as a one-off marketing campaign or temporary price discount, may boost current performance but fail Property 2 ("changes slowly over time"); these are tactics rather than accumulated capital. Externally acquired, codified assets (such as a specific product patent or a software license) may be intangible, but they often fail Property 4 ("produced at least partly inside the firm with the active participation of top management"), as they can be purchased without reflecting internal, leader-driven processes that build culture or management systems. Employee perks with no clear performance link, such as free lunch or generous vacation policies, may increase happiness, but if they do not demonstrably affect firm performance through mechanisms like improved productivity, it fails

Property 1 (“it affects firm performance”). Accordingly, our measurement process enforces the boundaries of the conceptual definition.²

2.2 CHALLENGES AND OPPORTUNITIES

Measuring organizational capital is inherently challenging due to its intangible nature (Dessein and Prat [2022]). Previous studies have made considerable efforts to quantify organizational capital based on observable factors (Lev and Radhakrishnan [2005]; Eisfeldt and Papanikolaou [2013]). For example, Eisfeldt and Papanikolaou [2013] measure the stock of organizational capital by capitalizing SG&A expenses. They find that firms with higher cumulative SG&A have higher managerial quality scores constructed by Bloom and Van Reenen [2007], invest more in information technology, and are more likely to list the firm’s dependence on a number of key talents as a risk factor in 10-K files. This approach adopts an input perspective and focuses on measuring the amount of investments in organizational capital, that is, SG&A expenditures. However, the efficiency of converting SG&A expenditures into organizational capital could vary greatly between firms and involve considerable firm heterogeneity. SG&A expenditures may also be subject to managerial manipulation due to empire-building incentives (Chen et al. [2012]).

New developments in technology and information-sharing platforms, such as crowd-sourced reviews, offer a fresh perspective on this intangible asset. Because organizational capital is largely tacit—embedded in a firm’s culture, routines, and coordination practices, it remains difficult for outsiders to observe or infer from standard disclosures like 10-Ks or corporate websites. For example, Guiso et al. [2015] show that stated corporate values often fail to represent actual culture. In contrast, employee reviews on Glassdoor provide systematic, large-scale, and timely “inside-out” perspectives on organizational features. For example, Campbell and Shang [2022] demonstrate that the text of employee reviews contains specific signals about control systems and incentives that effectively predict corporate misconduct. Similarly, Cai et al. [2025] leverage machine learning on these reviews to measure product and service quality, demonstrating that employee voices provide a powerful, forward-looking, and scalable signal of

² Specifically, for the seed word approach, we begin with a focused set of seed words drawn directly from the theoretical definition of organizational capital. Using a word-embedding model, we then identify the broader vocabulary employees use in similar contexts. The resulting expanded dictionary (appendix B) provides a data-driven map of how employees discuss these core concepts. Terms related to compensation or specific job tasks are naturally down-weighted or excluded, as they are contextually dissimilar to “culture” or “leadership.” The ChatGPT method enforces the theoretical definition even more directly. We supply the model with the four-property definition from Dessein and Prat [2022] and ask it to generate synthetic reviews exemplifying strong and weak organizational capital. These AI-generated texts serve as theoretical benchmarks. An actual employee review scores highly only insofar as it is semantically similar to these examples, ensuring that the measure captures the construct itself, not generic positivity or negativity.

firm quality provision. Consistent with this logic, we argue that employee reviews offer an ideal lens through which to measure organizational capital. Because employees directly experience the culture, coordination, and managerial systems that constitute organizational capital, their narratives naturally capture the tacit features of organizational capital.

3. *Data, Measure, and Summary Statistics*

3.1 MEASURING ORGANIZATIONAL CAPITAL

3.1.1. Glassdoor Data. We use an original panel data set created from Glassdoor reviews to quantify firm-level organizational capital. Glassdoor, launched in 2008, is a popular online platform that provides comprehensive information about company reviews, salary reports, job interview reports, and CEO approval ratings. Former and current employees can post reviews about their experience working at specific companies. At the end of January 2022, Glassdoor reported 55 million unique monthly visitors and 1.9 million employers reviewed on Glassdoor.³ The reviewers are diverse. There are 190,226 different job titles, and most of the reviewers are rank-and-file employees rather than senior executives (Karabarbounis and Pinto [2018]).

We obtain reviews from Glassdoor for S&P 1500 firms from 2008 to 2020 and aggregate them to build a firm-year panel.^{4,5} The original sample includes over a million reviews. A key concern in using Glassdoor reviews is potential self-selection bias. However, several of Glassdoor's platform policies help mitigate this issue and improve the representativeness of reviewers. The platform's "give-to-get" system requires users to submit a review before accessing others, reducing the likelihood that reviews come predominantly from employees with extreme opinions (Marinescu et al. [2021]; deHaan et al. [2023]). Users must also verify their identity through an active email address or a valid social media account, limiting opportunities for company-driven self-promotion (Green et al. [2019]). Moreover, Glassdoor's anonymity policy encourages candid feedback by eliminating reputational concerns, and its 24-hour verification process combining

³ See <https://expandedramblings.com/index.php/numbers-15-interesting-glassdoor-statistics/>.

⁴ Glassdoor data are widely used in prior studies. For example, Lee et al. [2021] find that corporate tax avoidance news negatively affects employee perception of the company, as evidenced by the decline in Glassdoor ratings. Green et al. [2019] find that firms experiencing improvements in Glassdoor ratings significantly outperform firms with declines.

⁵ We choose to use reviews posted by both former and current employees as our main sample following prior literature (e.g., Campbell and Shang [2022]; Lee et al. [2021]; Graham et al. [2022]). In addition, current employees might feel constrained in expressing their opinions due to their ongoing employment, while former employees might be more candid and open. Incorporating reviews from both groups can provide a more balanced and comprehensive assessment.

algorithmic and human checks helps ensure that reviews originate from genuine employees, enhancing data reliability.⁶

3.1.2. Text Preprocessing. We first tokenize the reviews using the NLTK package.⁷ Moreover, since phrases play a crucial role in conveying organizational capital, we then use the “Phrases” function from Gensim to identify potential bigrams within these tokens.⁸ This function scans the tokenized text for frequently co-occurring word pairs. In training the bigram model, we set `min_count = 10`, filtering out all words and bigrams that appear fewer than 10 times in the entire data set, thereby eliminating rare or potentially uninformative pairs. Furthermore, we set the threshold parameter to 10. The threshold parameter is a measure of the strength of association between word pairs and assists in selecting bigrams that are both frequent and contextually relevant, ensuring a meaningful and coherent model output.

3.1.3. Word Embedding. We perform word embedding on the preprocessed Glassdoor reviews to understand their meanings. The basic concept of the word embedding model is that words occurring in similar contexts have similar meanings (Harris [1954]). The word embedding model is often implemented using the Word2Vec algorithm developed by Mikolov, Yih, and Zweig [2013].

We use Gensim Word2Vec to train the word embedding model.⁹ We set the vector size to 300 to capture a wide range of semantic relations while maintaining computational efficiency. The window size is set to 5, indicating that the model considers five words or bigrams before and after the target word or bigram in the text to learn word associations.¹⁰ Furthermore, we train the model for 20 iterations. Each iteration helps the model adjust the word vectors to better capture the nuances of their meanings and contextual relations. The number of iterations is chosen to balance model accuracy and training time, ensuring that the embeddings are well-trained without overfitting the training data.

3.1.4. Seed Word–Based Measure of Organizational Capital. The first measure of organizational capital is a seed word–based metric. Specifically, we

⁶ Another concern is that Glassdoor data have limited coverage, and many firms have very few reviews (Li et al. [2021]). According to Li et al. [2021], the median number of reviews for a public firm in a year is only five based on Glassdoor.com. However, our sample only includes S&P1500 firms. These firms are typically larger than an average public firm and contain more reviews. To further address the concern, we exclude the firm-years with fewer than five employee reviews and repeat the analysis in section 4.1. The results, reported in table A18 of the online appendix, remain economically and statistically consistent.

⁷ <https://www.nltk.org/index.html>.

⁸ <https://radimrehurek.com/gensim/models/phrases.html>.

⁹ <https://radimrehurek.com/gensim/models/word2vec.html>.

¹⁰ We also conduct a robustness test with a window length equal to 10. As reported in table A1, the new measures are highly correlated with those at a window length of 5 (coefficient > 0.97 and $p < 0.01$), suggesting that our measurement is robust to the choice of window length.

first identify a list of words that capture the essence of organizational capital based on its definition in Dessein and Prat [2022], reported in appendix B. We then obtain the embedding vector for each seed word using the Word2Vec model trained in section 3.1.3 and average the vectors to obtain a representative vector of “organizational capital,” v_R . Specifically, $s = 1, 2, \dots, S_{i,t}$ refers to the seed words in the seed word list in appendix B, while v_s represents the embedding vector of each seed word s .

$$v_R = \frac{1}{S_{i,t}} \sum_s^{S_{i,t}} v_s.$$

Next, we calculate the cosine similarity between this representative vector and each token in the corpus (i.e., all the words and bigrams in the reviews), and obtain the top 500 words with the highest cosine similarity to the representative vector. These 500 words constitute the expanded dictionary for “organizational capital.” Appendix B reports the top 50 words in the expanded dictionary and their respective cosine similarities to the representative vector of organizational capital.

To score the presence of organizational capital indicated by each review, we identify all tokens appearing in the expanded dictionary and sum their cosine similarities. Specifically, the organizational capital score of review m is calculated as:

$$Score_m = \sum_b^{B_{i,t}} 1\{b \in \mathbb{C}\} \times \frac{v_b \cdot v_R}{|v_b||v_R|},$$

where $b = 1, 2, \dots, B_{i,t}$ are the bigrams in review m . $\mathbb{C}$ is the 500-word expanded dictionary listed in appendix B. v_b is the embedding vector of bigram b . v_R is the representative vector of organizational capital. Unlike word count or TF-IDF (term frequency-inverse document frequency), which focuses on the frequency of word occurrence, cosine similarity evaluates how closely the meanings of words align with the concept of organizational capital, thereby providing a more nuanced understanding of semantics.

We aggregate the review-level measure to the firm-year-level by taking the average. Notably, since each review includes a “pros” and a “cons” section—allowing for the expression of both positive and negative aspects of a company—we calculate separate averages for these sections. The net measure of organizational capital, termed “Raw Org Capital (Seed Word),” is derived by subtracting the average “cons” score from the average “pros” score.

$$Raw\ Org\ Capital(Seed\ Word)_{i,t} = \frac{1}{M} \sum_m^M Score_{m_{pros}} - \frac{1}{M} \sum_m^M Score_{m_{cons}},$$

where $m = 1, 2, \dots, M$ refers to the reviews of firm i in year t . $Score_{m_{pros}}$ denotes the organizational capital score for the pros section in review m , and

$Score_{m_{cons}}$ represents the organizational capital score for the cons section in review m .¹¹

3.1.5. ChatGPT-Based Measure. In our second approach to quantifying organizational capital, we utilize ChatGPT-4 (with a default temperature of around 0.7) to generate synthetic employee reviews. We input the definition of organizational capital into ChatGPT and prompt it to create 100 positive employee reviews indicative of strong organizational capital and 100 negative employee reviews reflective of weak organizational capital. Appendix C reports the details of the prompt and 20 sample synthetic reviews.

Next, we tokenize the 200 reviews using a method similar to that described in section 3.1.2, and obtain the embedding vector for each token in the reviews using the model trained in section 3.1.3. For each synthetic review, we average the vectors of its tokens to obtain a score vector. We then average the review-level vectors for all positive reviews to obtain a representative vector for strong organizational capital and for all negative reviews to obtain a representative vector for weak organizational capital.

$$v_{strong} = \frac{1}{100} \sum_{k_s=1}^{100} \left(\frac{1}{B_{k_s}} \sum_{b_s}^{B_{k_s}} v_{b_s} \right),$$

$$v_{weak} = \frac{1}{100} \sum_{k_w=1}^{100} \left(\frac{1}{B_{k_w}} \sum_{b_w}^{B_{k_w}} v_{b_w} \right),$$

where $k_s = 1, 2, \dots, 100$ ($k_w = 1, 2, \dots, 100$) is the 100 positive (negative) reviews indicating strong (weak) organizational capital, $b_s = 1, 2, \dots, B_{k_s}$ ($b_w = 1, 2, \dots, B_{k_w}$) are the bigrams in positive (negative) review k_s (k_w), and v_{b_s} (v_{b_w}) is the embedding vector of bigram b_s (b_w).

To apply the representative vectors to real employee reviews, we first calculate the score vector of the pros (cons) section of real review m , $v_{m_{pros}}$ ($v_{m_{cons}}$), by averaging the vectors of all tokens in the pros (cons) section of review m . After that, we calculate the similarity between each “pros” review and the representative vector for strong organizational capital, $sim_{m_{pros}}$, and the similarity between each “cons” review and the representative vector for weak organizational capital, $sim_{m_{cons}}$.

$$v_{m_{pros}} = \frac{1}{B_{m_{pros}}} \sum_{b_{m_{pros}}}^{B_{m_{pros}}} v_{b_{m_{pros}}},$$

$$v_{m_{cons}} = \frac{1}{B_{m_{cons}}} \sum_{b_{m_{cons}}}^{B_{m_{cons}}} v_{b_{m_{cons}}},$$

$$sim_{m_{pros}} = \frac{v_{m_{pros}} \cdot v_{strong}}{|v_{m_{pros}}| |v_{strong}|},$$

¹¹ In the raw data, 67% of employee reviews contain at least one word from the 500-word expanded dictionary of organizational capital.

$$sim_{m_{cons}} = \frac{v_{m_{cons}} \cdot v_{weak}}{|v_{m_{cons}}| |v_{weak}|}.$$

To derive a firm-year measure, we average these similarity scores for all reviews pertaining to a firm in a specific year. The final measure, named “Raw Org Capital (ChatGPT),” is obtained by subtracting the average $sim_{m_{cons}}$ from the average $sim_{m_{pros}}$.

$$Raw\ Org\ Capital\ (ChatGPT)_{i,t} = \frac{1}{M} \sum_m^M sim_{m_{pros}} - \frac{1}{M} \sum_m^M sim_{m_{cons}},$$

where $m = 1, 2, \dots, M$ is the reviews of firm i in year t . This ChatGPT-based measure offers an innovative approach by leveraging AI-generated content to model and quantify the abstract concept of organizational capital, thus providing a unique perspective that complements traditional analysis methods.

3.1.6. Combination of the Seed Word Measure and ChatGPT Measure. As the seed word-based measure and the ChatGPT-based measure have different scales, to ensure meaningful comparison, we standardize Raw Org Capital (Seed Word) and Raw Org Capital (ChatGPT), and obtain Org Capital (Seed Word) and Org Capital (ChatGPT).¹²

Additionally, we introduce “Org Capital (Average),” which is calculated as the average of the “Org Capital (Seed Word)” and “Org Capital (ChatGPT).” This combined measure integrates the insights from both methods and provides a comprehensive view of organizational capital. While the seed word measure offers a direct application of the definition of organizational capital to the target text, the ChatGPT measure incorporates AI processing, ensuring that the measurement benchmarks (i.e., the synthetic reviews) are more closely tailored to the target text. Therefore, in contexts where high organizational capital is directly indicated by the presence of specific organizational capital-related words, the seed word measure is more appropriate. Conversely, in settings where organizational capital is reflected indirectly through other phrases or connotations, the ChatGPT measure is preferable, as the advantage of the ChatGPT approach lies in its ability to generate synthetic reviews that reflect a nuanced understanding of organizational capital, potentially capturing context-specific language that a pre-selected set of seed words might miss. In other situations, researchers can use the average of the seed word measure and the ChatGPT measure for a balanced assessment.

Moreover, considering the methodology used to construct our variables, the measure of organizational capital yields more insightful interpretations

¹² We report robustness tests using the Raw Org Capital (Seed Word) and Raw Org Capital (ChatGPT) in table A22 of the online appendix.

TABLE 1
Descriptive Statistics

	Count	Mean	p50	SD	Min	Max
Org Capital (Seed Word)	15446	0.006	0.083	0.930	-11.524	9.214
Org Capital (ChatGPT)	15446	0.003	0.012	0.988	-6.327	6.225
Org Capital (Average)	15446	0.005	0.030	0.827	-8.559	7.015
Pct Org Capital (Seed Word)	15446	50.454	50.000	28.530	1.000	100.000
Pct Org Capital (ChatGPT)	15446	50.648	51.000	28.748	1.000	100.000
Pct Org Capital (Average)	15446	50.613	51.000	28.551	1.000	100.000
Cumulative SG&A	10852	-0.000	-0.091	1.000	-3.953	18.404
Overall Rating	15446	3.209	3.238	0.658	1.000	5.000
Balance Rating	15374	3.272	3.294	0.653	1.000	5.000
Culture Rating	11964	3.173	3.195	0.710	1.000	5.000
Opportunities Rating	15370	2.981	3.000	0.632	1.000	5.000
Compensation Rating	15374	3.314	3.333	0.618	1.000	5.000
Management Rating	15367	2.862	2.864	0.694	1.000	5.000
ROA	15445	4.115	4.046	8.372	-34.133	26.496
P/B Ratio	14705	3.246	2.252	5.474	-18.626	35.047
Ln(Total Assets)	15446	8.336	8.269	1.757	2.630	15.035
Firm Age	15446	28.662	25.000	17.571	1.000	71.000
Sales Growth	15242	0.060	0.046	0.189	-0.462	0.910
Leverage	15388	0.928	0.558	2.610	-10.057	16.660

This table reports the descriptive statistics of the main variables used in the analysis.

when viewed in relative terms, rather than absolute. To facilitate this perspective, we convert the values of “Org Capital (Seed Word),” “Org Capital (ChatGPT),” and “Org Capital (Average)” into percentile rankings. This transformation results in the creation of “Pct Org Capital (Seed Word),” “Pct Org Capital (ChatGPT),” and “Pct Org Capital (Average).” Each of these percentile-based measures ranges from 1 to 100, representing a relative positioning within the entire data set. This approach enables a more nuanced comparison of organizational capital across different entities, emphasizing their relative standing rather than focusing solely on their specific scores.

3.2 SAMPLE CONSTRUCTION

We merge the organizational capital measure from Glassdoor reviews with financial data from Compustat and CRSP. The sample consists of 15,446 firm-year observations from 1,572 companies, with a sample period from 2008 to 2020.

3.3 DESCRIPTIVE STATISTICS

Table 1 reports the descriptive statistics of the measures of organizational capital. Figure 1 plots the average organizational capital in each year from 2008 to 2020. The figure shows that the average organizational capital was low during the post-financial crisis period (2008–2010), gradually rose between 2011 and 2015, plateaued from 2015 to 2019, and then drastically rose in 2020. To explore the cross-sectional variation of organizational

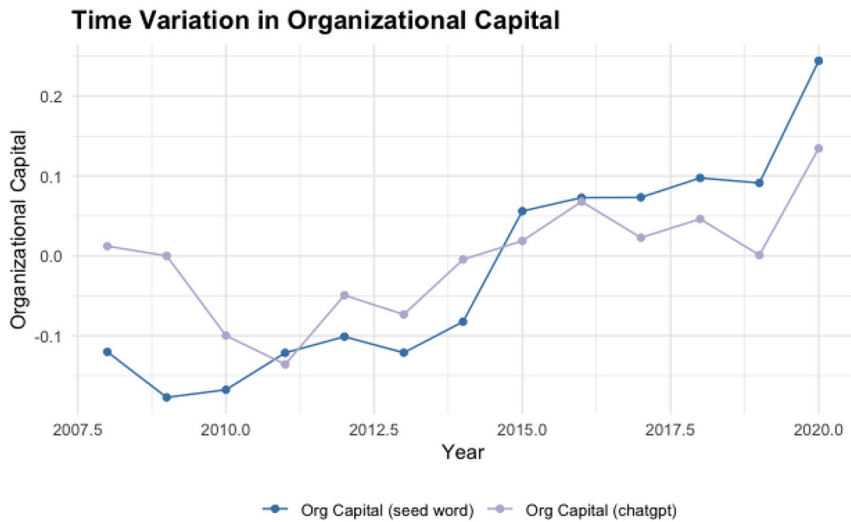


FIG. 1.—Time variation in organizational capital. This figure plots the average organizational capital in each year from 2008 to 2020.

capital, figure 2 plots the average organizational capital in each industry. The industry classification follows the Division Structure in Standard Industrial Classification (SIC) Manual from Occupational Safety and Health Administration (OSHA).¹³ We drop “Division A: Agriculture, Forestry, and Fishing” and “Division J: Public Administration” because there are not enough observations in these two industry groups. The descriptive statistics by industry provide insight into the relative organizational capital across different industries, which enhances our understanding of the nature of organizational capital and its development within various industrial contexts. The graphs show that the mining industry, wholesale trade industry, and manufacturing industry on average have low organizational capital, while the finance and real estate industry and retail trade industry on average have high organizational capital, suggesting that B2B (Business-to-Business) firms on average exhibit lower organizational capital than B2C (Business-to-Customer) firms.^{14 15}

¹³ <https://www.osha.gov/data/sic-manual>

¹⁴ Figure A1 of the online appendix plots the average organizational capital of firms in Fama-French 17 Industries, suggesting a similar pattern.

¹⁵ Note that the organizational capital measures are standardized. A positive or negative sign only indicates that the measure is above or below the mean, rather than implying a negative correlation. The observed difference between the seed word-based measure and the ChatGPT-based measure stems from the language employees typically use within their industry. For instance, employees using conversational language may not explicitly reference the academic terms included in the seed word-based dictionary. Conversely, the ChatGPT-based measure captures a more nuanced representation of organizational capital by interpreting

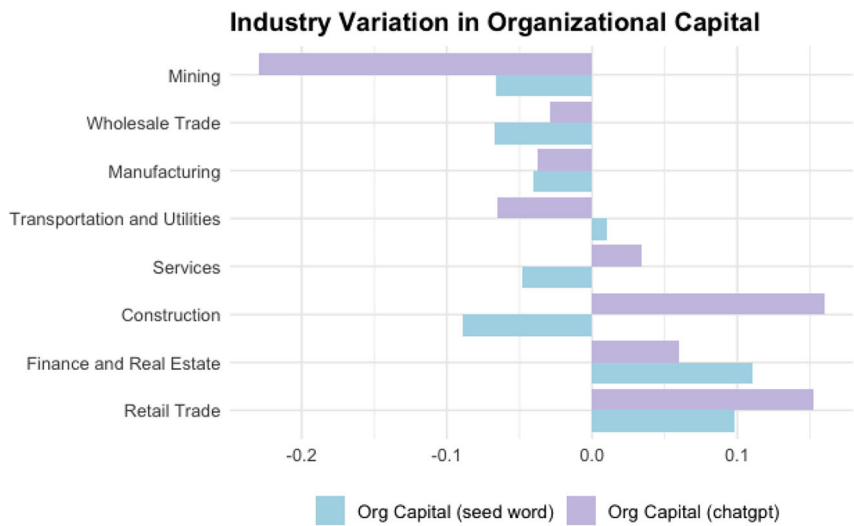


FIG. 2.—Industry variation in organizational capital. This figure plots the average organizational capital in each industry. The industry classification follows the Division Structure in Standard Industrial Classification (SIC) Manual from the Occupational Safety and Health Administration (OSHA) (<https://www.osha.gov/data/sic-manual>). We drop “Division A: Agriculture, Forestry, And Fishing” and “Division J: Public Administration” because there are not enough observations in these two industry groups.

3.4 VARIANCE DECOMPOSITION

To explore the extent to which our measure of organizational capital explains firm-level variation, table 2 A reports the *R*-squared of the regressions of organizational capital on year fixed effects, two-digit SIC industry fixed effects, industry fixed effects + year fixed effects, industry*year fixed effects, firm fixed effects, firm fixed effects + year fixed effects, CEO fixed effects, CEO fixed effects + year fixed effects, CEO*firm fixed effects, and CEO*firm fixed effects + year fixed effects. Figure 3 plots the incremental variation in organizational capital explained by these fixed effects, corresponding to rows 1, 3, 6, and 10 in table 2 A.

The results show that industry and year-level variation explain less than 5% of the variation in organizational capital; firm-level heterogeneity explains less than 25% of the variation in organizational capital; and CEO fixed effects explain about 35% of incremental variation. The findings indicate that Org Capital (Seed Word) and Org Capital (ChatGPT) capture not only firm heterogeneity but also substantial within-firm variation. Moreover,

informal or implied language. Thus, we recommend using the seed word–based measure for formal texts and the ChatGPT-based measure for informal contexts.

TABLE 2
Variance Decomposition

Panel A			
No.	Fixed Effects	Org Capital (Seed Word)	Org Capital (ChatGPT)
1	Year Fixed Effects	1.8%	0.5%
2	Industry Fixed Effects	1.5%	2.5%
3	Industry Fixed Effects + Year Fixed Effects	3.3%	3.0%
4	Industry * Year Fixed Effects	7.8%	7.4%
5	Firm Fixed Effects	21.9%	23.9%
6	Firm Fixed Effects + Year Fixed Effects	23.7%	24.3%
7	CEO Fixed Effects	34.7%	35.8%
8	CEO Fixed Effects + Year Fixed Effects	35.7%	36.2%
9	CEO * Firm Fixed Effects	35.0%	36.1%
10	CEO * Firm Fixed Effects + Year Fixed Effects	35.9%	36.4%
Panel B			
(1) Construction			
		Org Capital (Seed Word)	Org Capital (ChatGPT)
Year Fixed Effects		5.8%	5.2%
Firm Fixed Effects		18.5%	22.0%
Year Fixed Effects + Firm Fixed Effects		24.4%	27.2%
CEO Fixed Effects		25.2%	42.3%
CEO Fixed Effects + Year Fixed Effects		30.4%	44.6%
CEO * Firm Fixed Effects		25.2%	42.3%
CEO * Firm Fixed Effects + Year Fixed Effects		30.4%	44.6%
(2) Finance and Real Estate			
		Org Capital (Seed Word)	Org Capital (ChatGPT)
Year Fixed Effects		2.1%	1.3%
Firm Fixed Effects		19.8%	23.6%
Year Fixed Effects + Firm Fixed Effects		21.6%	24.4%
CEO Fixed Effects		30.9%	34.8%
CEO Fixed Effects + Year Fixed Effects		32.6%	35.7%
CEO * Firm Fixed Effects		31.3%	34.9%
CEO * Firm Fixed Effects + Year Fixed Effects		32.8%	35.8%
(3) Manufacturing			
		Org Capital (Seed Word)	Org Capital (ChatGPT)
Year Fixed Effects		1.7%	0.4%
Firm Fixed Effects		20.7%	23.0%
Year Fixed Effects + Firm Fixed Effects		22.4%	23.4%
CEO Fixed Effects		35.4%	34.8%
CEO Fixed Effects + Year Fixed Effects		36.3%	35.1%
CEO * Firm Fixed Effects		35.6%	35.1%
CEO * Firm Fixed Effects + Year Fixed Effects		36.5%	35.4%

(Continued)

TABLE 2—(Continued)

Panel B		
(4) Mining		
	Org Capital (Seed Word)	Org Capital (ChatGPT)
Year Fixed Effects	3.1%	6.7%
Firm Fixed Effects	21.5%	20.6%
Year Fixed Effects + Firm Fixed Effects	23.9%	25.9%
CEO Fixed Effects	31.3%	36.5%
CEO Fixed Effects + Year Fixed Effects	33.6%	39.2%
CEO * Firm Fixed Effects	31.6%	36.7%
CEO * Firm Fixed Effects + Year Fixed Effects	33.9%	39.4%
(5) Retail Trade		
	Org Capital (Seed Word)	Org Capital (ChatGPT)
Year Fixed Effects	2.5%	1.9%
Firm Fixed Effects	26.2%	20.9%
Year Fixed Effects + Firm Fixed Effects	29.0%	23.0%
CEO Fixed Effects	39.3%	30.4%
CEO Fixed Effects + Year Fixed Effects	40.2%	31.6%
CEO * Firm Fixed Effects	39.4%	30.5%
CEO * Firm Fixed Effects + Year Fixed Effects	40.3%	31.7%
(6) Services		
	Org Capital (Seed Word)	Org Capital (ChatGPT)
Year Fixed Effects	6.7%	2.0%
Firm Fixed Effects	28.1%	29.5%
Year Fixed Effects + Firm Fixed Effects	34.3%	31.1%
CEO Fixed Effects	38.4%	38.4%
CEO Fixed Effects + Year Fixed Effects	41.7%	39.9%
CEO * Firm Fixed Effects	38.4%	38.4%
CEO * Firm Fixed Effects + Year Fixed Effects	41.7%	39.9%
(7) Transportation and Utilities		
	Org Capital (Seed Word)	Org Capital (ChatGPT)
Year Fixed Effects	1.4%	1.0%
Firm Fixed Effects	19.8%	22.6%
Year Fixed Effects + Firm Fixed Effects	21.2%	23.4%
CEO Fixed Effects	37.5%	38.3%
CEO Fixed Effects + Year Fixed Effects	38.7%	39.0%
CEO * Firm Fixed Effects	37.6%	38.4%
CEO * Firm Fixed Effects + Year Fixed Effects	38.8%	39.1%
(8) Wholesale Trade		
	Org Capital (Seed Word)	Org Capital (ChatGPT)
Year Fixed Effects	5.5%	1.4%

(Continued)

TABLE 2—(Continued)

Panel B		
Firm Fixed Effects	20.8%	15.7%
Year Fixed Effects + Firm Fixed Effects	25.8%	16.9%
CEO Fixed Effects	32.2%	30.5%
CEO Fixed Effects + Year Fixed Effects	36.3%	33.0%
CEO * Firm Fixed Effects	32.2%	30.5%
CEO * Firm Fixed Effects + Year Fixed Effects	36.3%	33.0%

This table reports the *R*-squared of the regressions of organizational capital on year fixed effects, industry fixed effects, industry fixed effects + year fixed effects, industry*year fixed effects, firm fixed effects, firm fixed effects + year fixed effects, CEO fixed effects, CEO fixed effects + year fixed effects, CEO-firm fixed effects, and CEO-firm fixed effects + year fixed effects, where industries are classified by 2-digit SIC code. Panel A reports the variance decomposition for the whole sample. Panel B reports the variance decomposition for each broad industry classified by the Occupational Safety and Health Administration (OSHA) based on SIC code (<https://www.osha.gov/data/sic-manual>). We drop “Division A: Agriculture, Forestry, And Fishing” and “Division J: Public Administration” because there are not enough observations in these two industry groups.

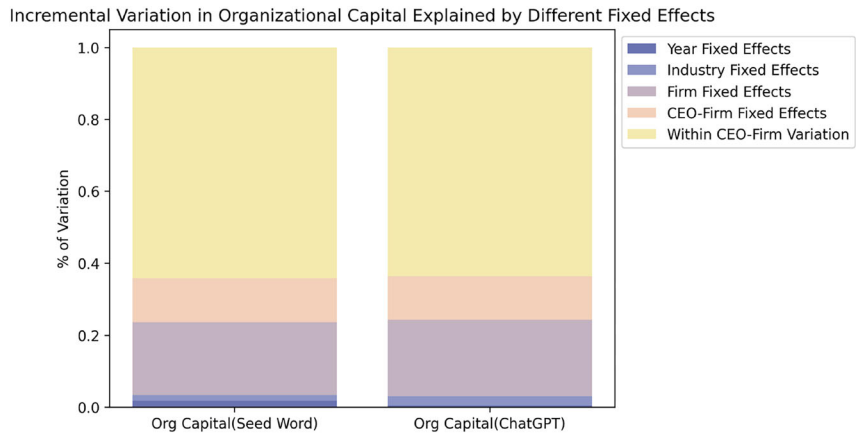


FIG. 3.—Variance decomposition. This figure plots the incremental variation in organizational capital explained by year fixed effects, year fixed effects + industry fixed effects, year fixed effects + firm fixed effects, and year fixed effects + CEO*firm fixed effects, corresponding to rows 1, 3, 6, and 10 in table 2 A.

the results are similar for both Org Capital (Seed Word) and Org Capital (ChatGPT), thus partially validating the two measures.

Table 2 B reports the variance decomposition for each broad industry classified by the OSHA. We exclude “Division A: Agriculture, Forestry, and Fishing” and “Division J: Public Administration” due to insufficient observations in these two industry groups. The results are similar to those obtained using the whole sample.

4. Validation Tests

4.1 PROPERTIES OF ORGANIZATIONAL CAPITAL

To validate the measures, we test empirical predictions motivated by the important role of organizational capital discussed in the literature. Dessein and Prat [2022] suggest that organizational capital exhibits the following four properties: (1) it affects firm performance; (2) it changes slowly over time; (3) being intangible, it is not perfectly observable; and (4) it must be produced at least partly inside the firm with the active participation of the firm's top management.¹⁶

4.1.1. Association with Firm Performance. According to Dessein and Prat [2022], organizational capital affects firm performance through several interlinked mechanisms. First, organizational capital, consisting of factors such as management practices, corporate culture, and systems that improve decision-making and employee motivation, serves as a foundation for long-term value creation. Unlike physical assets, this intangible capital grows gradually, fostering enduring improvements in productivity. When a capable CEO focuses on cultivating these intangible aspects over short-term profits, the firm sees a consistent boost in profitability and resilience, benefiting from compounded gains over time. In addition, organizational capital reduces agency problems by aligning CEO actions with shareholder interests. Strong governance, combined with a CEO's commitment to building organizational capital, reduces tendencies toward short-term decision-making. This focus on the organization's long-term health yields cumulative benefits to firm value, as it minimizes costs associated with turnover, inefficiency, and organizational disruption. Although the theory implies a causal relation, our empirical analysis should be viewed as documenting correlations. In particular, we follow Bloom and Van Reenen [2007], who examine the association between management practices, a specific form of organizational capital, and firm performance without claiming causality. Our analysis adopts the same logic: The correlation between our measure and firm outcomes serves as evidence that it captures economically meaningful organizational attributes.

Motivated by the theoretical positive relation between organizational capital and firm performance, we empirically explore the relation between organizational capital and firm performance by estimating the following equation:¹⁷

$$Performance_{it} = \beta_0 + \beta_1 OrgCapital_{it} + X'_{it}\gamma + \delta_{mt} + \epsilon_{it}, \quad (1)$$

¹⁶ We also repeat all tests in this section using Raw Org Capital (Seed Word) and Raw Org Capital (ChatGPT) and report the results in table A22. The findings are economically and statistically similar.

¹⁷ Table A21 reports the corresponding univariate correlations, which are significantly positive.

where $Performance_{it}$ is measured by ROA and P/B ratio.¹⁸ $OrgCapital_{it}$ takes the value of Org Capital (ChatGPT), Org Capital (Seed Word), Org Capital (Average), Pct Org Capital (ChatGPT), Pct Org Capital (Seed Word), and Pct Org Capital (Average) of firm i in year t . Control variables X'_{it} consist of the natural log of total assets and firm age. We use light controls because controlling for the intermediate factors potentially influenced by organizational capital can lead to bad control problems. We also include industry*year fixed effects δ_{mt} and cluster standard errors at the firm level. We include industry*year fixed effects rather than firm fixed effects + year fixed effects because theory suggests a cross-sectional, rather than “within-firm,” relation between organizational capital and firm performance. We also repeat the analysis using firm fixed effects + year fixed effects and report the results in table A3 of the online appendix. The findings remain economically and statistically consistent. In all tests, we include year fixed effects to mitigate concerns that our results are driven by long-term shifts in Glassdoor usage.

The results are reported in table 3. The findings show that firms with higher organizational capital exhibit higher ROA and P/B ratio. Specifically, a one standard deviation in organizational capital (measured by the “Org Capital (Average)” variable) is associated with a 9.3% standard deviation increase in ROA (calculated as $0.944 \times 0.827 / 8.372$), and a 3.5% standard deviation increase in P/B ratio (calculated as $0.233 \times 0.827 / 5.474$). The findings are consistent with the first feature of organizational capital, thus partially validating the text-based measure of organizational capital. That said, the results should be interpreted as documenting correlations, not causality.

4.1.2. Slow-Moving. For the second property—slow-moving, the variance decomposition results in table 2 imply that firm fixed effects explain over 20% of the variation in organizational capital. This pattern aligns with the idea that organizational capital is neither fixed nor rapidly fluctuating but instead evolves gradually as firms learn and adapt. In this context, “slow-moving” refers to incremental adjustment over time rather than complete stability, and the observed within-firm variation is consistent with an intangible stock that accumulates or erodes gradually. The magnitude is also comparable to that in prior literature. For example, Hassan et al. [2019] document that the permanent differences across firms in a given sector (i.e., firm-sector pair fixed effects) account for around 20% of the variation in the measure of firms’ political risk.

We also empirically test whether organizational capital evolves smoothly within the firm with no abrupt structural breaks. First, we calculate the absolute value of the year-by-year change in organizational capital and find

¹⁸ In table A2 of the online appendix, we use ROE as the outcome variable and repeat the analysis. The results remain economically and statistically consistent. We multiplied ROA and ROE by 100%.

TABLE 3
Organizational Capital and Firm Performance

Panel A: ROA						
	(1) ROA	(2) ROA	(3) ROA	(4) ROA	(5) ROA	(6) ROA
Org Capital (Seed Word)	0.522*** (0.111)					
Org Capital (ChatGPT)		0.855*** (0.091)				
Org Capital (Average)			0.944*** (0.119)			
Pct Org Capital (Seed Word)				0.026*** (0.003)		
Pct Org Capital (ChatGPT)					0.034*** (0.003)	
Pct Org Capital (Average)						0.034*** (0.003)
Ln(Total Assets)	0.434*** (0.123)	0.439*** (0.122)	0.432*** (0.122)	0.435*** (0.123)	0.442*** (0.122)	0.431*** (0.122)
Firm Age	0.009 (0.008)	0.010 (0.008)	0.009 (0.008)	0.008 (0.008)	0.010 (0.008)	0.009 (0.008)
Constant	0.245 (1.021)	0.170 (1.015)	0.249 (1.015)	-1.030 (1.054)	-1.593 (1.057)	-1.452 (1.055)
Observations	15445	15445	15445	15445	15445	15445
Adjusted R ²	0.124	0.131	0.129	0.128	0.134	0.134
Industry*Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Panel B: P/B ratio						
	(1) P/B Ratio	(2) P/B Ratio	(3) P/B Ratio	(4) P/B Ratio	(5) P/B Ratio	(6) P/B Ratio
Org Capital (Seed Word)	0.114** (0.048)					
Org Capital (ChatGPT)		0.222*** (0.043)				
Org Capital (Average)			0.233*** (0.054)			
Pct Org Capital (Seed Word)				0.006*** (0.002)		
Pct Org Capital (ChatGPT)					0.010*** (0.002)	
Pct Org Capital (Average)						0.009*** (0.002)
Ln(Total Assets)	0.159** (0.066)	0.160** (0.066)	0.158** (0.066)	0.159** (0.066)	0.160** (0.066)	0.157** (0.066)
Firm Age	-0.001 (0.007)	-0.001 (0.007)	-0.001 (0.007)	-0.001 (0.007)	-0.001 (0.007)	-0.001 (0.007)
Constant	1.965*** (0.491)	1.947*** (0.490)	1.969*** (0.491)	1.679*** (0.499)	1.415*** (0.487)	1.527*** (0.493)
Observations	14705	14705	14705	14705	14705	14705
Adjusted R ²	0.045	0.046	0.046	0.045	0.047	0.047
Industry*Year FE	Yes	Yes	Yes	Yes	Yes	Yes

(Continued)

TABLE 3—(Continued)

This table reports the results from regressions estimating the relation between organizational capital and firm performance. The dependent variable is ROA in Panel A and P/B Ratio in panel B. (ROA is multiplied by 100%.) All variables are defined in appendix A. All regressions include industry*year fixed effects. Standard errors clustered at the firm level are reported in parentheses. *, **, *** indicate two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively.

that, for both the seed word-based measure and the ChatGPT-based measure, around two-thirds of the absolute changes are smaller than the overall standard deviation of the respective measure. Second, we perform a structural break test (Bai and Perron [1998]), and find that 98.6% of firms exhibit no structural breaks in Org Capital (Seed Word), and that 99.11% of firms exhibit no structural breaks in Org Capital (ChatGPT). Taken together, these results show that our measure captures a smooth and gradual process, which is consistent with the slow-moving property.

4.1.3. Intangible. To validate the third property—intangible, we explore the correlation between organizational capital and other measures related to the firm’s intangible assets, such as Glassdoor ratings and Fortune 100 Best Companies to Work. The results are reported in table 4.¹⁹

Table 4 A reports the correlation between our text-based measures of organizational capital and Glassdoor ratings. The rating for firm i in year t is the average of all ratings submitted by its employees in year t . This measure captures the employees’ evaluation of the company’s multiple aspects, including work-life balance, culture, diversity, career opportunities, compensation, and management quality. The results indicate that our text-based measures of organizational capital are significantly positively correlated with the Glassdoor overall rating and all sub-ratings. Moreover, the correlations with compensation rating and work-life balance rating are smaller while the correlations with culture rating and management rating are larger, suggesting that Org Capital (ChatGPT) and Org Capital (Seed Word) capture not only the “hard” quantifiable employee benefits but also the “softer” and more intangible firm capital. Table 4 B reports the results of t-tests showing that firms in the “Fortune 100 Best Companies to Work” list have significantly higher organizational capital. The findings suggest that firms with higher organizational capital generally enjoy better reputations.²⁰

¹⁹ Section 4.2 provides additional evidence validating the intangible nature of our organizational capital measure.

²⁰ Proposition 2 in Dessein and Prat [2022] suggests that the right tail of the distribution of organizational capital follows a power law. We interpret this as evidence that organizational capital, like other intangible phenomena such as knowledge, innovation, and firm dynamics, tends to be highly concentrated. A small number of firms may accumulate disproportionately high levels of organizational capital due to the self-reinforcing nature of intangible assets and their scalability. Figure A2 of the online appendix shows that the distribution of our organizational capital measure visually approximates a power law. However, formal statistical

TABLE 4
Organizational Capital and Intangibles

Panel A: Glassdoor ratings										
	Org Capital (Seed Word)	Org Capital (ChatGPT)	Org Capital (Average)	Pct Org Capital (Seed Word)	Pct Org Capital (ChatGPT)	Pct Org Capital (Average)	Overall Rating	Balance Rating	Culture Rating	Opportunities Rating
Org Capital (Seed Word)	1.00									
Org Capital (ChatGPT)	0.49 ^{***}	1.00								
Org Capital (Average)	0.85 ^{***}	0.87 ^{***}	1.00							
Pct Org Capital (Seed Word)	0.86 ^{***}	0.46 ^{***}	0.76 ^{***}	1.00						
Pct Org Capital (ChatGPT)	0.45 ^{***}	0.90 ^{***}	0.79 ^{***}	0.50 ^{***}	1.00					
Pct Org Capital (Average)	0.74 ^{***}	0.80 ^{***}	0.89 ^{***}	0.83 ^{***}	0.87 ^{***}	1.00				
Overall Rating	0.57 ^{***}	0.39 ^{***}	0.55 ^{***}	0.58 ^{***}	0.38 ^{***}	0.54 ^{***}	1.00			
Balance Rating	0.40 ^{***}	0.17 ^{***}	0.33 ^{***}	0.42 ^{***}	0.15 ^{***}	0.32 ^{***}	0.66 ^{***}	1.00		
Culture Rating	0.60 ^{***}	0.42 ^{***}	0.58 ^{***}	0.62 ^{***}	0.42 ^{***}	0.58 ^{***}	0.84 ^{***}	0.71 ^{***}	1.00	
Opportunities Rating	0.47 ^{***}	0.38 ^{***}	0.49 ^{***}	0.49 ^{***}	0.38 ^{***}	0.49 ^{***}	0.79 ^{***}	0.53 ^{***}	0.75 ^{***}	1.00

(Continued)

TABLE 4—(Continued)

Panel A: Glassdoor ratings															
	Org Capital (Seed Word)	Org Capital (ChatGPT)	Org Capital (Average)	Pct Org Capital (Seed Word)	Pct Org Capital (ChatGPT)	Pct Org Capital (Average)	Overall Rating	Balance		Culture		Opportunities		Compensation Management Rating	
								Rating	Rating	Rating	Rating	Rating	Rating	Rating	Rating
Compensation Rating	0.26***	0.13***	0.23***	0.27***	0.12***	0.21***	0.63***	0.47***	0.59***	0.60***	1.00				
Management Rating	0.57***	0.44***	0.58***	0.59***	0.43***	0.57***	0.82***	0.64***	0.85***	0.74***	0.55***	1.00			

Panel B: Best company to work						
	Mean (Firms NOT in 100 Best Companies to Work)		Mean (Firms in 100 Best Companies to Work)	Difference in Means	T-statistics	P-value
Org Capital (Seed Word)	0.002	0.442		-0.441	-6.134	0.000
Org Capital (ChatGPT)	-0.002	0.418		-0.419	-5.488	0.000
Org Capital (Average)	-0.000	0.430		-0.430	-6.733	0.000
Pct Org Capital (Seed Word)	50.218	71.870		-21.652	-9.842	0.000
Pct Org Capital (ChatGPT)	50.444	69.136		-18.692	-8.426	0.000
Pct Org Capital (Average)	50.370	72.645		-22.275	-10.120	0.000

This table reports the correlations between our measure of organizational capital and measures of intangible assets such as employee satisfaction. Specifically, panel A reports the correlation between our measure of organizational capital and Glassdoor Ratings. Panel B reports the results of *t* tests examining whether firms in the “Fortune 100 Best Companies to Work” list have significantly higher organizational capital. *, **, *** indicate significance at the 0.10, 0.05, and 0.01 levels, respectively.

4.1.4. Top Management's Influence. For the fourth property—top management's influence, we investigate how much of the variation in organizational capital is explained by a company's top management, that is, the CEO. The variance decomposition results in table 2 A imply that CEO fixed effects explain about 35% of the variation in organizational capital. Figure 3 also shows that CEO fixed effects explain an incremental 12% variation in addition to firm heterogeneity and time trend. Taken together, the findings show that a large proportion of the variation in our measure of organizational capital is associated with the firm's top management, which is consistent with the definition of organizational capital proposed by Dessein and Prat [2022].

4.2 COMPARISON WITH THE SG&A-BASED MEASURE

Eisfeldt and Papanikolaou [2013] develop a measure of organizational capital based on SG&A expenses. According to Eisfeldt and Papanikolaou [2013], SG&A expenses encompass costs associated with information systems development, employee training, research and development, consultant fees, and brand promotion, all of which contribute to the development of organizational capital. Specifically, the stock of organization capital each year is calculated by accumulating the deflated value of SG&A expenses based on the following equation:

$$Cumulative\ SG\&A_{i,t} = Cumulative\ SG\&A_{i,t-1} (1 - \delta_0) + \frac{SG\&A_{i,t}}{CPI_{i,t}},$$

where δ_0 denotes the amortization rate of organizational capital, and $CPI_{i,t}$ is the consumer price index. The initial stock of organization capital is estimated as:

$$Cumulative\ SG\&A_{i,t_0} = \frac{SG\&A_{i,t_0}}{(g + \delta_0)CPI_{i,t_0}},$$

where t_0 is the initial year for the firm in the sample. The amortization rate (δ_0) is 15%. The growth in the flow of organization capital g is estimated as the average real growth of firm-level SG&A expenses. Next, we scale $Cumulative\ SG\&A_{i,t}$ by the firm's total book assets in year t and de-mean the measure by subtracting the industry-year average. The variable is then standardized to ensure meaningful comparison with text-based organizational capital.

To assess whether our organizational capital measure provides explanatory power beyond the SG&A-based proxy, we add $Cumulative\ SG\&A_{it}$ as an additional control and re-estimate equation (1). As shown in table 5,

analysis following Cheynel et al. [2024] rejects the hypothesis that our data are drawn from a true power law distribution. One possibility is that our S&P 1500 sample captures only large, successful firms already in the upper tail of the organizational-capital distribution. Power-law behavior requires the full distribution, so restricting attention to the upper tail mechanically truncates the scaling pattern.

TABLE 5
Comparison with Cumulative SG&A

Panel A: ROA						
	(1) ROA	(2) ROA	(3) ROA	(4) ROA	(5) ROA	(6) ROA
Org Capital (Seed Word)	0.668*** (0.141)					
Org Capital (ChatGPT)		1.000*** (0.110)				
Org Capital (Average)			1.157*** (0.147)			
Pct Org Capital (Seed Word)				0.031*** (0.004)		
Pct Org Capital (ChatGPT)					0.040*** (0.004)	
Pct Org Capital (Average)						0.040*** (0.004)
Cumulative SG&A	-0.841*** (0.292)	-0.817*** (0.285)	-0.830*** (0.287)	-0.848*** (0.289)	-0.815*** (0.282)	-0.834*** (0.283)
Ln(Total Assets)	0.419*** (0.144)	0.443*** (0.143)	0.422*** (0.143)	0.414*** (0.143)	0.442*** (0.142)	0.414*** (0.141)
Firm Age	0.015 (0.010)	0.016 (0.010)	0.016 (0.010)	0.015 (0.010)	0.017* (0.010)	0.015 (0.010)
Constant	0.719 (1.118)	0.507 (1.114)	0.695 (1.113)	-0.798 (1.158)	-1.515 (1.154)	-1.275 (1.158)
Observations	10852	10852	10852	10852	10852	10852
Adjusted R ²	0.149	0.157	0.156	0.155	0.161	0.162
Industry*Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Panel B: P/B ratio						
	(1) P/B Ratio	(2) P/B Ratio	(3) P/B Ratio	(4) P/B Ratio	(5) P/B Ratio	(6) P/B Ratio
Org Capital (Seed Word)	0.128** (0.062)					
Org Capital (ChatGPT)		0.323*** (0.056)				
Org Capital (Average)			0.318*** (0.071)			
Pct Org Capital (Seed Word)				0.007*** (0.002)		
Pct Org Capital (ChatGPT)					0.014*** (0.002)	
Pct Org Capital (Average)						0.012*** (0.002)
Cumulative SG&A	0.101 (0.101)	0.108 (0.100)	0.103 (0.101)	0.099 (0.101)	0.109 (0.100)	0.102 (0.100)
Ln(Total Assets)	0.218*** (0.083)	0.223*** (0.083)	0.217*** (0.083)	0.217*** (0.083)	0.222*** (0.082)	0.214*** (0.083)
Firm Age	-0.008 (0.007)	-0.008 (0.007)	-0.008 (0.007)	-0.008 (0.007)	-0.007 (0.007)	-0.008 (0.007)

(Continued)

TABLE 5—(Continued)

	Panel B: P/B ratio					
	(1)	(2)	(3)	(4)	(5)	(6)
	P/B Ratio	P/B Ratio	P/B Ratio	P/B Ratio	P/B Ratio	P/B Ratio
Constant	1.782*** (0.611)	1.741*** (0.606)	1.793*** (0.608)	1.470** (0.624)	1.017 (0.619)	1.231** (0.623)
Observations	10745	10745	10745	10745	10745	10745
Adjusted R^2	0.039	0.042	0.041	0.040	0.044	0.042
Industry*Year FE	Yes	Yes	Yes	Yes	Yes	Yes

This table reports the results from regressions estimating the relation between organizational capital and firm performance after controlling for cumulative SG&A. The dependent variable is ROA in panel A and P/B Ratio in panel B. All variables are defined in appendix A. All regressions include industry*year fixed effects. Standard errors clustered at the firm level are reported in parentheses. *, **, *** indicate two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively.

the results confirm that our measure explains variation in organizational capital beyond what is captured by the SG&A-based measure.²¹

In addition, we analyze the variance decomposition of the SG&A-based measure, with the results untabulated. We find that firm fixed effects account for more than 80% of its variance, a largely mechanical result of its construction. The SG&A-based measure is a cumulative stock variable that capitalizes SG&A expenses over a firm’s entire history in the database. By its very nature, it changes very slowly and is almost entirely determined by the past trajectory of the firm.

Notably, our measure of organizational capital and the SG&A-based measure differ in what they capture. The SG&A-based proxy primarily reflects raw investment (e.g., wages, training), that is, the intended input into organizational capital. By contrast, our measure captures the realized manifestation of organizational capital: the intermediate output of those investments as reflected in the quality of worker-task and worker-worker matches, culture, and coordination, which remains an input to the firm’s ultimate production, but it is also an output relative to SG&A, capturing how effectively firms transform spending into usable organizational capital. More importantly, SG&A captures expenditures on selling, general, and administrative functions, only a subset of which pertains to the development of organizational capital. Even when such spending is intended to enhance organizational capabilities, its effectiveness is unobservable. Firms may invest substantial amounts yet fail to translate these outlays into productive organizational capital. Table A20 shows that our measure of organizational capital and the SG&A-based measure are weakly negatively correlated, further suggesting that they differ in what they capture.

²¹ The negative coefficient of the SG&A measure on ROA is largely mechanical because SG&A is treated as an expense and is subtracted in the calculation of net income and therefore reduces ROA by construction. Prior literature also documents a negative correlation between SG&A-based organizational capital and profitability measures including ROA (Li et al. [2018]; Gao et al. [2021]) and retained earnings over total assets (Hasan and Cheung [2018]).

5. Applications

In this section, we provide examples of how our measure of organizational capital could be applied to accounting, economics, finance, and management literature. Specifically, we investigate the determinants and implications of organizational capital and test whether our measure of organizational capital aligns with the predictions in Dessein and Prat [2022]. However, we would like to acknowledge that the analyses presented here are exploratory applications rather than definitive causal tests; nonetheless, they also aid in unpacking and validating the measures. Each determinant/implication test should be viewed as a preliminary investigation, and we invite future research to rigorously establish causal interpretations.

5.1 DETERMINANTS OF THE LEVEL AND GROWTH OF ORGANIZATIONAL CAPITAL

We first investigate whether the level and growth of organizational capital are associated with the previous and current CEO and other contextual factors including corporate governance and feedback loop. These tests are motivated by Proposition 5 (Leader Centric Predictions) and Proposition 6 (Predictions Linking Organization Centric and Leader Centric) in Dessein and Prat [2022].

5.1.1. *Tenure of Previous and Current CEO.*

5.1.1.1 Current CEO's Tenure:. To test if the level of organizational capital is positively associated with the current CEO's tenure, we estimate the following equation:

$$Org\ Capital_{it} = \beta_0 + \beta_1 CEO\ Tenure_{it} + X'_{it}\gamma + \delta_{mt} + \epsilon_{it}, \quad (2)$$

where $CEO\ Tenure_{it}$ is the number of years since the CEO has been in office. X_{it} consists of ROA, firm size, leverage, sales growth, and firm age. δ_{mt} represents industry*year fixed effects; and ϵ_{it} represents standard errors clustered at the firm level.

The results are reported in table 6. In all columns, the coefficients on $CEO\ Tenure_{it}$ are significantly positive, indicating that the level of organizational capital is positively associated with the current CEO's tenure.

5.1.1.2 Prior CEOs' Tenures:. We also investigate whether firms experiencing a sequence of short-lived CEOs are predicted to have lower organizational capital. Specifically, we calculate the number of CEOs of firm i in the past 10 years, $\# CEOs_{it}$, and estimate the following equation:

$$Org\ Capital_{it} = \beta_0 + \beta_1 \# CEOs_{it} + X'_{it}\gamma + \delta_{mt} + \epsilon_{it}. \quad (3)$$

The results are reported in table 7. In all columns, the coefficients on $\# CEOs_{it}$ are significantly negative, indicating that the level of

TABLE 6
CEO Tenure and Organizational Capital

	(1) Org Capital (Seed Word)	(2) Org Capital (ChatGPT)	(3) Org Capital (Average)	(4) Pct Org Capital (Seed Word)	(5) Pct Org Capital (ChatGPT)	(6) Pct Org Capital (Average)
CEO Tenure	0.003* (0.001)	0.008*** (0.002)	0.005*** (0.001)	0.128*** (0.047)	0.281*** (0.050)	0.232*** (0.049)
ROA	0.007*** (0.002)	0.011*** (0.001)	0.009*** (0.001)	0.304*** (0.046)	0.378*** (0.043)	0.386*** (0.043)
Leverage	-0.007*** (0.003)	-0.008*** (0.003)	-0.007*** (0.003)	-0.269*** (0.101)	-0.241*** (0.111)	-0.301*** (0.110)
Sales Growth	0.083 (0.057)	0.376*** (0.065)	0.230*** (0.053)	3.635** (1.719)	12.177*** (1.785)	8.750*** (1.737)
Ln (Total Assets)	0.021** (0.008)	0.009 (0.008)	0.015** (0.007)	0.381 (0.270)	0.112 (0.287)	0.427 (0.284)
Firm Age	0.001 (0.001)	-0.001 (0.001)	0.000 (0.001)	0.043* (0.025)	-0.026 (0.025)	0.017 (0.025)
Constant	-0.241*** (0.066)	-0.172** (0.069)	-0.206*** (0.059)	43.938*** (2.149)	46.288*** (2.287)	43.039*** (2.253)
Observations	14799	14799	14799	14799	14799	14799
Adjusted R ²	0.035	0.046	0.045	0.058	0.067	0.067
Industry*Year FE	Yes	Yes	Yes	Yes	Yes	Yes

This table reports the results from regressions estimating the relation between CEO tenure and organizational capital. All regressions include industry*year fixed effects. Industries are defined by 2-digit SIC code. All variables are defined in appendix A and table A23 of the online appendix. Standard errors clustered at the firm level are reported in parentheses. *, **, *** indicate two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively.

TABLE 7
Organizational Capital and a Sequence of Short-Lived CEOs

	(1) Org Capital (Seed Word)	(2) Org Capital (ChatGPT)	(3) Org Capital (Average)	(4) Pct Org Capital (Seed Word)	(5) Pct Org Capital (ChatGPT)	(6) Pct Org Capital (Average)
# CEOs in Past 10 Years	-0.007 (0.012)	-0.057*** (0.013)	-0.032*** (0.011)	-0.872** (0.411)	-2.133*** (0.419)	-1.699*** (0.415)
ROA	0.007*** (0.002)	0.011*** (0.001)	0.009*** (0.001)	0.310*** (0.045)	0.382*** (0.042)	0.391*** (0.043)
Leverage	-0.007*** (0.003)	-0.009*** (0.003)	-0.008*** (0.003)	-0.270*** (0.101)	-0.268*** (0.112)	-0.315*** (0.110)
Sales Growth	0.081 (0.056)	0.363*** (0.064)	0.222*** (0.052)	3.528** (1.686)	11.925*** (1.751)	8.560*** (1.703)
Ln (Total Assets)	0.018** (0.008)	0.005 (0.008)	0.011 (0.007)	0.318 (0.266)	-0.016 (0.284)	0.312 (0.281)
Firm Age	0.001* (0.001)	0.000 (0.001)	0.001 (0.001)	0.055** (0.025)	0.003 (0.026)	0.039 (0.025)
Constant	-0.196*** (0.067)	-0.001 (0.070)	-0.098 (0.061)	46.533*** (2.163)	52.478*** (2.305)	48.072*** (2.286)
Observations	15181	15181	15181	15181	15181	15181
Adjusted R ²	0.033	0.042	0.042	0.056	0.064	0.064
Industry*Year FE	Yes	Yes	Yes	Yes	Yes	Yes

This table reports the results from regressions estimating the relation between organizational capital and the firm's total number of CEOs in the past 10 years. All regressions include industry*year fixed effects. Industries are defined by 2-digit SIC code. All variables are defined in appendix A and table A23 of the online appendix. Standard errors clustered at the firm level are reported in parentheses. *, **, *** indicate two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively.

organizational capital is lower in firms that have experienced a sequence of short-lived CEOs.

5.1.2. Change in Organizational Capital Around CEO Turnover. According to Dessein and Prat [2022], organizational capital “must be produced at least partly inside the firm with the active participation of the firm’s top management.” The accumulation of organizational capital follows a stochastic process punctuated by endogenous CEO transitions. Therefore, CEO turnover, a major leadership change, might be associated with a firm’s organizational capital.

To investigate the change in organizational capital around CEO turnover, we first identify all CEO turnovers in our sample period and keep the seven-year window $([-3, 3])$ around the CEO turnover. We also include all firms with no CEO turnover in our sample period as the control group. We then estimate the following equation:

$$Org\ Capital_{it} = \beta_0 + \beta_1 Post_{it} + X'_{it}\gamma + \eta_i + \delta_t + \epsilon_{it}, \quad (4)$$

where $Org\ Capital_{it}$ takes the value of Org Capital (ChatGPT), Org Capital (Seed Word), Org Capital (Average), Pct Org Capital (ChatGPT), Pct Org Capital (Seed Word), and Pct Org Capital (Average). $Post_{it}$ is an indicator variable equal to 1 for the three years after the CEO turnover. X_{it} consists of ROA, total assets, sales growth, leverage, and firm age. We also include firm fixed effects η_i and year fixed effects δ_t and cluster standard errors at the firm level.

The results are presented in table 8 A. The coefficients on $Post_{it}$ are significantly negative for Org Capital (ChatGPT), Org Capital (Average), Pct Org Capital (ChatGPT), and Pct Org Capital (Average), suggesting that organizational capital decreases shortly after a CEO turnover. In terms of economic magnitude, in the three years following a CEO turnover, the firm’s Org Capital (Average) decreases by around 5% standard deviation, and its rank of Pct Org Capital (Average) in the sample declines by over 2 percentiles.

To further examine the year-by-year change in organizational capital around CEO turnover, we estimate the following equation:

$$Org\ Capital_{it} = \beta_0 + \sum_{\tau=-3}^3 \beta_{\tau} D_{it}^{\tau} + X'_{it}\gamma + \eta_i + \delta_t + \epsilon_{it}, \quad (5)$$

where D_{it}^{τ} is an indicator variable equal to 1 if the number of years relative to the CEO turnover equals τ . In the tables and figures, we refer to indicators for $\tau < 0$ as Pre τ and indicators for $\tau > 0$ as Post τ . We use the year prior to CEO turnover (Pre1) as the baseline omitted group. X'_{it} are the same set of controls as those in equation (4). We also include firm fixed effects and year fixed effects and cluster standard errors at the firm level. The

TABLE 8
Organizational Capital Around CEO Turnover

Panel A						
	(1) Org Capital (Seed Word)	(2) Org Capital (ChatGPT)	(3) Org Capital (Average)	(4) Pct Org Capital (Seed Word)	(5) Pct Org Capital (ChatGPT)	(6) Pct Org Capital (Average)
Post	-0.011 (0.027)	-0.067** (0.027)	-0.039* (0.023)	-1.283 (0.791)	-2.294*** (0.744)	-2.100*** (0.776)
ROA	0.005** (0.002)	0.006*** (0.002)	0.005*** (0.002)	0.233*** (0.056)	0.203*** (0.050)	0.235*** (0.052)
Ln (Total Assets)	-0.027 (0.040)	-0.045 (0.043)	-0.036 (0.037)	-1.869 (1.155)	0.183 (1.145)	-0.846 (1.150)
Sales Growth	0.091 (0.064)	0.196** (0.079)	0.143** (0.061)	4.084** (1.909)	4.921** (1.979)	5.195*** (1.890)
Leverage	-0.004 (0.003)	-0.007** (0.003)	-0.005* (0.003)	-0.176* (0.107)	-0.209** (0.098)	-0.198** (0.099)
Firm Age	-0.391** (0.156)	0.367 (0.672)	-0.012 (0.404)	-8.854* (5.246)	-0.690 (7.367)	-2.278 (8.064)
Constant	8.388** (3.318)	-7.356 (14.232)	0.516 (8.555)	251.114** (110.930)	65.822 (155.841)	104.603 (170.576)
Observations	10002	10002	10002	10002	10002	10002
Adjusted R ²	0.016	0.009	0.015	0.029	0.012	0.023
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
(Continued)						

(Continued)

TABLE 8—(Continued)

Panel B						
	(1) Org Capital (Seed Word)	(2) Org Capital (ChatGPT)	(3) Org Capital (Average)	(4) Pct Org Capital (Seed Word)	(5) Pct Org Capital (ChatGPT)	(6) Pct Org Capital (Average)
Pre3	−0.047 (0.043)	−0.042 (0.044)	−0.044 (0.038)	−0.008 (1.278)	−1.077 (1.244)	−1.003 (1.259)
Pre2	−0.025 (0.037)	−0.021 (0.038)	−0.023 (0.032)	0.124 (1.103)	0.100 (1.095)	0.178 (1.075)
Post0	−0.040 (0.035)	−0.104*** (0.038)	−0.072** (0.031)	−1.210 (1.038)	−3.222*** (1.072)	−2.728** (1.065)
Post1	−0.028 (0.036)	−0.112*** (0.037)	−0.070** (0.031)	−1.470 (1.130)	−3.162*** (1.058)	−2.867*** (1.069)
Post2	−0.042 (0.038)	−0.068* (0.038)	−0.055* (0.033)	−1.930 (1.241)	−2.133* (1.161)	−2.207* (1.197)
Post3	0.008 (0.042)	0.012 (0.042)	0.010 (0.036)	0.116 (1.358)	0.278 (1.296)	0.096 (1.316)
ROA	0.005** (0.002)	0.006*** (0.002)	0.005*** (0.002)	0.233*** (0.056)	0.203*** (0.050)	0.235*** (0.052)
Ln(Total Assets)	−0.025 (0.040)	−0.042 (0.043)	−0.033 (0.037)	−1.860 (1.157)	0.264 (1.148)	−0.786 (1.153)
Sales Growth	0.089 (0.064)	0.190** (0.079)	0.140** (0.061)	4.033** (1.913)	4.762** (1.979)	5.070*** (1.892)

(Continued)

TABLE 8—(Continued)

Panel B						
	(1) Org Capital (Seed Word)	(2) Org Capital (ChatGPT)	(3) Org Capital (Average)	(4) Pct Org Capital (Seed Word)	(5) Pct Org Capital (ChatGPT)	(6) Pct Org Capital (Average)
Leverage	−0.004 (0.003)	−0.007** (0.003)	−0.005* (0.003)	−0.173 (0.107)	−0.206** (0.098)	−0.195** (0.099)
Firm Age	−0.377** (0.163)	0.395 (0.673)	0.009 (0.407)	−8.738* (5.259)	0.185 (7.414)	−1.562 (8.139)
Constant	8.099** (3.458)	−7.940 (14.255)	0.080 (8.627)	248.581** (111.216)	47.184 (156.883)	89.378 (172.200)
Observations	10002	10002	10002	10002	10002	10002
Adjusted R ²	0.016	0.010	0.015	0.029	0.013	0.024
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

This table reports the change in organizational capital around CEO turnovers. In panel A, Pct_{it} is an indicator variable equal to 1 for the three years after the CEO turnover. In panel B, Pre- and Post- are indicator variables for the number of years relative to the CEO turnover. We use the year prior to CEO turnover (Pre1) as the baseline omitted group. All regressions include firm fixed effects and year fixed effects. All variables are defined in appendix A. Standard errors clustered at the firm level are reported in parentheses. *, **, *** indicate two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively.

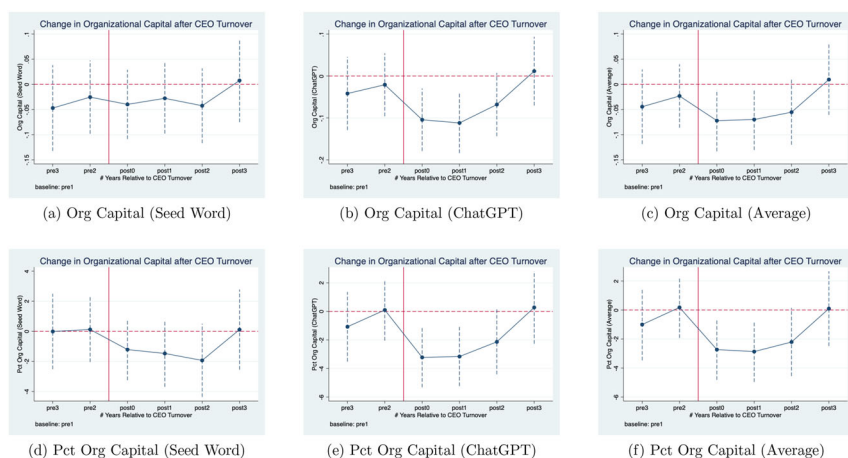


FIG. 4.—CEO turnover and organizational capital. This figure shows the change in organizational capital in the seven-year window $[-3, 3]$ around turnover. We use the year prior to CEO turnover (Pre1) as the baseline omitted group. The plotted coefficients and their 95% confidence intervals correspond to table 8.

variables of interest are D_{it}^{τ} . If consistent with our prediction, we expect to see insignificant β_{τ} for $\tau < 0$ and significantly negative β_{τ} for $\tau > 0$.

The results are reported in table 8. The coefficients on Post0, Post1, Post2, and Post3 exhibit decreasing economic magnitude and statistical significance, suggesting that the negative change in organizational capital is mostly evident in the year of CEO turnover and the following two years and then gradually vanishes. Moreover, the coefficients on Pre3 and Pre2 are insignificant, thus mitigating the concern that CEO turnover is a consequence of constantly declining organizational capital, and providing partial support for the parallel trend assumption. Figure 4 presents a graphical illustration of the results by plotting the estimated coefficients of Pre3, Pre2, Post0, Post1, Post2, and Post3 with their 95% confidence intervals.

In addition, we try to reduce observable differences between firms with and without a CEO turnover by conducting entropy balancing between the treatment and control groups. Specifically, we first calculate firm-level average ROA, firm size, sales growth, leverage, firm age for the control group and the pre-period of the treatment group. We then perform an entropy balancing based on these observable characteristics and obtain the weight for each observation. We populate the treated firms' pre-period weights to their post-periods, and conduct a weighted DID, with the sampling weights equal to the entropy balancing weights. The results are reported in table A4. Panel A shows that the difference between the treated and control group significantly decreases after the matching. Panel B shows that our findings persist after matching treated firms with control firms.

Further, we investigate the cross-sectional difference between a good CEO replacing a bad CEO and a bad CEO replacing a good CEO. Specifically, we partition our sample based on the difference in the CEO's general abilities, measured by General Ability Index (GAI), of the new CEO and the old CEO.²² The results are reported in table A5. The findings suggest that the decline in organizational capital is larger, both in terms of statistical significance and economic magnitude, when a high GAI CEO is replaced by a low GAI CEO. Taken together, the results imply that while new CEOs do not tend to invest in organizational capital at first, leading to an average decay in organizational capital, good CEOs still maintain a higher level of organizational capital than bad CEOs.²³

5.1.3. Governance and Feedback Loop. We also investigate whether the growth of organizational capital is related to corporate governance and feedback loop.

Specifically, we measure corporate governance by the entrenchment index (E-index) based on the firm's four constitutional provisions that prevent a majority of shareholders from having their way (staggered boards, limits to shareholder bylaw amendments, supermajority requirements for mergers, and supermajority requirements for charter amendments), and two takeover readiness provisions that boards put in place to be ready for a hostile takeover (poison pills and golden parachutes). A higher E-index indicates worse corporate governance.

To measure feedback loop, we use the CEO-to-median-employee pay ratio from AFL-CIO (Cai et al. [2024]).²⁴ Specifically, in Dessein and Prat [2022], the "feedback loop" refers to the time it takes for the firm to identify and remove a "bad" CEO. A faster feedback loop implies a more effective monitoring technology and a quicker flow of information from within the organization to the board, allowing for faster correction of poor leadership. A lower pay ratio often reflects a flatter, less hierarchical organizational structure. In such organizations, information, both positive and negative, can travel more quickly and with less distortion from frontline employees to top management and the board. This improved upward communication serves as a more effective monitoring and feedback mechanism.

We then estimate the following equations:

$$Org\ Capital\ Growth_{it} = \beta_0 + \beta_1 Contextual\ Factor_{it} + X'_{it}\gamma + \delta_{mt} + \epsilon_{it}, \quad (6)$$

²² We leverage the GAI developed by Custódio et al. [2013], who use CEOs' resumes of S&P 1500 firms to construct an index of general skills that are transferable across firms and industries. The GAI index is the first component from principal component analysis of the following five factors: number of positions, number of firms, number of industries, CEO experience dummy, and Conglomerate experience dummy.

²³ Another possibility is that the new CEO's investments in organizational capital take several years to be reflected in our measures.

²⁴ <https://aflcio.org/paywatch/company-pay-ratios>.

TABLE 9
Corporate Governance and Organizational Capital

	(1) Org Capital Growth (ChatGPT)	(2) Org Capital Growth (Seed Word)
E-index	−0.117* (0.065)	−0.020 (0.061)
ROA	−0.008 (0.012)	0.006 (0.013)
Ln(Total Assets)	−0.155*** (0.043)	−0.105** (0.048)
Sales Growth	−0.181 (0.718)	−1.109* (0.613)
Leverage	−0.020 (0.024)	−0.010 (0.022)
Firm Age	−0.001 (0.004)	−0.002 (0.004)
Constant	2.092*** (0.469)	1.541*** (0.474)
Observations	9837	9837
Adjusted R^2	−0.004	−0.010
Industry*Year FE	Yes	Yes

This table reports the results from regressions estimating the relation between organizational capital growth and entrenchment index. All regressions include industry*year fixed effects. Industries are defined by 2-digit SIC code. All variables are defined in appendix A and table A23 of the online appendix. Standard errors clustered at the firm level are reported in parentheses. *, **, *** indicate two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively.

where $Org\ Capital\ Growth_{it}$ is calculated as $\frac{Org\ Capital_{it} - Org\ Capital_{i,t-1}}{Org\ Capital_{i,t-1}}$.²⁵ $Contextual\ Factor_{it}$ takes the value of either E-index or CEO-to-median-employee pay ratio.

The results are reported in table 9 and table 10. In both tables, the coefficients on E-index and CEO-to-median-employee pay ratio are significantly negative for the ChatGPT-based measure, suggesting that better corporate governance and faster feedback are both positively associated with the growth of organizational capital measured using the ChatGPT approach.

5.2 IMPLICATIONS OF ORGANIZATIONAL CAPITAL ON CEO CAREER PATHS

To test the empirical predictions on organizational capital and CEO career paths, we investigate (1) whether an improved measure of organizational capital would reveal “bad” CEOs more quickly, and (2) whether the current compensation of a CEO depends on the change in organizational capital of its previous firm. These tests are motivated by the assortative matching theories related to Proposition 1 and Propositions 7 to 9 in Dessein and Prat [2022].

5.2.1. *Does Organizational Capital Reveal “Bad” CEOs.* To investigate whether organizational capital provides additional predictive power for

²⁵ We add a constant to $Org\ Capital_{it}$ to ensure that they are all positive.

TABLE 10
CEO-to-Median-Employee Pay Ratio and Organizational Capital

	(1) Org Capital Growth (ChatGPT)	(2) Org Capital Growth (Seed Word)
Pay Ratio	-0.121** (0.061)	-0.123 (0.078)
ROA	0.011 (0.010)	0.013 (0.013)
Ln(Total Assets)	-0.061 (0.039)	-0.039 (0.046)
Sales Growth	0.489 (0.636)	-0.527 (0.577)
Leverage	-0.004 (0.019)	-0.022 (0.019)
Firm Age	-0.000 (0.003)	-0.005 (0.005)
Constant	1.464*** (0.352)	1.703*** (0.443)
Observations	10197	10197
Adjusted R^2	0.002	-0.018
Industry*Year FE	Yes	Yes

This table reports the results from regressions estimating the relation between organizational capital growth and CEO-to-median-employee pay ratio. All regressions include industry*year fixed effects. Industries are defined by 2-digit SIC code. All variables are defined in appendix A and table A23 of the online appendix. Standard errors clustered at the firm level are reported in parentheses. *, **, *** indicate two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively.

CEO turnover beyond other financial measures, including ROA and stock returns, we estimate the following equation:

$$CEO\ Turnover_{i,t+1} = \beta_0 + \beta_1 Org\ Capital_{i,t} + X'_{it}\gamma + \delta_{mt} + \epsilon_{it}, \quad (7)$$

where $CEO\ Turnover_{i,t+1}$ is an indicator variable equal to 1 if the CEO of firm i changes in year $t+1$ and 0 otherwise. X_{it} is a set of firm-year level variables that might predict CEO turnover, which consists of ROA, stock returns, firm size, leverage, sales growth, and firm age. δ_{mt} represents industry*year fixed effects; and ϵ_{it} represents standard errors clustered at the firm level. The results are reported in table 11. We find that organizational capital provides additional predictive power for CEO turnover beyond other financial measures, suggesting that our measure of organizational capital aligns with the prediction in Dessein and Prat [2022].

5.2.2. CEO Compensation and Organizational Capital Improvement in Prior Employment. To test whether the current compensation of a CEO depends on the change in organizational capital of her previous firm, we manually search a CEO's prior employment via 8-K filings, the CEO's personal LinkedIn website and the company's official website. We then calculate the change in the organizational capital in the CEO's prior firm from her initial year in the prior firm (or the earliest of our sample period, whichever is later) to her last year (*Org Capital Change in Prior Firm_{ct}*), and investigate

TABLE 11
Organizational Capital and Future CEO Turnover

Dependent Variable: CEO Turnover(<i>i,t</i> +1)	(1)	(2)	(3)	(4)	(5)	(6)
Org Capital (Seed Word)	−0.006* (0.003)					
Org Capital (ChatGPT)		−0.005* (0.003)				
Org Capital (Average)			−0.008** (0.004)			
Pct Org Capital (Seed Word)				−0.000 (0.000)		
Pct Org Capital (ChatGPT)					−0.000* (0.000)	
Pct Org Capital (Average)						−0.000 (0.000)
Annual Return	−0.001*** (0.000)	−0.001*** (0.000)	−0.001*** (0.000)	−0.001*** (0.000)	−0.001*** (0.000)	−0.001*** (0.000)
ROA	−0.001*** (0.000)	−0.001*** (0.000)	−0.001*** (0.000)	−0.001*** (0.000)	−0.001*** (0.000)	−0.001*** (0.000)
Leverage	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
Sales Growth	−0.020 (0.020)	−0.018 (0.020)	−0.018 (0.020)	−0.020 (0.020)	−0.018 (0.020)	−0.019 (0.020)
Ln(Total Assets)	0.004* (0.002)	0.004* (0.002)	0.004* (0.002)	0.004* (0.002)	0.004* (0.002)	0.004* (0.002)
Firm Age	−0.000 (0.000)	−0.000 (0.000)	−0.000 (0.000)	−0.000 (0.000)	−0.000 (0.000)	−0.000 (0.000)
Constant	0.093*** (0.018)	0.094*** (0.018)	0.093*** (0.018)	0.099*** (0.018)	0.103*** (0.018)	0.102*** (0.018)
Observations	11512	11512	11512	11512	11512	11512
Adjusted <i>R</i> ²	0.012	0.012	0.012	0.011	0.012	0.012
Industry*Year FE	Yes	Yes	Yes	Yes	Yes	Yes

This table reports the results from regressions estimating the relation between a firm’s organizational capital and future CEO turnover. CEO Turnover(*i,t*+1) is an indicator variable equal to 1 if the CEO of firm *i* changes in year *t*+1 and 0 otherwise. All regressions include industry*year fixed effects. Industries are defined by 2-digit SIC code. All variables are defined in appendix A and table A23 of the online appendix. Standard errors clustered at the firm level are reported in parentheses. *, **, *** indicate two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively.

how the change in organizational capital in the CEO’s prior employment is related to her first-year compensation in the new firm. Specifically, we estimate the following equation:

$$\begin{aligned} Compensation_{ct} = & \beta_0 + \beta_1 \text{Org Capital Change in Prior Firm}_{ct} + X'_{it}\gamma \\ & + \delta_{mt} + \epsilon_{it}, \end{aligned} \tag{8}$$

where $Compensation_{ct}$ is the natural log of CEO *c*’s total compensation (*tdc1* from Execucomp Annual Compensation) in her first year at the new company. X_{it} is a set of firm-level controls, which consists of firm size, firm age, ROA, leverage, and P/B ratio. δ_{mt} represents industry*year

TABLE 12
CEO Compensation and Organizational Capital Improvement in the Prior Firm

Dependent Variable: ln(CEO Total Compensation)						
	(1)	(2)	(3)	(4)	(5)	(6)
Change in Pct Org Capital (Average) in Prior Firm	0.029					
	(0.024)					
Change in Pct Org Capital (ChatGPT) in Prior Firm		0.027**				
		(0.011)				
Change in Pct Org Capital (Seed Word) in Prior Firm			0.017			
			(0.027)			
Change in Org Capital (Average) in Prior Firm				1.150		
				(1.226)		
Change in Org Capital (ChatGPT) in Prior Firm					1.347***	
					(0.442)	
Change in Org Capital (Seed Word) in Prior Firm						0.209
						(1.592)
Ln(Total Assets)	0.469	0.407	0.543	0.478	0.437	0.430
	(0.418)	(0.338)	(0.468)	(0.417)	(0.281)	(0.346)
Firm Age	0.010	0.008	-0.008	0.001	0.005	-0.018
	(0.051)	(0.022)	(0.047)	(0.051)	(0.021)	(0.040)
ROA	-0.016	-0.017	-0.026	-0.029	-0.021	-0.025
	(0.055)	(0.045)	(0.060)	(0.064)	(0.044)	(0.045)
Leverage	-0.219	-0.253	-0.029	-0.086	-0.255	0.184
	(1.020)	(0.680)	(1.064)	(1.058)	(0.660)	(0.976)
P/B Ratio	-0.034	-0.022	-0.017	-0.005	0.010	-0.036
	(0.207)	(0.155)	(0.226)	(0.235)	(0.145)	(0.232)
Constant	5.020	5.455*	4.755	4.984	5.251**	5.719**
	(4.053)	(2.843)	(4.274)	(4.160)	(2.562)	(2.741)
Observations	88	88	88	88	88	88
Adjusted R ²	0.688	0.803	0.461	0.577	0.836	0.335
Industry*Year FE	Yes	Yes	Yes	Yes	Yes	Yes

This table reports the results from regressions estimating the relation between the CEO's first-year total compensation in the new firm and the organizational capital improvement in her prior firm. All regressions include industry*year fixed effects. Industries are defined by 2-digit SIC code. All variables are defined in appendix A and table A23 of the online appendix. Standard errors clustered at the firm level are reported in parentheses. *, **, *** indicate two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively.

fixed effects. ϵ_{it} represents standard errors clustered at the firm level. *Org Capital Change in Prior Firm_{ct}* will be missing if the new CEO is promoted internally, if the new CEO's prior company is not in the S&P 1500 list, or if the new CEO's prior employment ends before 2008. The results, reported in table 12, indicate that this change in organizational capital, measured using the ChatGPT method, in the prior firm is positively associated with the CEO's first year compensation in the new firm, which is consistent with the empirical prediction.

6. Robustness Tests

6.1 ALTERNATIVE SPECIFICATIONS FOR ORGANIZATIONAL CAPITAL AND FIRM PERFORMANCE

We perform the following robustness tests on the association between organizational capital and firm performance using alternative specifications. Specifically, we conduct regressions (1) using lagged organizational capital as the independent variable, (2) using long-term financial performance (average of t to $t+3$) as the outcome variable, (3) controlling for lagged financial performance, (4) controlling for leverage, and (5) demeaning the measure of organizational capital by industry. The results are reported in table A6, table A7, table A8, table A9, and table A10 of the online appendix, respectively. Across all specifications, the results remain economically and statistically consistent.

6.2 TIME SERIES AND CROSS-SECTIONAL VARIATION IN THE ASSOCIATION BETWEEN ORGANIZATIONAL CAPITAL AND FIRM PERFORMANCE

In this section, we investigate how the association between organizational capital and firm performance varies over time and across industries.

For time-series variation, we split the sample into two periods—2008–2014, when average organizational capital is lower, and 2015–2020, when it is higher (see figure 1). Estimating the performance relation separately for each period (table A11), we find a stronger association in 2015–2020, when organizational capital appears to receive greater attention. This upward shift is consistent with the rise in acquired intangible assets documented by Kepler et al. [2025].

For cross-sectional variation, we first calculate the HHI index of each industry-year using all public firms' market capitalization data from Compustat, where industry is defined as 2-digit SIC code. An industry year is classified as competitive if its HHI is below the sample median (i.e., low concentration of firms) and otherwise non-competitive. Estimating the performance relation within each group (table A12), we find that organizational capital is significantly positively associated with ROE and P/B only in competitive industries, while the relation with ROA holds in both settings. This pattern aligns with Bloom and Van Reenen [2007], who show that strong management practices and their performance benefits are more prevalent in highly competitive environments.

6.3 ADDITIONAL FIRM OUTCOMES

In this section, we examine the effect of organizational capital on additional firm outcomes, including gross margin, asset turnover, sales growth, restatement, violation, amount of violation penalties, and the Solow model residual.²⁶ The results are reported in table A13. We find that

²⁶ The Violation variable is an indicator variable equal to 1 if the firm commits a violation this year according to the Violation Tracker Database. It captures a wide range of offenses

organizational capital is positively associated with gross margin, asset turnover, and sales growth, and weakly and positively correlated with the Solow Model Residual, thus providing further evidence that firms with higher organizational capital exhibit better performance.²⁷ We also find that organizational capital is negatively associated with corporate misconduct, including restatement, violations, and the amount of violation penalties. These results further assure us that higher organizational capital is not value-destroying.

6.4 GLASSDOOR RATINGS

In this section, we investigate whether overall rating as well as culture sub-rating on Glassdoor could serve as a potential alternative measure of organizational capital and report our findings in table A14. Panel A shows that Glassdoor overall rating and culture sub-rating are positively associated with ROA. Panel B shows that the positive relation between our measure of organizational capital and firm performance persists after controlling for Glassdoor overall rating and the culture sub-rating. Panels C and D suggest that Glassdoor ratings and culture ratings are positively related to firms' intangibles. Taken together, these findings imply that our measures capture unique aspects of organizational capital that are not fully reflected in the ratings.²⁸

While Glassdoor ratings offer a useful benchmark, our textual analysis of employee reviews provides a more precise and theoretically aligned assessment of organizational capital. Glassdoor ratings are broad, aggregated indicators of employee sentiment that do not directly reflect the core components of organizational capital—such as culture, management practices, or human capital. They also primarily measure overall job satisfaction, which can be influenced by compensation, work-life balance, or job-specific factors. In contrast, our textual analysis maps employee comments to these

including competition-related, consumer-protection, employment-related, environmental, financial, government-contracting, healthcare, and safety-related offenses. Amount of violation penalties is the natural log of the amount of violation penalties charged against the firm this year according to the Violation Tracker Database. These penalties usually result from government enforcement actions and include civil or administrative settlements, consent decrees, and criminal fines levied by regulatory agencies or prosecutors.

²⁷ Table A19 shows that the positive relation between our measure of organizational capital and gross margin and asset turnover remains after controlling for cumulative SG&A.

²⁸ The results indicate that our measure does not simply capture general sentiment or employee treatment: the organizational-capital-performance relation remains significant even after controlling for Glassdoor ratings, indicating that our measure provides incremental explanatory power. Moreover, because it relates to a broader set of outcomes—such as profitability components, growth, and reduced misconduct—it is unlikely to be merely a proxy for “being nice to employees.” This distinction follows from our measurement design. The seed-word approach includes only terms theoretically linked to organizational capital, and the ChatGPT-based approach identifies language resembling synthetic descriptions of high organizational capital. Anchored in the framework of Dessein and Prat [2022], both methods ensure that the measure isolates organizational capital rather than general sentiment.

theoretical constructs, ensuring that the measure captures the nuanced dimensions of organizational capital as defined by Dessein and Prat [2022].

6.5 SCORING ORGANIZATIONAL CAPITAL USING ALTERNATIVE DATA SOURCES

We explore whether organizational capital can be reliably measured using three alternative data sources: corporate website descriptions, job postings, and interview questions. For corporate websites, we collect annual snapshots from the Wayback Machine, focusing on the “about us” and “career” sections, and apply the same textual analysis and validation procedures used in the main study. The results, reported in table A15 of the online appendix, indicate that website-based measures—reflecting firm-initiated communications—are less effective than Glassdoor employee reviews. This aligns with prior evidence documenting inconsistencies between advertised culture and actual organizational practices (Guiso et al. [2015]; Graham et al. [2022]; Chen [2024]).

We then analyze job postings from Linkup, randomly sampling 50 postings for firm-years with more than 50 entries to avoid overrepresentation. After applying the same analysis and validation tests (table A16), we again find weaker performance. As job postings are formal disclosures, they appear to reflect idealized or advertised organizational capital rather than firms’ true underlying characteristics.

Finally, we examine interview questions posted by candidates on Glassdoor. Applying the same procedures (table A17), we similarly find that interview questions offer limited ability to capture meaningful variation in organizational capital.

Taken together, these results suggest that alternative forms of firm-initiated or externally posted content are less effective proxies for organizational capital than employee-generated reviews, reinforcing the value of employee perspectives in capturing this construct.

7. Conclusion

This paper develops a text-based measure of organizational capital using employee reviews from Glassdoor. The evidence suggests that the measure captures a slow-moving intangible asset linked to firm performance and shaped by top management, consistent with the conceptual features of organizational capital discussed in prior literature. We also illustrate how the measure can be applied in a range of accounting, economics, finance, and management settings to study the determinants and implications of organizational capital.

Beyond the settings explored in this paper, our measure of organizational capital opens new avenues for analyzing a variety of corporate phenomena. One promising direction concerns mergers and acquisitions. Because organizational capital is a component of firms’ intangible asset, it may influence goodwill valuation and thus affect acquisition premia. This

connection raises several important questions: How much do acquirers effectively pay for organizational capital? How does the organizational capital of merging firms interact: do they complement, substitute, or even erode one another? And does organizational capital exhibit a finite useful life, or does it behave more like an indefinite-lived intangible asset within combined entities? These questions offer fertile ground for future research and provide practical implications for M&A practitioners. Our measure also relates to social capital, a firm’s relationships with the broader society and various external stakeholders. The two forms of intangible capital may interact: Strong organizational processes can enhance a firm’s ability to cultivate and maintain positive external relationships, while supportive stakeholder environments can reinforce organizational norms and facilitate smoother internal coordination.

Finally, because our measure may be used in investment and valuation research, it is important to clarify how organizational capital fits within, and differs from, standard Q-theory interpretations of investment: Changes in our measure should not be interpreted as direct investment in the standard Q-theory sense. Organizational capital may evolve through mechanisms such as learning-by-doing or leadership changes that require little or no investment (Dessein and Prat [2022]). Even when firms invest in organizational capital in response to higher Q, such efforts may not immediately appear in employee perceptions if the investments are ineffective or take time to materialize. Nevertheless, the level of our measure is positively associated with market-based proxies for investment opportunities, such as the P/B ratio.

Our paper is subject to the following limitations. First, our measurement of organizational capital is limited to firms with a Glassdoor account. Although this encompasses the majority of public and private firms in the United States, it excludes some small private businesses that lack a Glassdoor presence. Second, while this paper employs textual analysis techniques primarily based on word embeddings and ChatGPT, we acknowledge that these methods may not fully capture the complexities of measuring organizational capital. As natural language processing technologies continue to advance, we encourage future research to explore more precise and sophisticated approaches to quantify organizational capital better.

APPENDIX A: VARIABLE DEFINITION

Variable	Definition	Data Source
Org Capital (Seed Word)	Measure of organizational capital based on seed word defined in section 3.1.6	Glassdoor
Org Capital (ChatGPT)	Measure of organizational capital based on ChatGPT defined in section 3.1.6	Glassdoor
Org Capital (Average)	Average of Org Capital (Seed Word) and Org Capital (ChatGPT)	Glassdoor

Variable	Definition	Data Source
Pct Org Capital (Seed Word)	Percentile rank of Org Capital (Seed Word)	Glassdoor
Pct Org Capital (ChatGPT)	Percentile rank of Org Capital (ChatGPT)	Glassdoor
Pct Org Capital (Average)	Percentile rank of Org Capital (Average)	Glassdoor
Cumulative SG&A	Measure of organizational capital based on SG&A defined in section 4.2	Compustat
Overall Rating	Average overall rating on Glassdoor	Glassdoor
Balance Rating	Average work-life balance rating on Glassdoor	Glassdoor
Culture Rating	Average culture rating on Glassdoor	Glassdoor
Opportunities Rating	Average opportunities rating on Glassdoor	Glassdoor
Compensation Rating	Average compensation rating on Glassdoor	Glassdoor
Management Rating	Average management rating on Glassdoor	Glassdoor
ROA	Net income / total assets * 100%, winsorized at the 1st and 99th percentile	Compustat
P/B Ratio	Market value / book value of common equity, winsorized at the 1st and 99th percentile	Compustat
Ln(Total Assets)	Natural log of total assets	Compustat
Firm Age	Number of years since the firm's first appearance in Compustat	Compustat
Sales Growth	$(Sale_t - Sale_{t-1}) / Sale_{t-1}$, winsorized at the 1st and 99th percentile	Compustat
Leverage	Total debt / book value of equity, winsorized at the 1st and 99th percentile	Compustat

APPENDIX B: SEED WORD AND EXPANDED DICTIONARY

Seed word: human capital, culture, relationship, intangible, management

Top 50 Words in the Expanded Dictionary					
Rank	Word	Similarity	Rank	Word	Similarity
1	culture	0.724	26	cooperation	0.445
2	leadership	0.671	27	behavior	0.444
3	management	0.616	28	behaviour	0.443
4	relationship	0.599	29	mangement	0.436
5	mgmt	0.536	30	connection	0.435
6	managment	0.534	31	mgt	0.432
7	atmosphere	0.523	32	ethic	0.431
8	relationships	0.504	33	approach	0.430
9	ethos	0.492	34	rapport	0.424
10	attitude	0.490	35	perception	0.423
11	communication	0.489	36	strategy	0.420
12	human_capital	0.484	37	leaders	0.420

Top 50 Words in the Expanded Dictionary					
Rank	Word	Similarity	Rank	Word	Similarity
13	interpersonal_relationships	0.483	38	mentality	0.418
14	teamwork	0.482	39	strategic_thinking	0.416
15	engagement	0.475	40	strategic_vision	0.416
16	team_spirit	0.473	41	business_model	0.415
17	environment	0.470	42	balance	0.412
18	relations	0.469	43	moral_compass	0.412
19	collaboration	0.469	44	synergy	0.411
20	integrity	0.467	45	image	0.411
21	ethics	0.466	46	camaraderie	0.408
22	philosophy	0.463	47	business_acumen	0.407
23	partnership	0.451	48	emotion	0.407
24	communications	0.450	49	employee_engagement	0.406
25	mindset	0.449	50	hierarchy	0.405

APPENDIX C: CHATGPT-GENERATED EMPLOYEE REVIEWS

Prompt to ChatGPT,
This is the definition of organizational capital.

Organizational capital encompasses any intangible firm asset with four properties: (1) it affects firm performance; (2) it changes slowly over time; (3) being intangible, it is not perfectly observable; and (4) it must be produced at least partly inside the firm with the active participation of the firm’s top management.

What could organizational capital be in practice? A leading example is the management practices analyzed by Bloom and Van Reenen [2007], which arguably affect firm performance (as in condition 1) and are slow-moving (as in condition 2). In support of the imperfect observability condition (condition 3), note that management practices are difficult to measure precisely (Bloom et al. [2019] estimate that 45% of the observed variance in management scores is due to measurement error). For condition 4, Simons [1994b] uses 10 years of observational data collected in over 50 U.S. businesses to document how top managers use control systems—namely, mechanisms for influencing human endeavor within the company—to maintain or alter patterns in organizational activities; in particular, new CEOs use the first 18 months of their tenure to define and measure critical performance variables (Simons [1994a]). There are other possible examples of organizational capital. Our definition includes at least partial constructs, such as relational contracts (Baker, Gibbons, and Murphy [2002]), corporate culture (Schein [2010]), firm-specific human capital (Prescott and Visscher [1980]), or firm capabilities (Teece, Pisano, and Shuen [1997]).

Based on the above definition, please give me 100 employee reviews of their company which indicate that their company has strong organizational capital, and 100 employee reviews of their company which indicate that their company does not have strong organizational capital. Each review is

one or two sentences long. The language should be in the style of an employee's review of their company.

10 Sample Synthetic Reviews Indicating Strong Organizational Capital

Our company's management practices are top-notch and evolve with the times, ensuring we're always ahead of the curve in performance.

I'm continually impressed by how our leadership actively shapes our firm's direction, creating a unique and powerful organizational culture.

The way our management practices are integrated into every aspect of our work here makes a significant positive impact on our performance.

Our top executives are deeply involved in developing our company culture, which has led to a strong and cohesive work environment.

It's evident that our firm's success stems from the intangible assets we've cultivated over time, particularly our innovative management practices.

Our company's innovative approach and dynamic management practices really drive our success and growth.

The involvement of top management in cultivating our company culture is truly inspiring and motivates me every day.

I'm proud to work in a place where our intangible assets, like management practices, are given such importance.

The gradual yet impactful evolution of our organizational practices keeps us competitive and forward-thinking.

Our leadership's active role in shaping organizational activities translates into a highly productive and motivated workforce.

10 Sample Synthetic Reviews Indicating Weak Organizational Capital

There seems to be a disconnect in our management practices, and it's not clear how they contribute to our company's overall performance.

Our leadership seems disengaged from actively developing the company's culture, which has led to a lack of direction.

I've noticed that our organizational practices are stagnant and don't really adapt to changing industry trends.

The lack of involvement from top management in shaping our work environment has led to a disorganized and uninspiring company culture.

It's difficult to see the impact of our so-called organizational capital when management practices feel outdated and ineffective.

There seems to be little evolution in our management practices, leaving us trailing behind industry standards.

Our company's lack of focus on developing internal practices and culture is evident in our stagnant performance.

The disengagement of top management from actively shaping our organizational culture has led to a demotivated workforce.

Our firm's intangible assets, like management practices, seem outdated and disconnected from our actual needs.

I feel there's a lack of strategic involvement from our leadership in developing effective organizational practices.

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