COVID-19 Human Capital Management Response, SEC Disclosure, and Firm Value

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First Draft: January 7, 2022

This Draft: April 24, 2022

Abstract

Based on newly mandated SEC human capital disclosures in 10-K filings, we assess whether corporate human capital management responses to the COVID-19 pandemic (COVIDHCM) have value implications. We first show that firm COVIDHCM disclosure is positively associated with how favorably employees view the firm's pandemic response, suggesting the disclosures reflect firm actions. We then examine whether COVIDHCM is relevant for firm value. We find that while the effects of COVIDHCM on firm value are insignificant on average, favorable COVIDHCM valuation effects are observed as financial flexibility increases. Further analyses suggest that COVIDHCM enhances firm value via improved overall employee satisfaction and higher employee productivity, with such effects again being conditional on financial flexibility. Overall, the results provide early evidence on the usefulness of COVID-19 related human capital management disclosures for capturing variation in COVIDHCM activity and shed light on the economic implications of firms' actions to protect employees' welfare during a global pandemic.

Keywords: human capital management; disclosure; COVID-19 pandemic; employee welfare; firm value.

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*Corresponding author. We thank Nandu J. Nagarajan, Jedson Pinto, Bin Srinidhi, and Mohan Venkatachalam for helpful comments and discussions as well as workshop participants at Ohio State University and the University of Oklahoma. Excellent research assistance by Hangu Chen is greatly appreciated.

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1. Introduction

The COVID-19 pandemic has significantly disrupted business operations around the world since early 2020. Given the nature of the pandemic, human capital has become a particularly vulnerable business resource. However, our understanding of firms' attempts to protect employees during the pandemic and whether such attempts add value remain rudimentary at best. This study takes advantage of a recent human capital disclosure mandate under Regulation S-K (SEC 2020) and examines whether material human capital management responses to the COVID-19 pandemic have value implications.

Human capital management is an important driver of performance (SEC 2020) and many view human capital the "most important asset" of a business (Batish et al. 2021). However, this "most important asset" is not recognized on the balance sheet due to the difficulty in measuring the future economic benefits of human capital investments. Publicly available information about human capital and human capital management is, therefore, extremely limited.[1] Effective November 9, 2020, the SEC mandated a new disclosure requirement for registrants to provide a description of human capital resources "to the extent such disclosures would be material to an understanding of the registrant's business" (SEC 2020, Item 101(c)) as part of the SEC's continuing effort to modernize disclosures under Regulation S-K and improve regulations on environmental, social, and governance (ESG) related issues.

This new disclosure mandate adopts a principles-based approach with few prescribed requirements on the specific qualitative or quantitative human capital management information

[11] Scholars who study human resource management commonly rely on survey instruments completed by firm personnel including HR professionals, employees and middle manager to measure human capital investments (Boon et al. 2019).

that must be disclosed. This provides registrants great flexibility to tailor disclosures to their unique circumstances, which may include but are not limited to changing macro-economic conditions and global health matters (SEC 2020). Under this principles-based disclosure mandate, firms are expected to discuss their human capital management responses to the COVID-19 (COVIDHCM) when they deem these responses as material.[2]

To answer our research question, we will ultimately investigate associations between COVIDHCM disclosures and firm value. Such associations reflect a joint test that COVIDHCM disclosures capture actual COVIDHCM actions at firms and that COVIDHCM actions have implications for firm value. Given the joint test problem, we proceed in two steps. First, we examine the validity of COVIDHCM disclosures by assessing whether COVIDHCM disclosures faithfully capture the underlying actions firms take in protecting their employees. Second, we examine whether COVIDHCM is value relevant for investors. Importantly, COVIDCHM disclosures are provided after the fiscal year is completed and we use COVIDHCM disclosures to proxy for activity that occurred during the fiscal year. We take capital markets as at least somewhat efficient in that economic implications of COVIDHCM actions would be reflected in firm value well before any formal COVIDHCM disclosure on Form 10-K. As such, our investigation does not pertain to the decision relevance of the COVIDCHM disclosure (Barth et al. 2001).

In our first-step validity assessment, we seek evidence on "representational faithfulness," i.e., whether there is a correspondence between disclosure and the economic phenomenon it purports to represent. *Ex ante*, it is unclear whether COVIDHCM disclosures sufficiently capture variation in corporate actions. By following a principles-based approach, COVIDHCM

[2] Materiality is not clearly defined in under SEC regulations. Christensen et al. (2021) suggest that defining and assessing materiality of corporate social responsibility disclosures (CSR) is more difficult, especially when the scope of the CSR standards is broad and encompasses reporting on firms' impacts on the environment and society.

disclosure is expected to reflect material COVIDHCM activities firms undertake to enhance employee welfare. However, there is substantial debate regarding whether meaningful information results from this principles-based SEC disclosure mandate (SEC 2020; Mirchandani 2021). Because there are no rules-based prescriptive requirements, firms may not disclose COVID-related aspects of human capital management but rather focus on traditional and ongoing aspects such as talent attraction or development. Even if firms disclose COVIDHCM information, lacking a formal verification or enforcement mechanism, the disclosure may simply reflect boilerplate text or public relations language rather than capturing material COVIDHCM actions.

We focus on December-year-end firms who made their first human capital disclosures in 2020 10-K filings, which became available in early 2021. In these disclosures, firms sometimes discuss COVID-19 related human capital measures or objectives, ranging from the implementation of new health and safety protocols, to accommodation for remote work, to changes in employee workloads and benefits. Because of the diversity in the specific procedures that each firm takes in response to the pandemic, our analyses focus on a COVID-19 response in the aggregate. We code a disclosure as indicating a COVIDHCM if the human capital disclosure contains the terms *pandemic*, *COVID*, or *coronavirus*. We find that 63% of our 2,123 sample firms mention these terms in their 2020 human capital disclosures, while 37% of firms do not. The indicator variable for COVIDHCM is our variable of interest.

To empirically ascertain representational faithfulness, we proxy for actual COVID-19 human capital management responses via employee reviews provided in 2020 on glassdoor.com, a social media platform where employees provide ratings and reviews of their employers. As employees are the intended beneficiaries of human capital management, their sentiment provides

a direct, relevant, and independent assessment of human capital management at a specific firm. We examine employees' reference to the keywords *pandemic*, *COVID*, or *coronavirus* in the free-form "pros" and "cons" portion of employee reviews. Using the difference in the percentage of pro and con reviews that reference these keywords as our proxy for actual firm actions, we find a significantly positive association between firms' COVIDHCM disclosures and employees' COVID-19 sentiment. This evidence suggests employees respond, on average, relatively favorably (unfavorably) to the existence (absence) of a COVIDHCM, implying that the related principles-based human capital disclosures under the SEC mandate capture firm actions, at least to some extent.

Having established the existence of representational faithfulness, we next ascertain whether COVIDHCM is relevant for firm value. COVIDHCM actions are designed to counteract the negative implications of the pandemic on employees and COVIDHCM disclosures are intended to capture the nature of such actions. However, whether COVIDHCM would favorably impact firm value is unclear *ex ante*. On the one hand, many COVIDHCM actions are expected to directly protect employee health and safety and improve their working environment, which decreases the risk of virus infection and spread at the workplace. COVIDHCMs can also signal the firms' commitment to employees' well-being and increase employees' job satisfaction, morale and loyalty to the firm, resulting in a competitive advantage in talent attraction and employee productivity. This competitive advantage can in turn increase firm value (Huselid 1995; Jensen 2001; Edmans 2011).

On the other hand, even if well intended, COVIDHCM may not enhance firm value during the pandemic. For example, while transitioning to a remote work mode protects employee health, it also potentially disrupts normal production processes or sales transactions. Furthermore,

as many glassdoor.com employee reviews suggest, a successful transition requires proper training and strong technical support, and many corporate responses involve additional COVID-19 related employee benefits such as extended paid sick leaves, all of which can be costly (Holger 2020). Finally, if the economic impact of the pandemic is driven by shocks to demand as opposed to shocks to supply, human capital management may not be a first-order factor that affects employee productivity and firm value during the pandemic.

We assess the relevance of COVIDHCM disclosures for firm value via a difference-in-difference research design based on sample firm data from both 2020 and 2019, which reflect the onset of the pandemic and the year immediately prior, respectively. Using Tobin's Q as a proxy for firm value (Daines 2001; Cremers and Ferrell 2014), we find that on average, the effects of the COVIDHCMs on firm value during the pandemic are insignificant. However, after considering the implications of financial flexibility following Fahlenbrach et al. (2021), we find that the effects of COVIDHCMs on firm value significantly increase with cash holdings.[3] An increase of one standard deviation in cash holdings increases the COVIDHCM effects on firm value during the pandemic by 14% of one standard deviation in firm value. These results suggest COVIDHCMs are value relevant, but the benefits are conditional on a firm having sufficient financial flexibility.

To ultimately impact firm value, COVIDHCMs should enhance overall employee satisfaction and employee productivity. Using numeric employee firm ratings on glassdoor.com as our proxy for employee overall satisfaction (Huang et al. 2015; Green et al. 2019) and revenue per employee as our proxy for employee productivity (Cronqvist et al. 2009), we find results consistent with our results on firm value. Specifically, COVIDHCM is not associated with higher

[3] Similar effects are observed for cash holdings net of short-term debt. Long-term debt, however, is generally not a significant factor in the net benefits of the COVIDHCM on firm value.

employee satisfaction or higher employee productivity on average. However, favorable effects of COVIDHCM on both employee satisfaction and productivity are observed conditional on firms' financial flexibility. These results again suggest that the benefits of COVIDHCM on employees are not ubiquitous but vary in the cross section with the availability of financial resources.

This paper makes three important contributions. First, we contribute to an emerging literature that examines how the society and the economy have combatted a global pandemic that has significantly upended the workplace and the workforce. Much of this nascent literature focuses on the capital market implications of the pandemic (e.g., Kargar et al. 2020) or the roles of government policies or regulations in the pandemic (Haddad et al. 2021). Less focus is on corporate responses, largely due to the lack of firm-level data. Research on human capital management responses is even more scarce, despite the importance of human capital and the extent of the impact that the pandemic has on human capital.[4] This paper provides some of the first evidence on the economic implications of human capital management in combating the destructions brought about by the global health crisis by leveraging a recent SEC disclosure mandate.

Second, our findings provide initial evidence on the efficacy of the recent and controversial SEC rule on mandatory human capital disclosures. This mandate is a first step toward greater transparency about corporate human capital management. However, given the principles-based nature of the rule, many market participants question the usefulness of such disclosures. Our evidence is consistent with COVID-19 related human capital disclosures, at least partially, capturing human capital investments. Our evidence also suggests that human

[4] Cheema-Fox et al. (2020) examine how the sentiment in news coverage of corporate human capital, supply chain, and product and service responses to the COVID-19 pandemic affects market returns from February 20 to March 23, 2020. Thus, their focus is more about the sentiment of media coverage as opposed to firm responses. Furthermore, they do not examine the effects on productivity and firm value.

capital investments, proxied via COVIDHCM disclosures, are associated with firm value for firms with financial flexibility, consistent with COVIDHCM disclosures capturing value relevant information.

Third, we contribute to the literature examining the economic implications of human capital and employee welfare, and more broadly, the ESG literature. Due to the lack of large-sample data, our understanding of human capital and human capital management is limited and fails to match the increasing importance of human capital in the economy (e.g., Rajan and Zingales 2000) and surging ESG trends that advocate employee welfare.[5] Extending prior findings on the economic benefits of investing in employee benefits and employee satisfaction (Salop 1979; Akerlof et al. 1988; Edmans 2011; Guo et al. 2016; Gubler et al. 2018), we provide large-sample evidence that investing in employees' health and well-being in a health crisis can have positive economic benefits by enhancing short-term employee productivity and long-term firm value (Jensen 2001). Importantly, our results show that during an economic crisis from a global pandemic, such benefits can vary considerably with a firm's financial flexibility, underscoring the cost-benefit tradeoff in investing in employees' well-being.

2. Background and hypothesis development

2.1. Human capital management during the pandemic

The global COVID-19 pandemic has brought unprecedented disruptions and challenges to businesses. A survey by Blank Rome (2020) shows that productivity reductions are among the top concerns of business executives. Indeed, the pandemic has upended the workplace equilibrium and taken a toll on employees and businesses (including employee-employer

[5] While the literature on ESG/CSR has grown considerably in the last decade, most studies focus on aggregate ESG/CSR activities (e.g., Albuquerque et al. 2019). Large sample studies on specific employee welfare are scarce. Furthermore, this literature has provided largely mixed results on the net benefits of ESG/CSR activities (Christensen et al. 2021).

relationships) with decreased productivity and retention, increased absenteeism, and declining mental health (Allen 2021).

In the United States, the Federal Occupational Safety and Health Administration (OSHA) is charged with ensuring safe and healthy workplace conditions. However, it has left protecting workers from the pandemic largely to employers (Scheiber 2020). It is therefore employers' responsibility to decide whether they need to undertake a human capital management response to the pandemic, and in what form. Many U.S. employers took prompt and sometimes significant human capital management measures to protect their employees and adapt to the pandemic's economic environment. Company crisis responses have included specific safety and health measures (e.g., protective equipment and the option to work from home) as well as enhanced employee benefits (e.g., paid sick leave, counseling, medical benefits, and bonuses for essential workers) (Holger 2020).[6] Other strategies focus on long-term human capital management that emphasizes norms around engagement, communication, organization, and ways of working (Deloitte 2020).

2.2. Human capital disclosure

To obtain measures of human capital investments, scholars commonly survey HR professionals, middle managers and employees to ascertain human capital activities (Boon et al. 2020). Relying on firm specific survey responses limits the ability of scholars to readily examine human capital activities in the cross section of public firms. We overcome this limitation by exploiting new publicly available data on human capital management required by the SEC. On August 26, 2020, the SEC adopted a rule that modernizes the requirements of Regulation S-K

[6] Notably, investors also play an important role in urging firms to engage in positive human capital management responses. For example, BlackRock, the world's largest asset manager, had nearly 150 coronavirus-related engagements in the first quarter of 2020 and worker health and safety were "clearly key priorities" in many of these discussions (Holger 2020).

applicable to disclosures of the description of the business (Item 101), legal proceedings (Item 103), and risk factors (Item 105). Effective November 9, 2020, these requirements greatly expanded the human capital management disclosures required by firms under Item 101. Under the old rule, Item 101(c)(1)(xiii) required disclosure of only the number of persons employed by the registrant. Under the new rule, Item 101(c)(2)(ii) requires a description of the registrant's human capital resources, including the number of persons employed by the registrant, and any human capital measures or objectives that the registrant focuses on in managing the business.[7] In particular, firms must disclose "a description of the registrant's human capital resources to the extent such disclosures would be material to an understanding of the registrant's business" (SEC 2020).

The final rule identifies human capital measures and objectives that address the "attraction, development, and retention" of personnel as non-exclusive examples of subjects that may be material, depending on the nature of the registrant's business and workforce (SEC 2020). Importantly, this rule is principles-based (and hence, registrant-specific) with minimal prescriptive requirements. This is because the SEC recognizes that the exact measures and objectives included in human capital management disclosure may evolve over time and may depend, and vary significantly, based on various factors. These factors include the industry and regions/jurisdictions in which the registrant operates, the general strategic posture of the registrant (e.g., whether and the extent to which the registrant is vertically integrated), current macro-economic conditions, and national or global health matters (SEC 2020).

While many commenters supported this perspective, others expressed concerns that the principles-based approach would not likely elicit useful information about human capital

[7] The SEC (2020) stated that modernization of Regulation S-K was necessary because "as businesses, markets, and technology have changed since that time, some of the prescribed disclosure topics in Item 101(c) are not relevant to all registrants, and these disclosure requirements may elicit disclosure that is not material to a particular registrant."

practices or provide sufficiently comparable disclosure unless grounded in standardized metrics (SEC 2020).[8] In fact, two SEC commissioners voted against the final principles-based rule.[9] One of them, Commissioner Crenshaw, explained her position, "although the Commission has taken a step in the right direction by adding a reference in the final rule to human capital, I worry that the policy choice to impose a generic and vague principles-based requirement will fail to give American investors the information they need..."[10]

Doubts with respect to the relevance of human capital disclosures continued after the rule became effective. Batish et al. (2021) and Pandit (2021) examine early disclosure choices that companies have made under the new SEC rules and find that while some companies are transparent in explaining the philosophy, design, and focus of their human capital management, most disclosure is boilerplate and lacks quantitative metrics. Batish et al. (2021) suggest that the new rules appear to contribute to the length but not the informativeness of 10-Ks.

While the rule itself does not prescribe specific human capital management categories or metrics, many common themes have emerged in the resulting disclosures, including talent attraction, compensation and benefits, diversity and inclusion, and culture and engagement (PwC 2020; Pandit 2021). Notably, while a prescriptive, static, rules-based disclosure standard is unlikely to require disclosures of human capital management related to the COVID-19 pandemic, many firms disclose how they modify their human capital management procedures to protect employees against the pandemic (PwC 2020; Aon 2021).

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[8] For example, as summarized by the SEC (2020), commenters are concerned that the principles-based approach would not likely elicit meaningful information about human capital practices (NYC Comptroller; Financial Executives International). Other commenters expressed concern based on their view that the principles-based approach would rely entirely on the judgment of management to determine the substance of the information to disclose and would result in less disclosure being provided than would be the case under a prescriptive disclosure requirement (Human Capital Management Coalition; ShareAction; Financial Executives International).

[9] The final rule passed with a 3-2 vote, with Commissioners Caroline Crenshaw and Allison Herren Lee voting against it.

[10] https://www.sec.gov/news/public-statement/crenshaw-statement-modernization-regulation-s-k.

Appendix A illustrates COVID-related discussions within the firm's overall human capital disclosures (COVIDHCM=1). As evidenced from these examples, the disclosures are mainly qualitative in nature, quite specific, and not boilerplate. For example, CECO Environmental Corp. (from the manufacturing industry) and Citizens, Inc. (from the finance and insurance industry) discuss work-from-home policies, employee benefits such as paid leave policies, and/or employee training for online sales. In particular, CECO Environmental states that the company's experience and continuing focus on workplace safety have enabled the firm "to preserve business continuity without sacrificing our commitment to keeping our colleagues and workplace visitors safe during the COVID-19 pandemic."[11]

2.3. Hypothesis development

Assessing whether COVIDHCM impacts firm value ultimately requires examining the association between COVIDHCM disclosures and a measure of firm value. Any observed association would reflect a joint test that COVIDHCM disclosures capture COVIDHCM actions and that investors find such actions important for firm value. Given this joint test problem, we first assess disclosure validity and then examine value relevance from an investor's standpoint. These two steps are akin to assessing whether SEC mandated disclosures are useful to investors in the sense that they exhibit both representational faithfulness and relevance, which are the two fundamental qualitative characteristics of useful financial information under accounting standards (FASB 2018). While SEC disclosures are not prepared under US GAAP, using these two qualitative characteristics helps guide our hypothesis development with respect to COVIDHCM disclosures.

[11] In reviewing human capital disclosures, we find that regardless of the COVID-related references, firms make similar disclosures on the number of employees and general discussions of topics such as talent, compensation, and culture.

Our first hypothesis pertains to whether COVIDHCM disclosures at least to some degree are representationally faithful. The SEC requires a human capital disclosure "to the extent such disclosures would be material to an understanding of the registrant's business" (SEC 2020, Item 101(c)). Under this mandate, representational faithfulness means that when COVIDHCM disclosures are provided (absent), firms have (have not) undertaken material human capital management actions to protect employees during the pandemic.[12] Whether COVIDHCM disclosures are representationally faithful is unclear given the relative lack of evidence on principles-based disclosure standards generally and the lack of evidence on human capital disclosures specifically. A large literature examines principles-based vs. rules-based accounting standards,[13] whereas fewer studies examine principles-based vs. rules-based disclosure standards, despite the fact that the SEC considers the principles-based approach key to its disclosure regulations (Hinman 2020; SEC 2020). Moreover, given the recency of the SEC principles-based disclosure mandate with respect to human capital, the literature to date has only provided descriptive evidence pertaining to topics disclosed by firms (Batish et al. 2021; Pandit 2021).

COVIDHCM disclosures may lack representational faithfulness if firms either do not provide disclosures when material COVIDHCM exists, or provide COVIDHCM disclosures when they are unwarranted. Regarding the former, the principles-based SEC mandate rule does not prescribe specific disclosure topics. Thus, even if firms introduce COVID-19 related procedures to protect their employees, they may not make such disclosures. This could occur if firms are unsure whether their COVIDHCM will be effective or unsure whether the pandemic

[12] In terms of disclosures mandated by the SEC, our consideration of representational faithfulness of COVIDHCM is similar to scholars examining whether SEC risk factor disclosures meaningfully reflect the true risks firms face (e.g., Campbell et al. 2014).

[13] Researchers generally find that accounting information generated under principles-based standards has higher quality (e.g., Barth et al. 2008; Folsom et al. 2017), notwithstanding findings that managers use the allowed discretion under principles-based standards for earnings management (Fornaro and Huang 2012; Folsom et al. 2017).

effects will be transitory or permanent. In such cases, managers may believe their COVIDHCM are not material for understanding the business. Firms may also strategically avoid providing a COVIDHCM disclosure if they believe it would be viewed as confirming the pandemic is having a severely negative impact on the firm.[14] Second, the rule does not require any quantitative disclosures; most disclosures, especially those on COVIDHCM, are qualitative in nature (Batish et al. 2021; Pandit 2021), which makes them difficult to verify. Managers may face pressure to convey support for employees even if material support for employees is lacking. Such pressure can stem from, for example, growth in ESG investing, where a heavy focus on employee welfare can play a role in investment decisions (Holger 2020). As a result, a firm without material COVIDHCM activities may nonetheless make COVIDHCM disclosures for impression management or under investor pressure.

On the other hand, a long literature has shown disclosure generally provides benefits in the form of lower cost of capital and improved liquidity (Healy and Palepu 2001) and the discretion under the principles-based rule can facilitate the communication of private information (Barth et al. 2008). In terms of qualitative disclosures provided under SEC mandate, research on risk factor disclosures reveals they are informative to some extent, suggesting some degree of representational faithfulness (Campbell et al. 2014).[15] Finally, there are some potential disciplining mechanisms that can drive truthful, and in turn representationally faithful, human capital disclosures. While human capital disclosures are not reviewed or audited by an

[14] That some firms have attempted to downplay the impact of the pandemic is suggested in Larcker et al. (2020), who study COVID-19 disclosures in the first five months of 2020 prior to the SEC human capital disclosure mandate. They find the majority of COVID-19 disclosures occur in the risk factor section of form 10-Q and 10-K, and cite instances where firms made no disclosures pertaining to COVID-19 despite COVID-19 impacting the business and instances where firms did not increase their risk factor disclosures despite the likely possession of information that COVID-19 would impact sales and operations.

[15] However, Nelson and Pritchard (2016) also show that the informativeness of mandatory risk factor disclosures is diminished for high-litigation-risk firms relative to voluntary risk factor disclosures.

independent party, public disclosures – and the lack of them - can facilitate scrutiny by various stakeholders (Dyreng et al. 2016).[16]

Based on the above discussion, overall, whether COVIDHCM disclosures are representationally faithful is an empirical question. We state our first hypothesis in null form as follows:

H1: Corporate COVIDHCM disclosures are not representationally faithful.

Our second hypothesis considers whether disclosed COVIDHCM activities are relevant for firm value. How human capital management affects firm value in the context of a global pandemic is largely unknown.[17] COVIDHCM could enhance firm value for at least two reasons. First, health and safety measures decrease the risk of employee infection and protect employees' well-being, in turn mitigating disruptions from the pandemic. Second, beyond direct infection reduction effects, COVIDHCM can boost employees' job satisfaction, morale, and loyalty to the firm and help attract and retain talent.[18] Ultimately, these effects are expected to result in a corporate competitive advantage, increasing both employee productivity (Arthur 1994; Jones and Kato 1995; Ichniowski et al. 1997) and firm value (Jensen 2001; Filbeck and Preece 2003; Freeman 2010; Edmans 2011).

When considering these potential benefits, it is also important to note that pandemic-specific human capital measures may differ from general employee benefits or safety measures, with some COVIDHCM perhaps having negative short-run productivity implications. For

[16] Employees are one such stakeholder. To the extent that firms disclose COVID-19 employee policies that are not representationally faithful, workforce satisfaction may deteriorate. In our hypothesis test we will utilize employee reviews of firm COVID-19 responses to assess representational faithfulness.

[17] The literature review of human resource investment studies by Boon et al. (2019) notes that the evidence overall consistent with the conclusion that "investments in some broad set of HR practices yields returns" but cautions that it is unclear which practices drive value. Harney and Collings (2021) note "the nature of HR responses to the COVID-19 pandemic, including why and how different organizations responded as they did is an important question" and "insights to such questions are not immediately evident from extant research."

[18] For example, Shapiro and Stiglitz (1984) show that better worker benefits can provide the workforce with an incentive not to shirk.

example, labor-intensive manufacturing firms may have to adjust labor shifts to decrease worker density at the factory to protect employees during the pandemic. Furthermore, many COVIDHCM measures can be financially costly. Morgan Stanley's analysts estimate that labor costs for some businesses could increase by 15% due to COVID-related human capital management measures (Holger 2020). For example, paid sick leave policy for an extended period for all employees can create a cost headwind for employers. Transitioning employees to a remote work mode requires adequate digitalization, which requires significant investment in infrastructure building, hardware installation, software development, and employee training. If firms do not sufficiently support these measures, positive effects with respect to firm value may not materialize.

Management scholars who focus on human resources have pointed out that traditional findings with respect to the favorable impact of human resource management on firm outcomes may not hold in the COVID setting (Collings et al. 2021a; Harney and Collings 2021). Moreover, as managers attempt to satisfy both shareholders and stakeholders more broadly, actions taken to maintain short-run financial outcomes may fail to sufficiently balance employee needs and vice versa (Collings et al. 2021b). Given the above discussion, whether COVIDHCM investments ultimately increase firm value or not is unclear *ex ante*.

We therefore state our second hypotheses in null form as follows:

H2: COVIDHCM is not associated with firm value.

We note that an assessment of H2 is moot if we do not find COVIDHCM disclosures to be representationally faithful when testing H1. Further, rejecting H2 would also support the value relevance of COVIDCM disclosures *per se* given we proxy for COVIDHCM via variation in firm disclosures, which is important to assess given Batish et al. (2021) who state:

> "… it does not appear that current HCM disclosure is *relevant* for assessing corporate performance or understanding how employee development programs contribute to strategy, *value creation*, or competitive advantages." (pg. 4, emphasis added in *italics*)

3. Sample and research design

3.1. Sample and identification of COVIDHCM

Table 1 summarizes our sample selection process. The first COVID-19 case in the United States was reported on January 21, 2020, and the World Health Organization declared a public health emergency on January 31, 2020. The SEC human capital disclosure mandate became effective on November 9, 2020. As such, December fiscal year end firms are expected to include in their 2020 10-K filings COVID-19 related human capital management responses if they deem these responses material. Accordingly, the sample begins with 4,397 unique firms in Compustat that have December fiscal year ends, positive sales, positive total assets, and non-missing CIK and SIC for fiscal year 2020.

To ensure that human capital is an economically important business resource and to manage the scope of manual data collection of human capital disclosures, we require sample firms to have at least 100 employees as of year end 2020. We require metadata containing 2020 10-K filing information in the WRDS SEC analytics suite so we can identify the firm's 10-K on the SEC EDGAR archive. Firms that filed 10-K filings beyond 100 days after December 31, 2020 are excluded from the sample to mitigate confounding effects from unusual business circumstances that result in late filings. Because our tests of value relevance involves a difference-in-difference design where the firm serves as its own control, we further require a balanced sample of 2019 and 2020 firm-years with non-missing financial variables used in our tests. This process yields a sample of 2,123 unique firms and 4,246 firm-years in 2019 and 2020.

Human capital disclosures are manually collected from each firm's 2020 Form 10-K via the SEC EDGAR archive. Given the potential for substantial heterogeneity across firms in terms of specific COVIDHCM (as illustrated in Appendix A), we simply identify a firm as engaging in a material COVIDHCM during the pandemic if any of the following keywords is present within the human capital disclosure: *pandemic, COVID, coronavirus*. The keyword search identifies that 63% (COVIDHCM=1) of the sample firms provide COVID-19 related disclosures in the human capital disclosures and 37% have no references to the pandemic (COVIDHCM=0).[19]

Table 2 presents the frequency of COVIDHCM disclosures across Fama-French 12 industries for our sample of 2,123 unique firms. Within each of the 12 industries, the majority of firms engage in material COVID-19-related COVIDHCM activities, confirming the general emphasis of employee well-being across industries during the pandemic. However, variation exists, with utilities (75%) and consumer durables (69%) exhibiting the highest COVIDHCM rates, while the oil, gas, and coal extraction and products industry (54%) and chemicals and allied products industry (56%) have the lowest COVIDHCM rates.[20]

Our Hypothesis 1 tests for the representational faithfulness of COVIDHCM disclosures. Comparing firm COVIDHCM disclosures to actual COVIDHCM actions is the ideal test of representational faithfulness. Because actual actions are not observable, we use employee review data from glassdoor.com to infer firm actions. Glassdoor.com is a social media platform where employees provide ratings of their employers, share opinions of the firms' outlook, and post

[19] Our documented percentage of COVIDHCM is similar to the 67% of S&P 500 firms (Gibson Dunn 2021) and 65% of Fortune 500 firms (Pandit 2021) who report making COVID-19 related human capital disclosures. We read 200 randomly selected disclosures and observed 100% accuracy in capturing pandemic related human capital responses. All CVOIDHCM = 1 observations contained a discussion of a human capital response to the pandemic and all COVIDHCM = 0 observations contained no mention of the pandemic.

[20] Larcker et al. (2020) examine voluntary COVID-19 disclosures in 8-K, 10-Q, and 10-K filings primarily in forward-looking statement or risk factor discussions during the first five months of 2020. They find that airlines and travel industries have the most mentions of COVID-19, which pertain, in part, to actions taken to ensure customer safety and the risk to the business of the drop in customer demand (Hassan et al. 2020). The SEC disclosure mandate we study pertains to firm employees, not firm customers.

reviews on positive and negative firm aspects.[21] Although glassdoor.com does not explicitly solicit employee feedback on COVID-19 management responses, employees can and do reference the pandemic in the free-form text portion where they list "pros and cons" of working for their employer. Because the purpose of COVIDHCM is to protect employees, employees' perceptions provide an indicator of material COVIDHCM activities that is independent of disclosures managers make under the SEC mandate.

We focus on employees who are currently employed at the time of their review as opposed to workers previously employed to better ensure the employee is exposed to any COVIDHCM of the firm. For these current employees, we focus on the textual reviews of pros and cons posted on glassdoor.com in 2020. We require a minimum of 20 reviews for each firm-year to obtain a set of robust and reliable reviews.[22] We are able to obtain a sample of 128,551 reviews for 699 individual sample firms in 2020 to test for the representational faithfulness of COVIDHCM disclosures. We use the same keywords as in our COVIDHCM variable (*COVID*, *pandemic*, and *coronavirus*) to identify review references to the pandemic in free-form responses.

To illustrate how we use these reviews, in Appendix B we first provide a screenshot illustration for Citizens, Inc. Under "pros" the employee states "As COVID hit the first priority was ensuring that the colleagues were safe and then we made sure we continued to deliver for our customers too" while under "cons" none of the keywords appear. We would code this particular review, *r*, for the firm Citizens, Inc., *i*, in the year 2020, as positive ($COVIDPRO_{r,i,2020}$ = 1) and not negative ($COVIDCON_{r,i,2020}$ = 0).[23] Below the Citizens, Inc. example, we provide

[21] Prior research has provided validation of glassdoor.com reviews and ratings as a measure of employees' assessment of their employers (e.g., Huang et al. 2015; Green et al. 2019).

[22] Green et al. (2019) require 15 reviews each firm-quarter, which equates to 60 reviews per year.

[23] If an employee references the pandemic under both pros and cons by citing favorable and unfavorable aspects of the firm's response, then COVIDPRO and COVIDCON will both equal 1. When conducting firm level analysis, all responses are aggregated by firm-year by calculating the simple average.

examples of text excerpts from both positive and negative reviews with respect to the pandemic. Like the SEC disclosure examples in Appendix A, these employee reviews also refer to remote working, additional compensation and benefits, and technological support for remote working.

3.2. Variables and descriptive statistics

Table 3 Panel A provides descriptive statistics of variables used in our hypothesis tests.[24] The average COVIDHCM, our key independent variable indicating a COVIDHCM disclosure, is 0.632. For testing H1 regarding representational faithfulness, we use employees' reference to COVID-19 in the pros and cons section of their glassdoor.com reviews. We create firm-year level variables COVIDPRO (COVIDCON) by taking the average of $COVIDPRO_{r,i,2020}$ ($COVIDCON_{r,i,2020}$) from reviews during the year 2020. The aggregate employee sentiment with respect to the firm's COVID-19 response in human capital management is captured by the variable COVIDNET, which is the difference between COVIDPRO and COVIDCON. On average, 2.03% (1.92%) of all sample pro (con) reviews in 2020 contain the keywords, suggesting mentions of COVID-19 are not frequent in reviews. The difference between positive and negative reviews is 0.12%, suggesting employees are slightly more positive about COVID-19 managerial responses than negative. For testing H2, we follow a large literature (e.g., Daines 2001; Cremers and Ferrell 2014) and use Tobin's Q at the end of the year to proxy for firm value. Mean (median) Tobin's Q is 1.753 (1.129), with a standard deviation of 2.01.

In testing our hypotheses, we include various control variables that might reasonably affect both a firm's actual COVIDHCM activities and related disclosure. Large firms (SIZE), who are more likely to operate in a wide variety of locations, may require a larger response due to global travel restrictions and differential restrictions across states. More valuable firms (Q)

[24] Detailed variable definitions are provided in Appendix C. All continuous variables are winsorized at 1% and 99% by year based on the broader balanced-sample.

and more profitable firms (ROA) have potentially more to lose absent a COVIDHCM response. Fahlenbrach et al. (2021) document the value of financial flexibility, proxied by cash holdings (CASH), short-term debt, (STDEBT), and long-term (LTDEBT), during the pandemic. Firms with greater financial flexibility have greater financial resources and thus are more able to engage in material COVIDHCM activities. Firms with greater labor intensity (LABOR) have stronger incentives to protect their employees via a COVIDHCM response. Finally, firms with higher employee productivity (PROD) or greater R&D intensity (RDX) generate more value from their human capital. Holding the level of labor intensity constant, these firms have more at stake if employees' health or well-being is negatively affected by the pandemic. Thus, these firms are more likely to engage in COVIDHCM activities. We note that several of these control variables also affect firm incentives to make disclosures about COVIDHCM actions. Larger firms (SIZE) tend to exhibit greater transparency due to information intermediaries monitoring the firm and are also subject to greater public scrutiny. Firms with larger labor forces (LABOR) or higher employee productivity (PROD) have greater incentives to signal a commitment to protecting employee well-being, given the importance of employees for these firms. Descriptive statistics with respect to control variables and the correlation between them, as provided in Table 3, are generally consistent with the extant literature.[25]

4. Empirical results

4.1. Test of H1: Representational faithfulness of COVIDHCM disclosures

[25] The positive and statistically significant correlation between COVIDPRO and COVIDCON in Table 3 Panel B may seem counterintuitive. Recall that mentions of COVID overall are quite rare and a lack of any COVID mention on glassdoor.com could capture situations where employees simply did not take the time to voice an opinion with respect to the presence or absence of a firm's COVIDHCM. Such a firm-level lack of response would result in COVIDPRO and COVIDCON both equaling zero, and thereby driving a positive correlation in the cross section of firms. Indeed, when we remove observations where COVIDPRO and COVIDCON both equal zero, the correlation between COVIDPRO and COVIDCON becomes -0.01 and is statistically insignificant.

Table 4 provides results of estimating the following OLS regression to test our first hypothesis on the representational faithfulness of COVIDHCM disclosures based on the 2020 observations with reviews available on glassdoor.com:

$$COVIDNET_{i,2020} = \beta_0 + \beta_1 COVIDHCM_{i,2020} + \gamma Controls_{i,2019} + \varepsilon_{i.t} \quad (1)$$

The dependent variable is COVIDNET, which is the difference between COVIDPRO and COVIDCON, and captures employee sentiment with respect to COVIDHCM. The independent variable of interest is COVIDHCM, which indicates a firm made a human capital disclosure pertaining to the pandemic. We include all the control variables we introduced in Section 3.2. As COVIDHCM investments are intended to assist employees, observing $\beta_1 > 0$ would reject H1 and suggest that COVID-19 related human capital management disclosures reflect the real actions taken by firms to protect their employees, at least to some extent.

We begin in column (1) with a univariate analysis by regressing COVIDNET on COVIDHCM with robust standard errors. The association is positive and statistically significant (β_1 = 0.0096, $p<0.01$). Firms making COVIDHCM disclosures generate more favorable employee COVID-19 specific reviews than firms who do not make COVIDHCM disclosures, consistent with CVOIDHCM disclosures capturing variation in latent COVIDHM activity.

In column (2) we include the full set of control variables discussed earlier along with industry fixed effects and cluster standard errors by industry. We find the association between COVIDHCM and COVIDNET is virtually unchanged (β_1=0.0101; $p<0.01$). The lack of attenuation on the COVIDHCM coefficient when including control variables is informative with respect to competing explanations for our findings. Suppose one conjectures COVIDHCM simply capture firms who already have in place superior human resource management practices regardless of COVID. Such a conjecture is reasonable given (1) superior human resource

management practices have been shown to enhance both employee productivity and financial performance (Huselid 1995), and (2) the correlation matrix reveals in Panel B of Table 3 reveals a positive association exists between the COVIDHCM indicator and both profitability (ROA) and productivity (PROD) prior to the onset of COVID. Such a conjecture would imply attenuation on the COVIDHCM after controlling for such factors, but the point estimate in Table 4 goes up (from 0.0096 to 0.0101), not down.

Representational faithfulness implies that COVIDHCM = 1 (0) captures instances where the firm had (did not have) a material human capital management response to the pandemic. Given the pandemic, on average, had a negative impact on employees, firms with no COVIDHCM are more likely to have negative reviews. Firms with material COVIDCHM responses are more likely to have positive reviews if, on average, the COVIDHCM was at least somewhat helpful to employees. To see whether this is the case, in columns (3) and (4) we change the dependent variable to positive reviews and negative reviews only, respectively. The coefficient on COVIDHCM is significantly positive for COVIDPRO (β_1=0.0037, $p<0.10$) and significantly negative for COVIDCON (β_1=-0.0064, $p<0.05$). These results suggest the overall positive association between COVIDHCM disclosures and employee sentiment to the firm's pandemic human capital response in column (2) is driven by both favorable responses to employer COVIDHCM actions and unfavorable responses to a lack of COVIDHCM.

In terms of what we can learn from control variables as determinants of employee sentiment to the firm's COVID response, only firm size exhibits a statistically significant association across specifications provided in columns (2) through (4). Larger firms are less likely to have employees that exhibit favorable sentiment to the firm's COVID-19 response (column 2, β_1= -0.0049, $p< 0.05$). However, this overall effect occurs because, while larger firms

are less likely to have both positive (column 3, β_1= -0.0075, p< 0.01) and negative sentiment (column 4, β_1= -0.0026, p<0.10), the marginal effect of positive sentiment dominates the marginal effect of negative sentiment.

Overall, the results in Table 4 reject the null hypothesis of H1, suggesting that COVIDHCM disclosures exhibit representational faithfulness, at least to some extent. However, the relationship between COVIDHCM and employees' COVID-19 response sentiment, while statistically significant, is not economically large (adjusted R^2 = 1.2%), possibly due to the low frequency of COVID references in employee reviews.

4.2. Test of H2: Relevance of COVIDHCM disclosures for assessing firm value

To test H2, we utilize a difference-in-difference design as specified in equation (2) based on the balanced sample of 2,123 pairs (4,246 firm-years) of observations in 2019 and 2020:

$$Q_{i,t} = \beta_0 + \beta_1 COVIDHCM_I + \beta_2 POST_i + \beta_3 COVIDHCM_i \times POST_t + \gamma Controls_{i,t-1} + \varepsilon_{i.t} \quad (2)$$

We use a difference-in-difference specification with paired observations so that the firm can serve as its own control. A difference-in-difference specification is not used when testing H1 because a difference in the COVIDNET dependent variable does not conceptually exist given the pandemic did not start until 2020.

In equation (2), Tobin's Q at the end of the year is our proxy for firm value and serves as the dependent variable. POST is a time specific indicator variable that equals 1 for year 2020 observations and 0 for year 2019 observations. COVIDHCM is a firm specific indicator variable for firms that make COVIDHCM disclosures under the SEC mandate. The coefficient on POST, β_2, captures the effects of the pandemic (i.e., year 2020) on firm value for firms that do not undertake material COVIDHCM (i.e. COVIDHCM=0 firms). The coefficient on COVIDHCM, β_1, captures pre-pandemic differences between firms that eventually make pandemic-specific

COVIDHCM disclosures in their 10-Ks under the SEC mandate and those that do not. The coefficient of interest for hypothesis testing of H2 is β_3, which captures the incremental effects of COVIDHCM on firm value changes between 2019 (pre-pandemic) and 2020 (pandemic) relative to firms undertaking no COVIDHCM. *Controls* is a vector of control variables discussed in Section 3.2, and all control variables are measured as of the beginning of the year. The regression model includes industry fixed effects and standard errors are clustered by industry.

Table 5 presents the estimation results for equation (2). Column (1) includes industry fixed effects but not the control variables. Column (2) includes both industry fixed effects and control variables. In both columns, the coefficients on COVIDHCM, POST, and the interactions between COVIDHCM and POST are statistically insignificant. Overall, these results fail to reject H2, providing no evidence that COVIDHCM disclosures are relevant for assessing firm value on average. In terms of control variables, the lagged value of Q is highly predictive of current period Q (coefficient = 1.02, $p<0.01$), consistent with high autocorrelation in firm value over time. Firms with higher cash holdings (CASH) have higher firm value as do firms with more R&D activity (RDX).

4.3. COVIDHCM, financial flexibility, and firm value

There are at least three reasons why we fail to find evidence that COVIDHCM disclosures are relevant for firm value on average. The first is that COVIDHCM actions do not ultimately enhance firm value. The second is that COVIDCHM actions do enhance firm value, but COVIDHCM disclosures that capture such actions do not exhibit a sufficient amount of representational faithfulness. That is, the COVIDHCM disclosures do not sufficiently separate the existence versus absence of material COVIDHCM activity across firms, perhaps because firms have different notions of what constitutes materiality. The third is that COVIDHCM

disclosures do capture variation in COVIDHCM actions, but some actions are more beneficial for employees than others. That is, there is important variation among firms where COVIDHCM = 1, and only those firms where COVIDHCM investments are sufficiently large impact firm value. Given the lack of quantitative data provided in human capital management disclosure (Batish et al. 2021), it is not feasible to proxy for the magnitude of COVIDHCM activities in dollar terms. However, we can utilize financial statement data that accompanies COVIDHCM disclosures to assess financial flexibility of the firm.

Our consideration of financial flexibility stems from recent work by Fahlenbrach et al. (2021), who show that financial flexibility (particularly cash holdings) plays a critical role with respect to firm value during the pandemic. They find that firms with financial flexibility experience lower decreases in firm value from the COVID-19 shock. As discussed earlier, human capital management measures specific to the pandemic, such as technology support for remote work and extra compensation for front line employees, can be costly and require sufficient financial resources to achieve effective results. Consistent with this idea, in the text responses listing "pros" and "cons" of the firm by employees in Appendix B, we observe reference to compensation and tech support during the pandemic. Employees who are satisfied with the firms' COVIDHCM activities commend "increased pay during peak COVID along with bonus" while employees who are unhappy complain about "little compensation for front line workers during COVID-19" or "in current COVID situations, employees are expected to work almost 10-11 hours a day and weekend too without company provided laptops and required accessories with their fluctuating networks." This implies the possibility that only COVIDHCM activities backed with sufficient financial support offer genuine enhancement in employees' satisfaction and morale.

If this is true, the lack of a significant impact of COVIDHCM on firm value shown in Table 5 could be driven by firms without sufficient financial slack failing to carry out effective COVIDHCM measures. In other words, the effectiveness of firms' COVIDHCM measures on firm value depends on financial flexibility. This possibility cannot be assessed from equation (2) because financial flexibility measures serve as control variables, not moderating variables. We therefore estimate equation (3) to assess this possibility:

$$Q_{i,t} = \beta_0 + \beta_1 COVIDHCM_i + \beta_2 POST_i + \beta_3 COVIDHCM_i \times POST_t + \beta_4 FINFLEX_{i,t-1} \times POST_t + \beta_5 FINFLEX_{i,t-1} \times COVIDHCM_i + \beta_6 FINFLEX_{i,t-1} \times COVIDHCM_i \times POST + \gamma Controls_{i,t-1} + \varepsilon_{i,t} \quad (3)$$

Equation (3) extends equation (2) by adding three interaction terms: the three-way interaction among POST, COVIDHCM, and FINFLEX, the interaction between FINFLEX and POST, and the interaction between FINFLEX and COVIDHCM. FINFLEX follows Fahlenbrach et al. (2021) and is proxied by CASH, STDEBT, and LTDEBT respectively. The coefficient on the three-way interaction term, β_6, tests for moderating effects of financial flexibility on the relationship between COVIDHCM and firm value during the pandemic.

Table 6 presents the results. Columns (1)-(3) are based on CASH, STDEBT and LTDEBT as proxies for financial flexibility (FINFLEX), respectively. In Column (1), the coefficient on POST continues to be statistically insignificant. The coefficient on COVIDHCM×POST, however, becomes significantly negative (-0.1471, $p< 0.05$). This result suggests that for firms with minimal cash holdings (i.e. CASH=0), COVIDHCM can have a negative effect on firm value. In contrast, the coefficient on the three-way interaction among CASH, POST, and COVIDHCM is significantly positive (1.5115, $p<0.01$). An increase of one standard deviation in cash holdings (0.189, based on Table 3) increases the COVIDHCM effects on firm value during the pandemic year by about 0.2856 (0.189×1.5115), which is about 14.3% of the standard deviation in firm value. This result supports the notion that as the adequacy of the

financial slack in the form of cash increases, firms are more likely to enjoy favorable value implications associated with COVIDHCMs. This result underscores the significance of financial costs of COVIDHCM decisions.

The three-way interaction terms in Columns (2) and (3) based on short-term (STDEBT) and long-term debt (LTDEBT) as proxies for financial flexibility, on the other hand, while negative as expected, are statistically insignificant.[26] One may posit that it is the availability of cash holdings net of short-term debt that matters for a firm's emergency actions to combat negative revenue shocks and related operating activities. Accordingly, following Fahlenbrach et al. (2021), Column (4) focuses on a measure of net cash holdings (NETCASH, cash holdings net of short-term debt) instead of focusing on cash holdings and short-term debt separately. Consistent with Column (1), the three-way interaction term based on this measure of financial flexibility continues to be significantly positive, with economic significance similar to that estimated for CASH in Column (1).

Overall, these findings suggest that COVIDHCM disclosures are relevant for assessing firm value conditional on a firm's financial flexibility. That is, we can reject H2, but only conditionally. This result supports the insights in Fahlenbrach et al. (2021) on the importance of financial flexibility for firm value during the pandemic. Importantly, Fahlenbrach et al. (2021) do not examine the specific corporate operations that require substantial financial flexibility. Our results extend their findings by showing that human capital management is an important value driver during the pandemic that requires financial flexibility.

4.4. Drivers of relevance for firm value: Employee satisfaction and employee productivity

[26] In Fahlenbrach et al. (2021), cash holdings is the only financial flexibility proxy that is consistently significant across different specifications, while the effects of short-term and long-term debt vary.

To better understand why COVIDHCM disclosures are relevant for assessing firm value, we consider the mechanism by which positive valuation implications of COVIDHCMs would materialize. Firms engage in COVIDHCM to protect their employees' welfare, which in expectation should increase overall employee satisfaction and employee productivity. Therefore, in our final analyses, we directly examine overall employee satisfaction and employee productivity. If these mechanisms underpin the firm value results we observe, we should observe the effects of COVIDHCM on employee satisfaction and employee productivity to be conditional on financial flexibility as well.

We collect numeric employee ratings of their employers on glassdoor.com as our proxy for overall employee satisfaction (Huang et al. 2015). Employees can provide an overall rating of their employers on glassdoor.com on a scale from one to five, along with an indication of whether or not the employee assesses the business outlook as favorable, approves of the CEO, and would recommend the firm as an employer.[27] Returning to the example employee posting in Appendix B for Citizens, Inc., we observe the employee rated the firm 5/5, had a favorable business outlook, approved of the CEO and recommended the firm as an employer. As these measures are available in both 2019 and 2020, we collect them for each year, and require a minimum of 20 ratings per firm-year. We are able to obtain, 227,055 ratings for a balanced sample of 1,198 firm-years during 2019 and 2020. We focus our analyses on overall firm rating (RATING) as a proxy for employees' overall satisfaction. Because firm value is long-term and forward looking, we also examine employees' assessment of their firms' business outlook (OUTLOOK).[28]

[27] Conditional on an employee providing an overall firm rating, we code favorable indicators as 1, negative indicators as -1, and 0 if indicators are missing.

[28] Results using CEO approval or firm recommendation are similar, which is not surprising as these four glassdoor.com variables are highly correlated, with correlations ranging between 0.78 and 0.91.

In Panel A of Table 7, we find the mean (median) RATING is 3.82 (3.85) and the mean (median) OUTLOOK is 0.35 (0.35). These values imply that on average employees posting on glassdoor.com are slightly more favorable than neutral. In Panels B and C of Table 7, we estimate equations (2) and (3) but replace the dependent variable with RATING and OUTLOOK, respectively. In Column (1) of both panels, our estimation of equation (2) reveals the coefficient on the interaction term between COVIDHCM and POST to be statistically insignificant, consistent with our results in Table 5 for firm value. That is, unconditionally, we find COVIDHCM does not appear to be associated with overall employee sentiment. When we condition on financial flexibility in columns (2) – (5) we find evidence that as financial flexibility increases, so does the effects of COVIDHCM on employee sentiment. Specifically, the results in Columns (2) and (5) in both panels show significantly positive coefficients on the three-way interaction terms with CASH and NETCASH respectively. Additionally, we also observe that the three-way interaction term with long-term debt (LTDEBT) is significantly negative. This result continues to highlight the importance of financial flexibility, suggesting negative effects of long-term financial leverage. Overall, these results in Table 7 suggest that employees are more likely to feel satisfied and have confidence about firm prospects when firms have enough financial slack to effectively carry out human capital management responses to the COVID-19 pandemic.

In Table 8, we examine employee productivity based on the natural logarithm of the ratio of sales deflated by average number of employees (PROD, Cronqvist et al. 2009). Column (1) reports the estimates of modified versions of equation (2) where the dependent variable is replaced by PROD. The coefficient on COVIDHCM is insignificant. The coefficient on POST is significantly negative, suggesting that the pandemic negatively affected employee productivity.

However, the POSTxCOVIDHCM interaction is insignificant, suggesting that on average, the COVIDHCM does not have statistically meaningful effects on employee productivity.

Columns (2) through (5) condition the estimation in column (1) by financial flexibility based on CASH, STDEBT, LTDEBT, and NETCASH, respectively. In Column (2), the POST coefficient remains significantly negative (-0.0711, $p<0.01$). Similarly, the coefficient on POST×COVIDHCM remains insignificant. In contrast, the coefficient on the three-way interaction terms with CASH and NETCASH is significantly positive in Columns (2) and (5) respectively. The three-way interaction terms with STDEBT and LTDEBT remain insignificant, as in Table 6 with firm value. These results support the notion that firms with adequate cash holdings are more likely to enjoy productivity benefits associated with COVIDHCMs.

4.5. Additional analysis

4.5.1 Entropy balancing

In our analyses, we have compared firms that make COVIDHCM disclosures versus firms that do not. However, as the correlation matrix in Panel B of Table 3 reveals, a number of firm level characteristics are associated with a firm disclosing COVIDHCM. Despite including control variables in our analysis, their effects could be non-linear and structural differences beyond COVIDHCM investments may exist for firms that make COVIDHCM disclosures and those that do not. We therefore repeat our tests for H1 and H2 using an entropy-balanced sample to address these concerns. Untabulated descriptive statistics confirm covariate balance on control variables listed in Table 3 Panel A in the resulting weighted averages between COVIDHCM=0 and COVIDHCM=1 observations. The regression results based on the entropy-balanced sample are repented in Table 9. Columns (1) and (2) are for H1 and H2, respectively, and Columns (3) and (4) examine the role of financial flexibility for H2 based on CASH and NETCASH

respectively. As evident from the table, all of our results remain qualitatively similar to our main results, suggesting that differences in firm characteristics are unlikely to explain our results.

4.5.2 State level exposure to COVID-19

Green et al. (2019) show that employee sentiment captured by glassdoor.com provides important information about fundamental value, particularly so for employees that are in the same state as corporate headquarters. Given firm value has a geographic component (Dougal et al. 2015) and COVID infection rates vary by state, the association we document between COVIDHCM and firm value may be driven by differences in COVID-19 infection across states. Controlling for state fixed effects in our value relevance tests do not impact our inferences.

5. Conclusion

This study provides evidence that the new principles-based human capital disclosures regarding COVID-19 responses capture actions firms take in protecting their employees' well-being and these actions are relevant for firm value. However, COVIDHCM value-relevance is conditional on a firm's financial flexibility. We find insignificant associations between COVIDHCM and firm value on average, but observe favorable valuation effects of COVIDHCM as a firm's financial flexibility increases. COVIDHCMs do not enhance employee satisfaction and employee productivity unconditionally, but do once financial flexibility is considered. Our study sheds initial light on the usefulness of principles-based human capital disclosures in the context of COVID-19. Our findings also underscore the important cost-benefit tradeoffs in human capital management decisions for corporate outcomes during the pandemic when business operations at the workplace have been substantially disrupted.

Because of the nascent nature of the COVID-19 pandemic, our understanding of its full economic and societal implications is in an early stage. This study takes one of the first steps

toward advancing our understanding of the implications of COVIDHCM; in particular, it focuses only on the implications of COVIDHCM on economic outcomes at the firm level. Our analysis considers COVIDHCM implications by comparing firms making such COVIDHCM disclosures versus those that do not. Future research might refine our analysis of COVIDHCM so as to examine variation in human capital responses to the pandemic. Doing so will allow researchers to understand which aspects of a COVIDHCM are especially important for firm value and whether some benefits of COVIDHCM are not conditional on financial flexibility.

Additionally, we do not examine whether COVIDHCM disclosures are decision relevant (Barth et al. 2001) and incrementally informative over other voluntary disclosures firms make such as those during earnings conference calls (Hassan et al. 2020). This is an important area for future research. Additionally, we do not compare and contrast the usefulness of COVIDHCM disclosures to other human capital disclosures firms make. Our findings with respect to COVIDHCM disclosures may not generalize to other human capital disclosures given the uniqueness of the pandemic.

Finally, actions taken by firms in response to the pandemic may have implications for society more broadly. In this paper, we do not examine the long-term macroeconomic, social, and societal implications of COVIDHCMs on the labor market more generally or on employee mental health. Does COVIDHCM (or lack thereof) play a role in the 2021 "Great Resignation," in which a record-high number of employees quit their jobs?[29] Given the paramount role that human capital and employees play in our society and in the economy, answers to these questions will deepen our understanding of effective strategies for fighting future pandemics.

[29] A record-high 4.3 million workers in the United States quit their jobs as part of the "Great Resignation" in August 2021, according to the Job Openings and Labor Turnover Survey (JOLTS) report released by the U.S. Bureau of Labor Statistics (https://www.bls.gov/news.release/jolts.nr0.htm), which represents the highest monthly total since the data series began in December 2000.

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Appendix A

Excerpts of COVID-19-related human capital management disclosures in 2020 10-K filings

Example 1 (COVIDHCM = 1): CECO ENVIRONMENTAL CORP.

Health and Safety. At CECO, the health and safety of our employees is one of our highest priorities. We believe that all injuries, occupational illnesses and incidents are preventable, and we are committed to operating with a zero-incident culture. Through our environmental, health and safety program we implement policies and training programs, as well as perform self-audits to ensure our colleagues leave the workplace safely every day. To better understand employee safety at the site level, we have implemented safety committees and developed safety scorecards to share best practices between sites. We currently share scorecard information monthly to foster visibility, accountability and commitment across our workplace, communicating and celebrating successful results across the enterprise. In addition to lagging indicators, such as injury performance, the scorecards highlight leading indicators such as safety observations and near-misses, as well as other proactive actions taken at each site to ensure worker safety. For the year ended December 31, 2020, CECO's domestic Total Recordable Incident Rate ("TRIR") was 1.9% as compared to our benchmark industry average TRIR of 4.5%. Our safety focus is also evident in our response to the COVID-19 pandemic around the globe. We implemented all government, federal and state policies, in addition to the following policies and procedures:

- added work from home flexibility for office job roles;
- deployed Microsoft Teams world-wide to enable collaboration while ensuring team safety;
- implemented an Emergency Paid Pandemic Leave policy to encourage those who are sick to stay home;
- increased cleaning protocols across all locations;
- initiated regular communication regarding impacts of the COVID-19 pandemic, including health and safety protocols and procedures;
- implemented a self-certification health assessment for all employees, partners and vendors at our manufacturing facilities (where allowed by local law);
- established new physical distancing procedures for employees who need to be onsite;
- provided additional personal protective equipment and cleaning supplies;
- implemented safety protocols to address actual and suspected COVID-19 cases and potential exposure;
- prohibited all non-essential domestic and international travel for all employees;
- required masks to be worn in all locations where allowed by local law;
- required on site visitors complete a health and travel declaration; and
- for on site visitors traveling by plane, required a negative Polymerase Chain Reaction test before entering the facility.

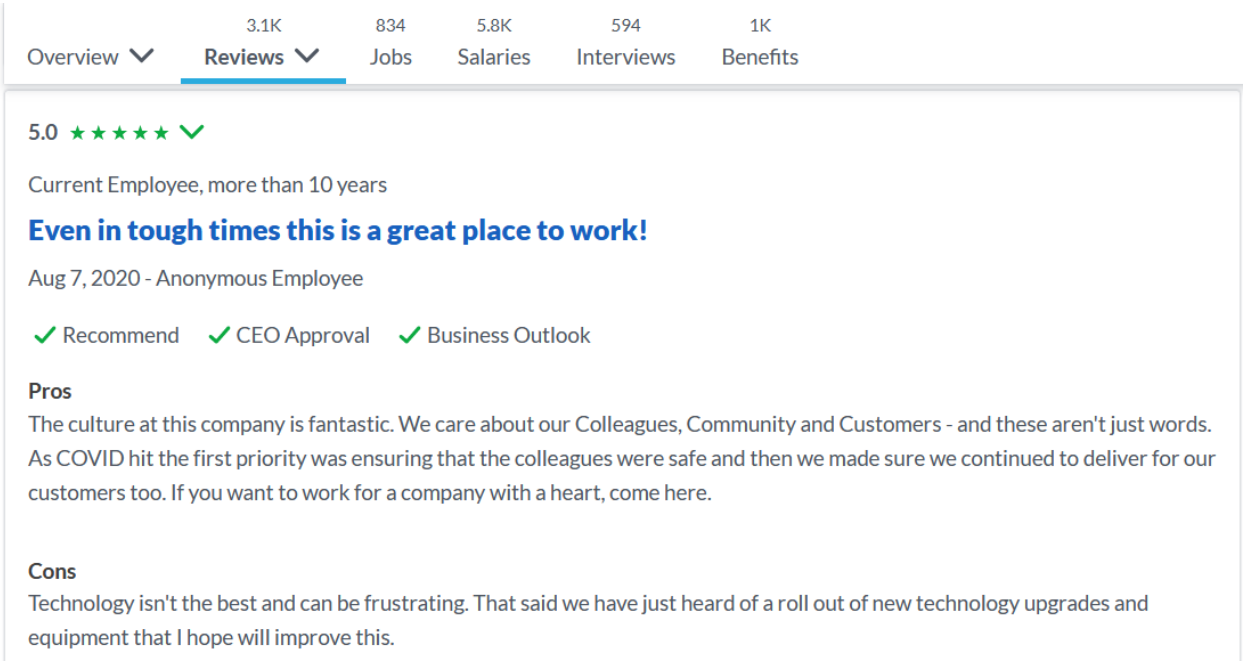
CECO manufactures products and performs services deemed essential to critical infrastructure, including manufacturing, and energy, and, as a result, our facilities have continued operating during the COVID-19 pandemic. Importantly, during 2020, our experience and continuing focus on workplace safety have enabled us to preserve business continuity without sacrificing our commitment to keeping our colleagues and workplace visitors safe during the COVID-19 pandemic.

Example 2 (COVIDHCM = 1): CITIZENS, INC.

Health and Safety. In response to the COVID-19 pandemic, we implemented significant operating environment changes that we determined were in the best interest of the health of our employees and independent agents, as well as the communities in which we operate, and which comply with government regulations. These changes included having the vast majority of our employees work from home, while implementing additional safety measures for employees continuing critical on-site work. We also created training programs to assist our independent agents with online sales efforts in order to minimize face-to-face interactions with potential customers and our policyholders.

Appendix B:

Sample employee COVID-19 related reviews on glassdoor.com for Citizens, Inc.



Examples of COVID-19 free-form text under "pros":

- Increased pay during peak COVID along with bonus and implemented plenty of measures to facilitate COVID rules.
- Very supportive employer and takes care of employees during COVID crisis.
- COVID policies are one of the safest and best across many workplaces/companies (pay, procedures, expectations, PPE).
- Remote work opportunity after COVID-19.
- During COVID-19 lockdown it was one of the very few companies that added bonus pay to its employees.
- Solid health and retirement benefits, strong culture and a leadership that protects employee jobs during things like COVID-19 or contractions
- Handled, and continues to handle COVID difficulties well.
- Lots of benefits, has done a great job handling employee safety with regards to COVID.
- They really care about their employees! They have implemented many different procedures during COVID to keep us safe.
- Flexible work environment during COVID- 19.

Examples of COVID-19 free-form text under "cons":

- Little compensation for front line workers during COVID-19.
- I don't think they handled COVID-19 as best as they could have. A lot of people went home after coming in contact with someone who tested positive before they finally said well ok I guess we'll allow everyone to work from home.
- Even though there was a COVID positive employee, they only closed for a day to clean up and reopened and required every employee to work put them on risk of having COVID, Just not caring employees...
- No empathy, lack interest in protecting their employees for covid-19.
- Management is not allowing employee to work from their hometown in COVID-19 situation. Forcing people to work from base location.

- Doors never closed during COVID and company risked the lives of employees while other banks protected their staff. During COVID, we were sent home and ordered to use our own technology. We weren't and still aren't provided technology to do our jobs.
- COVID caused many tech issues.
- Long hours/days, unpaid lunch, no room for advancement, poor pay. Very poor responses to COVID and supporting their staff with financials/insurance.
- The release process is hectic, even in COVID time they don’t bother about employee wellness, they are more focused about delivering the things.
- Worst thing is in current COVID situations too, employees are expected to work almost 10-11 hours a day and weekend too without company provided laptops and required accessories with their fluctuating networks.

Appendix C: Variable definition

COVIDHCM	1 if the firm mentions COVID-19 related human capital management objectives or measures in its 2020 human capital disclosures based on keywords of *COVID, pandemic, coronavirus*, and 0 otherwise.
COVIDPRO	Percentage of employees' positive reviews in 2020 on glassdoor.com that reference to COVID-19, calculated as the average value of $COVIDPRO_{r,i,2020}$ from all current employee reviews, *r*, posted for firm *i* during 2020. $COVIDPRO_{r,i,2020}$ equals 1 if under the "pros" portion of the employee review the employee mentions any of the keywords *COVID, pandemic,* or *coronavirus*, and 0 otherwise. A minimum of 20 reviews is required for this variable.
COVIDCON	Percentage of employees' negative reviews in 2020 on glassdoor.com that reference to COVID-19, calculated as the average value of $COVIDCON_{r,i,2020}$ from all current employee reviews, *r*, posted for firm *i* during 2020. $COVIDCON_{r,i,2020}$ equals 1 if under the "cons" portion of the employee review the employee mentions any of the keywords *COVID, pandemic,* or *coronavirus*, and 0 otherwise. A minimum of 20 reviews is required for this variable.
COVIDNET	*COVIDPRO – COVIDCON*
Q	Tobin's Q
POST	1 for year 2020, and 0 otherwise
SIZE	Ln (total assets)
ROA	Income before extraordinary items scaled by average total assets.
CASH	Cash and cash equivalent / total assets
STDEBT	Short-term debt / total assets
LTDEBT	Long-term debt / total assets
RDX	R&D expenditures / total sales.
LABOR	Ln (employees / total assets)
PROD	Ln (sales / average number of employees)
RATING	Average of current employees' overall employer rating for firm *i* in year *t*. Each rating takes on a value of 1 to 5 stars, with 5 stars being the most favorable and 1 star being the least favorable. A minimum of 20 reviews for each firm-year is required for this variable.
OUTLOOK	Average of current employees' indications of business outlook for the employer for firm *i* in year *t*. Each review indicates a business outlook as favorable, taking on a value of 1, or unfavorable, taking on a value of -1. When the review makes no business outlook indication, it is coded as 0. A minimum of 20 reviews for each firm-year is required for this variable.

Table 1: Sample Selection

Table 1 describes the steps in sample selection. Data source is Compustat and WRDS SEC analytics suite. Identification of COVIDHCMs is based on human capital disclosures collected from the SEC EDGAR filing archive.

	# of unique firms
December fiscal year end firms with sale>0 and at>0, and non-missing CIK and SIC for fiscal year 2020	4,397
Require at least 100 employees as of 12/31/2020	3,317
Require 2020 10-K information available in WRDS SEC analytics suite	2,602
Require 10-K filing date within 100 days after 12/31/2020	2,578
Require balanced observations (i.e., 2019 and 2020) with financial data available (for testing H2)	2,123
Require at least 20 glassdoor.com reviews in 2020 by current employees (for testing H1)	699

Table 2: COVIDHCM by Fama-French 12 Industry Classification

Table 2 describes the sample distribution across Fama-French 12 industry classifications and the percentage of COVIDHCM firms based on the broad sample. See Appendix C for variable definitions.

	N	% of COVIDHCM=1
Utilities	60	75%
Consumer durables	45	69%
Manufacturing	194	68%
Mines, construction, transportation, hotels, entertainment	267	67%
Telephone and television transmission	51	67%
Consumer nondurables	65	65%
Business equipment	279	64%
Finance	625	63%
Wholesale, retail, and some services	121	60%
Healthcare, medical equipment and drugs	260	58%
Chemicals and Allied Products	59	56%
Oil, Gas, and Coal Extraction and Products	97	54%
Total	2,123	63%

Table 3: Descriptive Statistics

Table 3 Panel A provides descriptive statistics of the sample. Panel B provides the Pearson correlation table where all correlations involving COVIDPRO, COVIDCON, or COVIDNET are based on 699 observations in 2020, and all other correlations are based on 2,123 observations in 2020. Correlations in bold are significant at 0.10 level or better. All continuous variables are winsorized at the 1% and 99% by year. See Appendix C for variable definitions.

Panel A: Descriptive statistics

	n	mean	median	sd	p25	p75
Key independent variable						
$COVIDHCM_i$	4,246	0.632	1.000	0.482	0.000	1.000
Dependent variables						
$COVIDPRO_{i,2020}$	699	0.0203	0.0097	0.0307	0.0000	0.0294
$COVIDCON_{i,2020}$	699	0.0192	0.0108	0.0260	0.0000	0.0280
$COVIDNET_{i,2020}$	699	0.0012	0.0000	0.0378	-0.0124	0.0104
$Q_{i,t}$	4,246	1.753	1.129	2.010	0.633	1.996
Control variables						
$SIZE_{i,t}$	4,246	7.700	7.667	1.957	6.462	8.949
$Q_{i,t}$	4,246	1.592	1.072	1.655	0.626	1.863
$ROA_{i,t}$	4,246	-0.005	0.018	0.154	-0.004	0.060
$CASH_{i,t}$	4,246	0.146	0.066	0.189	0.025	0.182
$STDEBT_{i,t}$	4,246	0.034	0.014	0.056	0.002	0.041
$LTDEBT_{i,t}$	4,246	0.251	0.213	0.232	0.043	0.387
$NETCASH_{i,t}$	4,246	0.112	0.043	0.203	-0.001	0.158
$RDX_{i,t}$	4,246	0.035	0.000	0.083	0.000	0.022
$LABOR_{i,t}$	4,246	-6.938	-6.679	1.576	-8.268	-5.783
$PROD_{i,t}$	4,246	5.996	5.878	0.981	5.446	6.574

Panel B: Correlation table

	1	2	3	4	5	6	7	8	9	10	11	12	13
1 $COVIDNET_{i,2020}$													
2 $COVIDPRO_{i,2020}$	**0.73**												
3 $COVIDCON_{i,2020}$	**-0.59**	**0.12**											
4 $Q_{i,2020}$	**0.16**	**0.17**	-0.03										
5 $COVIDHCM_{i,2020}$	**0.11**	0.04	**-0.11**	0.00									
6 $SIZE_{i,2019}$	-0.06	**-0.16**	**-0.11**	**-0.25**	**0.25**								
7 $Q_{i,2019}$	**0.16**	**0.18**	-0.02	**0.89**	0.01	**-0.24**							
8 $ROA_{i,2019}$	-0.01	-0.05	-0.04	**-0.07**	**0.12**	**0.37**	-0.03						
9 $CASH_{i,2019}$	**0.17**	**0.17**	-0.04	**0.49**	**-0.07**	**-0.38**	**0.51**	**-0.37**					
10 $STDEBT_{i,2019}$	**-0.10**	**-0.09**	0.04	**-0.04**	**-0.06**	**-0.06**	**-0.05**	**-0.15**	**-0.10**				
11 $LTDEBT_{i,2019}$	**-0.07**	-0.02	**0.07**	**0.10**	**0.06**	**0.09**	**0.13**	**-0.09**	**-0.12**	0.02			
12 $RDX_{i,2019}$	**0.16**	**0.18**	-0.02	**0.41**	**-0.06**	**-0.35**	**0.41**	**-0.59**	**0.65**	0.02	-0.02		
13 $LABOR_{i,2019}$	**-0.15**	**-0.13**	0.07	**0.28**	**-0.04**	**-0.48**	**0.28**	**-0.06**	**0.15**	**0.07**	**0.15**	**0.13**	
14 $PROD_{i,2019}$	**0.12**	**0.10**	-0.06	**-0.09**	**0.05**	**0.39**	**-0.08**	**0.25**	**-0.14**	**-0.05**	**0.05**	**-0.19**	**-0.65**

Table 4: Representational Faithfulness of Disclosures on HCM Response to the Pandemic

Table 4 estimates OLS regression of equation (1) that examines the representational faithfulness of the COVIDHCM disclosures, using employee reviews from glassdoor.com that reference to the pandemic as a benchmark. COVIDPRO is the percentage of "pros" employee reviews in 2020 that reference to the pandemic, COVIDCON is the percentage of "cons" employee reviews in 2020 that reference to the pandemic, and COVIDNET is the difference between the two variables. All continuous variables are winsorized at the 1% and 99% by year. See Appendix C for variable definitions. ***, **, and * indicate 2-sided significance of p-values at 1%, 5%, and 10% respectively.

	(1)	(2)	(3)	(4)
Dependent Variable =	$COVIDNET_{i,2020}$	$COVIDNET_{i,2020}$	$COVIDPRO_{i,2020}$	$COVIDCON_{i,2020}$
$COVIDHCM_{i,2020}$	0.0096***	0.0101***	0.0037*	-0.0064**
	(0.0033)	(0.0024)	(0.0020)	(0.0021)
$SIZE_{i,2019}$		-0.0049**	-0.0075***	-0.0026*
		(0.0018)	(0.0010)	(0.0013)
$Q_{i,2019}$		0.0025**	0.0021*	-0.0004
		(0.0010)	(0.0011)	(0.0007)
$ROA_{i,2019}$		-0.0086	-0.0116	-0.0030
		(0.0201)	(0.0201)	(0.0127)
$CASH_{i,2019}$		0.0020	-0.0088*	-0.0107**
		(0.0047)	(0.0049)	(0.0036)
$STDEBT_{i,2019}$		-0.0324*	-0.0140	0.0184
		(0.0162)	(0.0144)	(0.0178)
$LTDEBT_{i,2019}$		-0.0055	-0.0003	0.0051
		(0.0089)	(0.0052)	(0.0055)
$RDX_{i,2019}$		0.0101	0.0035	-0.0065
		(0.0463)	(0.0497)	(0.0216)
$LABOR_{i,2019}$		-0.0054***	-0.0074***	-0.0020
		(0.0017)	(0.0019)	(0.0019)
$PROD_{i,2019}$		0.0030	0.0022	-0.0008
		(0.0028)	(0.0019)	(0.0022)
Intercept	-0.0060	-0.0167**	0.0223***	0.0390***
	(0.0028)	(0.0074)	(0.0066)	(0.0075)
N	699	699	699	699
adj. R-sq	0.012	0.110	0.167	0.025
Fixed Effects	No	Industry	Industry	Industry
Cluster S.E.	Robust	By Industry	By Industry	By Industry

Table 5: HCM Response to the Pandemic and Firm Value

Table 5 estimates OLS regression of equation (2) that examines the average effect of COVIDHCM activities on firm value, proxied by Tobin's Q. All continuous variables are winsorized at the 1% and 99% by year. See Appendix C for variable definitions. ***, **, and * indicate 2-sided significance of p-values at 1%, 5%, and 10% respectively.

Dependent Variable = $Q_{i,t}$	(1)	(2)
$COVIDHCM_i$	0.0656	-0.0879
	(0.0536)	(0.0649)
$POST_t$	0.2206	0.0503
	(0.1249)	(0.1027)
$COVIDHCM_i \times POST_t$	-0.0279	0.0564
	(0.0500)	(0.1051)
$SIZE_{i,t-1}$		0.0050
		(0.0119)
$Q_{i,t-1}$		1.0212***
		(0.0709)
$ROA_{i,t-1}$		0.0818
		(0.2093)
$CASH_{i,t-1}$		0.4708**
		(0.2013)
$STDEBT_{i,t-1}$		0.1207
		(0.2393)
$LTDEBT_{i,t-1}$		0.0967
		(0.0984)
$RDX_{i,t-1}$		1.2145***
		(0.2180)
$LABOR_{i,t-1}$		0.0003
		(0.0304)
$PROD_{i,t-1}$		0.0120
		(0.0202)
Intercept	1.6097***	-0.1081
	(0.0750)	(0.3126)
N	4,246	4,246
adj. R-sq	0.228	0.797
Fixed Effects	Industry	Industry
Cluster S.E.	By industry	By industry

Table 6: HCM Response to the Pandemic, Financial Flexibility, and Firm Value

Table 6 estimates OLS regression of equation (3). The dependent variable firm value proxied by Tobin's Q. Financial flexibility FINFLEX is proxied by CASH, STDEBT, LTDEBT, and NETCASH, respectively. All continuous variables are winsorized at the 1% and 99% by year. See Appendix C for variable definitions. ***, **, and * indicate 2-sided significance of p-values at 1%, 5%, and 10% respectively.

Dependent Variable = $Q_{i,t}$	(1)	(2)	(3)	(4)
$FINFLEX_{i,t-1}$ =	CASH	STDEBT	LTDEBT	NETCASH
$COVIDHCM_i$	0.0431**	-0.0869	-0.1147*	0.0002
	(0.0183)	(0.0723)	(0.0625)	(0.0170)
$POST_t$	0.0384	0.0281	0.0960	0.0507
	(0.0920)	(0.1085)	(0.0953)	(0.0789)
$COVIDHCM_i \times POST_t$	-0.1471**	0.0784	0.0633	-0.0877*
	(0.0488)	(0.0847)	(0.0907)	(0.0460)
$COVIDHCM_i \times POST_t \times FINFLEX_{i,t-1}$	1.5115***	-0.5432	-0.0159	1.3753***
	(0.4498)	(1.3564)	(0.2178)	(0.3608)
$COVIDHCM_i \times FINFLEX_{i,t-1}$	-0.9168***	-0.0683	0.1055	-0.7956***
	(0.2352)	(0.6958)	(0.0716)	(0.2319)
$POST_t \times FINFLEX_{i,t-1}$	0.0853	0.5662	-0.1895	0.0304
	(0.8110)	(0.8849)	(0.2236)	(0.6776)
$SIZE_{i,t-1}$	0.0050	0.0054	0.0049	0.0040
	(0.0122)	(0.0117)	(0.0119)	(0.0120)
$Q_{i,t-1}$	1.0213***	1.0209***	1.0218***	1.0242***
	(0.0702)	(0.0707)	(0.0705)	(0.0699)
$ROA_{i,t-1}$	0.0847	0.0891	0.0723	0.0324
	(0.2115)	(0.2054)	(0.2038)	(0.1978)
$CASH_{i,t-1}$	0.5458	0.4769**	0.4697**	
	(0.4495)	(0.1975)	(0.2024)	
$STDEBT_{i,t-1}$	0.1199	0.0024	0.1221	
	(0.2409)	(0.2864)	(0.2425)	
$LNETCASH_{i,t-1}$				0.4282
				(0.3839)
$LTDEBT_{i,t-1}$	0.0845	0.0987	0.1335	0.0722
	(0.0975)	(0.0979)	(0.1517)	(0.0927)
$RDX_{i,t-1}$	1.2695***	1.2111***	1.2143***	1.3400***
	(0.2149)	(0.2089)	(0.2145)	(0.2126)
$LABOR_{i,t-1}$	0.0023	-0.0006	0.0005	0.0037
	(0.0292)	(0.0297)	(0.0303)	(0.0286)
$PROD_{i,t-1}$	0.0130	0.0113	0.0121	0.0156
	(0.0195)	(0.0195)	(0.0204)	(0.0191)
Intercept	-0.1122	-0.1098	-0.1151	-0.0787
	(0.2769)	(0.3115)	(0.3103)	(0.2772)
N	4,246	4,246	4,246	4,246
adj. R-sq	0.800	0.797	0.797	0.799
Fixed Effects	Industry	Industry	Industry	Industry
Cluster S.E.	By industry	By industry	By industry	By industry

Table 7: HCM Response to the Pandemic and Employee Satisfaction

Table 7 examines the relation between COVIDHCM and employee satisfaction. Panel A presents descriptive statistics of the employee rating variables, RATING and OUTLOOK. Panels B and C estimate OLS regression of equations (2)-(3) with the dependent variable being replaced by RATING and OUTLOOK respectively. Columns (1) corresponds to Model (2), columns (2)-(5) correspond to Model (3). Financial flexibility FINFLEX is proxied by CASH, STDEBT, LTDEBT, and NETCASH, respectively. All continuous variables are winsorized at the 1% and 99% by year. See Appendix C for variable definitions. ***, **, and * indicate 2-sided significance of p-values at 1%, 5%, and 10% respectively.

Panel A: Descriptive Statistics

Variable	N	mean	median	sd	p25	p75
$RATING_{i,t}$	1,198	3.82	3.85	0.41	3.58	4.10
$OUTLOOK_{i,t}$	1,198	0.35	0.35	0.21	0.22	0.48

Panel B: Overall Firm Rating

Dependent Variable = $RATING_{i,t}$	(1)	(2)	(3)	(4)	(5)
$FINFLEX_{i,t-1}$=		CASH	STDEBT	LTDEBT	NETCASH
$COVIDHCM_i$	0.0129	0.0708	0.0197	-0.0690*	0.0433
	(0.0336)	(0.0573)	(0.0395)	(0.0337)	(0.0456)
$POST_t$	0.1533***	0.2170***	0.1624***	0.1193***	0.1825***
	(0.0349)	(0.0476)	(0.0358)	(0.0347)	(0.0447)
$COVIDHCM_i \times POST_t$	0.0048	-0.0821	-0.0145	0.0797*	-0.0373
	(0.0407)	(0.0564)	(0.0452)	(0.0396)	(0.0524)
$COVIDHCM_i \times POST_t \times FINFLEX_{i,t-1}$		0.7071***	0.5090	-0.2766**	0.4921*
		(0.1727)	(0.5343)	(0.0980)	(0.2290)
$COVIDHCM_i \times FINFLEX_{i,t-1}$		-0.4530	-0.1895	0.3059*	-0.3312
		(0.3058)	(0.5258)	(0.1512)	(0.2566)
$POST_t \times FINFLEX_{i,t-1}$		-0.5172***	-0.2146	0.1448**	-0.3478
		(0.1548)	(0.3453)	(0.0527)	(0.2062)
$FINFLEX_{i,t-1}$		0.4277	0.6138	-0.4312**	0.1643
		(0.2841)	(0.4120)	(0.1103)	(0.2605)
Intercept	3.2218***	3.1801***	3.2180***	3.2742***	3.2009***
	(0.1456)	(0.1463)	(0.1491)	(0.1504)	(0.1449)
N	1,198	1,198	1,198	1,198	1,198
adj. R-sq	0.191	0.192	0.189	0.192	0.191
$Controls_{i,t-1}$	Yes	Yes	Yes	Yes	Yes
Fixed Effects	Industry	Industry	Industry	Industry	Industry
Cluster S.E.	By industry	By industry	By industry	By industry	By industry

Panel C: Business Outlook

Dependent Variable = $OUTLOOK_{i,t}$	(1)	(2)	(3)	(4)	(5)
$FINFLEX_{i,t-1}$=		CASH	STDEBT	LTDEBT	NETCASH
$COVIDHCM_i$	-0.0173	0.0090	-0.0071	-0.0652*	-0.0070
	(0.0137)	(0.0294)	(0.0173)	(0.0299)	(0.0218)
$POST_t$	0.0095	0.0476	0.0094	-0.0214	0.0278
	(0.0210)	(0.0298)	(0.0234)	(0.0265)	(0.0275)
$COVIDHCM_i \times POST_t$	0.0094	-0.0400	0.0033	0.0593**	-0.0144
	(0.0194)	(0.0313)	(0.0268)	(0.0261)	(0.0289)
$COVIDHCM_i \times POST_t \times FINFLEX_{i,t-1}$		0.4061**	0.1982	-0.1855**	0.2941*
		(0.1386)	(0.3879)	(0.0674)	(0.1630)
$COVIDHCM_i \times FINFLEX_{i,t-1}$		-0.2061	-0.2974	0.1809*	-0.1158
		(0.1855)	(0.1994)	(0.1003)	(0.1467)
$POST_t \times FINFLEX_{i,t-1}$		-0.3140***	-0.0140	0.1239**	-0.2305*
		(0.1005)	(0.2749)	(0.0422)	(0.1212)
$FINFLEX_{i,t-1}$		0.0590	0.2305	-0.2827	-0.0020
		(0.1290)	(0.1949)	(0.0904)	(0.1140)
Intercept	0.1704***	0.1517***	0.1638***	0.2031***	0.1642***
	(0.0525)	(0.0407)	(0.0527)	(0.0550)	(0.0450)
N	1,198	1,198	1,198	1,198	1,198
adj. R-sq	0.239	0.240	0.238	0.240	0.239
$Controls_{i,t-1}$	Yes	Yes	Yes	Yes	Yes
Fixed Effects	Industry	Industry	Industry	Industry	Industry
Cluster S.E.	By industry	By industry	By industry	By industry	By industry

Table 8: HCM Response to the Pandemic and Employee Productivity

Table 8 examines the relation between COVIDHCM and employee productivity. Panel A presents descriptive statistics of employee productivity PROD. Panels B estimates OLS regression of equations (2) and (3) with the dependent variable being replaced by PROD. Columns (1) corresponds to Model (2), columns (2)-(5) correspond to Model (3). Financial flexibility FINFLEX is proxied by CASH, STDEBT, LTDEBT, and NETCASH, respectively. All continuous variables are winsorized at the 1% and 99% by year. See Appendix C for variable definitions. ***, **, and * indicate 2-sided significance of p-values at 1%, 5%, and 10% respectively.

Panel A: Descriptive Statistics

Variable	N	mean	median	sd	p25	p75
$PROD_{i,t}$	4,246	5.982	5.873	0.977	5.449	6.555

Panel B: Employee Productivity

Dependent Variable = $PROD_{i,t}$	(1)	(2)	(3)	(4)	(5)
$FINFLEX_{i,t-1}$ =		CASH	STDEBT	LTDEBT	NETCASH
$COVIDHCM_i$	-0.0093	0.0057	-0.0159	-0.0186**	0.0029
	(0.0084)	(0.0106)	(0.0118)	(0.0063)	(0.0113)
$POST_t$	-0.0853***	-0.0711***	-0.0898***	-0.0781***	-0.0757***
	(0.0188)	(0.0191)	(0.0216)	(0.0244)	(0.0208)
$COVIDHCM_i \times POST_t$	0.0077	-0.0378	0.0222	0.0315	-0.0253
	(0.0263)	(0.0226)	(0.0315)	(0.0299)	(0.0239)
$COVIDHCM_i \times POST_t \times FINFLEX_{i,t-1}$		0.3227***	-0.4336	-0.0856	0.3134**
		(0.0898)	(0.6100)	(0.0762)	(0.1168)
$COVIDHCM_i \times FINFLEX_{i,t-1}$		-0.1042**	0.2120	0.0354	-0.1028*
		(0.0365)	(0.3834)	(0.0309)	(0.0479)
$POST_t \times FINFLEX_{i,t-1}$		-0.0879	0.1238	-0.0320	-0.0854
		(0.0696)	(0.5403)	(0.0436)	(0.0848)
$FINFLEX_{i,t-1}$		0.0535	-0.3010	0.0227	0.0879
		(0.0483)	(0.4272)	(0.0479)	(0.0704)
Intercept	0.1891**	0.1880**	0.1919**	0.1871**	0.1804**
	(0.0735)	(0.0728)	(0.0724)	(0.0761)	(0.0726)
N	4,246	4,246	4,246	4,246	4,246
adj. R-sq	0.916	0.917	0.916	0.917	0.917
$Controls_{i,t-1}$	Yes	Yes	Yes	Yes	Yes
Fixed Effects	Industry	Industry	Industry	Industry	Industry
Cluster S.E.	By Industry	By Industry	By Industry	By Industry	By Industry

Table 9: Testing H1 and H2 using Entropy Balanced Sample

Table 9 estimates OLS regression of equations (1)-(3) with an entropy-balanced sample. Financial flexibility FINFLEX is proxied by CASH and NETCASH, respectively. All continuous variables are winsorized at the 1% and 99% by year. See Appendix C for variable definitions. ***, **, and * indicate 2-sided significance of p-values at 1%, 5%, and 10% respectively.

Dependent Variable	$COVIDNET_{i,2020}$	$Q_{i,t}$	$Q_{i,t}$	$Q_{i,t}$
$FINFLEX_{i,t-1}$=			CASH	NETCASH
$COVIDHCM_i$	0.0107***	-0.0934	0.0300	-0.0057
	(0.0026)	(0.0703)	(0.0195)	(0.0211)
$POST_t$		0.0276	-0.0155	0.0041
		(0.0922)	(0.0888)	(0.0659)
$COVIDHCM_i \times POST_t$		0.0760	-0.0954*	-0.0443
		(0.0957)	(0.0438)	(0.0412)
$COVIDHCM_i \times POST_t \times FINFLEX_{i,t-1}$			1.2574**	1.1425**
			(0.5212)	(0.4138)
$COVIDHCM_i \times FINFLEX_{i,t-1}$			-0.8810***	-0.7980***
			(0.2325)	(0.2299)
$POST_t \times FINFLEX_{i,t-1}$			0.3286	0.2499
			(1.0478)	(0.9050)
$FINFLEX_{i,t-1}$			0.3486	0.3277
			(0.4795)	(0.4187)
Intercept	-0.0261**	-0.1840	-0.1703	-0.1611
	(0.0079)	(0.3312)	(0.2878)	(0.2911)
N	699	4,246	4,246	4,246
adj. R-sq	0.097	0.809	0.811	0.811
$Controls_{i,t-1}$	Yes	Yes	Yes	Yes
Fixed Effects	Industry	Industry	Industry	Industry
Cluster S.E.	By Industry	By Industry	By Industry	By Industry