Veda Fatmy

Essays on Corporate Social Responsibility and its Efficacy in Value Creation

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Tiivistelmä

Tämä väitöskirja koostuu neljästä toisiinsa liittyvästä esseestä, jotka keskittyvät yritysten yhteiskuntavastuullisuuteen ja erityisesti siihen, miten erilaiset yhteiskuntavastuuseen liittyvät tekijät vaikuttavat sidosryhmien odotuksiin, yritysten käyttäytymiseen ja taloudelliseen menestykseen.

Väitöskirjan ensimmäisessä esseessä tutkitaan, miten seksuaali- ja sukupuolivähemmistöjen huomioiminen vaikuttaa yritysten taloudelliseen menestykseen. Tutkimustulokset osoittavat, että LHBTQ-myönteisyys vaikuttaa positiivisesti yhdysvaltalaisten yritysten kannattavuuteen ja markkina-arvoon. Esseessä myös havaitaan, että yritysten LHBTQ-myönteisyyden positiivinen vaikutus menestykseen on vahvempi Yhdysvaltain liberaaleissa osavaltioissa. Toisessa esseessä tarkastellaan LHBTQ-myönteisyyden vaikutusta yritysten innovatiivisuuteen. Tutkimuksessa havaitaan, että seksuaalivähemmistöt paremmin huomioivat yritykset ovat innovatiivisempia ja luovat enemmän patentteja kuin muut yritykset. Ensimmäisen ja toisen esseen tulokset osoittavat kollektiivisesti, että monimuotoisuus ja inklusiivisuus ovat tärkeitä yritysten menestykselle.

Kolmannessa esseessä tutkitaan uskonnon ja uskonnollisuuden vaikutusta yritysten yhteiskuntavastuullisuuteen. Tutkimuksessa havaitaan, että yhdysvaltalaiset yritykset, joiden päätöksenteossa heijastuvat kristilliset arvot, ovat keskimäärin yhteiskuntavastuullisempia riippumatta alueellisista eroista uskonnollisuudessa. Uskonnollisuuden vaikutus on erityisen voimakas päästöjen vähentämisen, tuotevastuun ja vastuullisen resurssien käytön osalta. Väitöskirjan neljännessä esseessä tutkitaan yritysten yhteiskuntavastuun vaikutusta työntekijöiden irtisanomisiin COVID-19-pandemian aikana. Ennakko-odotuksista poiketen tutkimustulokset osoittavat, että yhteiskuntavastuullisena pidetyt yhdysvaltalaisyritykset irtisanoivat enemmän työntekijöitään pandemian aikana kuin vähemmän vastuulliset yritykset.

Asiasanat: Yritysten yhteiskuntavastuullisuus, sosiaalinen vastuu, seksuaaliset vähemmistöt, monimuotoisuus, innovaatiot, uskonnollisuus, suorituskyky, irtisanomiset.

Abstract

This doctoral dissertation consists of four essays that focus on contemporary CSR-related policies and how they shape stakeholder expectations, corporate behavior, and financial outcomes.

The first essay examines whether CSR policies that support sexual minorities can positively affect the firm's financial performance. We show that LGBTQ friendliness is associated with higher profitability and firm value, and that this effect is significantly stronger in liberal U.S. states. Closely related to this research, the second essay studies the relationship between LGBTQ-friendly policies and firm innovation. We find that LGBTQ friendliness is not only positively associated with higher innovation intensity, but also with several measures of innovation quality, including originality, generality, and a novel measure of the global reach of the patent, its internationality. Together with the findings of the first essay, our results empirically support the claims that diversity and inclusivity are good for business, and underscore the decisive role of external political, social and economic factors.

The third essay explores the effects of firm-specific religiosity on CSR. Using a novel identifier of internal firm culture and practice, we determine that firms who cater to faith-driven stakeholders are more socially responsible, and that this relationship is independent of the effects of county-level religiosity. The effects of firm-level religiosity on CSR are particularly strong with respect to product responsibility, emissions reduction, and responsible use of resources. Finally, the fourth essay investigates the role of past CSR as a determinant of employee layoffs during the COVID-19 pandemic. Surprisingly, firms with a history of high ESG performance are found to be more likely to have laid off employees during the pandemic, and also to have laid off significantly more employees than their peers. These results support the theory that CSR affords firms higher strategic agility, and that it may be exploited to avoid negative consequences.

Keywords: Corporate Social Responsibility, sexual minorities, firm performance, innovation, layoffs.

This work is dedicated to my mother, Fatima Aziz.

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Vaasa, September 2022

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Publications

Fatmy, Veda, Kihn, John, Sihvonen, Jukka and Vähämaa, Sami (2022). Does lesbian and gay friendliness pay off? A new look at LGBT policies and firm performance. *Accounting and Finance*, Vol. 62, No. 1, pp. 213-242.

Fatmy, Veda, Sihvonen, Jukka and Vähämaa, Sami (2022). LGBTQ-friendly employee policies and corporate innovation. Proceedings of the 59th Annual Meeting of the Southern Finance Association.

Dimic, Nebojsa, Fatmy, Veda and Vähämaa, Sami (2022). Religiosity and corporate social responsibility. Proceedings of the 2022 Conference on International Finance, Sustainable and Climate Finance and Growth.

Fatmy, Veda (2022). Does past corporate social performance matter in a crisis? Layoffs during the COVID-19 pandemic. Proceedings of the 2021 Annual Workshop of the Nordic Corporate Governance Network.

1 INTRODUCTION

From its early days as a concept encompassing ethical, social and philanthropic activities of businessmen and corporations alike, Corporate Social Responsibility (CSR) has evolved and branched out into several interrelated topics and processes, and has enjoyed escalating prominence for both investors and academics. A plethora of literature on the subject, mostly published after the turn of the 21st century, exists to illuminate the landscape and identify points of interest for new research. Partly owing to its commutability, determining the various operational and pecuniary effects of CSR and its constituents is a particularly prolific area of study, and it consequently drives interest in methods and variables to empirically determine or predict CSR. This dissertation consists of four essays that aim to answer important questions within this domain of research.

The level of a firm's engagement in CSR and the response garnered by its social activities are consequential to multiple stakeholders. The decision to undertake CSR activities is costly, contributing to the incidence of large, successful businesses leading the charge. Despite the uncertain return on such investments, CSR is increasingly coveted by individual and institutional investors, discerning customers and even talented employees. Moreover, while sustainability reporting is not mandatory in the U.S., many companies regularly disclose the information voluntarily to signal their commitment to CSR. These factors alone call into question the viability of the trade-off hypothesis – the assertion that CSR reduces financial performance – (Aupperle et al. 1985; Vance 1975) in the present day. Meanwhile, theoretical and empirical evidence supporting the idea of CSR as an active and passive driver of financial performance and value creation has seen rapid growth.

The conclusions that CSR is good for the bottom line are not uncontested, and are punctuated with social and temporal contexts. The same empirical tests have been shown to produce conflicting results across different samples (Cahan, Villiers, Jeter, Naiker & Staden 2016), time periods (Lougee and Wallace 2008) and for different measures of CSR (Chatterji, Durand, Levine and Touboul 2016). In general, favorable effects have been consistently reported in Western markets since the early 90's, (Freedman & Stagliano 1991; Herremans, Akathaporn & McInnes 1993; van Beurden & Gössling 2008), prompting further scrutiny of the various areas under the umbrella of CSR, including but not limited to gender and sexual diversity, health and safety, environmental sustainability, executive compensations, disclosures and transparency. The independent study of these

areas of focus is an equally important endeavor, and one that promises significant discoveries for both scientific research and practical applications.

The purpose of this doctoral dissertation is to examine the effects of diversity and inclusivity in corporate culture, and to advance the understanding of CSR in a contemporary setting. Specifically, the first two essays in this dissertation study the effects of firm-specific policies and attitudes toward sexual minorities on operating performance, firm value and innovation, and add to a growing body of literature on LGBTQ inclusivity and finance (Wang & Schwarz 2010; Shan, Fu & Zheng 2017; Pichler, Blazovich, Cook, Huston & Strawser 2018; Chintrakarn, Treepongkaruna, Jiraporn & Lee 2020, etc.). The third essay utilizes a novel measure of religious inclusivity to examine the association between firm-specific religiosity and corporate social responsibility. Finally, the fourth essay determines whether past social performance is a good predictor of job security during the unemployment crisis initiated by the COVID-19 pandemic. The essays in this dissertation are topically motivated, and spotlight a portion of the ongoing academic discourse on the subject of CSR and its noteworthy constituents.

The remainder of this introductory chapter is organized as follows. Section 2 describes the contribution of the essays in this dissertation to the contemporary academic discussion on the determinants and effects of CSR within corporate finance, while Section 3 presents the major theoretical and empirical literature that forms the foundation of this thesis. Finally, section 4 provides a summary of the four essays.

2 THE CONTRIBUTION OF THIS DISSERTATION

This dissertation contributes to multiple strands of finance literature related to CSR and firm performance. Specifically, the findings of the constituent essays shed light on topics such as inclusivity in corporate culture, LGBTQ-friendly workplace policies, firm religiosity, employee turnover, layoffs, the moderating role of external socio-political factors within corporate finance, and literature explaining differences in performance measures across firms, including profitability, value and technological innovation. Additionally, the research presented in this dissertation contributes to the unification of the disciplines of corporate finance and human resource management, and in particular the study of non-investing stakeholder rights and pecuniary performance. Overall, the findings of this dissertation are timely and topical, and help illuminate the importance of corporate ethical engagement.

The four essays comprising this dissertation each provide distinctive insights sharing a connection to topics under the umbrella of CSR. The first two essays are closely related to each other, and each introduces multiple novel empirical nuances to the sphere of existing evidence in the study of LGBTQ-friendliness in the workplace, which is one of the many topical issues within CSR gaining traction in research and practice. The third essay deviates from the remaining essays by studying CSR as a response variable, and adds new perspectives to the literature on religion and religiosity as a potential driver of CSR. The fourth essay is linked to the former three through the topics of employee welfare and CSR. It addresses a noticeable gap in existing literature, and delivers an assessment of the value of a company's past performance in CSR to one of its most valuable stakeholder groups, which serves as an appropriate denouement to the work of this dissertation. The following paragraphs provide a more detailed description of the contribution of the individual essays.

The first essay adds to the growing body of evidence on the benefits of diversity in the workplace in general, and makes two important contributions to the literature on corporate policies regarding sexual minorities specifically. This paper is one of the first to employ a multi-dimensional measure of LGBTQ friendliness in the study of its effects on firm performance, and thus provides robust corroboration of the recent research demonstrating that inclusivity for sexual minorities is good for business (Wang & Schwarz 2010; Shan, Fu & Zheng 2017; Pichler, Blazovich, Cook, Huston & Strawser 2018). In addition, studying the role of regional factors on CSR and its effects is an important strand of the literature in question, and it motivates the methodology adopted in this paper. Presenting the moderating effects of the local political climate on the success of LGBTQ friendliness as a driver of

performance and value creation augments the existing evidence and provides additional incentives to account for socio-political influences in future research.

Closely related to the first essay, the second essay follows the exploration of the effects of LGBTQ-friendly corporate policies, and adds to the literature on the factors contributing to corporate innovation. As a predictor of firm performance, market value and stock returns (Narin, Noma & Perry 1987; Kogan, Papanikolaou, Seru & Stoffman 2017; Lee, Lee & Garrett 2019), innovation has been shown to thrive in working environments that promote employee wellbeing (Chen, Leung & Evans 2016; Chen, Chen, Hsu & Podolski 2016; Mao & Weathers 2019). Therefore, the positive relationship documented between LGBTQ friendliness and innovation in this paper illustrates that inclusivity for sexual minorities is an important indicator of a productive work environment. Moreover, the empirical results present innovative productivity as a viable channel for the benefits to firm performance documented in the first paper. Finally, a new measure of innovation quality – the international applicability of issued patents - is introduced in this study, which is a practical contribution to the literature on patent-based innovation.

Deviating from the topic of inclusivity for sexual minorities, the third essay examines the relationship between religiosity and CSR, and supplies new insights from two perspectives. The contested theory that firm religiosity induces higher corporate social performance has been empirically tested across several varying samples over recent years (Schouten, Graafland & Kaptein 2014; Harjoto & Rossi 2019; Chantziaras, Dedoulis, Grougiou & Leventis 2020, etc.). Using a firm specific measure of religiosity that is novel to the literature, the third essay of this doctoral dissertation strengthens the claims that the two variables are positively related. Additionally, similar to the first two essays, this paper encourages the use of firm-specific measures in empirical research and suitably demonstrates their distinction from regional measures of religiosity, which are inherently less adequate at complete identification. Overall, this essay advances the contention of religiosity as a predictor of CSR, and furthers the discussions surrounding the multi-dimensional role of culture within corporate finance.

Finally, the value of accumulated social capital as an explanatory factor in future firm behavior requires greater scrutiny. A firm's history of social responsibility can understandably inform the expectations and decisions of multiple groups of stakeholders. Specifically, talented members of the workforce may seek out socially responsible firms anticipating better growth opportunities, wages, benefits, job quality and security (Branco & Rodrigues 2006; Sun & Yu 2015). The question of whether high-CSR firms are significantly better at prioritizing the

needs of their employees than low-CSR firms is worth academic interest, and is especially pertinent when contextualized by exogenous stressors such as the global unemployment crisis triggered by the COVID-19 pandemic. The fourth and final essay of this dissertation is one of the first attempts to empirically study the impact of past CSR performance on layoff behavior during crisis. In addition, this essay contributes to the body of literature furthering our comprehension of the many strategic roles and perks of CSR.

3 BACKGROUND AND RELATED LITERATURE

This section presents the prior literature relevant to this dissertation. The subject of corporate social responsibility pervades all four included essays, and the development of the discussion surrounding CSR is presented in Section 2.1. Section 2.2 follows with a discussion on studies pertaining to the specific topic of LGBTQ-friendly corporate policies, and their effects on various measures of firm performance and innovation. Finally, the existing literature on the relationship between firm religiosity and corporate social responsibility is presented in Section 2.3.

3.1 Corporate Social Responsibility

Carroll (1979) defines CSR as the "…responsibility of businesses [that] encompasses economic, legal, ethical and discretionary expectations that society has of organizations at a given point in time". This important definition implies the dichotomy of financial and social performance, while emphasizing the role of external influence and time as a determinant of CSR, and serves as the basis for the discussion in this dissertation. Four decades of theoretical and empirical research has vindicated this nuanced interpretation. The surge of academic interest in CSR in recent years as evidenced by a tenfold increase in published literature on the subject since 2010, is a testament to the evolution of attitudes toward CSR over time. Moreover, despite being a universal concept, CSR standards and performance are surprisingly heterogeneous even across a sample of economically similar countries, and strongly dependent on social and political contexts (Gjølberg, 2009). The moderating role of external culture motivates the focus of the articles in this dissertation on a singular economy, the US, which also happens to be the birthplace of CSR.

Challenging the principles of Milton Friedman's shareholder wealth maximization theory, the role of CSR in corporate decision-making and financial outcomes has been increasingly decisive. Early studies that examine the motivations behind CSR present a plethora of intersecting theories to explain its popularity and efficacy. On the one end of the spectrum, theories of stakeholder salience postulate that CSR affects value from the inside out - by satisfying stakeholder needs and achieving systematic organizational efficiency. These theories are often employed to demonstrate the benefits of social and corporate governance measures such as board and workplace diversity. On the other end, the agency theory follows Friedman's original doctrine, and portrays CSR as an unnecessary and unprofitable endeavor. Furthering this perspective, the causality between CSR and

financial performance may be called into question, invalidating the positive link between the two variables as evidence of the economic viability of social pursuits. Overall, in reality, why companies undertake CSR and why it helps the bottom line is likely explained by a combination of factors.

The bulk of evidence on the financial effects of CSR in Western markets has been succinctly summarized by van Beurden and Gössling (2008), and affirms that ethical decisions pay off for corporations. Studies published since then have further strengthened the claims that corporate social responsibility (disclosures, actions and reputation) is positively related to a company's value (Jo & Harjoto 2011; Servaes & Tamayo 2013; Gregory et al. 2014; Chen & Lee 2017; Mishra 2017; Buchanan et al. 2018, etc.), and operating performance (Jo, Kim & Park 2015; Bocquet, Le Bas, Mothe & Poussing 2017; Miller, Eden & Li 2020, etc.). Moreover, the theoretical justifications for the link between corporate social and financial performance have also been reinforced empirically. For instance, employee welfare, a significant component of CSR, has been shown to improve firm innovation, innovation efficiency and productivity (Badgett et al. 2013; Chen et al. 2016; Mao & Weathers 2019; Wei et al. 2020). Similarly, the mechanisms which allow green firms to gain a competitive advantage through their environmental practices have also been explored in literature (Dechant & Altman 1994; Wong et al. 2017; Andersén et al. 2019).

Alternatively, according to the agency theory, which delineates the disassociation between manager and shareholder interests, corporate executives may use CSR to bolster their own personal reputation and reduce the likelihood of turnover (Surroca and Tribó 2008; Chen et al. 2019). Expenditures toward social initiatives that are not aligned with the long-term strategy of the firm, or that are mainly incurred to entrench self-serving executives, cannot be expected to increase firm value or profitability. In addition, the concentration of CSR among firms with excess cashflows (Campbell 2007; Hong et al. 2012) suggests that socially responsible activities are not strategic investments, but expenditures that are not significantly related to the operating activities of the firm. Using these arguments, Lys et al. (2015) propose that there is no causality between corporate social and financial performance, and that firms are simply more likely to undertake CSR expenditures when they anticipate favorable future prospects. To this effect, it is noteworthy that a negative or neutral relationship between CSR and firm performance has also been evidenced in literature (McWilliams and Siegel 2000; Brammer and Millington 2008; Surroca et al. 2010; Krüger 2015).

The same theories that connect a firm's social performance to its financial performance can be extended to justify a link between CSR and stock returns.

While some of the recent rise in socially responsible investing (SRI) can be attributed to ethically motivated investors, applying the knowledge gleaned from the research on CSR and CFP can similarly bolster interest in sustainable stocks. Whether these stocks can consistently outperform their peers ultimately depends on both the degree of interest they command and on the intensity of additional active explanatory factors. Extant literature studies the relationship between CSR and a firm's market performance, and in many cases, finds evidence to support the claims that social responsibility creates value (Dhaliwal, Radhakrishnan, Tsang & Yang 2012; Deng, Kang & Low 2013; Flammer 2015; Lins, Servaes & Tamayo 2019).

Meanwhile, CSR and its effects are purported to vary in times of economic turmoil. A company may increase or decrease its investment in social activities during a financial crisis to signal its commitment or reallocate funds to operations respectively (García-Benau et al. 2013). Moreover, while some studies document a reduction in crisis risk exposure among high-CSR firms (Albuquerque et al. 2020; Shanaev et al. 2021; Broadstock et al. 2021), these findings are increasingly being called into question. Al-Dah et al. (2018) report that firms with more outside directors were penalized by investors for CSR expenditures during the 2007-08 financial crisis. More recently, Demers et al. (2021) examine previous findings suggesting high-CSR firms experienced lower downside risk during the 2020 financial crisis, and propose instead that these effects could be attributed to investments in intangibles. Bae et al. (2021) similarly find no significant benefits to ESG (Environmental, Social and Governance) stocks during the COVID-19 crash.

Overall, whether SRI can significantly help investors sort the winners from the losers should not become a major influence in a company's decision to adopt socially responsible behaviors. From a deontological ethics perspective, firms should engage in CSR to promote or preserve the wellbeing of their constituents and environs for the principle alone, although marketers of CSR maintain that this approach is impractical and idealistic. Instead, a virtue ethics perspective helps connect socially responsible behavior with the public reputation of the firm, creating the first echelon in the reward system of CSR (Collier 1995; Murphy 1999). The ethical foundations may be further reconciled with a consequentialist viewpoint to reinforce a strategic approach to CSR wherein the positive effects accrued to the firm's reputation and human capital manifest in higher operational performance (van de Ven 2008). Therefore, while companies may prioritize investments in social capital to earn pecuniary benefits, they should be aware of the channels through which CSR affects returns, and abstain from band-aid solutions. In short, when embraced for the right reasons (Maak 2008), socially

responsible behavior has the potential to differentiate market leaders from their competitors.

Criticism of the status quo of research on CSR also provides valuable insights to the discourse and encourages the development of more stringent methods and variables. Some of the most compelling accusations levied at the prevalence of CSR or sustainability in extant corporate finance literature include: a refutal of the necessity of CSR in business and society (van Oosterhout & Heugens 2008); an argument that socially responsible behavior is a product rather than a driver of the changes brought on by unrelated factors (Hanlon 2008); skepticism surrounding the viability of internal and external actors to fulfill their roles in improving corporate social performance (Kuhn & Deetz 2008); and lastly, persisting support of Friedman's original critique of CSR (Salazar & Husted 2008). Together, these critiques present challenges to the conceptual foundations of CSR and highlight weaknesses in the evolving definitions and frameworks of social responsibility.

Corporate social performance is understood to contribute to a firm's social capital, and is often used interchangeably with CSR. In addition, the two terms are frequently employed to refer to the measure of a firm's actual contribution to the wellbeing of its stakeholders and its environment. However, a distinction exists between a company's ethically responsible activities and our perception of them. While the primary purpose of CSR disclosures is to inform investors and shape their impressions, they also serve as major sources of information for ESG Index rankings and company metrics, and subsequently become proxies for actual CSR in academic research. There is evidence to suggest that this "perception" of CSR is more faithful to corporate motives than to some universal standard of ethics. Bergström & Diedrich (2011) document the case of a Swedish firm that was able to maintain its socially responsible status in the aftermath of mass layoffs because it exploited a network of actors to subvert the narrative. Though anecdotal, this study is a reminder that the role of strategic and managerial agility in shaping perceptions of social responsibility should not be underestimated, and that the attributes of high-CSR firms that grant them this agility should be regarded with caution.

3.2 The Shareholder theory

As one of the most prominent theories of capitalism, Milton Friedman's doctrine regarding shareholder wealth maximization requires further consideration. In his 1970 essay in The New York Times, the famous economist delivers a harsh rebuttal of the then nascent concept of social responsibility, likening it to "taxation without

representation". Friedman argues that the very nature of the principal-agent relationship between a firm's owners and its executives bars the use of corporate resources for any purpose other than maximizing profits. Reallocating these resources for social or political activism would fall outside the bounds of authority or responsibility for the appointed executives. Furthermore, Friedman draws attention to the ambiguity surrounding the ethics of such activism, and proposes that the only socially responsible behavior would be to follow the "rules of the game". This perspective leaves little room for voluntariness, and shifts the burden of shaping the corporate ethical footprint on regulatory bodies.

It is noteworthy that Friedman's (1970) shareholder theory does not preclude participation in social causes that would benefit the firm in the long run, such as "devoting resources to [the] community or improving its government". Interestingly, he admits that such actions may be "justified on other grounds", and that they should not be cloaked under the guise of social responsibility. However, if social responsibility carries value within society and evokes a positive response from the free market, it would be antithetical to Friedman's own principles for firms to eschew the label. Moreover, while Friedman decries the vilification of capitalism and the pursuit of profits, and acknowledges that it would be hypocritical to try to resist or shift these evolving social perceptions, he stops short of accepting them as an extension of the rules in the corporate playing field.

The shareholder theory cannot easily be reconciled with the ethical approach to social responsibility. As discussed above, arguing the short- or long-term benefits of CSR to the firm's operational efficiency, bottom line, or reputation does not distinguish it from the objective of maximizing shareholder wealth. Moreover, there is insufficient evidence to claim that CSR *always* nets positive value for the firm. After all, literature purporting that social performance leads to financial performance only provides a snapshot of what transpires in certain industries, countries and time periods, and does not imply that the positive relationship is linear or that it persists indefinitely (Edmans 2022). Similarly, Bebchuk, Kastiel and Tallarita (2022) warn against the misconception that engaging in social responsibility only offers "win-win choices", and illustrate several scenarios that can present themselves as tradeoffs between the interests of customers, workers and the environment, and shareholder value.

The shareholder maximization theory represents a pervasive viewpoint of the objectives of corporations, but this perspective is continually evolving to accommodate a more nuanced interpretation of the role of directors and executives in fulfilling these objectives. For example, principal-agent conflicts can arise notwithstanding any pressure to participate in social initiatives, necessitating

shareholders to invest additional resources in order to incentivize corporate executives to carry out their profit-maximizing duties (Jensen and Meckling 1976). Furthermore, while shareholder rights are protected by law in the U.S., these protections are also extended to the rights of other, ancillary stakeholders. The legal responsibilities of corporate directors can, in fact, be condensed into two main principles: their *duty of care*, and their *duty of loyalty* (Lorsch 1989). Both duties can be fulfilled while catering to the interests of non-investing stakeholders, and across various states, the legal landscape is shifting to allow directors to act as a "neutral umpire for all involved", instead of a "policeman employed by shareholders" (Blair and Stout 1999).

3.3 The Stakeholder theory

A plethora of literature is devoted to exploring opposing arguments and evidence to the shareholder wealth maximization objective, and specifically delineating the relationship of the firm with its multitudinous non-investing stakeholders. While the origins of stakeholder theory can be traced back to the study of broader inter-social subjects, the term "stakeholder" has increasingly been adopted in discussions around businesses, institutions and organizations, and is ubiquitously interpreted as any constituency that lies within their sphere of influence. The normative theory of stakeholder identification further defines the bounds of this sphere, whereas the descriptive theory of stakeholder salience establishes the nature of the relationships with each constituent. Notably, Edward Freeman's (1984) work, *Strategic Management: A Stakeholder Approach*, has played an important role in the development of these theories, and provides a framework for identifying stakeholders and managing their interests.

Thompson (1967) proposes that "stakeholders" are groups that affect or can be affected by the achievement of the organization's objectives. Freeman (1984) notes that while these groups do not necessarily overlap, it is nevertheless important to consider parties that may presently only be affected by the firm, because they may very well be able to affect it in the future. Based on this definition, Freeman identifies and maps out the roles of the following groups as stakeholders in a large organization: owners, suppliers, customers, employees, the government, competitors, trade unions and associations, customer advocate groups, activist and political groups, and the financial community. Variations of this stakeholder map have been presented in extant literature using a combination of these and similar entities to complement the traditional depiction of the firm, and Figure 1 illustrates one such map for a publicly owned corporation. The figure incorporates conventionally known stakeholder groups against a backdrop of auxiliary sources

of influences, such as unions, trade associations and advocacy groups, labeled "society".

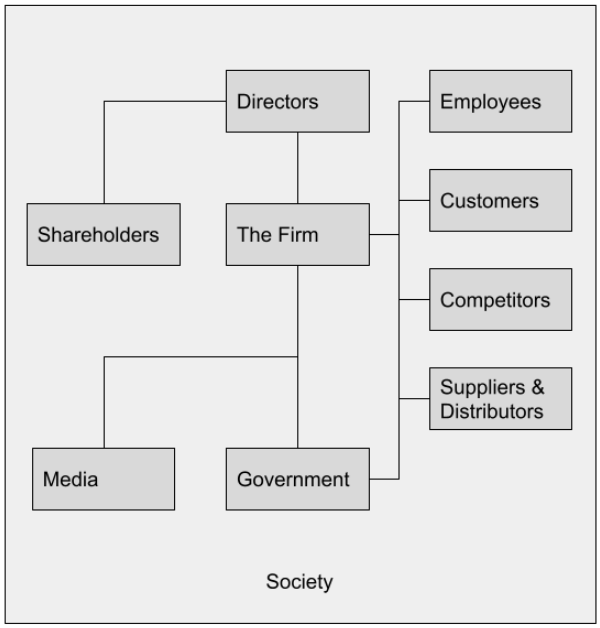

Figure 1. A stakeholder map for a publicly-owned corporation

Although stakeholder theory and CSR may be regarded as independent areas of study (Brown and Forster 2013; Schwartz and Carroll 2008), they intersect on the importance of taking societal interests into account while managing the firm. Notably, while CSR concerns the decisions and actions of the firm with regards to all stakeholders, it is heavily associated with groups that have disproportionately lower power relative to the degree of influence exerted over them by the firm. This relationship is illustrated in Figure 2, which portrays an alternative depiction of a stakeholder map, and highlights the area where CSR activity is likely to concentrate. Moreover, whereas stakeholder theory unites the balancing of stakeholder interests with the strategic management of the firm, CSR focuses on the business's societal impact untethered from its financial operations. Nevertheless, the two concepts are often used complementarily to underscore the importance of addressing the concerns of non-investing shareholders from ethical and remunerative perspectives (Russo and Perini 2010; Jamali 2008; Kurucz, Colbert and Wheeler 2008).

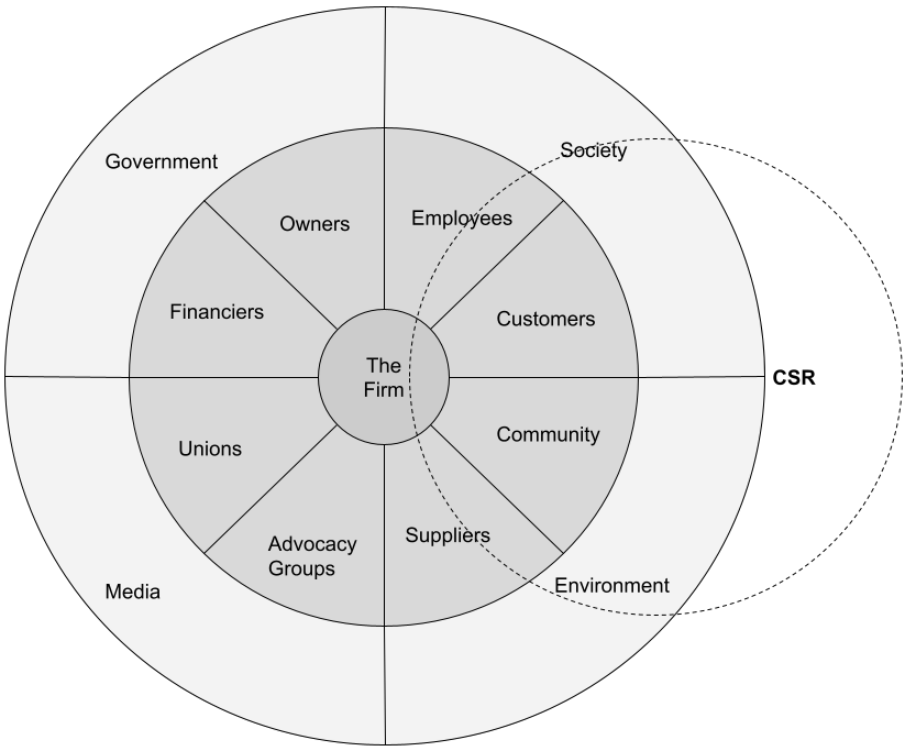

Figure 2. The focal point of CSR on a stakeholder map

3.4 Other related theories

An early work by Bowen (1953) has been particularly instrumental in establishing the motivations and mechanisms of businesses that engage in CSR. In his book, *Social Responsibilities of the Businessman*, Bowen affirms the obligations of firms that hold considerable and far-reaching influence in society to work toward upholding the wellbeing of their communities. Moreover, he maintains that institutional changes in the first half of the twentieth century have played a significant role in bringing these obligations to the forefront, allowing the voluntary pursuit of social capital alongside enforcement of more socially responsible behavior (Lee 2008). Bowen's (1953) claims are also some of the earliest formulated around the institutional theory of CSR, which postulates that by conforming to the values and norms that constitute acceptable economic behavior, firms gain increased legitimacy, additional resources, and improved survival capabilities (Scott 1987; Oliver 1991; Carpenter and Feroz 2001).

Within institutional theory, "isomorphic forces", such as the pressure exerted by external factors, including shareholders, media and the government, and the firm's own desire to conform to industry standards to remain competitive, can explain

the increasingly communicable appreciation of CSR practices (DiMaggio and Powell 1983; Deegan 2009). However, conformity can lead to the widespread adoption of similar strategic policies and organizational structures across industries, despite distinctive requirements for each firm's organizational efficiency. To this effect, "decoupling forces" can be used to describe the separation of the external image of the firm from its operational activities (Moll et al. 2006). Likewise, utilizing social and environmental disclosures to project a reputable image that adheres to external expectations is also a cornerstone of the legitimacy theory, which proposes that the foundations of a business within society may be reinforced through decisions and actions that reaffirm the values and well-being of the community in which it operates (Matthews 1993).

It is worth noting that theories related to CSR do not claim that social initiatives will lead to better financial performance. Even though the institutional and legitimacy theories posit that CSR can be used to attain stability and remain competitive, they do not suggest that it is positively correlated with profitability or market returns. Specifically, while the argument that social performance improves operational efficiency can be used to develop long-term strategies, it does not address the immediate returns on investments in social capital. In fact, the trade-off hypothesis, carefully articulated by Aupperle et al. (1985), indicates that these returns may very well be negative. This hypothesis suggests that reallocating corporate resources towards CSR may put firms at a disadvantage compared to their competitors who do not invest in socially responsible activities. Although the trade-off hypothesis underpins the works of neoclassical economists, such as Friedman's shareholder theory (Waddock and Graves 1997), it is not necessarily an indictment of CSR pursuits. Prominently, Vance (1975) provides evidence consistent with the trade-off hypothesis, however, support for it has waned over recent years in view of conflicting results.

Meanwhile, based on Carroll's (1991) model of CSR, which presents "economic viability" as the foundation of a socially responsible firm, Branco and Rodriguez (2006) argue that corporate social and financial performance should not be presented as trade-offs. Instead, they propose that CSR may be "both a determinant and a consequence of high financial performance" (Branco and Rodriguez 2006; Orlitzky 2005; Orlitzky et al. 2003; Waddock and Graves 1997). This outlook is supported by the resource-based perspective, which studies the relationship between internal, firm-specific resources and performance. According to Branco and Rodriguez (2006), a firm's tangible and intangible resources, and its learned organizational capabilities at employing these resources, are all important factors in determining performance. As reputational assets, social performance and social capital are intangible resources that are likely to be a

source of competitive advantage in capable hands. Interestingly, by the same logic, financial and organizational assets, along with the appropriate strategic capabilities, may be utilized to achieve higher social performance.

3.5 Employee treatment, LGBTQ policies and firm performance

The recent rise in popularity of socially responsible investing (SRI) belies the purpose of CSR to readjust a firm's priorities from a shareholder wealth maximization perspective (Friedman 1970) toward safeguarding the rights of all stakeholder groups (Freeman 1984; Mitchell et al. 1997). Among all external and internal groups of stakeholders, perhaps none are as ubiquitous and critical to the operation of a firm as its employees (Adams & Matheson 2000). Yet despite the high degree of legitimacy conveyed by their status within a firm, the distribution of power is skewed away from the average employee, whose welfare is not guaranteed by the firm (Fahlbeck 1994). Since the protections afforded to workers through the law are often insufficient to ensure equitable treatment and job security, maintaining good employee relations is a prime example of voluntary social responsibility, and their wellbeing and satisfaction has far-reaching consequences for a firm's financial health (Bosse et al. 2008), innovation productivity (Chen et al. 2016; Mao & Weathers 2019) and longevity (Bae et al. 2011).

For the purposes of this discussion, it is worth considering the role of CSR in the field of human resource management (HRM), which has a long-standing, dynamic relationship with the concept of social responsibility (Voegtlin and Greenwood 2016). Within their own respective spheres of literature, both CSR and HRM have each been studied as integral elements of the other, enabling effective and responsible management of stakeholders and the achievement of a firm's social and financial objectives (Becker 2011; Chen et al. 2011; Ghoul et al. 2011; Bhattacharya et al. 2008; Tymon et al. 2010; Ardichvili 2011; Deakin and Hobbs 2007). Alternatively, the nuanced interaction of the two concepts has also been explored (Baek and Kim 2014; Becker et al. 2010; Cooke and He 2010, etc.), as well as their distinctive places within the organization (Nollen 1986; Smith and Langford 2011).

Three "theories" surface when examining the HRM perspective on CSR, and these are discussed in further detail by Voegtlin and Greenwood (2016). Briefly, the first of these, the instrumental approach, is founded on neoclassical assumptions about the role of the firm and its executives, and supports CSR to the extent that it can

improve productivity and the financial prospects of the firm. The second, the social integrative approach to CSR, argues that the business should account for the interests and demands of the society, because it is instrumental for sustainability and growth (Garriga & Melé 2004). This approach also acknowledges the relatively far-reaching influence of the firm, and its responsibility to external stakeholders in the absence of market mechanisms that can guarantee their welfare (Jones and Felps 2013). Lastly, the political approach further emphasizes the power of the corporation in society (Scherer and Palazzo 2007), and broadens the focus of CSR by invoking the "political role of the firm" as a corporate citizen (Voegtlin and Greenwood 2016).

Within HRM, diversity and inclusivity for minorities are prominent, measurable facets of the social responsibility of the firm. Diversity, when not implemented purely for appearances (Rigolini & Huse 2021), has been shown to have a positive effect on firm performance. Racial, gender and age diversity within the board of directors has been shown to increase reputation and innovation (Miller & Triana 2009), firm value (Aggarwal et al. 2019), profitability (Shehata et al. 2017), and reduce firm risk (Bernile et al. 2018). Additionally, Garnero et al. (2014) document the positive effects of workforce educational diversity on productivity and wages, and the significant benefits to performance from workforce gender diversity in high-tech sectors. Theoretical underpinnings of the arguments for increasing diversity include an appraisal of the additional value of distinct but complementary information sets available through demographically diverse workforces (Lazear 1999; Jehn et al. 1999), and the comparative advantages of integration over segregation for productivity (Sparber 2008).

Inclusivity for sexual minorities is similarly important as attested by academics and industry professionals[1]. The disparity in public opinion and legislation across the U.S. provides appropriate testing grounds for the hypothesis that LGBTQ-friendly corporate policies pay off. Corporate culture that is inspired by attitudes of tolerance and inclusivity toward sexual minorities has been connected to significantly higher productivity, operating performance, innovation, and market returns (Wang & Schwarz 2010; Shan et al. 2017; Gao & Zhang 2017; Pichler et al. 2018). An earlier study by Badgett et al. (2013) suggests that LGBTQ-friendly policies impact performance, productivity and innovation by creating a welcoming workplace environment that boosts job commitment, improves peer relations, and

[1] Apple CEO Tim Cook attested to the need for inclusivity, stating, "I've had the good fortune to work at a company that loves creativity and innovation, and knows it can only flourish when you embrace people's differences." (Bloomberg 2014). Furthermore, when faced with a bill that threatened to overturn anti-discrimination legislation across Georgia, U.S., several corporations united in protest (Bloomberg 2015).

overall improves job satisfaction. In conjunction with the aforementioned findings on the benefits of nurturing diversity, the evidence provided stresses the importance of embracing inclusivity and indicates that the documented effects of LGBTQ-friendly policies cannot be dismissed as spurious or endogenous.

3.6 Firm religiosity

The roots of CSR can be traced all the way back to theological principles and actors (De George 1987; Hui 2008), and while it has evolved to accommodate a more modern ethical viewpoint, it still shares many of its integral elements with world religions. Buddhism, a religion that emphasizes the importance of the harmonious coexistence of mankind and nature, has been shown to shape the environmental practices of businesses within measurable reach of its influence (Du et al. 2014). Similarly, in the west, religion as represented by Christian institutions increases community involvement and corporate philanthropy (Cui et al. 2018). Two major factors reinforce the justifications for a positive relationship between firm religiosity and CSR. Firstly, religiosity exerts considerable influence on personal ethics through conscientiousness and guilt, inspiring charity, compassion and humility (Black & London 1966; Dyreng et al. 2012). Secondly, the influence of religion extends to major world institutions, affecting not just public values and attitudes but also policies and regulation (Tucker and Grim 2001). Together, these factors determine public opinions and expectations regarding the standards of corporate ethical behavior.

The argument that religiosity would be a good predictor of CSR or any of its constituent metrics naturally follows, and has been theoretically and empirically corroborated in extant literature. Religiosity, represented by regional measures such as the proximity of the business headquarters to religious institutions or places of worship, or the percentage of surveyed religious adherents in the state or county of these headquarters, has been positively linked to CSR initiatives, and has been shown to have a moderating effect on the relationship between CSR and firm performance (Cui et al. 2018; Zolotoy et al. 2019; Li et al. 2021). Moreover, when the variable is measured using firm-specific information such as CEO survey responses, the results consistently indicate higher CSR levels and effectiveness in connection with religious values (Schouten et al. 2013; Du et al. 2014; Harjoto & Rossi 2019). The literature exploring religious aspects within corporate culture is sufficiently nuanced, establishing not only the effects of religiosity on CSR, but also the moderating roles of both religiosity and CSR on risk-taking, fraud, tax evasion, corporate governance and firm performance (Chang 2015; Adhikari & Agrawal 2016; Chantziaras et al. 2020; Xu & Ma 2021). However, empirical analyses of the

role of religion in corporate ethics are heavily contextualized by the cultures of the studied samples, and there is plenty of room to extend the current research to new environments and factors.

Besides the plethora of concerns that accompany any group of scientific studies, two problems are particularly conspicuous in the literature examining the relationship between religiosity and CSR. The first is the interchangeable use of geographic or location-based religiosity and firm-level religiosity. The value of understanding regional influences on corporate behavior cannot be understated (Schneider 1988; Volonté et al. 2015; Gu et al. 2019; Yan et al. 2021). However, defining an appropriate measure of religiosity necessitates a distinction between regional and corporate culture. The variable, measured as the proximity of the corporate headquarters to places of worship, or as the surveyed religious adherence of the denizens of the headquarters state or county, is a perfectly valid proxy - for regional religiosity. However, it cannot sufficiently describe internal firm culture, and its use sacrifices valuable variation across the sample. The second problem is the failure to estimate a fairly internalized measure of firm-level religiosity for a large sample of firms with any measure of accuracy. Employing management or CEO survey data, or independently conducted company reviews such as the Faith Equality Index (FEI) mitigates the variable identification problems, but leaves us with a fraction of the desired sample. The assimilation of information to identify corporate culture on a large scale is another viable avenue for further research.

4 SUMMARY OF THE ESSAYS

This dissertation aims to fill specific gaps in the literature on corporate social responsibility and its constituent metrics, and to provide empirical evidence in response to research questions regarding their efficacy in creating value for the firm and its stakeholders. The findings of the four essays fall into three main categories: material productive and financial gains as further justifications for companies to be more inclusive to sexual minorities, cultural ethics as a predictor of CSR, and the impact of past social performance on stakeholder management during crisis. Overall, this dissertation pursues a deeper understanding of CSR and topics that are pertinent to employee wellbeing and equitable treatment.

4.1 Does lesbian and gay friendliness pay off? A new look at LGBT policies and firm performance

The first essay in this doctoral dissertation explores the relationship between a firm's attitude and policies regarding sexual minorities and its financial performance. The study deviates from previous literature on the topic by employing a more variable and comprehensive measure as a proxy for LGBTQ friendliness. Additionally, to the best of my knowledge, this study is the first to demonstrate that regional politics play a moderating role on the effects of LGBTQ friendliness.

Previous literature documents sufficient theory and evidence to constitute probable cause to expect that LGBTQ friendliness increases firm performance and value. Specifically, research connecting LGBTQ friendliness to employee satisfaction (Badgett, Durso, Kastanis & Mallory 2013; Hur, 2020), and subsequently to productivity and performance (Edmans, 2011, 2012, Melián-González, Bulchand-Gidumal, & López-Valcárcel 2015; Huang, Meschke & Guthrie 2015) motivates the hypothesis of this essay. In addition, similar studies utilizing alternate measures of LGBTQ friendliness or firm performance have been recently published (Shan, Fu & Zhang 2017; Pichler, Blazovich, Cook, Huston & Strawser 2018), and guide the methodology of this paper.

The sample used in this study comprises publicly traded U.S. firms that have been evaluated by the Human Rights Campaign on multiple metrics of LGBTQ friendliness. This annual assessment is published as the Corporate Equality Index (CEI), and it scores companies a maximum of 100 points distributed across 5 categories: equal employment opportunity policies, employment benefits, organizational LGBTQ competency, public commitment, and deductions for large-scale anti-LGBTQ blemishes. The CEI report has been published since 2003, and

also determines the sample period of this study. Financial data for the observed firms is obtained from Thomson Reuters. The final sample consists of an unbalanced panel of 657 firms.

The hypothesis that LGBTQ-friendly firms perform better is empirically tested using panel regressions with industry- and year-fixed effects. ROA (profitability) and Tobin's Q (firm value) are regressed on the CEI score respectively, in identical regressions that control for size, leverage, sales growth, risk, the overall ESG score, board size and board independence. The resulting coefficient estimates for the CEI score are positive and statistically significant. A standard deviation increase in the CEI (approximately 33.6 points) is associated with a 7 percent increase in firm value and a 50 basis point increase in return on assets. For the second part of the analysis, firms are assigned to "liberal" and "conservative" subsamples based on presidential election outcomes (Democrat and Republican respectively), and the level of religiosity in their headquarter states. The effects of LGBTQ friendliness on firm performance are then compared across the two subsamples using the original estimation model. The results suggest that the relationship between corporate sexual equality and financial performance is influenced by the religious and political climate of the firm's location. In the conservative subsample, the effect of a standard deviation increase in the CEI score on Tobin's Q is reduced by half, and the effect on ROA is no longer significant. Interestingly, these differences are plainly evident for state-level variations in religiosity and political sentiment, which would be relatively minor compared to the disparities that exist across national and continental borders.

Finally, several robustness tests are performed to strengthen the findings of this study. To address concerns regarding endogeneity and omitted variables, the results of the main regression are replicated in two-stage least squares estimation, wherein statewise LGBTQ concentration is used as the instrumental variable. A set of propensity score matched regressions using samples of perfectly scored firms further mitigates these concerns. Additional tests to establish reliability include the use of industry adjusted CEI scores, separate samples for voluntary and involuntary CEI reporting, Thomson Reuters' Social score and Corporate Governance score as separate control variables, and finally, the index "Fortune's 100 Best Companies to Work For" as a control for overall employee satisfaction. The discovered relationship between LGBTQ friendliness and firm performance persists in magnitude and significance across all the aforementioned tests. Briefly, this article produces results that reinforce the findings of prior literature (Pichler, Blazovich, Cook, Huston and Strawser, 2018; Wang and Schwarz, 2010), demonstrates the moderating effects of local culture on the success of LGBTQ friendliness, and strengthens the case for sexual equality in the workplace.

4.2 LGBTQ-friendly employee policies and corporate innovation

The second essay investigates the effects of LGBTQ friendly corporate policies on the frequency and quality of technological innovations as represented by the adjusted patent and citation counts, and patent originality and generality (Trajtenberg, Henderson & Jaffe 1997; Jaffe, Hall & Trajtenberg, 2001). The essay further contributes to the literature on technological innovation by introducing the variable "patent internationality", a measure of the number of countries spanned by the citing patents. Innovation measures based on patent and citation counts have been linked to higher operating performance and stock market returns (Kogan, Papanikolaou, Seru & Stoffman 2017; Burrus, Graham & Jones 2018). Therefore, based on the stakeholder theory of CSR and closely related to the research in the first essay, this paper provides a tangible channel through which LGBTQ friendliness creates value for the firm and drives performance.

There is a plethora of research identifying employee satisfaction as a vital source of competitive advantage and value (Whitener 2001; Faleye & Trahan 2011; Edmans 2012; Coff 1997, etc.). Investments in initiatives that foster a corporate culture of diversity and inclusivity have been linked to productivity and performance benefits through employee motivation and engagement (Richard 2000; Jackson, Joshi & Erhardt 2003; Fauver, McDonald & Taboada 2018; Chang & Jo 2019). Closely related to this paper, employee diversity, employee-friendly policies and employment non-discrimination acts (ENDAs) have all been shown to increase innovation output (Gao & Zhang 2016; Chen, Chen, Hsu & Podolski 2016; Schubert & Tavassoli 2020; Cumming & Leung 2021, etc). Based on these findings, this essay contributes to the literature exploring the predicting factors for innovation, including managerial characteristics and incentives, ownership structure, board composition, legal environments and social capital (Hsu, Tian & Xu 2014; Ucar 2018; Dai, Shen & Zhang 2021; Boubakri, Chkir, Saadi & Zhu 2021).

Similar to the first essay, this paper uses a sample of firms that is determined by the Human Rights Campaign's Corporate Equality Index (CEI). After excluding financial entities and firms with missing observations, the final sample of 614 publicly traded firms is studied over the period 2013-2017. Patent and citation data are obtained from the USPTO (United States Patent and Trademarks Office), and financial data are obtained from Compustat. The dependent variables, innovation quantity and quality, are measured by the annual patent and citation counts respectively. The analysis on innovation quality is supplemented with additional variables, namely patent originality (the number of NBER technological classes spanned by the cited patents), generality (the number of NBER technological

classes spanned by the citing patents), and internationality (a novel measure of the number of countries spanned by the citing patents). Finally, raw and memory-adjusted inventor counts are studied to demonstrate concentration of innovating talent in LGBTQ-friendly firms. Following the methodology of Hall, Jaffe and Trajtenberg, 2001, all patent-based measures are scaled by the respective aggregate annual measures of the corresponding technological classes to account for truncation bias. Employing fixed effects panel estimations, these innovation measures are then regressed on the CEI score while controlling for firm and board characteristics.

Consistent with the hypotheses, LGBTQ friendliness is shown to positively affect innovation quantity, innovation quality, and inventor counts, and these results are robust to a plethora of additional tests. To account for potentially omitted or exogenous factors, the regressions are repeated after excluding the top 5 innovative states, and subsequently the most liberal states. The regressions are also repeated after excluding non-innovating firms to demonstrate that the relationship holds in a sample of strictly innovating firms. Similar to the first essay, the potential for volunteer bias in the CEI score is addressed by including a dummy for involuntarily evaluated firms, and by performing a propensity score match on voluntariness. Other sundry adjustments, such as alternate control variables, industry-adjusted CEI scores and controls for overall CSR, serve to further validate the findings of this study. To more formally establish causality, two-stage least squares regressions are run using the following three instrumental variables: the staggered passage of state-level employment non-discrimination acts, the annual number of employment non-discrimination charges, and the annual percentage of state population that identifies as LGBTQ. Lastly, propensity score matching tests are performed for firms with perfect CEI scores. Both tests produce results consistent with the main findings. In summary, this essay presents tangible evidence of the benefits of LGBTQ-friendly employee policies in the form of inventor concentrations and innovation outputs, and strengthens the arguments that inclusivity boosts performance and creates value.

4.3 Firm religiosity and corporate social responsibility

The third essay of this doctoral dissertation studies the relationship between religiosity and corporate social responsibility (CSR). Using a novel measure of firm-specific religiosity as the independent variable, the analysis contributes to prior literature on the role of religion in corporate culture, and introduces a distinction between the effects of internal and external religious influences on CSR.

Entwined with local culture and tradition, religion has been shown to affect attitudes toward CSR and its incidence across different geographical samples (Ramasamy, Yeung & Au 2010; Schouten, Graafland & Kaptein 2014; Wu, Lin & Liu 2016). Christianity in particular, credited as the source for modern day business ethics (De George 1987; Hui 2008), encourages active engagement in philanthropy, community support, equality in the workplace and reducing human rights abuses (Brammer, Williams & Zinkin 2007). Consequently, a positive relationship is hypothesized between firm-level religiosity and CSR. Moreover, it is worth noting that the existing literature lacks an empirical consensus on the hypothesized relationship (van Aaken & Buchner 2020). Firm religiosity has hitherto been studied using one of several geographical and survey-based measures (Chatjudhamard-Kitsabunnarat, Jiraporn, & Tong 2014; Chintrakarn, Jiraporn, Tong & Chatjuthamard 2017; Chantziaras, Dedoulis, Grougiou & Leventis 2020) and the hypothesis of this essay is consistent with the majority of results published for similar samples and time periods. Nevertheless, the use of a new, multi-dimensional firm-specific measure of religiosity provides a valuable contribution to the existing literature.

The effects of firm-level religiosity on CSR are examined for a sample of large US firms, selected for their inclusion in the Faith Equality Index (FEI). Comparable in purpose to the CEI, the FEI facilitates the differentiation of recognizable brands in America based on their track records of supporting American Christian values. Firms are evaluated on several criteria, including faith-compatible corporate actions, faith-driven diversity and inclusivity objectives, and philanthropic support for religious organizations. This sample of firms is studied from 2012, the year the FEI was first published, to 2020. Using financial and ESG data obtained from Thomson Reuters' Refinitiv, fixed effects panel regressions are performed where the overall ESG scores, the Environmental scores and the Social scores are regressed on the FEI in succession, while controlling for firm and board characteristics. In addition, an alternative model with the interaction of firm-level religiosity and state-level religiosity is implemented to test the distinction and the moderating effects of external religious influences.

Consistent with the literature focused on U.S. samples, the results of the empirical analysis affirm the hypothesis that religious firms are more socially responsible. The coefficient estimates for the FEI score are congruous across the three regressions for ESG scores, the Environmental scores and the Social scores. A standard deviation increase in the FEI is associated with an increase of 2.22% in the overall ESG, an increase of 1.66% in the Social score, and an increase of 5.02% in the Environmental score. Moreover, the effects of firm-level religiosity are shown to be significant independent of the effects of state-level religiosity, and do

not significantly vary across states with high and low levels of religiosity. Two-stage least squares regressions are performed using Lewbel's (2012) heteroscedasticity-based instrument variable methodology, applied when exogenous instruments may not be suitably identified (Lewbel 2012; Lewbel 2018; Cheng and Smyth 2015; Gong et al. 2018; Mavis et al. 2020, etc.). The results of the IV regressions are consistent with those of our main analysis. Finally, the findings of this study are robust under the scrutiny of several tests, including an alternative set of control variables, dummies for the top and bottom quartiles of the FEI score, a rank order variable for firm religiosity based on the FEI scores, controls for Chantzairas et al.'s (2020) state corruption, and the inclusion of state and county dummies respectively. Overall, the paper discovers that Christian, faith-driven values in corporate culture may encourage good CSR above and beyond the effects of external religious influences, and in doing so, advocates the identification and use of firm-specific variables over regional measures.

4.4 Does past corporate social performance matter in a crisis? Layoffs during the COVID-19 pandemic

In the fourth essay, the effect of past corporate social performance on announced layoffs is examined for U.S. firms during the unemployment crisis triggered by the COVID-19 pandemic. This study contributes to the literature on the tangible effects of CSR on a firm's groups of stakeholders, and more specifically, is to my knowledge one of the first to empirically document the relationship between past social performance and corporate layoff activity.

Employee welfare and treatment is a prominent part of a company's social performance, and receives particular attention in the Social Pillar of the ESG Ratings. Socially responsible firms are expected to uphold high standards of health and safety, wages, benefits and diversity among other metrics of employee treatment. It is unsurprising, then, that skilled labor is shown to gravitate toward firms with high social capital (Rodrigo & Arenas 2008; Ghosh 2018), harboring expectations about the future quality of their employment. Whether the company can subsequently meet these expectations in terms of job security is a question worth academic attention. Based on the current literature, the claim that high-CSR firms would lay off fewer employees can be substantiated by either demonstrating an advantage in performance and financial returns, or by the implicit trust that they will be more likely to maintain their psychological contracts with their employees (Feldheim 2007).

On the other hand, the claim that high-CSR firms would lay off significantly more employees can be supported by utilizing a resource-based perspective of CSR (Barney 1991), wherein the same strategic agility that firms use to gain a competitive edge can be yielded to counter the negative consequences of downsizing. The case of a Swedish high-tech firm that was able to redefine its social responsibility and bolster its reputation in the immediate aftermath of downsizing can serve as anecdotal evidence of the power of narrative and managerial resourcefulness (Bergström & Diedrich 2011). Moreover, given that the superior performance of ESG stocks during the COVID-19 economic crisis was shown to be insignificant after controlling for their investments in intangibles (Demers et al. 2021), it is more reasonable to hypothesize that most of the firms that announced layoffs during 2020 were high-CSR.

The sample studied in this essay comprises publicly traded U.S. firms with a minimum total assets of $1 million. Financial, ESG, and layoff data is obtained from Thomson Reuters Refinitiv database for the sample period 2013-2020. Layoff data is supplemented from two additional sources, namely the WARN (Worker Adjustment and Retraining Notification) database, and from news announcements collected through Bloomberg. A difference-in-difference approach is used to estimate the relative incidence and magnitude of layoffs in high-CSR firms. The treatment group is constructed by comparing the company's past average performance in ESG, the Social Pillar and the Corporate Governance Pillar respectively to the industry median. The dependent variable, Announced Layoffs, is the natural logarithm of layoffs scaled by total employees, while the independent variables constitute the interaction of the treatment dummy and a dummy for the period 2020. In addition to controlling for regional COVID-19 response measures, I control for industries that were reportedly the most and least negatively impacted by the economic effects of the pandemic (S&P Global Market Intelligence 2020). A set of three regressions are run for each treatment, including one that replaces the dependent variable with a dummy indicating the incidence of layoffs in a given firm year.

The findings suggest that high-CSR firms significantly exceeded their peers in the magnitude and incidence of layoffs during the COVID-19 crisis. Similar empirical results were obtained for the high-Social treatment group, while the positive coefficients for the high-Governance treatment group were only weakly significant. Overall, the results confirm a resource-based view of CSR, wherein firms with high social capital are able to conduct more layoffs because they possess the strategic agility to navigate the negative consequences of downsizing. Meanwhile, the supposed protection that a high prior performance in the Social Pillar may provide employees during an unemployment crisis was shown to be nonexistent; this

performance was similarly positively linked to layoff incidence and magnitude. While the findings of this study present a retrospective assessment of the downsizing events during 2020, additional research is required to further our understanding of the effects of social capital on organizational restructuring.

References

Adhikari, B.K., & Agrawal, A. (2016). Does local religiosity matter for bank risk-taking? *Journal of Corporate Finance*, 38, 272-293.

Aggarwal, R., Jindal, V., & Seth, R. (2019). Board diversity and firm performance: the role of business group affiliation. *International Business Review*, 28(6), 101600.

Al-Dah, B., Dah, M., & Jizi, M. (2018). Is CSR reporting always favorable? *Management Decision*, 56(7), 1506-1525.

Albuquerque, R., Koskinen, Y., Yang, S., & Zhang, C. (2020). Resiliency of environmental and social stocks: An analysis of the exogenous COVID-19 market crash. *The Review of Corporate Finance Studies*, 9(3), 593-621.

Ardichvili, A. (2011). Sustainability of nations, communities, organizations and individuals: The role of HRD. *Human Resource Development International*, 14, 371-374.

Aupperle, K.E., Carroll, A.B., & Hatfield, J.D. (1985). An empirical examination of the relationship between corporate social responsibility and profitability. *Academy of Management Journal*, 28(2), 446-463.

Badgett, M.V.L., Durso, L.E., Kastanis, A., & Mallory, C. (2013). The business impact of LGBT-supportive workplace policies. The Williams Institute UCLA.

Bae, K.H., Kang, J.K., & Wang, J. (2011). Employee treatment and firm leverage: A test of the stakeholder theory of capital structure. *Journal of Financial Economics*, 100(1), 130-153.

Bae, K. H., El Ghoul, S., Gong, Z. J., & Guedhami, O. (2021). Does CSR matter in times of crisis? Evidence from the COVID-19 pandemic. *Journal of Corporate Finance*, 67, 101876.

Baek, P., & Kim, N. (2014). Exploring a theoretical foundation for HRD in society: Toward a model of stakeholder-based HRD. *Human Resource Development International*, 1-15.

Barakat, S.R., Isabella, G., Boaventura, J.M.G., & Mazzon, J.A. (2016). The influence of corporate social responsibility on employee satisfaction. *Management Decision*, 54(9), 2325-2339.

Bebchuk, L.A., Kastiel, K., & Tallarita, R. (2022). Does enlightened shareholder value add value? *The Business Lawyer*, forthcoming.

Becker, W.S. (2011). Are you leading a socially responsible and sustainable human resource function? *People & Strategy*, 34, 18-23.

Becker, W.S., Carbo, J.A., & Langella, I.M. (2010). Beyond self-interest: Integrating social responsibility and supply chain management with human resource development. *Human Resource Development Review*, 9, 144-168.

Bergström, O., & Diedrich, A. (2011). Exercising social responsibility in downsizing: Enrolling and mobilizing actors at a Swedish high-tech company. *Organization Studies*, 32(7), 897-919.

Bernile, G., Bhagwat, V., & Yonker, S. (2018). Board diversity, firm risk, and corporate policies. *Journal of Financial Economics*, 127(3), 588-612.

Black, M.S., & London, P. (1966). The dimensions of guilt, religion and personal ethics. *The Journal of Social Psychology*, 69(1), 39-54.

Blair, M.M., & Stout, L.A. (1999). A team production theory of corporate law. *Virginia Law Review*, 85(2), 247-328.

Bocquet, R., Le Bas, C., Mothe, C., & Poussing, N. (2017). CSR, innovation and firm performance in sluggish growth contexts: A firm-level empirical analysis. *Journal of Business Ethics*, 146, 241-254.

Bode, C., Singh, J., & Rogan, M. (2015). Corporate social initiatives and employee retention. *Organizational Science*, 26(6), 1553-1804.

Bosse, D.A., Phillips, R.A., & Harrison, J.S. (2009). Stakeholders, reciprocity, and firm performance. *Strategic Management Journal*, 30(4), 447-456.

Boubakri, N., Chkir, I., Saadi, S., & Zhu, H. (2021). Does national culture affect corporate innovation? International evidence. *Journal of Corporate Finance*, 66, 101847.

Bowen, H. R. (2013). *Social responsibilities of the businessman*. University of Iowa Press.

Brammer, S., & Millington A. (2008). Does it pay to be different? An analysis of the relationship between corporate social and financial performance. *Strategic Management Journal*, 29(12), 1325-1343.

Brammer, S. Williams, G., & J. Zinkin (2006). Religion and attitudes to corporate social responsibility in a large cross-country sample. *Journal of Business Ethics*, 71, 229-243.

Branco, M.C., & Rodrigues, L.L. (2006). Corporate social responsibility and resource-based perspectives. *Journal of Business Ethics*, 69(2), 111-132.

Broadstock, D. C., Chan, K., Cheng, L. T., & Wang, X. (2021). The role of ESG performance during times of financial crisis: Evidence from COVID-19 in China. *Finance Research Letters*, 38, 101716.

Brown, J.A., & Forster, W.R. (2013). CSR and Stakeholder Theory: A Tale of Adam Smith. *Journal of Business Ethics*, 112, 301-312.

Buchanan, B., Cao, C. X., & Chen, C. (2018). Corporate social responsibility, firm value, and influential institutional ownership. *Journal of Corporate Finance*, 52, 73-95.

Burrus, R.T, Graham, J.E., & Jones, A.T. (2018). Regional innovation and firm performance. *Journal of Business Research*, 88, 357-362.

Cahan, S.F., Villiers, C.D., Jeter, D.C., Naiker, V., & Staden, C.J.V. (2016). Are CSR disclosures value relevant? Cross country evidence. *European Accounting Review*, 25-3, 579-611.

Cao, Z., & W. Rees (2020). Do employee-friendly firms invest more efficiently? Evidence from labor investment efficiency. *Journal of Corporate Finance*, 65, 101744.

Cappelli, P. (2004). Why do employees retrain at-risk workers? The role of social capital. *Industrial Relations*, 43(2), 421-447.

Carpenter, V.L., & Feroz, E.H. (2001). Institutional theory and accounting rule choice: An analysis of four U.S. state governments' decisions to adopt generally accepted accounting principles. *Accounting, Organizations and Society*, 26(7-8), 565-595.

Carroll, A. B. (1979). A three-dimensional conceptual model of corporate social performance. *Academy of Management Review*, 4, 497-505.

Carroll, A. B. (1991). The pyramid of corporate social responsibility: Toward the moral management of organizational stakeholders. *Business horizons*, 34(4), 39-48.

Chang, J. C. (2015). The impact of religiosity on Corporate Governance. In *Academy of Management Proceedings* (2015).

Chantziaras, A., Dedoulis, E., Grougiou, V., & Leventis, S. (2020). The impact of religiosity and corruption on CSR reporting: The case of US banks. *Journal of Business Ethics*, 109, 362-374.

Chatjuthamard-Kitsabunnarat, P., Jiraporn, P., & S. Tong (2014). Does religious piety inspire corporate social responsibility (CSR)? Evidence from historical religious identification. *Applied Economic Letters*, 21(16), 1128-1133.

Chatterji, A.K., Durand, R., Levine, D.I., & Touboul, S. (2016). Do ratings of firms converge? Implications for managers, investors and strategy researchers. *Strategic Management Journal*, 37(8), 1597-1614.

Chen, C., Patten, D.M., & Roberts, R. (2008). Corporate charitable contributions: A corporate social performance or legitimacy strategy? *Journal of Business Ethics*, 82, 131-144.

Chen, C., Chen, Y., Hsu, P., & Podolski, E.J. (2016). Be nice to your innovators: Employee treatment and corporate innovation performance. *Journal of Corporate Finance*, 39, 78-98.

Chen, R.C., & Lee, C.H. (2017). The influence of CSR on firm value: An application of panel smooth transition regression on Taiwan. *Applied Economics*, 49(34), 3422-3434.

Chen, J., Leung, W.S., & Evans, K.P. (2016). Are employee-friendly workplaces conducive to innovation? *Journal of Corporate Finance*, 40, 61-79.

Cheng, Z., & Smyth, R. (2015). Sex and happiness. *Journal of Economic Behavior & Organization*, 112, 26-32.

Chintrakarn, P., Treepongkaruna, S., Jiraporn, P., & Lee, S.M. (2020). Do LGBT-supportive corporate policies improve credit ratings? An instrumental-variable analysis. *Journal of Business Ethics*, 162, 31-45.

Chintrakarn, P., Jiraporn, P., Tong, S., & P. Chatjuthamard (2017). Exploring the effects of religious piety on corporate governance: Evidence from anti-takeover defences and historical religious identification. *Journal of Business Ethics*, 141, 469-476.

Coff, R. (1997). Human assets and management dilemmas: Coping with hazards on the road to resource-based theory. *The Academy of Management Review*, 22(2), 374-402.

Collier, J. (1995) The virtuous organization. *Business Ethics: A European Review*, 4, 143–149.

Cooke, F.L., & He, Q.L. (2010). Corporate social responsibility and HRM in China: A study of textile and apparel enterprises. *Asia Pacific Business Review*, 16, 355-376.

Cornett, M.M., Erhemjamts, O., & Tehranian, H. (2016). Greed or good deeds: An examination of the relation between corporate social responsibility and the financial performance of U.S. commercial banks around the financial crisis. *Journal of Banking and Finance*, 70, 137-159.

Cui, J., Jo, H., & Velasquez, M.G. (2019). Christian religiosity and corporate community involvement. *Business Ethics Quarterly*, 29(1), 85-125.

Cumming, D., & Leung, T.Y. (2021). Board diversity and corporate innovation: Regional demographics and industry context. *Corporate Governance: An International Review*, 29(3), 277-296.

Dai, L., Shen, R., & Zhang, B. (2021). Does the media spotlight burn or spur innovation? *Review of Accounting Studies*, 26(1), 343-390.

De George, R.T. (1987). The status of business ethics: Past and future. *Journal of Business Ethics*, 6, 201-211.

Deakin, S., & Hobbs, R. (2007). False dawn for CSR? Shifts in regulatory policy and the response of the corporate and financial sectors in Britain. *Corporate Governance: An International Review*, 15, 68-76.

Deegan, C. (2009). *Financial accounting theory*. McGraw Hill, North Ryde, NSW, Australia.

Demers, E., Hendrikse, J., Joos, P. & Lev, B. (2021). ESG did not immunize stocks during the COVID-19 crisis, but investments in intangible assets did. *Journal of Business Finance and Accounting*, 48(3-4), 433-462.

Deng, X., Kang, J., & Low, B.S. (2013). Corporate social responsibility and shareholder value maximization: Evidence from mergers. *Journal of Financial Economics*, 110(1), 87-109.

Dhaliwal, D. S., Radhakrishnan, S., Tsang, A., & Yang, Y. G. (2012). Nonfinancial disclosure and analyst forecast accuracy: International evidence on corporate social responsibility disclosure. *The Accounting Review*, 87(3), 723–759.

DiMaggio, J., & Powell, W.W. (1983). The iron cage revisited: Insitutionalisomorphism and collective rationality in organizational fields. *American Sociological Review*, 48(2), 147-160.

Dyreng, S.D., Mayhew, W.J., & C.D. Williams (2012). Religious social norms and corporate financial reporting. *Journal of Business Finance and Accounting*, 39, 845-875.

Edmans, A. (2011). Does the stock market fully value intangibles? Employee satisfaction and equity prices. *Journal of Financial Economics*, 103(3), 621-640.

Edmans, A. (2012). The link between job satisfaction and firm value, with implications for corporate social responsibility. *Academy of Management Perspectives*, 26(4), 1-19.

Edmans, A. (2022). *Grow the Pie: How Great Companies Deliver Both Purpose and Profit–Updated and Revised*. Cambridge University Press.

Fahlbeck, R. (1994). The demise of collective bargaining in the USA: Reflections on the un-American character of American labor law. *Berkeley Journal of Employment and Labor Law*, 307-334.

Faleye, O., & Trahan, E.A. (2011). Labor-friendly corporate policies: Is what is good for the employees good for shareholders? *Journal of Business Ethics*, 101, 1-27.

Fauver, L., McDonald, M.B., & Taboada, A.G. (2018). Does it pay to treat employees well? International evidence on the value of employee-friendly culture. *Journal of Corporate Finance*, 50, 84-108.

Feldheim, M.A. (2007). Public sector downsizing and employee trust. *International Journal of Public Administration*, 30(3), 249-270.

Flammer, C. (2015). Does corporate social responsibility lead to superior financial performance? A regression discontinuity approach. *Management Science*, 61(11), 2549-2568.

Freedman, M., & Stagliano A.J. (1991). Differences in social-cost disclosures: A market test of investor reactions. *Accounting Auditing and Accountability Journal*, 4(1), 68–83.

Freeman, R.E. (1984). *Strategic Management: A Stakeholder Approach*. Pitman Publishing.

Friedman, M. (1962). *Capitalism and Freedom*. Chicago: University of Chicago Press.

Friedman, M. (1970). The social responsibility of business is to increase its profits. New York Times Magazine. September 13, 32-33, 122-124

Garcia-Benau, M.A., Sierra-Garcia, L. & Zorro, A. (2013). Financial crisis impact on sustainability reporting. *Management Decision*, 51(7), 1528-1542.

Garnero, A., Kampelmann, S., & Rycx, F. (2014). The heterogeneous effects of workforce diversity on productivity, wages, and profits. *Industrial Relations: A Journal of Economy and Society*, 53(3), 430-477.

Garriga, E., & Melé, D. (2004). Corporate social responsibility theories: Mapping the territory. *Journal of Business Ethics*, 53, 51-71.

Ghosh, K. (2018). How and when do employees identify with their organization? Perceived CSR, first-party (in)justice, and organizational (mis)trust at workplace. *Personnel Review*, 47(5), 1152-1171.

Gjølberg, M. (2009). Measuring the immeasurable?: Constructing an index of CSR practices and CSR performance in 20 countries. *Scandinavian Journal of Management*, 25:1, 10-12.

Gong, G., Xu, S., & Gong, X. On the value of Corporate Social Responsibility disclosure: An empirical investigation of corporate bond issues in China. *Journal of Business Ethics*, 150, 227–258.

Gregory, A., Tharyan, R., & Whittaker, J. (2014). Corporate social responsibility and firm value: Disaggregating the effects on cash flow, risk and growth. *Journal of Business Ethics*, 124(4), 633-657.

Gu, Y., Zhang, H., Zhou, W., & Zhong, W. (2019). Regional culture, top executive values, and corporate donation behaviors. *Technological Forecasting and Social Change*, 140, 1-13.

Hall, B., Jaffe, A., and Trajtenberg, M. (2001). The NBER patent citations data file: Lessons, insights and methodological tools. NBER Working Paper Series, No 8498.

Hanlon, G. (2008). Rethinking corporate social responsibility and the role of the firm – On the denial of politics. In *The Oxford Handbook of Corporate Social Responsibility* (2015). Oxford University Press.

Harjoto, M.A., & Rossi, F. (2019). Religiosity, female directors, and corporate social responsibility for Italian listed companies. *Journal of Business Research*, 95, 338-346.

Herremans, I. M., Akathaporn, P., & McInnes, M. (1993). An investigation of Corporate Social Responsibility reputation and economic performance. *Accounting Organizations and Society*, 18(7-8), 587–604.

Hsu, P.-H., Tian, X., & Xu, Y. (2014). Financial development and innovation: Cross-country evidence. *Journal of Financial Economics*, 112, 116-135.

Huang, M., Li, P., Meschke, F., & Guthrie, J.P. (2015). Family firms, employee satisfaction, and corporate performance. *Journal of Corporate Finance*, 34, 108-127.

Hui, L.T. (2008) Combining faith and CSR: A paradigm of corporate sustainability. *International Journal of Social Economics*, 35(6) 449-465.

Hur, H. (2020). The role of inclusive work environment practices in promoting LGBT employee job satisfaction and commitment. *Public Money & Management*, 40(6), 426-436.

Hur, W., Moon, T., & Ko, S. (2018). How employees' perceptions of CSR increase employee creativity: Mediating mechanisms of compassion at work and intrinsic motivation. *Journal of Business Ethics*, 153, 629-644.

Jackson, S.E., Joshi, A., & Erhardt, N.L. (2003). Recent research on team and organizational diversity: SWOT analysis and implications. *Journal of Management*, 29(6), 801-830.

Jamali, D. (2008). A stakeholder approach to corporate social responsibility: A fresh perspective into theory and practice. *Journal of Business Ethics*, 82, 213-231.

Jehn, K., Northcraft, G.B., & Neale, M.A. (1999). Why differences make a difference: A field study of diversity, conflict and performance in workgroups. *Administrative Science Quarterly*, 44(4), 741– 63.

Jensen, M.C., & Meckling, W.H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305-360.

Jo, H., & Harjoto, M. A. (2011). Corporate governance and firm value: The impact of corporate social responsibility. *Journal of Business Ethics*, 103(3), 351-383.

Jo, H., Kim, H., & Park, K. (2015). Corporate environmental responsibility and firm performance in the financial services sector. *Journal of Business Ethics*, 131, 257-284.

Kim, J., Milliman, J., & Lucas, A. (2020). Effects of CSR on employee retention via identification and quality-of-work-life. *International Journal of Contemporary Hospitality Management*, 32(3), 1163-1179.

Kogan, L., Papanikolaou, D., Seru, A., & Stoffman, N. (2017). Technological innovation, resource allocation, and growth. *The Quarterly Journal of Economics*, 132(2), 665-712.

Krüger, P. (2015). Corporate goodness and shareholder wealth. *Journal of Financial Economics*, 115, 304-329.

Kuhn, T.R., & Deetz, S. (2008). Critical theory and corporate social responsibility: Can/Should we get beyond cynical reasoning? In *The Oxford Handbook of Corporate Social Responsibility*.

Kurucz, E. C., Colbert, B. A., & Wheeler, D. (2008). The business case for corporate social responsibility. In *The Oxford handbook of corporate social responsibility*.

Lazear, E.P. (1999). Globalization and the market for team-mates. *Economic Journal*, 109(454), 15-40.

Lee, M. D. P. (2008). A review of the theories of corporate social responsibility: Its evolutionary path and the road ahead. *International Journal of Management Reviews*, 10(1), 53-73.

Lee, R., Lee, J., & Garrett, T.C. (2019). Synergy effects of innovation on firm performance. *Journal of Business Research*, 99, 507-515.

Lewbel, A. (2012). Using heteroscedasticity to identify and estimate mis-measured and endogenous regressor models. *Journal of Business & Economic Statistics*, 30(1), 67-80.

Lewbel, A. (2018). Identification and estimation using heteroscedasticity without instruments: The binary endogenous regressor case. *Economics Letters*, 165, 10-12.

Lins, K.V., Servaes, H., & Tamayo, A. (2019). Social capital, trust, and corporate performance: How CSR helped companies during the financial crisis (and why it can keep helping them). *Journal of Applied Corporate Finance*, 31, 59-71.

Lorsch, J., & Young, J. (1990). Pawns or potentates: The reality of America's corporate boards. *Academy of Management Perspectives*, 4(4), 85-87.

Lougee, B., & Wallace, J. (2008). The corporate social responsibility (CSR) trend. *Journal of Applied Corporate Finance*, 20(1), 96-108.

Maak, T. (2008). Undivided corporate responsibility: Towards a theory of corporate integrity. *Journal of Business Ethics*, 82(2), 353-368.

Mao, C.X., & Weathers, J. (2019). Employee treatment and firm innovation. *Journal of Business Finance & Accounting*, 46(7-8), 977-1002.

Mathews, M.R. (1993). *Socially responsible accounting*, Chapman and Hall, London, U.K.

Mavis, C. P., McNamee, N. P., Petmezas, D., & Travlos, N. G. (2020). Selling to buy: Asset sales and acquisitions. *Journal of Corporate Finance*, 62, 101587.

McWilliams, A., & Siegel, D. (2000). Corporate social responsibility and financial performance: Correlation or misspecification? *Strategic Management Journal*, 21(5), 603-609.

Melián-González, S., Bulchand-Gidumal, J., & López-Valcárcel, B. G. (2015). New evidence of the relationship between employee satisfaction and firm economic performance. *Personnel Review*, 44(6), 906-929.

Miller, T., & del Carmen Triana, M. (2009). Demographic diversity in the boardroom: Mediators of the board diversity–firm performance relationship. *Journal of Management Studies*, 46(5), 755-786.

Miller, S.R, Eden, L., & Li, D. (2020). CSR reputation and firm performance: A dynamic approach. *Journal of Business Ethics*, 163, 619-636.

Mishra, D. R. (2017). Post-innovation CSR performance and firm value. *Journal of Business Ethics*, 140(2), 285-306.

Mitchell, R.K., Agle, B.R., & Wood, D.J. (1997). Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts. *Academy of Management Review*, 22, 853–886.

Moll, J., Burns, J., Major, M., & Hoque, Z. (2006). Institutional theory. In *Methodological issues in accounting research: Theories and methods*. Spiramus Press.

Murphy, P. E. (1999). Character and virtue ethics in international marketing: An agenda for managers, researchers and educators. *Journal of Business Ethics*, 18, 107–124.

Narin, F. Noma, E., & Perry, R. (1987). Patents as indicators of corporate technological strengths. *Research Policy*, 16, 143-215.

Nollen, S.D. (1986). Business programs for work-family problems. *Labor Law Journal*, 37, 480-484.

Oliver, C. (1991). Strategic responses to institutional processes. *Academy of Management Review*, 16(1), 145-179.

Orlitzky, M., Schmidt, F. L., & Rynes, S. L. (2003). Corporate social and financial performance: A meta-analysis. *Organization studies*, 24(3), 403-441.

Orlitzky, M. (2005). Payoffs to social and environmental performance. *The Journal of Investing*, 14(3), 48-52.

Paul, K. (2017). The effect of business cycle, market return and momentum on financial performance of socially responsible investing mutual funds. *Social Responsibility Journal*, 13(3), 513-528.

Pichler, S., Blazovich, J.L., Cook, K.A., Huston, J.M., & Strawser, W.R. (2018). Do LGBT-supportive corporate policies enhance firm performance? *Human Resource Management*, 57(1), 263-278.

Ramasamy, B., Yeung, M.C.H., & A.K.M. Au (2010). Consumer support for corporate social responsibility (CSR): The role of religion and values. *Journal of Business Ethics*, 91, 61-72.

Richard, O.C. (2000). Racial diversity, business strategy, and firm performance: A resource-based view. *Academy of Management Journal*, 43(2), 164-177.

Rigolini, A., & Huse, M. (2021). Women and multiple board memberships: Social capital and institutional pressure. *Journal of Business Ethics*, 169(3), 443-459.

Rodrigo, P., & Arenas, D. (2008). Do employees care about CSR programs? A typology of employees according to their attitudes. *Journal of Business Ethics*, 83, 265-283.

Russo, A., & Perrini, F. (2010). Investigating stakeholder theory and social capital: CSR in large firms and SMEs. *Journal of Business Ethics*, 91, 207–221.

Salazar, J., & Husted, B.W. (2008). Principals and agents: Further thoughts on the Friedmanite critique of corporate social responsibility. In *The Oxford Handbook of Corporate Social Responsibility*.

Scherer, A.G., & Palazzo, G. (2007). Toward a political conception of corporate social responsibility: Business and society seen from a Habermasian perspective. *Academy of Management Review*, 32, 1096-1120.

Schneider, S. C. (1988). National vs. corporate culture: Implications for human resource management. *Human Resource Management*, 27(2), 231-246.

Schouten, C.M.D., Graafland, J., & Kaptein, M. (2014). Religiosity, CSR attitudes, and CSR behavior: An empirical study of executives' religiosity and CSR. *Journal of Business Ethics*, 123, 437-459.

Schubert, T., & Tavassoli, S. (2020). Product innovation and educational diversity in top and middle management teams. *Academy of Management Journal*, 63(1), 272-294.

Schwartz, M.S., & Carroll, A.B. (2008). Integrating and unifying competing and complementary frameworks: The search for a common core in the business and society field. *Business & Society*, 47(2), 148-186.

Servaes, H., & Tamayo, A. (2013). The impact of corporate social responsibility on firm value: The role of customer awareness. *Management Science*, 59(5), 1045-1061.

Shan, L., Fu, S., & Zheng, L. (2017). Corporate sexual equality and firm performance. *Strategic Management Journal*, 38(9), 1812-1826.

Shanaev, S., & Ghimire, B. (2021). When ESG meets AAA: The effect of ESG rating changes on stock returns. *Finance Research Letters*, 102302.

Shehata, N., Salhin, A., & El-Helaly, M. (2017). Board diversity and firm performance: evidence from the UK SMEs. *Applied Economics*, 49(48), 4817-4832.

Smith, V., & Langford, P. (2011). Responsible or redundant? Engaging the workforce through corporate social responsibility. *Australian Journal of Management*, 36, 425-447.

Sparber, C. (2008). A theory of racial diversity, segregation, and productivity. *Journal of Development Economics*, 87(2), 210-226.

Sun, L. & Yu, T.R. (2015). The impact of corporate social responsibility on employee performance and cost. *Review of Accounting and Finance*, 14(3), 262-284.

Surroca, J., Tribó, J.A., & Waddock, S. (2010). Corporate responsibility and financial performance: The role of intangible resources. *Strategic Management Journal*, 31, 463-490.

Thompson, J.D. (1967). *Organizations in Action*. New York: McGraw-Hill Book Co.

Trajtenberg, M., Henderson, R., & Jaffe, A. (1997). University versus corporate patents: A window on the basicness of invention. *Economics of Innovation and New Technology*, 5(1), 19-50.

Ucar, E. (2018). Local creative culture and corporate innovation. *Journal of Business Research*, 91, 60-70.

van Aaken, D., & F. Buchner (2020). Religion and CSR: A systematic literature review. *Journal of Business Economics*, 90(5), 917-945.

van Beurden, P., & Gössling, T. (2008). The worth of values: A literature review on the relation between corporate social and financial performance. *Journal of Business Ethics*, 82(2), 407-424.

van de Ven, B. (2008). An ethical framework for the marketing of corporate social responsibility. *Journal of Business Ethics*, 82, 339-352.

van Oosterhout, J.H., & Heugens, P.P.M.A.R. (2008). Much ado about nothing: A conceptual critique of Corporate Social Responsibility. In *The Oxford Handbook of Corporate Social Responsibility*.

Vance, S. G. (1975). Are socially responsible corporations good investment risks? *Management Review*, 64(8), 18–24.

Voegtlin, C., & Greenwood, M. (2016). Corporate social responsibility and human resource management: A systematic review and conceptual analysis. *Human Resource Management Review*, 26(3), 181-197.

Volonté, C. (2015). Culture and corporate governance: The influence of language and religion in Switzerland. *Management International Review*, 55(1), 77-118.

Waddock, S. A., & Graves, S. B. (1997). The corporate social performance–financial performance link. *Strategic Management Journal*, 18(4), 303-319.

Wang, P., & Schwarz, J.L. (2010). Stock price reactions to GLBT non-discrimination policies. *Human Resource Management*, 49(2), 195-216.

Wei, Y., Nan, H., & Wei, G. (2020). The impact of employee welfare on innovation performance: Evidence from China's manufacturing corporations. *International Journal of Production Economics*, 228, 107753.

Whitener, E.M. (2001). Do “high commitment” human resource practices affect employee commitment? A cross-level analysis using hierarchical linear modeling. *Journal of Management*, 27(5), 515-535.

Wong, C.W.Y., Wong, C.Y., & Boon-itt, S. (2017). How does sustainable development of supply chains make firms lean, green and profitable? A resource orchestration perspective. *Business Strategy and the Environment*, 27(3), 375-388.

Wu, D., Lin, C., & S. Liu (2016). Does community environment matter to corporate social responsibility? *Finance Research Letters*, 18, 127-135.

Xu, B., & Ma, L. (2021). Religious values motivating CSR: An empirical study from corporate leaders’ perspective. *Journal of Business Ethics*, 1-19.

Yan, Y., Xu, X., & Lai, J. (2021). Does Confucian culture influence corporate R&D investment? Evidence from Chinese private firms. *Finance Research Letters*, 40, 1017-1019.

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Does lesbian and gay friendliness pay off? A new look at LGBT policies and firm performance

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Abstract

This paper examines the association between LGBT-friendly corporate policies and firm performance. Using data on US firms from 2003 to 2016, we document that LGBT friendliness is positively associated with firm performance. Specifically, we find strong evidence that more LGBT-friendly firms have higher profitability and higher stock market valuations. Our results further demonstrate that the positive effect of progressive LGBT policies on firm performance is more pronounced for firms located in more liberal states. Overall, our empirical findings provide support for the view that socially progressive corporate policies and diversity management may create value for the firm.

Key words: LGBT policies; Firm performance; Sexual minorities; Employee policies

JEL classification: D22, G30, G31, G39, J15, J70, J83, M12, M50

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1. Introduction

Corporate social advocacy can be a tricky business. While taking a public stand on potentially sensitive social or political issues may lead to positive outcomes and competitive advantages, the repercussions of social advocacy can also be detrimental if the stance taken is not aligned with the preferences and values of the firm's key stakeholders. One particularly visible and divisive form of corporate social advocacy in the US has been firms' engagement in the public socio-political debate related to sexual minorities. Over the past decade, many prominent large firms have been among the most visible proponents of lesbian, gay, bisexual and transgender (LGBT) rights and anti-discrimination policies despite the risk of potentially alienating some of their employees, customers and other stakeholders who may share different social values.[1] Given that LGBT advocacy often has no intrinsic relation to firms' core business operations, why do firms engage in a controversial debate over sexual minorities instead of remaining value-neutral? The natural question then is whether LGBT friendliness pays off for the firms. In this paper, we address this question by empirically examining the relationship between LGBT-friendly corporate policies and firm performance.

There are various reasons why LGBT friendliness may influence firm performance. In general, corporate social advocacy such as the adoption of LGBT-supportive policies or taking a stand on same-sex marriage can be broadly considered as an element of corporate social responsibility (see, e.g., Snider *et al*., 2003; Weinzimmer and Esken, 2016; Wettstein and Baur, 2016; Shan *et al*., 2017). Consequently, the theoretical arguments for a link between corporate social responsibility (CSR) and firm performance are largely applicable also in the context of LGBT advocacy. While the classical shareholder-oriented view of Friedman (1962, 1970) posits that the only social responsibility of a firm is to increase its profits, implying that CSR is potentially value-destroying expenditure of corporate resources, the stakeholder theory established by Freeman (1984) argues that engagement in social activities creates shareholder value by forging relationships with the firm's key stakeholders.[2] In the vast body of CSR literature, the stakeholder theory has

[1]Over recent years, prominent firms such as Apple, Coca-Cola, Goldman Sachs, Google, Hewlett-Packard, Intel, KPMG, PwC, Starbucks, Target and Walt Disney have engaged in the public discussion and have actively supported sexual minorities (see, e.g., Aspan, 2020).

[2]Consistent with Friedman's (1970) shareholder-oriented view, Henderson (2001), Jensen (2002) and Sundaram and Inkpen (2004) have criticised socially responsible behaviour as an unnecessary cost and potentially value-destroying investment. Freeman's (1984) stakeholder view is comprehensively discussed and further elaborated, e.g., in Donaldson and Preston (1995), Jones (1995), Agle *et al*. (2008) and Laplume *et al*. (2008).

become the central paradigm for rationalising why social responsibility may pay off by enhancing firm reputation, customer relationships, accumulation of human capital and access to resources and external financing (see, e.g., Waddock and Graves, 1997; Barnett, 2007; Artiach *et al*., 2010; Surroca *et al*., 2010; Faleye and Trahan, 2011; Barnett and Salomon, 2012; Flammer and Luo, 2017; Buchanan *et al*., 2018).[3] Thus, if LGBT friendliness is not conflicting with stakeholders' expectations and values, the stakeholder theory predicts a positive relationship between LGBT-friendly policies and firm performance.

Loosely parallel with the stakeholder view, the human resource management (HRM) theories regarding employee satisfaction and diversity management provide an alternative motivation for hypothesising a positive linkage between LGBT-friendly policies and firm performance. These theories recognise employees as the firm's key asset and a focal source of competitive advantage and value creation (e.g., Cascio, 1991; Huselid, 1995; Whitener, 2001; Gelade and Ivery, 2003; Faleye and Trahan, 2011; Edmans, 2012). An extensive literature has documented that employee-friendly practices and organisational diversity management policies benefit firms, for instance, by advancing employee motivation and engagement, labour stability and productivity, and the firm's competitiveness in the labour market (e.g., Wright *et al*., 1995; Waddock and Graves, 1997; Richard, 2000; Bridges *et al*., 2003; Jackson *et al*., 2003; Kochan *et al*., 2003; Armstrong *et al*., 2010; Edmans, 2011, 2012; Chen *et al*., 2016; Fauver *et al*., 2018; Ahmed and Bukth, 2019).

Accordingly, consistent with the stakeholder arguments, intangible investments in employee welfare and satisfaction may ultimately improve firm performance by enhancing the firm's relational and reputational capital with its employees and other stakeholders. This line of argumentation is also broadly consistent with the institutional and legitimacy theories used in the CSR literature in tandem with the stakeholder theory (see, e.g., Fernando and Lawrence, 2014). These theories suggest that CSR initiatives such as those related to LGBT-friendly policies can be induced by the firms' pursuit to build reputation and achieve legitimacy in the context of their social environment (e.g., Roumpi *et al*., 2020). Given that perceived LGBT friendliness is to a large extent conjoined with inclusive and non-discriminatory employee policies and

[3]An extensive literature has been devoted to examining the relation between CSR and firm performance (for reviews, see, e.g., Griffin and Mahon, 1997; Orlitzky, 2001; Orlitzky *et al*., 2003; van Beurden and Gössling, 2008; Peloza, 2009; Aguinis and Glavas, 2012; Huang, 2021). While many studies have documented a negative, neutral or mixed association between CSR activities and financial performance (e.g., McWilliams and Siegel, 2000; Brammer and Millington, 2008; Surroca and Tribó, 2008; Surroca *et al*., 2010; Krüger, 2015; Buchanan *et al*., 2018), recent empirical evidence generally supports the view that the relationship is positive (e.g. Barnett and Salomon, 2012; Servaes and Tamayo, 2013; Eccles *et al*., 2014; Dimson *et al*., 2015; Flammer, 2015; Hasan *et al*., 2018; Miller *et al*., 2020; Huang, 2021).

embracing diversity in the workplace, the concomitant favourable HRM outcomes are a potential mechanism through which LGBT-friendly corporate policies can improve firm performance. Nevertheless, analogously to the stakeholder view, a prerequisite for value creation is that LGBT friendliness does not alienate the firm's employees or other stakeholders who have different social values.

A growing body of research offers evidence that LGBT friendliness advances a range of desired corporate outcomes. Previous studies have documented that LGBT-friendly firms are associated with greater employee commitment, improved job satisfaction, increased employee productivity, and more altruistic workplace behaviour (e.g., Day and Schoenrade, 1997, 2000; Button, 2001; Ragins and Cornwell, 2001; Ragins *et al*., 2007; Badgett *et al*., 2013; Shan *et al*., 2017). Furthermore, LGBT-friendly policies may improve competitiveness in the labour market by fostering the firm's ability to attract, recruit and retain talented employees (e.g., Huffman *et al*., 2008; Day and Greene, 2008; Metcalf and Rolfe, 2011; Badgett *et al*., 2013; Trau, 2015; Wettstein and Baur, 2016). Among firms' LGBT workforce, the implementation of sexual minority policies is associated with improved job satisfaction and psychological well-being, lower job-related stress and reduced perception of discrimination (e.g., Day and Schoenrade, 1997; Ragins and Cornwell, 2001; Griffith and Hebl, 2002; Ragins *et al.,* 2007). LGBT friendliness may also advance customer relations and improve the firm's reputation as a socially responsible corporate citizen (Day and Greene, 2008; Weinzimmer and Esken, 2016; Wettstein and Baur, 2016). Taken together, the prior literature demonstrates that LGBT-friendly corporate policies may help firms to accumulate and develop intangibles related to human capital, stakeholder relations and firm reputation.

Given that LGBT friendliness may enhance the firm's relational and reputational capital, it is not surprising that several studies have recently examined the implications of LGBT-friendly corporate policies on financial outcomes. Johnston and Malina (2008) and Wang and Schwarz (2010) focus on the association between firms' LGBT policies and stock returns. Using an event study approach, Johnston and Malina (2008) find that the short-run stock market reaction to news regarding LGBT-friendly policies is positive or neutral, while Wang and Schwarz (2010) document that firms with more LGBT-friendly policies are associated with higher long-run stock returns. Li and Nagar (2013) examine how the adoption of same-sex domestic partner benefit policies affects stock prices, and report that a portfolio of firms initiating such LGBT-supportive policies generates excess stock returns of about 10 percent per year. Chintrakarn *et al*. (2020) focus on the effects of LGBT friendliness on credit ratings which directly influence the firm's borrowing costs. Their findings demonstrate that more LGBT-friendly firms have better credit ratings, suggesting that LGBT-friendly policies may pay off for the firms by reducing the cost of debt and advancing access to external financing.

Most directly related to our study, Pichler *et al.* (2018) and Shan *et al.* (2017) investigate the relationship between LGBT-friendly corporate policies and firm performance. Using data on US firms for the years 1996–2009, Pichler *et al.* (2018) document that the impact of LGBT-friendly corporate policies on profitability and stock market valuation is positive only for firms engaged in research and development activities. Interestingly, their results indicate that LGBT-friendly firms without R&D activities are associated with lower profitability and have no difference in market valuation relative to less LGBT-friendly firms. Shan *et al.* (2017) use data on large US firms over the bullish, pre-crisis period 2002–2006 to examine the influence of LGBT friendliness on stock returns, stock market valuation and net income per employee. Their empirical findings demonstrate that firms with more LGBT-friendly policies have higher risk-adjusted stock returns, higher stock market valuations, and higher income per employee.

In this paper, we take a new perspective on the effects of LGBT friendliness on firm performance. Specifically, using data on 657 publicly traded US firms over the period 2003–2016, we examine how LGBT-friendly corporate policies influence the firm's stock market valuation and profitability. Furthermore, given that the relationship is likely to depend on stakeholders' socio-political preferences, we also investigate whether normative social values moderate the linkage between LGBT-friendly policies and firm performance.

This paper contributes to the literature in three main respects. First, while our paper builds on the work of Pichler *et al.* (2018) and Shan *et al.* (2017), we aim to provide rigorous new evidence on the relationship between LGBT-friendly policies and firm performance by utilising a refined empirical approach which facilitates causal inferences. Second, we extend Pichler *et al.* (2018) and Shan *et al.* (2017) by assessing how stakeholders' normative social values influence the relation between LGBT-friendly policies and firm performance. Although both the stakeholder theory and the HRM theories related to employee satisfaction and diversity management can be used to hypothesise a positive association between LGBT friendliness and firm performance, both mechanisms also suggest that the linkage is likely to depend on stakeholders' social values and preferences. As noted by Kaplan (2006), Day and Greene (2008) and Wettstein and Baur (2016), the adoption of LGBT-friendly policies may lead to stakeholder alienation and backlash if the policies conflict with the social values of the key stakeholders. Thus, we investigate how social norms potentially moderate the link between LGBT-friendly policies and firm performance by exploiting regional differences in social conservatism in our empirical analysis.[4] Finally, given the positive shift in general societal attitude towards sexual minorities over the past decade, we aim to reinforce the prior empirical evidence by using a long, more recent sample period which allows us

[4]Kitzmueller and Shimshack (2012) and Cahan *et al.* (2020) argue that locally accepted social norms, views and values may discipline firms into certain social behaviour.

to examine how the relationship between LGBT friendliness and firm performance has evolved over time and under different market conditions.

In our empirical analysis, we follow Shan *et al.* (2017) and utilise the Corporate Equality Index (CEI) constructed by the Human Rights Campaign to measure firm-level LGBT friendliness.[5] The CEI is considered to provide a comprehensive assessment of a firm's LGBT friendliness in terms of corporate policies and practices pertaining to LGBT employees as well as public advocacy related to the rights of sexual minorities. With respect to firm performance, we use Tobin's Q as a proxy for stock market valuation and measure firm profitability with return on assets (ROA). We empirically test the hypothesis that LGBT-friendly corporate policies are positively associated with firm performance by using fixed-effects panel regressions in which we control for a wide variety of firm characteristics including the level of engagement in CSR activities and overall employee satisfaction. To alleviate endogeneity concerns and facilitate causal inferences, we utilise two-stage instrumental variable regressions and propensity score matching in our additional tests. Following Chintrakarn *et al.* (2020), our instrument for firm-level LGBT friendliness is the percentage of the LGBT population in the firm's headquarter state which arguably should not have any conceptual relation to the performance of individual firms. Finally, we exploit regional variation in religiousness and presidential election results to examine whether and how social norms and attitudes influence the link between LGBT-friendly policies and firm performance.

Our empirical findings demonstrate that LGBT-friendly corporate policies pay off. Specifically, we document that firms with more LGBT-friendly policies are more profitable and have higher stock market valuations after controlling for firm attributes such as size, riskiness, growth and engagement in social responsibility. The documented positive relationship between LGBT friendliness and firm performance can be considered economically significant; our estimates suggest that a one standard deviation increase in the firm's CEI is associated with an about 7 percent increase in stock market valuation and approximately 50 basis point increase in ROA.

These results should be compared and contrasted to the partially contradictory evidence provided in the prior studies. While Pichler *et al.* (2018) do not find any differences in market valuations between more and less LGBT-friendly firms unless the firms are engaged in research and development activities, the findings of Shan *et al.* (2017) indicate that a one standard deviation increase in CEI would increase the firm's market valuation by about 3 percent. Therefore, our empirical findings extend the earlier evidence by demonstrating an economically much stronger and statistically highly significant positive relationship between LGBT-friendly policies and stock market valuation.

[5]The empirical analysis in Pichler *et al.* (2018) is based on a dummy variable for firms that have adopted LGBT-supportive corporate policies.

Moreover, in contrast to the negative association between LGBT friendliness and profitability documented in Pichler *et al.* (2018), our findings provide considerable evidence to suggest that more LGBT-friendly firms are associated with significantly higher ROA.[6]

With respect to the influence of socio-political norms and attitudes towards sexual minorities, we contribute to the prior literature by documenting that regional differences in the religious and political leanings moderate the relationship between LGBT-friendly policies and firm performance. In particular, our empirical findings demonstrate that the positive effect of progressive LGBT policies on profitability and market valuation is more pronounced for firms located in more liberal states while being weaker or non-existent for firms located in more conservative states. Our results suggest that a standard deviation increase in the firm's CEI increases stock market valuation by almost 7 percent in less religious and decisively Democratic states and by about 3 percent in more religious and decisively Republican states. Nevertheless, it is worthwhile to emphasise that even for firms located in more socially conservative states, the effect of LGBT friendliness on firm performance is positive or at worst neutral, suggesting that the adoption of LBGT-friendly policies does not generally have detrimental repercussions.

2. Data and variables

The sample used in our empirical analysis consists of 657 publicly traded US firms over the period 2003–2016. Our main analysis requires data on the firms' (i) LGBT friendliness, (ii) financial statements, (iii) stock prices and (iv) corporate social responsibility and governance attributes. We measure firm-level LGBT friendliness with the Corporate Equality Index (CEI) scores obtained from the Human Rights Campaign. The data on the firms' income statement and balance sheet variables, stock prices, and environmental, social and corporate governance (ESG) scores are obtained from Thomson Reuters. In our additional tests, we also utilise state-level data on religiousness, US presidential election results and LGBT demographics. These data are collected from Gallup, the US National Archives and Records Administration, and the UCLA Williams Institute, respectively.

We restrict our sample to firms for which the CEI score and the financial data are available for at least five consecutive years. After excluding penny stocks and firms with missing data, we obtain an unbalanced panel of 657 individual

[6]Instead of examining the impact of LGBT-friendly policies on ROA (i.e., the ratio of net income to total assets), Shan *et al.* (2017) focus on the ratio of gross income to the number of employees.

firms and approximately 3,000 usable firm-year observations for our main regressions.[7] The final sample includes firms from all major industries that are headquartered across 42 different US states.

2.1. LGBT friendliness

Following Johnston and Malina (2008), Wang and Schwarz (2010), Everly and Schwarz (2015) and Shan *et al.* (2017), we use the Corporate Equality Index (CEI) constructed by the Human Rights Campaign to measure firm-level LGBT friendliness. The Human Rights Campaign is the largest LGBT civil rights advocacy organisation in the US and it has published the CEI for large US firms annually since 2002. The CEI provides a comprehensive assessment of a firm's LGBT friendliness in terms of corporate policies and practices pertaining to lesbian, gay, bisexual and transgender employees and public advocacy related to the rights of sexual minorities. The Human Rights Campaign compiles and constructs the CEI based on self-reported surveys as well as SEC filings, employee resource groups, press releases and news articles during the year leading up to the date of publication.[8] The surveys underlying the CEI are sent to the S&P 500 firms, the Fortune 1000 firms, the firms in the Forbes' list of 200 largest privately held companies, and other US firms with at least 500 employees.[9] In our empirical analysis, the sample is constrained to publicly traded firms.

The CEI is based on five main criteria related to firms' employee policies, workplace equality, diversity culture and competency, and public statements and actions related to either advocacy or discrimination of sexual minorities. The criteria underlying the CEI are summarised in Table 1. Each of the considered criteria is given a specific amount of points and the CEI is then constructed for each firm as the sum of the points of the individual evaluation criteria. Consequently, the CEI may take values between −25 and 100 with higher values of the index corresponding to more LGBT-friendly corporate

[7]The number of firm-year observations in our main panel regressions varies from 2,858 to 3,071 depending on the model specification.

[8]The CEI is released by the Human Rights Campaign during the autumn of each year. Since 2007, the CEI has been published in a forward-looking manner so that the report published in the autumn of each year is labelled as the CEI for the upcoming calendar year. In our empirical analysis, we use the actual year of publication of the CEI throughout the sample period to maintain conformity (i.e., the 2017 CEI scores published in the autumn of 2016 are used for calendar year 2016).

[9]The number of firms covered by the CEI has gradually increased over the sample period. In 2002, the Human Rights Campaign surveyed the Fortune 500 firms, the firms in the Forbes' list of 200 largest privately-held companies, and other US firms with at least 500 employees.

Table 1
The criteria underlying the Corporate Equality Index (CEI)

Criteria 1	Equal Employment Opportunity policies	
	a) Sexual orientation for all operations	15 points
	b) Gender identity for all operations	15 points
	c) Contractor/vendor standards include sexual orientation and gender identity	5 points
Criteria 2	Employment benefits	
	a) Equivalent spousal and partner benefits	10 points
	b) Other 'soft' benefits	10 points
	c) Transgender-inclusive health insurance coverage	10 points
Criteria 3	Organisational LGBT competency	
	a) Competency training, resources and accountability measures	10 points
	b) Employee group or Diversity council	10 points
Criteria 4	Public commitment	
	LGBT-specific efforts (recruitment, philanthropy, etc.)	15 points
Criteria 5	Deductions for large-scale anti-LGBT blemish	
	25-point reduction for recent cases of LGBT discrimination	100 points

policies and practices. In our empirical analysis, we restrict the sample to publicly traded firms with non-zero CEI scores.[10]

2.2. Local socio-political values

We aim to contribute to the prior literature by examining whether local social values moderate the linkage between LGBT-friendly policies and firm performance. For this purpose, we use the addresses of firms' headquarters and utilise state-level data on religiousness and the US presidential election results from 2004 to 2016 to divide our sample into subsamples of firms located in more liberal and more conservative states.

We define a firm to be located in a conservative state if the Republican candidate won the presidential elections in that state with a margin of at least 5 percent and more than two-thirds of the state population consider themselves to be 'highly religious'. Correspondingly, a firm is located in a liberal state if the Democratic candidate won the presidential elections in that state with a margin

[10]We restrict the sample to firms with non-zero CEI scores in order to alleviate potential self-selection bias. During the latter half of the sample period, the Human Rights Campaign has published the CEI also for firms that have not responded to the survey and have not acquiesced to provide information regarding their employee policies and the management of sexual orientation diversity. This inconsistency in the requirement for voluntary disclosure is mainly manifested in the increase in CEI scores of 0 during the latter half of our sample. In the robustness checks discussed in Section 3.5, we perform three additional tests to ensure that our results are not influenced by non-voluntary CEI scores.

of at least 5 percent and less than one-third of the state population consider themselves to be 'highly religious'. We use a conservative approach to assigning state-level political stance by requiring a winning margin of at least 5 percent and by carrying the election results backward over the four years leading up to the election in order to alleviate concerns that political changes may affect future corporate policies.[11] It may be argued, of course, that the location of the firm's headquarters is an imperfect proxy for the social attitude of the firm's stakeholders given that most large firms are operating globally. The counter-argument is that corporate cultures are sticky and firms tend to be entrenched in social values prevalent in their place of origin. As noted, for example, by Hilary and Hui (2009), Kitzmueller and Shimshack (2012) and Cahan *et al.* (2020), the firm's environment and locally accepted social norms, views and values may discipline firms into certain behaviour.

2.3. Firm performance

Following the prior literature (e.g., Huselid, 1995; Waddock and Graves, 1997; Faleye and Trahan, 2011; Servaes and Tamayo, 2013; Chen and Jermias, 2014; Pichler *et al.*, 2018), we measure firm performance with stock market valuation and profitability. We employ the logarithm of Tobin's Q as a proxy for market valuation. Tobin's Q is calculated as the sum of the firm's market value of equity and the book value of liabilities divided by the book value of total assets. We measure firm profitability with return on assets (ROA) which is calculated as net income divided by the book value of total assets.

2.4. Control variables

We include a number of control variables in our empirical analysis to account for the effects of firm-specific factors such as size, financial leverage, growth and riskiness on firm performance. Specifically, the following set of control variables is used in the regressions: (i) *Size* is measured as the logarithm of total assets, (ii) *Leverage* is the ratio of total debt to book value of equity, (iii) *Growth* is the percentage change in sales from year $t - 1$ to year t, (iv) *Risk* is the firm's beta coefficient which is estimated against the S&P 500 index using daily stock return data for year t, (v) *ESG* is the Thomson Reuters ESG score which is used as a proxy for the firm's environmental and social responsibility and the strength of corporate governance mechanisms, (vi) *Board size* is the number of members on the firm's board of directors, and (vii) *Board independence* is measured as the percentage of independent directors on the board. In the regressions with *Tobin's Q* as the dependent variable, we also include *ROA* as an additional control variable. These control variables are

[11]This means that the results of the 2016 Trump vs. Clinton election, for instance, are utilised for determining state-level political stance for years 2013–2016.

selected based on the existing firm performance literature (see, e.g., Capon *et al*., 1990; Huselid, 1995; Waddock and Graves, 1997; Aldamen *et al*., 2012; Cahan *et al*., 2015; Frijns *et al*., 2016; Shan *et al*., 2017). In addition, we control for potential biases related to omitted and/or unobservable variables with industry fixed-effects based on standard industrial classification (SIC) codes and we account for potential time fixed-effects by including fiscal year dummy variables in the regressions.

2.5. Instrumental variable

In our additional tests, we address endogeneity concerns with two-stage instrumental variable regressions. Following Chintrakarn *et al*. (2020), our choice of the instrumental variable for firm-level LGBT friendliness is the percentage of the state population that identifies as lesbian, gay, bisexual or transgender.

3. Empirical analysis

3.1. Descriptive statistics and correlations

Table 2 reports descriptive statistics for LGBT friendliness (*CEI score*), our two alternative dependent variables (*Tobin's Q* and *ROA*), and the control variables used in the regressions. All variables are presented in their original forms without logarithms or any other transformations. The mean *CEI score* for the firms included in our sample is 68.1 with a standard deviation of 33.7 and the 25th to 75th percentile range from 40 to 100, indicating that the level of LGBT friendliness varies considerably across firms. Nevertheless, the relatively high mean *CEI score* may be indicative of a possible voluntary response bias in the CEI because firms that have implemented LGBT-friendly corporate policies or acknowledge the importance of diversity management may be more likely to respond to the Human Rights Campaign's survey.[12]

Table 2 demonstrates that the firms included in our sample exhibit considerable dispersion in terms of performance. *Tobin's Q*, our measure of market valuation, has a mean value of 2.00 and ranges from 0.82 to 6.98. Firm profitability, as measured by *ROA*, varies between −24.87 and 24.71 percent, with a mean of 6.47 percent. With respect to the control variables, the descriptive statistics in Table 2 indicate that our sample is very heterogeneous in terms of firm size, leverage, growth, riskiness and ESG performance.

Table 3 presents the bivariate correlation coefficients between the variables used in our empirical analysis. As can be seen from the table, *CEI score* is significantly positively correlated with *Tobin's Q* and *ROA*. Thus, consistent

[12]In the robustness checks in Section 3.5, we conduct several additional tests to ensure that our results are not influenced by biases related to voluntary disclosure.

Table 2
Descriptive statistics

Variable	Mean	Median	P1	P25	P75	P99	SD	No. of obs.
LGBT friendliness								
CEI score	68.07	80.00	0.00	40.00	100.00	100.00	33.68	3,123
Firm performance								
Tobin's Q	2.00	1.69	0.82	1.16	2.13	6.98	1.08	3,123
ROA	6.47	6.30	−24.87	1.71	8.69	24.71	7.61	3,123
Control variables								
Size	38826.95	13713.33	249.72	3285.61	26415.42	857574.5	98301.93	3,123
Leverage	1.43	0.56	−21.76	0.18	1.00	25.25	25.76	3,123
Growth	4.97	4.35	−42.04	−0.87	14.22	102.06	15.94	3,123
Risk	1.09	1.03	0.09	0.77	1.43	3.02	0.51	3,123
ESG	46.58	43.07	17.13	33.81	52.93	84.94	15.97	3,123
Board size	11.07	11.00	6.00	9.00	12.00	18.00	2.06	3,123
Board independence	81.79	84.62	33.33	75.00	90.00	93.75	11.51	3,123

The table reports summary statistics for the sample of 657 publicly traded US firms over the period 2003–2016. LGBT friendliness is measured with the Corporate Equality Index (*CEI score*) constructed by the Human Rights Campaign. The dependent variables are defined as follows: *Tobin's Q* is the sum of the firm's market value of equity and the book value of liabilities divided by the book value of total assets and *ROA* is calculated as net income divided by the book value of total assets. The control variables are defined as follows: *Size* is measured with the firm's total assets, *Leverage* is the ratio of total debt to book value of equity, *Growth* is the percentage change in sales from year $t - 1$ to year t, *Risk* is the firm's beta coefficient, *ESG* is the Thomson Reuters Environmental, Social and Governance responsibility score, *Board size* is the number of members on the firm's board of directors, and *Board independence* is the percentage of independent directors on the board.

with the hypothesis that LGBT friendliness improves firm performance, the correlations suggest that firms with more LGBT-friendly corporate policies are more profitable and have higher stock market valuations. Table 3 further shows that *CEI score* is significantly positively correlated with *Size*, *ESG* and *Board size*, and negatively correlated with *Risk*, indicating that LGBT-friendly firms tend to be larger, more socially responsible, less risky and have larger boards of directors.

As expected, our two firm performance measures *Tobin's Q* and *ROA* are strongly positively correlated with each other. The firm performance measures are also statistically significantly correlated with most of our control variables. Regarding the correlations among the control variables, it can be concluded from Table 3 that multicollinearity should not be a concern in our regressions because all the correlation coefficients between the independent variables are relatively low in magnitude, all being less than 0.4.

Table 3
Correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) CEI score									
(2) Tobin's Q	0.158*								
(3) ROA	0.100*	0.613*							
(4) Size	0.240*	−0.206*	−0.099*						
(5) Leverage	−0.032	−0.069*	−0.165*	0.006					
(6) Growth	−0.014	0.214*	0.210*	0.012	−0.036				
(7) Risk	−0.164*	−0.260*	−0.338*	−0.097*	0.064*	−0.047			
(8) ESG	0.104*	0.055*	0.099*	−0.015	−0.027	−0.064*	−0.019		
(9) Board size	0.190*	−0.058*	0.029	0.388*	0.004	−0.024	−0.167*	0.031	
(10) Board independence	0.035	−0.023	0.022	0.116*	−0.006	−0.077*	−0.034	0.251*	0.062*

The table reports pairwise correlations between the variables used in the main regressions. LGBT friendliness is measured with the Corporate Equality Index (*CEI score*) constructed by the Human Rights Campaign. The dependent variables are defined as follows: *Tobin's Q* is the sum of the firm's market value of equity and the book value of liabilities divided by the book value of total assets and *ROA* is calculated as net income divided by the book value of total assets. The control variables are defined as follows: *Size* is measured as the logarithm of the firm's total assets, *Leverage* is the ratio of total debt to book value of equity, *Growth* is the percentage change in sales from year $t-1$ to year t, *Risk* is the firm's beta coefficient, *ESG* is the Thomson Reuters Environmental, Social and Governance responsibility score, *Board size* is the number of members on the firm's board of directors, and *Board independence* is the percentage of independent directors on the board. All variables are winsorised at the 1st and 99th percentiles. * denotes statistical significance at the 0.01 level.

3.2. Main results

We test our main research hypothesis that LGBT-friendly corporate policies are positively associated with firm performance by estimating alternative versions of the following panel regression specification:

$$\begin{aligned} Performance_{i,t} &= \alpha + \beta\, CEI\, score_{i,t} + \gamma(Firm\text{–}specific\ controls)_{i,t} \\ &\quad + \omega(Industry\ fixed\text{–}effects)_{i,t} + \varphi(Year\ fixed\text{–}effects)_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (1)$$

where the dependent variable $Performance_{i,t}$ is one of the two alternative firm performance measures (*Tobin's Q* or *ROA*) for firm i at time t and $CEI\ score_{i,t}$ is the Corporate Equality Index for firm i at time t which is our proxy for firm-level LGBT friendliness. The firm-specific control variables in Equation (1) are *Size*, *Leverage*, *Growth*, *Risk*, *ESG*, *Board size* and *Board independence*. In the regressions with *Tobin's Q* as the dependent variable, we also include *ROA* as

an additional control variable. This set of control variables should account for the potentially confounding effects of firm characteristics on profitability and market valuation. Equation (1) also includes industry fixed-effects to control for systemic variation in firm performance across different industries as well as potential biases related to omitted variables and unobserved heterogeneity. Moreover, we account for systematic variation in firm performance over time by including year fixed-effects in the regressions. All variables in Equation (1) are winsorised at the 1st and 99th percentiles to moderate the effects of outliers. Throughout the estimations, we use robust standard errors that are adjusted for heteroskedasticity and clustered by firm.

The estimation results of four alternative versions of Equation (1) are reported in Table 4. The dependent variable is *Tobin's Q* in Models 1 and 2 and *ROA* in Models 3 and 4. Furthermore, Models 1 and 3 are baseline regressions without industry and year fixed-effects and with a constrained set of control variables (Models 1 and 3), whereas Models 2 and 4 include the full set of firm-specific controls as well as industry and year fixed-effects. As shown in Table 4, the *F*-statistics are statistically significant at the 1 percent level in all four model specifications, and the adjusted R^2s indicate that our panel regressions explain about 50 percent of the variation in *Tobin's Q* and about 20 percent of the variation in *ROA*.

Overall, the regression results in Table 4 indicate that LGBT friendliness is positively associated with firm performance. The coefficient estimates for *CEI score* are positive and statistically significant at the 1 percent level in every model specification, suggesting that firms with more LGBT-friendly corporate policies are more profitable and have higher stock market valuations. In addition to being statistically highly significant, the positive relationship between LGBT friendliness and firm performance can also be considered economically significant. The magnitudes of the estimated coefficients suggest that a one standard deviation increase in *CEI score* would increase the firm's market valuation by approximately 7 percent and return on assets by about 47 to 51 basis points. Overall, the estimates reported in Table 4 provide strong support for our hypothesis that LGBT-friendly corporate policies improve firm performance.

With respect to stock market valuation, our regression results in Table 4 should be compared and contrasted to the findings of Shan *et al.* (2017) and Pichler *et al.* (2018). Using the Corporate Equality Index over the period 2002–2006, Shan *et al.* (2017) document that a ten-point increase in *CEI score* would be associated with an approximately 1 percent increase in stock market valuation. On the other hand, Pichler *et al.* (2018), who base their analysis on a dummy variable for firms with LGBT-supportive corporate policies and use MSCI ESG data over the period 1996–2009, do not find any significant differences in market valuations between more and less LGBT-friendly firms unless the firms are engaged in research and development activities. Therefore, our empirical findings extend the earlier results of Shan *et al.* (2017) and Pichler

Table 4
Regression results

	Tobin's Q		*ROA*	
	Model 1	Model 2	Model 3	Model 4
Constant	0.921***	0.976***	15.536***	14.026***
	(9.78)	(8.03)	(11.14)	(7.45)
CEI score	0.002***	0.002***	0.014***	0.015***
	(5.14)	(5.15)	(2.66)	(2.77)
Size	−0.067***	−0.071***	−0.825***	−0.792***
	(−7.52)	(−6.92)	(−5.98)	(−4.77)
Leverage	0.003	0.003	−0.219***	−0.211***
	(1.53)	(1.33)	(−4.59)	(−4.36)
ROA	0.039***	0.038***		
	(16.86)	(16.25)		
Growth	0.003***	0.003***	0.074***	0.073***
	(3.18)	(3.56)	(7.08)	(6.72)
Risk	−0.099***	−0.091***	−3.698***	−3.295***
	(−5.91)	(−5.03)	(−11.54)	(−8.98)
ESG	0.000	0.000	0.038***	0.033***
	(−0.07)	(−0.65)	(3.92)	(3.30)
Board size		0.000		0.082
		(0.13)		(0.85)
Board independence		0.000		0.001
		(−0.44)		(0.08)
Industry fixed-effects	No	Yes	No	Yes
Period fixed-effects	No	Yes	No	Yes
No. of observations	2,868	2,858	3,071	3,060
Adjusted R^2	0.49	0.53	0.20	0.22
F-stat.	388.19***	122.66***	132.82***	36.39***

The table reports the estimates of four alternative versions of Equation (1). LGBT friendliness is measured with the Corporate Equality Index (*CEI score*) constructed by the Human Rights Campaign. The dependent variables are defined as follows: *Tobin's Q* is the logarithm of the sum of the firm's market value of equity and the book value of liabilities divided by the book value of total assets and *ROA* is calculated as net income divided by the book value of total assets. The control variables are defined as follows: *Size* is measured as the logarithm of the firm's total assets, *Leverage* is the ratio of total debt to book value of equity, *Growth* is the percentage change in sales from year $t-1$ to year t, *Risk* is the firm's beta coefficient, *ESG* is the Thomson Reuters Environmental, Social and Governance responsibility score, *Board size* is the logarithm of the number of members on the firm's board of directors, and *Board independence* is the percentage of independent directors on the board. All variables are winsorised at the 1st and 99th percentiles. The *t*-statistics (in parentheses) are based on robust standard errors which are adjusted for heteroskedasticity and are clustered by firm. ***, ** and * denote statistical significance at the 0.01, 0.05 and 0.10 levels, respectively.

et al. (2018) by demonstrating that LGBT-friendly corporate policies are strongly positively associated with stock market valuation over the period 2003–2016.

While Shan *et al.* (2017) do not examine the relationship between LGBT friendliness and firm profitability, Pichler *et al.* (2018) document that more LGBT-friendly firms without engagement in R&D activities are associated with significantly lower ROA. However, their findings also indicate that LGBT-friendly firms with R&D activities are more profitable and have an approximately one percentage point higher ROA. Intriguingly, in stark contrast to the negative association between LGBT friendliness and profitability documented in Pichler *et al.* (2018), our results reported in Table 4 provide strong evidence to suggest that firms with more LGBT-friendly corporate policies have higher profitability. These contrasting findings with respect to firm profitability may be at least partially reconciled by considering the differences in the LGBT friendliness proxies (CEI score vs. MSCI ESG dummy) and the sample periods (2003–2016 vs. 1996–2009) used in the respective empirical analyses.

As can be noted from Table 4, the coefficient estimates for most of our control variables are statistically highly significant, demonstrating the importance of these variables as determinants of firm market valuation and profitability. Specifically, the regression results suggest that firm performance is negatively associated with *Size*, *Leverage* and *Risk*, while being significantly positively related to *Growth* and *ESG*. Furthermore, as expected, the regressions with *Tobin's Q* as the dependent variable indicate that stock market valuation is strongly positively associated with firm profitability ($p < 0.01$).

Although both the stakeholder theory and the HRM theories related to employee satisfaction and diversity management can be used to hypothesise a positive association between LGBT friendliness and firm performance, both mechanisms also suggest that the linkage is likely to depend on stakeholders' values and preferences. Therefore, we next investigate whether and how regional differences in conservatism and the general social attitude towards sexual minorities potentially moderate the link between LGBT-friendly policies and firm performance. For this purpose, we use the addresses of the firms' headquarters and state-level data on religiousness and the US presidential election results to split our sample into subsamples of firms located in more liberal and more conservative states. We then estimate alternative versions of Equation (1) using the two subsamples.

Table 5 reports the estimation results of Equation (1) based on the subsamples of firms located in more liberal and more conservative states. Similar to Table 4, *Tobin's Q* is used as the dependent variable in Models 1 and 2 and *ROA* in Models 3 and 4. All four regression specifications in Table 5 include the full set of firm-specific control variables and account for industry and year fixed-effects. As can be seen from the table, the *F*-statistics are

Table 5
The influence of social norms on the relation between LGBT friendliness and firm performance

	Tobin's Q		*ROA*	
	Liberal	Conservative	Liberal	Conservative
Constant	0.817***	0.605*	−11.085***	9.685***
	(3.81)	(1.82)	(−2.72)	(2.68)
CEI score	0.002**	0.001*	0.030*	0.018
	(2.14)	(1.65)	(1.93)	(1.64)
Size	−0.041**	−0.031	−1.063***	−0.764**
	(−2.01)	(−1.26)	(−2.89)	(−2.44)
Leverage	0.007	0.006	−0.176	−0.222***
	(1.12)	(1.44)	(−1.03)	(−3.05)
ROA	0.044***	0.036***		
	(9.04)	(8.17)		
Growth	0.006**	−0.000	0.078***	0.074***
	(2.41)	(−0.12)	(3.36)	(3.65)
Risk	−0.077*	−0.092***	−3.128***	−2.867***
	(−1.85)	(−2.62)	(−3.84)	(−5.09)
ESG	−0.000	−0.000	0.053***	0.046**
	(−0.32)	(−0.09)	(2.77)	(2.06)
Board size	−0.009	0.009	0.103	0.383***
	(−0.64)	(0.77)	(0.44)	(2.96)
Board independence	−0.000	−0.000	0.034	0.003
	(−0.14)	(−0.22)	(1.06)	(0.14)
Industry fixed-effects	Yes	Yes	Yes	Yes
Period fixed-effects	Yes	Yes	Yes	Yes
No. of observations	552	609	597	624
Adjusted R^2	0.62	0.45	0.26	0.26

The table reports the estimates of four alternative versions of Equation (1) based on subsamples of firms located in more liberal and more conservative states. A firm is located in a conservative state if the Republican candidate won the presidential elections with a margin of at least 5 percent and more than two-thirds of the state population consider themselves to be highly religious. Correspondingly, a firm is located in a liberal state if the Democratic candidate won the presidential elections with a margin of at least 5 percent and less than one-third of the state population consider themselves to be highly religious. LGBT friendliness is measured with the Corporate Equality Index (*CEI score*) constructed by the Human Rights Campaign. The dependent variables are defined as follows: *Tobin's Q* is the logarithm of the sum of the firm's market value of equity and the book value of liabilities divided by the book value of total assets and *ROA* is calculated as net income divided by the book value of total assets. The control variables are defined as follows: *Size* is measured as the logarithm of the firm's total assets, *Leverage* is the ratio of total debt to book value of equity, *Growth* is the percentage change in sales from year $t-1$ to year t, *Risk* is the firm's beta coefficient, *ESG* is the Thomson Reuters Environmental, Social and Governance responsibility score, *Board size* is the logarithm of the number of members on the firm's board of directors, and *Board independence* is the percentage of independent directors on the board. All variables are winsorised at the 1st and 99th percentiles. The *t*-statistics (in parentheses) are based on robust standard errors which are adjusted for heteroskedasticity and are clustered by firm. ***, ** and * denote statistical significance at the 0.01, 0.05 and 0.10 levels, respectively.

significant at the 1 percent level in every model and the adjusted R^2s indicate a relatively good fit of the estimated regressions.

The estimates in Table 5 demonstrate that the positive association between LGBT-friendly corporate policies and firm performance is stronger for firms located in more liberal (i.e., less religious and decisively Democratic) states while being weaker or non-existent for firms located in more conservative (i.e., more religious and decisively Republican) states. Specifically, in both subsamples, the estimated coefficients for *CEI score* are positive and statistically significant in the regressions with *Tobin's Q* as the dependent variable, indicating that LGBT-friendly firms have higher market valuations. However, for firms located in more liberal states, the coefficient estimate of *CEI score* is larger in magnitude as well as being statistically more significant. The estimates of Models 1 and 2 in Table 5 suggest that a one standard deviation increase in *CEI score* for firms located in more liberal states increases their stock market valuation by approximately 7 percent, whereas a corresponding increase for firms in more conservative states is about 3 percent.

In the regressions with *ROA* as the dependent variable, the estimated coefficient of *CEI score* is positive and statistically significant for firms located in more liberal states and insignificant at conventional levels ($p = 0.102$) for firms headquartered in more conservative states. Thus, our findings suggest that the positive association between LGBT-friendly corporate policies and profitability pertains more to firms that are located in less religious and decisively Democratic states. For these firms, a ten-point increase in *CEI score* would be associated with an about 30 basis points increase in *ROA*. Consistent with the regressions reported in Table 4, the coefficient estimates for the control variables demonstrate that firm performance is significantly negatively associated with *Size*, *Leverage* and *Risk*, while being positively related to *Growth*, *ESG* and *Board size*.

In general, the regression results presented in Tables 4 and 5 provide strong evidence that firms with more LGBT-friendly corporate policies are associated with higher profitability and higher stock market valuation. Our empirical findings further demonstrate that the positive effect of progressive LGBT policies is more pronounced for firms that are headquartered in less religious and decisively Democratic states and is weaker or non-existent for firms located in more religious and decisively Republican states. This suggests that regional differences in political and religious leanings moderate the relationship between LGBT-friendly policies and firm performance.

3.3. Instrumental variable regressions and propensity score matching

Given that our research hypothesis implies that LGBT-friendly corporate policies improve firm performance, it is important to acknowledge that our preceding analysis may suffer from endogeneity and reverse causality. In our panel regressions, we have controlled for a number of firm-specific

characteristics that are known to affect profitability and market valuation. Moreover, we have attempted to control for potential biases related to omitted correlated variables that may influence firm performance by including industry and year fixed-effects in the regressions. Nevertheless, it is possible that some unobservable or omitted firm attributes simultaneously affect firm performance and the implementation of LGBT-friendly policies. It is also plausible that firms that have better financial performance can allocate more resources to employee relations and societal activities, potentially leading to reverse causality from firm performance to LGBT friendliness. As the next step of our analysis, we utilise two-stage instrumental variable regressions and propensity score matching in order to alleviate endogeneity concerns and to establish a causal link between LGBT-friendly corporate policies and firm performance.

First, we address endogeneity concerns by estimating two-stage instrumental variable regressions. Following Chintrakarn *et al.* (2020), our choice of the instrumental variable for firm-level LGBT friendliness is the percentage of the state population that identifies as lesbian, gay, bisexual or transgender. We posit that the percentage of the LGBT population in a given state should be positively related to the implementation of LGBT-friendly corporate policies, while it arguably should not have any conceptual relation to the performance of individual firms. Accordingly, in the first-stage regression, we model *CEI score* as a function of *LGBT population* and the set of control variables used in Equation (1). In the second-stage regressions, *Tobin's Q* and *ROA* are regressed on the instrumented CEI score and our firm-specific control variables.

The estimates of the two-stage instrumental variable regressions are presented in Table 6. As can be seen from the table, the estimated coefficient for the instrumental variable *LGBT population* is positive and statistically highly significant (t-stat = 4.08) in the first-stage regression with *CEI score* as the dependent variable. This demonstrates that our instrument is strongly positively associated with the implementation of LGBT-friendly corporate policies. Furthermore, the high partial F-statistics of the first-stage regressions as well as the LM test for underidentification and the Wald test for weak identification all indicate that *LGBT population* is a valid instrument for *CEI score*, thereby suggesting that our instrumental variable estimates should not be plagued by a weak-instrument problem. The first-stage regressions in Table 6 also indicate that LGBT friendliness is positively associated with *Size*, *ESG* and *Board size* and negatively associated with *Risk*.

The estimates of the second-stage regressions with the instrumented CEI score are very similar to the results reported in Table 4. Most importantly, the coefficient estimates for the instrumented CEI score are positive and statistically highly significant both in the *Tobin's Q* and *ROA* regressions, suggesting that more LGBT-friendly firms have higher profitability and stock market valuation even after controlling for potential endogeneity. Therefore, the instrumental variable regressions in Table 6 provide support for the hypothesis

that LGBT-friendly corporate policies improve firm performance. With respect to the control variables, the estimates of the second-stage regressions are consistent with our main analysis with the only exception being the insignificant coefficients for *ESG* in both second-stage models.

We aim to further mitigate endogeneity concerns by utilising propensity score matching. Specifically, we use all the control variables included in Equation (1) to estimate propensity scores for the sample firms and then use these scores to identify a matched sample of less LGBT-friendly firms that are statistically indistinguishable from the most LGBT-friendly firms in terms of size, riskiness, ESG engagement, and other firm-specific controls. If the only observable difference between the matched firms is their *CEI score*, there should presumably not be any differences in *Tobin's Q* and *ROA* unless firm performance is affected by LGBT friendliness. We utilise one-to-one nearest neighbour matching without replacement and require that the maximum

Table 6
Instrumental variable regressions

Variable	First-stage regression *CEI score*	Second-stage regressions *Tobin's Q*	*ROA*
Constant	−36.460**	0.977***	13.730***
	(−2.36)	(7.17)	(6.61)
Instrumental variables			
LGBT population	10.233***		
	(4.16)		
Independent variables			
Instrumented CEI score		0.006***	0.074**
		(2.86)	(2.33)
Size	4.680***	−0.090***	−1.073***
	(4.76)	(−6.54)	(−4.62)
Leverage	−0.150	0.003	−0.198***
	(−0.58)	(1.33)	(−4.15)
ROA		0.037***	
		(14.28)	
Growth	−0.046	0.003***	0.075***
	(−1.09)	(3.82)	(6.71)
Risk	−5.853***	−0.070***	−2.961***
	(−3.52)	(−3.01)	(−7.12)
ESG	0.212***	−0.001	0.018
	(3.90)	(−1.56)	(1.46)
Board size	1.257**	−0.005	−0.001
	(2.35)	(−0.66)	(−0.01)
Board independence	0.079	−0.000	−0.000
	(0.79)	(−0.51)	(−0.04)
Industry fixed-effects	Yes	Yes	Yes

(continued)

Table 6 (continued)

Variable	First-stage regression *CEI score*	Second-stage regressions *Tobin's Q*	*ROA*
Period fixed-effects	Yes	Yes	Yes
No. of observations	3,060	2,858	3,060
Adjusted R^2	0.23	0.45	0.14
F-stat.	36.05***	118.34***	36.42***
Partial *F*-stat.	16.73***		
LM stat.		24.58***	24.18***
Wald *F*-stat.		134.16***	131.59***

The table reports the estimates of two-stage instrumental variable regressions. LGBT friendliness is measured with the Corporate Equality Index (*CEI score*) constructed by the Human Rights Campaign. The instrumental variable for *CEI score* is the percentage of the state population that identifies as lesbian, gay, bisexual or transgender. The dependent variables are defined as follows: *Tobin's Q* is the logarithm of the sum of the firm's market value of equity and the book value of liabilities divided by the book value of total assets and *ROA* is calculated as net income divided by the book value of total assets. The control variables are defined as follows: *Size* is measured as the logarithm of the firm's total assets, *Leverage* is the ratio of total debt to book value of equity, *Growth* is the percentage change in sales from year $t - 1$ to year t, *Risk* is the firm's beta coefficient, *ESG* is the Thomson Reuters Environmental, Social and Governance responsibility score, *Board size* is the logarithm of the number of members on the firm's board of directors, and *Board independence* is the percentage of independent directors on the board. All variables are winsorised at the 1st and 99th percentiles. The *t*-statistics (in parentheses) are based on robust standard errors which are adjusted for heteroskedasticity and are clustered by firm. ***, ** and * denote statistical significance at the 0.01, 0.05 and 0.10 levels, respectively.

difference between the propensity score of each treatment firm and that of its matched control firm does not exceed 0.1 standard deviations. After identifying matching firms for the most LGBT-friendly firms, we re-estimate alternative versions of Equation (1) using the propensity score matched sample of firms.

Table 7 reports matching diagnostics and the regression results based on the propensity score matched sample. In order to ascertain that the matched firms are sufficiently similar to the treatment firms, we first re-estimate the probit model underlying the propensity score matching using the matched-firm sample. The pseudo R^2 of the post-matching probit model is about 54 percent lower than the pre-matching pseudo R^2 and the post-matching coefficient estimates for all control variables except for *Size* and *ESG* become statistically insignificant. The mean and the mean percentage differences between the propensity scores of the treatment and matched firms are 0.01 and 3.9 percent, respectively. Moreover, the sample means of *Size*, *Leverage*, *Risk* and *ESG* are almost equal for the treatment and matched firms. Therefore, we conclude that the propensity score matching effectively eliminates the observable differences

between the most LGBT-friendly firms and their matched less LGBT-friendly counterparts.

Overall, the regression results based on the propensity score matched sample are very similar to our main regressions, and thereby provide further evidence to suggest that LGBT-friendly corporate policies improve firm performance. Similar to Tables 5 and 6, *Tobin's Q* is used as the dependent variable in Models 1 and 2 and *ROA* in Models 3 and 4, and regressions for both dependent variables are estimated without and with industry and year fixed-effects. As can be noted from Table 7, the coefficients for *CEI score* are positive and statistically highly significant in all four models, indicating that firms with more LGBT-friendly policies are more profitable and have higher stock market valuation even when a propensity score matched sample is used in the regressions. Broadly consistent with our main analysis, the fixed-effects

Table 7
Propensity score matching

	Tobin's Q		*ROA*	
Variable	Model 1	Model 2	Model 3	Model 4
Constant	0.884***	0.938***	7.288**	7.038**
	(4.99)	(5.17)	(2.57)	(2.27)
CEI score	0.001***	0.002***	0.019**	0.020**
	(2.71)	(3.58)	(2.42)	(2.45)
Size	−0.066***	−0.066***	−0.659***	−0.701***
	(−5.19)	(−5.23)	(−3.24)	(−3.30)
Leverage	0.007**	0.005	−0.225**	−0.213**
	(2.07)	(1.45)	(−2.52)	(−2.51)
ROA	0.040***	0.039***		
	(12.03)	(11.82)		
Growth	0.003***	0.004***	0.070***	0.064***
	(3.21)	(3.98)	(4.27)	(3.78)
Risk	−0.103***	−0.103***	−3.282***	−3.056***
	(−4.22)	(−4.12)	(−6.71)	(−6.06)
ESG	0.000	−0.001	0.059***	0.054***
	(0.35)	(−0.79)	(4.06)	(3.50)
Board size	0.001	0.007	0.150	0.148
	(0.15)	(1.08)	(1.23)	(1.20)
Board independence	0.000	−0.001	0.038*	0.031
	(0.25)	(−0.47)	(1.95)	(1.54)
Industry fixed-effects	No	Yes	No	Yes
Period fixed-effects	No	Yes	No	Yes
No. of observations	1,246	1,246	1,246	1,246
Adjusted R^2	0.47	0.54	0.17	0.20
F-stat.	40.24***	31.89***	15.960***	7.820***

(continued)

Table 7 (continued)

	Tobin's Q		*ROA*	
Variable	Model 1	Model 2	Model 3	Model 4
PSM diagnostics				
Pre-matching pseudo R^2	0.13			
Pre-matching LR chi-square	456.38***			
Post-matching pseudo R^2	0.06			
Post-matching LR chi-square	75.11***			
Mean difference	0.010			
Max difference	0.020			
Mean percentage difference	0.039			
Max percentage difference	1.646			

The table reports the estimates of four alternative versions of Equation (1) based on a propensity score matched sample of firms. LGBT friendliness is measured with the Corporate Equality Index (*CEI score*) constructed by the Human Rights Campaign. We utilise propensity score matching to build a matched-firm sample in which the most LGBT-friendly firms with a CEI score of 100 are matched with less LGBT-friendly firms which are as similar as possible in terms of the control variables. The dependent variables are defined as follows: *Tobin's Q* is the logarithm of the sum of the firm's market value of equity and the book value of liabilities divided by the book value of total assets and *ROA* is calculated as net income divided by the book value of total assets. The control variables are defined as follows: *Size* is measured as the logarithm of the firm's total assets, *Leverage* is the ratio of total debt to book value of equity, *Growth* is the percentage change in sales from year $t - 1$ to year t, *Risk* is the firm's beta coefficient, *ESG* is the Thomson Reuters Environmental, Social and Governance responsibility score, *Board size* is the logarithm of the number of members on the firm's board of directors, and *Board independence* is the percentage of independent directors on the board. All variables are winsorised at the 1st and 99th percentiles. The *t*-statistics (in parentheses) are based on robust standard errors which are adjusted for heteroskedasticity and are clustered by firm. ***, ** and * denote statistical significance at the 0.01, 0.05 and 0.10 levels, respectively.

estimates in Table 7 suggest that a one standard deviation increase in *CEI score* would increase the firm's market valuation by approximately 7 percent and return on assets by about 67 basis points.

3.4. Additional tests

We examine the robustness of our results by conducting a number of additional tests.[13] First, even though we have controlled for industry fixed-effects in our main regressions, we acknowledge that our findings may be influenced by cross-industry differences in social progressiveness and attitude

[13]For brevity, we do not tabulate our additional tests. The results of these robustness checks are available from the corresponding author.

towards sexual minorities. These differences are also reflected in the mean CEI scores in our sample which vary considerably across industries, being highest in business equipment and lowest in the energy, oil and gas industry. To address potential industry effects, we estimate industry-adjusted CEI scores for each firm as the residual from a regression of *CEI score* on industry dummies. We then re-estimate alternative versions of Equation (1) using the industry-adjusted CEI scores as the test variable. The regression results (not tabulated) are very similar to the results reported in Table 4. Most importantly, the coefficients for the industry-adjusted CEI score are positive and statistically significant at the 1 percent level in all four regression specifications. This suggests that our empirical findings should not be driven by cross-industry differences in LGBT friendliness.

Second, another potential concern with the CEI score is that it is based largely on annual self-reported surveys. Since 2011, the Human Rights Campaign has published the CEI also for firms that have not responded to the survey, thereby inflicting an inconsistency in the constituent firms. We conduct three additional tests to investigate whether our findings are influenced by the non-voluntary CEI scores. We first re-estimate the regressions using two subsamples; the first subsample excludes all firms with non-voluntary CEI scores and the second subsample comprises only the firms with non-voluntary CEI scores. The estimation results for both subsamples (not tabulated) are remarkably similar and the coefficients for *CEI score* are positive and statistically significant at the 1 percent level in all regressions. We also estimate regressions in which a dummy variable for non-voluntary CEI scores is used as an additional control variable. Once again, the coefficient estimates (not tabulated) for *CEI score* are positive and statistically highly significant throughout the alternative regressions. Our third approach is to use propensity score matching to construct a matched-firm sample in which firms with non-voluntary CEI scores are matched with essentially identical firms that have responded to the surveys. When the regressions are re-estimated using the propensity score matched sample, the coefficients for *CEI score* remain positive and statistically significant (not tabulated). Thus, we conclude that our results are robust to alternative approaches to account for potential non-voluntary disclosure bias in the CEI score.

Third, given that LGBT-friendly corporate policies can be considered as one dimension of corporate social responsibility policies and diversity management, we aim to further ascertain that LGBT friendliness has an incremental effect on firm performance over and above the level of engagement in social responsibility. For this purpose, we replace the ESG score in our regressions with the Thomson Reuters social responsibility score (S score) which takes values between 0 and 100 with higher values indicating higher levels of social responsibility. The regressions results (not tabulated) are consistent with our main analysis; the coefficient estimates for *CEI score* are positive and statistically significant throughout the alternative model specifications. We

also re-estimate the regressions using two subsamples from which either the most socially responsible firms (S score in the highest decile) or the least socially responsible firms (S score in the lowest decile) are excluded. Again, the coefficient estimates (not tabulated) for *CEI score* are positive and statistically significant in both subsamples, suggesting that LGBT friendliness is positively associated with firm performance regardless of the degree of social responsibility.

Fourth, because corporate governance may have confounding effects on the relation between LGBT-friendly policies and firm performance, we estimate regressions in which we employ alternative control variables for corporate governance quality as a further sensitivity test. While in our main regressions we have included *ESG*, *Board size* and *Board independence* to control for governance mechanisms, we now estimate regressions in which the ESG score is replaced with the Thomson Reuters corporate governance score (G score) and board reputation is included as an additional control variable related to board characteristics. The G score takes values between 0 and 100 with higher values indicating stronger corporate governance mechanisms. Following Unsal and Brodmann (2020), we use the change in the number of outside board seats held by the firms' directors as a proxy for board reputation. Consistent with our main regressions reported in Table 4, the coefficient estimates for *CEI score* are positive and remain highly significant in all model specifications after the inclusion of the additional governance quality control variables.

Finally, we acknowledge that firms with employee-supportive working environment and good employee relations are also likely to be more LGBT-friendly. To ensure that LGBT friendliness has an incremental effect on firm performance over overall employee friendliness, we next utilise Fortune's list of the 100 Best Companies to Work for in America to identify firms with the highest employee satisfaction.[14] We then re-estimate our main regressions using a sample from which the most employee-friendly firms included in Fortune's best employer list have been excluded. As an alternative approach, we also estimate regressions in which a dummy variable for the most employee-friendly firms is used as an additional control variable. Irrespective of the approach, the estimated coefficients for *CEI score* (not tabulated) are positive and statistically significant both in the *Tobin's Q* and *ROA* regressions. Overall, these additional tests suggest that the documented positive relationship between LGBT friendliness and firm performance is independent of employee-supportive corporate policies and overall employee satisfaction.

[14]Fortune's list of the 100 Best Companies to Work for in America has been utilised previously to measure employee satisfaction, for example in Filbeck and Preece (2003), Edmans (2011, 2012), Faleye and Trahan (2011) and Chen *et al.* (2016).

4. Conclusions

In this paper, we examine the association between LGBT-friendly corporate policies and firm performance. Given that the relationship is likely to depend on stakeholders' socio-political preferences, we further investigate whether normative social values moderate the linkage between LGBT-friendly policies and firm performance. We empirically test the hypothesis that LGBT-friendly corporate policies improve firm performance using data on 657 publicly traded US firms over the period 2003–2016. In our analysis, we utilise the Corporate Equality Index (CEI) constructed by the Human Rights Campaign to measure firm-level LGBT friendliness, and we use stock market valuation and profitability to measure firm performance.

Consistent with our research hypothesis, we document that firms with more LGBT-friendly corporate policies have higher profitability and higher stock market valuations after controlling for firm attributes such as size, riskiness, growth and overall engagement in social responsibility. The documented positive relationship between LGBT friendliness and firm performance can be considered economically significant; our estimates suggest that a one standard deviation increase in the firm's CEI is associated with an almost 7 percent increase in stock market valuation and about 50 basis point increase in profitability.

Although both the stakeholder theory and the HRM arguments can be used to hypothesise a positive association between LGBT friendliness and firm performance, both mechanisms also suggest that the linkage is likely to depend on stakeholders' preferences and socio-political values. Thus, we investigate how social norms and attitudes potentially moderate the linkage between LGBT-friendly policies and firm performance by exploiting regional differences in social conservatism in our analysis. Our findings indicate that the positive effect of progressive LGBT policies on profitability and market valuation is more pronounced for firms located in more liberal states while being weaker or non-existent for firms located in more conservative states.

Taken as a whole, our empirical findings provide strong evidence to suggest that LGBT-friendly corporate policies enhance firm performance. These findings can be considered to support the view that socially progressive corporate policies and diversity management pay off and create value for the firm.

References

Agle, B. R., T. Donaldson, R. E. Freeman, M. C. Jensen, R. K. Mitchell, and D. J. Wood, 2008, Dialogue: toward superior stakeholder theory, *Business Ethics Quarterly* 18, 153–190.

Aguinis, H., and A. Glavas, 2012, What we know and don't know about corporate social responsibility: a review and research agenda, *Journal of Management* 38, 932–968.

Ahmed, H. L., and T. Bukth, 2019, Effect of employee diversity on firm performance in Bangladesh, *Frontiers in Management Research* 3, 26–39.
Aldamen, H., K. Duncan, S. Kelly, R. McNamara, and S. Nagel, 2012, Audit committee characteristics and firm performance during the global financial crisis, *Accounting and Finance* 52, 971–1000.
Armstrong, C., P. C. Flood, J. P. Guthrie, W. Liu, S. MacCurtain, and T. Mkamwa, 2010, The impact of diversity and equality management on firm performance: beyond high performance work systems, *Human Resource Management* 49, 977–998.
Artiach, T., D. Lee, D. Nelson, and J. Walker, 2010, The determinants of corporate sustainability performance, *Accounting and Finance* 50, 31–51.
Aspan, M., 2020, Fortune 500 CEOs praise landmark LGBTQ antidiscrimination ruling. *Fortune* (16 June). Available at: https://fortune.com/2020/06/16/fortune-500-ceos-supreme-court-lgbtq-ruling/
Badgett, M. V. L., L. Durso, A. Kastanis, and C. Mallory, 2013, The business impact of LGBT-supportive workplace policies, Working paper (The Williams Institute, UCLA).
Barnett, M. L., 2007, Stakeholder influence capacity and the variability of financial returns to corporate social responsibility, *Academy of Management Review* 32, 794–816.
Barnett, M. L., and R. M. Salomon, 2012, Does it pay to be really good? Addressing the shape of the relationship between social and financial performance, *Strategic Management Journal* 33, 1304–1320.
Brammer, S., and A. Millington, 2008, Does it pay to be different? An analysis of the relationship between corporate social and financial performance, *Strategic Management Journal* 29, 1325–1343.
Bridges, S., W. Marcum, and J. K. Harrison, 2003, The relation between employee perceptions of stakeholder balance and corporate financial performance, *SAM Advanced Management Journal* 68, 50–57.
Buchanan, B., C. X. Cao, and C. Chen, 2018, Corporate social responsibility, firm value, and influential institutional ownership, *Journal of Corporate Finance* 52, 73–95.
Button, S. B., 2001, Organizational efforts to affirm sexual diversity: a cross-level examination, *Journal of Applied Psychology* 86, 17–28.
Cahan, S. F., C. Chen, C. Li, and N. H. Nguyen, 2015, Corporate social responsibility and media coverage, *Journal of Banking and Finance* 59, 409–422.
Cahan, S. F., C. Chen, and L. Chen, 2020, Do local social norms affect investors' involvement in social activism? Revisiting the case of US institutional investors, *Accounting and Finance*, https://doi.org/10.1111/acfi.12649.
Capon, N., J. U. Farley, and S. Hoenig, 1990, Determinants of financial performance: a meta-analysis, *Management Science* 36, 1143–1159.
Cascio, W. F., 1991, *Costing Human Resources: The Financial Impact of Behavior in Organizations*, 3rd edn (PWS-Kent Publishing, Boston, MA).
Chen, Y., and J. Jermias, 2014, Business strategy, executive compensation and firm performance, *Accounting and Finance* 54, 113–134.
Chen, J., W. S. Leung, and K. P. Evans, 2016, Are employee-friendly workplaces conducive to innovation?, *Journal of Corporate Finance* 40, 61–79.
Chintrakarn, P., S. Treepongkaruna, P. Jiraporn, and S. M. Lee, 2020, Do LGBT-supportive corporate policies improve credit ratings? An instrumental variable analysis, *Journal of Business Ethics* 162, 31–45.
Day, N. E., and P. Greene, 2008, A case for sexual orientation diversity management in small and large organizations, *Human Resource Management* 47, 637–654.

Day, N. E., and P. Schoenrade, 1997, Staying in the closet vs. coming out: relationships between communication about sexual orientation and work attitudes, *Personnel Psychology* 50, 147–163.

Day, N. E., and P. Schoenrade, 2000, The relationship among reported disclosure of sexual orientation, anti-discrimination policies, top management support and work attitudes of gay and lesbian employees, *Personnel Review* 29, 346–363.

Dimson, E., O. Karakas, and X. Li, 2015, Active ownership, *The Review of Financial Studies* 28, 3225–3268.

Donaldson, T., and L. E. Preston, 1995, The stakeholder theory of the corporation: concepts, evidence, and implications, *Academy of Management Review* 20, 65–91.

Eccles, R. G., I. Ioannou, and G. Serafein, 2014, The impact of corporate sustainability on organizational processes and performance, *Management Science* 60, 2835–2857.

Edmans, A., 2011, Does the stock market fully value intangibles? Employee satisfaction and equity prices, *Journal of Financial Economics* 101, 621–640.

Edmans, A., 2012, The link between job satisfaction and firm value, with implications for corporate social responsibility, *Academy of Management Perspectives* 26, 1–19.

Everly, B. A., and J. L. Schwarz, 2015, Predictors of the adoption of LGBT-friendly HR policies, *Human Resource Management* 54, 367–384.

Faleye, O., and E. A. Trahan, 2011, Labor-friendly corporate practices: is what is good for employees good for shareholders?, *Journal of Business Ethics* 101, 1–27.

Fauver, L., M. B. McDonald, and A. G. Taboada, 2018, Does it pay to treat employees well? International evidence on the value of employee-friendly culture, *Journal of Corporate Finance* 50, 84–108.

Fernando, S., and S. Lawrence, 2014, A theoretical framework for CSR practices: integrating legitimacy theory, stakeholder theory and institutional theory, *Journal of Theoretical Accounting Research* 10, 149–178.

Filbeck, G., and D. Preece, 2003, Fortune's Best 100 Companies to Work for in America: do they work for shareholders?, *Journal of Business Finance and Accounting* 30, 771–797.

Flammer, C., 2015, Does corporate social responsibility lead to superior financial performance? A regression discontinuity approach, *Management Science* 61, 2549–2568.

Flammer, C., and J. Luo, 2017, Corporate social responsibility as an employee governance tool: evidence from a quasi-experiment, *Strategic Management Journal* 38, 163–183.

Freeman, R. E., 1984, *Strategic Management: A Stakeholder Approach* (Pitman, Boston, MA).

Friedman, M., 1962, *Capitalism and Freedom* (University of Chicago Press, Chicago, IL).

Friedman, M., 1970, The social responsibility of business is to increase its profits, *New York Times Magazine* (13 September), 122–126.

Frijns, B., O. Dodd, and H. Cimerova, 2016, The impact of cultural diversity in corporate boards on firm performance, *Journal of Corporate Finance* 41, 521–541.

Gelade, G. A., and M. Ivery, 2003, The impact of human resource management and work climate on organizational performance, *Personnel Psychology* 56, 383–404.

Griffin, J. J., and J. F. Mahon, 1997, The corporate social performance and corporate financial performance debate: twenty-five years of incomparable research, *Business and Society* 36, 5–31.

Griffith, K. H., and M. R. Hebl, 2002, The disclosure dilemma for gay men and lesbians: 'coming out' at work, *Journal of Applied Psychology* 87, 1191–1199.

Hasan, I., N. Kobeissi, L. Liu, and H. Wang, 2018, Corporate social responsibility and firm financial performance: the mediating role of productivity, *Journal of Business Ethics* 149, 671–688.

Henderson, P. D., 2001, *Misguided Virtue: False Notions of Corporate Social Responsibility* (Institute of Economic Affairs, London).

Hilary, G., and K. W. Hui, 2009, Does religion matter in corporate decision making in America?, *Journal of Financial Economics* 93, 455–473.

Huang, D. Z. X., 2021. Environmental, social and governance (ESG) activity and firm performance: a review and consolidation. *Accounting and Finance* 61, 335–360.

Huffman, A. H., K. M. Watrous-Rodriguez, and E. B. King, 2008, Supporting a diverse workforce: what type of support is most meaningful for lesbian and gay employees?, *Human Resource Management* 47, 237–253.

Huselid, M. A., 1995, The impact of human resource management practices on turnover, productivity, and corporate financial performance, *Academy of Management Journal* 38, 635–672.

Jackson, S. E., A. Joshi, and N. L. Erhardt, 2003, Recent research on team and organizational diversity: SWOT analysis and implications, *Journal of Management* 29, 801–830.

Jensen, M. C., 2002, Value maximization, stakeholder theory, and the corporate objective function, *Business Ethics Quarterly* 12, 235–256.

Johnston, D., and M. A. Malina, 2008, Managing sexual orientation diversity: the impact on firm value, *Group and Organization Management* 33, 602–625.

Jones, T. M., 1995, Instrumental stakeholder theory: a synthesis of ethics and economics, *Academy of Management Review* 20, 404–437.

Kaplan, D. M., 2006, Can diversity training discriminate? Backlash to lesbian, gay, and bisexual diversity initiatives, *Employee Responsibilities and Rights Journal* 18, 61–72.

Kitzmueller, M., and J. Shimshack, 2012, Economic perspectives on corporate social responsibility, *Journal of Economic Literature* 50, 51–84.

Kochan, T., K. Bezrukova, R. Ely *et al.*, 2003, The effects of diversity on business performance: report of the diversity research network, *Human Resource Management* 42, 3–21.

Krüger, P., 2015, Corporate goodness and shareholder wealth, *Journal of Financial Economics* 115, 304–329.

Laplume, A. O., K. Sonpar, and R. A. Litz, 2008, Stakeholder theory: reviewing a theory that moves us, *Journal of Management* 34, 1152–1189.

Li, F., and V. Nagar, 2013, Diversity and performance, *Management Science* 59, 529–544.

McWilliams, A., and D. S. Siegel, 2000, Corporate social responsibility and financial performance: correlation or misspecification?, *Strategic Management Journal* 21, 603–608.

Metcalf, H., and H. Rolfe, 2011, *Barriers to Employees in Developing Lesbian, LGBT, Bisexual and Transgender-Friendly Work Places* (National Institute of Economic and Social Research, London).

Miller, S. R., L. Eden, and D. Li, 2020, CSR reputation and firm performance: a dynamic approach, *Journal of Business Ethics* 163, 619–636.

Orlitzky, M., 2001, Does firm size confound the relationship between corporate social performance and financial performance?, *Journal of Business Ethics* 33, 167–180.

Orlitzky, M., F. L. Schmidt, and S. L. Rynes, 2003, Corporate social and financial performance: a meta-analysis, *Organization Studies* 24, 403–441.

Peloza, J., 2009, The challenge measuring financial impacts from investments in corporate social performance, *Journal of Management* 35, 1518–1541.

Pichler, S., J. L. Blazovich, K. A. Cook, J. M. Huston, and W. R. Strawser, 2018, Do LGBT-supportive corporate policies enhance firm performance?, *Human Resource Management* 57, 263–278.

Ragins, B. R., and J. M. Cornwell, 2001, Pink triangles: antecedents and consequences of perceived workplace discrimination against gay and lesbian employees, *Journal of Applied Psychology* 86, 1244–1261.

Ragins, B. R., R. Singh, and J. M. Cornwell, 2007, Making the invisible visible: fear and disclosure of sexual orientation at work, *Journal of Applied Psychology* 92, 1103–1118.

Richard, O. C., 2000, Racial diversity, business strategy, and firm performance: a resource-based view, *Academy of Management Journal* 43, 164–177.

Roumpi, D., P. Giannakis, and J. E. Delery, 2020, Adoption of LGBT-friendly practices: the effect of institutional pressures and strategic choice, *Human Resource Management Journal* 30, 604–623.

Servaes, H., and A. Tamayo, 2013, The impact of corporate social responsibility on firm value: the role of customer awareness, *Management Science* 59, 1045–1061.

Shan, L., S. Fu, and L. Zheng, 2017, Corporate sexual equality and firm performance, *Strategic Management Journal* 38, 1812–1826.

Snider, J., R. P. Hill, and D. Martin, 2003, Corporate social responsibility in the 21st century: a view from the world's most successful firms, *Journal of Business Ethics* 48, 175–187.

Sundaram, A. K., and A. C. Inkpen, 2004, The corporate objective revisited, *Organization Science* 15, 350–363.

Surroca, J., and J. A. Tribó, 2008, Managerial entrenchment and corporate social performance, *Journal of Business Finance and Accounting* 35, 748–789.

Surroca, J., J. A. Tribó, and S. Waddock, 2010, Corporate responsibility and financial performance: the role of intangible resources, *Strategic Management Journal* 31, 463–490.

Trau, R. N. C., 2015, The impact of discriminatory climate perceptions on the composition of intra-organizational developmental networks, psychosocial support, and job and career attitudes of employees with an invisible stigma, *Human Resource Management* 54, 345–356.

Unsal, O., and J. Brodmann, 2020, The impact of employee relations on the reputation of the board of directors and CEO, *The Quarterly Review of Economics and Finance* 78, 372–388.

van Beurden, P., and T. Gössling, 2008, The worth of values – a literature review on the relation between corporate social and financial performance, *Journal of Business Ethics* 82, 407–424.

Waddock, S. A., and S. B. Graves, 1997, The corporate social performance-financial performance link, *Strategic Management Journal* 18, 303–319.

Wang, P., and J. L. Schwarz, 2010, Stock price reactions to GLBT non-discrimination policies, *Human Resource Management* 49, 195–216.

Weinzimmer, L. G., and C. A. Esken, 2016, Risky business: taking a stand on social issues, *Business Horizons* 59, 331–337.

Wettstein, F., and D. Baur, 2016, 'Why should we care about marriage equality?': political advocacy as a part of corporate responsibility, *Journal of Business Ethics* 138, 199–213.

Whitener, E. M., 2001, Do 'high commitment' human resource practices affect employee commitment? A cross-level analysis using hierarchical linear modelling, *Journal of Management* 27, 515–535.

Wright, P., S. P. Ferris, J. S. Hiller, and M. Kroll, 1995, Competitiveness through the management of diversity: effects on stock price valuation, *Academy of Management Journal* 38, 272–287.

LGBTQ-Friendly Employee Policies and Corporate Innovation[☆]

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Abstract

This paper examines the association between LGBTQ-friendly employee policies and corporate innovation. Using data on large U.S. firms, we document that LGBTQ friendliness has a positive influence on innovation intensity and quality. Specifically, our results demonstrate that LGBTQ-friendly firms produce more patents, have more patent citations, and are associated with higher innovation quality as measured by patent originality, generality, and internationality. Furthermore, our empirical findings indicate that LGBTQ friendliness is positively associated with the firm-level concentration of innovative talent. Overall, our results are consistent with the view that diversity management policies may lead to competitive advantages for the firm.

JEL classification: D22, G30, G39, J15, J70, J83, M14, M50, O30

Keywords: LGBTQ policies, sexual minorities, employee policies, diversity management, corporate innovation, patents

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1. Introduction

> "*I've had the good fortune to work at a company that loves creativity and innovation and knows it can only flourish when you embrace people's differences*."
> Tim Cook, CEO of Apple Inc.

This paper focuses on the effects of LGBTQ-friendly employee policies on corporate innovation. Abundant evidence documented in the management literature suggests that employee policies related to the advocacy and support of sexual minorities may advance a wide range of desired corporate outcomes. Specifically, previous studies have found that firms with more inclusive policies that better embrace lesbian, gay, bisexual, transgender, and queer (LGBTQ) employees are associated with greater employee commitment, improved job satisfaction, and higher employee productivity (see e.g., Day and Schoenrade, 1997; Day and Schoenrade, 2000; Button, 2001; Ragins and Cornwell, 2001; Ragins et al., 2007; Shan et al., 2017). Furthermore, LGBTQ-friendly policies may influence firm reputation among the key stakeholders and promote competitiveness in the labor market by improving the firm's ability to attract and recruit talented employees (e.g., Huffman et al., 2008; Day and Greene, 2008; Metcalf and Rolfe, 2011; Trau, 2015; Wettstein and Baur, 2016).[1] In addition to accumulating intangibles related to human capital and stakeholder relations, LGBTQ friendliness has been found to improve financial performance and increase the firm's market valuation (Li and Nagar, 2013; Shan et al., 2017;

[1] Anecdotal support for this view can be found in the *amici curiae* brief submitted to the U.S. Supreme Court in July 2019 by the representatives of 206 prominent firms such as Amazon, Apple, Coca-Cola, Facebook, General Motors, Goldman Sachs, Google, JPMorgan Chase, Microsoft, and Walt Disney. The brief asserts that a law prohibiting discrimination based on sexual orientation in the workplace "would strengthen and expand benefits to businesses, such as the ability to recruit and retain top talent".

Pichler et al., 2018; Jiraporn et al., 2019; Fatmy et al., 2022). In this paper, we aim to contribute to the existing literature by examining whether progressive LGBTQ policies foster corporate innovation.

The underlying logic linking LGBTQ-friendly corporate policies to innovation builds on the human resource management (HRM) theories regarding employee satisfaction and diversity management. These theories recognize employees as the firm's key asset and a focal source of competitive advantage and value creation (e.g., Cascio, 1991; Huselid, 1995; Coff, 1997; Whitener, 2001; Gelade and Ivery, 2003; Faleye and Trahan, 2011; Edmans, 2012; Beneish et al., 2022). Accordingly, a vast body of research has documented that intangible investments in employee-friendly practices and organizational diversity management policies benefit firms, for instance, by advancing employee motivation and engagement, labor stability and productivity, and the firm's ability to recruit and retain the best talent (e.g., Wright et al., 1995; Waddock and Graves, 1997; Richard, 2000; Jackson, Joshi and Erhardt, 2003; Kochan et al., 2003; Armstrong et al., 2010; Edmans, 2011, 2012; Fauver, McDonald and Taboada, 2018; Chang and Jo, 2019; Darendeli et al., 2022). Loosely parallel with the HRM arguments, the stakeholder theory established by Freeman (1984) posits that engagement in social activities and investments in employee welfare and satisfaction may pay off by enhancing the firm's relational and reputational capital with its employee and other stakeholders. Given that inclusive and non-discriminatory employee policies in general, and the embracement of sexual minorities in particular, may lead to positive outcomes and competitive advantages for the firm, we expect to find a positive relationship between LGBTQ-friendly employee policies and corporate innovation.

Our paper contributes to the growing body of literature on factors influencing innovation activity and the determinants of innovative corporate environments. Hsu, Tian and Xu (2014),

Ucar (2018), Gupta, Raman and Shang (2020), Hasan et al. (2020), Boubakri et al. (2021), and Dai, Shen and Zhang (2021), among others, have documented that investments in innovation and innovation outcomes are affected by a variety of attributes related to firms' operating environment and geographical location such as institutional arrangements and legal environment, financial market development, local culture, media scrutiny, and the level of social capital. Over the past few years, several studies have examined how specific firm characteristics are reflected in innovation efforts and productivity. These studies suggest that success in innovation is related to managerial characteristics and incentives, ownership structure, board composition, and corporate governance mechanisms (see e.g., Manso, 2011; Hirshleifer, Low and Teoh, 2012; Aghion, Van Reenen and Zingales, 2013; Atanassov, 2013; Ederer and Manso, 2013; Tian and Wang, 2013; Lu and Wang, 2018; Biggerstaff, Blank and Goldie, 2019; Chang, Liang and Wang, 2019; Chemmanur et al., 2019; Custodio, Ferreira and Matos, 2019; Islam and Zein, 2020; Glaeser et al., 2020).

Two distinct streams of innovation literature are closely related to our study. First, studies by Østergaard, Timmermans and Kristinsson (2011), Chen, Chen, Hsu and Podolski (2016), Chen, Leung and Evans (2016), Schubert and Tavassoli (2020), An et al. (2021), Cumming and Leung (2021), and Griffin, Li and Xu (2021) examine the relations between corporate innovation, employee diversity, and diversity in the composition of the management teams and board of directors. In brief, the previous studies suggest that diversity in human capital resources in terms of age, gender, ethnicity, and education is positively associated with investments in innovation and patent-based measures of innovation success. These findings provide support for the view that diversity management policies and diversity embracing corporate culture may benefit the firm by fostering innovation activity.

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The second related strand of innovation literature focuses on employee-friendly policies and employment non-discrimination acts. Chen, Chen, Hsu and Podolski (2016) and Chen, Leung and Evans (2016) document that employee-friendly firms invest more in research and development and have greater innovation output as measured by the number of patents and patent citations. In the same vein, the results of Mao and Weathers (2019) suggest that employee friendliness has a positive influence on patent-based measures of innovation intensity and quality.[2] Perhaps most directly related to our paper, Gao and Zhang (2016) investigate the effects of employment nondiscrimination acts on corporate innovation by exploiting the enactment in anti-discrimination legislation across the different U.S. states. Their findings indicate that the adoption of laws that prohibit employment discrimination based on sexual orientation leads to an increase in the number of patents and patent citations for firms headquartered in the adopting states. Collectively, the empirical findings of Chen, Chen, Hsu and Podolski (2016), Chen, Leung and Evans (2016), Gao and Zhang (2016), and Mao and Weathers (2019) demonstrate that employee-supportive policies and inclusive, non-discriminatory operating environments are conducive to innovation. In this paper, we extend the existing literature by examining the effects of firm-level LGBTQ friendliness on innovation intensity and quality.

We test the hypothesis that LGBTQ-friendly employee policies foster corporate innovation using data on large publicly traded U.S. firms over the period 2003–2017. Following Everly and Schwarz (2015), Shan et al. (2017), and Roumpi, Giannis and Delery (2020), we employ the Corporate Equality Index (CEI) constructed by the Human Rights Campaign to measure firm-

[2] Chen, Chen, Hsu and Podolski (2016), Chen, Leung and Evans (2016), and Mao and Weathers (2019) identify employee-friendly firms based on their inclusion in the Fortune's list of the "100 Best Companies to Work for in America" and KLD's corporate social responsibility metrics related to firms' employee relations.

level LGBTQ friendliness. The CEI is considered to provide a comprehensive assessment of a firm's LGBTQ friendliness in terms of corporate policies and practices that pertain to LGBTQ employees and public advocacy related to the rights of sexual minorities. To gauge corporate innovation intensity and quality, we use data on patents granted by the U.S. Patent and Trademark Office. Specifically, we measure the intensity of the firm's innovation output by the number of patents granted and utilize patent citations as well as the originality, generality, and internationality of the patents granted as proxies for innovation quality. In addition, we use the inventor count extracted from unique patent assignee names as an additional measure of innovation intensity and firm-level concentration of innovative talent. We empirically examine the effects of progressive LGBTQ policies on the different patent-based measures of innovation intensity and quality by estimating three-way fixed-effects panel regressions in which we control for a wide variety of firm characteristics including research and development investments, capital expenditures, and the overall engagement in employee-friendliness as well as time-invariant unobservable differences across different industries and states.

Consistent with our research hypothesis, we find strong evidence that LGBTQ-friendly firms are more innovative. Our empirical findings demonstrate that firms with more LGBTQ-friendly employee policies produce significantly more patents, have more patent citations and higher patent quality as well as a higher concentration of individual inventors as employees. Regardless of the patent-based innovation measure used, the positive effect of LGBTQ friendliness on innovation output is found to be economically meaningful in addition to being statistically significant. Our estimates suggest that a one standard deviation increase in the firm's CEI is associated with an over 20 percent increase in the patent count and an almost 25 percent

increase in the number of patent citations. Overall, these results suggest that progressive LGBTQ policies enhance corporate innovation.

We utilize two-stage instrumental variable regressions and propensity score matching to alleviate potential endogeneity concerns and facilitate causal inferences. These tests give further support for the hypothesis that LGBTQ-supportive policies have a positive influence on corporate innovation. Specifically, both the instrumental variable regressions and the propensity score matching analysis demonstrate that LGBTQ-friendly firms are more innovative and produce more patents and have higher patent quality. We also conduct a number of additional tests that suggest that our empirical findings are robust to alternative model specifications and econometric estimation techniques, potential self-selection biases, different control variables and variable definitions as well as many different sample restrictions. Among other things, the results of our robustness checks indicate that the positive association between LGBTQ friendliness and innovation cannot be explained by state-level differences in innovation activity, social conservatism, or anti-discrimination legislation. Furthermore, the additional tests suggest that LGBTQ-friendly corporate policies have an incremental impact on innovation performance over and above the influence of more generic diversity considerations and the firm's overall engagement in social responsibility. Taken as a whole, the empirical findings reported in this paper provide additional evidence for the view that socially progressive corporate policies pay off.

The remainder of the paper proceeds as follows. Section 2 describes the data and introduces the variables used in the analysis. In Section 3, we empirically examine the relation between LGBTQ-friendly employee policies and corporate innovation. Finally, Section 4 summarizes the findings and concludes the paper.

2. Data and variables

2.1. Data

The sample used in our empirical analysis consists of large publicly traded U.S. firms over the period 2003–2017. The data are collected from three different sources. First, we use the Corporate Equality Index (CEI) scores obtained from the Human Rights Campaign (HRC) to measure firm-level LGBTQ friendliness. Second, we use data on patents granted by the U.S. Patent and Trademark Office (USPTO) jointly with global patent citation data obtained from Google Patents database to construct alternative patent-based measures of corporate innovation intensity and quality. Third, we collect financial statement and balance sheet data for the sample firms from Compustat.

Out of 968 firms assessed by the HRC in the period 2003-2017, 905 firms can be linked to Compustat data. Out of these 905 firms, 805 firms are headquartered in the U.S. and have at least one observation with positive book assets and market capitalization during our sample period. After excluding financial entities (SIC codes 6000 to 6799), we are left with a sample of 614 firms and an unbalanced panel of 4,902 firm-year observations.

2.2. LGBTQ friendliness

We employ the Corporate Equality Index (CEI) constructed by the Human Rights Campaign to measure firm-level LGBTQ friendliness. The Human Rights Campaign is the largest sexual minorities advocacy organization in the U.S. and it has published the CEI for large U.S. firms annually since 2002. The CEI provides a comprehensive assessment of a firm's LGBTQ

friendliness in terms of corporate policies and practices that pertain to LGBTQ employees and public advocacy related to the rights of sexual minorities, and it has been commonly used to gauge LGTBQ friendliness in the prior literature (see e.g., Wang and Schwarz, 2010; Everly and Schwarz, 2015; Shan et al., 2017; Roumpi et al., 2020; Fatmy et al., 2022).

The Human Rights Campaign compiles and constructs the CEI through SEC filings, employee resource groups, press releases, news articles, and company surveys during the year leading up to the date of publication. The surveys underlying the CEI are sent to the S&P 500 firms, the Fortune 1000 firms, the firms in the Forbes' list of 200 largest privately-held companies, and other U.S. firms with at least 500 employees. In our empirical analysis, the sample is constrained to publicly traded firms.

The CEI is based on five main criteria related to firms' employee policies, workplace equality, diversity culture and competency, and public statements and actions related to either advocacy or discrimination of sexual minorities. The criteria underlying the CEI are summarized in Table 1. Each of the considered criteria is given a specific amount of points and the CEI is then constructed for each firm as the sum of the points of the individual evaluation criteria. Consequently, the CEI may take values between -25 and 100 with higher values of the index corresponding to more LGBTQ-friendly corporate policies and practices.

(Insert Table 1 about here)

2.3. Corporate innovation

The response variable in our empirical analysis is corporate innovation. Following the prior literature (see e.g., Chen et al., 2016; Balsmeier, Fleming and Manso, 2017; Mao and Weathers, 2019; Gupta et al., 2020; Hasan et al., 2020; Dai et al., 2021; Beneish et al., 2022), we measure corporate innovation intensity and quality through patents granted by the USPTO. Specifically, we employ six alternative measures of innovation: (i) the number of patents, (ii) the number of patent citations, (iii) patent originality, (iv) patent generality, (v) patent internationality, and (vi) the number of individual employees as patent assignees. These innovation measures are based on patent data from the USPTO and global patent citation data obtained from Google Patents in January 2020. We utilize patent identification numbers (patent_id), and use the US Patents linking table available through the Wharton Research Data Services (WRDS) to match the USPTO patent assignees to Compustat Global Company Keys (GVKEY).[3] Out of 3,695,956 granted patents filed during the period 2003-2017, we are able to link 1,835,449 patents to individual firms with a GVKEY. When constructing the alternative patent-based measures of innovation intensity and quality, we follow the prior literature (e.g., Bena et al., 2017; Gao and Zhang, 2017; Ucar, 2018) and assume that firms produce zero patents if their patent information is missing.[4]

We measure the intensity of the firm's innovation output by the annual number of patents granted and the annual number of patents adjusted by the average number of patents granted in each NBER technological class and year. *Patents* is defined as the patent count for a given firm

[3] As an auxiliary mapping between patent assignees and publicly listed firms, we utilize the Global Corporate Patent Dataset (GCPD) compiled by the University of Virginia Darden School of Business. The GCPD is constructed based on the matching algorithm described in Bena, Ferreira, Matos, and Pires (2017).

[4] In the regressions, we include a dummy variable for zero-imputed patents counts.

and filing year and $Patents_{Adj}$ is calculated following the two-way fixed-effects adjustment of Hall, Jaffe and Trajtenberg (2001) which purges the patent count of any effects due to systematic changes in innovation intensity over time or across technological classes. In the construction of the patent-based innovation variables, we use the patent's filing year instead of its grant year because the former arguably better captures the actual time of innovation (see e.g., Griliches, Pakes, and Hall, 1991). Given that innovation activity is concentrated in a relatively small set of firms and most firms have zero patents, we use the inverse hyperbolic sine transformation to normalize our highly-skewed dependent variables which are based on zero-bounded count data.[5]

Patent citations reflect the quality of the firm's innovation output. As noted e.g. by Albert et al. (1991), Trajtenberg, Henderson and Jaffe (1997), and Hall, Jaffe and Trajtenberg (2001), the number of citations a patent receives indicates the practical and economic importance of the innovation and also reflects the differences in innovation activities across firms. *Citations* is measured as the annual total global citation count for the firm's patents registered on the filing year of each citing patent. Given that patent citations are subject to backward and forward lags as well as a truncation bias, we follow Hall et al. (2001) to calculate year and technological class adjusted patent citations. $Citations_{Adj}$ is measured as the total number of patent citations per patent adjusted by the average citation count of patents in each technological class during the patent filing year.

[5] The conventional approach of using the logarithm of one plus the number of patents is a problematic transformation in innovation research and may lead to biased estimates with highly-skewed zero-bounded count data (see e.g., Campbell and Mau, 2021; Cohn, Liu and Wardlaw, 2021). Nevertheless, as a robustness check, we have also used the conventional logarithmic transformation to our dependent variables. The estimates of these additional regressions are consistent with our main analysis.

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In addition to patent citation counts, we use patent originality, generality, and internationality as additional proxies for innovation quality. Proposed by Trajtenberg et al. (1997) and Hall et al. (2001), patent originality and generality represent the proximity of the cited patents to the original scientific sources and the versatility of the cited patent across different technological classes. *Originality* is measured as the number of NBER technological classes spanned by the cited patents, with a more original patent building upon more diverse sources. *Generality* is measured as the number of NBER technological classes spanned by the citing patents, with higher generality indicating greater applicability of the patent across different fields. We employ patent internationality as a novel proxy for innovation quality. *Internationality* is measured as the number of patent assignee countries spanned by the citing patents. Higher internationality indicates that the patent is internationally more valuable with the innovation being utilized outside the U.S. We also scale patent originality, generality, and internationality by the corresponding aggregate annual measures for the technological class of the granted patent to adjust for any systematic biases and trends. The resulting adjusted variables used in the regressions are $Originality_{Adj}$, $Generality_{Adj}$, and $Internationality_{Adj}$, respectively.

Finally, following Jaffe, Trajtenberg and Henderson (1993), we use inventor count as an additional measure of innovation intensity and the concentration of innovative talent on a firm-level. The number of individual inventors for each firm and year is calculated on the basis of unique inventor names extracted from all the firm's patents granted in a given year. However, the raw inventor count fluctuates over time to a greater extent than would be expected based on general employee retainment and mobility. Therefore, similar to the perpetual inventory method used in economics and finance literature to account for the accumulation of intangible capital over time, we construct a memory-adjusted inventor count by acknowledging the firm's non-filing prior

inventors at an annual rate of 0.8^n, where n is the number of years from the non-filing inventor's previous patent.[6] If an inventor moves to a different firm, she is removed from the firm's memory-adjusted inventor count irrespective of n. We adjust the inventor counts for each firm by the annual average number of inventors per a patent-filing firm. *Inventor count* is defined as the number of individual inventors listed in the patents filed by a firm in a given year scaled by the total amount of individual inventors in a given year and multiplied by the average annual total number of inventors. Correspondingly, $Inventor\ count_{Adj}$ is the firm's memory-adjusted inventor count scaled by the total annual amount of individual inventors and multiplied by the average annual total number of inventors.

2.4. Control variables

Following the prior corporate innovation literature (e.g., Chen et al., 2016; Mao and Weathers, 2019; Gupta et al., 2020; Islam and Zein, 2020; Boubakri et al., 2021), we include a number of controls variables in our regressions to account for the confounding effects of firm-specific factors such as size, financial performance, research and development expenditures, and employee treatment on innovation intensity and quality. The financial data used for constructing the control variables are taken from Compustat.

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[6] Consider a firm with two individual inventors, Minnie and Mickey. Suppose that Minnie is a patent assignee in 2010, 2011, and 2013 and Mickey is a patent assignee only in 2011. The raw inventor count for the firm would be 1 in 2010, 2 in 2011, 0 in 2012, and 1 in 2013. The memory-adjusted inventor count would be 1 in 2010, 2 in 2011, $0.8^1 + 0.8^1 = 1.6$ in 2012, and $1 + 0.8^2 = 1.64$ in 2013.

The control variables are defined as follows: (i) *Size* is measured as the logarithm of total assets, (ii) *Profitability* is measured with return on assets (ROA) which is calculated as the ratio of net income to total assets, (iii) *Cash* is the logarithm of one plus cash holdings scaled by total assets, (iv) *Leverage* is the ratio of total liabilities to total assets, (v) *Total Q* is the intangible capital adjusted Tobin's Q proposed by Peters and Taylor (2017) calculated as the logarithm of one plus the sum of the firm's market value of equity and the book value of liabilities minus current assets divided by the sum of the gross value of property, plant, and equipment and the estimated replacement cost of the firm's intangible capital, (vi) *R&D* is the logarithm of one plus research and development expenditures scaled by total assets[7], (vii) *Capex* is the logarithm of capital expenditures scaled by total assets, and (viii) *Employee-friendly* is a dummy variable that equals one for firms which are included in the Fortune's list of the 100 Best Companies to Work For in America in a given year.

2.5. Descriptive statistics and correlations

Descriptive statistics for LGBTQ friendliness (*CEI score*), the six different measures of corporate innovation intensity and quality, and the control variables are reported in Table 2. For ease of interpretation, we present all variables in their original forms without any transformations. The mean (median) *CEI score* for the sample firms is 65.84 (80.00) with a standard deviation of 34.38. As can be seen from the table, the level of LGBTQ friendliness spans the full index spectrum from -25 to 100.

[7] Because of the large number of missing values for R&D expenditures, we follow the convention and set the missing values to zeros. In the regressions, we include a dummy variable for zero-imputed R&D expenditures.

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(Insert Table 2 about here)

Innovation intensity and quality vary substantially across firms. The mean annual patent count for the sample firms is 88.38 and the mean citation count 778.69. The sample firms, on average, have 118.32 individual employees who have filed successful patents. As can be seen from Table 2, the medians for all innovation measures are very low and the minimum values are zeros, indicating that innovation activity is concentrated in a relatively small set of firms. With respect to the control variables, the descriptive statistics indicate that our sample exhibits considerable dispersion also in terms of the control variables. The mean of total assets (*Size*) of the sample firms is about $26.6 billion and the mean ROA (*Profitability*) is about 5 percent. *Total Q* varies from -0.93 to 12.87 with a mean of 1.12, and *Cash* and *Leverage* fluctuate substantially around their means. Finally, it can be noted that about 6 percent of the firm-year observations are included in the Fortune's best employers list.

Table 3 presents the pairwise correlations between the variables used in the regressions. As can be seen from the table, *CEI score* is positively correlated with all six innovation measures. Thus, consistent with the hypothesis that LGBTQ-supportive employee policies foster corporate innovation, the correlation coefficients suggest that LGBTQ-friendly firms produce more patents, have higher patent quality, and have a higher number of individual employees who have filed successful patents. Table 3 further shows that *CEI score* is positively correlated with *Size*, *Profitability*, *Cash*, *Total Q*, *R&D*, and *Employee-friendly*, while being negatively correlated with *Capex*. The strong positive correlation between *CEI score* and *Size* ($r = 0.19$, $p < 0.01$) is broadly consistent with the view that large, well-established firms are generally able to provide better employee benefits. Moreover, given that LGBTQ-friendly firms are likely to have an employee-

supportive working environment and good employee relations, it is not surprising that *CEI score* correlates positively with *Employee-friendly* ($r = 0.15$, $p < 0.01$).

(Insert Table 3 about here)

The six different corporate innovation measures are strongly positively correlated with each other. The highest correlation coefficients are those between *Patents* and *Originality* ($r = 0.98$), *Citations* and *Internationality* ($r = 0.98$), and *Originality* and *Internationality* ($r = 0.97$). The innovation measures are also statistically significantly correlated with all of our control variables. The correlations indicate that innovative firms are larger, perform better, have higher cash holdings, invest more in R&D activities, and are more likely to have employee-friendly working environments. Regarding the correlations among the control variables, Table 3 shows that *Total Q* exhibits a strong positive correlation with *Profitability*, *R&D*, and *Employee-friendly*, and a negative correlation with *Leverage*.

3. Empirical analysis

3.1. Univariate analysis

We begin our empirical analysis by performing *t*-tests to examine differences between more LGBTQ-friendly and less LGBTQ-friendly firms. For this purpose, we split the firms into two subsamples based on their CEI scores; the subsample of more LGBTQ-friendly firms comprises the firms that have a CEI score of 100 (approximately corresponding CEI scores in the top quartile),

while the subsample of less LGBTQ-friendly firms consists of firms with CEI scores of less than 45 (corresponding to CEI scores in the bottom quartile).

Table 4 presents the results of two-tailed *t*-tests. Overall, the univariate tests demonstrate that LGBTQ friendliness is strongly associated with firm characteristics as almost all the mean differences between the two subsamples are statistically highly significant. As can be noted from Table 4, the differences in all different innovation measures between the more LGBTQ-friendly and less LGBTQ-friendly firms are positive and significant at the 1 percent level, and thereby suggest that firms with more LGBTQ-friendly policies have greater innovation intensity and produce more valuable innovations. Therefore, the *t*-tests provide support for the hypothesis that LGBTQ-supportive employee policies spur corporate innovation.

The observed differences in the innovation measures can also be considered economically meaningful; the mean difference in the number of patents is 149.95 and the mean difference in the number of patent citations is 1,362.41, with both of these differences corresponding to almost a half standard deviation of the corresponding variables. Moreover, the mean inventor count is about 214 individuals, or about two-thirds of a standard deviation, higher in the more LGBTQ-friendly firms, supporting the argument that LGBTQ-supportive policies may enhance the productivity and innovative activity of the firm's employees.

(Insert Table 4 about here)

With respect to our control variables, it can be noted from Table 4 that firms with more LGBTQ-friendly employee policies are very different from the ones with less LGBTQ-friendly policies. Most importantly, the results of the *t*-tests indicate that the more LGBTQ-friendly firms

are substantially larger, have higher profitability and valuation, invest more in research and development, are more likely to be among the firms with the highest employee satisfaction. Given these differences in firm characteristics and their potentially confounding effects on innovation activity, the univariate results regarding the positive relationship between LGBTQ-friendly employee policies and innovation should be approached cautiously.

3.2. Main results

We empirically test the hypothesis that LGBTQ-friendly employee policies foster corporate innovation by estimating alternative versions of the following three-way fixed-effects specification:

$$\begin{aligned} Innovation_{i,t} = {} & \alpha + \beta CEI\ score_{i,t-1} + \gamma(Firm\text{-}specific\ controls)_{i,t-1} \\ & + \omega(Industry\ fixed\text{-}effects)_i + \varphi(State\ fixed\text{-}effects)_i \\ & + \tau(Year\ fixed\text{-}effects)_t + \varepsilon_{i,t} \end{aligned} \quad (1)$$

where the dependent variable $Innovation_{i,t}$ is one of the alternative patent-based measures of innovation intensity and quality for firm *i* at time *t*, and *CEI score* is the Corporate Equality Index which is our proxy for LGBTQ friendliness. The set of control variables in Equation (1) includes *Size*, *Profitability*, *Cash*, *Leverage*, *Total Q*, *R&D*, *Capex*, and *Employee-friendly*. The independent variables in Equation (1) are lagged by one year in order to alleviate endogeneity concerns and to avoid potential reverse causality from the innovation measures to our independent variables. We include industry and state fixed-effects to control for any systemic variation in innovation intensity and quality across different industries and across the different U.S. states as well as to mitigate potential biases related to omitted variables and unobserved heterogeneity. Moreover, we account for systematic variation in corporate innovation over time by including year

fixed-effects in the regressions. All variables in Equation (1) are winsorized at the 1st and 99th percentiles to moderate the effects of outliers. Throughout the estimations, we use robust standard errors that are adjusted for heteroskedasticity and clustered by firm.

Table 5 reports the estimation results of alternative versions of Equation (1) with the raw and adjusted patent and patent citation counts as the dependent variables. All four model specifications include the full set of control variables as well as industry, state, and year fixed-effects. As shown in Table 5, the adjusted R^2s indicate a good fit of the estimated regressions.

(Insert Table 5 about here)

The estimates in Table 5 provide support for the hypothesis that LGBTQ-supportive employee policies foster corporate innovation. Specifically, the estimated coefficients for *CEI score* are positive and statistically significant at the 1 percent level in all four models, suggesting that LGBTQ-friendly firms produce more patents as well as higher-quality patents. In addition to being statistically significant, the positive association between LGBTQ friendliness and innovation can also be considered economically significant. The magnitudes of the coefficients suggest that a one standard deviation increase in *CEI score* would increase the firm's raw patent count by approximately 20 percent and patent citation count by almost 25 percent. Regarding the control variables, it can be noted from Table 5 that larger firms with higher market valuation, cash holdings, and R&D investments are associated with more patents and patent citations.

We next shift the focus from the number of patents and patent citations to three distinct measures of innovation quality: patent originality, generality, and internationality. Table 6 reports the estimation results of six alternative versions of Equation (1) with the raw and adjusted

Originality, *Generality*, and *Internationality* as the dependent variables. The adjusted R^2s indicate that our fixed-effects regressions explain about 64-73 percent of the variation in the raw patent quality measures.

(Insert Table 6 about here)

As can be seen from Table 6, the coefficient estimates for *CEI score* are positive and statistically highly significant in all six models. Thus, similar to Table 5, the regressions suggest that LGBTQ friendliness is positively associated with corporate innovation. The positive effect of LGBTG-friendly policies appears slightly larger in magnitude when *Originality* and *Internationality* are used as the dependent variables. The estimates of Models 1 and 5 suggest that a one standard deviation increase in *CEI score* increases the originality and internationality of the firm's patents by more than 20 percent. Consistent with the regressions reported in Table 5, the coefficients for the control variables indicate that innovation quality is significantly positively associated with *Size*, *Cash*, *Total Q*, and *R&D* while being negatively related to *Leverage*. In addition, *Generality* appears weakly positively associated with *Employee-friendly* in Model 3.

Finally, we proceed by regressing the firm-level concentration of individual innovative employees on *CEI score*. The estimates of the regressions with the raw and memory-adjusted inventor counts as the dependent variables are presented in Table 7. Again, the coefficient estimates for *CEI score* are positive and statistically significant at the 1 percent level, and thereby provide further evidence to suggest that LGBTQ friendliness is positively associated with corporate innovation and the distribution of innovative human capital across firms. The magnitudes of the estimated coefficients in Table 7 indicate that a one standard deviation increase

in *CEI score* increases firm-level innovative talent by about 20 percent. Thus, the positive relationship between LGBTQ-friendly employee policies and the concentration of innovative talent can be considered economically meaningful in addition to being statistically significant.

(Insert Table 7 about here)

Collectively, the regression results presented in Tables 5, 6, and 7 support the hypothesis that LGBTQ-friendly firms are more innovative. Our empirical findings provide strong evidence that LGBTQ friendliness is positively associated with the patent-based measures of innovation intensity and quality after controlling for firm attributes such as size, profitability, R&D intensity, and overall employee satisfaction as well as for any systemic differences across different industries and states. The regressions show that LGBTQ-friendly firms produce significantly more patents, have more patent citations and higher patent quality as well as a higher concentration of individual inventors as employees. Regardless of the innovation measure used, the effect of LGBTQ-friendly employee policies on corporate innovation is economically meaningful in addition to being statistically significant. In general, these findings can be interpreted to indicate that enhanced innovation intensity and quality are among the potential channels through which LGBTQ-supportive policies may improve firm performance as documented in Shan et al. (2017), Pichler et al. (2018), Jiraporn et al. (2019), and Fatmy et al. (2022).

3.4. Endogeneity concerns

We next discuss the issues that could confound causal interpretation of our results and then proceed to address potential endogeneity concerns with two-stage instrumental variable (IV) regressions and propensity score matching (PSM). As with any observational study, we acknowledge that omitted variables, reserve causality, selection bias, and functional form misspecification are potential sources of endogeneity that could bias our main regressions. For instance, it is possible that an omitted or unobservable attribute is correlated with both the firm-level LGBTQ friendliness and the patent-based measure of innovation, thereby creating an artificial linkage between the two variables. While concerns about an omitted variable cannot be decisively eliminated, we follow Larcker and Rusticus (2010) in assessing the extent of potential omitted variable bias. Specifically, we compute Impact Threshold of a Confounding Variable ("ITCV"; Frank, 2000) between CEI score and our five different dependent variables, and compare the magnitude of the ITCVs with the ones for our control variables. In untabulated results, we find that the ITCV for CEI score is generally larger than the ones for all the control variables, with the exception of firm size. With respect to firm size, one might argue that it is unlikely that there exists an omitted variable that is as important as firm size in determining a firm's innovative performance, given that we already include an extensive set of control variables motivated by prior research. These results lead us to conclude that while omitted variable bias cannot completely dismissed in our empirical specifications, such a variable would need to be rather large in statistical impact in order to overturn our results. Moreover, we have attempted to control for unobserved firm heterogeneity by including industry, state, and year fixed-effects in our regressions. The use of PSM as an alternative estimation approach further addresses any omitted variable concerns.

Based on the theoretical arguments presented in the HRM literature, it is unlikely that our main results are driven by reverse causality. Moreover, given the fact that patents are granted approximately two years after the initial filing and that we use lagged independent variables in the regressions, reverse causality in our empirical setting would rather counterintuitively imply that higher innovation intensity and quality at time t+2 would lead to more LGBTQ-friendly corporate policies at t-1. Nevertheless, we utilize the instrumental variable approach to address potential endogeneity concerns arising from reverse causality.

We identify two potential sources of selection bias in our empirical setting. First, our measure of LGBTQ friendliness, *CEI score*, would suffer from a voluntary disclosure bias if only firms that have implemented LGBTQ-friendly policies or acknowledge the importance of diversity management were to respond to the HRC's surveys. However, the observed CEI ranges from -25 to 100 with a sample standard deviation of 35, rendering this scenario unlikely. We nevertheless address the issue of voluntary disclosure in our additional tests. Second, it is possible that if only firms with non-zero patent counts are included in the sample, our regressions would yield false-positive results (see Koh et al., 2022). Therefore, we follow the convention in the prior innovation literature and assume that firms produce zero patents if their patent information is missing.

Finally, we acknowledge that an incorrect functional form of the regression specification can lead to a correlation between the residual term and the patent-based innovation measures. More specifically, the coefficient estimates for *CEI score* in our regressions may be biased if the critical assumption of model linearity is violated (Greene, 2018). We address these concerns to some degree by including three-way fixed effects in our main regressions, which are supposed to absorb the effects of potential nonlinearities across industries, states, and years that could be driving the

results. Furthermore, we alleviate any potential model misspecification concerns by utilizing the PSM approach which relaxes linearity assumptions in a multiple regression framework.

In the following, we proceed by estimating two-stage IV regressions to mitigate reverse causality concerns and to establish a causal linkage between LGBTQ-friendly policies and innovation. Because the choice of the instrumental variables admittedly is arbitrary and easy to criticize, we use three alternative instruments for *CEI score* in the first-stage regressions. With our first causal identification strategy, we exploit the staggered passage of state-level Employment Non-Discrimination Acts (ENDA) for increased protection of LGBTQ employees at workplace. The passage of legislation that prohibits employment discrimination based on sexual orientation or gender identity represents exogenous, positive shocks to firm-level implementation of LGBTQ-friendly policies while it arguably should not have any direct independent influence on the number of patents and patent citations of individual firms. Because the enactment of the ENDAs vary by state over time, our instrument for the firm-level LGBTQ friendliness is a dummy variable that takes the value of one for firms headquartered in the ENDA states for the post-enactment years, and zero otherwise.

The second instrumental variable we use is the annual total number of employment discrimination charges filed under Title VII in the firm's headquarter state relative to the LGBTQ population in that state. In a series of legal cases starting from from 1989, the Supreme Court and the Equal Employment Opportunity Commission (EEOC) have ruled that employer discrimination based on employee gender identity and "sex-stereotyping" is unlawful under Title VII of the Civil Rights Act of 1964. Given that state-level trends in employment discrimination can be considered to reflect local attitudes towards diversity and equality in general, and increasingly towards the LGBTQ community in specific, we posit that the amount of Title VII charges relative to the

LGBTQ population in a given state is negatively associated with LGBTQ friendliness while it should not have any conceptual relation to innovation intensity and quality of individual firms.[8] Finally, following Jiraporn et al. (2019), Chintrakarn et al. (2020), and Fatmy et al. (2022), we use the annual percentage of the state population that self-identifies as LGBTQ as the third instrument for *CEI score*. As argued by Jiraporn et al. (2019), firms headquartered in states with larger LGBTQ populations are likely to have more LGBTQ-friendly corporate policies and practices. In addition to using the three alternative instrumental variables individually, we also estimate a two-stage IV model in which all three instruments are used simultaneously in the first-stage regressions.

(Insert Table 8 about here)

Table 8 presents the estimates of the instrumental variable regressions. In addition to the instrumental variable, the first-stage regressions reported in Panel A include the same set of control variables as our main regressions. The coefficient estimates for the three alternative instrumental variables are statistically significant at the 1 percent level when used individually and also when used simultaneously. As expected, the first-stage regressions indicate that the enactment of ENDAs and LGBTQ population are positively associated with the implementation of LGBTQ-friendly corporate policies, while the amount of Title VII charges at the state level is negatively related to

[8] Although transgender discrimination was ruled under Title VII already in the cases of *PriceWaterhouse v. Hopkins* (1989) and *Maffei v. Kolaeton Industries* (1995), the Supreme Court rulings regarding same-sex marriage and the position taken by the EEOC that LGBTQ discrimination was sex discrimination under Title VII came fully into place with the case *Macy v. Holder* (2012).

firm-level LGBTQ friendliness. The partial *F*-statistics of the first-stage regressions exceed the critical values suggested by Stock, Wright and Yogo (2002), suggesting that our instrumental variable estimates should not be plagued by a weak-instrument problem. The untabulated first-stage estimates for the control variables indicate that LGBTQ friendliness is significantly positively associated with *Size*, *Cash*, *R&D*, and *Employee-friendly*.

Panel B of Table 8 reports the estimates of the second-stage regressions in which the alternative patent-based measures of innovation intensity and quality are regressed on the instrumented *CEI score* and the firm-specific control variables. Overall, the estimates of the second-stage regressions indicate that LGBTQ-friendly policies have a positive influence on corporate innovation. Regardless of the instrument used, the estimated coefficients for the instrumented *CEI score* are positive and statistically significant in the second-stage regressions with *Patents*, *Citations*, *Generality*, and *Internationality* as the dependent variables. Moreover, the coefficients for the instrumented CEI score are positive and significant also in the regressions with *Originality* and *Inventor count* as the dependent variables when the staggered enactment of ENDAs is used as the instrument and when all three instrumental variables are used simultaneously. Thus, our two-stage IV regressions suggest that LGBTQ-friendly firms are more innovative even after controlling for potential endogeneity. With respect to the control variables, the estimates of the instrumental variable regressions are broadly consistent with our main regressions in Tables 5-7, and indicate that innovation intensity and quality are positively associated with *Size*, *Cash*, *Total Q*, and *R&D*.

We utilize propensity score matching as the second approach to alleviating endogeneity concerns. The univariate tests in Table 4 as well as the first-stage estimates of our IV regressions indicate that firms with more LGBTQ-friendly employee policies are very different from the ones

with less LGBTQ-friendly policies. Among other differences, LGBTQ-friendly firms are substantially larger, invest more in research and development, and are more likely to be among the firms with the highest employee satisfaction. Given the observed differences in firm characteristics, we construct a matched-firm sample in which the most LGBTQ-friendly firms with a maximum CEI score of 100 are matched with less LGBTQ-friendly firms which are as identical as possible in terms of observable firm attributes other than LGBTQ friendliness and innovativeness.

We use all the control variables included in Equation (1) together with industry and year dummies to estimate propensity scores for the sample firms and then use these scores to identify a matched sample of less LGBTQ-friendly firms that are statistically as similar as possible to the most LGBTQ-friendly firms included in our sample. If the only observable difference between the matched firms is their *CEI score*, we should not observe any differences in the patent-based measures of innovation intensity and quality unless LGBTQ friendliness affects corporate innovation. We utilize one-to-one nearest neighbor matching without replacement and require that the maximum difference between the propensity score of each treatment firm and that of its matched control firm does not exceed 0.1 standard deviations.[9] After identifying matching firms for the most LGBTQ-friendly firms, we re-estimate alternative versions of Equation (1) using the propensity score matched sample of firms.

(Insert Table 9 about here)

[9] As an alternative matching procedure, we apply multivariate Mahalanobis distance matching. The regression results based on Mahalanobis-matched sample are consistent with the estimates based on PSM.

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The regression results based on the propensity score matched sample are presented in Table 9. The matching diagnostics suggest that the matched firms are sufficiently similar to the treatment firms. When the probit model underlying the propensity score matching is re-estimated using the matched-firm sample, the post-matching pseudo R^2 is about 1 percent and the LR chi-square becomes insignificant, suggesting that all of the coefficients are simultaneously equal to zero. Moreover, the propensity scores of the treatment and matched firms have a mean difference of 0.001 and a mean percentage difference of 0.13%. Overall, the matching diagnostics indicate that the propensity score matching effectively eliminates the observable differences between the most LGBTQ-friendly firms and their less LGBTQ-friendly matched counterparts.

As can be noted from Table 9, the coefficients for *CEI score* are positive and statistically highly significant regardless of the dependent variable. Thus, the regression results based on the propensity score matched sample demonstrate that LGBTQ-friendly firms are more innovative and produce more patents, have more patent citations and higher quality patents, and have a higher number of individual inventors as employees even after controlling for any endogenous selection on observed firm characteristics. Broadly consistent with our main regressions, the estimates in Table 9 suggest that a one standard deviation increase in *CEI score* would increase the firm's patent count by about 27 percent and patent citations by over 30 percent.

3.5. Additional tests

We conduct a number of additional tests in order to ensure that our empirical findings are robust to alternative model specifications and estimation techniques, different sample restrictions, and the inclusion of additional controls. The results of these robustness checks are summarized in

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Table 10. The six numerical columns show the estimated coefficients for *CEI score* from 12 alternative specifications with the adjusted measures of innovation intensity and quality used as the dependent variables. For convenience, the first row of the table (Specification 0) summarizes the baseline estimation results from Tables 5-7.

First, we examine whether our results are driven by the states with very high levels of innovation activity. For this purpose, we re-estimate the regressions using a sample that excludes all firms headquartered in California, New York, Washington, Illinois, and Massachusetts. As shown in Table 10, the coefficient estimates for *CEI score* remain almost unchanged in Specification 1, and therefore, we can conclude that the positive association between LGBTQ friendliness and innovation is not induced by the firms located in the most innovative states. If anything, the positive effect of LGBTQ-friendly policies on *Citations*, *Originality*, and *Internationality* appears larger in magnitude when the most innovative states are excluded.

(Insert Table 10 about here)

Second, given that regional differences in socio-political norms and attitudes towards sexual minorities may potentially influence the linkage between LGBTQ-supportive policies and corporate innovation, we next investigate the possibility that LGBTQ friendliness is positively associated with innovation activity only in progressive, more liberal U.S. states. For this purpose, we exploit state-level data on religiousness and the U.S. presidential election results to identify

and exclude firms located in the most liberal states.[10] When the regressions are re-estimated using a sample that excludes firms located in the most liberal states (Specification 2), the coefficients for *CEI score* remain positive and are statistically significant at the 1 percent level. As an alternative approach, we also re-estimate the regressions using a sample that excludes firms located in the most conservative states (Specification 3). Once again, the coefficients for *CEI score* are positive and highly significant. The estimated coefficients are slightly larger in magnitude when the firms located in the most conservative and religious states are excluded, suggesting that the positive effect of LGBTQ-friendly policies on corporate innovation is more pronounced for firms that are headquartered in more liberal states.

Third, to further ensure that our findings are not induced by state-level policies, we re-estimate the regressions using a sample from which all firms headquartered in the states with the strongest employment non-discrimination acts have been excluded.[11] The regression results based on this constrained sample (Specification 4) are consistent with our main findings. As can be noted from Table 10, the positive and significant coefficients for *CEI score* become slightly larger in magnitude in the regressions with *Citations*, *Originality*, and *Internationality* as the dependent variables when the firms located in the strongest ENDA states are excluded from the sample.

Fourth, we address potential industry biases related to the Corporate Equality Index employed as the proxy for firm-level LGBTQ friendliness. Even though our patent-based corporate

[10] Following Fatmy et al. (2022), we define a firm to be located in a liberal state if the Democratic candidate won the latest presidential election in that state with a margin of at least 5 percent and less than one-third of the state population consider themselves to be highly religious.

[11] The constrained sample excludes all firms headquartered in California, Colorado, Connecticut, Hawaii, Illinois, Iowa, Maine, Massachusetts, Nevada, New Mexico, New Jersey, Oregon, Rhode Island, Vermont, Washington, and Washington, D.C.

innovation measures are adjusted for differences across technological classes and we have also controlled for industry fixed-effects in our main regressions, our findings may nevertheless be influenced by cross-industry differences in social progressiveness and attitude towards sexual minorities. These differences are also reflected in the mean CEI scores in our sample which vary considerably across industries. To further address potential industry effects, we estimate industry-adjusted CEI scores for each firm as the residual term from regressing *CEI score* on industry dummies. We then re-estimate our main regressions with the industry-adjusted CEI score as the test variable of interest. As can be seen from Table 10, the estimates of these additional regressions (Specification 5 in Table 10) are consistent with the baseline results. Most importantly, the coefficients for the industry-adjusted CEI score are positive and statistically significant regardless of the innovation measure used as the dependent variable. Thus, we conclude that our results should not be driven by cross-industry differences in LGBTQ friendliness.

Fifth, the CEI would suffer from a voluntary disclosure bias if firms that have implemented LGBTQ-friendly corporate policies or acknowledge the importance of diversity management were more likely to respond to the HRC's survey. Since 2011, the HRC has constructed the CEI also for firms that have not responded to the survey, thereby inflicting an inconsistency in the constituent firms. The firms with non-voluntary CEI scores constitute approximately 11 percent of the firm-year observations in our sample over the period 2011–2017. To ascertain that our results are not affected by the non-voluntary CEI scores, we re-estimate the regressions using a subsample from which all firm-year observations with non-voluntary CEI scores have been excluded. The estimates based on this constrained sample (Specification 6) are very similar to our main regressions and indicate that LGBTQ-friendly firms are associated with higher innovation intensity and quality.

Our second approach to address voluntary disclosure bias is to use propensity score matching to construct a matched-firm sample in which firms with non-voluntary CEI scores are matched with essentially identical firms that have responded to the surveys. When the regressions are re-estimated using the matched-firm sample (Specification 7 in Table 10), the coefficients for *CEI score* remain positive and highly significant. Taken together, these additional tests suggest that the positive association between LGBTQ friendliness and innovation is not induced by potential biases related to voluntary disclosure.

Sixth, given that most firms in our sample have only a few patents and patent citations in any given year and many firms do not have a single patent granted for multiple years, our empirical findings may be influenced by generic disparities between innovative and non-innovative firms. Therefore, we further examine the sensitivity of our results by re-estimating the regressions using a sample restricted to innovative firms with non-zero patent and patent citation counts. In these regressions (Specification 8), the coefficient estimates for *CEI score* are positive and highly significant. Interestingly, the size of the positive effect of progressive LGBTQ policies on innovation seems to increase when the non-innovative firms are excluded from the sample.

Seventh, in our main analysis, we apply the inverse hyperbolic sine transformation to normalize the highly-skewed zero-bounded dependent variables because of the potential biases related to the conventional logarithmic transformation when the dependent variable contains many zeros (see e.g., Bellemare and Wichman, 2020; Campbell and Mau, 2021; Cohn, Liu and Wardlaw, 2021). Nevertheless, as a robustness check, we re-estimate the regressions with the logarithms of one plus the patent-based innovation measures as the dependent variables. The estimates of these additional regressions (Specification 9) are consistent with our main analysis. Furthermore, as an alternative approach to deal with the large number of zero-valued patent observations, we follow

the prior literature (e.g., Hirshleifer et al., 2012; Chen et al., 2016; Bena et al., 2017; Islam and Zein, 2020) and employ Poisson and negative binomial regressions to ascertain that our results are robust to different estimation techniques. Consistent with the OLS estimates reported in Tables 5, 6, and 7, the coefficients for *CEI score* are positive and statistically highly significant throughout the different model specifications regardless of the estimation approach used.[12]

Eighth, we acknowledge that LGBTQ-friendly corporate policies can be considered as one dimension of corporate social responsibility and diversity management. In order to ensure that LGBTQ friendliness has an incremental effect on innovation over the firm's overall engagement in environmental, social, and governance (ESG) dimensions of responsibility, we estimate regressions in which the Thomson Reuters ESG rating is used as an additional control variable.[13] As shown in Table 10, the estimated coefficients for *CEI score* in Specification 10 are positive and remain highly significant in all model specifications after the inclusion of ESG rating as an additional control. This suggests that LGBTQ friendliness is positively associated with innovation intensity and quality regardless of the firm's overall engagement in social responsibility.

In a similar vein, it can be argued that LGBTQ-friendly corporate policies are one dimension of diversity and organizational diversity management policies. To ascertain that LGBTQ friendliness has an incremental impact on corporate innovation over and above the influence of more generic diversity considerations, we next re-estimate the regressions with board gender diversity as an additional control variable (Specification 11).[14] The coefficients for *CEI score* are

[12] The results of the Poisson and negative binomial regressions are available upon request.

[13] The Thomson Reuters ESG rating aims to measure the firm's environmental and social responsibility and the strength of corporate governance mechanisms on a scale of 0 to 100.

[14] Recent studies by Cumming and Leung (2021) and Griffin et al. (2021) suggest that board gender diversity is positively associated with corporate innovation.

positive and statistically significant at the 1 percent level throughout the alternative regressions. Consistent with Cumming and Leung (2021) and Griffin et al. (2021), the estimates of these additional regressions indicate that board gender diversity is positively associated with innovation.

Finally, to further examine the robustness of our empirical findings, we estimate additional regressions with alternative definitions of the control variables. Specifically, we measure *Size* as the logarithm of the market value of equity and *Profitability* with the return on equity (ROE), and we replace *Total Q* with the market-to-book ratio and *Capex* with the ratio of property, plant, and equipment to total assets. The estimates of these additional regressions are consistent with our main analysis, and indicate that LGBTQ friendliness is positively associated with innovation. Throughout the regressions, the coefficient estimates for *CEI score* in Specification 12 are positive and retain their size and statistical significance. Consequently, we can conclude that our results are robust to alternative variable definitions.

Taken as a whole, the additional tests demonstrate that our empirical findings are robust to many different model specifications, econometric estimation techniques, sample restrictions, and variable definitions. Therefore, the results of these tests support the conclusions drawn from our main analysis and provide strong additional evidence to suggest that LGBTQ-friendly employee policies foster corporate innovation.

4. Conclusions

In this paper, we examine the association between LGBTQ-friendly employee policies and corporate innovation. The underlying logic linking LGBTQ friendliness to innovation builds on

the human resource management theories regarding employee satisfaction and diversity management. The HRM literature suggests that intangible investments in employee-friendly practices and organizational diversity management policies generate competitive advantages by advancing employee motivation, engagement, and productivity and the firm's ability to recruit and retain the best talent. Loosely parallel with the HRM arguments, the stakeholder theory has been extensively used as a motivation for rationalizing why engagement in social responsiveness and investments in employee satisfaction may pay off by enhancing the firm's relational and reputational capital with its employees and other stakeholders. Given that LGBTQ friendliness is largely conjoined with inclusive and non-discriminatory employee policies, social responsiveness, and embracing diversity in the workplace, the HRM arguments and the stakeholder theory can be used to predict a positive relationship between LGBTQ-friendly employee policies and corporate innovation.

We empirically test the hypothesis that LGBTQ-friendly employee policies foster corporate innovation using data on large publicly traded U.S. firms over the period 2003–2017. In our empirical analysis, we employ the Corporate Equality Index constructed by the Human Rights Campaign to measure firm-level LGBTQ friendliness and we utilize data on patents granted by the U.S. Patent and Trademark Office (USPTO) to build various measures of innovation intensity and quality. Specifically, the intensity of the firm's innovation output is gauged by the number of patents granted and patent citations as well as patent originality, generality, and internationality are used as proxies for innovation quality. In addition, we also use the number of individual inventors as an additional measure of innovation intensity and firm-level concentration of innovative talent.

Consistent with our research hypothesis, we find strong evidence that LGBTQ-friendly firms are associated with higher innovation intensity and quality. Our results demonstrate that firms with progressive LGBTQ policies produce more patents, have more patent citations, and have higher innovation quality as measured by patent originality, generality, and internationality. Furthermore, we document that LGBTQ-friendly firms have a higher concentration of individual inventors as employees. Regardless of the patent-based innovation measure used, the positive effect of LGBTQ friendliness on innovation output is economically meaningful in addition to being statistically significant. Our estimates suggest that a one standard deviation increase in the firm's CEI is associated with an over 20 percent increase in the patent count and an almost 25 percent increase in the number of patent citations. We utilize instrumental variable regressions and propensity score matching to alleviate endogeneity concerns, and we also conduct a number of additional tests to investigate the robustness of our empirical findings. The additional tests give further support for the hypothesis that LGBTQ-supportive policies have a positive influence on corporate innovation. These tests also suggest that our findings are robust to many different model specifications and variable definitions, alternative econometric estimation techniques, potential self-selection biases as well as many different sample restrictions. Overall, our results are consistent with the view that diversity considerations and socially progressive corporate policies pay off.

References

Aghion, P., Van Reenen, J., & Zingales, L. (2013). Innovation and institutional ownership. *American Economic Review*, 103, 277-304.

Albert, M.B., Avery, D., Narin, F., & McAllister, P. (1991). Direct validation of citation counts as indicators of industrially important patents. *Research Policy*, 20, 251-59.

An, H., Chen, C. R., Wu, Q., & Zhang, T. (2021). Corporate innovation: Do diverse boards help? *Journal of Financial and Quantitative Analysis*, 56, 155-182.

Armstrong, C., Flood, P.C., Guthrie, J.P., Liu, W., MacCurtain, S., & Mkamwa, T. (2010), The impact of diversity and equality management on firm performance: Beyond high performance work systems. *Human Resource Management*, 49, 977-998.

Atanassov, J. (2013). Do hostile takeovers stifle innovation? Evidence from antitakeover legislation and corporate patenting. *Journal of Finance*, 68, 1097-1131.

Balsmeier, B., Fleming, L., & Manso, G. (2017). Independent boards and innovation. *Journal of Financial Economics*, 123(3), 536-557.

Bellemare, M.F., & Wichman, C.J. (2020). Elasticities and the inverse hyperbolic sine transformation. *Oxford Bulletin of Economics and Statistics*, 82(1), 50-61.

Bena, J., Ferreira, M.A., Matos, P., & Pires, P. (2017). Are foreign investors locusts? The long-term effects of foreign institutional ownership. *Journal of Financial Economics*, 126(1), 122-146.

Beneish, M. D., Harvey, C. R., Tseng, A., & Vorst, P. (2022). Unpatented innovation and merger synergies. *Review of Accounting Studies*, 27(2), 706-744.

Biggerstaff, L., Blank, B., & Goldie, B. (2019). Do incentives work? Option-based compensation and corporate innovation. *Journal of Corporate Finance*, 58, 415-430.

Boubakri, N., Chkir, I., Saadi, S., & Zhu, H. (2021). Does national culture affect corporate innovation? international evidence. *Journal of Corporate Finance*, 66, 101847.

Button, S.B. (2001). Organizational efforts to affirm sexual diversity: A cross-level examination. *Journal of Applied Psychology*, 86(1), 17-28.

Campbell, D., & Mau, K. (2021). On "Trade induced technical change: The impact of Chinese imports on innovation, IT and productivity". *The Review of Economic Studies*, 88(5), 2555–2559.

Cascio, W.F. (1991). *Costing Human Resources: The Financial Impact of Behavior in Organizations*. 3rd Edition. PWS-Kent Publishing, Boston.

Chang, S., & Jo, H. (2019). Employee-friendly practices, product market competition and firm value. *Journal of Business Finance and Accounting*, 46, 200-224.

Chang, H.-Y., Liang, W.-L., & Wang, Y. (2019). Do institutional investors still encourage patent-based innovation after the tech bubble period? *Journal of Empirical Finance*, 51, 149-164.

Chemmanur, T.J., Kong, L., Krishnan, K., & Yu, Q. (2019). Top management human capital, inventor mobility, and corporate innovation. *Journal of Financial and Quantitative Analysis*, 54(6), 2383-2422.

Chen, C., Chen, Y., Hsu, P.-H., & Podolski, E.J. (2016). Be nice to your innovators: Employee treatment and corporate innovation performance. *Journal of Corporate Finance*, 39, 78-98.

Chen, J., Leung, W.S., & Evans, K.P. (2016). Are employee-friendly workplaces conducive to innovation? *Journal of Corporate Finance*, 40, 61-79.

Chen, J., Leung, W. S., & Evans, K. P. (2018). Female board representation, corporate innovation and firm performance. *Journal of Empirical Finance*, 48, 236-254.

Coff, R. (1997). Human assets and management dilemmas: Coping with hazards on the road to resource-based theory. *The Academy of Management Review*, 22(2), 374-402.

Cohn, J., Liu, Z., & Wardlaw, M. (2021). Count data in finance. Working paper.

Cumming, D., & Leung, T.Y. (2021). Board diversity and corporate innovation: Regional demographics and industry context. *Corporate Governance: An International Review*, 29(3), 277-296.

Custódio, C., Ferreira, M.A., & Matos, P. (2019). Do general managerial skills spur innovation? *Management Science*, 65(2), 459-954.

Dai, L., Shen, R., & Zhang, B. (2021). Does the media spotlight burn or spur innovation? *Review of Accounting Studies*, 26, 343–390.

Day, N.E., & Greene, P.G. (2008). A case for sexual orientation diversity management in small and large organizations. *Human Resource Management*, 47(3), 637-54.

Day, N.E., & Shoenrade, P. (1997). Staying in the closet versus coming out: Relationships between communication about sexual orientation and work attitudes. *Personnel Psychology*, 50, 147-163.

Day, N.E., & Shoenrade, P. (2000). The relationship among reported disclosure of sexual orientation, anti-discrimination policies, top management support and work attitudes of gay and lesbian employees. *Personnel Review*, 29(3), 346-363.

Darendeli, A., Law, K., & Shen, M. (2022). Green new hiring. *Review of Accounting Studies*, forthcoming.

Ederer, F., & Manso, G. (2013). Is pay for performance detrimental to innovation? *Management Science*, 59(7), 1496-1513.

Edmans, A. (2011) Does the stock market fully value intangibles? Employee satisfaction and equity prices. *Journal of Financial Economics*, 101, 621-640.

Edmans, A. (2012). The link between job satisfaction and firm value, with implications for corporate social responsibility. *Academy of Management Perspectives*, 26(4), 1-19.

Everly, B.A., & Schwarz, J.L. (2015), Predictors of the adoption of LGBT-friendly HR policies. *Human Resource Management*, 54, 367-384.

Faleye, O., & Trahan, E.A. (2011). Labor-friendly corporate practices: Is what is good for the employees good for shareholders? *Journal of Business Ethics*, 101, 1-27.

Fatmy, V., Kihn, J., Sihvonen, J., & Vähämaa, S. (2022). Does lesbian and gay friendliness pay off? A new look at LGBT policies and firm performance. *Accounting and Finance*, 62(1), 213-242.

Fauver, L., McDonald, M.B., & Taboada, A.G. (2018). Does it pay to treat employees well? International evidence on the value of employee-friendly culture. *Journal of Corporate Finance*, 50, 84-108.

Freeman, R.E. (1984). *Strategic Management: A Stakeholder Approach*. Pitman, Boston.

Frank, K. (2000). Impact of a confounding variable on the inference of a regression coefficient. *Sociological Methods and Research*, 29(2), 147-194.

Gao, H., & Zhang, W. (2016). Employment Non-Discrimination Acts and corporate innovation. *Management Science*, 63(9), 2773-3145.

Gelade, G. A., & Ivery, M. (2003). The impact of human resource management and work climate on organizational performance. *Personnel Psychology*, 56(2), 383–404.

Glaeser, S., Michels, J., & Verrecchia, R. E. (2020). Discretionary disclosure and manager horizon: Evidence from patenting. *Review of Accounting Studies*, 25(2), 597-635.

Greene, W.H. (2018). *Econometric Analysis*. 8th Edition, Pearson Education Inc., New York.

Griffin, D., Li, K., & Xu, T. (2021). Board gender diversity and corporate innovation: International evidence. *Journal of Financial and Quantitative Analysis*, 56(1), 123-154.

Griliches, Z., Hall, B. H., & Pakes, A. (1991). R&D, patents, and market value revisited: Is there a second (technological opportunity) factor? *Economics of Innovation and New Technology*, 1(3), 183-201.

Gupta, A., Raman, K., & Shang, C. (2020). Do informal contracts matter for corporate innovation? Evidence from social capital. *Journal of Financial and Quantitative Analysis*, 55(5), 1657-1684.

Hall, B., Jaffe, A., & Trajtenberg, M. (2001). The NBER patent citations data file: Lessons, insights and methodological tools. *NBER Working Paper Series*, No. 8498.

Hasan, I., Hoi, C.K., Wu, Q., & Zhang, H. (2020). Is social capital associated with corporate innovation? Evidence from publicly listed firms in the US. *Journal of Corporate Finance*, 62, 101623.

Hirshleifer, D., Low, A., & Teoh, S.H. (2012). Are overconfident CEOs better innovators? *Journal of Finance*, 67, 1457-1498.

Hsu, P.-H., Tian, X., & Xu, Y. (2014). Financial development and innovation: Cross-country evidence. *Journal of Financial Economics*, 112, 116-135.

Huffman, A.H., Watrous-Rodriguez, K.M., & King, E.B. (2008). Supporting a diverse workforce: What type of support is most meaningful for lesbian and gay employees? *Human Resource Management*, 47(2), 237-253.

Huselid, M.A. (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Academy of Management Journal*, 38, 635-672.

Islam, E., & Zein, J. (2020). Inventor CEOs. *Journal of Financial Economics*, 135(2), 505-527.

Jackson, S.E., Joshi, A., Erhardt, N.L. (2003). Recent research on team and organizational diversity: SWOT analysis and implications. *Journal of Management*, 29(6), 801-830.

Jaffe, A., Trajtenberg, M., & Henderson, R. (1993). Geographic localization of knowledge spillovers as evidenced by patent citations. *The Quarterly Journal of Economics*, 108, 577-598.

Jiraporn, P., Potosky, D., & Lee, S.M. (2019). Corporate governance and lesbian, gay, bisexual, and transgender-supportive human resource policies from corporate social responsibility, resource-based, and agency perspectives. *Human Resource Management*, 58(3), 317-336.

Kochan, T., Bezrukova, K., Ely, R., Jackson, S., Joshi, A., Jehn, K., Leonard, J., Levine, D. and Thomas, D. (2003). The effects of diversity on business performance: Report of the diversity research network. *Human Resource Management*, 42, 3-21.

Koh, P.-S., Reeb, D.M., Sojli, E., Tham, W.W., & Wang, W. (2022). Deleting unreported innovation. *Journal of Financial and Quantitative Analysis*, forthcoming.

Larcker, D. F., & Rusticus, T. O. (2010). On the use of instrumental variables in accounting research. *Journal of Accounting and Economics*, 49(3), 186-205.

Li, F., & Nagar, V. (2013). Diversity and performance. *Management Science*, 59(3), 529-544.

Lu, J., & Wang, W. (2018). Managerial conservatism, board independence and corporate innovation. *Journal of Corporate Finance*, 48, 1-16.

Manso, G. (2011). Motivating innovation. *Journal of Finance*, 66, 1823-1869.

Mao, C.X., & Weathers, J. (2019). Employee treatment and firm innovation. *Journal of Business Finance and Accounting*, 46(7-8), 977-1002.

Metcalf, H., & Rolfe, H. (2011). *Barriers to Employees in Developing Lesbian, Gay, Bisexual and Transgender-Friendly Work Places*. London: National Institute of Economic and Social Research.

Østergaard, C., Timmermans, B., & Kristinsson, K. (2011). Does a different view create something new? The effect of employee diversity on innovation. *Research Policy*, 40(3), 500-509.

Peters, R.H., & Taylor, L.A. (2017). Intangible capital and the investment-q relation. *Journal of Financial Economics*, 123(2), 251-272.

Pichler, S., Blazovich, J.L., Cook, K.A. & Huston, J.M. (2018). Do LGBT-supportive corporate policies enhance firm performance? *Human Resource Management*, 57(1), 263-78.

Ragins, B.R., & Cornwel, J.M. (2001). Pink triangles: Antecedents and consequences of perceived workplace discrimination against gay and lesbian employees. *Journal of Applied Psychology*, 86(6), 1244-1261.

Ragins, B.R., Singh, R., Cornwell, J.M. (2007). Making the fear invisible: Fear and disclosure of sexual orientation at work. *Journal of Applied Psychology*, 92(4), 1103-1118.

Richard, O.C. (2000). Racial diversity, business strategy, and firm performance: A resource-based view. *Academy of Management*, 43(2), 164-177.

Roumpi, D., Giannakis, P., & Delery, J.E. (2020). Adoption of LGBT-friendly practices: The effect of institutional pressures and strategic choice. *Human Resource Management Journal*, 30(4), 604-623.

Schubert, T., & Tavassoli, S. (2020). Product innovation and educational diversity in top and middle management teams. *Academy of Management Journal*, 63(1), 272-294.

Shan, L, Fu, S., & Zheng, L. (2017). Corporate sexual equality and firm performance. *Strategic Management Journal*, 38(9), 1812-26.

Stock, J.H., Wright, J.H., & Yogo, M. (2002). A survey of weak instruments and weak identification in generalized method of moments. *Journal of Business & Economics Statistics*, 20, 518–529.

Tian, X., & Wang, T.Y. (2014). Tolerance for failure and corporate innovation. *Review of Financial Studies*, 27, 211-255.

Trajtenberg, M., Henderson, R., & Jaffe, A. (1997). University versus corporate patents: A window on the basicness of invention. *Economics of Innovation and New Technology*, 5 (1), 19-50.

Trau, R.N.C. (2015). The impact of discriminatory climate perceptions on the composition of intra-organizational developmental networks, psychosocial support, and job and career attitudes of employees with an invisible stigma. *Human Resource Management*, 54(2), 345356.

Ucar, E. (2018). Local creative culture and corporate innovation. *Journal of Business Research*, 91, 60-70.

Waddock, S., & Graves, S. (1997). The corporate social performance-financial performance link. *Strategic Management Journal*, 18(4), 303-319.

Wang, P., & Schwarz, J.L. (2010). Stock price reactions to GLBT nondiscrimination policies. *Human Resource Management*, 49(2), 195-216.

Wettstein, F., & Baur, D. (2016). "Why should we care about marriage equality?": Political advocacy as part of Corporate Responsibility. *Journal of Business Ethics*, 138, 199-213.

Whitener, E.M. (2001). Do “high commitment” human resource practices affect employee commitment? A cross-level analysis using hierarchical linear modeling. *Journal of Management*, 27(5), 515-535.

Wright, P., Ferris, S., Hiller, J., & Kroll, M. (1995). Competitiveness through management of diversity: Effects on stock price valuation. *The Academy of Management Journal*, 38(1), 272-287.

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Table 1. The criteria underlying the Corporate Equality Index (CEI).

Criteria 1	**Equal Employment Opportunity policies**	
	a) Sexual Orientation for all operations	15 points
	b) Gender Identity for all operations	15 points
	c) Contractor/Vendor standards include sexual orientation and gender identity	5 points
Criteria 2	**Employment benefits**	
	a) Equivalent Spousal and Partner benefits	10 points
	b) Other "soft" benefits	10 points
	c) Transgender inclusive health insurance coverage	10 points
Criteria 3	**Organizational LGBT competency**	
	a) Competency training, resources and accountability measures	10 points
	b) Employee group or Diversity council	10 points
Criteria 4	**Public commitment**	
	LGBT-specific efforts (recruitment, philanthropy etc.)	15 points
Criteria 5	**Deductions for large-scale anti-LGBT blemish** 25-point reduction for recent cases of LGBT discrimination	
		100 points

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Table 2. Descriptive statistics.

Variable	Mean	Median	Minimum	Maximum	Std. dev.	No. of obs.
LGBTQ friendliness:						
CEI score	65.84	80.00	-25.00	100.00	34.38	4902
Innovation variables:						
Patents	88.38	1.00	0.00	3791.00	269.89	4902
Citations	778.69	0.00	0.00	63059.00	3528.49	4902
Originality	185.79	2.00	0.00	8253.00	583.21	4902
Generality	61.02	0.00	0.00	6000.00	284.99	4902
Internationality	73.92	2.00	0.00	4238.00	253.09	4902
Inventor count	118.32	1.12	0.00	3472.44	316.12	4902
Control variables:						
Size	26601.25	11268.69	296.31	479921.00	45595.10	4902
Profitability	0.05	0.05	-0.48	0.45	0.07	4902
Cash	0.09	0.07	0.00	0.51	0.08	4902
Leverage	0.65	0.64	0.12	2.11	0.22	4902
Total Q	1.12	0.82	-0.93	12.87	1.17	4902
R&D	0.02	0.00	0.00	0.24	0.03	4902
Capex	0.05	0.04	0.00	0.25	0.04	4902
Employee-friendly	0.06	0.00	0.00	1.00	0.24	4902

The table reports summary statistics for the sample firms. LGBTQ friendliness is measured with the Corporate Equality Index (*CEI score*) constructed by the Human Rights Campaign. The dependent variables are defined as follows: *Patents* is the patent count for a given firm in a given year, *Citations* is the annual total global citation count for the firm's patents registered on the filing year of each citing patent, *Originality* is the number of NBER technological classes spanned by the cited patent, *Generality* is the number of NBER technological classes spanned by the citing patents, *Internationality* is the number of patent assignee countries spanned by the citing patents, and *Inventor count* is the number of individual patent inventors in the firm scaled by the total amount of individual inventors in a given year and multiplied by the average annual total number of inventors. The control variables are defined as follows: *Size* is measured with the firm's total assets, *Profitability* is measured with return on assets which is calculated as the ratio of net income to total assets, *Cash* is cash holdings scaled by total assets, *Leverage* is the ratio of total liabilities to total assets, *Total Q* is the adjusted Tobin's Q that accounts for the firm's intangible capital, *R&D* is research and development expenditures scaled by total assets, *Capex* is capital expenditures scaled by total assets, and *Employee-friendly* is a dummy variable that equals one for firms which are included in the Fortune's list of the 100 Best Companies to Work For in America in a given year.

Table 3. Correlations.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) CEI score														
(2) Patents	0.25													
(3) Citations	0.22	0.93												
(4) Originality	0.22	0.98	0.96											
(5) Generality	0.21	0.86	0.95	0.88										
(6) Internationality	0.22	0.95	0.98	0.97	0.95									
(7) Inventor count	0.27	0.92	0.85	0.89	0.78	0.86								
(8) Size	0.19	0.38	0.33	0.37	0.31	0.35	0.42							
(9) Profitability	0.06	0.15	0.14	0.15	0.13	0.15	0.15	0.02						
(10) Cash	0.12	0.31	0.27	0.29	0.23	0.27	0.28	-0.15	0.12					
(11) Leverage	0.00	-0.16	-0.18	-0.16	-0.18	-0.18	-0.15	0.03	-0.29	-0.18				
(12) Total Q	0.13	0.18	0.15	0.16	0.13	0.15	0.21	0.03	0.46	0.13	-0.26			
(13) R&D	0.15	0.69	0.64	0.67	0.57	0.65	0.69	0.03	0.14	0.36	-0.11	0.19		
(14) Capex	-0.03	-0.12	-0.09	-0.12	-0.08	-0.09	-0.11	0.06	0.03	-0.23	-0.02	0.03	-0.21	
(15) Employee-friendly	0.15	0.13	0.14	0.12	0.16	0.15	0.13	0.00	0.11	0.07	-0.22	0.25	0.12	0.05

The table reports pairwise correlations between the variables used in the main regressions. LGBTQ friendliness is measured with the Corporate Equality Index (*CEI score*) constructed by the Human Rights Campaign. The dependent variables are defined as follows: *Patents* is the patent count for a given firm in a given year, *Citations* is the annual total global citation count for the firm's patents registered on the filing year of each citing patent, *Originality* is the number of NBER technological classes spanned by the cited patent, *Generality* is the number of NBER technological classes that by the citing patents, *Internationality* is the number of patent assignee countries spanned by the citing patents, and *Inventor count* is the number of individual patent inventors in the firm scaled by the total amount of individual inventors in a given year and multiplied by the average annual total number of inventors. The inverse hyperbolic sine transformation is applied to all dependent variables. The control variables are defined as follows: *Size* is the logarithm of total assets, *Profitability* is measured with return on assets which is calculated as the ratio of net income to total assets, *Cash* is cash holdings scaled by total assets, *Leverage* is the ratio of total liabilities to total assets, *Total Q* is the adjusted Tobin's Q that accounts for the firm's intangible capital, *R&D* is research and development expenditures scaled by total assets, *Capex* is capital expenditures scaled by total assets, and *Employee-friendly* is a dummy variable that equals one for firms which are included in the Fortune's list of the 100 Best Companies to Work For in America in a given year. All variables are winsorized at the 1st and 99th percentiles.

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Table 4. Univariate tests.

	Less LGBTQ-friendly	More LGBTQ-friendly	Difference in means
Patents	25.11	175.06	149.95 ***
Citations	148.02	1,510.43	1,362.41 ***
Originality	53.45	357.04	303.59 ***
Generality	11.33	109.68	98.35 ***
Internationality	17.68	136.00	118.32 ***
Inventor count	30.33	244.47	214.14 ***
Size	17,363.02	39,966.51	22,603.49 ***
Profitability	0.05	0.06	0.01 ***
Cash	0.08	0.10	0.02 ***
Leverage	0.65	0.65	0.00
Total Q	0.92	1.29	0.37 ***
R&D	0.01	0.03	0.02 ***
Capex	0.05	0.04	-0.01 ***
Employee-friendly	0.02	0.10	0.08 ***

The table reports the results of two-tailed *t*-tests for the null hypothesis that there is no difference in the means between more LGBTQ-friendly and less LGBTQ-friendly firms. The subsample of more LGBTQ-friendly firms comprises the firms that have a CEI score of 100 and the subsample of less LGBTQ-friendly firms consists of firms with CEI scores of less than 45. The patent-based measures of innovation intensity and quality are defined as follows: *Patents* is the patent count for a given firm in a given year, *Citations* is the annual total global citation count for the firm's patents registered on the filing year of each citing patent, *Originality* is the number of NBER technological classes spanned by the cited patent, *Generality* is the number of NBER technological classes spanned by the citing patents, *Internationality* is the number of patent assignee countries spanned by the citing patents, and *Inventor count* is the number of individual patent inventors in the firm scaled by the total amount of individual inventors in a given year and multiplied by the average annual total number of inventors. The inverse hyperbolic sine transformation is applied to all dependent variables before the *t*-tests. The control variables are defined as follows: *Size* is the logarithm of total assets, *Profitability* is measured with return on assets which is calculated as the ratio of net income to total assets, *Cash* is cash holdings scaled by total assets, *Leverage* is the ratio of total liabilities to total assets, *Total Q* is the adjusted Tobin's Q that accounts for the firm's intangible capital, *R&D* is research and development expenditures scaled by total assets, *Capex* is capital expenditures scaled by total assets, and *Employee-friendly* is a dummy variable that equals one for firms which are included in the Fortune's list of the 100 Best Companies to Work For in America in a given year. All variables are winsorized at the 1st and 99th percentiles. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

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Table 5. Regression results: Patents and patent citations.

	Patents		Citations	
	Raw	Adjusted	Raw	Adjusted
Constant	-1.748 **	-1.996 **	-1.117	-3.249 ***
	(-1.97)	(-2.24)	(-1.03)	(-3.68)
CEI score	0.006 ***	0.006 ***	0.007 ***	0.007 ***
	(4.26)	(4.38)	(3.89)	(4.09)
Size	0.688 ***	0.619 ***	0.788 ***	0.607 ***
	(12.65)	(11.48)	(11.54)	(8.53)
Profitability	0.310	0.670 *	0.007	0.907 **
	(0.80)	(1.90)	(0.01)	(2.07)
Cash	0.111 ***	0.102 ***	0.079 *	0.095 **
	(3.17)	(3.11)	(1.71)	(2.39)
Leverage	-0.389 **	-0.243	-0.591 ***	-0.239
	(-2.48)	(-1.62)	(-3.05)	(-1.32)
Total Q	0.260 **	0.317 ***	0.368 ***	0.463 ***
	(2.40)	(3.19)	(2.65)	(3.48)
R&D	0.210 ***	0.182 ***	0.250 ***	0.159 ***
	(10.27)	(9.10)	(9.64)	(6.41)
Capex	0.026	0.015	0.048	-0.034
	(0.44)	(0.27)	(0.65)	(-0.53)
Employee-friendly	0.270	0.280 *	0.335	0.236
	(1.62)	(1.78)	(1.55)	(1.03)
Industry fixed-effects	Yes	Yes	Yes	Yes
Period fixed-effects	Yes	Yes	Yes	Yes
State fixed-effects	Yes	Yes	Yes	Yes
No. of observations	4902	4902	4902	4902
Adjusted R^2	0.74	0.70	0.70	0.55

The table reports the estimates of four alternative versions of Equation (1). LGBTQ friendliness is measured with the Corporate Equality Index (*CEI score*) constructed by the Human Rights Campaign. The dependent variables are defined as follows: $Patents_{Raw}$ is the patent count for a given firm in a given year, $Patents_{Adj}$ is the patent count adjusted for the average number of patents per firm in the same NBER technological class during the patent filing year, $Citations_{Raw}$ is the annual total global citation count for the firm's patents registered on the filing year of each citing patent, and $Citations_{Adj}$ is the firm's citation count adjusted for the citation count per patent for all firms in the same technological class during the patent filing year. The inverse hyperbolic sine transformation is applied to all dependent variables. The control variables are defined as follows: *Size* is the logarithm of total assets, *Profitability* is measured with return on assets which is calculated as the ratio of net income to total assets, *Cash* is cash holdings scaled by total assets, *Leverage* is the ratio of total liabilities to total assets, *Total Q* is the adjusted Tobin's Q that accounts for the

firm's intangible capital, *R&D* is research and development expenditures scaled by total assets, *Capex* is capital expenditures scaled by total assets, and *Employee-friendly* is a dummy variable that equals one for firms which are included in the Fortune's list of the 100 Best Companies to Work For in America in a given year. All variables are winsorized at the 1st and 99th percentiles. The *t*-statistics (in parentheses) are based on robust standard errors which are adjusted for heteroskedasticity and are clustered by firm. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

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Table 6. Regression results: Patent originality, generality, and internationality.

	Originality		Generality		Internationality	
	Raw	Adjusted	Raw	Adjusted	Raw	Adjusted
Constant	-1.544 *	-2.724 ***	-0.986	-2.366 ***	-1.461 *	-2.554 ***
	(-1.76)	(-3.48)	(-1.39)	(-4.62)	(-1.75)	(-3.61)
CEI score	0.007 ***	0.007 ***	0.005 ***	0.004 ***	0.006 ***	0.006 ***
	(4.03)	(4.43)	(3.57)	(3.40)	(4.13)	(4.10)
Size	0.726 ***	0.662 ***	0.538 ***	0.332 ***	0.630 ***	0.479 ***
	(12.45)	(11.92)	(10.78)	(7.15)	(12.15)	(8.78)
Profitability	0.223	0.703 *	0.006	0.467 *	0.098	0.594 *
	(0.52)	(1.75)	(0.02)	(1.83)	(0.27)	(1.72)
Cash	0.095 **	0.086 **	0.030	0.039 *	0.062 *	0.070 **
	(2.49)	(2.39)	(0.93)	(1.69)	(1.86)	(2.40)
Leverage	-0.454 **	-0.357 **	-0.379 ***	-0.053	-0.434 ***	-0.214
	(-2.57)	(-2.08)	(-2.71)	(-0.51)	(-2.91)	(-1.60)
Total Q	0.262 **	0.293 **	0.278 ***	0.310 ***	0.248 **	0.352 ***
	(2.17)	(2.45)	(2.77)	(3.50)	(2.36)	(3.54)
R&D	0.228 ***	0.207 ***	0.154 ***	0.059 ***	0.193 ***	0.124 ***
	(10.53)	(9.83)	(8.52)	(3.84)	(9.89)	(6.58)
Capex	0.018	0.035	0.033	-0.025	0.041	-0.010
	(0.28)	(0.61)	(0.62)	(-0.64)	(0.73)	(-0.19)
Employee-friendly	0.260	0.227	0.368 *	0.223	0.288	0.194
	(1.47)	(1.26)	(1.94)	(1.34)	(1.64)	(1.08)
Industry fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Period fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
State fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	4902	4902	4902	4902	4902	4902
Adjusted R^2	0.73	0.66	0.64	0.41	0.71	0.56

The table reports the estimates of six alternative versions of Equation (1). LGBTQ friendliness is measured with the Corporate Equality Index (*CEI score*) constructed by the Human Rights Campaign. The dependent variables are defined as follows: $Originality_{Raw}$ is the number of NBER technological classes spanned by the cited patent, $Generality_{Raw}$ is the number of NBER technological classes spanned by the citing patents, and $Internationality_{Raw}$ is the number of patent assignee countries spanned by the citing patents. $Originality_{Adj}$, $Generality_{Adj}$, and $Internationality_{Adj}$ are the corresponding raw measures adjusted for the average annual measures for the technological class of the cited patent. The inverse hyperbolic sine transformation is applied to all dependent variables. The control variables are defined as follows: *Size* is the logarithm of total assets, *Profitability* is measured with return on assets which is calculated as the ratio of net income to total assets, *Cash* is cash holdings scaled by total assets, *Leverage* is the ratio of total liabilities to total assets, *Total Q* is the adjusted Tobin's Q that accounts for the firm's intangible

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capital, *R&D* is research and development expenditures scaled by total assets, *Capex* is capital expenditures scaled by total assets, and *Employee-friendly* is a dummy variable that equals one for firms which are included in the Fortune's list of the 100 Best Companies to Work For in America in a given year. The *t*-statistics (in parentheses) are based on robust standard errors which are adjusted for heteroskedasticity and are clustered by firm. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

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Table 7. Regression results: Inventor count.

	Raw inventor count	Adjusted inventor count
Constant	-2.861 ***	-1.392
	(-2.83)	(-1.37)
CEI score	0.006 ***	0.005 ***
	(3.69)	(3.25)
Size	0.800 ***	0.750 ***
	(13.77)	(12.90)
Profitability	0.231	0.625
	(0.61)	(1.61)
Cash	0.123 ***	0.132 ***
	(3.16)	(3.36)
Leverage	-0.387 **	-0.270
	(-2.35)	(-1.54)
Total Q	0.376 ***	0.223 *
	(3.06)	(1.74)
R&D	0.213 ***	0.213 ***
	(8.70)	(8.73)
Capex	0.002	0.046
	(0.03)	(0.57)
Employee-friendly	0.297 *	0.269 *
	(1.86)	(1.68)
Industry fixed-effects	Yes	Yes
Period fixed-effects	Yes	Yes
State fixed-effects	Yes	Yes
No. of observations	4902	4902
Adjusted R^2	0.73	0.78

The table reports the estimates of two alternative versions of Equation (1). LGBTQ friendliness is measured with the Corporate Equality Index (*CEI score*) constructed by the Human Rights Campaign. The dependent variables are defined as follows: *Inventor count*$_{Raw}$ is the number of individual patent inventors in the firm scaled by the total amount of individual inventors in a given year and multiplied by the average annual total number of inventors and *Inventor count*$_{Adj}$ is the firm's memory adjusted inventor count scaled by the total amount of individual inventors in a given year and multiplied by the average annual total number of inventors. The inverse hyperbolic sine transformation is applied to the dependent variables. The control variables are defined as follows: *Size* is the logarithm of total assets, *Profitability* is measured with return on assets which is calculated as the ratio of net income to total assets, *Cash* is cash holdings scaled by total assets, *Leverage* is the ratio of total liabilities to total assets, *Total Q* is the adjusted Tobin's Q that accounts for the firm's intangible capital, *R&D* is research and development expenditures scaled by

total assets, *Capex* is capital expenditures scaled by total assets, and *Employee-friendly* is a dummy variable that equals one for firms which are included in the Fortune's list of the 100 Best Companies to Work For in America in a given year. All variables are winsorized at the 1st and 99th percentiles. The *t*-statistics (in parentheses) are based on robust standard errors which are adjusted for heteroskedasticity and are clustered by firm. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

Table 8. Instrumental variable regressions.

Panel A. First-stage instrumental variable regression models for *CEI Score* using alternative instruments

Instrument	IV model (1)	IV model (2)	IV model (3)	IV model (4)
ENDA enactment	12.49 ***			3.282 ***
	(5.17)			(3.02)
Title VII charges		-28.77 ***		-5.445 ***
		(-4.91)		(-4.85)
LGBTQ population			35.98 ***	5.413 ***
			(5.43)	(3.54)
Control variables	Yes	Yes	Yes	Yes
Industry fixed-effects	Yes	Yes	Yes	Yes
Period fixed-effects	Yes	Yes	Yes	Yes
No. of observations	4902	4902	4902	4902
Adjusted R^2	0.255	0.251	0.257	0.267
Shea's partial R^2	0.035	0.031	0.038	0.052
Partial F-statistic	26.75	24.12	29.47	13.90

Table 8. *Continued.*

Panel B. Second-stage instrumental variable regressions based on instrumented *CEI Score*

Instrumental variable model	Patents	Citations	Originality	Generality	Internationality	Inventor count
(1) ENDA enactment	0.019 **	0.023 **	0.017 *	0.016 **	0.019 **	0.028 **
	(2.02)	(2.15)	(1.72)	(2.56)	(2.39)	(2.27)
(2) Title VII charges	0.020 **	0.024 **	0.016	0.013 **	0.021 **	0.018
	(1.96)	(2.09)	(1.52)	(2.00)	(2.49)	(1.50)
(3) LGBTQ population	0.020 **	0.026 ***	0.020 **	0.012 **	0.021 ***	0.013
	(2.43)	(2.67)	(2.34)	(2.20)	(2.89)	(1.30)
(4) All instruments	0.020 **	0.025 ***	0.018 **	0.014 ***	0.020 ***	0.019 **
	(2.51)	(2.81)	(2.22)	(2.77)	(3.10)	(1.99)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Period fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	4902	4902	4902	4902	4902	4902
Adjusted R^2	0.643	0.473	0.616	0.326	0.472	0.741
Wald χ^2-statistic	1717.16	981.34	1697.97	577.68	852.38	3194.50

The table reports the estimates of two-stage instrumental variable regressions. LGBTQ friendliness is measured with the Corporate Equality Index (*CEI score*) constructed by the Human Rights Campaign. Three alternative instruments for *CEI score* are used in the first-stage regressions: *ENDA enactment* is a staggered dummy variable that equals one for firms headquartered in the states that have adopted employment non-discrimination acts, *Title VII charges* is the annual total number of employment discrimination charges filed under Title VII relative to the LGBTQ population in the firm's headquarter state, and *LGBTQ population* is the annual percentage of the state population that self-identifies as LGBTQ. The dependent variables in the second-stage regressions are defined as follows: *Patents*

is the patent count for a given firm in a given year, *Citations* is the annual total global citation count for the firm's patents registered on the filing year of each citing patent, *Originality* is the number of NBER technological classes spanned by the cited patent, *Generality* is the number of NBER technological classes spanned by the citing patents, *Internationality* is the number of patent assignee countries spanned by the citing patents, and *Inventor count* is the number of individual patent inventors in the firm scaled by the total amount of individual inventors in a given year and multiplied by the average annual total number of inventors. The inverse hyperbolic sine transformation is applied to the dependent variables. The control variables are defined as follows: *Size* is the logarithm of total assets, *Profitability* is measured with return on assets which is calculated as the ratio of net income to total assets, *Cash* is cash holdings scaled by total assets, *Leverage* is the ratio of total liabilities to total assets, *Total Q* is the adjusted Tobin's Q that accounts for the firm's intangible capital, *R&D* is research and development expenditures scaled by total assets, *Capex* is capital expenditures scaled by total assets, and *Employee-friendly* is a dummy variable that equals one for firms which are included in the Fortune's list of the 100 Best Companies to Work For in America in a given year. All variables are winsorized at the 1st and 99th percentiles. The *t*-statistics (in parentheses) are based on robust standard errors which are adjusted for heteroskedasticity and are clustered by firm. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

Table 9. Propensity score matching.

Variable	Patents	Citations	Originality	Generality	Internationality	Inventor count
Constant	-0.650	-2.793 **	-1.429	-2.332 ***	-2.287 ***	-0.270
	(-0.68)	(-2.47)	(-1.60)	(-3.55)	(-2.75)	(-0.27)
CEI score	0.008 ***	0.010 ***	0.008 ***	0.005 ***	0.007 ***	0.008 ***
	(4.68)	(4.24)	(4.58)	(3.41)	(4.46)	(3.84)
Size	0.689 ***	0.744 ***	0.766 ***	0.428 ***	0.598 ***	0.800 ***
	(9.56)	(7.59)	(10.33)	(6.46)	(8.16)	(10.39)
Profitability	0.570	0.844	0.386	0.390	0.732	-0.463
	(0.80)	(0.88)	(0.49)	(0.69)	(1.05)	(-0.53)
Cash	0.217 ***	0.192 **	0.201 ***	0.083 *	0.148 ***	0.203 ***
	(3.63)	(2.53)	(3.12)	(1.88)	(2.68)	(3.03)
Leverage	-0.508 **	-0.617 **	-0.602 ***	-0.189	-0.470 **	-0.401 *
	(-2.42)	(-2.34)	(-2.59)	(-1.17)	(-2.40)	(-1.66)
Total Q	0.188	0.390 *	0.161	0.362 **	0.291 *	0.219
	(1.21)	(1.81)	(0.95)	(2.35)	(1.86)	(1.22)
R&D	0.156 ***	0.139 ***	0.180 ***	0.055 **	0.110 ***	0.191 ***
	(5.65)	(3.99)	(6.88)	(2.55)	(4.18)	(6.05)
Capex	0.138	0.143	0.170 *	0.093	0.124	0.169
	(1.60)	(1.34)	(1.79)	(1.46)	(1.52)	(1.39)
Employee-friendly	0.230	0.271	0.083	0.179	0.182	0.336
	(1.33)	(1.03)	(0.47)	(0.92)	(0.97)	(1.50)

Table 9. *Continued.*

	Patents	Citations	Originality	Generality	Internationality	Inventor count
Industry fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Period fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	2019	2019	2019	2019	2019	2019
Adjusted R^2	0.69	0.53	0.66	0.39	0.55	0.74
PSM diagnostics:						
Pre-matching pseudo R^2	0.167					
Pre-matching LR chi-square	993.94 ***					
Post-matching pseudo R^2	0.010					
Post-matching LR chi-square	20.00					
Mean difference	0.001					
Max difference	0.049					
Mean percentage difference	0.126					
Max percentage difference	5.272					

The table reports the estimates of five alternative versions of Equation (1) based on a propensity score matched sample of firms. LGBTQ friendliness is measured with the Corporate Equality Index (*CEI score*) constructed by the Human Rights Campaign. We utilize propensity score matching to build a matched-firm sample in which the most LGBTQ-friendly firms with a CEI score of 100 are matched with less LGBTQ-friendly firms which are as similar as possible in terms of the control variables. The dependent variables are defined as follows: *Patents* is the patent count for a given firm in a given year, *Citations* is the annual total global citation count for the firm's patents registered on the filing year of each citing patent, *Originality* is the number of NBER technological classes spanned by the cited patent, *Generality* is the number of NBER technological classes spanned by the citing patents, *Internationality* is the number of patent assignee countries spanned by the citing patents, and *Inventor count* is the number of individual patent assignees in the firm scaled by the total amount of individual inventors in a given year and multiplied by the average annual total number of inventors. The inverse hyperbolic sine transformation is applied to the dependent variables. The control variables are defined as follows: *Size* is the logarithm of total assets, *Profitability* is measured with return on assets which is calculated as the ratio of net income to total assets, *Cash* is cash holdings scaled by total assets, *Leverage* is the ratio of total liabilities to total assets, *Total Q* is the adjusted Tobin's Q that accounts for the firm's intangible capital, *R&D* is research and development expenditures scaled by total assets, *Capex* is capital expenditures scaled by total assets,

and *Employee-friendly* is a dummy variable that equals one for firms which are included in the Fortune's list of the 100 Best Companies to Work For in America in a given year. All variables are winsorized at the 1st and 99th percentiles. The *t*-statistics (in parentheses) are based on robust standard errors which are adjusted for heteroskedasticity and are clustered by firm. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

Table 10. Robustness checks.

Specification	Patents	Citations	Originality	Generality	Internationality	Inv. count
S0. The baseline results from Tables 5-7	0.006 ***	0.007 ***	0.007 ***	0.004 ***	0.006 ***	0.005 ***
S1. Exclude the five most innovative states	0.006 ***	0.008 ***	0.007 ***	0.004 ***	0.006 ***	0.005 ***
S2. Exclude the most liberal states	0.005 ***	0.007 ***	0.006 ***	0.003 ***	0.005 ***	0.005 ***
S3. Exclude most conservative states	0.006 ***	0.008 ***	0.007 ***	0.004 ***	0.006 ***	0.005 ***
S4. Exclude strongest ENDA states	0.006 ***	0.008 ***	0.008 ***	0.004 ***	0.006 ***	0.005 ***
S5. Use industry-adjusted CEI scores	0.005 ***	0.006 ***	0.006 ***	0.003 ***	0.004 ***	0.005 ***
S6. Exclude non-voluntary CEI scores	0.007 ***	0.008 ***	0.008 ***	0.003 ***	0.006 ***	0.005 *
S7. Propensity score match on voluntariness	0.005 ***	0.006 ***	0.006 ***	0.003 ***	0.005 ***	0.006 ***
S8. Exclude non-innovating firms	0.006 ***	0.009 ***	0.007 ***	0.004 ***	0.006 ***	0.006 ***
S9. Use log(1+x) transformation	0.010 ***	0.015 ***	0.006 **	0.009 **	0.010 ***	0.005 ***
S10. Include total ESG score as a control variable	0.004 ***	0.006 ***	0.005 ***	0.003 ***	0.004 ***	0.003 *
S11. Include board diversity as a control variable	0.005 ***	0.006 ***	0.006 ***	0.003 ***	0.005 ***	0.005 ***
S12. Use alternative control variables	0.006 ***	0.007 ***	0.006 ***	0.003 ***	0.005 ***	0.005 ***

The table reports the coefficient estimates for *CEI score* from alternative specifications of Equation (1) with the adjusted measures of innovation intensity and quality used as the dependent variables. *CEI score* is the Corporate Equality Index constructed by the Human Rights Campaign. *Patents* is the adjusted patent count for a given firm and filing year, *Citations* is the adjusted citation count for the firm's patents, *Originality* is the number of NBER technological classes spanned by the cited patent, *Generality* is the adjusted number of technological classes spanned by the citing patents, *Internationality* is the adjusted number of patent assignee countries spanned by the citing patents, and *Inventor count* is the firm's memory adjusted inventor count. The inverse hyperbolic sine transformation is applied to the dependent variables. All variables are winsorized at the 1st and 99th percentiles. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

Religiosity and Corporate Social Responsibility[☆]

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Abstract

This paper examines the hypothesis that religious firms are more socially responsible. By utilizing a novel measure of religiosity that reflects firm-level adherence to Christian values, we find that religiousness is positively associated with the CSR engagement of large U.S. firms after controlling for county-level religiosity and various firm characteristics. Our results indicate that religious firms have higher social and environmental responsibility scores. The documented positive relationship is particularly strong with respect to product responsibility, emissions reduction, and responsible use of resources. Overall, our empirical findings suggest that faith-driven corporate values may encourage socially responsible behavior.

JEL classification: D22, G30, G34, G39, G41, M10, M14, Z12
Keywords: religiosity, religious values, corporate social responsibility

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1. Introduction

Is corporate social responsibility (CSR) influenced by religious values? Religion has a long-reaching influence on the lives, choices, and values of individuals, communities, and organizations around the world, and evidence of its influence on corporate decisions and outcomes has also been documented in recent studies. Most notably, external religious influences from the community and the personal religious beliefs of firms' top executives have been shown to shape organizational behavior, ranging from reducing risk-taking to mitigating earnings management (see e.g., Hilary and Hui, 2009; Du et al., 2015). Given that religiosity is associated with moral values, and being more lawful and risk-averse (e.g., Adhikari and Agrawal, 2016; Boone et al., 2012), it may also steer a firm towards more socially responsible behavior. In this paper, we investigate firm-specific religious signaling as a potential factor influencing its engagement in CSR.

Socially responsible corporate behavior can be explained by a number of theoretical arguments. Standing at odds with Friedman's (1970) classical shareholder doctrine, Freeman's (1984) stakeholder theory argues that the success of a corporation is reliant on its ability to manage the expectations of multiple parties of interest (stakeholders), including its employees, customers, suppliers, the extended community and even the government. Similarly, the legitimacy theory developed by Dowling and Pfeffer (1975) asserts that a firm's actions need to conform to societal norms in order for it to maintain the right to operate in its community. Socially responsible behavior can therefore be considered a necessary step in appeasing a large number of ancillary stakeholders, and in the legitimization of the business's operations. From this perspective, engagement in CSR is likely to be at least partially driven by an adherence to the ethical values upheld by the community.

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Building on these theories, it can be presumed that attitudes towards CSR would be linked to religiosity. Religious individuals have been shown to expect more socially responsible behavior in several geographically distinct environments (see e.g., Brammer et al., 2007; Ramasamy et al., 2010; Schouten et al., 2014, Wu et al., 2016; Felix et al., 2018). Moreover, as recently documented by Harjoto and Rossi (2019) and Chantziaras et al. (2020), firms located in more religious regions and subject to a greater influence of theistic adherents are less risk-taking, and more likely to follow stricter standards of CSR. Considering the firm and its internal culture to be a microcosm of the society at large, internalized religious values and degrees of adherence would be expected to have similar effects on socially responsible behaviors. In this paper, we empirically examine the hypothesis that religiosity influences CSR engagement using a sample of publicly-listed U.S. firms over the period 2012-2020.

An obvious source of concern in studies on the effects of religious influence on corporate outcomes is the difficulty of measuring firm-level religiousness. Religious influence is often proxied by a geographical measure of religiosity, such as the proximity of the corporate headquarters to places of congregation and worship (e.g., Du et al., 2014), or the concentration of religious adherents in the surrounding region (e.g., Cui et al., 2015; Adhikari and Agrawal, 2016; Rossi et al., 2019; Chantziaras et al., 2020). These measures of religiousness are rather indirect proxies, plagued by a multitude of potentially confounding factors, and may not be an accurate representation of a firm's internal culture and adherence to religious values. In other studies, firm religiosity has been determined through the personal religious views of the firm's top executives (Adhikari and Agrawal, 2016; Harjoto and Rossi, 2019; Liao et al., 2019; Chen et al., 2021; Chen et al., 2022). While alleviating the problem of inference, the use of executive characteristics may overestimate the role of managerial beliefs on corporate culture.

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In contrast to the prior literature, this study employs a novel measure of religiosity which directly reflects firm-level adherence to Christian values. Specifically, we utilize the Faith Equality Index (FEI) constructed by an independent religious organization Faith Driven Consumers to measure firm-level religiosity. The FEI provides an assessment of corporate behavior and religious actions from the viewpoint of conservative American Christianity. In this index, individual firms are given points if their public opinions and/or actions support biblically orthodox views related to specific religious issues. Thus, the FEI scores are a direct outcome of religiously motivated corporate behavior. Moreover, unlike the regional measures of religiosity used in the prior studies such as the proportion of adherents within a county, the FEI scores are able to uniquely identify attitudes toward religion at the individual firm level.

We empirically test the hypothesis that religious firms are more socially responsible by estimating fixed-effects panel regressions in which we control for various firm-level characteristics that are known to affect CSR performance as well as for county-level differences in religiousness. In our analysis, the CSR engagement of individual firms is measured with Refinitiv's ESG scores as well as the environmental (E) and social (S) pillar scores. We also use interaction regressions to investigate whether regional differences in religiousness potentially mediate the linkage between firm-level religiosity and engagement in CSR.

Our empirical findings indicate that religiousness is positively associated with corporate social responsibility. Specifically, we document that religious firms have higher overall ESG scores and they also have higher scores for the dimensions of social and environmental responsibility. These results based on our novel firm-level religiosity measure are broadly consistent with the prior studies that use data on regional religiosity or executives' religious adherence (e.g., Schouten et al., 2014; Harjoto and Rossi, 2019; Su, 2019; Chantziaras et al.,

2020). When the social and environmental scores are further decomposed into the seven main categories underlying these scores, we find that the positive association between religiousness and CSR is particularly strong with respect to product responsibility, emissions reduction, and responsible use of resources. Interestingly, firm-level religiosity is unrelated to the subscore that reflects workforce issues such as job satisfaction, equal opportunities, and diversity and inclusivity considerations.

With respect to the mediating effects, our interaction regressions indicate that county-level differences in religiousness do not influence the linkage between firm-level religiosity and CSR performance. Overall, the regressions suggest that regional differences in religiousness do not have any incremental effect on CSR over and above the influence of firm-level religiousness. We conduct a number of additional tests to examine the robustness of our empirical findings to alternative model specifications and variable measurements, and we also use Lewbel's (2012) instrumental variable approach to address potential concerns related to endogeneity and reverse causality. Collectively, these additional tests provide further support for the hypothesis that religious firms are more socially responsible.

Our study contributes to the literature in two main respects. First, we complement the body of literature that has examined the effects of religion on corporate outcomes in general (see e.g., Hope, 2003; Hilary and Hui, 2009; Dyreng et al., 2012; McGuire et al., 2012), and CSR engagement in particular (Wu et al., 2016; Chantziaras et al., 2020). Given that there is only a little previous empirical evidence on whether and how religiosity is associated with corporate social responsibility, our paper is considered to provide important new insights for the discussion. Second, it can be argued that the previous studies do not distinguish between external and internal measures of religiosity, and the religiousness measures used in the literature are potentially

plagued by various confounding factors. To the best of our knowledge, this study is the first one to use a more direct measure of firm-level religiousness that reflects corporate behavior and actions that are considered to support biblically orthodox views. By utilizing this novel measure, we are also able to demonstrate the potential duality of the effects of communal and internalized religiosity on CSR engagement.

The remainder of this paper is organized as follows. Section 2 discusses the relevant literature and presents our research hypotheses. Section 3 describes the data and the variables used in the analysis. Section 4 presents and discusses our empirical findings on the effects of religiosity on corporate social responsibility. Finally, Section 5 concludes the paper.

2. Background and hypothesis development

The major religions of the world all provide guidelines to their adherents concerning ethical behavior, and their followers are familiar to some extent with the principles of fidelity to these guidelines. The influence exerted by religious adherence can be argued to prompt change through two main channels. First, religious beliefs can ostensibly foster a strong sense of personal ethics via conscientiousness and guilt, spurring charity, compassion, and humility (Black and London, 1966; Miller and Hoffman, 1995; Diaz, 2000; Dyreng et al., 2012). It must be noted, however, that the evidence on the effects of religious beliefs on individual ethics and morality is not conclusive, and the relationship can be confounded by personal characteristics such as gender, age, and education. Second, world religions exert significant moral authority and institutional power, allowing them to shape public values, attitudes, policies, and regulations (Tucker and Grim, 2001). In tandem, these two channels increase the likelihood that religious beliefs not only

influence otherwise secular institutions, but also that they align organizational behavior with legitimizing principles.

Not surprisingly, the effects of religion on the behavior of firms and other economic institutions have been studied across many regions encompassing several different theologies. Significant disparities have been found across religions in the attitudes towards CSR that they influence (Brammer, Williams and Zinkin, 2007; Liao et al. 2019; Terzani and Turzo, 2020). For instance, while the proximity to Buddhist monasteries has been shown to reduce the polluting behavior of firms in China (Du et al. 2014; Su 2019; Chen et al. 2020), the reverse has been documented for U.S. firms, citing the "dominion" worldview of Christian theology as a deterrent to environmental ethics (Cui, Jo and Velasquez, 2015). Likewise, the different attitudes in Buddhist samples toward social issues like charity are attributed to the Buddhist principles of detachment (Brammer, Williams and Zinkin, 2007). Furthermore, country-level variations in religiosity and religious affiliations have been shown to influence attitudes toward ESG disclosures (Terzani and Turzo, 2020), and Eastern and Western religious beliefs have demonstrably differing effects on CEO behavior (Liao et al., 2019). Consequently, discussions of religious influence on organizational behavior should be distinctively contextualized.

In Christianity, ethics features as a prominent medium of religious influence in business and managerial decision-making. Christian theology has been cited as the primary source of inspiration for modern-day business ethics (De George, 1987). One of the early examples of socially responsible investment practices can be traced back to the Religious Society of Friends, a Methodist group of Christians led by John Wesley in the 1700s. Members of the group, more commonly known as Quakers, refused to profit at the expense of another's wellbeing, eschewing usury, slave trading, gambling, and industries using toxic materials (Sparkes, 2003). Furthermore,

adherence to Christianity has been shown to affect attitudes toward CSR, specifying the avenues of social responsibility, and these attitudes can be categorized as financial or economic, ethical, and philanthropic or altruistic (Schouten et al., 2014). Roman Catholics have demonstrated a higher priority for social issues, supporting charities and community projects, upholding workplace equality, and reducing human rights abuses (Brammer et al., 2007). Schouten et al. (2014) corroborate these findings using survey data from a sample of Dutch executives, where religious adherence was shown to be positively associated with charity and negatively associated with diversity. Since Christian religiosity was found to have opposing effects on attitudes toward separate facets of CSR, the combined effects on overall CSR behavior were negligible (Schouten et al., 2014).

Additional research on the effects of Christian values supports a positive relationship between religiosity and CSR. Studies by Conroy and Emerson (2004), Ibrahim et al. (2008), Minton et al. (2015), and Arli and Tjiptono (2018) utilize survey data on Christian participants and show that attitudes of consumers, students, and managers toward CSR and ethics are influenced by intrinsic and extrinsic religiosity, and that these influences are moderated by individual characteristics. In institutional settings, religiosity has been associated with higher performance in multiple dimensions of CSR. In a large sample of U.S. firms, Cui et al (2019) demonstrate that Catholic and mainland Protestant religiosity is linked with increased corporate community involvement initiatives.

While religion may not impact all dimensions of CSR equally, it has been shown to play an important role in the overall social responsibility of the firm. Previous studies have documented that county-level religiosity can substitute for the role of corporate governance and anti-takeover defenses in alleviating agency conflict in U.S. firms. (Chintrakarn et al., 2017). More recently,

Chantziaras et al. (2020) studied the effects of religious influence on CSR disclosure in the context of the U.S. banking industry, and documented that banks in religious regions are associated with better CSR-reporting practices. Thus, the empirical evidence generally suggests that religion is a consequential factor in CSR engagement and sustainability. Building on these studies, we hypothesize a positive relationship between firm-level religiosity and corporate social responsibility:

H1: Religiosity is positively associated with corporate social responsibility.

Given that our study employs a novel firm-specific measure of religiosity, it is of interest to also consider the interaction between external and internal religious influences and the potential mediating effects of external religiousness on the linkage between firm-level religiosity and engagement in CSR. The culture and demographic characteristics of a firm's geographic location have been shown to not only impact its internal culture and decision-making (see e.g., Palazzo, 2002; Christie et al., 2003; Matten et al., 2004; Adams, Licht and Sagiv, 2011; Ucar, 2018; Chen et al., 2021), but also to play a mediating role on established causal and non-causal effects (e.g., Guiso et al., 2006; Shi and Veenstra, 2020; Fatmy et al., 2022). Consequently, while external regional influences such as county-level religiosity can be presumed to affect both firm-level religiosity and CSR engagement, it can also influence the way in which religiosity affects social responsibility, as recently documented by Chen et al. (2021). Consequently, we posit the following hypothesis:

H2: The relationship between firm-level religiosity and corporate social responsibility is mediated by regional differences in religiousness.

3. Data and variables

3.1. Sample

The sample used in our analysis comprises 109 large, publicly-listed U.S. firms over the period 2012-2020. The data are obtained from four different sources: i) the Faith Equality Index used as the measure of firm-level religiosity is provided by Faith Driven Consumers, ii) the firms' ESG scores as well as the environmental and social scores are obtained from Refinitiv, iii) county-level data on religious adherents for U.S. counties are collected from the 2010 Religious Congregations and Membership Study, and iv) data on the firms' financial variables and governance attributes are obtained from Thomson Reuters. After excluding firms and firm-year observations with insufficient data on some of the variables, we are left with an unbalanced panel of 797 firm-year observations.

3.2. Firm-level and county-level religiosity

We use the Faith Equality Index (FEI) constructed by the Faith Driven Consumers to measure firm-level religiosity. The Faith Driven Consumers (FDC) is an independent conservative organization that claims to assist over 41 million Americans in making faith-driven choices at work and as consumers in the marketplace. The organization does not acknowledge affiliation to any specific denomination of the Christianity, but instead simply proclaims to support a "biblically orthodox" worldview. The FEI provides an assessment of corporate behavior and religious actions from the viewpoint of conservative American Christianity. Based on the criteria outlined in Table 1, firms that would be considered well-known brands in the U.S. are

assigned a score between 0 and 100 by the FDC, with higher values of the index corresponding to stronger firm-level adherence to Christian values and a biblical worldview[1]. All firms are assessed once in 2012, at the start of the sample period. As can be seen from Table 1, the criteria used in the construction of the FEI range from the recognition of religious identity and expression as an overall part of corporate diversity to biblically compatible views on the subjects of abortion, stem-cell research, euthanasia, sexuality, gender, marriage, and family.

(Insert Table 1 about here)

In addition to the FEI, we use data on regional religiosity as a comparison to firm-level religiosity. Specifically, we aim to examine whether firm-level religiosity has an incremental effect on CSR engagement over and above the impact of regional religiousness, and furthermore, whether regional differences in religiousness mediate the linkage between firm-level religiosity and CSR. Following the prior literature (e.g., Callen and Fang, 2015; Jiang et al., 2018; Chantziaras et al., 2020), we use county-by-county data on the number of religious adherents in the population obtained from the 2010 Religious Congregations and Membership Study conducted by the Association of Statisticians of American Religious Bodies. We calculate county-level religiosity (*County religiosity*) as the mean-centered ratio of the number of religious adherents to the total population in the county of the firm's headquarters.

[1] Since the FDC focuses on well-known brands in the U.S. regardless of their adherence to Christian values, there is sufficient dispersion in the FEI. Moreover, the FEI scores are constructed independently by the FDC without any self-reported information, which should alleviate potential self-selection biases in our sample.

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3.3. Corporate social responsibility

The dependent variable in our analysis is corporate social responsibility. We measure the CSR engagement of individual firms with the Environmental, Social and Governance (ESG) scores constructed by Refinitiv. These ESG scores range from 0 to 100 with higher scores reflecting stronger engagement in CSR. According to Refinitiv, the ESG scores are based on publicly reported and verifiable data on 450 firm-level metrics related to CSR activities and involvement. In addition to the overall ESG scores, we also use the environmental (E) and social (S) pillar scores as the dependent variables in our main regressions.

Furthermore, we also decompose the social and environmental scores into the following seven main categories underlying these scores: i) workforce issues, ii) human rights, iii) community involvement, iv) product responsibility, v) environmental innovations, vi) emissions reduction, and vii) resource use. The first four subcategories are the underlying components of the Refinitiv social score and the latter three subcategories are the components of the environmental score.

The workforce issues subcategory covers the themes related to job satisfaction, diversity, inclusivity, career development and training, working conditions, and work safety and health. The human rights subcategory mainly reflects human rights issues in developing nations. Product responsibility represents themes concerning responsible marketing, product quality, and data privacy. The community involvement subcategory reflects the firm's commitment to respecting business ethics, being a good corporate citizen, and protecting public health. Environmental innovation measures the firm's product innovation, green revenues, research and development efforts, and capital expenditures related to sustainable development. The emissions reduction

subcategory measures the amount of industrial emissions and waste and the firm's commitment towards reducing environmental emissions in its production and operational processes. Finally, the resource use subcategory reflects the use of water, energy, and materials, accounting for sustainable packaging and the environmental supply chain of the firm.

3.4. Control variables

We control for a number of firm-specific factors that are known to affect CSR engagement. Specifically, the prior literature indicates that attributes such as firm size, profitability, and market-to-book value influence CSR scores (e.g., Edmans, 2012; Hong, Kubik and Scheinkman, 2012; McGuire et al., 2012; Ali et al., 2017; Ucar and Staer, 2020). The control variables used in our regressions are defined as follows: i) *Size* is the natural logarithm of the firm's total assets, ii) *Profitability* is measured with return on assets calculated as the ratio of net income to total assets, iii) *Leverage* is the ratio of total debt to total assets, iv) *Market-to-book* the ratio of the firm's market capitalization to the book value of equity, v) *Growth* is the annual percentage change in sales, vi) *Board size* is the number of members on the board of directors, vii) *Board diversity* is defined as the percentage of female members on the board of directors, and viii) *Board independence* is the percentage of independent board members.

3.5. Descriptive statistics and correlations

The descriptive statistics for our sample of 109 publicly-listed U.S. firms are reported in Table 2. The descriptives are reported without taking logarithms of the variables. The mean and

the median FEI scores for the sample firms are 31.42 and 31, respectively. Thus, given that the FEI score can range from 0 to 100, most of the sample firms cannot be considered very religious or faith-driven in terms of the criteria underlying the FEI. The mean of county religiosity is 56 percent with a standard deviation of 11 and the 25th to 75th percentile range from 46 percent to 66 percent. The firms assessed by the Faith Driven Consumers have a mean ESG score of 63.10, while the mean environmental and social pillar scores are 60.11 and 65.91, respectively. It is worth noting that our sample is constrained to firms that have FEI scores available, and these firms seem to have slightly higher ESG scores in comparison to the U.S. samples used in recent previous studies (e.g., Demers et al., 2021; Zanin, 2021). As can be seen from Table 2, the firms included in our sample are large with mean (median) total assets of about $107 billion ($34 billion), and have a mean return on assets of about 5 percent. On average, the board of directors of the sample firms consist of 10 members and only about 15 percent of the board members are women.

(Insert Table 2 about here)

Table 3 reports the pairwise correlation coefficients between the FEI score, county-level religiosity, our three main dependent variables (*ESG score*, *Environmental score*, and *Social score*), and all control variables used in the regressions. As can be seen from Table 3, firm-level religiosity is significantly positively correlated with county-level religiosity, while being largely uncorrelated with the three different measures of CSR engagement. County-level religiosity, in contrast, is positively correlated with the social responsibility score. The FEI score is significantly

negatively correlated with firm size, board size, and board diversity, suggesting that larger firms that have larger boards with more female directors tend to be less religious.

Not surprisingly, Table 3 shows that the three measures of CSR engagement are strongly positively correlated with each other. Consistent with the previous studies, most of our control variables are statistically significantly correlated with the measures of CSR engagement. The correlation coefficients between the CSR measures and the control variables are largest in magnitude for firm size and the three different board characteristics. These correlations indicate that larger firms that have large boards with more independent directors and more female directors are associated with better CSR performance.

(Insert Table 3 about here)

4. Empirical analysis

4.1. The empirical setup

We empirically test the hypothesis that religious firms are more socially responsible by estimating fixed-effects panel regressions. Specifically, the first research hypothesis is tested with the following regression specification:

$$CSR_{i,t} = \alpha + \beta_1 \, Religiosity_i + \beta_{2\text{-}9} \, (Firm\text{-}specific \; controls)_{i,t} + \omega \, (Industry \; fixed\text{-}effects)_i + \varphi \, (Year \; fixed\text{-}effects)_t + \varepsilon_{i,t} \quad (1)$$

where the dependent variable $CSR_{i,t}$ is the natural logarithm of one of the ten different measures of CSR engagement. The main independent variable of interest in Equation (1) is *Religiosity*

which is either the natural logarithm of the *FEI score* or *County religiosity*, which both are time-invariant variables. The set of firm-specific control variables includes *Size*, *Profitability*, *Leverage*, *Market-to-book*, *Growth*, *Board size*, *Board diversity*, and *Board independence*. In addition, Equation (1) includes industry fixed-effects and year fixed-effects to control for omitted variables and any systematic variation in CSR performance across different industries and over time. The standard errors for the coefficients are adjusted for heteroscedasticity and clustered by firm.

We utilize interaction regressions to investigate whether regional differences in religiousness mediate the linkage between firm-level religiosity and CSR engagement. The second research hypothesis is tested by estimating alternative versions of the following fixed-effects specification:

$$\begin{aligned} CSR_{i,t} = {} & \alpha + \beta_1 \, FEI\ score_i + \beta_2 \, County\ religiosity_i \\ & + \beta_3 \, FEI\ score \times County\ religiosity_i + \beta_{4\text{-}11}(Firm\text{-}specific\ controls)_{i,t} \\ & + \omega(Industry\ fixed\text{-}effects)_i + \varphi(Year\ fixed\text{-}effects)_t + \varepsilon_{i,t} \end{aligned} \tag{2}$$

where the dependent variable $CSR_{i,t}$ is the natural logarithm of one of the ten different measures of CSR engagement, *FEI score* is the mean-centered value of the firm's FEI score, and *County religiosity* is the mean-centered ratio of the number of religious adherents to the total population in the county of the firm's headquarters. Equation (2) includes the same set of control variables as Equation (1) as well as industry and year fixed-effects. Moreover, similar to Equation (1), we use robust standard errors that are adjusted for heteroscedasticity and clustered by firm throughout the estimations.

4.2. Main results

The estimation results of alternative versions of Equation (1) with *ESG score*, *Environmental score*, and *Social score* as the dependent variables are presented in Table 4. Throughout the different specifications of Equation (1), the *F*-statistics are statistically significant at the 1 percent level, and the adjusted R^2s range from 41 percent to 57 percent. Column I for each dependent variable tabulates the results of the regressions in which *ESG Score*, *Environmental score*, and *Social score* are regressed on *County religiosity* as the religiosity measure. As can be seen from Table 4, the coefficient estimate for *County religiosity* is positive and highly significant in the regression with *Social score* as the dependent variable, while being insignificant in the other two regressions. The magnitude of the coefficient estimate suggests that a one standard deviation increase in the percentage of religious adherents in the county of the firm's headquarters is associated with a 9.2 percent higher score for social responsibility. This finding corroborates the expectations based on prior studies (e.g., Schouten et al., 2014; Cui et al., 2019; Chantziaras et al., 2020). Specifically, for U.S. firms, social concerns are expected to have greater significance for firms located in more religious regions, while environmental concerns are not as likely to be influenced by religiosity (e.g., Brammer et al., 2007; Cui, Jo and Velasquez, 2015).

(Insert Table 4 about here)

The regression results with firm-level religiosity, *FEI score*, as the test variable of interest are reported in Column II for each of the three dependent variables. Consistent with hypothesis 1, the coefficient estimates for *FEI score* are positive and statistically significant at the 5 percent level in all three regression specifications. The estimates in Table 4 suggest that a one standard

deviation increase in *FEI score* is associated with about 2.2 percent increase in the firm's *ESG score*. This positive relationship is consistent with the findings of Chantziaras et al. (2020) and Harjoto and Rossi (2019) based on different religiosity measures. In terms of economic magnitude, firm-level religiosity appears to have a stronger effect on environmental responsibility than on social responsibility. The estimates suggest that a one standard deviation increase in *FEI score* is associated with about 5 percent increase in the firm's *Environmental score* and about 1.7 percent increase in *Social score*. Overall, the regression results in Table 4 indicate that firm-level religiosity captures a dimension of religiosity that is not captured by the county-level measure.

Regarding the control variables, it can be noted from Columns I and II in Table 4 that the signs, magnitudes, and significance levels of the coefficient estimates for the control variables are consistent across the regressions. Specifically, similar to previous studies (e.g., Udayasankar, 2008; Chih et al., 2010; Chang et al., 2017; Olthuis and Oever, 2020), *Firm size*, *Board size*, *Board diversity*, and *Board independence* are significantly positively associated with CSR engagement. Additionally, *Growth* is negatively associated with different CSR measures, and *Profitability* is significantly positively associated with CSR engagement when *FEI score* is used as the test variable of interest.

To test hypothesis 2, we estimate interaction regressions in which *FEI score* is interacted with *County religiosity*. The results of these interaction specifications are tabulated in Column III for each of the three dependent variables. The adjusted R^2s of the interaction regressions range from 44 percent to 59 percent, and the *F*-statistics are significant at the 1 percent level in every model. As can be seen from Table 4, the coefficient estimates for *FEI score* are very similar to those reported in Column II both in terms of magnitude and statistical significance, and thereby suggest that firm-level religiosity is positively associated with CSR performance. However, the

estimated coefficients for *County religiosity* as well as the interaction variable *FEI score* × *County religiosity* are statistically insignificant throughout the different model specifications. This suggests that regional differences in religiousness do not have any incremental effect on CSR engagement over and above the influence of firm-level religiousness. Furthermore, the insignificant coefficients for the interaction term indicate that county-level differences in religiousness do not influence the linkage between firm-level religiosity and social responsibility. Thus, the regression results do not provide support for hypothesis 2.

4.3. Subcategories of the social and environmental scores

As the next step of our analysis, we decompose the social and environmental scores into the following seven subcategories underlying these scores: i) workforce issues, ii) human rights, iii) community involvement, iv) product responsibility, v) environmental innovations, vi) emissions reduction, and vii) resource use. We then use the subcategory scores as the dependent variables in the regressions.

Panel A of Table 5 reports the estimates of different versions of Equation (1). The adjusted R^2s of the interaction regressions range from 28 percent to 43 percent. As can be noted from Panel A, the estimated coefficients for *FEI score* are positive and statistically significant in the regressions with *Human rights*, *Community involvement*, *Product responsibility*, *Emissions reduction*, and *Resource use* as the dependent variables. Thus, with respect to the subcategories underlying the social responsibility score, our estimates suggest that religious firms are likely to respect business ethics and human rights, display a greater commitment to being good corporate citizens and protecting public health, uphold product quality, and to be engaged in responsible

marketing. Moreover, within environmental responsibility, religious firms are associated with a greater commitment towards reducing environmental emissions and are more responsible in terms of the use of water, energy, and materials. The estimated coefficients for the control variables indicate that different dimensions of social and environmental responsibility are generally positively associated with *Size*, *Profitability*, *Board size*, *Board diversity*, and *Board independence*.

(Insert Table 5 about here)

The estimates of the interaction regressions corresponding to Equation (2) are presented in Panel B of Table 5. The estimates of these regressions are broadly consistent with the estimates in Panel A and also broadly consistent with our main regressions in Table 4. The coefficients for *FEI score* are positive and significant at the 5 percent level in the regressions with *Product responsibility*, *Emissions reduction*, and *Resource use* as the dependent variables. The coefficient estimates for *County religiosity* are insignificant throughout the alternative model specifications, with the only exception being the positive coefficient in the *Product responsibility* regression. In a similar manner, the coefficient for the interaction variable *FEI score* × *County religiosity* is statistically significant only in the regression with *Product responsibility* as the dependent variable. The negative coefficient for the interaction term suggests that county-level religiosity moderates the positive relationship between firm-level religiosity and the specific dimension of social responsibility that reflects themes related to product quality and responsible marketing.

4.4. Instrumental variable regressions

In order to mitigate concerns related to endogeneity and reverse causality, we next estimate instrumental variable (IV) regressions in which *ESG score*, *Environmental score*, and *Social score* are used as the dependent variables. We acknowledge that it is inherently difficult to find an instrumental variable for firm-level religiosity that would be unrelated to CSR performance and would satisfy the exclusion restriction. We circumvent this problem of weak or nonexistent instruments by adopting the IV technique proposed by Lewbel (2012) which has been extensively used in recent economics and finance literature (see e.g., Emran and Hou, 2013; Cheng and Smyth, 2015; Gong et al., 2018; Mavis et al., 2020; Chen et al, 2021; Hasan et al., 2022). Formally, Lewbel's (2012) internal instrumental variables, based on a heteroscedastic covariance restriction, are constructed using the product of the mean-centered forms of existing exogenous variables and the residuals from the first-stage regression of the instrumented independent variable.

(Insert Table 6 about here)

The estimates of the two-stage IV regressions are reported in Table 6. Overall, the IV regressions indicate that religious firms are more socially responsible even after controlling for potential endogeneity. Specifically, the coefficient estimates for the instrumented *FEI score* are positive and statistically highly significant, and are also comparable in magnitude to those reported in Table 4. The coefficients suggest that a one standard deviation increase in firm-level religiousness is associated with a 2.6 percent increase in *ESG score*, a 5.0 percent increase in *Environmental score*, and a 3.1 percent increase in *Social score*. In general, the estimates of the

IV regressions that utilize heteroscedasticity-based augmentations of external instruments provide support for the argument that religiosity has a positive impact on corporate social responsibility.

Panel B of Table 6 reports diagnostic statistics for the first-stage regressions in order to validate the IV estimates based on Lewbel's (2012) approach. The Kleibergen-Paap rk Wald F statistic equals 184.78 which exceeds the critical value suggested by Stock and Yogo (2005) with a comfortable margin, thereby rejecting the null hypothesis of weak instruments. Furthermore, the Kleibergen-Paap rk LM statistic of 68.36 is statistically significant at the 1 percent level, and thus rejects the null of underidentification. Finally, the Hansen J statistic of 5.76 suggests that the model does not suffer from overidentification problem. Overall, the diagnostics in Panel B demonstrate the validity of the set of Lewbel's (2012) internal instruments used in the two-stage IV regressions.

4.5. Robustness tests

We conduct a number of additional tests to examine the robustness of our empirical findings. First, the relation between firm-level religiosity and CSR is further scrutinized within the quartiles of the FEI in order to determine whether the documented positive association differs across different levels of religiosity. For this purpose, we construct two dummy variables based on the bottom and top quartiles of *FEI score* to identify the least religious and the most religious firms. We then re-estimate different versions of Equation (1) in which these dummy variables are used as the firm-level religiosity measures (not tabulated). Interestingly, the estimated coefficients for the least religious dummy variable are negative and significant, while the coefficients for the most religious dummy are insignificant. The estimates are broadly similar regardless of the CSR

measure used as the dependent variable. Thus, these additional regressions suggest that the positive association between firm-level religiosity and social responsibility can be at least to some extent attributed to the lower CSR engagement of the least religious firms.

Second, we address potential concerns related to the distributional properties of the FEI. While the FEI may theoretically range from 0 to 100, *FEI score* for our sample firms takes values from a minimum of 11 to a maximum of 60. As an alternative continuous measure of firm-level religiosity, we construct a rank-ordered measure by assigning the firm with the lowest *FEI score* to a value of 1 and the firm with the highest *FEI score* to a value of 109. We then re-estimate the regressions with the rank-ordered religiosity measure as the test variable of interest. The results of these regressions (not tabulated) are consistent with our main analysis; the coefficient estimates for the religiosity measure are positive and statistically significant in the regressions with *ESG score*, *Environmental score*, and *Social score* as the dependent variables.

Third, state-level corruption has been recently documented to play a mediating role in the relation between religiosity and CSR-related disclosure. In particular, the findings of Ucar and Staer (2020) indicate that local corruption is negatively associated with CSR scores, while Chantziaras et al. (2020) document that corruption weakens the positive effects of religiosity on CSR reporting within U.S. banks. Following their approach, we construct a state-level corruption variable as the number of convictions of corrupt public officials divided by the state population. This corruption measure is first included as an additional control variable in the regressions, and subsequently, we also estimate additional regressions in which firm-level religiosity is interacted with state-level corruption. The estimates of these regressions (not tabulated) are consistent with our main analysis. Once again, the coefficients for *FEI score* are positive and statistically significant throughout the alternative regressions. Furthermore, the estimates suggest that the

positive linkage between firm-level religiosity and CSR is not influenced by state-level differences in corruption.

Finally, although we have controlled for county-level religiosity in our main analysis and for state-level corruption in our additional tests, we acknowledge that our empirical findings may be confounded by some omitted regional factors. In order to ascertain that our results are not influenced by omitted, potentially unobservable regional factors, we estimate augmented versions of Equation (1) in which either state fixed-effects or county fixed-effects are included. The estimates of these regressions are very similar to the estimates reported in Tables 4 and 5. Most importantly, the coefficient estimates for *FEI score* remain positive and statistically significant even after including state or county fixed-effects in the regressions.

Collectively, the additional tests demonstrate that our empirical findings are robust to many alternative model specifications and variable definitions, and thereby these tests provide further support for the hypothesis that religious firms are more socially responsible.

5. Conclusions

This paper contributes to the literature by examining the association between firm-level religiosity and corporate social responsibility. Using a novel measure of religiosity that reflects firm-level adherence to Christian values and a biblical worldview, we investigate whether religious values steer firms towards more socially responsible behavior. The firm-level religiosity measure in this study, Faith Equality Index, provides an assessment of corporate behavior and actions relative to Christian values and religious views in American society. Furthermore, given that regional differences in religious adherence may influence firm-level policies and values as

well as their engagement in CSR, we also examine whether the link between firm-level religiosity and CSR is influenced by county-level differences in religiosity.

In our empirical analysis, we use data on large, publicly-listed U.S. firms over the period 2012-2020 to examine the association between firm-level religiosity and CSR. We employ the ESG scores as well as the environmental responsibility (E) and social responsibility (S) scores constructed by Refinitiv to measure firms' engagement in CSR. In addition, we also decompose the environmental and social responsibility scores into the seven subcategories underlying these scores. We test the hypothesis that religious firms are more socially responsible by estimating fixed-effects panel regressions in which we control for various firm-level attributes that are known to affect CSR performance as well as for county-by-county differences in religiosity. The potential mediating effect of regional religiosity on the linkage between firm-level religiosity and CSR engagement is examined with interaction regressions. We also use Lewbel's (2012) instrumental variable approach to facilitate causal inferences and address concerns related to endogeneity and reverse causality.

Our empirical findings indicate that firm-level religiosity is positively associated with corporate social responsibility. Specifically, we document that religious firms have higher ESG scores and they also have higher scores for the dimensions of social and environmental responsibility. When the social and environmental scores are further decomposed into the seven main categories underlying these scores, we find that the positive association between religiousness and CSR is particularly strong with respect to product responsibility, emissions reduction, and responsible use of resources. Interestingly, firm-level religiosity is unrelated to the social responsibility subcategory score that reflects workforce issues such as job satisfaction, equal opportunities, and diversity and inclusivity considerations. With respect to the mediating

effects, our empirical findings indicate that county-by-county differences in religiousness do not influence the linkage between firm-level religiosity and CSR performance. Overall, the results suggest that regional differences in religiousness do not have any incremental effect on CSR engagement over and above the influence of firm-level religiosity.

References

Adams, R. B., Licht, A. N., & Sagiv, L. (2011). Shareholders and stakeholders: How do directors decide? *Strategic Management Journal*, 32(12), 1331-1355.

Adhikari, B. K. & Agrawal, A. (2016). Does local religiosity matter for bank risk-taking? *Journal of Corporate Finance*, 38, 272-293.

Ali, W., Frynas, J. G., & Mahmood, Z. (2017). Determinants of corporate social responsibility (CSR) disclosure in developed and developing countries: A literature review. *Corporate Social Responsibility and Environmental Management*, 24(4), 273-294.

Arli, D. I. & Tjiptono, F. (2018). Consumer ethics, religiosity and consumer social responsibility: Are they related? *Social Responsibility Journal*, 14(2).

Black, M. S. & London, P. (1966). The dimensions of guilt, religion and personal ethics. *The Journal of Social Psychology*, 69(1), 39-54.

Boone, J. P., Khurana, I. K., & Raman, K. K. (2013). Religiosity and tax avoidance. *Journal of the American Taxation Association*, 35(1), 53-84.

Brammer, S. Williams, G., & Zinkin, J. (2007). Religion and attitudes to corporate social responsibility in a large cross-country sample. *Journal of Business Ethics*, 71, 229-243.

Callen, J.L. and Fang, X. (2015). Religion and stock price crash risk. *Journal of Financial and Quantitative Analysis*, 50(1-2), 169-195.

Chang, Y. K., Oh, W. Y., Park, J. H., & Jang, M. G. (2017). Exploring the relationship between board characteristics and CSR: Empirical evidence from Korea. *Journal of Business Ethics*, 140(2), 225-242.

Chantziaras, A., Dedoulis, E., Grougiou, V., & Leventis S. (2020). The impact of religiosity and corruption on CSR reporting: The case of US banks. *Journal of Business Research*, 109, 362-374.

Chen, K., Guo, W., Kang, Y., & Wan, Q. (2020). Does religion improve corporate environmental responsibility? Evidence from China. *Corporate Social Responsibility and Environmental Management*, 28(2), 808-818.

Chen, S., Chen, Y., & Jebran, K. (2021). Trust and corporate social responsibility: From expected utility and social normative perspective. *Journal of Business Research*, 134, 518-530.

Chen, Y., Chu, X., Park, J. C., & Soileau, J. S. (2022). CEO religious university affiliation and financial reporting quality. *Accounting & Finance*, 62(1), 417-468.

Chen, Y., Fan, Q., Yang, X., & Zolotoy, L. (2021). CEO early-life disaster experience and stock price crash risk. *Journal of Corporate Finance*, 68, 101928.

Cheng, Z. & Smyth, R. (2015). Sex and happiness. *Journal of Economic Behavior & Organization*, 112, 26-32.

Chih, H. L., Chih, H. H., & Chen, T. Y. (2010). On the determinants of corporate social responsibility: International evidence on the financial industry. *Journal of Business Ethics*, 93(1), 115-135.

Chintrakarn, P., Jiraporn, P., Tong, S., & Chatjuthamard, P. (2017). Exploring the effects of religious piety on corporate governance: Evidence from anti-takeover defenses and historical religious identification. *Journal of Business Ethics*, 141, 469-476.

Christie, P., Kwon, I., Stoeberl, P., & Baumhart, R. (2003). A cross-cultural comparison of ethical attitudes of business managers: India, Korea and the United States. *Journal of Business Ethics.* 46, 263-287.

Conroy, S. J. & Emerson T. L. N. (2004). Business ethics and religion: Religiosity as a predictor of ethical awareness among students. *Journal of Business Ethics*, 50, 383-396.

Cui, J., Jo, H., & Velasquez, M. G. (2019). Christian religiosity and corporate community involvement. *Business Ethics Quarterly*, 29(1), 85-125.

Cui, J., Jo, H., & Velasquez, M. G. (2015). The influence of Christian religiosity on managerial decisions concerning the environment. *Journal of Business Ethics*, 132, 203-231.

De George, R. T. (1987). The status of business ethics: Past and future. *Journal of Business Ethics*, 6, 201-211.

Demers, E., Hendrikse, J., Joos, P., & Lev, B. (2021). ESG did not immunize stocks during the COVID-19 crisis, but investments in intangible assets did. *Journal of Business Finance & Accounting*, 48(3-4), 433-462.

Diaz, J. D. (2000). Religion and gambling in sin-city: A statistical analysis of the relationship between religion and gambling patterns in Las Vegas residents. *The Social Science Journal*, 37(3), 453-458.

Dowling, J., & Pfeffer, J. (1975). Organizational legitimacy: Social values and organizational behavior. *Pacific sociological review*, 18(1), 122-136.

Du, X., Jian, W., Lai, S., Du, Y., & Pei, H. (2015). Does religion mitigate earnings management? Evidence from China. *Journal of Business Ethics*, 131, 699-749.

Du, X., Jian, W., Zeng, Q, & Du, Y. (2014). Corporate environmental responsibility in polluting industries: Does religion matter? *Journal of Business Ethics*, 124, 485-507.

Dyreng, S. D., Mayhew, W. J., & Williams, C. D. (2012). Religious social norms and corporate financial reporting. *Journal of Business Finance and Accounting*, 39, 845-875.

Edmans, A. (2012). The link between job satisfaction and firm value, with implications for corporate social responsibility. *Academy of Management Perspectives*, 26(4), 1-19.

Emran, M. S. & Hou, Z. (2013). Access to markets and rural poverty: Evidence from household consumption in China. *The Review of Economics and Statistics*, 95(2), 682-697.

Fatmy, V., Kihn, J., Sihvonen, J., & Vähämaa, S. (2022). Does lesbian and gay friendliness pay off? A new look at LGBT policies and firm performance. *Accounting and Finance*, 62(1), 213-242.

Felix, R., Hinsch, C., Rauschnabel, P. A., & Schlegelmilch, B. B. (2018). Religiousness and environmental concern: A multilevel and multi-country analysis of the role of life satisfaction and indulgence. *Journal of Business Research*, 91, 304-312.

Freeman, R. E (1984). *Strategic Management: A Stakeholder Approach*, Pitman, Boston, MA.

Gong, G., Xu, S., & Gong, X. (2018). On the value of Corporate Social Responsibility disclosure: An empirical investigation of corporate bond issues in China. *Journal of Business Ethics*, 150, 227–258.

Guiso, L., Sapienza, P., & Zingales, L. (2006). Does culture affect economic outcomes? *Journal of Economic Perspectives*, 20(2), 23-48.

Harjoto, M. A. & Rossi, F. (2019). Religiosity, female directors, and corporate social responsibility for Italian listed companies. *Journal of Business Research*, 95, 338-346.

Hasan, M. M., Taylor, G., & Richardson, G. (2022). Brand capital and stock price crash risk. *Management Science*, forthcoming.

Hilary, G. & Hui, K. W. (2009). Does religion matter in corporate decision making in America? *Journal of Financial Economics*, 93, 455-473.

Hong, H., Kubik, J. D., & Scheinkman, J. A. (2012). Financial constraints on corporate goodness. *NBER Working Paper Series*, No. w18476.

Hope, O. K. (2003). Firm-level disclosures and the relative roles of culture and legal origin. *Journal of International Financial Management & Accounting*, 14(3), 218-248.

Ibrahim, N. A., Howard, D. P., & Angelidis, J. P. (2008). The relationship between religiousness and corporate social responsibility orientation: Are there differences between business managers and students? *Journal of Business Ethics*, 78, 165-174.

Jiang, F., John, K., Li, C. W., & Qian, Y. (2018). Earthly reward to the religious: religiosity and the costs of public and private debt. *Journal of Financial and Quantitative Analysis*, 53(5), 2131-2160.

Lewbel, A. (2012). Using heteroscedasticity to identify and estimate mismeasured and endogenous regressor models. *Journal of Business & Economic Statistics*, 30(1), 67-80.

Liao, Z., Dong, J., Weng, C., & Shen, C. (2019). CEO's religious beliefs and the environmental innovation of private enterprises: The moderating role of political ties. *Corporate Social Responsibility and Environmental Management*, 26(4), 972-980.

Matten, D. & Moon, J. (2004). Corporate Social Responsibility education in Europe. *Journal of Business Ethics*, 54, 323-337.

Mavis, C. P., McNamee, N. P., Petmezas, D., & Travlos, N. G. (2020). Selling to buy: Asset sales and acquisitions. *Journal of Corporate Finance*, 62, 101587.

McGuire, S., Omer, T., & Sharp, N. (2012). The impact of religion on financial reporting irregularities. *The Accounting Review*, 87, 645-673.

Miller, A. S. & Hoffman, J. P. (1995). Risk and religion: An explanation of gender differences in religiosity. *Journal for the Scientific Study of Religion*, 34, 63-75.

Minton, E. A., Kahle, L. R., & Kim, C.-H. (2015). Religion and motives for sustainable behaviors: A cross-cultural comparison and contrast. *Journal of Business Research*, 68(9), 1937-1944.

Olthuis, B. R. & van den Oever, K. F. (2020). The board of directors and CSR: How does ideological diversity on the board impact CSR? *Journal of Cleaner Production*, 251, 119532.

Palazzo, B. (2002). U.S. American and German business ethics: An intercultural comparison. *Journal of Business Ethics*, 41, 195-216.

Ramasamy, B., Yeung, M. C. H., & Au, A. K. M. (2010). Consumer support for corporate social responsibility (CSR): The role of religion and values. *Journal of Business Ethics*, 91, 61-72.

Schouten, C. M. D., Graafland, J., & Kaptein, M. (2014). Religiosity, CSR attitudes, and CSR behavior: An empirical study of executives' religiosity and CSR. *Journal of Business Ethics*, 123, 437-459.

Shi, W. & Veenstra, K. (2020). The moderating effect of cultural values on the relationship between corporate social performance and firm performance. *Journal of Business Ethics*, 174(1), 89-107.

Sparkes, R. (2003). *Socially Responsible Investment: A Global Revolution*. John Wiley and Sons, UK.

Su, K. (2019). Does religion benefit corporate social responsibility (CSR)? Evidence from China. *Corporate Social Responsibility and Environmental Management*, 26(6), 1206-1221.

Terzani, S. & Turzo, T. (2020). Religious social norms and corporate sustainability: The effect of religiosity on environmental, social, and governance disclosure. *Corporate Social Responsibility and Environmental Management*, 28(1), 485-496.

Tucker, M. E. & Grim, J. A. (2001). Introduction: The emerging alliance of world religions and ecology. *Daedalus*, 130(4), 1-22.

Ucar, E. (2018). Local creative culture and corporate innovation. *Journal of Business Research*, 91, 60-70.

Ucar, E., & Staer, A. (2020). Local corruption and corporate social responsibility. *Journal of Business Research*, 116, 266-282.

Udayasankar, K. (2008). Corporate social responsibility and firm size. *Journal of Business Ethics*, 83(2), 167-175.

Wu, D., Lin, C., & Liu, S. (2016). Does community environment matter to corporate social responsibility? *Finance Research Letters*, 18, 127-135.

Zanin, L. (2021). Estimating the effects of ESG scores on corporate credit ratings using multivariate ordinal logit regression. *Empirical Economics*, 1-32.

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Table 1. Description of individual components of the composite Faith Equality Index (FEI).

Faith indicators	Description
Faith-Compatible Corporate Actions	**Company's actions that acknowledge, respect and comply with biblically orthodox teachings (30 points)**
(1)	Respect for, acknowledgment of, and compatibility with a comprehensive pro-life view on abortion, embryonic stem cell research and euthanasia (10 points)
(2)	Respect for, acknowledgment of, and compatibility with biblical teaching on sexuality, gender, marriage and family (10 points)
(3)	Promote or support wholesome images in marketing and culture while refraining from pornography, sexual immorality or the sexual exploitation of individuals, as viewed through a biblical lens (10 points)
Corporate Competency in the Faith Driven Consumer Market Segment	**Company's activities that demonstrate respect for, genuine welcome and celebration of faith driven consumers as well as their biblically orthodox values and worldview (20 points)**
(4)	Faith/religious identity and expression as a recognized category in the corporate diversity position (5 points)
(5)	Targeted recruiting efforts for both faith-driven employees and suppliers (5 points)
(6)	Faith-inclusive employee training, resources and accountability measures (10 points)
Equal Application of Equal Protections	**Creating a safe harbor inclusive of religious freedom and practice in the marketplace and workplace (20 points)**
(7)	A workplace Non-Discrimination Policy that includes explicit, enumerated protections for faith driven consumers/employees (5 points)
(8)	Offers an employer-sponsored Employee Resource Group for faith-driven employees (10 points)
(9)	An Equal Application of Equal Protection statement specifying that all enumerated groups are protected equally in practice with every other enumerated group (5 points)
Public Commitment to Faith Driven Consumers	**Demonstrating a company-wide public commitment to the faith driven consumer community (30 points)**
(10)	Initiate and maintain a specific welcoming campaign communicating respect for, genuine welcome and celebration of faith driven consumers and employees (5 points)
(11)	Engagement of and outreach to the faith driven consumer market segment including faith-compatible, wholesome advertising and marketing campaigns (10 points)
(12)	Use of the word "Christmas" in seasonal advertising (5 points)
(13)	Philanthropic support of biblically orthodox faith-driven organization(s) or event(s) (5 points)
(14)	Proactive public support for legislative, regulatory, and/or judicial protections for religious liberty including freedom of speech, association and expression (5 points)

This table provides the description 14 individual components of the Faith Consumer Index (100 points in total). Individual components are organized in 4 groups: (i) Faith-comparable corporate actions (30 points), (ii) Corporate competency in the faith driven consumer market segment (20 points), (iii) Equal application of equal protection (20 points), and (iv) Public commitment to faith drive consumers (30 points).

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Table 2. Descriptive statistics.

	Mean	Median	25th	75th	St. Dev	No. of observations
Religiosity						
FEI score	31.42	31.00	26.00	37.00	8.36	1364
County religiosity	56.28	56.82	46.69	66.29	11.39	1390
CSR						
ESG score	63.10	68.27	53.44	77.15	19.86	1190
Environmental score	60.11	69.17	43.86	82.22	27.77	1182
Social score	65.91	68.96	53.16	82.54	20.58	1182
Workforce issues	68.15	74.78	51.98	88.41	24.89	1190
Human rights	49.50	54.08	16.67	80.85	33.81	1182
Community involvement	81.22	88.43	70.48	95.78	19.32	1190
Product responsibility	62.02	71.20	34.49	87.92	29.54	1182
Environmental innovation	37.41	36.60	0.00	72.97	34.47	1182
Emissions reduction	63.55	74.52	41.99	89.71	31.57	1182
Resource use	67.77	79.99	52.04	92.13	31.52	1182
Control Variables						
Size	107000	33700	6510	118000	243000	1366
Profitability	4.59	4.76	1.90	8.54	18.95	1361
Leverage	33.29	28.80	16.67	43.47	27.50	1366
Growth	-1.58	2.63	-2.50	7.38	31.09	1092
Market-to-book	6.66	2.78	1.47	5.36	17.21	1133
Board size	11.80	12.00	10.00	13.00	2.52	1189
Board diversity	22.48	22.22	15.38	30.00	10.92	1189
Board independence	78.64	84.61	73.33	90.91	17.41	1188

This table reports the summary statistics for the sample of US firms studied over the period 2012-2020. The *FEI score* is a measure of firm-level religiosity, while *County religiosity* is the percentage of adherents of the headquarter county's population. The *ESG score* is the proxy for a firm's CSR activity, and the category and subcategory scores studied all correspond to either the Environmental category or the Social category. The control variables are defined as follows: *Size* is a firm's total assets (in million USD), *Profitability* is the ratio of net income to total assets, *Leverage* is the ratio of total debt to total assets, *Growth* is the annual percentage change in sales, *Market-to-book* is the ratio of market value to the book value of equity, *Board size* is the number of members on the firm's board of directors, *Board diversity* is the percentage of female members on the board of directors, and *Board independence* is the percentage of independent directors on the board.

Table 3. Correlations.

		(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)	(xi)	(xii)
(i)	FEI score												
(ii)	County religiosity	0.23 *											
(iii)	ESG score	-0.02	0.07										
(iv)	Environmental score	-0.04	0.03	0.83 *									
(v)	Social score	-0.06	0.13 *	0.93 *	0.76 *								
(vi)	Size	-0.30 *	-0.01	0.44 *	0.45 *	0.46 *							
(vii)	Profitability	0.02	0.03	0.11 *	0.02	0.07 *	0.16 *						
(viii)	Leverage	0.02	-0.02	-0.15 *	-0.19 *	-0.11 *	-0.39 *	-0.20 *					
(ix)	Growth	0.01	-0.02	0.02	-0.01	0.02	0.06	0.38 *	-0.14 *				
(x)	Market-to-book	0.01	-0.01	-0.03	-0.06	-0.04	-0.16 *	0.17 *	0.26 *	-0.01			
(xi)	Board size	-0.08 *	0.08 *	0.30 *	0.28 *	0.31 *	0.40 *	-0.04	-0.11 *	0.01	-0.04		
(xii)	Board diversity	-0.13 *	-0.04	0.25 *	0.17 *	0.24 *	0.08 *	0.05 *	0.04	-0.03	0.07	0.16 *	
(xiii)	Board independence	-0.07	0.13 *	0.23 *	0.16 *	0.23 *	0.05	0.13 *	-0.05	-0.03	0.08 *	-0.01	0.44 *

This table reports pairwise correlation coefficients for the firm-level measure of religiosity, the *FEI score*, the measure of regional religiosity, *County religiosity*, the ESG Score, the Environmental and Social category scores, and all remaining independent variables. The control variables are as follows: *Size* is the natural logarithm of total assets, *Profitability* is the ratio of net income to total assets, *Leverage* is the ratio of total debt to total assets, *Growth* is the annual percentage change in sales, *Market-to-book* is the ratio of market capitalization to the book value of equity, *Board size* is the number of members on the board of directors, *Board diversity* is the percentage of female members on the board of directors and *Board independence* is the percentage of independent directors on the board. All continuous control variables are winsorized at the 1% and 99% levels respectively. * denotes statistical significance at the 1% level.

Table 4. Regression results.

	ESG score			Environmental score			Social score		
	I	II	III	I	II	III	I	II	III
Constant	-0.660	-1.687 **	-1.565 *	-5.987 ***	-8.302 ***	-7.985 ***	-0.486	-1.116 *	-0.780
	(-1.12)	(-2.08)	(-1.84)	(-4.00)	(-4.05)	(-3.72)	(-1.00)	(-1.94)	(-1.36)
FEI score		0.266 **	0.251 **		0.601 **	0.562 **		0.199 **	0.156 *
		(2.39)	(2.12)		(2.26)	(2.05)		(2.39)	(1.91)
County religiosity	0.448		0.750	1.086		2.156	0.843 ***		2.583
	(0.98)		(0.23)	(1.17)		(0.34)	(2.88)		(1.12)
FEI x County religiosity			-0.169			-0.512			-0.625
			(-0.18)			(-0.27)			(-0.89)
Size	0.139 ***	0.151 ***	0.149 ***	0.290 ***	0.318 ***	0.313 ***	0.125 ***	0.137 ***	0.131 ***
	(6.39)	(6.50)	(6.30)	(5.19)	(5.40)	(5.28)	(6.56)	(7.08)	(6.83)
Profitability	1.283	1.323 *	1.327 *	1.566 *	1.770 **	1.736 *	0.490	0.574 *	0.536
	(1.63)	(1.74)	(1.73)	(1.73)	(2.00)	(1.97)	(1.45)	(1.67)	(1.63)
Leverage	-0.068	-0.062	-0.057	-0.321	-0.320	-0.306	0.097	0.078	0.093
	(-0.34)	(-0.31)	(-0.29)	(-0.77)	(-0.77)	(-0.72)	(0.59)	(0.44)	(0.56)
Growth	-0.116 *	-0.118 **	-0.112 *	-0.414 **	-0.426 **	-0.408 **	-0.087 **	-0.103 **	-0.082 *
	(-1.82)	(-1.87)	(-1.78)	(-2.23)	(-2.30)	(-2.21)	(-2.07)	(-2.28)	(-1.96)
Market-to-book	0.001	0.001	0.001	-0.001	0.001	-0.001	-0.001	0.001	0.001
	(0.18)	(0.36)	(0.31)	(-0.25)	(-0.13)	(-0.16)	(-0.06)	(0.19)	(0.08)
Board size	0.031 **	0.033 ***	0.032 ***	0.086 ***	0.093 ***	0.089 ***	0.032 ***	0.036 ***	0.032 ***
	(2.51)	(2.84)	(2.65)	(3.24)	(3.67)	(3.47)	(2.63)	(3.03)	(2.74)
Board diversity	0.003 *	0.004 *	0.004 *	0.004	0.005	0.006	0.002	0.002	0.002
	(1.41)	(1.67)	(1.79)	(0.63)	(0.92)	(0.99)	(0.99)	(1.03)	(1.25)
Board independence	0.005 **	0.005 **	0.005 **	0.010 **	0.010 **	0.010 **	0.006 ***	0.006 ***	0.006 ***
	(2.14)	(2.06)	(2.10)	(2.08)	(2.14)	(2.06)	(4.01)	(3.65)	(3.93)
Industry fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.496	0.514	0.516	0.414	0.431	0.436	0.577	0.572	0.588
F-statistic	6.393 ***	7.24 ***	6.75 ***	3.81 ***	4.29 ***	3.95 ***	8.72 ***	9.96 ***	13.12 ***
No. of observations	797	797	797	789	789	789	789	797	789

This table reports the results of the multivariate regressions performed as specified by Equation (1). The dependent variables are the *ESG score* and the *Environmental* and *Social* category scores obtained from Thomson Reuter's Refinitiv database. The independent variable, the natural logarithm of *FEI score*, represents firm-level religiosity, while regional religiosity, measured as the ratio of religious adherents to the headquarter county's population, is represented by *County religiosity*. Column I for each dependent variable reports the results when we use the county-level measure of religiosity as the main explanatory variable. Column II reports the results of the regression when religiosity is represented by the firm-level measure. Finally, in Column III, each dependent variable is regressed on an interaction

of mean-centered firm-level and county-level religiosity. The control variables include *Size*, the natural logarithm of total assets, *Profitability*, the ratio of net income to total assets, *Leverage*, the ratio of total debt to total assets, *Growth*, the annual percentage change in net sales, *Market-to-book*, the ratio of market capitalization to the book value of equity, *Board size*, the number of members on the board of directors, *Board diversity*, the percentage of female board members, and *Board independence*, the percentage of independent board members. The *t*-statistics (in parenthesis) are based on robust standard errors which are adjusted for heteroscedasticity and are clustered by firm. ***, ** & * denote statistical significance at the 1%, 5% and 10% levels, respectively.

Table 5. Subcategories of social responsibility and environmental responsibility scores.

PANEL A – FEI score and CSR							
	Social responsibility				Environmental responsibility		
	Workforce issues	Human rights	Community involvement	Product responsibility	Environmental innovation	Emissions reduction	Resource use
Constant	-2.249 **	-12.928 ***	1.585 **	-4.425 ***	-12.068 ***	-9.845 ***	-11.547 ***
	-(2.52)	-(4.66)	(2.30)	-(3.40)	-(4.13)	-(4.20)	-(4.42)
FEI score	0.176	0.659 *	0.199 *	0.437 **	-0.271	0.648 **	0.849 **
	(1.26)	(1.71)	(1.83)	(2.24)	-(0.60)	(2.20)	(2.37)
Size	0.190 ***	0.456 ***	0.046 **	0.199 ***	0.532 ***	0.365 ***	0.377 ***
	(6.05)	(5.64)	(2.13)	(4.76)	(6.33)	(5.03)	(4.92)
Profitability	1.972 *	3.709 ***	1.017	1.321 *	1.932	2.686 **	1.850
	(1.70)	(2.64)	(0.96)	(1.74)	(1.15)	(2.19)	(1.58)
Leverage	-0.157	0.049	-0.126	0.594 **	-0.611	-0.030	-0.551
	-(0.45)	(0.06)	-(0.56)	(2.00)	-(0.84)	-(0.06)	-(0.86)
Growth	-0.057	-0.585	0.037	-0.274 ***	-0.184	-0.531 ***	-0.318
	-(0.99)	-(1.53)	(0.52)	-(2.69)	-(0.65)	-(2.96)	-(1.24)
Market-to-book	0.001	-0.003	0.001	-0.002	0.006	-0.001	-0.001
	(1.55)	-(0.92)	(0.84)	-(0.95)	(1.49)	-(0.43)	-(0.24)
Board size	0.038 **	0.088 **	0.033 ***	0.055 **	0.152 ***	0.093 ***	0.111 ***
	(2.54)	(2.27)	(2.81)	(2.22)	(3.93)	(2.88)	(3.39)
Board diversity	0.009 **	0.007	0.006 **	-0.004	0.007	0.008	0.006
	(2.53)	(0.76)	(2.17)	-(0.98)	(0.61)	(1.22)	(0.87)
Board independence	0.004	0.006	0.006 *	0.006 **	0.004	0.011 *	0.018 **
	(0.99)	(1.05)	(1.95)	(2.25)	(0.58)	(1.89)	(2.54)
Industry fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.358	0.409	0.283	0.378	0.404	0.402	0.432
F-statistic	7.81 ***	5.65 ***	3.84 ***	9.27 ***	10.25 ***	3.89 ***	3.96 ***
No. of observations	797	789	797	789	789	789	789

Table 5. *Continued.*

PANEL B – Interaction regressions															
	Social responsibility								Environmental responsibility						
	Workforce issues		Human rights		Community involvement		Product responsibility		Environmental innovation		Emissions reduction		Resource use		
Constant	-2.263	**	-11.768	***	1.431	*	-3.812	***	-11.233	***	-9.443	***	-10.950	***	
	-(2.15)		-(4.40)		(1.70)		-(2.90)		-(4.29)		-(3.94)		(-4.39)		
FEI score	0.174		0.489		0.209		0.391	**	-0.372		0.611	**	0.774	**	
	(1.05)		(1.32)		(1.62)		(2.08)		-(0.94)		(2.07)		(2.15)		
County religiosity	-1.084		-0.848		-3.139		11.053	**	4.542		5.103		2.887		
	(-0.24)		(-0.08)		(-0.95)		(2.32)		(0.32)		(0.64)		(0.27)		
FEI x County religiosity	0.325		0.839		0.881		-3.083	**	-0.978		-1.364		-0.581		
	(0.24)		(0.28)		(0.93)		(-2.15)		(-0.27)		(-0.57)		(-0.18)		
Size	0.191	***	0.442	***	0.049	**	0.186	***	0.518	***	0.357	***	0.368	***	
	(5.70)		(5.42)		(2.08)		(4.55)		(6.32)		(4.95)		(4.95)		
Profitability	1.986	*	3.551	***	1.023		1.278	*	1.883		2.659	**	1.794		
	(1.72)		(2.63)		(0.99)		(1.72)		(1.16)		(2.21)		(1.59)		
Leverage	-0.145		0.152		-0.113		0.579	**	-0.536		-0.007		-0.491		
	-(0.43)		(0.19)		-(0.51)		(1.98)		(-0.75)		(-0.01)		(-0.80)		
Growth	-0.065		-0.527		0.021		-0.233	**	-0.139		-0.503	***	-0.278		
	-(1.10)		-(1.44)		(0.31)		-(2.41)		(-0.50)		(-2.87)		(-1.15)		
Market-to-book	0.001		-0.004		0.001		-0.002		0.006		-0.001		-0.001		
	(1.43)		-(1.18)		(0.73)		-(0.91)		(1.46)		(-0.44)		(-0.34)		
Board size	0.037	**	0.073	*	0.034	***	0.048	**	0.142	***	0.088	***	0.103	***	
	(2.45)		(1.88)		(2.75)		(2.00)		(3.58)		(2.75)		(3.10)		
Board diversity	0.009	**	0.009		0.006	**	-0.004		0.008		0.009		0.007		
	(2.67)		(1.03)		(2.31)		-(0.98)		(0.70)		(1.30)		(0.99)		
Board independence	0.004		0.005		0.006	**	0.006	**	0.003		0.011	*	0.018	**	
	(1.07)		(0.86)		(2.15)		(2.16)		(0.47)		(1.81)		(2.58)		

Table 5. *Continued.*

PANEL B – Interaction regressions							
	Social responsibility				Environmental responsibility		
	Workforce issues	Human rights	Community involvement	Product responsibility	Environmental innovation	Emissions reduction	Resource use
Industry fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.358	0.428	0.288	0.396	0.409	0.405	0.438
F-statistic	8.74 ***	5.73 ***	3.56 ***	8.40 ***	10.80 ***	3.94 ***	3.81 ***
No. of observations	797	789	797	789	789	789	789

This table reports the results of the multivariate regressions where the four component scores of the Social category, and the three component scores of the Environmental category are the dependent variables in Columns I through VII respectively. The independent variable, the natural logarithm of *FEI score*, represents firm-level religiosity. Panel A reports the results of the regressions when these scores are regressed on the *FEI* score, the measure of firm-level religiosity, following the estimation specified by Equation (1). Panel B reports the results of the regressions when the dependent variables are regressed on an interaction of the *FEI score* and *County religiosity*, the latter being the regional measure of religiosity within the headquarter county. The control variables include *Size*, the natural logarithm of total assets, *Profitability*, the ratio of net income to total assets, *Leverage*, the ratio of total debt to total assets, *Growth*, the annual percentage change in net sales, *Market-to-book*, the ratio of market capitalization to the book value of equity, *Board size*, the number of members on the board of directors, *Board diversity*, the percentage of female board members, and *Board independence*, the percentage of independent board members. The *t*-statistics (in parenthesis) are based on robust standard errors which are adjusted for heteroscedasticity and are clustered by firm. ***, ** & * denote statistical significance at the 1%, 5% and 10% levels, respectively.

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Table 6. Instrumental variable regressions.

Panel A: Second-stage IV Regressions			
	ESG score	Environmental score	Social score
Constant	-1.890 ***	-8.298 ***	-1.841 ***
	-(4.11)	-(8.24)	-(5.17)
Instrumented FEI score	0.312 ***	0.599 ***	0.365 ***
	(3.58)	(3.73)	(5.43)
Size	0.152 ***	0.318 ***	0.143 ***
	(15.76)	(11.43)	(16.32)
Profitability	1.331 ***	1.769 ***	0.620 ***
	(3.49)	(3.35)	(3.39)
Leverage	-0.058	-0.320	0.090
	-(0.65)	-(1.51)	(1.09)
Growth	-0.117	-0.426 **	-0.099 **
	-(1.58)	-(2.53)	-(2.11)
Market-to-book	0.001	-0.001	-0.001
	(0.44)	-(0.15)	-(0.29)
Board size	0.033 ***	0.093 ***	0.036 ***
	(6.29)	(7.60)	(6.89)
Board diversity	0.004 ***	0.005 *	0.003 **
	(3.14)	(1.72)	(2.55)
Board independence	0.005 ***	0.010 ***	0.006 ***
	(4.98)	(4.70)	(8.11)
Industry fixed-effects	Yes	Yes	Yes
Year fixed-effects	Yes	Yes	Yes
Adjusted R^2	0.514	0.431	0.561
F-statistic	32.20 ***	15.01 ***	40.51 ***
No. of observations	797	789	789
Panel B: Lewbel's IV First Stage Diagnostics **(Stock, Yogo 2005)**			
K-P rk LM Statistics	68.36		
K-P rk Wald F-test	184.78		
Hansen J-statistic	5.76		

This table reports the results of instrumental variable regressions using adjustments for heteroscedasticity-based instruments. Columns I, II & III in Panel A report the results of Lewbel's (2012) IV regressions for the dependent variables ESG score, Environmental Pillar score and Social Pillar score respectively, using the internally instrumented *FEI score*. The control variables include *Size*, the natural logarithm of total assets, *Profitability*, the ratio of net income to total assets, *Leverage*, the ratio of total debt to total assets, *Growth*, the annual percentage change in net sales, *Market-to-book*, the ratio of market capitalization to the book value of equity, *Board size*, the number of members on the board of directors, *Board diversity*, the percentage of female board members, and *Board independence*, the percentage of independent board members. Panel B reports diagnostic statistics for the first stage of Lewbel's IV regressions. The t-statistics (in parenthesis) are based on robust standard errors which are adjusted for heteroskedasticity and clustered by firm. ***, ** & * denote statistical significance at the 1%, 5% and 10% levels, respectively.

Does past corporate social performance matter in a crisis? Layoffs during the COVID-19 pandemic

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Abstract

In this paper, I examine the effects of a firm's historical CSR on its involuntary turnover behavior during the first year of the COVID '19 pandemic. Specifically, using difference-in-difference estimations in panel regressions for 3,011 publicly traded US firms over the period 2013-2020, I compare announced layoffs across firms with a history of above and below par corporate social performance. Additionally, I investigate the role of the Social and Governance categories of ESG separately on layoffs during 2020. CSR comprises several metrics of employee treatment and well-being, and is expected to shield workers from mass layoffs during the pandemic. On the other hand, downsizing may be more accessible to high-CSR firms because they have superior managerial agility and organizational capabilities. Consistent with the latter theory, the findings of this paper suggest that past corporate social performance may be a poor indicator of job security during the recent unemployment crisis. Announced layoffs were significantly higher across high-CSR firms, implying that the expected value of CSR for one of the firm's most important stakeholders may not be realized.

JEL classification: D22, G01, G30, J28, J63, M14, M50
Keywords: Economic crisis, layoffs, unemployment, corporate social responsibility, corporate governance

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1. Introduction

Following the COVID-19 pandemic, interest has been rekindled in the effects of good corporate social responsibility (CSR) in times of crises. The economic disruptions caused by the enforced lockdowns, travel restrictions, and declining consumption of specific goods and services had prolonged effects on the labor market, human resource management, and employee-related corporate policies. Specifically, given that so many workers were indiscriminately furloughed or laid off due to the economic impact of the pandemic, it would be worthwhile to investigate predictors of employee treatment that could affect layoff activity. One obvious suspect is a company's CSR – a measure of how it prioritizes fulfilling the needs of its stakeholders alongside its objectives of maximizing shareholder wealth. In a recent working paper, Collins, Fleischman and Sanchez (2018) demonstrate that firms with high CSR may in fact lay off significantly more employees than firms with low CSR. In view of these findings, I investigate the layoff practices during the first year of COVID-19 across U.S. firms with high and low historical CSR.

CSR and its multitudinous effects on a firm's financial, operational and reputational status have been extensively studied. Higher levels of CSR are associated with higher firm value, profitability, stock returns and operational efficiency (Herremans et al. 1993; Brown 1998; Graves & Waddock 1999; Carter et al. 2000; Dowell et al. 2000; Schnietz & Epstein 2005; Luo & Bhattacharya 2006; Barnett & Solomon 2006, etc). Notably, CSR may have practical benefits that extend beyond the objective of placating discerning stakeholders. Corporate social performance is directly linked to employee productivity, innovativeness and customer loyalty (Luo & Du 2015; Sun & Yu 2015; Sánchez & Benito-Hernández 2015; Pérez & del Bosque 2015). Moreover, Cho and Lee (2019) find that performance-boosting CSR increases and becomes more profitable in the

presence of efficient managers. Therefore, there is a strong connection between a company's social performance and the strategic and human resources that give it a competitive advantage.

A firm's employees are one of its most valuable resources, and their welfare is affected by the type and extent of a company's social responsibility. The ESG Rating, for instance, accounts for various measures of employee friendliness, including health and safety, wages and benefits, diversity and inclusivity, and overtime hours and compensation. It has been shown that skilled people in turn covet employment in firms that have high social capital (Rodrigo & Arenas 2008; Ghosh 2018), and that these firms have a significantly lower voluntary turnover rate, especially for female employees (Bode et al. 2015; Leung et al 2021). Inclusivity for genders, races and sexual orientations is an especially prevalent form of social performance, and attracts talented workers who are instrumental to the firm's innovation, productivity and performance (Richard 2000; Armstrong et al. 2010; Edmans 2011, 2012; Chen et al. 2016; Fauver et al. 2018). Since workers seek out firms with social capital, they carry high expectations about the future behavior of the firm pertaining to the quality of their employment. One implicit assumption is that they can enjoy a reasonable level of job security in high CSR firms. However, there is no empirical evidence that guarantees a significantly lower involuntary turnover within these firms, especially when the event of downsizing is primarily driven by an exogenous impetus.

During an economic crisis, several factors determine the incidence and scope of corporate downsizing. The decision needs to be properly motivated to justify the resulting loss in performance and share value (De Meuse et al. 1994). According to Neinstedt (1989), employees may be laid off to cut operating costs, to reduce management levels, to eliminate obsolete positions after a merger, to endure competitive pressures, or as a response to a combination of the aforementioned factors. Layoffs may be presented as a proactive method to improve the overall

organizational efficiency and to increase job security for the remaining employees (De Meuse et al. 1994). However, while downsizing has been shown to reduce operating costs (Fuchsberg 1993), streamline business operations (Hymowitz 1990) and improve global competitiveness (Lord 1992; Fuchsberg 1993), it has also been shown to decrease productivity, product quality and employee trust (Knox 1992), increase stress and health care costs (Boroughs 1992; Leana & Feldman 1992; Noer 1993) and decrease profitability and dividend growth (Gombola & Tsetsekos 1992). Overall, the negative effects of downsizing tend to outweigh the positive (Cascio 1993). Regardless, a company may be forced to tackle the problem when faced with the eventuality of financial distress. Whether a high CSR firm would be less likely to lay off employees during an economic crisis is therefore also contingent on its exposure to the crisis.

There is a noticeable dearth of literature on the effects of social responsibility or accumulated social capital, on corporate layoff activity, or the manner in which these decisions are communicated. To my knowledge, the only research closely related to the subject is a recent working paper by Collins, Fleishman and Sanchez (2018), which suggests that the relationship between CSR and layoffs may be positive. They study a sample of S&P 500 firms over the period 1993-2014, and find that while high-CSR firms lay off more employees, they also tend to pay higher severances, and have better disclosures regarding their layoff practices. This evidence supports the theory that a firm's social capital may be leveraged to diminish the negative consequences of its restructuring decisions, affording the firm greater managerial and strategic agility. The resource-based perspective of CSR, which also serves as a reconciliation of sorts between the Friedman doctrine (1970) and Freeman's (1984) Stakeholder theory, provides further groundwork for the claim that CSR unlocks opportunities and resources that facilitate restructuring and downsizing.

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Additionally, it is important to note that firms with high social capital possess characteristics that ease the process of conducting layoffs and lessen the financial and reputational impact of downsizing decisions. Managers in high CSR firms are afforded greater agility, allowing these firms to navigate complex problems with higher strategic sensitivity, commitment and resource fluidity (Ivory & Brooks 2018). Moreover, high CSR firms are notably less exposed to financial and legal risk (Godfrey et al. 2009; Jo & Na 2012; Harjoto & Jo 2015). These firms have smaller tail risks (Ilhan et al. 2021), systematic risks (Albuquerque et al. 2019), and maintain high provisions for lawsuits despite their reduced likelihood of being sued (Barnett et al. 2018). In addition, the accumulation of social capital accelerates gains in reputation while also acting as a buffer against reputational losses (Godfrey 2005; Godfrey et al. 2009; Minor & Morgan 2011). This is anecdotally evident in the example documented by Bergström and Diedrich (2011), wherein a company is able to reshape its definition of social responsibility to maintain its reputation after a downsizing event. In brief, the monetary and contingent resources at the disposal of high CSR firms may alleviate the problems associated with downsizing decisions.

A firm's performance in CSR may well predict higher job security, as expected following the underpinnings of the Stakeholder theory. Therefore, hypothesis 1A predicts a negative relationship between a company's past CSR and the magnitude and likelihood of layoffs during the COVID-19 crisis. However, as discussed above, there are sufficient arguments to present a case for the alternative outcome. To this effect, hypothesis 1B predicts higher COVID-19 period layoff activity among firms with historically high CSR.

H_{1A}: *Firms that have had relatively higher corporate social performance over 2013-2019 laid off significantly less employees during the COVID-19 pandemic.*

H_{1B}: *Firms that have had relatively higher corporate social performance over 2013-2019 laid off significantly more employees during the COVID-19 pandemic.*

Due to the impracticality in associating environmental practices with job security, or overcoming the selection bias due to the inherent industry-specific exposure to the pandemic, studying the effects of past performance in the Environmental category of ESG are beyond the scope of this study. Meanwhile, the Social category of ESG, which measures commitment to the wellbeing of stakeholders and tracks human rights abuses, is justifiably instrumental in forming expectations regarding the involuntary turnover of employees. While their employee welfare policies may suggest that firms with a history of good performance in the Social category announced fewer layoffs, the intrinsic costs of these policies could be disadvantageous during times of economic uncertainty. According to Hong et al. (2012), good employee policies are a luxury afforded by firms with excess cash flow, but they do not significantly factor into the implementation of cash policies. These findings are supported by Ghaly et al. (2015), who report that labor-intensive industries that have greater cash holdings are more likely to enforce employee friendly practices. If the firm's sensitivity to cash flow volatility increases during a crisis (Song and Lee 2012), investments in employee welfare would also suffer. These arguments present sufficient basis to overturn expectations of a negative relationship between performance in the Social category and layoff activity. I therefore present competing hypotheses that predict both potential outcomes.

H_{2A}: *A historically high performance in the Social category of ESG is negatively related to layoffs during the COVID-19 pandemic.*

H_{2B}: *A historically high performance in the Social category of ESG is positively related to layoffs during the COVID-19 pandemic.*

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Finally, because workforce reductions are the result of critical executive and managerial decision-making, it is worth analyzing the effects of a company's historical corporate governance on its layoff activity during the pandemic. For the purposes of this study, it is interesting to note that better corporate governance has been shown to mitigate the negative consequences of restructuring decisions. Larger and more independent boards reduce the negative impact of workforce reductions on post-acquisition operating performance (Malikov et al. 2021), and investor protections have been shown to reduce the effectiveness of union laws (Atanassov & Kim 2009). Managerial entrenchment has also been demonstrably linked to better employee treatment (Cronqvist, Low and Nilsson, 2007). Additionally, none of the corporate governance measures tracked by Refinitiv's Governance category score can be expected to act as deterrents for layoffs. In short, elements of good corporate governance can facilitate and incentivize restructuring decisions. Therefore, I hypothesize that the magnitude and incidence of layoffs were both significantly higher in high-Governance firms during the pandemic.

H_3: *A historically high performance in the Governance category of ESG is positively related to layoffs during the COVID-19 pandemic.*

This paper contributes to the literature on the response of firms with a history of good CSR practices to financial distress (e.g. Jacob 2012; Lauesen 2013; Garcia-Benau et al. 2013; Al-Hadi et al. 2017; Sukdeo et al. 2017; Lins, Servaes & Tamayo 2019; Boubaker et al. 2020). To my knowledge, this is the first study that utilizes COVID-period measures of involuntary employee turnover to test the value of a firm's past social capital for one of its most vital stakeholder groups.

In this study, I follow the interaction analysis methodology presented by Bae, Ghoul, Gong and Guedhami (2021) to compare COVID-19 period performance across two groups of firms. The dependent variable is announced layoffs scaled by total employees. The independent variable, the

measure of a firm's past performance in CSR is constructed as the difference between its average ESG score, Social score and Corporate Governance score respectively, and the industry's median score over the period 2013-2019. CSR activities and reporting during 2020 are not included in the construction of the treatment group due to evidence that firms may cut back on investment in social capital to reallocate finances, or ramp up their social performance to rebuild trust in an economic crisis (Charitoudi et al 2011; Placier 2011; Garcia-Benau et al. 2013). Firms with relatively higher prior scores in ESG, the Social and the Governance categories are assigned to the corresponding treatment groups. The interaction of these treatment dummies is then used in a fixed effects panel regression.

I find that firms with high CSR over the period 2013-2019 laid off significantly more employees during the first year of the COVID-19 pandemic, corroborating the claims posited in Hypothesis 1B. Similarly, consistent with the claims of Hypothesis 2B, past performance in the Social category is shown to be positively associated with COVID-period layoffs. Lastly, Hypothesis 3 is weakly corroborated by slightly significant evidence pointing to a positive relationship between past Corporate Governance and layoffs during the pandemic. Overall, these results indicate that employees of high CSR firms may be exposed to relatively higher risks of job loss during periods of financial distress. These findings are consistent with the results reported by Collins et al. (2018), and reinforce the resource-based perspective of CSR.

The rest of this paper is organized as follows. Section II provides a detailed discussion of the data and methodology. Section III presents the findings of the empirical analysis, and Section IV describes the various robustness tests performed. Section V details the results of the propensity score matched (PSM) regressions. Finally, Section VI presents some concluding remarks.

2. Data and Methodology

The data used in this study comprises publicly traded US firms with total assets greater than $1 million. Variables representing firm and board characteristics are obtained from Thomson Reuter's Eikon database, and ESG and employee turnover variables are obtained from Thomson Reuter's Refinitiv database. Data for the variable *Announced layoffs* is supplemented with layoff disclosures from the WARN (Worker Adjustment and Retraining Notification) database, and media coverage of mass layoffs manually obtained via Bloomberg and EBSCO. Additionally, indicator variables tracking COVID-19 related policies are used to control for exogenous explanatory factors, and are provided by the Oxford Covid-19 Government Response Tracker[1]. The final sample consists of 3,011 firms over the period 2013-2020.

2.1 Announced layoffs

The dependent variable in this study is the natural logarithm of the number of layoffs announced by a firm in a given year scaled by total employees, and represents involuntary employee turnover. Since the data for corporate layoffs on Thompson Reuters is incomplete and not up to date, the baseline series is heavily supplemented by hand-collected data from the WARN (Worker Adjustment and Retraining Notification) database, which provides a record of recent mass layoffs disclosed in accordance with the federal law of the same name. However, since all layoff events may not meet the legal conditions for mandatory disclosures, the WARN database itself cannot be considered a complete record of corporate layoffs. Therefore, as a final step, I supplement the data

[1] The Oxford Covid-19 Government Response Tracker is part of the working paper *Variation in US states' responses to Covid-19* (Hallas et al. 2020), and the data and documentation for the project is available online at: https://github.com/OxCGRT/USA-covid-policy

using media coverage regarding mass layoffs obtained from Bloomberg. The resulting series may not account for undisclosed layoffs, but should sufficiently approximate the magnitude and variation in job losses of the population. As an alternate specification of the estimation, a dummy variable is utilized in its stead to indicate the incidence of layoffs.

2.2 Past CSR performance and the COVID-19 dummy

The independent variables in this study - the proxies for a firm's prior corporate social performance - are constructed using the overall ESG (Environmental, Social and Governance) score, the Social score, and the Corporate Governance score. The Thomson Reuter's overall ESG score captures firm-level ESG performance across 178 selected data points. The Social score is the aggregate of its category (Workforce, Human Rights, Community and Product Responsibility) scores, and the Governance score is the aggregate of its category (Management, Shareholders and CSR Strategy) scores. All three scores are time-varying and range from 0-100.

To measure past CSR, I create a dummy variable that indicates whether a firm's average ESG score has been higher than its industry median over the period 2013-2019. Similar dummy variables are used to indicate a relatively higher prior Social performance, and a relatively higher prior Corporate Governance performance. These dummy variables are *ESG Treated*, *Social Treated*, and *Governance Treated* respectively. Additionally, a dummy variable is used to indicate the year 2020. The products of this dummy, *COVID-19*, with each of the treatment groups produce the difference-in-difference interaction terms.

2.3 Control Variables, Descriptive Statistics and Correlation Coefficients

The choice of control variables is influenced by prior studies in human resource management and decision-making in related contexts (Fauver et al. 2018; Collins et al 2018; Cao & Rees 2020; Demers et al 2021). The set of control variables includes size, profitability, leverage, high-exposure industries and low-exposure industries[2] (dummy variables indicating the industries most and least adversely impacted by the pandemic), sales growth, tangibility (the proportion of fixed assets to total assets), board size and board diversity. All firm-specific control variables are winsorized at 1% and 99%. COVID-19 policies that could potentially affect work-life balance, commute, and consumption are also controlled for in the regressions. These policies include the observed levels of state-wide enforcement of schools closing, workplaces closing, stay-at-home restrictions, and the policy of income support via monetary remunerations.

(Insert Table 2 here)

Table 2 displays the descriptive statistics for the variables employed in this study. The ESG measures of the firms in our sample are positively skewed. The average ESG score is only 38.04 out of 100, the average Social score is 40.69 and the average Corporate Governance score is 46.61. Missing values of *Announced layoffs* are replaced with 0, and most firm-years in this sample did not announce layoffs. The variable has a mean value of 52.03. Finally, the firms in the sample are

[2] According to S&P Global Market Intelligence, industries affected from a probability of default perspective include Airlines, Automobiles, Energy Equipment & Services, Hotels, Restaurants and Leisure, and Specialty Retail as the most adversely impacted industries, and Health Care Equipment & Supplies, REITs, Life Sciences Tools & Services, Pharmaceuticals and Communications Equipment as the least adversely impacted industries.

relatively small (with median total assets around $512 million), moderately profitable (with median ROA around 1%), have low leverage (with median debt to assets around 0.17), and are relatively young (with median firm age of 16 years, and mean age of 21.23 years). The sample contains large variations across all notable firm characteristics, and therefore likely provides a measure of mitigation against selection bias.

With respect to COVID-related state-wide policies, firms in the sample are situated in states that had moderate to high enforcement of the closure of schools and workplaces (with a mean score of 2.33 and 1.97 out of 3.00 respectively), but did not sufficiently enact stay-at-home requirements (with a mean score of 1.05 out of 3.00). Similarly, the provision of income support across these states is lower than the expected value (with a mean score of 1.00 out of 3.00).

(Insert Table 3 here)

Table 3 reports the pairwise correlation coefficients between ESG and all right-hand-side variables. ESG-related category scores, presenting similar coefficients to the ESG score, are excluded from this table to facilitate presentation. The ESG score, the primary treatment variable in this study, is positively correlated with firm size, profitability, leverage, age, board size, and board diversity, an observation that is consistent with prior literature (Jennifer Ho & Taylor 2007; Gamerschlag et al. 2010; Michelon & Parbonetti 2012). Interestingly, the ESG score is significantly and positively correlated with announced layoffs, suggesting that the contemporaneous relationship between these variables is consistent with hypothesis 1B. With the

exception of the coefficient of size, none of the correlations with the ESG score are particularly large in magnitude, and all predictor coefficients preclude concerns of multi-collinearity.

3. Empirical Results

As a precursor to the multivariate analysis, I perform tests of equality for the means and medians of the dependent variable and all control variables across samples of firms with a high and low prior ESG rating. The firms are split into two subsamples based on their corporate social performance relative to that of their industries over the period 2013-2019. Firms with a higher average ESG score than their industry median are assigned to the "high-CSR" group, and the remaining firms are assigned to the "low-CSR" group. Finally, two sets of univariate analysis are performed, and the results of these tests are tabulated in Table 4.

(Insert Table 4 here)

Panel A of Table 4 reports the means, medians, and the differences in these statistics for the dependent and independent variables across groups of high- and low-CSR firms over the entire sample period. Announced layoffs are significantly higher for firms with a higher prior corporate social performance, once again indicating that employees may not be among the most salient groups of stakeholders in these companies. Unsurprisingly, the average high-CSR firm is larger than the average low-CSR firm, although the median of the former group is smaller, suggesting the prevalence of good CSR practices in growing businesses. High-CSR firms are also

significantly more profitable, have higher tangibility, and larger and more diverse boards of directors in our sample.

Panel B of Table 4 reports the results of the same univariate analysis of the means and median of all variables for high-CSR firms against the remainder of the sample for the year 2020. Similar to the previous results, the average number of layoffs reported for high-CSR firms during the pandemic were significantly higher than the average number of layoffs reported for low-CSR firms. Furthermore, it is interesting to note that while high-CSR firms were less likely to experience a drop in sales during the economic crisis brought on by the pandemic, these firms were significantly less profitable on average in 2020. High-CSR firms were less likely to belong to an industry severely impacted by the economic effects of the pandemic, yet the drop in profitability suggests that they failed to strategize and adapt to the crisis. This indicates that profitability may not be the primary motive for the greater number of employee layoffs in high-CSR firms.

To empirically investigate the role of past CSR performance on employee layoffs during the COVID-19 pandemic, I employ a difference-in-difference methodology within fixed-effects panel regressions. The left-hand-side variables in two iterations of the same regression are the natural logarithm of announced layoffs scaled by total employees, and a dummy variable that indicates whether the layoffs for a given firm year were non-zero. The independent variables of interest include *High-[CSR measure]*, which includes *High-ESG*, the treatment group of firms with a high prior ESG ratings (constructed as a dummy variable that indicates whether the 2013-2019 firm-average ESG scores were higher that the industry median), *High-Social*, the treatment group of firms with a high prior Social category rating, *High-Governance*, the treatment group of firms with a high prior Corporate Governance category rating, a dummy variable for the year 2020 called

COVID-19, and the interaction of the *High-[CSR measure]* and *COVID-19*. The empirical setup is defined by the following equation:

$$\begin{aligned} \textit{Announced layoffs}_{i,t} = {} & \alpha + \beta_1 \textit{ (COVID-19)}_{i,t} + \beta_2 \textit{ (High-[CSR measure])}_{i,t} + \beta_3 \\ & \textit{(COVID-19 x High-[CSR measure])}_{i,t} + \beta_{4\text{-}12} \textit{ (Firm-specific controls)}_{i,t} + \beta_{13\text{-}16} \\ & \textit{(State-specific COVID policies)}_{i,t} + \mu \textit{ (Industry fixed-effects)}_{i} + \delta \textit{ (Year fixed-} \\ & \textit{effects)}_{t} + \varepsilon_{i,t}, \end{aligned} \tag{1}$$

where the dependent variable, *Announced layoffs*, is measured as either the natural logarithm of scaled layoffs, or a dummy variable indicating non-zero layoffs. When studying the effects of a firm's prior performance in the Social and Corporate Governance categories specifically, the variable *High-ESG* is replaced by *High-Social* and *High-Governance* respectively. The firm-specific controls include *Size*, the natural logarithm of total assets; *Profitability*, the ratio of net income to total assets; *Leverage*, the ratio of total debt to total assets; *High-Industry*, a dummy variable that indicates whether the industry was heavily impacted by the COVID-19 pandemic[3]; *Low-Industry*, a dummy variable that indicates whether the industry was among those least impacted by the COVID-19 pandemic[3]; *Sales growth*, a dummy variable indicating a positive annual change in sales; *ln(Age)*, the natural logarithm of firm age; *ln(Tangibility),* the natural

[3] The variables *High-Industry* and *Low-Industry* are based on credit risk rankings published by *S&P Global Market Intelligence* in the article "Industries Most and Least Impacted by COVID19 from a Probability of Default Perspective". The top five adversely impacted industries include Airlines, Leisure Facilities, Oil & Gas Drilling, Auto Parts & Equipment and Restaurants. The five least adversely impacted industries include Specialized REITs, Property & Casualty Insurance, Multi-line Insurance, Life & Health Insurance & Industrial REITs. These industries are matched to the nearest related SIC code in this sample.
Article available online: https://www.spglobal.com/marketintelligence/en/news-insights/blog/industries-most-and-least-impacted-by-covid19-from-a-probability-of-default-perspective-september-2020-update

logarithm of the ratio of fixed assets to total assets; *Board size*, the number of members on the board of directors; and *Board diversity,* the percentage of female board members. The state-specific COVID-19 policies that are controlled for include the containment and closure policies of *Schools closing*, *Workplace closing*, and *Stay-home requirements*, all measured on a scale of 0-3 for increasing levels of strictness; and the economic policy *Income support*, measured on a scale of 0-2, where 0 is no support, and 2 is the supplementation of 50% or more lost salary by the government. μ & δ represents the inclusion of industry fixed-effects, defined by the first digit of the Standard Industrial Classification (SIC) codes, and year fixed-effects respectively. The results of this regression are displayed in Table 5.

(Insert Table 5 here)

The results reported in Column I of Table 5 correspond to the first baseline regression as specified in equation (1) without year fixed-effects. The coefficients of *High-ESG* and the interaction variable *COVID-19* x *High-ESG* are both positive and significant, indicating that firms with a high prior corporate social performance laid off significantly more employees than their peers overall and during the COVID-19 unemployment crisis. Specifically, high-CSR firms were on average 1.69 times more likely to lay off employees than low-CSR firms, and this multiplier dropped to 1.50 during 2020. Moreover, the regression results also illustrate the severity of job losses during the pandemic: the COVID-19 coefficient signifies that firms in the control group laid off 2.14 times more employees on average during 2020 than in any of the seven preceding years. Lastly, it is once again worth noting that the significant, negative coefficient of end-of-period

profitability belies the notion that layoffs successfully salvaged performance and appeased shareholders.

Column II of Table 5 reports the results of the regression specified by equation (1) with the addition of year fixed effects. The variable COVID-19 reports the coefficients of the dummy variable for the year 2020, the dummy for the year 2019 has been excluded from this regression, and the remaining dummy variables are left untabulated. This alternate specification further facilitates the interpretation of the *COVID-19* dummy, and increases the robustness of the estimation against the effects of undetermined time-varying factors. The coefficients for *High-ESG* and *COVID-19* x *High-ESG* obtained from the fixed effects model are consistent with those reported in Column I, and together they predict that high-CSR layoffs were higher by a similar factor of 1.73. The inclusion of year fixed-effects only serves to increase the determined likelihood of layoffs in high-CSR firms relative to low-CSR firms.

Finally, the regression specified by equation (1) is repeated using a dummy in place of the dependent variable. The *Announced layoffs* (dummy) variable indicates whether a given firm year has observed non-zero layoffs. This alternate approach alleviates concerns arising from potential inaccuracies in the data and further eliminates variation due to the size of the firm, but increases vulnerability to erroneous missing values. The results of this estimation are consistent with the previous two regressions. The coefficients of *High-ESG* and *COVID-19* x *High-ESG* together indicate that employees in high-CSR firms are 7% more likely to get laid off, and the coefficient of the interaction term alone suggests that these firms were 4.3% more likely to lay off employees during the first year of the pandemic. The coefficients of the remaining explanatory variables are also comparable to the coefficients of these variables in the first two regressions.

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Furthering the analysis, I determine whether past performances in the "Social" and "Corporate Governance" dimensions of CSR both individually impacted employee turnover during the pandemic. Since attitudes toward employee welfare are most relevant to the Social category, it is worth investigating the extent to which it contributes to the results in Table 5. The dummy variable *High-Social* indicates whether a firm's past average performance in the Social category of CSR over the period 2013-2019 has been higher than the industry median, and the product of *High-Social* and *COVID-19* is the interaction term in the second set of regressions. The remaining variables are identical to those of Equation (1), and the specifications correspond to the models tested in Table 5. The results of these regressions are reported in Table 6.

(Insert Table 6 here)

Column I of Table 6 reports the results of the baseline regression testing the difference in COVID-19 layoffs across low- and high-Social firms. The coefficients of *High-Social* and *High-Social* x *COVID-19* are consistent with the original results, and the difference-in-difference variable is similarly positive and significant at 1%. The percentage of employees laid off in firms with a history of good Social performance is 1.61 times higher than in the control group, and is specifically 1.39 times higher during 2020. Columns II & III of Table 6 display the coefficient estimates for the regressions including year fixed effects and a dummy replacement for *Announced layoffs* respectively. Both sets of coefficients are consistent with those reported in Column I. Consistent with the hypothesis 2B, historical Social performance does not seem to be a deterrent to corporate layoffs. Moreover, the coefficients of the high-Social treatment group are only slightly

smaller than the coefficients for the overall ESG treatment group, signifying that much of the difference in layoffs observed across high- and low-CSR firms can be attributed to the Social category of ESG.

Lastly, I reconstruct the treatment group to include firms whose Corporate Governance score is higher than the industry median over the period 2013-2019. The results of the regression using the *High-Governance* treatment are reported in Table 7. The coefficient estimates of *High-Governance* and *COVID-19* x *High-Governance* are the lowest reported out of the three treatment groups, indicating that Corporate Governance has by far the weaker connection to layoffs. Firms with high Corporate Governance were only 1.26 times more likely to lay off employees than their peers, and this relationship is only significant at 10%. Moreover, this factor drops to 1.17 during the first year of the pandemic. As depicted in Column II, the inclusion of year fixed-effects renders this relationship insignificant. When estimating the effects on the absolute incidence of layoffs (i.e. the dummy replacement specification in Column III), the difference between the treatment and control groups is negligible in magnitude.

(Insert Table 7 here)

Additionally, the coefficient estimates of the control variables remain consistent across all regression specifications and further elucidate the relationship between the represented firm characteristics and layoffs. Firm size has a high, positive coefficient, which is likely evidence of a selection bias among layoff disclosures in media reports. On the other hand, the consistently negative, significant coefficients for profitability can be interpreted in a more straightforward

manner. Layoffs likely coincide with periods of financial distress or a reduction in the scale of operations. Moreover, measures to cut the workforce are either not undertaken with the purposes of boosting benchmark levels of performance, or likely fail to do so. Finally, the contrast between the non-significant coefficients of *Hi-Industry* and the significantly negative coefficients of *Low-Industry* suggests that layoffs occurred indiscriminately across industries that were not, by their very nature and purpose, shielded from the effects of the pandemic.

4. Robustness Tests

I perform several robustness tests to alleviate concerns regarding the validity of the results detailed in the previous section, and the coefficient estimates obtained for the interaction term COVID-19 x (ESG Measure) are reported in Table D of the Appendix.

Firstly, I confirm that the coefficient estimates are not a product of the specific combination of the control variables used in equation (1). I therefore substitute the control variables size, ROA, leverage, sales growth and tangibility with new or alternatively calculated variables. When these variables are replaced with the natural log of the market value of equity, ROE, the natural log of the ratio of CAPEX and total assets, and the ratio of intangible assets and total assets respectively, the subsequent regression estimations are comparable to those reported in Tables 5, 6 and 7. Specifically, the coefficients of the interaction terms *COVID-19* x *High-ESG*, *COVID-19* x *High-Social* and *COVID-19* x *High-Governance* are all positive and statistically significant. According to the results obtained via the alternate controls specification, the proportion of employees laid off during the pandemic is 1.52 times higher in high-CSR firms, 1.42 times higher in high-Social firms, and 1.22 times higher in high-Governance firms.

Secondly, it is worth noting that a company's past ESG performance is a backward looking variable – or one that is based on historical information. Since the contemporaneous ESG rating does not factor into the construction of the treatment variable, concerns about reverse causality between layoffs in 2020 and prior ESG ratings need not be entertained. Nevertheless, it is possible that the use of contemporaneous firm characteristics as control variables disguises the effect of an unobservable endogenous element. Therefore, the regressions specified by equation (1) are repeated using lagged control variables. For each of the three interaction terms, *COVID-19* x *High-ESG*, *COVID-19* x *High-Social* and *COVID-19* x *High-Governance*, the coefficient estimates remain positive and statistically significant. Specifically, under the updated regression specifications, high-ESG firms were 1.74 times more likely to lay off employees in 2020. Meanwhile, high-Social firms were 1.58 times more likely, and high-Governance firms were 1.27 times more likely to lay off employees during the pandemic. Moreover, the relationship between observed layoffs and firm-specific characteristics remains consistent with the original results when these characteristics were lagged in the regressions.

Thirdly, there is a strong possibility that the observed positive coefficients are produced due to a selection bias in reported layoffs. While layoff data has been collected from three separate sources to ensure the maximum possible completeness, this does not preclude erroneous missing values. To demonstrate that the reported results are not driven by this bias, the regressions are repeated on a subsample of firms with strictly non-zero layoffs. This restriction limits the number of observations per regression to 1,605 firm years. The resulting estimated coefficients for the interaction terms *COVID-19* x *High-ESG* and *COVID-19* x *High-Social* are both positive and statistically significant, while the coefficient for *COVID-19* x *High-Governance* is insignificant. Within a sample of firms with strictly positive layoffs, high-ESG firms and high-Social firms were

both significantly more likely to lay off employees during 2020 by a factor of 1.39. Additionally, the coefficient estimates of the control variables obtained from the restricted sample are comparable in magnitude and significance to the estimates reported in Tables 5, 6 and 7.

Fourthly, the regressions are run with alternately computed variations of the dependent variable, *Announced layoffs*. In addition to the dummy variable based on non-zero layoffs, *Announced layoffs* is represented by the natural logarithm of reported layoffs scaled by total assets, and by the natural logarithm of unscaled reported layoffs respectively in two sets of consecutive regressions. In both cases, the coefficient estimates of the two interaction terms *COVID-19* x *High-ESG* and *COVID-19* x *High-Social* are positive and statistically significant, while the coefficient estimate of the interaction term *COVID-19* x *High-Governance* is not statistically significant. Specifically, the regression results for unscaled layoffs as the dependent variable suggest that high-CSR firms laid off 1.73 times more employees than their peers during the pandemic, while high-Social firms laid off 1.62 times more employees. These results demonstrate the viability of the original findings for multiple alternate constructions of the dependent variable.

Additionally, I account for arbitrariness in the construction of the independent variables and treatment groups *High-ESG*, *High-Social* and *High-Governance.* The proxy for CSR, the ESG Score, is itself an approximation of a company's social performance, and takes into consideration standard industry practices in its estimation. Therefore, comparing the firm's ESG score to its industry median as a benchmark for the treatment group may not produce new information. As an alternate benchmark, I compare each firm's average ESG score over the period 2013-2019 to the sample median ESG score to determine its inclusion in the treatment group *High-ESG*. Similarly, the treatment groups *High-Social* and *High-Governance* are constructed using the sample median Social and Governance scores as the benchmark. The coefficient estimates from the subsequent

regressions are consistent with the ones reported in Tables 5, 6 and 7. The coefficients for each of the three interaction terms are positive and statistically significant. Specifically, high-CSR firms laid off 1.74 times as many employees, high-Social firms laid off 1.38 times as many employees, and high-Governance firms laid off 1.46 times as many employees during the pandemic as their peers. Overall, the coefficient estimates for both *High-ESG* and *High-Social* treatment groups have been demonstrably consistent across all robustness tests.

Finally, I replace the treatment groups *High-ESG*, *High-Social*, and *High-Governance* with continuous forms of the ESG score, the Social score and the Governance score respectively. This should allow an estimation of the effect of a per-unit change in CSR measures, on a scale from 0 to 100, on the magnitude and likelihood of corporate layoffs. Running the regression specified by equation (1) for each set of independent variables produces results consistent with those reported in Tables 5, 6 & 7, and these results are displayed in Tables A, B & C of the Appendix. A standard deviation increase in overall ESG is associated with approximately a 20.8% increase in *Announced layoffs* during the COVID-19 pandemic. Similarly, a standard deviation increase in the Social score is associated with an increase in *Announced layoffs* by approximately 22.5%, and a standard deviation increase in the Governance score is associated with an increase in *Announced layoffs* by approximately 17.6%. Moreover, the likelihood of COVID-19 period layoffs as described by the results of the regressions using the dummy form of *Announced layoffs* is likewise significantly higher as the firm's ESG, Social and Governance performance increases.

5. Propensity Score Matching

The results of the empirical analysis have been obtained after controlling thoroughly for relevant, identifiable characteristics, and are robust to additional and alternate control specifications. Nevertheless, the observed differences in layoffs across the samples of high- and low-ESG firms must be corroborated in samples that are otherwise identical. To this end, the regressions specified by equation (1) are repeated using propensity score matched (PSM) samples for each treatment group. In particular, for the first regression, companies in the top 75th percentile of the ESG Score are matched with the remaining sample on the basis of all characteristics included as controls in equation (1). For the second regression, companies in the top 75th percentile of the Social score and matched to the firms in the lower quartiles. Similarly, for the third regression, companies in the top 75th percentile of the Governance score are matched to the firms in the lower quartiles. The matched sample weights are then used to select observations for the regressions specified by Equation (1). The results of the post-matching regressions are reported in Columns I, II and III of Panel A in Table 8.

(Insert Table 8 here)

The coefficient estimates obtained from the PSM sample regressions are consistent with those documented in Tables 5, 6 and 7. Specifically, both high-ESG and high-Social firms are shown to have laid off more employees during the pandemic, albeit with weaker statistical significance. Meanwhile, layoffs in high-Governance firms were not significantly different to their matched sample counterparts. Overall, these results provide further evidence to corroborate the

main findings. In order to strengthen the reliability of the PSM tests, several diagnostic statistics are presented in Panel B of Table 8. The first four statistics provided facilitate a comparison of the pre- and post-matched regressions for the high-ESG treatment group. The post-matching LR chi-square (6.69) is no longer significant, and the post-matching R-Squared (0.011) has diminished considerably. The last four statistics represent the absolute standardized mean (0.00) and max differences (0.01) and the percentage mean (0.06) and max differences (1.95). Similarly, the PSM diagnostic statistics for the regressions using the high-Social and high-Governance treatment groups demonstrate the viability and success of the subsequent tests.

6. Conclusion

This study compares layoffs during the first year of the COVID-19 pandemic between firms with a history of high and low corporate social responsibility. While employee welfare is congruous with good corporate social performance, there is no empirical evidence to suggest that employees of high-CSR firms enjoy better job security. In addition, firm may revise their priorities during times of high economic uncertainty. Since the global pandemic heralded a widespread unemployment crisis in 2020, it is worth investigating the role a company's past CSR played in its decision to lay off employees. For this purpose, 3,011 publicly traded US firms are studied over the period 2013-2020. Past CSR performance is measured as the difference between the firm's average ESG score and the industry median over the years 2013-2019, and firms with positive differences are assigned to the treatment group. Treatment groups based on the company's past performance in the Social and Governance categories are constructed in a similar manner. The variable *Announced layoffs* consists of data compiled from Thomson Reuters' Refinitiv, the

WARN database, and layoff-related news articles, and is calculated as the natural logarithm of total layoffs scaled by employees.

The role of past CSR performance in layoff activity during the unemployment crisis is investigated using a difference-in-difference methodology within a panel fixed-effects estimation, wherein the interaction of the treatment group (firms with high past ESG, Social and Governance scores respectively) with a dummy for the year 2020 is the independent variable of interest. The results indicate that firms with a high prior CSR announced significantly more layoffs (by 1.5 times) than their peers during the pandemic. Moreover, high-Social firms were similarly significantly more likely to announce layoffs than low-Social firms. On the other hand, Corporate Governance did not significantly impact layoff decisions during the event period. These results are robust to several tests including alternate specifications, variations of the dependent and independent variables, and propensity score matched sample regressions. Overall, the findings indicate that employees in firms with high past CSR were less likely to lose their job during the COVID-19 crisis.

In brief, this paper is one of the first to present documented evidence on the connection between a firm's CSR and its involuntary employee turnover. Moreover, the positive relationship between a firm's social performance and the number of employees it lays off during a crisis affirms the limitations of the privileges afforded to employees as a group of stakeholders. These findings support a resource-based perspective of CSR, wherein the strategic agility of firms with social capital shields them from the negative repercussions of organizational restructuring. In addition, contrary to the assumptions that jobs may be sacrificed to appease shareholders, the results of the empirical analysis suggest that these measures are likely prompted by situations of economic

distress. Additional research using alternate data sources is necessary to further explore the nature of the relationship between corporate social performance and layoffs.

References

Atanassov, J. & Kim, E. H. (2009), Labor and corporate governance: International evidence from restructuring decisions. *The Journal of Finance*, 64: 341-374.

Barnett, M. L. & Salomon, R. M. (2006). Beyond dichotomy: The curvilinear relationship between social responsibility and financial performance. *Strategic Management Journal*, 27(11), 1101–1156.

Barnett, M.L., Hartmann, J., & Salomon, R.M. (2018). Have you been served? Extending the relationship between Corporate Social Responsibility and lawsuits. *Academy of Management Discoveries*, 4(2), 109-126.

Bergström, O. & Diedrich, A. (2011). Exercising social responsibility in downsizing: Enrolling and mobilizing actors at a Swedish high-tech company. *Organization Studies*, 32(7), 897-919.

Bode, C., Singh, J., & Rogan, M. (2015). Corporate social initiatives and employee retention. *Organization Science*, 26(6), 1553-1804.

Boubaker, S., Cellier, A., Manita, R., & Saeed, A. (2020). Does corporate social responsibility reduce financial distress risk? *Economic Modelling*, 91, 835-851.

Brown, B. (1998). Do stock market investors reward companies with reputations for social performance? *Corporate Reputation Review*, 1(3), 271–280.

Cascio, W. F. (1993). Downsizing: What do we know? What have we learned? *Academy of Management Executive*, 7, 95-104.

Cao, Z. & Rees, W. (2020). Do employee-friendly firms invest more efficiently? Evidence from labor investment efficiency. *Journal of Corporate Finance*, 65.

Chen, J., Leung, W. S., & Evans, K. P. (2016). Are employee-friendly workplaces conducive to innovation? *Journal of Corporate Finance*, 40, 61-79.

Cho, S. Y. & Lee, C. (2019). Managerial efficiency, corporate social performance, and corporate financial performance. *Journal of Business Ethics*, 158, 467-486.

Collins, D., Fleischman, G., & Sanchez, D. (2018). The impact of corporate social responsibility on employee layoffs, severance payments and layoff disclosure. *Working paper.* Available online at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3265483

Cronqvist, H., Low, A., & Nilsson, M. (2007). Does corporate culture matter for investment and financial policies? Working paper. Ohio State University, Columbus, OH.

De Meuse, K., Vanderheiden, P., & Bergmann, T. (2006). Announced layoffs: Their effect on corporate financial performance. *Human Resource Management*, 33. 509 - 530.

Demers, E., Hendrikse, J., Joos, P., & Lev, B. (2021). ESG did not immunize stocks during the COVID-19 crisis, but investments in intangible assets did. *Journal of Business Finance and Accounting,* 48(3-4), 433-462.

Dowell, G., Hart, S., & Yeung, B. (2000). Do corporate global environment standards create or destroy market value? *Management Science*, 46(8), 1059–1074.

Edmans, A. (2011). Does the stock market fully value intangibles? Employee satisfaction and equity prices. *Journal of Financial Economics*, 103(3), 621-640.

Edmans, A. (2012). The link between job satisfaction and firm value, with implications for corporate social responsibility. *Academy of Management Perspectives,* 26(4).

Fauver, L., McDonald, M. B., & Taboada, A. G. (2018). Does it pay to treat employees well? International evidence on the value of employee-friendly culture. *Journal of Corporate Finance,* 50, 84-108.

Freeman, R. E. (1984). *Strategic Management: A Stakeholder Approach*. Pitman, Boston.

Fuchsberg, G. (1993). Why shakeups work for some, not for others. *The Wall Street Journal*, October 1, B1; B5.

Gamerschlag, R., Möller, K., & Verbeeten, F. (2010). Determinants of voluntary CSR disclosure: Empirical evidence from Germany. *Review of Managerial Science*, 5(2-3), 233-262.

Garcia-Benau, M. A., Sierra-Garcia, L., & Zorio, A. (2013). Financial crisis impact on sustainability reporting. *Management Decision*, 51(7), 1528-1542.

Ghaly, M., Dang, V. A., & Stathopoulos, K. (2015). Cash holdings and employee welfare. *Journal of Corporate Finance*, 33, 53-70.

Ghosh, K. (2018). How and when do employees identify with their organization? Perceived CSR, first-party (in)justice, and organizational (mis)trust at workplace. *Personnel Review*, 47(5), 1152-1171.

Godfrey, P. C. (2005). The relationship between corporate philanthropy and shareholder wealth: A risk management perspective. *Academy of Management Review*, 30 (4): 777-798.

Godfrey, P. C., Merrill, C. B., & Hansen, J. M. (2009). The relationship between corporate social responsibility and shareholder value: An empirical test of the risk management hypothesis. *Strategic Management Journal*, 30 (4): 425-445.

Gombola, M. J. & Tsetsekos, G. P. (1992). The information content of plant closing announcements: Evidence from financial profiles and the stock price reaction. *Financial Management*, 21, 31-40.

Harjoto, M.A. & Jo, H. (2015). Legal vs. normative CSR: Differential impact on analyst dispersion, stock return volatility, cost of capital and firm value. *Journal of Business Ethics*, 128, 1-20.

Herremans, I. M., Akathaporn, P. & McInnes, M. (1993). An investigation of Corporate Social Responsibility reputation and economic performance. *Accounting Organizations and Society*, 18(7/8), 587–604.

Hong, H., Kubik, J. D., & Scheinkman, J. A. (2012). Financial constraints on corporate goodness Working Paper (No. w18476). National Bureau of Economic Research.

Hymowitz, C. (1990). When firms slash middle management, those spared often bear a heavy load. *The Wall Street Journal*.

Ivory, S. B. & Brooks, S. B. (2018). Managing corporate sustainability with a paradoxical lens: Lessons from strategic agility. *Journal of Business Ethics*, 148, 347-361.

Jo, H. & Na, H. (2012). Does CSR reduce firm risk? Evidence from controversial industry sectors. *Journal of Business Ethics*, 110, 441-456.

Knox, A. (1992). By downsizing, do firms axe themselves in the foot? *The Philadelphia Inquirer*, February 17, A1; A10.

Lauesen, L. M. (2013). CSR in the aftermath of the financial crisis. *Social Responsibility Journal*, 9(4), 641-663.

Lins, K. V., Servaes, H., & Tamayo, A. (2019). Social capital, trust, and corporate performance: How CSR helped companies during the financial crisis (and why it can keep helping them). *Journal of Applied Corporate Finance,* 31(2), 59-71.

Luo, X. & Bhattacharya, C. B (2006). Corporate Social Responsibility, customer satisfaction, and market value. *Journal of Marketing*, 70(1), 1–18.

Luo, X. & Du, S. (2015). Exploring the relationship between Corporate Social Responsibility and firm innovation. *Marketing Letters*, 26, 703-714.

Malikov, K., Demirbag, M., Kuvandikov, A. & Manson, S. (2021). Workforce reductions and post-merger operating performance: The role of corporate governance. *Journal of Business Research*, 122, 109-120.

Michelon, G. & Parbonetti, A. (2012). The effect of corporate governance on sustainability disclosure. *Journal of Management & Governance*, 16(3), 477-509.

Minor, D., & Morgan, J. (2011). CSR as reputation insurance: Primum non nocere. *California Management Review*, *53*(3), 40-59.

Neinstedt, P. R. (1989). Effectively downsizing management structures. *Human Resource Planning*, 12, 155-164.

Noer, D. M. (1993). *Healing the wounds: Overcoming the trauma of layoffs and revitalizing downsized organizations*, San Francisco: Jossey-Bass.

Pérez, A. & del Bosque, I.R. (2015). An integrative framework to understand how CSR affects customer loyalty through identification, emotions and satisfaction. *Journal of Business Ethics*, 129, 571-584.

Rodrigo, P. & Arenas, D. (2008). Do employees care about CSR programs? A typology of employees according to their attitudes. *Journal of Business Ethics*, 83, 265-283.

Sánchez, P. E. & Benito-Hernández, S. (2015). CSR policies: Effects on labor productivity in Spanish micro and small manufacturing companies. *Journal of Business Ethics*, 128, 705-724.

Schnietz, K. E. & Epstein, M. J. (2005). Exploring financial value of a reputation for corporate social responsibility during a crisis. *Corporate Reputation Review*, 7(4), 327–345.

Song, K. R., & Lee, Y. (2012). Long-term effects of a financial crisis: Evidence from cash holdings of East Asian firms. *Journal of Financial and Quantitative Analysis*, 47(3), 617-641.

Sun, L. & Yu, R. T. (2015). The impact of Corporate Social Responsibility on employee performance and cost. *Review of Accounting and Finance*, 14(3), 1475-7702.

Thompson, J. D. (1967). *Organizations in Action*. New York: McGraw-Hill Book Co.

Waddock, S. A. Graves, S. B. (1997). The corporate social performance–financial performance link. *Strategic Management Journal*, 18(4), 303–319.

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Table 1. US State-wide COVID-19 policy measures (Oxford Covid-19 Government Response Tracker Codebook, Hallas et al. (2020))

Variable Name	*Description*	*Measurement*	*Coding*
C1 - Schools Closing	Record closings of schools and universities	Ordinal scale	0 - no measures 1 - recommend closing or all schools open with alterations resulting in significant differences compared to non-Covid-19 operations 2 - require closing (only some levels or categories, eg just high school, or just public schools) 3 - require closing all levels Blank - no data
C2 - Workplace Closing	Record closings of workplaces	Ordinal scale	0 - no measures 1 - recommend closing (or recommend work from home) or all businesses open with alterations resulting in significant differences compared to non-Covid-19 operation 2 - require closing (or work from home) for some sectors or categories of workers 3 - require closing (or work from home) for all-but-essential workplaces (eg grocery stores, doctors) Blank - no data
C6 - Stay at home requirements	Record orders to "shelter-in-place" and otherwise confine to the home	Ordinal Scale	0 - no measures 1 - recommend not leaving house 2 - require not leaving house with exceptions for daily exercise, grocery shopping, and 'essential' trips 3 - require not leaving house with minimal exceptions (eg allowed to leave once a week, or only one person can leave at a time, etc) Blank - no data
E1 - Income support	Record if the government is providing direct cash payments to people who lose their jobs or cannot work. Note: only includes payments to firms if explicitly linked to payroll / salaries	Ordinal scale	0 - no income support 1 - government is replacing less than 50% of lost salary (or if a flat sum, it is less than 50% median salary) 2 - government is replacing 50% or more of lost salary (or if a flat sum, it is greater than 50% median salary) Blank - no data

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Table 2. Descriptive Statistics

Variables	**25th**	**Median**	**Mean**	**75th**	**St.Dev**	**No. of observations**
Measures of CSR						
ESG Score	23.61	34.32	38.04	49.92	18.84	16689
Social Score	25.01	37.39	40.69	53.88	20.45	16689
Governance Score	28.34	46.69	46.61	64.75	22.53	16689
Measures of Employee Turnover						
Announced layoffs	0.00	0.00	52.03	0.00	1038.68	55434
Control Variables						
Size	50300	512000	5980000	2680000	20000000	42991
Profitability	-0.14	0.01	-0.51	0.05	2.41	42829
Leverage	0.01	0.17	0.37	0.39	0.91	42691
Hi-Exposure	0.00	0.00	0.04	0.00	0.21	55434
Low-Exposure	0.00	0.00	0.06	0.00	0.25	55434
Sales growth	0.00	1.00	0.64	1.00	0.47	55434
Age	7.00	16.00	21.23	28.00	21.81	51976
Tangibility	0.19	0.38	0.45	0.73	0.31	36748
Board size	8.00	9.00	9.34	11.00	2.57	16663
Board diversity	11.11	16.66	17.61	25.00	11.52	16663
Schools closing	2.26	2.33	2.38	2.41	0.32	51671
Workplace closing	1.51	1.97	1.74	2.00	0.51	51671
Stay-home requirements	1.00	1.05	1.04	1.22	0.41	51671
Income support	0.41	1.00	1.01	2.01	0.76	51671

This table reports the descriptive statistics for our dependent variables (measures of employee turnover), independent variables (ESG score and the Social and Governance category scores), and all control variables used in the analysis. The employee turnover measure, *Announced layoffs*, is represented here in its raw form and later scaled by total employees and log-transformed for the regressions. The ESG measures, *ESG score, Governance score* and *Social score* range from 0-100, and are obtained from Thomson Reuter's Refinitiv database. The control variables include *Size* (total assets in thousands), *Profitability* (the ratio of net income to total assets), *Leverage* (the ratio of total debt to total assets), *Hi-Industry* (a dummy variable for industries that were significantly exposed to the negative effects of the pandemic), *Low-Industry* (a dummy variable for industries least affected by the pandemic), *Sales growth* (a dummy variable for positive annual change in sales), *Tangibility* (the ratio of fixed assets to total assets), *Age* (the natural logarithm of firm age), *Tangibility* (the ratio of fixed assets to total assets), *Board size* (the number of board members), *Board diversity* (the percentage of female board members), *Schools closing* (an indicator of the policies of schools closing due to COVID-19), *Workplaces closing* (an indicator of the policies of workplaces closing due to COVID-19, *Stay home requirements* (an indicator of the restrictions on travelling outside the home due to COVID-19), and *Income support* (an indicator of the extent of income supplementation provided by the government due to COVID-19).

Table 3. Correlations

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)		(9)		(10)		(11)		(12)	
(1) ESG score																								
(2) COVID-19	0.01																							
(3) Announced layoffs	0.08	*	0.10	*																				
(4) Size	0.57	*	0.06	*	-0.04	*																		
(5) Profitability	0.17	*	0.04	*	-0.03	*	0.48	*																
(6) Leverage	0.07	*	-0.03	*	0.01		-0.32	*	-0.60	*														
(7) Hi-Exposure	-0.02	*	-0.01		-0.01		0.01		0.02	*	0.01	*												
(8) Low-Exposure	0.03	*	0.01		0.01		0.16	*	0.05	*	-0.01		-0.06	*										
(9) Sales growth	-0.07	*	-0.01		-0.01		-0.10	*	-0.06	*	0.01		-0.15	*	-0.01	*								
(10) Age	0.28		0.01		-0.02	*	0.22	*	0.10	*	-0.06	*	0.01		-0.00		-0.15	*						
(11) Tangibility	-0.16	*	-0.12	*	0.01		-0.22	*	-0.18	*	0.05	*	-0.09	*	-0.03	*	0.33	*	-0.34	*				
(12) Board size	0.38	*	-0.07	*	0.01		0.58	*	0.14	*	-0.01		-0.04	*	-0.05	*	0.03	*	0.28	*	0.17	*		
(13) Board diversity	0.37	*	0.18	*	0.06	*	0.21	*	0.06	*	0.01		-0.04	*	-0.01		0.01		0.08	*	-0.04	*	0.17	*

This table presents the correlation coefficients for the dependent and independent variables used in the main analysis. For brevity, *ESG score* is the only measure of CSR whose coefficients are tabulated here. The dependent variable, *Announced layoffs* is the natural log of the ratio of layoffs to total employees. *Size* is the natural log of total assets, *Profitability* is the ratio of net income to total assets, *Leverage* is the ratio of total debt to total assets, *Hi-Exposure* is a dummy variable indicating whether the firm belongs to an industry that was significantly affected by the COVID-19 pandemic, and similarly, *Low-Exposure* is a dummy variable indicating whether the firm belongs to one of the industries least affected by the COVID-19 pandemic. *Sales growth* is a dummy variable indicating whether the annual percentage change in sales was positive. *Age* is the natural log of the number of years since the firm was founded. *Tangibility* is the natural log of the ratio of fixed assets to total assets. *Board size* is the number of members on the board of directors and *Board diversity* is the percentage of female members on the board of directors.

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Table 4. Univariate analysis

PANEL A	Mean-1	Median-1	Mean-0	Median-0	Difference in Means		Difference in Medians	
Dependent Variable								
Announced layoffs	321.46	0.00	33.12	0.00	288.34	*	0.00	*
Control Variables								
Size	14000000	400000	10000000	520000	3200000		-120000	
Profitability	-0.29	-0.01	-0.53	0.01	0.23	*	-0.02	*
Leverage	0.31	0.16	0.37	0.17	-0.06	*	0.00	
Hi-Exposure	0.04	0.00	0.05	0.00	-0.01	*	0.00	*
Low-Exposure	0.06	0.00	0.06	0.00	-0.01		0.00	
Sales growth	0.64	1.00	0.64	1.00	0.00		0.00	
Age	21.39	15.00	21.22	16.00	0.17		-1.00	
Tangibility	0.48	0.41	0.44	0.38	0.03	*	0.04	*
Board size	9.61	9.00	9.32	9.00	0.28	*	0.00	*
Board diversity	24.86	25.00	16.95	16.67	7.91	*	8.33	*
PANEL B	Mean-1	Median-1	Mean-0	Median-0	Difference in Means		Difference in Medians	
Dependent Variable								
Announced layoffs	67.29	0.00	18.79	0.00	48.50	*	0.00	*
Control Variables								
Size	13000000	330000	7100000	800000	5500000	*	-480000	*
Profitability	-0.71	0.01	-0.15	0.01	-0.56	*	0.00	*
Leverage	0.43	0.18	0.26	0.14	0.16	*	0.03	*
Hi-Exposure	0.04	0.00	0.05	0.00	-0.01	*	0.00	*
Low-Exposure	0.06	0.00	0.06	0.00	-0.01		0.00	
Sales growth	0.65	1.00	0.62	1.00	0.03	*	0.00	*
Age	20.89	15.00	21.94	17.00	-1.04	*	-2.00	*
Tangibility	0.47	0.40	0.41	0.34	0.06	*	0.06	*
Board size	10.16	10.00	8.51	8.00	1.65	*	2.00	*
Board diversity	20.29	20.00	14.84	14.28	5.45	*	5.71	*

This table reports the results of the univariate analysis for the dependent and control variables across samples of high- and low-ESG firms respectively. Panel A reports the full sample means, medians and differences in means and medians for firms that outperformed (Columns I & II) and underperformed (Columns III & IV) the industry in CSR over the period 2013-2019, while Panel B reports the same statistics across the same subsamples of firms for the year 2020. The dependent variable, *Announced layoffs*, is the number of layoffs announced by a firm in a given year. The control variables include *Size* (total assets in thousands), *Profitability* (the ratio of net income to total assets), *Leverage* (the ratio of total debt to total assets), *Hi-Industry* (a dummy variable for industries that were significantly exposed to the negative effects of the pandemic), *Low-Industry* (a dummy variable for industries least affected by the pandemic), *Sales growth* (a dummy variable for positive annual change in sales), *Tangibility* (the ratio of fixed assets to total assets), *Board size* (the number of board members), *Board diversity* (the percentage of female board members), *Schools closing* (an indicator of the policies of schools closing due to COVID-19), *Workplaces closing* (an indicator of the policies of workplaces closing due to COVID-19, *Stay home requirements* (an indicator of the restrictions on travelling outside the home due to COVID-19), and *Income support* (an indicator of the extent of income supplementation provided by the government due to COVID-19)

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Table 5. COVID-19 Layoffs in ESG-Treated firms

	Announced layoffs					
Variables	I		II		III	
Constant	-6.870	***	-5.963	***	-0.999	***
	(-13.37)		(-12.32)		(-13.94)	
COVID-19	0.764	***	0.528	***	0.145	***
	(14.70)		(5.48)		(15.96)	
High-ESG	0.120	***	0.037		0.027	***
	(3.43)		(1.09)		(4.90)	
COVID-19 x High-ESG	0.406	***	0.512	***	0.043	***
	(4.51)		(5.63)		(2.93)	
Size	0.292	***	0.263	***	0.043	***
	(13.96)		(12.90)		(14.33)	
Profitability	-0.462	***	-0.448	***	-0.067	***
	(-4.16)		(-4.00)		(-4.16)	
Leverage	-0.285	***	-0.214	***	-0.037	***
	(-3.61)		(-2.77)		(-2.89)	
Hi-Industry	0.088		0.064		0.011	
	(0.97)		(0.69)		(0.78)	
Low-Industry	-0.452	***	-0.474	***	-0.070	***
	(-7.69)		(-8.01)		(-7.60)	
Sales growth	-0.145	***	-0.147	***	-0.022	***
	(-3.21)		(-3.24)		(-3.23)	
Ln(Age)	0.092	***	0.071	**	0.017	***
	(2.92)		(2.26)		(3.88)	
Ln(Tangibility)	-0.027	***	-0.023	***	-0.004	***
	(-6.94)		(-5.91)		(-6.98)	
Board size	0.015		0.013		0.002	
	(1.45)		(1.25)		(1.26)	
Board diversity	0.001		0.005	***	0.000	
	(1.08)		(3.41)		(0.47)	
Covid Policy Variables	Yes		Yes		Yes	
Industry fixed-effects	Yes		Yes		Yes	
Year fixed-effects	No		Yes		No	
No. Of Observations	16271		16271		16271	
F-Statistic	48.66	***	50.43	***	59.53	***
Adjusted R^2	0.189		0.231		0.189	

This table reports the results of the difference-in-difference analysis of the layoff activity of low- and high-ESG firms. The dependent variable is the natural logarithm of the number of announced layoffs adjusted by total employees. The treatment group is determined by the difference in a firm's corporate social performance over the period 2013-2019 and the median corporate social performance of its industry. The treatment group is interacted with a dummy for the year 2020. Column I depicts the results of the regression specified by equation (1). The results reported in Column II are obtained by including year-fixed effects in the regression. Column III replaces the dependent variable with a dummy for non-zero layoffs. The control variables are as follows: *Size* is the natural logarithm of total assets, *Profitability* is the ratio of net income to total assets, *Leverage* is the ratio of total debt to total assets, *Hi-Industry* is a dummy variable for industries that were significantly exposed to the negative effects of the pandemic, *Low-Industry* is a dummy variable for industries least affected by the pandemic, *Sales growth* is a dummy variable for positive annual change in sales, *Ln(Age)* is the natural logarithm of the firm's age, *Ln(Tangibility)* is the natural logarithm of

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the ratio of fixed assets to total assets, *Board size* is the number of members on the board of directors, and *Board diversity* is the percentage of female members on the board of directors. The t-statistics (in parenthesis) are based on robust standard errors adjusted for heteroscedasticity and clustered at the firm level. *, ** & *** denote statistical significance at the 10%, 5% and 1% levels respectively.

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Table 6. COVID-19 Layoffs in Social-treated firms

	Announced layoffs					
Variables	I		II		III	
Constant	-6.821	***	-5.963	***	-0.994	***
	(-13.39)		(-12.32)		(-13.91)	
COVID-19	0.792	***	0.638	***	0.151	***
	(14.99)		(6.27)		(16.21)	
High-Social	0.147	***	0.086	**	0.031	***
	(4.13)		(2.45)		(5.38)	
COVID-19 x High-Social	0.331	***	0.415	***	0.030	***
	(3.70)		(4.59)		(2.04)	
Size	0.289	***	0.259	***	0.042	***
	(13.90)		(12.80)		(14.23)	
Profitability	0.451	***	-0.438	***	-0.065	***
	(-4.17)		(-4.01)		(-4.17)	
Leverage	-0.285	***	0.212	***	-0.037	***
	(-3.64)		(-2.75)		(-2.96)	
Hi-Industry	0.080		0.058		0.009	
	(0.88)		(0.64)		(0.67)	
Low-Industry	-0.455	***	-0.477	***	-0.070	***
	(-7.73)		(-8.05)		(-7.62)	
Sales growth	-0.149	***	-0.148	***	-0.022	***
	(-3.30)		(-3.31)		(-3.33)	
Ln(Age)	0.101	***	0.077	**	0.018	***
	(3.23)		(2.47)		(4.27)	
Ln(Tangibility)	-0.025	***	-0.021	***	-0.004	***
	(-6.44)		(-5.45)		(-6.45)	
Board size	0.017		0.014		0.002	
	(1.62)		(1.34)		(1.50)	
Board diversity	0.002		0.005	***	0.001	
	(1.36)		(3.53)		(0.84)	
Covid Policy Variables	Yes		Yes		Yes	
Industry fixed-effects	Yes		Yes		Yes	
Year fixed-effects	No		Yes		No	
No. Of Observations	16271		16271		16271	
F-Statistic	47.03	***	49.77	***	58.09	***
Adjusted R^2	0.183		0.206		0.169	

This table reports the results of the difference-in-difference analysis of the layoff activity of low- and high-Social firms. The dependent variable is the natural logarithm of the number of announced layoffs adjusted by total employees. The treatment group is determined by the difference in a firm's performance in the Social category of ESG over the period 2013-2019 and the median performance in the Social category for its industry. The treatment group is interacted with a dummy for the year 2020. Column I depicts the results of the regression specified by equation (1). The results reported in Column II are obtained by including year-fixed effects in the regression. Column III replaces the dependent variable with a dummy for non-zero layoffs. The control variables are as follows: *Size* is the natural logarithm of total assets, *Profitability* is the ratio of net income to total assets, *Leverage* is the ratio of total debt to total assets, *Hi-Industry* is a dummy variable for industries that were significantly exposed to the negative effects of the pandemic, *Low-Industry* is a dummy variable for industries least affected by the pandemic, *Sales growth* is a dummy variable for

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positive annual change in sales, *Ln(Age)* is the natural logarithm of the firm's age, *Ln(Tangibility)* is the natural logarithm of the ratio of fixed assets to total assets, *Board size* is the number of members on the board of directors, and *Board diversity* is the percentage of female members on the board of directors. The t-stats (in parenthesis) are based on robust standard errors adjusted for heteroscedasticity and clustered at the firm level. *, ** & *** denote statistical significance at the 10%, 5% and 1% levels respectively.

Table 7. COVID-19 Layoffs in Governance-treated firms

	Announced layoffs		
Variables	I	II	III
Constant	-7.176 ***	-6.155 ***	-1.056 ***
	(-14.06)	(-12.88)	(-14.75)
COVID-19	0.865 ***	0.636 ***	0.155 ***
	(14.76)	(6.32)	(15.60)
High-Governance	0.071 *	0.031	0.014 **
	(1.71)	(0.75)	(2.28)
COVID-19 x High-Governance	0.162 *	0.217 **	0.019
	(1.85)	(2.44)	(1.33)
Size	0.303 ***	0.271 ***	0.045 ***
	(14.44)	(13.36)	(14.84)
Profitability	0.476 ***	-0.458 ***	-0.069 ***
	(-4.15)	(-4.01)	(-4.13)
Leverage	-0.310 ***	-0.231 ***	-0.042 ***
	(-3.91)	(-2.99)	(-3.22)
Hi-Industry	0.082	0.059	0.009
	(0.89)	(0.64)	(0.69)
Low-Industry	-0.445 ***	-0.469 ***	-0.068 ***
	(-7.61)	(-7.96)	(-7.48)
Sales growth	-0.142 ***	0.144 ***	-0.022 ***
	(-3.13)	(-3.18)	(-3.14)
Ln(Age)	0.092 ***	0.070 **	0.017 ***
	(2.92)	(2.21)	(3.95)
Ln(Tangibility)	-0.028 ***	-0.024 ***	-0.004 ***
	(-7.50)	(-6.29)	(-7.63)
Board size	0.018 *	0.014	0.002
	(1.69)	(1.39)	(1.57)
Board diversity	0.002	0.006 ***	0.000
	(1.41)	(3.70)	(0.83)
Covid Policy Variables	Yes	Yes	Yes
Industry fixed-effects	Yes	Yes	Yes
Year fixed-effects	No	Yes	No
No. Of Observations	16271	16271	16271
F-Statistic	45.72 ***	51.36 ***	59.53 ***
Adjusted R^2	0.173	0.211	0.189

This table reports the results of the difference-in-difference analysis of the layoff activity of low- and high-Governance firms. The dependent variable is the natural logarithm of the number of announced layoffs adjusted by total employees. The treatment group is determined by the difference in a firm's performance in the Governance category of ESG over the period 2013-2019 and the median performance in the Governance category for its industry. The treatment group is interacted with COVID-19, which is a dummy for the year 2020. Column I depicts the results of the regression specified by equation (1). The results reported in Column II are obtained by including year-fixed effects in the regression. Column III replaces the dependent variable with a dummy for non-zero layoffs. The control variables are as follows: *Size* is the natural logarithm of total assets, *Profitability* is the ratio of net income to total assets, *Leverage* is the ratio of total debt to total assets, *Hi-Industry* is a dummy variable for industries that were significantly exposed to the negative effects of the pandemic, *Low-Industry* is a dummy variable for industries least affected by the pandemic, *Sales growth* is a dummy variable for positive annual change in sales, *Ln(Age)* is the natural logarithm of the firm's

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age, *Ln(Tangibility)* is the natural logarithm of the ratio of fixed assets to total assets, *Board size* is the number of members on the board of directors, and *Board diversity* is the percentage of female members on the board of directors. The t-stats (in parenthesis) are based on robust standard errors adjusted for heteroscedasticity and clustered at the firm level. *, ** & *** denote statistical significance at the 10%, 5% and 1% levels respectively.

Table 8. Propensity Score Matching

PANEL A: *Propensity Score Matching*	Announced layoffs		
Variables	I	II	III
Constant	-11.322 ***	-11.099 ***	-11.446 **
	(-4.07)	(-3.99)	(-4.11)
COVID-19	-2.441	-2.333	-2.104
	(-0.94)	(-0.90)	(-0.81)
High-ESG	0.324 *		
	(1.82)		
COVID-19 x High-ESG	1.203 ***		
	(3.04)		
High-Social		0.386 **	
		(2.37)	
COVID-19 x High-Social		1.098 ***	
		(2.93)	
High-Governance			0.141
			(1.11)
COVID-19 x High-Governance			0.638 *
			(1.90)
Firm- and Board-specific controls	Yes	Yes	Yes
Covid Policy Variables	Yes	Yes	Yes
Industry fixed-effects	Yes	Yes	Yes
Year fixed-effects	Yes	Yes	Yes
No. of observations	3320	3320	3320
F-statistic	34.78 ***	35.01 ***	34.69 ***
Adjusted R^2	0.215	0.223	0.221
PANEL B: *PSM Diagnostics*			
Pre-Matching pseudo R^2	0.386	0.280	0.156
Pre-Matching LR χ^2	5226.15 ***	3693.28 ***	2467.85 ***
Post-Matching pseudo R^2	0.011	0.007	0.001
Post-Matching LR χ^2	6.69	7.10	2.41
Mean difference	0.000	0.000	0.000
Max difference	0.019	0.017	0.014
Mean percentage difference	0.069	0.049	0.022
Max percentage difference	1.953	1.945	1.776

This table reports the results of the propensity score matched regressions for each of the three treatment groups, *High-ESG*, *High-Social* and *High-Governance*. Panel A reports the results of the regressions for the propensity score matched samples, while Panel B reports some PSM diagnostics. The dependent variable *Announced layoffs* is the natural logarithm of layoffs scaled by employees. Columns I, II and III report the results of the regressions for the *High-ESG*, *High-Social* and *High-Governance* treatment groups respectively. The control variables (untabulated) include *Size*, the natural logarithm of total assets, *Profitability*, the ratio of net income to total assets, *Leverage*, the ratio of total debt to total assets, *Hi-Industry*, a dummy variable for industries that were significantly exposed to the negative effects of the pandemic, *Low-Industry,* a dummy variable for industries least affected by the pandemic, *Sales growth*, a dummy variable for positive annual change in sales, *Ln(Age)*, the natural logarithm of the firm's age,

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Ln(Tangibility), the natural logarithm of the ratio of fixed assets to total assets, *Board size*, the number of members on the board of directors, and *Board diversity*, the percentage of female members on the board of directors. The t-statistics, reported in parenthesis, are based on robust standard errors adjusted for heteroscedasticity. *, ** & *** denotes statistical significance at the 10%, 5% and 1% levels respectively.

APPENDIX

A. The ESG Score and COVID-19 Layoffs

	Announced layoffs					
Variables	I		II		III	
Constant	-5.633	***	-0.871		-0.848	***
	(-10.80)		(-1.52)		(-11.14)	
COVID-19	0.121		3.615	***	0.066	***
	(1.10)		(9.44)		(3.58)	
ESG Score	0.008	***	0.009	***	0.001	***
	(4.86)		(5.34)		(4.91)	
COVID-19 x ESG Score	0.019	***	0.021	**	0.002	***
	(6.07)		(6.70)		(4.48)	
Size	0.253	***	0.206	***	0.038	***
	(12.52)		(10.47)		(12.98)	
Profitability	-0.377	***	-0.349	***	-0.056	***
	(-3.80)		(-3.62)		(-3.79)	
Leverage	-0.155	*	-0.077		-0.021	
	(-1.78)		(-0.90)		(-1.60)	
Hi-Industry	0.233		0.208	*	0.030	*
	(1.89)		(1.68)		(1.65)	
Low-Industry	-0.189	**	-0.251	***	-0.025	**
	(-2.44)		(-3.22)		(-2.07)	
Sales growth	-0.099	**	-0.098	**	-0.016	**
	(-2.05)		(-2.04)		(-2.23)	
Ln(Age)	0.028		0.005		0.008	*
	(0.74)		(-0.13)		(1.69)	
Ln(Tangibility)	-0.007		-0.004		-0.001	
	(-1.65)		(-0.86)		(-1.48)	
Board size	0.018		0.014		0.002	
	(1.62)		(1.36)		(1.46)	
Board diversity	0.003	**	-0.003		-0.001	**
	(1.99)		(-0.16)		-(2.13)	
Covid Policy Variables	Yes		Yes		Yes	
Industry fixed-effects	Yes		Yes		Yes	
Year fixed-effects	No		Yes		No	
No. Of Observations	12881		12881		12881	
F-Statistic	27.43	***	51.36	***	34.60	***
Adjusted R^2	0.169		0.183		0.154	

This table reports the results of the interaction analysis of the sample firms' ESG scores and their layoffs during the COVID-19 pandemic. The dependent variable is the natural logarithm of the number of announced layoffs adjusted by total employees. The independent variable is the firm's ESG score, which is interacted with COVID-19, a dummy for the year 2020. Column I depicts the results of the regression specified by equation (1). The results reported in Column II are obtained by including year-fixed effects in the regression. Column III replaces the dependent variable with a dummy for non-zero layoffs. The control variables are as follows: *Size* is the natural logarithm of total assets, *Profitability* is the ratio of net income to total assets, *Leverage* is the ratio of total debt to total assets, *Hi-Industry* is a dummy variable for industries that were significantly exposed to the negative effects of the pandemic, *Low-Industry*

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is a dummy variable for industries least affected by the pandemic, *Sales growth* is a dummy variable for positive annual change in sales, *Ln(Age)* is the natural logarithm of the firm's age, *Ln(Tangibility)* is the natural logarithm of the ratio of fixed assets to total assets, *Board size* is the number of members on the board of directors, and *Board diversity* is the percentage of female members on the board of directors. The t-stats (in parenthesis) are based on robust standard errors adjusted for heteroscedasticity and clustered at the firm level. *, ** & *** denote statistical significance at the 10%, 5% and 1% levels respectively

B. The Social Score and COVID-19 Layoffs

	Announced layoffs					
Variables	I		II		III	
Constant	--6.037	***	-1.336	***	-0.909	***
	(-11.31)		(-2.32)		(-11.76)	
COVID-19	0.311	***	3.375	***	0.091	***
	(2.94)		(8.21)		(5.03)	
Social Score	0.006	***	0.006	***	0.001	***
	(2.94)		(4.21)		(3.73)	
COVID-19 x Social Score	0.012	***	0.014	***	0.001	***
	(4.70)		(5.16)		(3.30)	
Size	0.272	***	0.225	***	0.041	***
	(13.00)		(11.25)		(13.61)	
Profitability	-0.372	***	-0.344	***	-0.055	***
	(-3.86)		(-3.69)		(-3.85)	
Leverage	-0.154	*	-0.077		-0.021	
	(-1.77)		(-0.90)		(-1.61)	
Hi-Industry	0.224	*	0.198		0.028	
	(1.81)		(1.60)		(1.57)	
Low-Industry	-0.166	**	-0.225	***	-0.022	*
	(-2.13)		(-2.86)		(-1.79)	
Sales growth	-0.113	**	-0.144	**	-0.018	**
	(-2.31)		(-2.33)		(-2.48)	
Ln(Age)	0.054		0.025		0.012	**
	(1.47)		(0.69)		(2.46)	
Ln(Tangibility)	-0.006		-0.002		-0.001	
	(-1.27)		(-0.48)		(-1.15)	
Board size	0.020	*	0.017		0.003	*
	(1.82)		(1.60)		(1.67)	
Board diversity	-0.001		0.002		-0.000	
	-(0.66)		(1.22)		(-0.87)	
Covid Policy Variables	Yes		Yes		Yes	
Industry fixed-effects	Yes		Yes		Yes	
Year fixed-effects	No		Yes		No	
No. Of Observations	12881		12881		12881	
F-Statistic	26.69	***	50.12	***	33.77	***
Adjusted R^2	0.164		0.162		0.151	

This table reports the results of the interaction analysis of the sample firms' scores in the Social category of ESG and their layoffs during the COVID-19 pandemic. The dependent variable is the natural logarithm of the number of announced layoffs adjusted by total employees. The independent variable is the firm's Social category score, which is interacted with COVID-19, a dummy for the year 2020. Column I depicts the results of the regression specified by equation (1). The results reported in Column II are obtained by including year-fixed effects in the regression. Column III replaces the dependent variable with a dummy for non-zero layoffs. The control variables are as follows: *Size* is the natural logarithm of total assets, *Profitability* is the ratio of net income to total assets, *Leverage* is the ratio of total debt to total assets, *Hi-Industry* is a dummy variable for industries that were significantly exposed to the negative effects of the pandemic, *Low-Industry* is a dummy variable for industries least affected by the pandemic, *Sales growth*

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is a dummy variable for positive annual change in sales, *Ln(Age)* is the natural logarithm of the firm's age, *Ln(Tangibility)* is the natural logarithm of the ratio of fixed assets to total assets, *Board size* is the number of members on the board of directors, and *Board diversity* is the percentage of female members on the board of directors. The t-stats (in parenthesis) are based on robust standard errors adjusted for heteroscedasticity and clustered at the firm level. *, ** & *** denote statistical significance at the 10%, 5% and 1% levels respectively.

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C. The Governance Score and COVID-19 Layoffs

	Announced layoffs		
Variables	I	II	III
Constant	-7.068 ***	-2.617 ***	-1.057 ***
	(-12.90)	(-4.36)	(-13.46)
COVID-19	0.491 ***	3.143 ***	0.110 ***
	(4.66)	(7.74)	(6.11)
Governance Score	-0.001	-0.001	-0.000
	(-1.04)	(-0.52)	(-0.85)
COVID-19 x Governance Score	0.008 ***	0.008 ***	0.001 **
	(3.68)	(3.85)	(2.50)
Size	0.315 ***	0.279 ***	0.047 ***
	(14.15)	(13.13)	(14.87)
Profitability	0.406 ***	-0.385 ***	-0.060 ***
	(-3.81)	(-3.67)	(-3.81)
Leverage	-0.196 **	-0.130	-0.027 **
	(-2.25)	(-1.51)	(-2.05)
Hi-Industry	0.241 *	0.222	0.031 *
	(1.91)	(1.75)	(1.67)
Low-Industry	-0.138 *	-0.191 **	-0.018
	(-1.71)	(-2.36)	(-1.43)
Sales growth	-0.101 **	-0.100 **	-0.017 **
	(-2.06)	(-2.03)	(-2.24)
Ln(Age)	0.061	0.034	0.013 **
	(1.58)	(0.87)	(2.56)
Ln(Tangibility)	-0.012 ***	-0.009 **	-0.001 **
	(-2.60)	(-2.02)	(-2.35)
Board size	0.025 **	0.022	0.003 **
	(2.18)	(2.03)	(2.00)
Board diversity	0.001	0.004 **	0.000
	(0.42)	(2.01)	(0.17)
Covid Policy Variables	Yes	Yes	Yes
Industry fixed-effects	Yes	Yes	Yes
Year fixed-effects	No	Yes	No
No. Of Observations	12881	12881	12881
F-Statistic	25.78 ***	47.54 ***	32.88 ***
Adjusted R^2	0.157	0.171	0.146

This table reports the results of the interaction analysis of the sample firms' scores in the Governance category of ESG and their layoffs during the COVID-19 pandemic. The dependent variable is the natural logarithm of the number of announced layoffs adjusted by total employees. The independent variable is the firm's Governance category score, which is interacted with COVID-19, a dummy for the year 2020. Column I depicts the results of the regression specified by equation (1). The results reported in Column II are obtained by including year-fixed effects in the regression. Column III replaces the dependent variable with a dummy for non-zero layoffs. The control variables are as follows: *Size* is the natural logarithm of total assets, *Profitability* is the ratio of net income to total assets, *Leverage* is the ratio of total debt to total assets, *Hi-Industry* is a dummy variable for industries that were significantly exposed to the negative effects of the pandemic, *Low-Industry* is a dummy variable for industries least affected by the pandemic, *Sales growth* is a dummy variable for positive annual change in sales, *Ln(Age)* is the natural logarithm of the firm's age, *Ln(Tangibility)* is the natural logarithm of the ratio of fixed assets to total assets, *Board size* is the number of

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members on the board of directors, and *Board diversity* is the percentage of female members on the board of directors. The t-stats (in parenthesis) are based on robust standard errors adjusted for heteroscedasticity and clustered at the firm level. *, ** & *** denote statistical significance at the 10%, 5% and 1% levels respectively.

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D. Robustness Tests

Specification	COVID-19 x ESG Score	COVID-19 x Social Score	COVID-19 x Governance Score
S0. The baseline results from Tables 5-7	0.512 ***	0.415 ***	0.217 ***
S1. Alternative control variables	0.576 ***	0.470 ***	0.276 ***
S2. Lagged control variables	0.664 ***	0.551 ***	0.295 ***
S3. Sample restricted to firms with non-zero layoffs	0.412 **	0.323 **	0.110
S4. Alternate measurement of layoffs (unscaled)	0.659 ***	0.569 ***	0.101
S5. Alternate measurement of layoffs (scaled by total assets)	0.503 ***	0.410 ***	0.211 **
S6. Treatment groups constructed using sample mean	0.488 ***	0.407 ***	0.203 **

The table reports the coefficient estimates for the interaction variables COVID-19 x ESG Score, COVID-19 x Social Score, and COVID-19 x Governance Score for adjustments to the specifications of Equation (1) as described by the robustness tests detailed in Section 4. The baseline results correspond to Column II of Tables 5-7, and each subsequent specification includes both industry and year fixed-effects. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.