

## RESEARCH ARTICLE

# Religiosity and corporate social responsibility: A study of firm-level adherence to Christian values in the United States

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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 US firms after controlling for county-level religiosity and various firm characteristics. The results indicate that religious firms have higher social and environmental responsibility scores. The positive relationship is particularly strong with respect to product responsibility, emissions reduction, and responsible use of resources. While county-level religiosity does not have any incremental effect on CSR above the influence of firm-level religiousness, we document that the positive linkage between firm-level religiosity and CSR engagement is strengthened by local religiousness. Overall, our empirical findings suggest that faith-driven corporate values may encourage socially responsible behavior.

## KEYWORDS

corporate social responsibility, religiosity, religious values

## JEL CLASSIFICATION

D22, G30, G34, G39, G41, M10, M14, Z12

## 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., Du et al., 2015; Hilary & Hui, 2009). Given that religiosity is associated with moral values, and being more lawful and risk-averse (e.g., Adhikari & Agrawal, 2016; Boone et al., 2013), it may also steer a firm toward more socially responsible behavior. In

this paper, we contribute to the literature by examining whether firm-level adherence to Christian values is reflected in the CSR engagement of US firms.

It can be presumed that attitudes toward 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; Felix et al., 2018; Ramasamy et al., 2010; Schouten et al., 2014; Wu et al., 2016). 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

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similar effects on socially responsible behaviors. Moreover, the effect of the firm's internalized religiosity can arguably subsume that of religiousness in the surrounding community. In this paper, we empirically examine the hypothesis that adherence to Christian values and a biblical worldview influences CSR engagement using a sample of large US firms between the years 2012–2020.

An obvious source of concern in studies on the effects of religious influence on corporate outcomes is the difficulty of measuring religiousness and especially firm-level adherence to religious values. In the prior literature, religious influence on firms 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., Adhikari & Agrawal, 2016; Chantziaras et al., 2020; Cui et al., 2015; Rossi et al., 2019). These measures of religiousness are arguably rather indirect proxies, which 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 & Agrawal, 2016; Chen et al., 2022; Chen, Chen, et al., 2021; Harjoto & Rossi, 2019; Liao et al., 2019). While alleviating the problem of inference, the use of executive characteristics may overestimate the role of managerial values and beliefs on corporate culture.

In contrast to the prior literature, this study employs a novel measure of religiosity which directly reflects firm-level adherence to Christian values in the United States.<sup>1</sup> Specifically, we utilize the Faith Equality Index (FEI) constructed by an independent religious organization Faith Driven Consumers (FDC) 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 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 CSR engagement.

<sup>1</sup>In the context of this paper, religiosity refers to Christianity and biblical values in the United States. American congregations are predominantly Christian, with adherents of minority religions comprising a very small proportion of population in different US regions. While the issue of religious fragmentation is an important one in the context of firm culture, minority religions (i.e., differing religions among stakeholders with low power) are not likely to be affected by or likely to affect the public religious image of the firm. Whether these differences across different religions can in any way affect the decision to engage in overtly religious corporate policies is beyond the scope of this study.

Our empirical findings indicate that religiousness is positively associated with CSR. 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., Chantziaras et al., 2020; Harjoto & Rossi, 2019; Schouten et al., 2014; Su, 2019). 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.

Furthermore, our results suggest that regional differences in religiousness do not have any incremental effect on CSR over and above the influence of firm-level religiousness. With respect to the potential mediating effects of regional religiosity, our interaction regressions indicate that a higher degree of county-level religiousness may strengthen the positive linkage between firm-level religiosity and CSR. 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., Dyreng et al., 2012; Hilary & Hui, 2009; Hope, 2003; McGuire, Omer, et al., 2012; Zaman et al., 2018, etc.), and the effects of Christianity on CSR engagement in particular (Chantziaras et al., 2020; Wu et al., 2016; Zolotoy et al., 2019). Given that there is limited previous empirical evidence on whether and how religiosity is associated with CSR, 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. While the FEI is based on conservative Christian values, it is by design more comprehensive than the more indirect measures of religiosity used in the prior literature. Using this novel measure, we are also able to demonstrate the potential duality of the effects of communal and internalized religiosity on firms' 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 CSR. Finally, Section 5 concludes the paper.

## 2 | BACKGROUND AND HYPOTHESIS DEVELOPMENT

### 2.1 | Theoretical background

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 & London, 1966; Diaz, 2000; Dyreng et al., 2012; Miller & Hoffman, 1995). 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 & 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.

The theoretical arguments for why religiosity and religious values may influence CSR can be derived from three interrelated theories that describe the dynamic relationships between organizations and their stakeholders and surrounding communities. In general, these theories provide motivation for hypothesizing a positive linkage between religiosity and CSR engagement. First, 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. Thus, it can be argued that CSR-related initiatives can be induced by the firms' pursuit to build a reputation and achieve legitimacy in the context of their social environment (see e.g., Archel et al., 2009; Patten, 1992; Tilt, 1994; Wilmschurst & Frost, 2000), which also suggests that CSR engagement may be influenced by the religious values upheld by the community. Moreover, the extant literature on CSR generally substantiates the claim that socially responsible behavior may be driven in part by the need for legitimacy (e.g., Bebbington et al., 2008; Fernando & Lawrence, 2014; Magness, 2006). Because religiosity and CSR are both related to public perceptions of ethics (Conroy & Emerson, 2004; Stassen, 1977), firms that willfully construct a religious public image motivated by the impetus of societal expectations would also be more likely to comply with the ethical standards and practices that constitute CSR.

Second, the institutional theory further describes the tendency toward intra- and inter-organizational conformity to achieve legitimization (e.g., Carpenter & Feroz, 2001; Fernando & Lawrence, 2014; Scott, 1987). This theory relates in particular to the authoritative effects of societal structures on organizational behavior, and can be used to study the processes through which established norms impact corporations. In the context of religiosity, it can be argued that because major world religions in general, and Christianity specifically, operate through the organization of these societal structures, the religiosity of a firm falls directly within the scope of institutional theory.

Similarly, the ethical principles and standards of practice that constitute CSR are also being ingrained in society as established methods of corporate practice (Campbell, 2007; Risi et al., 2022). Therefore, we contend that their environmental adaptability pushes more religious firms to also be more socially responsible.

Finally, the stakeholder theory established by Freeman (1984) postulates that the success of a firm is reliant on its ability to manage the expectations of various stakeholders, including its employees, customers, suppliers, the extended community, and even the government. Building on the stakeholder theory, it can be presumed that CSR engagement would be linked to religiosity. As argued by McGuire, Newton, et al. (2012), managers that are more attuned to the needs of multiple groups of stakeholders would reasonably be more responsive to additional social expectations not necessarily within the domain of CSR. This would arguably result in a higher degree of firm-specific religiosity within more religious communities. However, as McGuire, Newton, et al. (2012) further elaborate, stakeholder theory also highlights that the connection between regional and firm-specific religiosity is confounded by the potentially significant influence exerted by non-regional stakeholders, such as institutional investors.

### 2.2 | Related literature

Previously, 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 toward CSR that they influence (Brammer et al., 2007; Liao et al., 2019; Terzani & Turzo, 2020). For instance, while the proximity to Buddhist monasteries has been shown to reduce the polluting behavior of firms in China (Chen et al., 2020; Du et al., 2014; Su, 2019), the reverse has been documented for US firms, citing the "dominion" worldview of Christian theology as a deterrent to environmental ethics (Cui et al., 2015). Likewise, the different attitudes in Buddhist samples toward social issues like charity are attributed to the Buddhist principles of detachment (Brammer et al., 2007). The link between religiosity and CSR has also been recently studied for Islamic and cross-cultural samples (Hassan et al., 2022; Helfaya & Easa, 2022; Lu & Castka, 2009; Rodríguez-Domínguez & Gallego-Alvarez, 2021). Furthermore, country-level variations in religiosity and religious affiliations have been shown to influence attitudes toward ESG disclosures (Terzani & 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.<sup>2</sup>

<sup>2</sup>Biblical verses pertaining to business ethics in general include Proverbs 16:8, "Better is a little with righteousness; than great income with injustice," and pertaining to the power wielded by a handful of corporate agents include Leviticus 19:35, "You shall do no wrong in judgment, in measurement of weight, or capacity." More direct connections between the Christian theology and the principles of business ethics and social responsibility can be drawn from the actions of early followers of the faith, motivated in whole or part by their piety.

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 US firms, Cui et al. (2019) demonstrate that Catholic and mainland Protestant religiosity is linked with increased corporate community involvement initiatives. Religious values have also been shown to affect the sustainability of family businesses to the benefit of the community (Broccardo et al., 2019; Le Breton-Miller & Miller, 2006). The findings of Zolotoy et al. (2019) suggest that local religious norms positively influence the effects of CSR engagement on firm value.

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 US 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 US 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.

## 2.3 | Hypotheses

Building on theoretical motivations and the empirical evidence documented in prior studies, we hypothesize a positive relationship between firm-level religiosity and CSR:

**Hypothesis 1.** Religiosity is positively associated with corporate social responsibility.

In contrast to the prior literature, we employ a novel measure of religiosity which directly reflects firm-level adherence to Christian values and a biblical worldview. In previous studies, religious influence on firms has been proxied either by geographical, typically county-level measures of religiosity in the proximity of the corporate headquarters (e.g., Adhikari & Agrawal, 2016; Chantziaras et al., 2020; Cui et al., 2015; Du et al., 2014; Rossi et al., 2019) or by inferring the personal religious views of the firm's top executives (Adhikari & Agrawal, 2016; Chen et al., 2022; Chen, Chen, et al., 2021; Harjoto & Rossi, 2019; Liao et al., 2019). Arguably, these measures are rather indirect proxies of religiousness, which may not be an accurate representation of a firm's internal culture and adherence to religious values.

Given that our study utilizes 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., Adams et al., 2011; Chen, Chen, et al., 2021; Christie et al., 2003; Matten & Moon, 2004; Palazzo, 2002; Ucar, 2018), but also to play a mediating role on established causal and non-causal effects (e.g., Fatmy et al., 2022; Guiso et al., 2006; Shi & Veenstra, 2020). Consequently, while external regional influences such as county-level religiosity can be presumed to affect both firm-level religiosity and CSR engagement, they can also influence the way in which religiosity affects social responsibility, as recently documented by Chen, Chen, et al. (2021). Consequently, we posit the following hypothesis:

**Hypothesis 2.** 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 98 large, publicly-listed US 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

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

Faith indicators	Description
<b>Faith-compatible corporate actions</b>	<b>Company's actions that acknowledge, respect and comply with biblically orthodox teachings (30 points)</b>
(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)
<b>Corporate competency in the faith driven consumer market segment</b>	<b>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)</b>
(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)
<b>Equal application of equal protections</b>	<b>Creating a safe harbor inclusive of religious freedom and practice in the marketplace and workplace (20 points)</b>
(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)
<b>Public commitment to faith driven consumers</b>	<b>Demonstrating a company-wide public commitment to the faith driven consumer community (30 points)</b>
(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)

Note: 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).

firms' ESG scores as well as the environmental and social scores are obtained from Refinitiv, (iii) county-level data on religious adherents for US 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 706 firm-year observations.<sup>3</sup>

<sup>3</sup>The sample is restricted first and foremost by our main independent variable of interest, the FEI. The intersection of the FEI and Refinitiv ESG scores leaves us with 1037 firm-year observations. The number of firm-year observations decreases to 1029 when the environmental and social pillar scores are used as the CSR measures, and we lose 331 firm-year observations due to missing data for the control variables used in the regressions.

### 3.2 | Firm-level and county-level religiosity

We use the FEI constructed by the FDC to measure firm-level religiosity. The 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 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 United States 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.<sup>4</sup> 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.

In contrast to the religiosity proxies used in previous studies, the FEI scores for individual firms are a direct outcome of religiously motivated corporate behavior. The FEI exhibits considerable across-firm variation which can be considered an advantage relative to geographical measures such as state-level or county-level religiosity. Furthermore, the FEI is arguably a more direct measure of firm-level religiosity than indirect proxies based on the religious views of the firm's top executives because it aims to uniquely identify attitudes toward Christian values at the individual firm level.

However, there are also drawbacks to the use of the FEI. First, the FDC constructed the FEI and assessed firm-level adherence to Christian values in 2012 for 109 individual firms out of which only 98 are firms headquartered in the United States. The small number of firms obviously limits the statistical power of the empirical tests and may impede the generalizability of our findings. Although the small number of firms may raise concerns related to selection biases, it is important to note that the FDC independently constructed the FEI for well-known brands regardless of their adherence to Christian values and without any self-reported information by the firms, which should alleviate concerns related to self-selection biases. In order to that the sample is reasonably randomly selected and representative of publicly-listed US firms, we have performed comparisons of our sample to the descriptive statistics of the samples used in previous studies with similar dependent variables, and we have also specifically compared our sample to the samples used in the previous studies related to religiosity and CSR (i.e., Chantziaras et al., 2020; Chen, Chen, et al., 2021; Cui et al., 2015; Du et al., 2014; Harjoto & Rossi, 2019; Liao et al., 2019). In terms of descriptive statistics for firm characteristics such as size, profitability, and leverage, the firms included in our sample appear mostly comparable to the samples used in previous studies. If anything, we conclude that our sample may be slightly tilted toward larger firms.

The second main drawback of the FEI is that firms have been assessed only once in 2012, and consequently, the FEI is time-invariant. While firm-level religiosity is likely to be a relatively "sticky" characteristic, it is possible that firm-level adherence to Christian values changes slowly over time and this potential variation cannot be addressed in empirical tests. Furthermore, because the FEI does not exhibit any within-firm variation, we cannot estimate regression

specifications with firm fixed-effects or estimate regressions with different types of lag structures to completely rule out omitted variable biases or concerns related to reverse causality. Finally, it is important to emphasize that the FEI reflects the assessment of corporate behavior and religious actions from the viewpoint of conservative American Christianity conducted by a single conservative organization which obviously may raise concerns regarding the validity and generalizability of this proxy for firm-level religiosity.

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 & Fang, 2015; Chantziaras et al., 2020; Jiang et al., 2018), 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.<sup>5</sup> 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.

### 3.3 | Corporate social responsibility

The dependent variable in our analysis is CSR. 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

<sup>4</sup>Because the FDC focuses on well-known brands in the United States regardless of their adherence to Christian values, there is considerable across-firm variation in the FEI scores. 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. In addition, prior performance in CSR does not influence the selection process. There is also no indication that the nature of the firm's business would affect the firm's inclusion in the FEI. This is likely because the religious values upheld by the management of the firm and reflected by its culture are not necessarily perfectly connected to their operations. Nevertheless, it is worthwhile to note that our sample does not contain any firms that may be outright labeled as "sin" or "virtue" companies.

<sup>5</sup>The county-level religiosity data includes information on all religious congregations and the number of their adherents within each county in the United States. Based on this information, we can determine that religious diversity within regions is low enough to not have any significant impact on the county- to firm-level relationships between religiosity and CSR engagement. American congregations are predominantly Christian, with adherents of minority religions comprising a very small proportion of population in different counties.

**TABLE 2** Descriptive statistics.

	Mean	Median	25th	75th	St. Dev	No. of observations
<i>Religiosity</i>						
FEI score	31.12	31.00	25.00	37.00	8.28	1180
County religiosity	55.95	57.03	46.69	67.16	12.08	1210
<i>CSR</i>						
ESG score	60.28	65.03	50.42	74.37	19.84	1037
Environmental score	56.85	64.39	37.64	80.53	28.19	1029
Social score	63.35	67.21	49.88	79.28	20.58	1029
Workforce issues	65.47	71.87	47.88	85.89	25.29	1037
Human rights	45.37	50.00	5.51	74.74	33.53	1037
Community involvement	79.66	87.28	69.00	95.36	21.21	1037
Product responsibility	58.58	66.28	30.37	85.64	29.54	1037
Environmental innovation	33.04	25.44	0.00	63.40	33.40	1029
Emissions reduction	60.34	69.67	34.87	88.09	32.01	1029
Resource use	65.02	77.89	46.43	91.10	32.63	1029
<i>Control variables</i>						
Size	108,000	30,500	6600	93,000	260,000	1162
Profitability	4.82	5.05	2.09	8.81	20.39	1157
Leverage	34.25	29.15	16.92	44.87	28.68	1162
Growth	-1.58	3.03	-1.44	7.41	32.61	909
Market-to-book	7.91	2.95	1.58	5.93	26.22	985
Board size	11.63	12.00	10.00	13.00	2.30	1034
Board diversity	23.25	23.07	16.67	30.00	9.99	1034
Board independence	81.83	85.71	76.92	91.66	12.41	1033

Note: 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.

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 toward 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., Ali et al., 2017; Edmans, 2012; Hong et al., 2012; McGuire, Newton, et al., 2012; Ucar & 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 is 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 98 publicly-listed US firms are reported in Table 2. The descriptive statistics are reported without



TABLE 3 Correlations.

	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)	(xi)	(xii)
(i) FEI score												
(ii) County religiosity	0.22*											
(iii) ESG score	0.00	0.07										
(iv) Environmental score	-0.05	0.03	0.81*									
(v) Social score	-0.03	0.08*	0.94*	0.75*								
(vi) Size	-0.34*	-0.01	0.41*	0.43*	0.43*							
(vii) Profitability	0.03	0.05	0.13*	0.03	0.08*	0.15*						
(viii) Leverage	0.05	-0.04	-0.13*	-0.19	-0.08*	-0.43	-0.21*					
(ix) Growth	0.01	-0.01	0.01	-0.01	0.01	0.04	0.41*	-0.15*				
(x) Market-to-book	0.01	-0.03	-0.04	-0.06	-0.05	-0.12*	0.12*	0.22*	-0.01			
(xi) Board size	-0.04	0.06	0.29*	0.28*	0.30*	0.41*	-0.03	-0.13	0.02	-0.06		
(xii) Board diversity	-0.08*	-0.06	0.34*	0.24*	0.29*	0.15*	0.02*	0.02	-0.03	0.03	0.18*	
(xiii) Board independence	-0.02	0.11*	0.35*	0.39*	0.37*	0.24	0.08*	-0.12	-0.03	0.04*	-0.11*	0.28*

Note: 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.



taking logarithms of the variables. The mean and the median FEI scores for the sample firms are 31.12 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% with a standard deviation of 12 and the 25th to 75th percentile range from 47% to 67%. The firms assessed by the FDC have a mean ESG score of 60.28, with mean environmental and social pillar scores of 56.85 and 63.35, respectively. It is worth noting that our sample is constrained to U.S. firms that have FEI scores available, and these firms seem to have slightly higher ESG scores in comparison to the US 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 \$108 billion (\$30 billion), and have a mean return on assets of about 4.82%. On average, the board of directors of the sample firms have 11 members and about 23% of the board members are women.

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 ( $\rho = 0.22$ ). Inconsistent with Hypothesis 1, FEI score is not statistically significantly related to ESG score, Environmental score, or Social score. County-level religiosity, in contrast, is significantly positively correlated with Social score. FEI score is significantly negatively correlated with firm size and board diversity, suggesting that larger firms that have 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.

## 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, Hypothesis 1 is tested with the following regression specification:

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

where the dependent variable  $CSR_{i,t}$  is the natural logarithm of one of the 10 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 are both 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. Hypothesis 2 is tested by estimating alternative versions of the following fixed-effects specification:

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

where the dependent variable  $CSR_{i,t}$  is the natural logarithm of one of the 10 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% level, and the adjusted  $R^2$ s range from 41% to 57%. 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 7.6% higher score for social responsibility. This finding corroborates the expectations based on prior studies (e.g., Chantziaras et al., 2020; Cui et al., 2019; Schouten et al., 2014). Specifically, for US 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 et al., 2015).

**TABLE 4** Regression results.

	ESG score			Environmental score			Social score		
	I	II	III	I	II	III	I	II	III
Constant	-0.393 (-0.83)	-1.472** (-2.17)	-0.769 (-1.62)	-5.276*** (-3.38)	-8.406*** (-4.00)	-6.252*** (-4.21)	-0.496 (-1.01)	-0.978* (-1.73)	-0.312 (-0.69)
FEI score		0.211** (2.07)	0.209** (2.02)		0.648** (2.18)	0.661** (2.21)		0.189** (2.20)	0.173* (1.85)
County religiosity	0.453 (0.97)		-0.314 (-0.64)	-0.983 (-0.86)		-0.811 (-0.65)	0.927** (2.53)		0.363 (0.89)
FEI × County religiosity			3.627** (1.99)			4.046 (0.90)			1.227 (0.86)
Size	0.117*** (5.84)	0.127*** (5.86)	0.126*** (6.09)	0.242*** (4.16)	0.271*** (4.31)	0.272*** (4.42)	0.111*** (5.12)	0.118*** (5.35)	0.119*** (5.31)
Profitability	1.01 (1.30)	1.045 (1.30)	0.931 (1.27)	0.409 (0.31)	0.420 (0.33)	0.376 (0.29)	0.286 (0.70)	0.265 (0.58)	0.247 (0.56)
Leverage	-0.006 (-0.04)	-0.004 (-0.03)	-0.026 (-0.17)	-0.529 (-1.25)	-0.541 (-1.25)	-0.591 (-1.34)	0.148 (1.00)	0.081 (0.51)	0.099 (0.64)
Growth	-0.087 (-1.44)	-0.075 (-1.31)	-0.091 (-1.45)	-0.389** (-2.05)	-0.351* (-1.92)	-0.378* (-1.97)	-0.047 (-0.92)	-0.055 (-1.04)	-0.054 (-1.04)
Market-to-book	-0.001 (-0.23)	-0.001 (-0.16)	0.001 (0.04)	0.001 (0.10)	0.001 (0.19)	0.001 (0.30)	-0.001 (-0.77)	-0.001 (-0.60)	-0.001 (-0.54)
Board size	0.027** (2.24)	0.026** (2.19)	0.031*** (2.66)	0.117*** (3.40)	0.117*** (3.55)	0.123*** (3.62)	0.029* (1.86)	0.034** (2.23)	0.035** (2.19)
Board diversity	0.005** (1.81)	0.006* (2.20)	0.006** (2.27)	0.001 (1.07)	0.010 (1.49)	0.011 (1.52)	0.003 (1.35)	0.003 (1.32)	0.003 (1.39)
Board independence	0.014*** (6.00)	0.013*** (5.54)	0.012*** (6.16)	0.022*** (3.82)	0.020*** (3.70)	0.021*** (3.81)	0.009*** (4.69)	0.010*** (4.61)	0.009*** (4.82)
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 <sup>2</sup>	0.537	0.543	0.566	0.409	0.420	0.427	0.556	0.573	0.549
F-statistic	8.04***	8.54***	11.34***	4.73***	6.35***	6.13***	8.63***	10.97***	11.59***
No. of observations	706	706	706	698	698	698	698	698	698

Note: 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. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

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% 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 1.74% increase in the firm's ESG score.

The documented positive relationship is novel from the perspective of internalized firm religiosity as measured by the FEI score. 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 5.36% increase in the firm's Environmental score and about 1.56% 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., Chang et al., 2017; Chih et al., 2010; Olthuis & van den Oever, 2020; Udayasankar, 2008), Firm size, Board size, Board diversity, and Board independence are significantly positively associated with CSR engagement, and additionally, Growth is negatively associated with Environmental score.

To test Hypothesis 2, we estimate interaction regressions in which FEI score is interacted with County religiosity.<sup>6</sup> The results of these interaction specifications are tabulated in Column III for each of the three dependent variables. The adjusted  $R^2$ s of the interaction regressions range from 43% to 57%, and the  $F$ -statistics are significant at the 1% 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. The estimated coefficients for County religiosity are statistically insignificant throughout the different model specifications, while the coefficient for the interaction variable FEI score  $\times$  County religiosity is positive and significant at the 5% level in the regression with ESG score as the dependent variable. Thus, our estimates indicate that regional differences in religiousness do not have any incremental effect on CSR engagement over and above the influence of firm-level religiousness. However, the interaction regressions suggest that a higher degree of county-level religiousness strengthens the positive linkage between firm-level religiosity and CSR as measured by ESG score. Thus, the regression results provide at least partial 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  $R^2$ s of the interaction regressions range from 33% to 44%. 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 toward 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, and negatively related to Growth.

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 statistically significant in the regressions with Community Involvement, 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. Furthermore, the coefficient for the interaction variable FEI score  $\times$  County religiosity is statistically significant only in the regression with Resource Use as the dependent variable. The positive coefficient of this interaction term suggests that a higher degree of county-level religiosity strengthens the positive relationship between firm-level religiosity and the specific dimension of social responsibility that reflects themes related to the responsible use of natural resources.

### 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.<sup>7</sup> 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., Chen, Fan, et al., 2021; Cheng & Smyth, 2015; Emran & Hou, 2013; Gong et al., 2018; Hasan et al., 2022; Mavis et al., 2020). 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

<sup>6</sup>As shown in Table 3, FEI score is strongly positively correlated with County religiosity. When these religiosity measures are used simultaneously in the interaction regressions, the variance inflation factors (VIFs) are well below 5 for all variables, suggesting that our estimates should not be influenced by multicollinearity.

<sup>7</sup>Due to the limitations of Lewbel's (2012) methodology for obtaining instruments from internal regressors, it is not possible to include interaction terms within the instrumented variables matrix as this would violate the condition that the instrumented variables should not exceed the instruments. Consequently, we are unable to estimate instrumental variable regressions that would correspond to the interaction regressions reported in Table 4.

**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	−1.422* (−1.70)	−13.371*** (−4.36)	1.179 (1.39)	−4.129*** (−2.85)	−11.743*** (−3.65)	−8.916*** (−3.65)	−11.996*** (−4.63)
FEI score	0.023 (0.16)	0.723* (1.72)	0.281* (1.90)	0.526** (2.25)	−0.330 (−0.64)	0.907** (2.59)	0.934** (2.40)
Size	0.150*** (4.59)	0.432*** (4.49)	0.041 (1.55)	0.165*** (3.37)	0.457*** (4.98)	0.255*** (3.62)	0.331*** (4.06)
Profitability	2.003* (1.78)	2.383 (1.30)	0.784 (0.76)	0.716 (0.77)	0.867 (0.44)	1.271 (0.87)	0.486 (0.33)
Leverage	0.040 (0.16)	−0.270 (−0.30)	−0.128 (−0.72)	0.352 (1.19)	−0.679 (−0.92)	−0.524 (−1.03)	−0.778 (−1.30)
Growth	−0.020 (−0.35)	−0.496 (−1.28)	0.031 (0.43)	−0.210* (−1.79)	0.017 (0.06)	−0.439** (−2.49)	−0.221 (−0.91)
Market-to-book	−0.001 (−0.55)	−0.002 (−1.18)	0.001 (0.09)	−0.001 (−0.07)	0.002 (0.87)	−0.001 (−0.49)	−0.001 (−0.33)
Board size	0.026* (1.67)	0.102* (1.81)	0.033** (2.22)	0.066* (1.98)	0.177*** (3.58)	0.146*** (3.65)	0.132*** (2.93)
Board diversity	0.013*** (3.30)	0.011 (1.02)	0.006* (1.94)	−0.006 (−1.17)	0.011 (0.80)	0.009 (1.27)	0.011 (1.34)
Board independence	0.012*** (2.96)	0.010 (1.13)	0.008*** (2.83)	0.009** (2.23)	0.022** (2.26)	0.016** (2.52)	0.032*** (3.61)
Industry fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R <sup>2</sup>	0.409	0.364	0.332	0.357	0.396	0.383	0.443
F-statistic	7.29***	6.10***	3.27***	8.46***	12.25***	4.07***	6.11***
No. of observations	706	706	706	698	698	698	698

  

Panel B: Interaction regressions							
	Social responsibility				Environmental responsibility		
	Workforce issues	Human rights	Community involvement	Product responsibility	Environmental innovation	Emissions reduction	Resource use
Constant	−1.362** (−1.99)	−10.508*** (−4.83)	2.125*** (3.60)	−2.188** (−2.18)	−12.999*** (−6.46)	−5.809*** (−3.44)	−8.861*** (−4.85)
FEI score	0.023 (0.15)	0.749 (1.55)	0.278* (1.70)	0.013* (1.87)	−0.274 (−0.55)	0.873** (2.34)	0.908** (2.38)
County religiosity	−0.327 (−0.45)	1.393 (0.83)	−0.273 (−0.51)	1.287* (1.73)	−1.816 (−0.91)	0.426 (0.35)	−0.226 (−0.16)
FEI × County religiosity	3.312 (1.20)	8.548 (1.29)	3.766 (1.57)	−0.779 (−0.28)	1.348 (0.19)	6.003 (1.23)	10.087* (1.72)
Size	0.149*** (4.61)	0.433*** (4.56)	0.041 (1.52)	0.161*** (3.30)	0.457*** (5.14)	0.256*** (3.62)	0.333*** (4.26)
Profitability	1.896* (1.84)	2.265 (1.27)	0.669 (0.71)	0.741 (0.83)	0.864 (0.43)	1.193 (0.82)	0.362 (0.25)

(Continues)



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
Leverage	0.018 (0.07)	-0.207 (-0.24)	-0.147 (-0.80)	0.437 (1.48)	-0.778 (-1.06)	-0.510 (-1.02)	-0.805 (-1.39)
Growth	-0.035 (-0.59)	-0.505 (-1.29)	0.015 (0.22)	-0.193* (-1.78)	-0.015 (-0.05)	-0.454** (-2.50)	-0.260 (-1.00)
Market-to-book	-0.001 (-0.44)	-0.002 (-1.05)	0.001 (0.26)	-0.001 (-0.11)	0.002 (0.94)	-0.001 (-0.43)	-0.001 (-0.13)
Board size	0.031** (1.99)	0.107* (1.88)	0.038** (2.55)	0.062* (1.83)	0.182*** (3.76)	0.151*** (3.65)	0.142*** (3.23)
Board diversity	0.014*** (3.36)	0.012 (1.18)	0.007** (2.09)	-0.006 (-1.15)	0.010 (0.76)	0.010 (1.39)	0.012 (1.53)
Board independence	0.012*** (3.19)	0.008 (0.99)	0.008*** (3.02)	0.009** (2.09)	0.024** (2.34)	0.015** (2.33)	0.031*** (3.92)
Industry fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R <sup>2</sup>	0.420	0.374	0.356	0.365	0.401	0.391	0.460
F-statistic	7.07***	6.04***	3.49***	7.82***	13.98***	3.77***	6.36***
No. of observations	706	706	706	698	698	698	698

Note: 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. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

and the residuals from the first-stage regression of the instrumented independent variable.

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 economic magnitude to those reported in Table 4. The coefficients suggest that a one standard deviation increase in firm-level religiosity is associated with a 3.6% increase in ESG score, a 9.4% increase in Environmental score, and a 3.6% 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 CSR.

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 130.98 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 54.48 is statistically significant at the 1% level, and thus rejects the null of underidentification. Finally, the Hansen J statistic 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.

While the results of Lewbel's IV regressions should mitigate endogeneity concerns, it is important to note that the use of the FEI as a measure of firm-level religiosity precludes some conventional empirical approaches for strengthening causal interpretations. Specifically, because the FEI does not exhibit any within-firm variation, we cannot estimate regression specifications with firm fixed-effects or estimate

**TABLE 6** Instrumental variable regressions.

Panel A: Second-stage IV regressions			
	ESG score	Environmental score	Social score
Constant	−2.369*** (−4.51)	−10.320*** (−7.94)	−1.934*** (−4.34)
Instrumented FEI score	0.435*** (3.78)	1.136*** (4.43)	0.436*** (4.66)
Size	0.136*** (12.55)	0.290*** (8.94)	0.128*** (11.62)
Profitability	1.044*** (3.65)	0.469 (0.75)	0.254 (1.18)
Leverage	−0.004 (−0.05)	−0.556** (−2.44)	0.076 (0.93)
Growth	−0.061 (−0.88)	−0.301* (−1.83)	−0.046 (−0.91)
Market-to-book	0.001 (−0.21)	0.001 (0.18)	−0.001 (−0.57)
Board size	0.026*** (4.14)	0.118*** (6.99)	0.035*** (5.02)
Board diversity	0.007*** (5.04)	0.012*** (3.38)	0.004*** (3.38)
Board independence	0.012*** (9.55)	0.019*** (6.33)	0.009*** (8.79)
Industry fixed-effects	Yes	Yes	Yes
Year fixed-effects	Yes	Yes	Yes
Adjusted R <sup>2</sup>	0.529	0.408	0.523
F-statistic	57.52***	30.05***	60.44***
No. of observations	706	698	698
Panel B: Lewbel's IV first stage diagnostics (Stock & Yogo, 2005)			
K-P rk LM statistics	54.48		
K-P rk Wald F-test	130.98		
Hansen J-statistic	0.00		

Note: This table reports the results of instrumental variable regressions using adjustments for heteroscedasticity-based instruments. Columns I, II, and 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. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

regressions with different types of lag structures to completely rule out omitted variable biases or concerns related to reverse causality.

#### 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 98. 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 US 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.

Fourth, 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 county or state 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 throughout the different specifications after including county fixed-effects in the regressions and the coefficients are also positive and significant in the regressions with Environmental score and Social score as the dependent variables when state fixed-effects are included.

Finally, to further ascertain the robustness of our findings to different model specifications, we re-estimate the regressions with an

alternative set of control variables. Specifically, we replace Size with the natural logarithm of total equity, Profitability with return on equity, Leverage with the ratio of total debt to total equity, and Market-to-book with Tobin's Q. In these regressions, the coefficient estimates for FEI score remain positive and statistically significant and are similar in magnitude to those reported in Table 4.

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 CSR. 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 toward more socially responsible behavior. The firm-level religiosity measure in this study, FEI, 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 US 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 CSR. Specifically, we document that religious firms have higher ESG scores and they also have higher scores for the dimensions of social and environmental responsibility. These results are broadly consistent with the legitimacy theory and the institutional theory, suggesting that firms which actively align themselves with religious values would also be more likely to adopt socially responsible practices to strengthen their foundations within their communities. Moreover, in the context of the stakeholder theory (Freeman, 1984), the findings of this study suggest that firms that present as religious are also more likely to appease stakeholders through socially

responsible actions. With respect to the potential mediating effects of local religious values, our interaction regressions indicate that a higher degree of county-level religiousness may strengthen the positive linkage between firm-level religiosity and CSR. Nevertheless, our findings also suggest that regional differences in religiousness do not have any incremental effect on CSR over and above the influence of firm-level religiousness.

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. These results are not surprising given that the major tenets of the Christian faith would be better aligned with aspects of social responsibility that represent hard work, fair trade, and community well-being, and less aligned with facets concerning religiously more controversial policies that include gender issues and, for instance, the rights and inclusivity of sexual minorities. Overall, our empirical findings provide strong support for the hypothesis that firm-level adherence to religious values may encourage socially responsible behavior.

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