

SPECIAL ISSUE

Corporate social responsibility and COVID-19: Prior reporting experience and assurance

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Email: g.mansourfar@urmia.ac.ir**Abstract**

The novel COVID-19 has created an exogenous shock to capital markets and, hence, an ideal opportunity for researchers to assess whether CSR-related activities provide an insurance-like mechanism to protect firms against the shock. Using a large sample of 4361 firms domiciled in 40 countries, we investigate the roles of CSR reporting and assurance in the negative consequences of COVID-19 on firm value. The results confirm that prior CSR reporting experience buffers firms against the adverse effects of the health crisis. The results also support that not only does the assurance on CSR reports create a buffering effect against the health crisis, but it also intensifies the buffering effects of prior CSR reporting experience against the pandemic. Moreover, using difference-in-difference method for testing the link between CSR reporting and firm value, we show that the positive association of reporting and assurance with firm value is more pronounced during the pandemic as compared with the years preceding it. The results of this study are robust to various analyses. Replicating the analyses to the context of the global financial crisis, we find that prior CSR reporting experience and assurance provide similar buffering effects when a market is exposed to various exogenous shocks. The results also hold for the mandatory disclosure regimes. By distinguishing first and subsequent reports and assurance, we show that, unlike subsequent CSR reports and assurance, the initial ones cannot mitigate the negative effects of the crisis on firm value, indicating that stakeholders take into account longer-term CSR reporting experiences. Aside from reporting and assurance aspects of CSR, we analyze the role of CSR report's quality and accuracy and show that the adoption of Global Reporting Initiatives (GRI) frameworks can enhance socially responsible firms' resilience against systematic shocks.

KEYWORDS

COVID-19, CSR assurance, CSR reports, GRI adoption, the red queen effect

1 | INTRODUCTION

Subsequent to the pandemic COVID-19 outbreak, research has examined the role of corporate social responsibility (CSR) in COVID-19. There is a consensus that CSR can create a buffering effect against this novel exogenous shock. Using Chinese firms operating in the hospitality industry, Qiu et al. (2021) found that CSR activities,

engagement, and reporting can enhance stock returns and attract stakeholders' attention during the health crisis. Using a larger sample, Huang et al. (2020) found that firms with prior high CSR performance experienced lower financial losses during the pandemic. They also found that socially responsible firms could recover faster from the problems caused by this systematic shock. Shen et al. (2020) confirmed the above results using a similar sample of firms. Relying

on a sample of American firms during the first quarter of 2020, Albuquerque et al. (2020) found that companies with a higher environmental and social performance enjoyed higher returns, lower volatility, and higher operating profit margins. In summary, these studies provide evidence that CSR activities, engagement, and performance can increase a socially responsible firm's resilience against the negative effects of exogenous shocks. There are some evident gaps in these recent studies that motivated the present research. These studies primarily focused on CSR performance in examining the negative association between COVID-19 and firm value. With the exception of Qiu et al. (2021) who examined the effect of CSR-related information in the media, little or no attention has been paid to corporate CSR reporting, reporting quality, and assurance as well as the differences between the eclectic aspects of CSR. For instance, Qiu et al. (2021) relied on CSR reporting to measure performance (see, section 4.4 of Qiu et al. [2021]). However, CSR reporting and CSR performance should be distinguished as they do not always contain similar information (see, Richardson et al., 1999; Wang et al., 2018), although CSR reporting provides systematic and comprehensive information about CSR performance and other comparable CSR-related activities (Zhang et al., 2020). By way of illustration, ASSET4, as one of the mainstream providers of CSR performance data, uses different resources to measure performance. In addition to CSR reports, ASSET4 relies on stock exchange filings, annual reports, non-governmental organization websites, and news sources to measure performance. As such, CSR reports alone cannot be used as a proxy for CSR performance, and vice versa. In the same way, CSR disclosure is different from corporate CSR reporting and contains different information. By way of explanation, Wang et al. (2021) investigated corporations' responses to their service failures because of the current health crisis and found that a defensive response strategy can lead to a more positive consumer electronic-word-of-mouth. In this study, corporations' COVID-19 announcements extracted from Twitter were considered as CSR disclosure. In addition to these, the samples these studies have employed are restricted to either a specific industry or a country, however, this crisis "has disrupted the lives of every individual and the economy" (Popkova et al., 2021, p. 1). Therefore, the present study extends this line of research and attempts to analyze the role of CSR reporting and assurance in creating a buffering effect against the health crisis using an international setting.

There are two main theories that could explain how CSR reporting leads to favorable financial returns or firm value (Braam & Peeters, 2018; Clarkson et al., 2019; Hummel et al., 2019; Koseoglu et al., 2021). Signaling theory explains the relationship between CSR reporting and firm value from an economic perspective, whereas legitimacy theory explains it from a socio-political perspective (see, Braam & Peeters, 2018). Signaling refers to those firms with superior CSR performance that are inclined to voluntarily disclose their positive news; Whereas legitimacy refers to those firms with low CSR performance and reputation that attempt to rebuild reputation and regain legitimacy by CSR disclosure. Along with these two, various other theoretical perspectives including stakeholder,

resource dependence, and impression management could also help us to understand the motivations behind CSR reporting (Frynas & Yamahaki, 2016). Despite the theoretical and empirical support, limited research exists on how CSR reporting affects firm value in the context of COVID-19. As such, the first objective of this study is to analyze the effects of CSR reporting on firm value resulting from the recent adverse systematic shock. The support in the literature contends that CSR reporting can play a value protection role and create an insurance-like mechanism in the face of reputation shocks or negative events (see, Christensen, 2016; Lins et al., 2017; Zhang et al., 2020). Drawing on this literature, we argue that prior CSR reporting can create a buffering effect against the pandemic's negative impacts on firm value. Moreover, a growing line of research has shown that, when CSR reporting is assured, the positive impact of CSR reporting becomes even stronger because of the enhanced credibility and confidence the assurance can create (Arco-Castro et al., 2020; Casey & Grenier, 2015; García-Sánchez et al., 2022; Kim et al., 2019; Kuo et al., 2021; Martínez-Ferrero et al., 2021; Steinmeier & Stich, 2019). Drawing on this line of research and building on the Red Queen effect concept and the theories of signaling and legitimacy, we set the second objective of this study which is to examine how prior CSR assurance can help firms to become more immune to the negative consequences of systematic shocks.

Using a large sample of 32,861 observations from 40 countries over the years 2010 to 2020, we test the insurance-like role of CSR reporting and assurance in the negative impacts of COVID-19 on firm value. Employing a market-based instrument to measure firm value, we find that prior CSR reporting and assurance can mitigate the adverse impacts of the health crisis on firm value. We also find that prior CSR reporting and assurance lead to a greater positive impact on firm value during the pandemic as compared with the years preceding it. Moreover, as assurance enhances CSR reports' credibility, we confirm that when reports have been assured, they can create an even greater positive impact on firm value during the pandemic as compared with unassured reports. We use both ordinary least squares (OLS) and fixed effects (FE) to estimate the models. We also replicate the main hypotheses testing using the Generalized Method of Moments (GMM). Results are also robust to alternative methods and different control tests. We controlled for the large proportion of U.S. firms, different country-level characteristics, and other exogenous shocks. We also confirm the results using a mandatory CSR disclosure regime. Next, analyzing CSR reporting and assurance experience, we discover that initial and subsequent CSR reporting activities are assessed differently by stakeholders. Finally, consistent and contributing to the literature, we find that CSR reports following Global Reporting Initiative (GRI) guidelines are more likely to be classified as high-quality disclosure (Ballou et al., 2018; Muslu et al., 2019; Orazalin & Mahmood, 2019). This strand of the literature concluded that GRI-based reports enjoy higher CSR quality levels (Herremans et al., 2016). Consistent with this line of research that demonstrates greater accuracy and completeness can influence stakeholders assessments of legitimacy (Melloni et al., 2017; Michelon et al., 2015; Zhang et al., 2020), we find that

GRI-based reports can mitigate the negative impacts of COVID-19 on firm value.

In summary, our study contributes to the literature in several ways. First, to the best of our knowledge, this is the first international study analyzing the role of prior CSR reporting, assurance, and the adoption of GRI guidelines in firm value in the context of COVID-19. Next, we extend Christensen (2016), Zhang et al. (2020), and Gong et al. (2021) by showing that CSR reporting activities can create an insurance-like mechanism even against systematic shocks. Third, we extend Lins et al. (2017) by showing that stakeholders give more value to CSR-related information during systematic crises. This, in turn, contributes to the literature that shows CSR reporting can lead to a favorable financial outcomes by revealing that socially responsible firms can draw greater benefits from CSR reporting when there is an exogenous shock in the market (see e.g., Arco-Castro et al., 2020; Carey et al., 2021; Chi et al., 2020; García-Sánchez et al., 2022; Martínez-Ferrero et al., 2021; Martínez-Ferrero & García-Sánchez, 2017; Raimo et al., 2021). Fourth, we extend Chen et al. (2018), Wang et al. (2018), Kuo et al. (2021), and Liu and Tian (2021) by demonstrating the role of CSR reporting and assurance during the pandemic under a mandatory disclosure regime. Fifth, extending Dhaliwal et al. (2012) and Muslu et al. (2019), we show that initial CSR reporting and assurance have different buffering effects from subsequent reporting and assurance during systematic crises. Last but not least, extending Ballou et al. (2018), Muslu et al. (2019), and Orazalin and Mahmood (2019), we show that GRI-based reports significantly influence stakeholders' assessments of legitimacy, leading them to react positively when the firm is exposed to a crisis.

The rest of the paper is structured as follows. In Section 2, the related theories and empirical literature on the role of CSR reporting and assurance in firm value are explained. Under the same section, we develop our hypotheses subsequent to reviewing the related literature. Presenting the research design, Section 3 elaborates on the models for testing the hypotheses. We also define our variables and sample under the same section. After providing explanations regarding descriptive statistics for the variables and the baseline results, Section 5 reports the robustness checks and further analyses. Finally, we conclude the paper in Section 6 by providing a summary of the result and a discussion of the implications.

2 | LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

In this section, we first explain the tradeoff between costs and benefits of CSR reporting and motivations for engaging in CSR reporting practice. We, then, draw on signaling and legitimacy theories to elaborate on firms' motivations. Next, we explain why firms are likely to issue CSR reporting using the stakeholder, resource dependence, and impression management theories as alternative lenses. Literature on the role of CSR reporting and how it mitigates the negative effects of COVID-19 on firm value is discussed next. Building on the Red Queen effect, we then discuss the role of reporting assurance

in this process and explain the theory on why certain firms are more likely to have their CSR reports assured, and how such assured CSR reports lead to more favorable firm value. Finally, we postulate on how CSR and assurance can create resilience against the adverse impact of COVID-19 on firm value.

2.1 | CSR reporting and firm value in the absence of the pandemic

As in financial reporting, there are costs, including direct and indirect, associated with producing CSR reports. The direct reporting costs include preparation, certification, and publication costs. Indirect costs relate to the costs of making the reports and information available to other parties such as competitors, labor unions, regulators, tax authorities (Berger & Hann, 2007; Christensen et al., 2019a; Feltham & Xie, 1992; Verrecchia, 1983). Some of these costs are quite complex to enumerate. Some likely have a fixed component, making such a voluntary activity burdensome for companies that lack motivations or do not see the benefits of reporting outweigh the associated costs. According to the literature, there are two main theories explaining why firms might perceive the benefits in producing CSR reports, despite all the direct and indirect costs.

The first theory that explains the firm motivations for the tradeoff from an economic perspective is the signaling theory. According to this theory, when firms have positive news regarding CSR initiatives, they voluntarily report such news in order to mitigate the information asymmetry (Dye, 1985; Spence, 1973). In other words, firms with a higher CSR performance are more inclined to apprise their stakeholders of their programs and superior performance. These socially responsible firms rely on CSR reporting to increase their legitimacy and reputation. The second theory that explains firms' engagement in CSR reporting from the socio-economics perspective is the legitimacy theory. This theory emanates from the concept of the social contract. According to this concept, firms are in a social contract with their stakeholders and failing to accommodate the stakeholders' interests will result in stakeholders' withdrawal from the contract. When the stakeholders see the social contract in jeopardized due to firms' failure to address CSR, firms will react by trying to demonstrate their CSR performance. Therefore, when firms are subject to public pressures and legitimacy threats, they produce CSR reports to camouflage their bad behavior and/or to maintain their legitimacy and reputation (see, Deegan, 2002). These two theories, signaling and legitimacy, denote that firms have different motivations for voluntarily reporting their CSR information, depending on their CSR performance and societal pressures they face to provide disclosure. Thus, regardless of the incentive to provide a report, firms engage in CSR reporting when the benefits of producing the reports outweigh the costs. However, the use of signaling and legitimacy theories does not indicate dismissal of other possible perspectives through which one can understand the motivations behind CSR reporting activities.

Manetti et al. (2019) explain firms' inclinations toward CSR reporting activities through the lens of stakeholder theory. Expounding

the motivations behind CSR reporting from the perspective of accountability, this theory posits that firms are no longer accountable only to their creditors and shareholders, rather they need to create a balance between a wide range of expectations and interests from a multiplicity of stakeholders (Freeman, 1984). The normative or moral branch of this theory postulates that it is a moral duty for a corporation to be accountable to their stakeholders because each stakeholder group has its intrinsic value (Donaldson & Preston, 1995). As a result, socially responsible firms resort to CSR reporting to fulfill this moral duty. On the other hand, the resource dependence theory of Pfeffer and Salancik (1978) posits that corporations are not independent of their surroundings, thus they need their stakeholders to guarantee the flow of critical sources for their survival (de-Miguel-Molina et al., 2019; Frynas & Yamahaki, 2016). Therefore, firms must consider the interests of those who control their critical resources (Herremans & Nazari, 2016). As there is also a demand for disclosure from various stakeholder groups (Manetti et al., 2019), firms must adjust their structure and behaviors to meet this need (Herremans et al., 2016). Taking together these two theories, we assume that managers turn to CSR reporting activities not merely because it is their moral duty, rather they have to do so to maintain or increase the firm value. Moreover, the other theory that can elucidate the incentives behind CSR reporting activities is impression management.¹ This theory can also integrate signaling and legitimacy theories into a common understanding as it concerns firms' tendencies for changing stakeholders' perceptions of firms, whether they be socially responsible with a positive reputation (signaling theory) or socially irresponsible with a negative reputation (legitimacy theory). The impression management theory, which is developed in social psychology, refers to "behavioral strategies that people use to create desired social image or identities" (Tetlock & Manstead, 1985, p. 59). Thus, corporations use CSR reporting to influence their audiences' perceptions. This theory posits that "an organization adopts communication tools that make the organization appear to comply with the expectations of stakeholders, who are not able to verify the validity of this information. When a company sees its legitimacy threatened, it may use defensive impression management strategies (e.g., apologies, excuses and justifications) to protect its image or to justify socially reprehensible practices or behavior" (Talbot & Boiral, 2018, p. 370). As a result, it explains the motivations of firms with different levels of CSR performance for issuing CSR reports. To recapitulate, stakeholder, resource dependence and impression management theories can also explain the motivations behind CSR reporting activities.

The empirical research provides evidence for the benefits firm realized by preparing a CSR report. A significant number of these studies have concluded that CSR reporting results in lowering the information asymmetry. Examining the relationship between disclosure of non-financial information in the form of stand-alone CSR report and analyst forecast accuracy, and using firm-level data from 31 countries, Dhaliwal et al. (2012) found that CSR reporting leads to lower analyst forecast errors. Likewise, Muslu et al. (2019) relied on a disclosure score based on the tone, readability, length, and the horizon content of

CSR reports and showed that those reports with a higher CSR disclosure score enjoy more accurate analyst forecasts. Muslu et al. (2019) maintained that firms with high-quality CSR disclosure enjoy smaller forecast errors in the pre-and post-restatement periods, implying that CSR reporting mitigates information asymmetry. Extending the earlier research on CSR reporting (Dhaliwal et al., 2012; Muslu et al., 2019), Zhang et al. (2020) found that firms with high-quality CSR disclosure enjoy smaller forecast errors in the pre-and post-restatement periods. Another stream of research investigates the impacts of CSR reporting on information asymmetry from the output perspective. In other words, researchers believe that if CSR reporting can mitigate the information asymmetry between the parties, then lower levels of information asymmetry can result in the reduction in external financing costs and better access to financial resources because lower levels of information asymmetry are associated with the reduction in external financing costs (Poursoleyman, Mansourfar, & Abidin, 2020, 2022). Employing an international setting consisting of 3594 firms from 31 stock indices, García-Sánchez et al. (2019) found that CSR reporting is negatively associated with financial constraints. Dhaliwal et al. (2011) in an influential study showed that firms with higher costs of equity capital are likely to initiate disclosure of CSR activities, thus reducing the cost of equity subsequently. They extended their sample later by using an international setting in 2014 and corroborated that there is a negative association between CSR disclosure and cost of equity capital (Dhaliwal et al., 2014). Using an international setting consisting of 16 countries, Martínez-Ferrero and García-Sánchez (2017) found that "voluntarily revealing social and/or environmental information reduces a firm's cost of capital by decreasing investors' uncertainty and information asymmetries." (p. 224). In the same way, Chi et al. (2020) showed that CSR reporting issuance is negatively associated with the cost of debt. Therefore, research widely acknowledges that CSR reporting facilitates external financing (e.g., Bhuiyan & Nguyen, 2019).

In summary, the above empirical studies show that prior CSR reporting can reduce information asymmetry and subsequently lower financing costs, leading to a favorable financial outcome. The direct positive link between CSR reporting and firm value also has been investigated in the literature. Using a sample of U.K. firms from 2004 to 2013, Li et al. (2018) found that there is a positive association between CSR disclosure level and firm value, suggesting that the improved transparency, accountability, and enhanced stakeholder trust play a key role in boosting firm value. Extending the research by Li et al. (2018), Albitar et al. (2020) studied the impact of CSR disclosure in integrated reports on firm performance in the United Kingdom. Using the same proxies over the years 2009 to 2018, they found that there is a positive association between CSR disclosure and firm value and the adoption of the novel types of reporting improves the mentioned connection. The positive link between CSR reporting and firm value has been further supported in the literature (e.g., Clarkson et al., 2019; Li et al., 2020; Nekhili et al., 2017; Ting, 2021). Thus, consistent with this line of research, our first hypothesis is as follows:

Hypothesis 1 *Prior CSR reporting improves firm value.*

2.2 | CSR reporting and firm value during the pandemic

The studies discussed in the previous section were in the absence of systematic or unsystematic shocks. Another strand of literature on the role of CSR reporting in firm value shows that prior CSR reporting experience can even protect firms' value when they are exposed to crises or negative events. For example, Christensen (2016) investigated whether corporate accountability engagement helps to protect firm value against high-profile misconduct. He found that corporate accountability reporting helps to prevent firms from the occurrence of high-profile misconduct—e.g., bribery, kickbacks, discrimination. He also showed that firms with prior CSR reporting enjoy the benefit of ethical capital and suffer less from negative market reactions. In support of the buffering effect of prior CSR reporting experience, Zhang et al. (2020) examined how firms use CSR disclosure to protect their value and reputation following financial restatements. According to Zhang et al. (2020), these financial restatements "... reduces the reliability of financial statements, destroys the trust of investors and other stakeholders, and endanger corporate legitimacy" (Zhang et al., 2020, p. 2). They found that prior CSR reporting experience acts as an insurance-like or value protection role in mitigating the restatement-related negative consequences on firm value. Relying on this line of research but applying it to a new environment, we predict that prior CSR reporting can create a buffer against the negative effects of the pandemic systematic shock on firm market value. Thus, the second hypothesis of this study is as follows:

Hypothesis 2 *Prior CSR reporting experience can mitigate the negative association between COVID-19 and firm value.*

According to Lins et al. (2017), when trust, in general, becomes low, investors may pay for a valuation premium for the firms with higher and more trustworthy social capital. Lins et al. (2017) supported this argument in the context of the global financial crisis. Motivated by this study and consistent with research that contends that CSR reporting has the potential to enhance a firm's reputation (Pham & Tran, 2020), we predict that during the pandemic stakeholders are more likely to support socially responsible firms as compared with normal times. We, therefore, put forward the third hypothesis as follows:

Hypothesis 3 *The positive association between prior CSR reporting experience and firm value during the pandemic is more pronounced relative to the years preceding the health crisis.*

2.3 | CSR reporting assurance and firm value in the absence of and during the pandemic

We posit that the "Red Queen" effect can clearly expound why firms are likely to get their CSR reports assured. This effect refers to the response of the Red Queen to Alice when she appears to be stationary

despite running a race. He responds that "in a fast world one must run just to stay still" (Barnett & Hansen, 1996, p. 140). The "Red Queen" effect in CSR happens when a leading firm starts to invest in CSR activities and subsequently sets the expectation for other corporations (Barnett & Hansen, 1996; Bertels & Pelozo, 2008). Therefore, leading firms need to keep finding ways to differentiate themselves from others (Robinson et al., 2011). Thus, as the Red Queen states if a corporation wants "...to get somewhere else, [they] must run at least twice as fast as that!" (Carroll, 1960, p. 345). One of the ways whereby firms could distinguish themselves from others is to issue a CSR report. However, given the increase in the increasing number of firms issuing CSR reports, the strategy of issuing reports can no longer differentiate leading firms. According to the latest survey by KPMG (2020) on the issuance of CSR reports, the ratio of N100 and G250 issuing reports has reached a staggering number of 80% and 96%, respectively (KPMG, 2020, p. 11). According to the literature, leading firms can distinguish their reports from the rest by having their CSR reports assured by a third party. There are currently two standards used for the assurance of these reports, International Standard on Assurance Engagement (ISAE) 3000 issued by the International Auditing and Assurance Board (IAASB) and the AA1000 Assurance Standard issued by AccountAbility Organization. The latter standard defines assurance as "The methods and processes employed by an assurance provider to evaluate an organization's public disclosures about its performance as well as underlying data, processes and systems, against suitable criteria and standards in order to increase the credibility of public disclosure. Assurance includes the communication of the results of the assurance process in an assurance statement." (AccountAbility, 2018, p. 36). Therefore, assurance is aimed to enhance the credibility of CSR reports. Aside from the "Red Queen" effect, both signaling and legitimacy theories can also explain why firms are likely to seek assurance on CSR reports. In the same way, Martínez-Ferrero et al. (2021) build on these two theories to understand whether CSR assurance signals credibility to the capital market by reducing information asymmetry. Based on the signaling theory, a socially responsible firm seeks assurance when it issues a CSR report to show trustworthy information in a balanced report and to show that the information provides all material respects of operations (Braam & Peeters, 2018). Thus, assurance can enhance the reliability of the reports which in turn enhances stakeholders' confidence. This enhancement is clearly stated by IAASB (2013): "Assurance engagement—An engagement in which a practitioner aims to obtain sufficient appropriate evidence in order to express a conclusion designed to enhance the degree of confidence of the intended users other than the responsible party about the subject matter information (that is, the outcome of the measurement or evaluation of an underlying subject matter against criteria)" (para. 12). When it comes to the legitimacy theory, this theory takes the view that as managers have the intention of deflecting the attention, they report only positive news and are more likely to report the activities selectively (see, Braam & Peeters, 2018; Brooks & Oikonomou, 2018). Firms should report their activities in a balanced way, thus, firms with low CSR performance are less likely to have

their reports assured, although assurance can enhance stakeholder's appreciation of the firm's transparency endeavors and renewal of social license (Hummel et al., 2019; Weaver et al., 1999). We will examine whether firms with lower (higher) CSR performance are less (more) likely to have their CSR reports assured in the further analyses section—the section relating to the role of CSR performance.

There is empirical support for the association between assurance and added credibility. Simnett et al. (2009) found that companies that seek to enhance the credibility of their reports and build their corporate reputation are more likely to have their CSR reports assured. Using an international setting comprised of 22 countries over the years from 2002 to 2017, García-Sánchez et al. (2022) confirmed this motivation for enhancing the reputation. In another study, using interviews with corporate social responsibility representatives from 20 U.K. listed companies, Jones and Solomon (2010) found that more than half of the participants believed that assurance improves the credibility of the reports and builds trust with stakeholders. The literature supports a negative relationship between CSR assurance and information asymmetry. Fuhrmann et al. (2017) investigated how the assurance of CSR reports enhances the report's credibility in the eyes of the investors and, thus, results in lower information asymmetries, as measured by bid-ask spreads. They found that a high assurance level decreases information asymmetry. Steinmeier and Stich (2019) examined the effect of CSR assurance on managerial investment decisions in terms of CSR investment efficiency. They posited that CSR assurance improves the set of information available for managerial decision-making, resulting in higher CSR investment efficiency. They showed that CSR assurance reduces information asymmetry, which enables investors to more effectively monitor a firm's management. Previous studies also predict that if assurance can lower information asymmetry it can subsequently enhance firm access to financial resources. In support of this argument, García-Sánchez et al. (2019) found that CSR assurance and its quality have a negative impact on financial constraints. Moreover, they showed that assurance and assurance quality intensify the negative association between CSR disclosure quality and financial constraints. Similarly, Casey and Grenier (2015) showed that the cost of equity capital was significantly lower when an accounting firm was the CSR assurance provider. In the same line of the literature, Martínez-Ferrero et al. (2021) used a sample of publicly held companies in Europe over a 5-year period from 2012 to 2016 and confirmed that CSR assurance quality mitigates the cost of capital. Examining how capital markets respond to the credibility of CSR information using Tobin's Q, Martínez-Ferrero et al. (2021) showed that this credibility is positively assessed by capital markets and consequently improves firm value. Arco-Castro et al. (2020) used the same proxy for firm value and confirmed that the external assurance of corporate philanthropy enhances market value. Recently, Kuo et al. (2021) have found that CSR assurance intensifies the negative relationship between mandatory CSR reporting and the cost of debt. Using an international sample comprised of 39 countries, Carey et al. (2021) observed the same relationship from a voluntary perspective and showed that CSR assurance and its quality aspect

amplify the negative impact of CSR reporting on the cost of debt and external financing constraints. To measure the quality, they rely on the notion that accounting and auditing firms provide more credible assurance than non-accountant experts. Therefore, CSR assurance can lead to a better financial status and enhance firm value (Clarkson et al., 2019, p. 16). Moreover, as the assurance of CSR report improves firm's reputation (Birkey et al., 2016) and influences stakeholders perceptions (Braam & Peeters, 2018; Clarkson et al., 2019), we predict that assurance can increase firm value and protect the firm against the pandemic's negative impacts. Consistent with the argument provided to support Hypothesis 3, we postulate that the positive relationship between firm value and assurance of CSR reporting is greater during the pandemic. Thus, the set of hypotheses relating to assurance are presented as follows:

Hypothesis 4 *Prior CSR reports assurance enhances firm value.*

Hypothesis 5 *The assurance of prior CSR reports mitigates the negative connection between COVID-19 and firm value.*

Hypothesis 6 *The positive association between the assurance of prior CSR reports and firm value is more pronounced in the context of COVID-19 relative to the years preceding the pandemic.*

3 | RESEARCH DESIGN

3.1 | Variable measurement

3.1.1 | Dependent variable

Following Clarkson et al. (2019), Kim et al. (2019), Albitar et al. (2020), Pham and Tran (2020), Arco-Castro et al. (2020), and Martínez-Ferrero et al. (2021) we rely on a market-based instrument to measure firm value. To this end, we use the ratio of the market value of equity to the book value of lagged assets which is a commonly used measure of value-added in finance literature. The frequency of its usage according to Christensen et al. (2019b), who synthesized 380 published studies on CSR and CSR reporting, is not the only motivation for applying the measure in our study. There are three additional reasons explaining why studies investigating the impact of CSR on firm value in the context of an exogenous shock should prefer market-based instruments over accounting-based ones. The first reason refers to who determines these measures and how these two are measured. Market-based instruments are determined by the market participants and are based on their assessment according to the past, present, and future stock returns, while the accounting-based instruments measure internal effectiveness (Barauskaite & Streimikiene, 2021; Van Beurden & Gössling, 2008). Therefore, as market-based instruments represent a firm's long-term expected value, it is more appropriate when research goal is to analyze the association between CSR and firm value as CSR initiatives' impact on a firm is more likely to be reflected in the long run (Cahan et al., 2016). Thus, market-based instruments are more likely to

capture the influence of CSR activities. The second reason relates to the speed of reflecting changes. Accounting ratios are historic; therefore, they cannot absorb systematic changes in the short run. When it comes to market-based instruments, they can expeditiously reflect such systematic changes. Finally, the third reason stems from the risks these two can reflect. Market-based instruments contain mostly systematic risks, while accounting-based instruments contain predominantly unsystematic risks. Although they can capture systematic risks as well, they are unable to do so within a short-term period. These rationales motivate us to use a market-based instrument instead of accounting measures.

3.1.2 | Independent variables: COVID-19, CSR reporting, and assurance

To measure the influence of the pandemic on firm value, we use a dummy variable taking the value of one for the year 2020 and zero otherwise. We expect this variable to be negatively related to firm value.

To measure prior CSR reporting and assurance, we relied on binary variables. We used the ASSET4 database to determine which firm issued a CSR report and whether these reports were assured. *CSR_Report* represents CSR reports and is scored one if the firm issues CSR reports. To measure this, we use the item with the code CGVSDP026. *CSR_Assurance* takes one when a CSR report is assured and zero otherwise. We rely on the item with the code CGVSDP033 to gauge this variable.

3.1.3 | Control variables: Firm and country characteristics

As the sample consists of firms domiciled in 40 different countries, we not only use firm-level control variables, but also control for country characteristics.

Firm characteristics

Following the relevant literature (e.g., Chen et al., 2018; Clarkson et al., 2008, 2019; Li et al., 2020; Lins et al., 2017; Poursoleyman, Mansourfar, Homayoun, et al., 2022; Ting, 2021; Zhang et al., 2020), we include several control variables, including cash balances (*Cash*), firm size (*Size*), property, plant and equipment (*PPE*), financial leverage or debt ratio (*FinLev*), firm age (*Age*), research and development intensity (*R&DInt*), capital expenditure (*CapExp*), and selling, general, and administrative expenditure (*SGAExp*). These variables are defined in the [Appendix A](#).

Country characteristics

As we use an international sample covering corporations from 40 countries, we capture country characteristics as well. Following Chen et al. (2018), we use the annual growth of gross domestic product (GDP) per capita to capture this effect. GDP growth is of paramount importance during the pandemic as interdisciplinary

studies have shown that COVID-19's fatalities are much worse in poorer countries due to overcrowded housing and work conditions (see, Elgar et al., 2020).

3.2 | Model specification

To test the hypotheses on CSR reporting, Hypotheses 1 to 3, we rely on the below model:

$$FV_{i,t} = \beta_1 CSR_Report_{i,t-1} + \beta_2 Pandemic + \beta_3 Pandemic \times CSR_Report_{i,t-1} + \beta_4 Cash_{i,t-1} + \beta_5 Size_{i,t-1} + \beta_6 PPE_{i,t-1} + \beta_7 FinLev_{i,t-1} + \beta_8 Age_{i,t-1} + \beta_9 R\&DInt_{i,t-1} + \beta_{10} CapExp_{i,t-1} + \beta_{11} SGAExp_{i,t-1} + \beta_{12} GDPGr_{i,t-1} + Country_Dummies + Industry_Dummies + Year_Dummies + \epsilon_{i,t} \quad (1)$$

where *FV* denotes firm value, *CSR_Report* represents prior CSR report experience, *Pandemic* represents COVID-19, *Cash* shows cash inventories, *Size* denotes the firm size, *PPE* represents property, plant, and equipment, *FinLev* denotes financial leverage, *Age* shows firm age, *R&DInt* represents research and development intensity, *CapExp* and *SGAExp* represent capital and selling, general, and administrative expenditures, respectively, *GDPGr* shows annual growth of GDP per capita, *Country_Dummies* represents a series of dummy variables for the effects of the countries, *Industry_Dummies* denotes a series of dummy variables for the industries effects, and *Year_Dummies* shows a series of dummy variables for the effects of years.

To confirm Hypothesis 1, we expect β_1 to be positive and significant. In the second hypothesis, we hypothesized that the negative association between COVID-19 and firm value should be mitigated by prior CSR reporting experience. Therefore, we first expect β_2 to be negative and then β_3 to be positive. To support the third hypothesis, we expect β_1 and β_3 to be positive and significant, confirming that during the pandemic the positive link between prior CSR reporting experience and firm value is more pronounced than the years preceding the health crisis.

Regarding the second set of hypotheses, Hypotheses 4 to 6, we designed the following model:

$$FV_{i,t} = \beta_1 CSR_Assurance_{i,t-1} + \beta_2 Pandemic + \beta_3 Pandemic \times CSR_Assurance_{i,t-1} + \beta_4 Cash_{i,t-1} + \beta_5 Size_{i,t-1} + \beta_6 PPE_{i,t-1} + \beta_7 FinLev_{i,t-1} + \beta_8 Age_{i,t-1} + \beta_9 R\&DInt_{i,t-1} + \beta_{10} CapExp_{i,t-1} + \beta_{11} SGAExp_{i,t-1} + \beta_{12} GDPGr_{i,t-1} + Country_Dummies + Industry_Dummies + Year_Dummies + \epsilon_{i,t} \quad (2)$$

where *CSR_Assurance* indicates whether CSR reports were assured.

To assess the fourth hypothesis, β_1 is expected to be positive to support that prior CSR assurance can lead to a favorable firm value. Regarding Hypothesis 5, β_2 and β_3 should be negative and positive, respectively, confirming that prior CSR assurance mitigates the negative link between COVID-19 and firm value. Finally, in Hypothesis 6, we predicted a more positive connection between prior CSR assurance and firm value during the pandemic; therefore, this time we expect β_1 and β_3 to be positive.

3.3 | Sample

We use a sample of 4361 firms domiciled in 40 different countries for the period of 2010 to 2020. All the firms in our sample have CSR scores provided by ASSET4 databases. Among the 32,861 observations, 17,384 (52.9%) of them had issued CSR reports, whereas 7296 (41.97% of CSR reports and 22.2% of the total number of observations) reports were assured by an independent party. Table 1 reports the sample distribution by country. Of the countries in the sample, the United States has the greatest contribution to the sample size with 11,672 (35.52%) observations, of which 3620 (31%) issued CSR reporters. Regarding assurance, Japan takes the lead with 1526 assured reports. The last column contains information on the ratio of assured CSR reports to total reports. As it can be observed, Korea Republic has the highest percentage, 88.82%, while the United States does not have high percentage of reports assured. Therefore, although U.S. firms are more likely to report on CSR, they are less likely to have these reports assured. Similar to the United States, United Kingdom has a low ratio of reports assured (35.96%).

Table 2 presents the sample distribution by industry and year. The industrials and consumer discretionary make the greatest contribution to the sample, with the 6443 and 6401 observations, respectively. These two sectors also have the highest number of CSR reports and assured reports. When it comes to the ratio of assured reports to total reports, the industries are relatively balanced (40% on average) with the exception of telecommunication, where the ratio stands at the top with 55.51%. Panel B contains information about the sample distribution by year. As it can be observed, the number of CSR reports and the number of assured CSR reports both show upward trends, confirming KPMG's survey (KPMG, 2020).

4 | RESULTS

4.1 | Descriptive statistics

Table 3 reports the descriptive statistics on the continuous variables. *FV* has a mean of 1.301 and a median of 0.821. *CapExp* has the smallest standard deviation with the value of 0.058, indicating that its values are close to the mean. Regarding the highest standard deviation, *Size* has a standard deviation of 2.723, indicating that the sample includes firms with different sizes and total assets. Another large standard deviation relates to *GDPGr* with the value of 2.066. This value along with the minimum of -3.702 for this variable shows that the sample countries have experienced both economic growths and downturns. Regarding other variables, the descriptive statistics are consistent with previous studies (Chen et al., 2018; Clarkson et al., 2008, 2019; Li et al., 2020; Lins et al., 2017; Ting, 2021; Zhang et al., 2020).

We report the correlations, both Pearson and Spearman, in Table 4. The highest Pearson correlation coefficient is between *SGAExp* and *R&DInt* (0.593; p -value < .01). However, the highest Spearman correlation is between *CapExp* and *PPE* with the value of

0.677 (p -value < .01). The direction of correlations coefficients between CSR-related variables and control variables is congruent with the previous studies. For instance, *Size* has a positive correlation with both *CSR_Report* and *CSR_Assurance*, indicating that the larger firms are more likely to issue CSR reports and have it assured (Bollas-Araya et al., 2019; Ting, 2021). As it can be observed, correlations are not too high to indicate possible collinearity.

4.2 | Regression results

Table 5 reports the regression results for Models 1 and 2. We estimated these models using ordinary least squares (OLS), fixed effects (FE), and GMM. The two latter were employed to alleviate the concerns about endogeneity. Moreover, we also combined these models and report their results in the three last columns of this table, Equations (7)–(9). In Model 1 regression results, Equations (1)–(3), *CSR_Report* has a positive coefficient with the values of 0.16 (p -value < .01), 0.037 (p -value < .05), and 0.189 (p -value < .01), respectively. These results indicate that prior CSR reports experience is positively associated with the firm value which in turn confirms the first hypothesis predicting that the association between prior CSR reporting and firm value is positive. This also is in line with the results of the previous studies (see e.g., Carey et al., 2021; Chi et al., 2020; Raimo et al., 2021) and supports the theories on which our research builds on. Regarding the effect of the current health crisis, *Pandemic* has a negative coefficient in both equations (Equation 1: -0.088, p -value < .05; Equation 2: -0.056, p -value < .01; Equation 3: -0.043, p -value < .01), supporting the literature that COVID-19 had a negative impact on firm value (Albuquerque et al., 2020; Halling et al., 2020; Huang et al., 2020; Huang & Ye, 2021; Qiu et al., 2021). As we use binary moderators, one might follow Whisman and McClelland (2005) logic and assume that β_1 in Model 1 can just show the impact of prior CSR reports on firm value during the years preceding the pandemic, thus this beta might not provide robust evidence for the first hypothesis because this prediction concerns the link between the mentioned variables regardless of the presence or absence of a systematic shock in the market. Gomariz and Ballesta (2014) also use this approach in their study and claim that the coefficient of their explanatory variable reflects the impact of the explanatory variable on the dependent variable when the moderator is 0. We, therefore, re-estimate Model 1 without the inclusion of *Pandemic* and the interaction effect to see whether the positive link between prior CSR reports and firm value holds without considering the effects of systematic shocks. Our untabulated analyses confirm the mentioned relationships. Moreover, according to our untabulated analyses, the regression of Model 1 without the inclusion of *CSR_Report* and the interaction effect of *Pandemic* \times *CSR_Report* reconfirm that there is an adverse association between the health crisis and firm value. In terms of the interaction effect, the results show that *Pandemic* \times *CSR_Report* is positive in the equations. Therefore, when the *Pandemic* is the main variable and *CSR_Report* is the moderator of the model, it can be concluded that prior CSR reporting experience

TABLE 1 Sample distribution by country

Country	No. Obs.	Pct. Obs.	No. CSR reports	Pct. CSR reports	No. CSR assurance	Pct. CSR assurance	Pct. CSR reports to Obs.	Pct. CSR assurance to Obs.	Pct. CSR assurance to CSR reports
Argentina	85	0.26%	34	0.20%	2	0.03%	40.00%	2.35%	5.88%
Australia	1861	5.66%	603	3.47%	199	2.73%	32.40%	10.69%	33.00%
Austria	99	0.30%	92	0.53%	51	0.70%	92.93%	51.52%	55.43%
Belgium	178	0.54%	130	0.75%	40	0.55%	73.03%	22.47%	30.77%
Bermuda	131	0.40%	27	0.16%	4	0.05%	20.61%	3.05%	14.81%
Brazil	600	1.83%	434	2.50%	224	3.07%	72.33%	37.33%	51.61%
Canada	1885	5.74%	699	4.02%	186	2.55%	37.08%	9.87%	26.61%
Chile	173	0.53%	106	0.61%	35	0.48%	61.27%	20.23%	33.02%
China	1247	3.79%	594	3.42%	84	1.15%	47.63%	6.74%	14.14%
Denmark	154	0.47%	141	0.81%	72	0.99%	91.56%	46.75%	51.06%
Finland	149	0.45%	137	0.79%	100	1.37%	91.95%	67.11%	72.99%
France	534	1.63%	513	2.95%	433	5.93%	96.07%	81.09%	84.41%
Germany	768	2.34%	630	3.62%	375	5.14%	82.03%	48.83%	59.52%
Greece	121	0.37%	67	0.39%	36	0.49%	55.37%	29.75%	53.73%
Hong Kong SAR, China	962	2.93%	544	3.13%	165	2.26%	56.55%	17.15%	30.33%
India	476	1.45%	382	2.20%	172	2.36%	80.25%	36.13%	45.03%
Indonesia	268	0.82%	196	1.13%	48	0.66%	73.13%	17.91%	24.49%
Ireland	184	0.56%	123	0.71%	64	0.88%	66.85%	34.78%	52.03%
Israel	133	0.40%	31	0.18%	8	0.11%	23.31%	6.02%	25.81%
Italy	266	0.81%	220	1.27%	180	2.47%	82.71%	67.67%	81.82%
Japan	3819	11.62%	2760	15.88%	1526	20.92%	72.27%	39.96%	55.29%
Korea, Rep.	838	2.55%	456	2.62%	405	5.55%	54.42%	48.33%	88.82%
Luxembourg	56	0.17%	38	0.22%	22	0.30%	67.86%	39.29%	57.89%
Malaysia	321	0.98%	267	1.54%	38	0.52%	83.18%	11.84%	14.23%
Mexico	237	0.72%	174	1.00%	73	1.00%	73.42%	30.80%	41.95%
Netherlands	331	1.01%	263	1.51%	140	1.92%	79.46%	42.30%	53.23%
New Zealand	161	0.49%	70	0.40%	18	0.25%	43.48%	11.18%	25.71%
Norway	93	0.28%	81	0.47%	30	0.41%	87.10%	32.26%	37.04%
Philippines	154	0.47%	85	0.49%	34	0.47%	55.19%	22.08%	40.00%
Poland	131	0.40%	70	0.40%	22	0.30%	53.44%	16.79%	31.43%
Russian Federation	281	0.86%	221	1.27%	101	1.38%	78.65%	35.94%	45.70%

(Continues)

TABLE 1 (Continued)

Country	No. Obs.	Pct. Obs.	No. CSR reports	Pct. CSR reports	No. CSR assurance	Pct. CSR assurance	Pct. CSR reports to assurance Obs.	Pct. CSR assurance to Obs.	Pct. CSR reports to CSR reports
Singapore	295	0.90%	184	1.06%	60	0.82%	62.37%	20.34%	32.61%
South Africa	654	1.99%	570	3.28%	264	3.62%	87.16%	40.37%	46.32%
Spain	167	0.51%	152	0.87%	85	1.17%	91.02%	50.90%	55.92%
Sweden	415	1.26%	352	2.02%	160	2.19%	84.82%	38.55%	45.45%
Switzerland	521	1.59%	378	2.17%	172	2.36%	72.55%	33.01%	45.50%
Thailand	238	0.72%	205	1.18%	92	1.26%	86.13%	38.66%	44.88%
Turkey	152	0.46%	100	0.58%	27	0.37%	65.79%	17.76%	27.00%
United Kingdom	2051	6.24%	1635	9.41%	588	8.06%	79.72%	28.67%	35.96%
United States	11,672	35.52%	3620	20.82%	961	13.17%	31.01%	8.23%	26.55%
Total	32,861	100.00%	17,384	100.00%	7296	100.00%	52.90%	22.20%	41.97%

mitigates the negative impact of COVID-19 on the firm value (as the coefficient of the interaction term is positive and the coefficient of the main variable is negative). Therefore, these results support the second hypothesis. Looking at the same relationship from a different perspective, this time if we consider *CSR_Report* as the main variable and *Pandemic* as the moderator, the positive coefficient of both the main and interaction effects show that COVID-19 intensifies the positive link between prior CSR reporting experience and the firm value (see, Whisman & McClelland, 2005). In other words, during the pandemic, the positive association between the prior CSR reporting experience and firm value becomes even greater. These results support Hypothesis 3.

Equations (4)–(6) report the estimates based on Model 2 and demonstrate that prior CSR reporting assurance has a positive and significant coefficient, with the values of 0.125, 0.053, and 0.151, respectively, at the significance level of 99%. This outcome confirms that those firms who have their CSR reports assured can see a favorable firm value in the future. This is congruent with Martínez-Ferrero and García-Sánchez (2017), Arco-Castro et al. (2020), Martínez-Ferrero et al. (2021), and García-Sánchez et al. (2022) as well as the theories. It also confirms the Red Queen effect as we confirm that those socially responsible firms issuing assured CSR reports can distinguish themselves from the competitors and draw greater attentions. Thus, Hypothesis 4 is supported. Like the discussion provided for β_1 in Model 1, we re-estimate Model 2 without the inclusion of *Pandemic* and the interaction effect to evaluate the impact of prior CSR reports assurance on firm value without considering the impact of the pandemic. Our untabulated regressions reconfirm the positive link between prior CSR assurance and firm value. Regarding the coefficient for *Pandemic*, like Equations (1)–(3), we can observe that the variable is negatively related to FV, indicating that the COVID-19 has led to a negative effect on firm value. Finally, the interaction effect is positive in the equations (Equation 4: 0.12, p -value < .01; Equation 5: 0.05, p -value < .01; Equation 6: 0.306, p -value < .01). In a similar manner, if we consider *Pandemic* as the main variable and *CSR_Assurance* as the moderator, because *Pandemic* has a negative, but the interaction effect has a positive coefficient, the moderator mitigates the *Pandemic's* negative impacts, indicating that prior CSR reporting assurance can lower the negative link between COVID-19 and firm value. The findings confirm Hypothesis 5. Looking at the model from a different perspective and assuming *CSR_Assurance* as the main and *Pandemic* as the moderator, we can conclude that the positive connection between prior CSR reports assurance and firm value is more pronounced during the pandemic as compared with the years preceding the crisis. This finding confirms Hypothesis 6.

As mentioned, in Equations (7)–(9), we report regressions results using a combination of the variables of Model 1 and 2. In these equations, the results and coefficients of the variables are consistent with those of Equations (1)–(6), providing further support to the results. Regarding our GMM estimations, we report the difference between J-statistics of restricted and unrestricted to evaluate whether there is an endogeneity problem. We also rely on Sargan-Hansen J-statistic to investigate whether the instruments are valid, i.e., uncorrelated

TABLE 2 Sample distribution by industry and year

Industry	No. Obs.	Pct. Obs.	No. CSR reports	Pct. CSR reports	No. CSR assurance	Pct. CSR assurance	Pct. CSR reports to Obs.	Pct. CSR assurance to Obs.	Pct. CSR assurance to CSR reports
<i>Panel A. sample distribution by industry</i>									
Basic materials	3114	9.48%	2037	11.7%	934	12.8%	65.41%	29.99%	45.85%
Consumer discretionary	6401	19.48%	3111	17.9%	1219	16.7%	48.60%	19.04%	39.18%
Consumer staples	2531	7.70%	1726	9.9%	720	9.9%	68.19%	28.45%	41.71%
Energy	2432	7.40%	1255	7.2%	500	6.9%	51.60%	20.56%	39.84%
Financials	1831	5.57%	565	3.3%	209	2.9%	30.86%	11.41%	36.99%
Health care	2537	7.72%	1067	6.1%	393	5.4%	42.06%	15.49%	36.83%
Industrials	6443	19.61%	3722	21.4%	1565	21.5%	57.77%	24.29%	42.05%
Real estate	2840	8.64%	1279	7.4%	540	7.4%	45.04%	19.01%	42.22%
Technology	2085	6.34%	897	5.2%	376	5.2%	43.02%	18.03%	41.92%
Telecommunications	1227	3.73%	681	3.9%	378	5.2%	55.50%	30.81%	55.51%
Utilities	1420	4.32%	1044	6.0%	462	6.3%	73.52%	32.54%	44.25%
Total	32,861	100.00%	17,384	100.0%	7296	100.0%	52.90%	22.20%	41.97%
<i>Panel B. Sample distribution by year</i>									
2010	1886	5.74%	881	5.1%	341	4.7%	46.71%	18.08%	38.71%
2011	2237	6.81%	1163	6.7%	438	6.0%	51.99%	19.58%	37.66%
2012	2372	7.22%	1294	7.4%	528	7.2%	54.55%	22.26%	40.80%
2013	2473	7.53%	1415	8.1%	618	8.5%	57.22%	24.99%	43.67%
2014	2596	7.90%	1508	8.7%	668	9.2%	58.09%	25.73%	44.30%
2015	2786	8.48%	1620	9.3%	711	9.7%	58.15%	25.52%	43.89%
2016	3442	10.47%	1755	10.1%	745	10.2%	50.99%	21.64%	42.45%
2017	4124	12.55%	1967	11.3%	784	10.7%	47.70%	19.01%	39.86%
2018	4200	12.78%	2138	12.3%	890	12.2%	50.90%	21.19%	41.63%
2019	4056	12.34%	2211	12.7%	966	13.2%	54.51%	23.82%	43.69%
2020	2689	8.18%	1432	8.2%	607	8.3%	53.25%	22.57%	42.39%
Total	32,861	100.00%	17,384	100.0%	7296	100.0%	52.90%	22.20%	41.97%

TABLE 3 Descriptive statistics

Descriptive statistics for the continuous variables					
	Mean	Median	Maximum	Minimum	Std. dev.
FV	1.301	0.821	6.324	0.023	1.361
Cash	0.149	0.099	0.763	0.002	0.155
Size	16.453	15.909	23.063	10.467	2.723
PPE	0.325	0.252	0.922	0.002	0.268
FinLev	0.264	0.250	0.760	0.000	0.190
Age	8.727	8.917	9.751	5.642	0.856
R&DInt	0.027	0.000	0.282	0.000	0.060
CapExp	0.054	0.037	0.337	0.000	0.058
SGAExp	0.257	0.182	1.823	0.019	0.279
GDPGr	1.542	1.539	7.855	-3.702	2.066

Note: See Appendix A for the definitions of the variables.

with error terms. Finally, Cragg-Donald F's-statistic is employed to assess the weakness of the instruments (see, Stock & Yogo, 2005). In all the GMM estimations, the p -value of the difference between J-statistics is significant, showing that there is an endogeneity problem. The p -values of Sargan-Hansen J-statistics are not significant, representing that the instruments are valid. Finally, Cragg-Donald statistics show that the instruments are not weak.

5 | ROBUSTNESS CHECKS AND ADDITIONAL ANALYS

5.1 | Alternative methods to assess hypotheses 3 and 6

Although, in Table 5, we provide evidence in support of the hypotheses on the link between prior CSR reports and assurance with firm value during the pandemic and the years preceding it, in this section, we analyze these predictions using the difference-in-difference method which is used by Lins et al. (2017) where they compare returns inside and outside of the 2008–2009 financial crisis period (see, section III.C). In the same way, Benlemlih and Girerd-Potin (2017) rely on this method where they compare the impact of CSR performance on firms risk among two different groups of countries (see, section 3.5). The outcomes of this method can even provide evidence in support of Hypotheses 1 and 4, predicting the positive link between prior CSR reports and firm value as well as the positive connection between prior CSR reports assurance and firm value, respectively. The models were designed as follows:

$$\begin{aligned}
 FV_{i,t} = & \beta_1 \text{Pandemic} \times \text{CSR_Report}_{i,t-1} + \beta_2 \text{PrePandemic} \\
 & \times \text{CSR_Report}_{i,t-1} + \beta_3 \text{Cash}_{i,t-1} + \beta_4 \text{Size}_{i,t-1} + \beta_5 \text{PPE}_{i,t-1} + \beta_6 \text{FinLev}_{i,t-1} \\
 & + \beta_7 \text{Age}_{i,t-1} + \beta_8 \text{R\&DInt}_{i,t-1} + \beta_9 \text{CapExp}_{i,t-1} + \beta_{10} \text{SGAExp}_{i,t-1} \\
 & + \beta_{11} \text{GDPGr}_{i,t-1} + \text{Country_Dummies} + \text{Industry_Dummies} \\
 & + \text{Year_Dummies} + \varepsilon_{i,t}
 \end{aligned} \quad (3)$$

where, *PrePandemic* takes 1 for the years preceding the pandemic and zero otherwise. The other variables are as same as those we included in Models 1 and 2.

$$\begin{aligned}
 FV_{i,t} = & \beta_1 \text{Pandemic} \times \text{CSR_Assurance}_{i,t-1} + \beta_2 \text{PrePandemic} \\
 & \times \text{CSR_Assurance}_{i,t-1} + \beta_3 \text{Cash}_{i,t-1} + \beta_4 \text{Size}_{i,t-1} + \beta_5 \text{PPE}_{i,t-1} + \beta_6 \text{FinLev}_{i,t-1} \\
 & + \beta_7 \text{Age}_{i,t-1} + \beta_8 \text{R\&DInt}_{i,t-1} + \beta_9 \text{CapExp}_{i,t-1} + \beta_{10} \text{SGAExp}_{i,t-1} \\
 & + \beta_{11} \text{GDPGr}_{i,t-1} + \text{Country_Dummies} + \text{Industry_Dummies} \\
 & + \text{Year_Dummies} + \varepsilon_{i,t}
 \end{aligned} \quad (4)$$

Moreover, in another model, we include all the CSR-related variables of Models 3 and 4 in the model using similar control variables.

Table 6 reports the regressions results using Models 3 and 4 with OLS and FE methods. As mentioned, this table also provides the regressions of a model containing a combination of these two models' variables. Odd and even equations are related to OLS and FE methods, respectively. The two first equations are related to Model 3. The Wald test confirms that the coefficient of *Pandemic* × *CSR_Report* is greater than that of *PrePandemic* × *CSR_Report* in both of these equations (Equation 1: 0.249 > 0.138; Equation 2: 0.083 > 0.038), indicating that the positive impact of prior CSR reporting experience on firm value during the pandemic is greater than the effect of the years preceding the pandemic. Thus, this outcome can support both Hypotheses 1 and 3 as it shows that, although prior CSR reporting is positively related to firm value, the positive link is more pronounced during the pandemic. Regarding the equations concerning Model 4, we can see from Equation (3) that *Pandemic* × *CSR_Assurance* has a greater positive coefficient than *PrePandemic* × *CSR_Assurance* with the values of 0.208 and 0.109, both at the significance level of 1%. We can see the same difference in Equation (4). The Wald test shows that this comparison is significant, demonstrating that the positive link between prior CSR reporting assurance with firm value is greater in the context of COVID-19 as compared with the years prior to this health crisis. Thus, this finding points out that Hypothesis 4 is valid as prior CSR reporting assurance establishes a positive relationship with firm value. Moreover, Hypothesis 6 is also reconfirmed as the positive link is more pronounced during the pandemic relative

TABLE 4 Correlation matrices. Left and right triangles summarize Pearson and Spearman correlation matrices for the continuous variables

	Pandemic	CSR_Report	CSR_Assurance	Cash	Size	PPE	FinLev	Age	R&DInt	CapExp	SGAExp	GDPGr
Pandemic	1	0.012	0.014	-0.015	-0.041	-0.031	0.014	0.033	0.009	-0.031	0.022	0.143
CSR_Report		1	0.501	-0.055	0.392	0.114	0.034	0.246	0.069	0.098	-0.106	-0.05
CSR_Assurance			1	-0.041	0.352	0.08	0.046	0.209	0.102	0.073	-0.047	-0.06
Cash				1	-0.044	-0.388	-0.399	-0.07	0.341	-0.156	0.276	0.064
Size					1	0.116	0.14	0.237	0.056	0.04	-0.218	0.144
PPE						1	0.223	0.045	-0.275	0.677	-0.394	-0.026
FinLev							1	-0.041	-0.19	0.062	-0.188	0.051
Age								1	0.124	-0.009	-0.031	-0.084
R&DInt									1	-0.106	0.324	0.038
CapExp										1	-0.198	0.01
SGAExp											1	-0.055
GDPGr												1

Notes: *** significance at 1%, ** significance at 5%, and * significance at 10%. For information regarding the definitions of the variables, see Appendix A.

to ordinary times. Finally, the same trend is observed in the last two. In summary, the difference-in-difference method reconfirmed what we found in the main regression results.

5.2 | Unbalanced sample

In Table 1, it was shown that the U.S. firms make the greatest contribution to the sample size (with 35.52%). Therefore, a concern may arise that the results could be driven by U.S. firms. To address this concern, we in this section re-estimated the main models, Models 1 and 2, using only the U.S. sample and the sample excluding firms domiciled in the United States separately. The regressions results are reported in Table 7. *CSR_Report* and *CSR_Assurance* as well as their interactions with *Pandemic* have positive and significant coefficients in all the equations, Equations (1)–(4) for the U.S. firms and Equations (5)–(8) for the sample excluding the U.S. firms. These results indicate that the main hypotheses are further supported when the sample either includes or excludes the U.S. firms.

5.3 | Robust to additional county-level control variables

One might assume that as we use an international setting, country characteristics might influence the regression results. To mitigate this concern, we use *GDPGr* as affluent nations are more likely to care about CSR-related issues (Liang & Renneboog, 2017) and a set of dummy variables. However, some studies in the literature postulate that country-level characteristics play pivotal roles and influence stakeholders' responses to CSR issues. For instance, Dhaliwal et al. (2012, 2014) show that stakeholder orientation influences how stakeholders respond to CSR reporting strategies. Carey et al. (2021) confirm the same impact on stakeholders' reactions to CSR assurance. We, therefore, control for this impact. To this end, we build on Spamann (2010) who corrects the antidirector rights index of Djankov et al. (2008) which measures the extent to which a country is shareholder oriented. Moreover, we use an index to capture the country's orientation toward stakeholders. Following Benlemlih and Girerd-Potin (2017), we use the strictness of employment protections (*EmploymentProtection*) as another control variable and collect the data from the Organization for Economic Co-operation and Development (OECD). Our untabulated analysis shows the correlation between these two is 0.387, thus the collinearity is unlikely to create a serious problem. Moreover, following El Ghouli et al. (2017), we use the index of business regulation (*BusinessRegulation*) which represents freedom from regulations as reflected by six sub-components. We also use the index reflecting the quality of the legal system and the security of property rights (*LegalSystem*). This index is composed of nine sub-components. Finally, we address the concern that "corporations will be less likely to act in socially responsible ways when they are experiencing relatively weak financial

TABLE 5 Regression of firm value on prior CSR report and assurance, COVID-19, and control variables

Variable	Equation 1	Equation 2	Equation 3	Equation 4	Equation 5	Equation 6	Equation 7	Equation 8	Equation 9
	OLS	FE	GMM	OLS	FE	GMM	OLS	FE	GMM
	Coef. (T-stat)	Coef. (T-stat)	Coef. (T-stat)	Coef. (T-stat)	Coef. (T-stat)	Coef. (T-stat)	Coef. (T-stat)	Coef. (T-stat)	Coef. (T-stat)
CSR_Report	0.16 ^{***} (6.154)	0.037 ^{**} (2.475)	0.189 ^{***} (4.11)				0.139 ^{***} (6.259)	0.03 [*] (1.666)	0.130 ^{***} (2.992)
CSR_Assurance				0.125 ^{***} (6.418)	0.053 ^{***} (3.064)	0.151 ^{***} (3.985)	0.084 ^{***} (4.203)	0.048 ^{***} (3.051)	0.105 ^{**} (2.488)
Pandemic	-0.088 ^{**} (-2.056)	-0.056 ^{***} (-4.634)	-0.043 ^{***} (-3.629)	-0.242 ^{***} (-23.35)	-0.068 ^{***} (-2.653)	-0.059 ^{***} (-3.373)	-0.102 ^{***} (-8.215)	-0.077 ^{***} (-2.814)	-0.127 ^{***} (-3.533)
Pandemic × CSR_Report	0.098 ^{***} (2.942)	0.047 ^{**} (2.025)	0.667 ^{***} (3.564)				0.056 ^{**} (2.249)	0.026 ^{**} (2.05)	0.198 ^{***} (3.754)
Pandemic × CSR_Assurance				0.12 ^{**} (6.135)	0.05 ^{***} (4.649)	0.306 ^{***} (3.268)	0.09 ^{***} (6.842)	0.039 ^{***} (3.539)	0.165 ^{***} (3.244)
Cash	1.795 ^{***} (19.283)	1.114 ^{***} (17.153)	1.872 ^{***} (13.837)	1.793 ^{***} (19.501)	1.115 ^{***} (13.717)	1.821 ^{***} (13.496)	1.798 ^{***} (20.651)	1.113 ^{***} (13.557)	1.613 ^{***} (10.560)
Size	-0.182 ^{***} (-18.028)	-0.089 ^{***} (-6.812)	-0.104 ^{***} (-13.657)	-0.174 ^{***} (-11.923)	-0.087 ^{***} (-1.858)	-0.116 ^{***} (-14.606)	-0.189 ^{***} (-14.33)	-0.091 ^{***} (-1.929)	-0.103 ^{***} (-17.090)
PPE	-0.233 ^{***} (-3.636)	-0.16 ^{**} (-2.543)	-0.155 ^{**} (-2.273)	-0.23 ^{***} (-5.875)	-0.158 ^{***} (-3.465)	-0.098 ^{**} (-1.434)	-0.234 ^{***} (-6.165)	-0.156 ^{***} (-3.439)	-0.483 ^{***} (-9.038)
FinLev	-1.189 ^{***} (-17.809)	-1.601 ^{***} (-32.684)	-1.33 ^{***} (-15.542)	-1.201 ^{***} (-30.237)	-1.603 ^{***} (-13.769)	-1.353 ^{***} (-15.549)	-1.173 ^{***} (-28.667)	-1.6 ^{***} (-13.671)	-0.942 ^{***} (-10.772)
Age	-0.029 ^{**} (-1.998)	0.094 ^{***} (5.534)	-0.024 (-1.46)	-0.024 (-1.912)	0.096 ^{***} (2.697)	-0.026 (-1.589)	-0.033 ^{***} (-2.71)	0.09 ^{***} (2.589)	-0.007 (-0.392)
R&DInt	2.24 ^{***} (7.435)	-0.237 (-0.752)	1.623 ^{***} (3.603)	2.22 ^{***} (7.487)	-0.24 (-0.471)	1.769 ^{***} (4.023)	2.183 ^{***} (7.67)	-0.237 (-0.467)	4.019 ^{***} (9.413)
CapExp	2.319 ^{***} (11.517)	1.083 ^{***} (9.726)	2.29 ^{***} (10.191)	2.311 ^{***} (9.779)	1.075 ^{***} (4.216)	2.2 ^{***} (10.031)	2.311 ^{***} (10.417)	1.073 ^{***} (4.164)	2.895 ^{***} (11.235)
SGAExp	-0.01 (-0.195)	-0.049 (-1.232)	-0.051 (-0.621)	-0.023 (-0.476)	-0.05 (-0.563)	0.008 (0.105)	-0.012 (-0.25)	-0.051 (-0.571)	0.340 ^{**} (4.381)
GDPGr	0.029 ^{***} (5.148)	0.028 ^{***} (11.458)	0.027 ^{***} (5.339)	0.027 ^{***} (2.491)	0.028 ^{***} (6.557)	0.023 ^{***} (4.419)	0.034 ^{***} (3.124)	0.027 ^{***} (6.77)	0.051 ^{***} (8.777)
Intercept	4.535 ^{***} (23.013)	2.154 ^{***} (9.784)	3.525 ^{***} (9.207)	4.618 ^{***} (17.304)	2.119 ^{**} (2.047)	4.364 ^{***} (12.593)	4.671 ^{***} (19.69)	2.216 ^{**} (2.131)	2.733 ^{***} (13.415)

TABLE 5 (Continued)

Variable	Equation 1	Equation 2	Equation 3	Equation 4	Equation 5	Equation 6	Equation 7	Equation 8	Equation 9
	OLS	FE	GMM	OLS	FE	GMM	OLS	FE	GMM
	Coef. (T-stat)	Coef. (T-stat)	Coef. (T-stat)	Coef. (T-stat)	Coef. (T-stat)	Coef. (T-stat)	Coef. (T-stat)	Coef. (T-stat)	Coef. (T-stat)
R-squared	35.68%	77.73%	24.41%	35.56%	77.74%	23.87%	35.89%	77.75%	25.05%
Adjusted R-squared	35.54%	74.32%	24.33%	35.42%	74.32%	23.70%	35.76%	74.33%	25.01%
F-stat	263.577	22.748	262.231	262.231	22.753	267.642	267.642	22.749	22.749
p-value F-stat	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
J-stat			0.309			0.271			2.734
p-value J-stat			0.578			0.603			0.254
Observations	32,861	32,861	32,861	32,861	32,861	32,861	32,861	32,861	32,861
Differences in J-stats value			18.928			17.409			7.001
Differences in J-stats p-value			0.0001			0.0001			0.0302
Cragg-Donald F-stat			33.07			31.703			3600.511

Notes: See Appendix A for the variables' definitions. Country dummies, industry dummies, and period dummies are included in OLS and GMM equations. The equations are estimated using white cross-section (period cluster) method which is robust to both correlation and heteroskedasticity (Arellano, 1987; Wooldridge, 2002).

*p-value < .1; **p-value < .05; ***p-value < .01.

performance or are operating in an economic climate where the possibility for near-term profitability is limited" (Campbell, 2007, p. 7, 2018, p. 4) by controlling for the inflation (*InflationRate*) and lending rates (*LendingRate*). Our untabulated results show that the main coefficients and findings remain relatively unchanged after controlling for these variables.

5.4 | Mandatory disclosure regimes

Under the literature review and hypotheses development section, we discussed the theories and empirical research that could explain why CSR reporting and assurance leads to favorable financial performance. This theoretical and empirical research primarily focuses on the voluntary disclosure of CSR. To address the issue, we test whether the hypotheses are applicable to mandatory disclosure environments.

Ioannou and Serafeim (2019) showed that firms affected by disclosure mandates voluntarily adopted assurance and reporting guidelines. They also found that the increase in CSR disclosure resulting from the regulations is associated with increases in firm value. Moreover, Liu and Tian (2021) showed that, under a mandatory disclosure system, the negative relationship between CSR disclosure and firm value becomes greater. Following these studies, Kuo et al. (2021) found that CSR assurance intensifies the negative relationship between mandatory disclosure and external financing costs. We, therefore, predict that the research hypotheses are valid even under mandatory disclosure regimes. To test this prediction, we focus on European Union (EU) firms because of the recent regulations affecting CSR disclosure by EU firms. The European Commission adopted Directive 2014/95/EU on October 22, 2014. According to this, as of the fiscal year 2017, EU companies with higher than 500 employees and annual revenue of over 40 million euros or net income of over 20 million euros must disclose CSR information (Grewal et al., 2019). We, therefore, in this section replicate the main models by considering the mandate. We create two dummies including *CSR_Report_Mandatory* and *CSR_Assurance_Mandatory*, the former takes one for those selected EU firms having issued CSR reports after the year 2017 and the latter takes one again for the selected EU firms that have issued assured CSR reports after the fiscal year 2017. Table 8 represents the regressions results. It can be seen from this table that the *CSR_Report_Mandatory* and *CSR_Assurance_Mandatory* both have positive coefficients in the equations and their interactions with *Pandemic* are also positive and significant. A conclusion can be made that the research hypotheses are even applicable to the mandatory CSR disclosure environments.

5.5 | Causality issues

As mentioned, an earlier study (Lins et al., 2017) has examined the impact of CSR activities on firm value during the global financial crisis of 2008–2009. If the results from the present study are reliable then hypotheses should be valid under a different systematic exogenous

TABLE 6 Regression of firm value on CSR report and assurance and control variables using difference-in-difference method

Variable	Equation 1	Equation 2	Equation 3	Equation 4	Equation 5	Equation 6
	OLS	FE	OLS	FE	OLS	FE
	Coef. (T-stat)	Coef. (T-stat)	Coef. (T-stat)	Coef. (T-stat)	Coef. (T-stat)	Coef. (T-stat)
<i>Pandemic</i> × <i>CSR_Report</i>	0.249*** (10.126)	0.083*** (4.526)			0.207*** (6.018)	0.069*** (3.512)
<i>Pandemic</i> × <i>CSR_Assurance</i>			0.208*** (8.104)	0.111*** (5.798)	0.132*** (4.273)	0.077*** (3.267)
<i>PrePandemic</i> × <i>CSR_Report</i>	0.138*** (6.365)	0.038*** (2.68)			0.122*** (5.721)	0.033** (2.192)
<i>PrePandemic</i> × <i>CSR_Assurance</i>			0.109*** (5.287)	0.04** (2.568)	0.07*** (3.418)	0.037** (2.345)
<i>Cash</i>	1.798*** (20.774)	1.199*** (13.439)	1.796*** (20.497)	1.272*** (14.38)	1.794*** (20.72)	1.288*** (14.537)
<i>Size</i>	-0.18*** (-14.506)	-0.089*** (-5.35)	-0.173*** (-13.017)	-0.142*** (-8.746)	-0.186*** (-15.042)	-0.155*** (-9.375)
<i>PPE</i>	-0.252*** (-7.577)	-0.155*** (-2.61)	-0.25*** (-7.258)	-0.263*** (-4.233)	-0.252*** (-7.54)	-0.264*** (-4.206)
<i>FinLev</i>	-1.172*** (-31.044)	-1.589*** (-21.221)	-1.184*** (-31.667)	-0.304*** (-4.652)	-1.169*** (-31.032)	-0.003 (-0.054)
<i>Age</i>	-0.021** (-2.021)	0.081*** (4.207)	-0.017 (-1.562)	0.038** (2.045)	-0.022** (-2.095)	0.022 (1.133)
<i>R&DInt</i>	2.393*** (8.409)	-0.113 (-0.219)	2.369*** (8.122)	-0.173 (-0.312)	2.365*** (8.149)	-0.147 (-0.262)
<i>CapExp</i>	2.296*** (10.244)	1.076*** (10.217)	2.295*** (9.97)	1.134*** (9.518)	2.282*** (10.218)	1.243*** (10.38)
<i>SGAExp</i>	-0.012 (-0.253)	-0.057 (-0.843)	-0.025 (-0.505)	-0.088 (-1.383)	-0.018 (-0.36)	-0.095 (-1.465)
<i>GDPGr</i>	0.038*** (3.382)	0.034*** (16.17)	0.035*** (3.088)	0.029*** (13.631)	0.038*** (3.407)	0.029*** (13.611)
<i>Intercept</i>	4.693*** (18.722)	2.229*** (8.136)	4.627*** (17.192)	3.198*** (12.334)	4.8*** (19.119)	3.447*** (12.582)
R-squared	35.24%	77.02%	35.13%	76.99%	35.29%	77.16%
Adjusted R-squared	35.11%	73.68%	35.00%	73.45%	35.15%	73.62%
F-stat	270.398	23.052	269.051	21.752	262.949	21.824
p-value F-stat	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Observations	32,861	32,861	32,861	32,861	32,861	32,861
Wald test	Equation 1	Equation 2	Equation 3	Equation 4	Equation 5	Equation 6
	T-stat	T-stat	T-stat	T-stat	T-stat	T-stat
<i>Pandemic</i> × <i>CSR_Report</i> = <i>PrePandemic</i> × <i>CSR_Report</i>	3.845***	3.283***			2.339***	2.030**
<i>Pandemic</i> × <i>CSR_Assurance</i> = <i>PrePandemic</i> × <i>CSR_Assurance</i>			3.497***	4.582***	2.01**	1.756*

Notes: The variables are defined in Appendix A. Country dummies, industry dummies, and period dummies are included in OLS equations. The equations are estimated using white cross-section (period cluster) method which is robust to both correlation and heteroskedasticity (Arellano, 1987; Wooldridge, 2002).

*p-value < .1; **p-value < .05; ***p-value < .01.

TABLE 7 Regression of firm value on CSR report and assurance, COVID-19, and control variables controlling the effect of U.S. firms contribution

Variable	Equation 1		Equation 2		Equation 3		Equation 4		Equation 5		Equation 6		Equation 7		Equation 8	
	OLS	Coef. (T-stat)	FE	Coef. (T-stat)	OLS	Coef. (T-stat)	FE	Coef. (T-stat)	OLS	Coef. (T-stat)	FE	Coef. (T-stat)	OLS	Coef. (T-stat)	FE	Coef. (T-stat)
CSR_Report	0.224 ^{***} (6.869)	0.071 ^{***} (2.202)							0.105 ^{***} (7.605)	0.033 [*] (1.778)			0.103 ^{***} (7.739)	0.026 [*] (1.951)		
CSR_Assurance					0.273 ^{***} (5.418)	0.172 ^{**} (2.407)										
Pandemic	-0.302 ^{***} (-4.833)	-0.126 ^{***} (-4.592)			-0.271 ^{***} (-4.528)	-0.097 ^{***} (-2.926)			-0.164 ^{***} (-5.09)	-0.099 [*] (-1.84)			-0.156 ^{***} (-3.169)	-0.062 ^{***} (-4.811)		
Pandemic × CSR_Report	0.206 ^{***} (2.834)	0.146 ^{***} (2.833)							0.083 ^{**} (2.248)	0.033 ^{**} (2.017)						
Pandemic × CSR_Assurance					0.308 ^{***} (2.652)	0.147 ^{***} (2.972)							0.039 ^{***} (4.325)	0.049 ^{**} (2.152)		
Cash	2.354 ^{***} (23.778)	1.248 ^{***} (7.1)			2.363 ^{***} (23.854)	1.247 ^{***} (6.321)			1.436 ^{***} (16.207)	1.073 ^{***} (10.664)			1.431 ^{***} (16.093)	1.058 ^{***} (10.245)		
Size	-0.175 ^{***} (-16.653)	-0.063 [*] (-1.702)			-0.159 ^{**} (-15.962)	-0.061 (-1.11)			-0.19 ^{**} (-16.859)	-0.118 ^{***} (-2.864)			-0.19 ^{***} (-17.478)	-0.104 ^{***} (-5.471)		
PPE	-0.438 ^{***} (-5.838)	-0.376 ^{**} (-2.048)			-0.441 ^{***} (-5.873)	-0.347 ^{***} (-3.8)			-0.172 ^{**} (-6.587)	-0.129 ^{**} (-3.799)			-0.171 ^{**} (-6.316)	-0.095 (-1.565)		
FinLev	-1.087 ^{***} (-16.798)	-1.51 ^{***} (-9.808)			-1.086 ^{***} (-16.766)	-1.509 ^{***} (-6.726)			-1.283 ^{***} (-26.538)	-1.797 ^{***} (-28.262)			-1.292 ^{***} (-27.75)	-1.76 ^{***} (-22.632)		
Age	0.021 (1.551)	0.186 ^{***} (4.387)			0.03 (2.205)	0.188 ^{***} (4.239)			-0.069 ^{***} (-9.334)	0.021 (0.674)			-0.068 ^{***} (-10.145)	0.036 (1.678)		
R&DInt	2.556 ^{**} (8.856)	-1.252 (-1.227)			2.492 ^{**} (8.618)	-1.295 (-1.315)			1.93 ^{***} (6.261)	0.157 (0.351)			1.911 ^{**} (6.144)	0.41 (0.617)		
CapExp	3.108 ^{***} (11.36)	0.451 [*] (1.782)			3.082 ^{***} (11.253)	0.444 (1.54)			1.982 ^{***} (11.573)	1.277 ^{***} (6.878)			1.974 ^{***} (11.859)	1.225 ^{***} (10.166)		
SGAExp	-0.196 ^{***} (-3.128)	-0.261 (-1.546)			-0.191 ^{***} (-3.053)	-0.263 (-1.517)			0.069 (1.561)	0 (0.003)			0.054 (1.202)	0.014 (0.189)		
GDPGr	0.189 ^{**} (3.936)	0.059 ^{***} (8.89)			0.191 ^{**} (3.967)	0.058 ^{***} (7.27)			0.033 ^{***} (2.855)	0.026 ^{***} (5.206)			0.037 ^{***} (2.752)	0.016 (7.278)		
Intercept	3.949 ^{***} (19.235)	1.368 ^{***} (2.311)			3.674 ^{***} (18.613)	1.323 (1.125)			5.21 ^{***} (33.772)	3.172 ^{***} (3.404)			5.281 ^{***} (33.835)	2.792 ^{***} (8.906)		

(Continues)

TABLE 7 (Continued)

Variable	Equation 1	Equation 2	Equation 3	Equation 4	Equation 5	Equation 6	Equation 7	Equation 8
	OLS	FE	OLS	FE	OLS	FE	OLS	FE
	Coef. (T-stat)	Coef. (T-stat)	Coef. (T-stat)	Coef. (T-stat)	Coef. (T-stat)	Coef. (T-stat)	Coef. (T-stat)	Coef. (T-stat)
R-squared	33.48%	73.85%	33.37%	73.86%	34.10%	78.64%	34.04%	79.92%
Adjusted R-squared	33.32%	68.89%	33.20%	68.90%	33.89%	76.02%	33.83%	77.21%
F-statistic	202.096	14.896	201.039	14.904	163.086	29.983	162.671	29.447
p-value F-stat	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Observations	11,672	11,672	11,672	11,672	21,189	21,189	21,189	21,189

Notes: See Appendix A for the information about variables definitions. Country, industry, and period dummies are included in OLS equations. The equations are estimated using white cross-section (period cluster) method which is robust to both correlation and heteroskedasticity (Arellano, 1987; Wooldridge, 2002). Equations 1 and 2: Regressions estimated based on model 1 using the sample of U.S. firms; equations 3 and 4: Regressions estimated based on model 2 using the sample consisting of U.S. firms; equations 5 and 6: Regressions estimated using model 1 with the sample of non-U.S. firms; and equations 7 and 8: Regressions estimated using model 2 with the sample of non-U.S. firms.

*p-value < .1; **p-value < .05; ***p-value < .01.

shock like the global financial crisis. Therefore, we replicate the main models to another setting and include the impact of the 2008–2009 crisis. To this end, we replace *Pandemic* with *FinCrisis* in Models 1 and 2. This new variable takes one for the years 2008 and 2009 and zero otherwise. We also include both the crises—the pandemic and the financial crisis—in a model for robustness check. As the period of this study covers the years from 2010 to 2020, we need to extend the period to earlier years to test the above predictions. We, therefore, use the period from 2005 to 2020 in this supplemental analysis. Table 9 presents that *FinCrisis* has a negative coefficient in all the equations, indicating that the global financial crisis decreased firm value. Moreover, *FinCrisis* × *CSR_Report* and *FinCrisis* × *CSR_Assurance* have a positive beta, indicating that the hypotheses are supported even in the context of the financial crisis. Thus, the results are reliable and the causality is not a concern in this study.

5.6 | Initial and subsequent CSR reporting and assurance experience

Dhaliwal et al. (2011) found that the initiation of CSR reports is more likely to have capital market consequences. Following this study, Muslu et al. (2019) distinguished between the first and subsequent CSR reports of firms and found that market practitioners, particularly investors and analysts, take into consideration socially responsible firms' longer-term CSR reporting practices. They showed that an initial CSR report reduces information asymmetry, which is measured based on analyst forecast accuracy, to a lesser extent than subsequent CSR reports. We, therefore, replicate the main models of the study by considering the differences between initial and subsequent CSR reports and assurance. To this end, we create four dummy variables consisting of two for the initial and two for the subsequent reporting and assurance. *CSR_Report_Initial* takes the value one for those observations issuing CSR report for the first time and zero otherwise, *CSR_Report_Subseq* takes one for those CSR reports that have been issued not for the first time and zero otherwise. We do the same for assured reports, considering *CSR_Assurance_Initial* and *CSR_Assurance_Subseq* for first and subsequent assurance, respectively. Table 10 summarizes the regressions estimated based on Models 1 and 2 when *CSR_Report* and *CSR_Assurance* are replaced by the above variables, respectively. The results tell us that neither first CSR reports nor first CSR assurance have a significant coefficient, moreover, the interactions between these variables and *Pandemic* are not significant, indicating that first CSR reporting and assurance does not create a buffering effect against the adverse effects of COVID-19 on firm value. It also implies that initial CSR reporting and assurance can lead to a favorable firm value neither in ordinary times nor in the context of COVID-19. While in the equations relating to subsequent CSR reporting and assurance, we observe that the results are in line with what we observed in our main model. The results reconfirm Dhaliwal et al. (2011) and Muslu et al. (2019) and demonstrate that stakeholders react and pay attention to long-term CSR reporting practices.

TABLE 8 Regression of firm value on CSR report, CSR assurance, COVID-19, and control variables by considering the milieu of reporting under a mandatory disclosure system

Variable	Equation 1	Equation 2	Equation 3	Equation 4
	OLS	FE	OLS	FE
	Coef. (T-stat)	Coef. (T-stat)	Coef. (T-stat)	Coef. (T-stat)
<i>CSR_Report_Mandatory</i>	0.218*** (6.635)	0.047* (1.841)		
<i>CSR_Assurance_Mandatory</i>			0.13*** (6.284)	0.011** (2.001)
<i>Pandemic</i>	-0.077*** (-8.284)	-0.124*** (-6.079)	-0.078*** (-8.436)	-0.085*** (-13.922)
<i>Pandemic × CSR_Report_Mandatory</i>	0.023*** (3.151)	0.051** (2.204)		
<i>Pandemic × CSR_Assurance_Mandatory</i>			0.079*** (5.198)	0.063*** (6.937)
<i>Cash</i>	2.115*** (23.232)	1.183*** (6.996)	2.12*** (23.771)	1.715*** (52.428)
<i>Size</i>	-0.161*** (-8.526)	0.068* (1.659)	-0.149*** (-8.402)	-0.1*** (-133.931)
<i>PPE</i>	-0.328*** (-5.927)	0.223 (1.56)	-0.324*** (-5.665)	-0.492*** (-52.936)
<i>FinLev</i>	-1.04*** (-15.268)	-0.491*** (-3.059)	-1.048*** (-15.595)	-0.982*** (-64.698)
<i>Age</i>	0.003 (0.36)	0.072 (1.36)	0.011 (1.087)	0.034*** (17.17)
<i>R&DInt</i>	2.576*** (7.236)	-1.034 (-1.014)	2.555*** (6.781)	4.313*** (39.514)
<i>CapExp</i>	2.155*** (5.3)	-0.425* (-1.95)	2.181*** (5.204)	2.01*** (31.888)
<i>SGAExp</i>	-0.153*** (-5.573)	-0.105 (-0.849)	-0.169*** (-5.97)	-0.128*** (-8.931)
<i>GDPGr</i>	0.05*** (3.645)	0.017*** (3.049)	0.049*** (3.593)	0.027*** (18.699)
<i>Intercept</i>	4.215*** (19.635)	-0.374 (-0.527)	4.028*** (22.117)	2.564*** (104.129)
R-squared	35.71%	84.63%	35.53%	77.06%
Adjusted R-squared	35.46%	78.55%	35.28%	77.04%
F-statistic	141.306	13.900	140.200	4207.324
p-value F-stat	0.0001	0.0001	0.0001	0.0001
Observations	15,069	15,069	15,069	15,069

Notes: *** significance at 1%, ** significance at 5%, and * significance at 10%. See Appendix A for the information about variables definitions. Country dummies, industry dummies, and period dummies are included in OLS equations. The equations are estimated using white cross-section (period cluster) method which is robust to both correlation and heteroskedasticity (Arellano, 1987; Wooldridge, 2002).

5.7 | Moderating role of CSR reporting assurance

Taking together the results for Hypotheses 3 to 6 in the Difference-in-Difference section as well as the main regression results section, we can conclude that prior CSR reporting assurance can increase

firm value and this impact becomes greater during the pandemic. Moreover, prior CSR assurance can also create a buffering effect against the effects of pandemic on firm value. Thus, we predict that those CSR reports with assurance create a greater buffering effect than those without assurance. Moreover, we can also postulate that

TABLE 9 Regression of firm value on the financial crisis of 2008–2009

Variable	Equation 1		Equation 2		Equation 3		Equation 4		Equation 5		Equation 6		Equation 7		Equation 8		
	OLS	Coef. (T-stat)	FE	Coef. (T-stat)	OLS	Coef. (T-stat)	FE	Coef. (T-stat)	OLS	Coef. (T-stat)	FE	Coef. (T-stat)	OLS	Coef. (T-stat)	FE	Coef. (T-stat)	
CSR_Report	0.088*** (3.379)		0.042*** (2.696)		0.083*** (2.759)		0.043** (2.519)		0.126*** (8.67)		0.045*** (3.499)		0.13*** (8.803)		0.038*** (2.99)		0.038*** (2.99)
CSR_Assurance																	
Pandemic					-0.105*** (-3.763)		-0.074** (-2.233)										
Pandemic × CSR_Report					0.105*** (4.044)		0.062*** (3.757)										
Pandemic × CSR_Assurance											0.132*** (3.202)		0.063** (2.405)				
FinCrisis	-0.061** (-2.174)		-0.265*** (-7.311)		-0.068** (-2.189)		-0.065** (-2.089)		-0.185*** (-9.516)		-0.155*** (-10.037)		-0.126*** (-6.689)		-0.155*** (-10.008)		-0.155*** (-10.008)
FinCrisis × CSR_Report	0.05* (1.745)		0.032* (1.755)		0.058* (1.833)		0.034* (1.827)										
FinCrisis × CSR_Assurance							0.064* (1.852)		0.049* (1.852)		0.059* (1.877)		0.053** (1.743)				
Cash	1.954*** (28.051)		1.353*** (17.768)		1.955*** (28.197)		1.349*** (18.153)		1.786*** (27.172)		1.126*** (13.201)		1.83*** (28.009)		1.125*** (13.182)		1.125*** (13.182)
Size	-0.163*** (-22.783)		-0.161*** (-4.727)		-0.165*** (-24.563)		-0.164*** (-4.937)		-0.178*** (-35.474)		-0.149*** (-10.025)		-0.178*** (-34.822)		-0.148*** (-9.855)		-0.148*** (-9.855)
PPE	-0.433*** (-8.757)		-0.215*** (-5.085)		-0.429*** (-8.562)		-0.235*** (-5.909)		-0.339*** (-14.282)		-0.181*** (-3.199)		-0.224*** (-8.043)		-0.187*** (-3.303)		-0.187*** (-3.303)
FinLev	-0.854*** (-17.728)		-0.345*** (-4.028)		-0.849*** (-17.657)		-0.33*** (-3.798)		-1.237*** (-30.362)		-1.598*** (-23.224)		-1.202*** (-29.638)		-1.596*** (-23.186)		-1.596*** (-23.186)
Age	-0.016 (-1.337)		0 (0.009)		-0.015 (-1.246)		-0.006 (-0.202)		-0.032*** (-4.348)		0.009 (0.598)		-0.032*** (-4.334)		0.019 (1.116)		0.019 (1.116)
R&DInt	3.078*** (10.263)		-0.297 (-0.674)		3.076*** (10.217)		-0.349 (-0.798)		2.842*** (16.114)		-0.292 (-0.618)		2.101*** (10.742)		-0.303 (-0.64)		-0.303 (-0.64)
CapExp	1.99*** (10.181)		1.05*** (4.719)		1.979*** (10.192)		1.078*** (4.707)		2.395*** (20.534)		1.418*** (12.887)		2.307*** (19.551)		1.412*** (12.832)		1.412*** (12.832)
SGAExp	0.119 (1.579)		-0.134 (-1.591)		0.124* (1.658)		-0.141* (-1.738)		0.109*** (2.93)		-0.149** (-2.265)		0.001 (0.047)		-0.149** (-2.271)		-0.149** (-2.271)

TABLE 9 (Continued)

Variable	Equation 1		Equation 2		Equation 3		Equation 4		Equation 5		Equation 6		Equation 7		Equation 8		
	OLS	Coef. (T-stat)	FE	Coef. (T-stat)	OLS	Coef. (T-stat)	FE	Coef. (T-stat)	OLS	Coef. (T-stat)	FE	Coef. (T-stat)	OLS	Coef. (T-stat)	FE	Coef. (T-stat)	
GDPGr	0.043*** (5.517)	0.043*** (5.539)	0.034*** (5.308)	0.044*** (5.308)	0.028*** (9.751)	0.036*** (4.784)	0.04*** (20.602)	0.038*** (13.526)	0.028*** (9.751)	0.036*** (4.784)	0.04*** (20.602)	0.038*** (13.526)	0.028*** (9.751)	0.036*** (4.784)	0.04*** (20.602)	0.038*** (13.526)	0.041*** (21)
Intercept	3.846*** (31.584)	3.794*** (4.904)	3.865*** (32.816)	3.934*** (5.377)	4.137*** (41.265)	3.891*** (16.393)	3.891*** (16.393)	4.551*** (43.471)	4.137*** (41.265)	3.891*** (16.393)	3.891*** (16.393)	4.551*** (43.471)	4.137*** (41.265)	3.891*** (16.393)	3.891*** (16.393)	4.551*** (43.471)	3.787*** (15.518)
R-squared	31.60%	74.30%	31.70%	74.40%	33.80%	75.00%	75.00%	35.50%	33.80%	75.00%	75.00%	35.50%	33.80%	75.00%	75.00%	76.00%	71.90%
Adjusted R-squared	31.60%	71.00%	31.70%	71.10%	33.70%	71.80%	71.80%	35.40%	33.70%	71.80%	71.80%	35.40%	33.70%	71.80%	71.80%	71.90%	71.90%
F-statistic	546.922	22.763	503.326	22.915	383.607	23.746	23.746	346.517	383.607	23.746	23.746	346.517	383.607	23.746	23.746	23.743	23.743
p-value F-stat	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Observations	38,940	38,940	38,940	38,940	38,940	38,940	38,940	38,940	38,940	38,940	38,940	38,940	38,940	38,940	38,940	38,940	38,940

Notes: *** significance at 1%, ** significance at 5%, and * significance at 10%. See Appendix A for the information about variables definitions. Country dummies, industry dummies, and period dummies are included in OLS equations. The equations are estimated using white cross-section (period cluster) method which is robust to both correlation and heteroskedasticity (Arellano, 1987; Wooldridge, 2002). The equations are estimated using the period from 2005 to 2020.

those CSR reports with assurance have a more positive impact on firm value as compared with those CSR reports without assurance. To support the predictions, we use a three-way interactions model. To this end, we include the variable *CSR_Assurance*, *Pandemic* × *CSR_Assurance*, *Pandemic* × *CSR_Report* × *CSR_Assurance*, and *CSR_Report* × *CSR_Assurance* in Model 1. Due to the exact collinearity issue, we cannot use this three-way interaction model to assess the predictions. Therefore, we rely on an alternative method to test our prediction. To this end, we first estimate Model 1 using the sample of firms excluding those observations with assured CSR reports and then re-estimate the same model using the sample excluding those observations without assured CSR reports. We then use Paternoster test to compare the coefficients (see, Paternoster et al., 1998). Reporting the mentioned regressions results using both OLS and FE methods, Table 11 presents that the coefficients of *CSR_Report* and *Pandemic* × *CSR_Report* in all the equations are positive and significant and the coefficient of *Pandemic* is negative and significant. These results are congruent with what we observed in the main regression results. Paternoster test confirms that the mentioned coefficients in Equations (3) and (4) are greater than those in Equations (1) and (2), indicating that those CSR reports with assurance can lead to a greater buffering effect against the pandemic as compared with CSR reports without assurance.

To test the latter prediction discussed in the above paragraph, we should add the variable *CSR_Assurance* and its related interaction variables to Model 3, although the results in Table 11 provide support for the prediction. However, as in the variables *Pandemic* × *CSR_Report* × *CSR_Assurance* and *PrePandemic* × *CSR_Report* × *CSR_Assurance*, *CSR_Report* × *CSR_Assurance* equals to *CSR_Assurance* and the outcomes of this model will be as same as those reported in Equations (5) and (6) in Table 6. Therefore, we rely on these two equations to support the hypotheses. As the coefficients of the variables *Pandemic* × *CSR_Assurance* and *PrePandemic* × *CSR_Assurance* are positive and significant, we can infer that the hypotheses are supported. We can even conclude that as the coefficient of the former is greater than that of the latter, those CSR reports with assurance lead to a greater firm value relative to those reports lacking assurance, and this relationship is even stronger during the pandemic. Since we did not include the variable *CSR_Assurance* itself in the mentioned equations, questions about the reliability of the results may arise. We, therefore, use an alternative method for this prediction. To this end, similar to what was reported in Table 11, we use Model 3 in this analysis as well. We re-estimated Model 3 using two different samples: the whole sample excluding observations with CSR assurance, and the whole sample excluding those CSR reports lacking assurance. Table 12 reports the mentioned regressions using both OLS and FE methods. In this table, the Wald test confirms that *Pandemic* × *CSR_Report* is greater than *PrePandemic* × *CSR_Report*. Moreover, the Paternoster test also indicates that these two variables in the equations with the sample including CSR reporting assurance (Equations 3 and 4) are greater than those in the sample excluding CSR reporting assurance (Equations 1 and 2). Thus, the results

TABLE 10 Regression of firm value on CSR report, CSR assurance, COVID-19, and control variables by considering the differences between first and subsequent CSR reporting and assurance

Variable	Equation 1 OLS Coef. (T-stat)	Equation 2 FE Coef. (T-stat)	Equation 3 OLS Coef. (T-stat)	Equation 4 FE Coef. (T-stat)	Equation 5 OLS Coef. (T-stat)	Equation 6 FE Coef. (T-stat)	Equation 7 OLS Coef. (T-stat)	Equation 8 FE Coef. (T-stat)
CSR_Report_Initial	0.058** (2.237)	0.011 (0.713)						
CSR_Report_Subseq			0.173** (6.115)	0.03* (1.777)				
CSR_Assurance_Initial					0.03 (0.945)	-0.001 (-0.061)		
CSR_Assurance_Subseq							0.119*** (6.988)	0.07*** (4.042)
Pandemic	-0.025* (-1.78)	-0.053*** (-4.222)	-0.089* (-1.941)	-0.057*** (-4.535)	-0.039*** (-2.717)	-0.053** (-2.061)	-0.213*** (-6.24)	-0.067*** (-4.701)
Pandemic × CSR_Report_Initial	-0.12 (-1.471)	-0.016 (-0.282)						
Pandemic × CSR_Report_Subseq		0.104*** (3.038)	0.051** (3.038)					
Pandemic × CSR_Assurance_Initial				0.145 (2.108)	-0.015 (1.515)	(-0.604)		
Pandemic × CSR_Assurance_Subseq						0.133***	0.06** (2.982)	(2.294)
Control variables	Included	Included	Included	Included	Included	Included	Included	Included
Country, industry, and period dummies	Included	Included	Included	Included	Included	Included	Included	Included
R-squared	0.342	0.777	33.84%	78.12%	0.337	0.777	33.49%	77.78%
Adjusted R-squared	0.341	0.743	33.71%	74.48%	0.336	0.743	33.37%	74.24%
F-statistic	292.793	22.738	265.475	21.510	304.182	22.737	275.550	21.956
p-value F-stat	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Observations	32,861	32,861	32,861	32,861	32,861	32,861	32,861	32,861

Notes: *** significance at 1%, ** significance at 5%, and * significance at 10%. See Appendix A for the information about variables definitions. The equations are estimated using white cross-section (period cluster) method which is robust to both correlation and heteroskedasticity (Arellano, 1987; Wooldridge, 2002).

TABLE 11 Regression of firm value on CSR report, COVID-19, and control variables by considering the moderating role of CSR reporting assurance

Variable	Equation 1			Equation 2			Equation 3			Equation 4		
	OLS	FE	FE	OLS	FE	FE	OLS	FE	FE	OLS	FE	FE
	Coef.	T-stat	Std.	Coef.	T-stat	Std.	Coef.	T-stat	Std.	Coef.	T-stat	Std.
CSR_Report	0.16***	7.173	0.022	0.036*	1.759	0.02	0.238***	7.303	0.032	0.046*	1.661	0.028
Pandemic	-0.097***	-3.771	0.025	-0.078***	-3.13	0.025	-0.09***	-3.924	0.023	-0.055***	-3.594	0.015
Pandemic × CSR_Report	0.044*	1.92	0.023	0.022*	1.692	0.013	0.145***	5.158	0.028	0.068**	2.365	0.026
Cash	1.814***	25.371	0.071	1.164***	13.749	0.084	1.693***	15.434	0.109	1.058***	9.757	0.108
Size	-0.209***	-13.021	0.016	-0.076*	-1.667	0.045	-0.198***	-12.947	0.015	-0.099***	-4.674	0.021
PPE	-0.468***	-9.4	0.049	-0.151**	-2.216	0.068	-0.475***	-9.381	0.05	-0.168**	-2.328	0.072
FinLev	-1.116***	-22.534	0.049	-1.684***	-13.978	0.12	-1.112***	-27.768	0.04	-1.65***	-16.917	0.097
Age	-0.014	-1.317	0.01	0.082***	2.596	0.031	-0.025*	-1.686	0.015	0.092***	3.7	0.025
R&DInt	2.809***	8.391	0.334	0.017	0.031	0.54	2.784***	9.858	0.282	-0.508	-0.81	0.627
CapExp	1.826***	7.533	0.242	0.796***	3.398	0.234	1.811***	8.357	0.216	0.996***	7.576	0.131
SCAExp	0.007	0.135	0.055	-0.015	-0.173	0.092	0.03	0.616	0.05	0.015	0.21	0.071
GDPGr	0.034***	4.513	0.007	0.026***	6.224	0.004	0.03***	4.524	0.006	0.023***	9.043	0.002
Intercept	4.786***	17.035	0.281	2.1**	2.407	0.872	4.783***	16.739	0.285	2.386***	7.077	0.337
R-squared	33.00%			77.40%			35.30%			79.30%		
Adjusted R-squared	32.80%			73.30%			35.20%			74.90%		
F-statistic	224.871			18.571			221.852			18.122		
p-value F-stat	0.0001			0.0001			0.0001			0.0001		
Observations	25,565			25,565			22,773			22,773		
Paternoster test												
Equation 1 versus Equation 3												
	T-stat											
CSR_Report	-2.008**											
Pandemic	-0.206											
Pandemic × CSR_Report	-2.787**											
Equation 2 versus Equation 4												
	T-stat											
CSR_Report	-0.29											
Pandemic	-0.677											
Pandemic × CSR_Report	-1.676*											

Notes: *** p-value < .01, ** p-value < .05, and * p-value < .01. The variables are defined in Appendix A. Country dummies, industry dummies, and period dummies are included in OLS equations. The equations are estimated using white cross-section (period cluster) method which is robust to both correlation and heteroskedasticity (Arellano, 1987; Wooldridge, 2002). Equations 1 and 2: Regressions estimated using model 1 excluding observations with CSR assurance; and equations 3 and 4: Regressions estimated using model 1 excluding CSR reports lacking CSR assurance. We report standard errors of the coefficients because we used the for the Paternoster test.

TABLE 12 Regression of firm value on CSR report and control variables by considering the moderating role of CSR reporting assurance and using difference-in-difference method

Variable	Equation 1			Equation 2			Equation 3			Equation 4		
	OLS	FE	FE	OLS	FE	FE	OLS	FE	FE	OLS	FE	FE
	Coef.	T-stat	Std.	Coef.	T-stat	Std.	Coef.	T-stat	Std.	Coef.	T-stat	Std.
<i>Pandemic</i> × <i>CSR_Report</i>	0.258***	5.654	0.045	0.066***	2.974	0.022	0.602***	3.851	0.156	0.376***	4.408	0.085
<i>PrePandemic</i> × <i>CSR_Report</i>	0.132***	6.515	0.02	0.031*	1.882	0.016	0.369***	2.968	0.124	0.201**	2.499	0.08
<i>Cash</i>	1.84***	23.991	0.076	1.211***	11.81	0.102	1.528***	5.693	0.268	0.753***	11.051	0.068
<i>Size</i>	-0.203***	-11.125	0.018	-0.094***	-5.174	0.018	-0.164***	-18.663	0.008	-0.096***	-31.857	0.003
<i>PPE</i>	-0.228***	-4.786	0.047	-0.163**	-2.269	0.071	-0.158***	-4.287	0.036	-0.321***	-14.243	0.022
<i>FinLev</i>	-1.203***	-27.806	0.043	-1.639***	-18.396	0.089	-0.973***	-16.532	0.058	-0.93***	-37.742	0.024
<i>Age</i>	-0.031**	-2.477	0.012	0.051**	2.148	0.023	-0.017	-1.115	0.015	-0.041***	-6.032	0.006
<i>R&DInt</i>	2.24***	7.023	0.318	0.234	0.375	0.625	2.004***	4.089	0.49	3.445***	11.724	0.293
<i>CapExp</i>	2.191***	8.611	0.254	0.742***	5.678	0.13	3.037***	12.001	0.253	3.328***	20.142	0.165
<i>SGAExp</i>	-0.06	-1.235	0.048	-0.029	-0.42	0.069	0.652***	13.324	0.049	0.8***	11.691	0.068
<i>GDPGr</i>	0.039***	3.13	0.012	0.026***	9.731	0.002	0.029***	3.303	0.008	0.053***	10.981	0.004
<i>Intercept</i>	4.913***	17.333	0.283	2.626***	8.963	0.293	3.597***	51.174	0.07	2.579***	21.516	0.119
<i>R-squared</i>	34.84%			77.38%			41.28%			77.74%		
<i>Adjusted R-squared</i>	34.67%			73.17%			40.72%			77.68%		
<i>F-statistic</i>	197.594			18.401			73.609			1411.549		
<i>p-value F-stat</i>	0.0001			0.0001			0.0001			0.0001		
<i>Observations</i>	25,565			25,565			22,773			22,773		
Wald test												
	Equation 1	Equation 2	Equation 3	Equation 4	Equation 1	Equation 2	Equation 3	Equation 4	Equation 1	Equation 2	Equation 3	Equation 4
	T-stat	T-stat	T-stat	T-stat	T-stat	T-stat	T-stat	T-stat	T-stat	T-stat	T-stat	T-stat
<i>Pandemic</i> × <i>CSR_Report</i>	2.871***	1.807*	3.580***	4.716***	2.871***	1.807*	3.580***	4.716***	2.871***	1.807*	3.580***	4.716***
<i>Report = PrePandemic</i> × <i>CSR_Report</i>												
Paternoster test												
	Equation 1 versus Equation 3	Equation 2 versus Equation 3	Equation 3 versus Equation 4	Equation 1 versus Equation 4	Equation 1 versus Equation 3	Equation 2 versus Equation 3	Equation 3 versus Equation 4	Equation 1 versus Equation 4	Equation 1 versus Equation 3	Equation 2 versus Equation 3	Equation 3 versus Equation 4	Equation 1 versus Equation 4
	T-stat	T-stat	T-stat	T-stat	T-stat	T-stat	T-stat	T-stat	T-stat	T-stat	T-stat	T-stat
<i>Pandemic</i> × <i>CSR_Report</i>	-2.118**	-3.53***	-2.083**	-2.118**	-3.53***	-2.083**	-2.118**	-3.53***	-2.083**	-2.118**	-3.53***	-2.083**
<i>PrePandemic</i> × <i>CSR_Report</i>	-1.886*			-1.886*			-1.886*			-1.886*		

Notes: *** p -value < .01, ** p -value < .05, and * p -value < .10. The variables are defined in Appendix A. Country dummies, industry dummies, and period dummies are included in OLS equations. The equations are estimated using white cross-section (period cluster) method which is robust to both correlation and heteroskedasticity (Arellano, 1987; Wooldridge, 2002). Equations 1 and 2: Regressions estimated using model 3 excluding observations with CSR assurance; and equations 3 and 4: Regressions estimated using model 3 excluding CSR reports lacking assurance. We report standard errors as they are inputs for Paternoster test.

reconfirm what we observed earlier. In a summary, both predictions in the following of our main results are supported.

5.8 | CSR reporting guidelines

According to the literature, high-quality CSR disclosure and information can improve the transparency of the overall information environment and subsequently affect the perception of CSR information users (Zhang et al., 2020). One of the ways to improve the quality of CSR information is the adoption of GRI guidelines in preparing the report. Using an international setting, Ballou et al. (2018) found that the adopters of GRI reporting guidelines were more likely to have higher quality CSR information. In support of this finding, Orazalin and Mahmood (2019) concluded that firms tend to adopt the GRI framework in order to disclose more extensive and detailed CSR information. Muslu et al. (2019) also found that CSR reports following the GRI guidelines are more likely to receive higher disclosure scores by their substance-based measure. We, therefore, predict that GRI adoption can lead to a favorable firm value. Moreover, we expect that adoption of GRI reporting guidelines creates an additional buffering effect against COVID-19. Following the discussion, we provided in support of the hypotheses, we postulate that the positive relationship between GRI adoption and firm value is more pronounced during the pandemic as compared with the years prior to it. To analyze these predictions, we use Model 1 and replace *CSR_Report* with *CSR_GRI*. *CSR_GRI* takes the value of one for those CSR reports that have followed GRI guidelines. To measure this variable, we use the item with the code CGVSDP028. The results are reported in Table 13. This table illustrates that *CSR_GRI* has a positive coefficient in both OLS and FE models, with the values of 0.102 (p -value < .01) and 0.045 (p -value < .05), respectively. Thus, prior GRI adoption leads to a positive firm value. Regarding the interaction effect, *Pandemic* × *CSR_GRI* has a positive coefficient in both equations, indicating that the GRI adoption mitigates the negative association between COVID-19 and firm value. It also shows that the positive association between the adoption of GRI guidelines is more pronounced during the pandemic than the years preceding it. In summary, the results confirm our predictions with respect to GRI adoption.

6 | CONCLUSION AND IMPLICATIONS

Since the outbreak of COVID-19, several researchers have postulated that those firms that have previously taken into consideration the interests of their stakeholders are likely to be immune to the adverse consequences of the crisis, implying that prior CSR performance increases socially responsible firms resilience against this exogenous shock (e.g., Albuquerque et al., 2020; Huang et al., 2020; Qiu et al., 2021; Shen et al., 2020). However, these studies predominantly focused on the performance aspect of CSR and paid little attention to the reporting aspect. Using a large

TABLE 13 Regression of firm value on GRI report, COVID-19, and control variables

	Equation 1	Equation 2
	OLS	FE
	Coef. (T-stat)	Coef. (T-stat)
<i>CSR_GRI</i>	0.102*** (6.432)	0.045** (2.56)
<i>Pandemic</i>	-0.252*** (-8.224)	-0.117*** (-5.725)
<i>Pandemic</i> × <i>CSR_GRI</i>	0.107*** (2.785)	0.058** (2.434)
<i>Cash</i>	1.788*** (34.266)	1.194*** (9.326)
<i>Size</i>	-0.174*** (-33.202)	-0.15*** (-6.58)
<i>PPE</i>	-0.229*** (-6.626)	-0.243*** (-2.854)
<i>FinLev</i>	-1.205*** (-33.301)	-1.588*** (-15.693)
<i>Age</i>	-0.024*** (-3.116)	0.003 (0.123)
<i>R&DInt</i>	2.251*** (14.181)	-0.539 (-0.782)
<i>CapExp</i>	2.322*** (17.663)	1.42*** (9.784)
<i>SGAExp</i>	-0.019 (-0.631)	-0.17* (-1.947)
<i>GDPGr</i>	0.028*** (4.65)	0.037*** (9.055)
<i>Intercept</i>	4.611*** (42.913)	4.054*** (10.487)
R-squared	35.54%	75.01%
Adjusted R-squared	35.41%	71.92%
F-statistic	262.052	24.252
p -value F-stat	0.0001	0.0001
Observations	32,861	32,861

Notes: *** significance at 1%, ** significance at 5%, and * significance at 10%. See Appendix A for the information about variables definitions. Country dummies, industry dummies, and period dummies are included in OLS equations. The equations are estimated using white cross-section (period cluster) method which is robust to both correlation and heteroskedasticity (Arellano, 1987; Wooldridge, 2002).

sample of 4361 corporations from 40 countries, we extended these studies by analyzing the disclosure aspects of CSR information. We built on several theories to explain the incentives behind CSR reporting and assurance. Following Braam and Peeters (2018), Clarkson et al. (2019), Hummel et al. (2019), Koseoglu et al. (2021), Martínez-Ferrero et al. (2021), and García-Sánchez et al. (2022), we first relied on the signaling and legitimacy theories to understand

why firms are likely to issue CSR reports. The signaling refers to the incentive for apprising the stakeholders of the firm's superior CSR performance, whereas legitimacy refers to the incentive for rebuilding the reputation and regaining the legitimacy. We then used the stakeholder, resource dependency, and impression management theories to further explain the motivations and elaborate on the CSR reporting demand side. Next, we built on the concept of the Red Queen effect and inferred from the response of the Red Queen to Alice that if a corporation wants "...to get somewhere else, [they] must run at least twice as fast as that!" (Carroll, 1960, p. 345). We, therefore, hypothesized that highly committed socially responsible firms are likely to distinguish themselves from the rest by getting their CSR reports assured to increase the credibility of the information. Following Martínez-Ferrero et al. (2021) and García-Sánchez et al. (2022), we again used the signaling and legitimacy theories to explain how CSR assurance enhances firm value and create a buffering effect against pandemic.

This paper revealed that prior CSR reporting and assurance mitigate the negative impact of COVID-19 on firm value. Aside from the above-mentioned line of research, our findings extend those streams of literature positing that CSR is a key strategy to build reputation and acts as an insurance-like mechanism against idiosyncratic risks by revealing that CSR disclosure activities can even mitigate the adverse effects of systematic and exogenous crises. For instance, Christensen (2016) showed that firms with prior CSR reporting enjoy the benefit of ethical capital and suffer less from negative market reactions. In the same line, Zhang et al. (2020) examined how firms use CSR disclosure to protect their value and reputation following financial restatements. In a different vein where researchers investigate CSR performance's buffering impact, Aqueveque et al. (2018) showed that controversial sectors can increase their reputation through CSR activities. Gong et al. (2021) confirmed the insurance-like mechanism of CSR performance. More recently, Thanetsunthorn (2022) revealed that CSR performance mitigates the eroding effect of corruption on social trust. This study also makes contribution to the theoretical frameworks. It contributes to the legitimacy theory by showing that when firms turn to CSR reporting and assurance, this not only helps them to regain their legitimacy and consequently maintain their value but also creates a shield against future shocks. Taking together this theory and our findings, we contemplate that the other motivation for issuing CSR reports and assurance for firms with less reputation would be avoiding reencountering the reputational crises. Finally, our findings showed that the positive impact of CSR reporting and assurance on firm value becomes stronger during the pandemic as compared with the years preceding it. This is in line with Lins et al. (2017) who take the view that socially responsible firms with positive reputation attract considerably greater attention whenever trust becomes important. In the same way, it also extends Martínez-Ferrero and García-Sánchez (2017), Arco-Castro et al. (2020), Chi et al. (2020), Carey et al. (2021), and Martínez-Ferrero et al. (2021) by showing that socially responsible firms can draw greater benefits from CSR assurance's credibility

enhancement when they encounter exogenous shocks. Moreover, this also confirms the signaling theory as highly committed socially responsible firms resort to CSR reporting activities to distinguish themselves from the rest.

Our results are robust to a battery of tests including alternative methods, controlling for the huge contribution of U.S. firms, capturing country-level characteristics, and mitigating endogeneity concerns. In the additional analyses section, we focused on mandatory disclosure regimes to see whether our hypotheses hold under such a system because both the signaling and legitimacy theories refer to a voluntary disclosure system. Relying on Directive 2014/95/EU, we discovered that the predictions remain unchanged, representing that the study extends Chen et al. (2018), Wang et al. (2018), Kuo et al. (2021), and Liu and Tian (2021) by analyzing the buffering roles of CSR reporting and assurance during the pandemic under a mandatory disclosure regime. However, we are aware of the issue that Directive 2014/95/EU requires the mandatory disclosure of specific information for specific companies. As a result, the findings should not be rigidly applicable to every mandatory disclosure regime. Testing the predictions when firms confront a different exogenous crisis, we found that prior CSR reporting and assurance lowered the negative impact of the global financial crisis of 2008–2009. Not only did these outcomes corroborate the findings by Lins et al. (2017), but they also mitigated the concern that the results obtained in the era of COVID-19 were casual. We then tested whether stakeholders react to initial and subsequent reports and assurances differently. The findings showed that initial CSR reports, as well as initial assurance, do not lead to a favorable financial performance and fail to increase firms' resilience against COVID-19, whereas subsequent reports and assurance could increase firm value and create a buffering effect against COVID-19. This finding extends Dhaliwal et al. (2012) and Muslu et al. (2019) by showing that initial CSR reporting and assurance have different buffering effects from subsequent reporting and assurance during systematic crises. Finally, drawing on Ballou et al. (2018), Orazalin and Mahmood (2019), and Muslu et al. (2019), we focused on the quality of CSR reports and found that GRI adoption can enhance firm disclosure quality and consequently increase firm value and resilience against exogenous shocks.

Our study also has important practical implications. Taking together the legitimacy theory and the findings of the study, we contemplate that those firms that are exposed to reputational crises can resort to CSR disclosure activities to not only regain their reputation but also save themselves from future crises. Building on the signaling theory, the Red Queen effect, and the findings of the study, we encourage firms with superior CSR performance to follow GRI frameworks and get their CSR reports assured as these are among the strategies through which highly committed socially responsible companies can win the competition and distinguish themselves from CSR reporters even when the whole market is exposed to a systematic shock.

CONFLICT OF INTEREST

The authors affirm no conflict of interest in this study.


PEER REVIEW

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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ENDNOTE

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APPENDIX A

Variable	Definition	Source
<i>Panel A. Dependent and control variables</i>		
FV	Market value of common equity divided by lagged total assets	Worldscope (MVC/WC02999)
Cash	Cash divided by total assets	Worldscope (WC02003/WC02999)
Size	The natural logarithm of total assets	Worldscope (WC02999)
PPE	The ratio of net plant, property, and equipment to total assets	Worldscope (WC02501/WC02999)
FinLev	The proportion of total debt over total assets	Worldscope (WC03255/WC02999)
Age	The natural logarithm of firm age	Worldscope (BDATE)
R&DInt	The ratio of research and development expenditures to total revenues	Worldscope (WC01201/WC01001)
CapExp	The ratio of capital expenditures to total assets	Worldscope (WC04601/WC02999)
SGAExp	The ratio of selling, general, and administrative costs to total revenues	Worldscope (WC01101/WC01001)
GDPGr	Annual growth of GDP per capita	World Bank
ADRI	Measuring the extent to a country is shareholder oriented	Spamann (2010)
EmploymentProtection	An index of the strictness of employment protection	OECD
BusinessRegulation	An index of business regulations. Its sub-components are: (1) Administrative requirements (2) Bureaucracy costs (3) Starting a business (4) Extra payments/bribes/favoritism (5) Licensing restrictions (6) Cost of tax compliance	Fraser Institute's Economic Freedom of the World
LegalSystem	An index of the quality of the legal system and the security of property rights. Its sub-components are: (1) Judicial independence (2) Impartial courts (3) Protection of property rights (4) Military interference in rule of law and politics (5) Integrity of the legal system (6) Legal enforcement of contracts (7) Regulatory restrictions on the sale of real property (8) Reliability of police (9) Business costs of crime	Fraser Institute's Economic Freedom of the World
InflationRate	An indicator of inflation rate	World Bank
LendingRate	An indicator of lending interest rate	World Bank
<i>Panel B. Variables capturing crises effects</i>		
Pandemic	Takes one for the year 2020 and zero otherwise	Authors' calculation
PrePandemic	Takes one for the years preceding 2020 and zero otherwise	Authors' calculation
FinCrisis	Takes one for the years 2008 and 2009 and zero otherwise	Authors' calculation
<i>Panel C. CSR-related variables</i>		
CSR_Report	Takes the value of one for CSR reports and zero otherwise	ASSET4 (CGVSDP026)
CSR_Report_Mandatory	Takes one for the CSR reports of EU companies with higher than 500 employees and yearly revenue of over 40 million euros or net income of over 20 million after the fiscal year of 2017, and zero otherwise	ASSET4 (CGVSDP026)

Variable	Definition	Source
<i>CSR_Report_Initial</i>	Takes the value one for those observations issuing CSR reporting for the first time and zero otherwise	ASSET4 (CGVSDP026)
<i>CSR_Report_Subsequent</i>	Takes one for those CSR reports that have been issued not for the first time and zero otherwise	ASSET4 (CGVSDP026)
<i>CSR_Assurance</i>	Takes the value of one for assured CSR reports and zero otherwise	ASSET4 (CGVSDP030)
<i>CSR_Assurance_Mandatory</i>	Takes one for the assured CSR reports of EU companies with higher than 500 employees and yearly revenue of over 40 million euros or net income of over 20 million after the fiscal year of 2017	ASSET4 (CGVSDP030)
<i>CSR_Assurance_Initial</i>	Takes the value one for those CSR reports that are assured for the first time and zero otherwise	ASSET4 (CGVSDP030)
<i>CSR_Assurance_Subsequent</i>	Takes one for those CSR reports that have not been assured for the first time and zero otherwise	ASSET4 (CGVSDP030)
<i>CSR_GRI</i>	Takes one for those CSR reports following GRI guidelines and zero otherwise	ASSET4 (CGVSDP028)