

Are sustainable firms more profitable during COVID-19? Recent global evidence of firms in developed and emerging economies

ESG and
financial
performance
during COVID-19

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Jing Lu
University of Guelph, Guelph, Canada, and
Shahid Khan
Penn State Berks, Reading, Pennsylvania, USA

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Abstract

Purpose – This paper investigates whether sustainability performance (SP) protects financial performance (FP) for firms in both developed and emerging economies during the COVID-19-induced economic downturn.

Design/methodology/approach – Using a recent sample of firms in 34 countries between 2003 and 2021, the authors employ ordinary least squares regressions, moderations and the Heckman two-step method to test the hypotheses.

Findings – Firms with strong SP have higher FP in developed and emerging economies in the upcoming year. During the COVID-19 crisis in 2020–2021, the impact of sustainability on FP is pronounced in developed but not in emerging economies. Furthermore, cross-listings expose firms in emerging economies to high-standard institutional mechanisms in developed economies. Thus, sustainable firms in emerging economies cross-listed on European stock exchanges are more profitable.

Practical implications – For regulators and standard setters, the global-level comparative analysis helps them find solutions that may assist firms in improving SP globally (e.g. mandatory reporting) and enduring crises resiliently. For institutional investors, the study reveals the relatively different impact of sustainability risk for firms in developed and emerging economies. For practitioners and private sector firms, this study contributes to the dialogue on what makes firms more resilient in COVID-19. Although COVID-19 might be temporary, the lessons learned could protect firms from future crises.

Originality/value – The authors contribute to the contingency perspective between sustainability and financial performance by providing recent empirical evidence in a global setting during the COVID-19 pandemic. The authors demonstrate how different external institutional mechanisms (rule-based governance and relation-based governance) and cross-listing affect the SP-FP relationship during a crisis. The authors extend the knowledge in crisis management literature with a comparative study and fill the research gap on how SP affects FP for firms in emerging economies compared to developed economies.

Keywords Sustainability, Financial performance, COVID-19, Internationalization, Developed economies, Emerging economies

Paper type Research paper

1. Introduction

Because of COVID-19, 2020 was an unprecedented year that triggered worldwide social and economic disruption (Baker *et al.*, 2020). Although both developed and emerging countries may have faced significant healthcare crises during the COVID-19 pandemic, the economic impact on the emerging world may have been more severe than on the developed world. Emerging

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economies suffer longer during the pandemic due to vaccine shortages and lack of financial support to mitigate the adverse effects of the pandemic on societies (Alberola *et al.*, 2021).

The COVID-19 pandemic provides an excellent opportunity to revisit the relationship between sustainability performance (SP) and financial performance (FP) in a comparative analysis of the developed and emerging world. Although COVID-19 might be temporary, the lessons learned could protect firms from future crises. Does SP protect FP for firms in both developed and emerging economies during the COVID-19 induced economic downturn? Our study reveals the different impacts of sustainability on firm performance in developed and emerging economies. Our research question is important to regulators and standard setters (e.g. UN Global roundtable) as they look for global-level comparative analysis and discussions to find solutions that may assist firms in improving SP and enduring crises resiliently. Our research question is also relevant to institutional investors, who consider sustainability (especially climate-related issues) as an investment risk (Fink, 2020).

We suggest that it is due to the fundamental institutional differences between developed (rule-based) and emerging economies (relation-based) that affect the SP-FP relationship during the COVID-19 pandemic. Developed economies are usually equipped with strong legal, social and economic institutions (e.g. auditing standards, secondary capital markets and information intermediaries such as analysts) that create public trust in firm disclosures (Hope *et al.*, 2022). Firms in developed economies are less constrained under the COVID-19 pandemic, as strong institutions protect them from the negative impacts of the COVID-19 pandemic with subsidies, interest-free loans and unemployment benefits. Society bears the layoff costs in developed economies. By comparison, poorly functioning underdeveloped institutions called “institutional void” are common in emerging economies (Kingsley and Graham, 2017; Hope *et al.*, 2022). Local firms in emerging economies often have no choice but to internalize deficient local institutions and market functions to facilitate business transactions using relation-based governance (Khanna and Palepu, 1997; Manolova *et al.*, 2007). The importance of relationships explains why families, group firms, or conglomerates are the most common basis for organizing business activities in emerging economies (Duque-Grisales and Aguilera-Caracuel, 2021; Graca *et al.*, 2017).

In emerging economies with weak institutions, firms get less government support during the crisis, which increases the trade-off between resources for the SP-FP relationship. For example, family firms are more reluctant to lay off their employees during economic hardships considering the lack of unemployment benefits from the government (Graca *et al.*, 2017; Amato *et al.*, 2021). Similarly, firms in emerging economies where society-level unemployment benefits are limited have less flexibility to lay off employees due to high transaction costs, e.g. high severance pay (Holzmann and Vodopivec, 2011). Thus, a COVID-19 crisis can result in firms in emerging economies taking additional financial burden as societal institutions do not play a strong role. As resources are likely to be severely constrained for emerging economies during COVID-19 pandemic, the SP-FP relationship for firms in emerging economies would have weakened compared to firms in developed economies.

Overall, we find that sustainable firms have better FP. However, during the COVID-19 crisis (2020–2021), the impact of SP on FP is pronounced for firms in developed but not in emerging economies. This implies that engaging in sustainability activities protects firms well during the crisis in developed economies, but this may not be the case for those in emerging economies.

We then split SP into the environmental, social and governance (ESG) dimensions and conduct separate tests on each dimension during COVID-19. We find that the effect of environmental, social or governance performance on FP is pronounced in developed economies. In emerging economies, environmental performance’s impact on FP is strengthened. However, the marginal benefit of social performance on FP weakens during COVID-19. And COVID-19 does not moderate the relationship between governance performance and FP in emerging economies. Furthermore, we conduct additional tests

where we show that all our results for firms in developed economies hold for firms from emerging economies that are cross listed in the capital markets of developed economies in Europe. Our results suggest a positive synergy between SP and FP during COVID-19 for firms in emerging economies cross-listed in Europe.

Early studies on COVID-19's financial impact are often limited to stock market reactions and stock returns, and the results are mixed. For instance, [Albuquerque *et al.* \(2020\)](#) find that during the first quarter of 2020, US firms with higher environmental and social (ES) ratings are associated with higher returns, lower volatility of stock returns and higher profit margins. [Qiu *et al.* \(2021\)](#) show that Chinese firms in the hospitality industry with enhanced Corporate Social Responsibility (CSR) activities and reporting have increased stock returns and attract stakeholders' attention during the COVID-19 crisis. Meanwhile, others question the halo effect of sustainability. For example, using a sample of US firms, [Demers *et al.* \(2021\)](#) challenge the wisdom that ESG is an indicator of share price resilience and find ESG insignificant in generating abnormal returns during the full COVID-19 year in 2020.

More recently, [Lu *et al.* \(2022\)](#) investigate the relationship between sustainability and accounting-based FP measures in G7 countries (Canada, France, Germany, Italy, Japan, the United Kingdom and the United States). They find sustainable firms are more resilient with higher FP during COVID-19. Similarly, [Bose *et al.* \(2022\)](#) investigate how COVID-19 affects changes in firm value using a sample of global firms in 2019–2020. They find that high SP could smooth the negative impact of the pandemic on firm value. We expand the work of [Lu *et al.* \(2022\)](#) and [Bose *et al.* \(2022\)](#) to the differences in institutions between developed and emerging economies that impact SP-FP during the COVID-19 pandemic.

This paper makes the following contributions. First, we contribute to the contingency perspective between SP and FP by providing recent empirical evidence in a global setting during COVID-19. Our results show that firms with better SP will be more profitable next year. This implies that sustainability offers strategic advantages for firms, resulting in better FP. Second, to the best of our knowledge, these earlier studies do not investigate the impact of sustainability on accounting-based FP in a comparative approach between developed and emerging economies. Our findings suggest that sustainability provides insurance-like protection for firms in developed economies during COVID-19 but not for those in emerging economies. This implies that institutional differences between developed and emerging economies (rule-based governance vs relation-based governance) affect the SP-FP relationship during crises. Third, we show a trade-off of resources between social and financial performance in emerging economies. For example, it is harder for firms in emerging economies to let go of employees due to relationships and high severance pays. Fourth, we show that internationalization differentiates cross-listing firms in emerging economies from their local non-cross-listed peers. Fifth, our tests include the latest data from the COVID-19 pandemic year 2021. COVID-19 is an ongoing phenomenon, and we believe that the more recent and comprehensive data is an additional contribution to COVID-related literature.

We structure the remainder of this paper as follows. [Section 2](#) discusses the literature related to sustainability, financial performance and crises. Then, we present our sample and methods in [section 3](#). In [section 4](#), we display our results and discuss the implications. We conclude our paper in [section 5](#).

2. Literature review and hypothesis development

2.1 Sustainability and financial performance

The SP-FP relationship has been a long-debated topic for accounting researchers since the early 1970s (e.g. [Bowman and Haire \(1975\)](#), [Bragdon and Marlin \(1972\)](#)). Although hundreds of studies have investigated this relationship, researchers have not been able to reach a consensus ([Grewatsch and Kleindienst, 2017](#)). Some meta-analyses attempt to consolidate the results.

For example, [Ullmann \(1985\)](#) investigates the early studies on social and economic performance in the US and attributes the inconsistencies to “(a) a lack in theory, (b) inappropriate definition of key terms, and (c) deficiencies in the empirical databases currently available” (p. 540). [Orlitzky et al. \(2003\)](#) conduct a meta-analysis of 52 studies and suggest that SP correlates more with accounting-based than market-based measures. Recently, the literature has evolved into a contingency perspective, suggesting that the SF-FP relationship depends on moderators (e.g. firm and managerial characteristics, growth) and mediators (e.g. intangible resources and stakeholder responses) ([Grewatsch and Kleindienst, 2017](#)).

Stakeholder theory and resource-based theory are the two most widely used theoretical lenses when investigating the SP-FP relationship ([Grewatsch and Kleindienst, 2017](#)). Stakeholder refers to “any group or individual who can affect or is affected by the achievement of the organization’s objectives” ([Freeman, 1984](#)). [Clarkson \(1995\)](#) further classifies stakeholders into primary groups who all directly affect a firm’s survival: customers, suppliers, employees, investors, communities and governments. [Waddock and Graves \(1997b\)](#) argue that SP is regarding the relationship between a firm and its primary stakeholders, and the quality of the relationships affects the quality of SP. They suggest that good management practice is behind the scenes of high SP ([Waddock and Graves, 1997a](#)) and that the quality of management links SP and FP ([Waddock and Graves, 1997b](#)). Consistently, in the 2020 letter to CEOs, BlackRock CEO Larry Fink wrote, “a company cannot achieve long-term profits without embracing purpose and considering the needs of a broad range of stakeholders” ([Fink, 2020](#)).

Resource-based theory defines resources as “all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by the firm” ([Barney, 1991](#)). Firms have a limited supply of resources, and managers use sustainability as a differentiation strategy to meet the demands of customers and other stakeholders ([McWilliams and Siegel, 2001](#)). Resource-based theory suggests that engaging in sustainability activities creates sustainable competitive advantages both internally (e.g. development of new resources) and externally (e.g. reputation) ([Branco and Rodrigues, 2006](#)). The literature widely documents the benefits of sustainability, such as attracting high-performing employees ([Brekke and Nyborg, 2008](#)) and increasing profitability ([Russo and Fouts, 1997](#)). Both stakeholder theory and resource-based theory suggest a positive SP-FP relationship.

It is well known in the accounting and finance literature that firms in emerging markets exist in poorer information environments due to weaker institutions (e.g. weak investor protection and immature ESG regulations) compared to firms in developed economies ([Garcia and Orsato, 2020](#)). Moreover, political uncertainty ([Henisz, 2000](#)) and market conditions ([Schaltegger and Wagner, 2011](#)) increase firm risk in emerging economies. Despite the differences between information environments in developed and emerging economies, researchers still find a positive SP-FP relationship in emerging markets. For example, using a sample of Jakarta Stock Exchange-listed companies and state-owned companies, [Fauzi and Idris \(2009\)](#) find a positive association between CSR and FP in Indonesia. More CSR practices in China and Pakistan lead to better sustainable competitive performance (a comprehensive measure of FP, operational efficiency and customer satisfaction) ([Waheed and Zhang, 2022](#)). Highly sustainable Brazilian firms have better return on equity ([Lourenço and Branco, 2013](#)). Numerous cross-country studies also find a positive SP-FP relationship ([Xiao et al., 2018](#); [Lu et al., 2022](#); [Ameer and Othman, 2012](#)). Thus, we hypothesize:

H1. Firms with better SP have higher subsequent FP.

2.2 Sustainability and financial performance during crises: developed versus emerging economies

We apply stakeholder and resource-based theories to analyze the SP-FP relationship during crises. [Waddock and Graves \(1997a\)](#) suggest that underlying high SP is good management,

which is highly associated with good relationships with primary stakeholders. Firms benefit from good relationships with primary stakeholders; for example, according to [Waddock and Graves \(1997a\)](#), good relationships with employees enhance morale and positive relationships with governments might bring in tax breaks. Primary stakeholders' support is important during crises, which might lead to increased sales or reduced costs. Thus, we expect that sustainable firms with stakeholders' support are more likely to survive crises. In other words, the marginal benefit of sustainability on FP will become enhanced during crises.

Resource-based theory suggests that firms hold tangible (e.g. financial assets) and intangible resources (e.g. stakeholder management), which create capabilities that lead to competitive advantages ([Hart, 1995](#)). However, adopting a sustainable strategy and pursuing sustainable development takes away resources that the company could be allocating elsewhere. The literature widely documents trade-offs in different aspects of sustainability (see [Haffar and Searcy \(2017\)](#)) and expresses that firms should not neglect this dimension ([Hahn et al., 2010](#)). For example, should a firm lay off some employees to save the business and keep the remaining employees on the payroll during crises? We believe that firms in emerging economies may face larger trade-offs during a crisis than those firms in developed economies ([Crotty, 2016](#)). In other words, crises may intensify these differences between developed and emerging economies. Slack resources theory, a modified version of resource-based theory, also suggests a trade-off between SP and FP. During an economic downturn, a firm might have fewer slack resources to spend on sustainability initiatives. According to slack resources theory, when resources are limited, managers face trade-offs, and the marginal benefit of SP on FP is weakened.

Previous studies on the SP-FP relationship during a previous financial crisis (2007–2008) find inconsistent results, suggesting that the impact of sustainability on FP during crises is contingency-based. [Li et al. \(2016\)](#) investigate how sustainability programs affect FP in the fashion industry during the 2008 financial crisis and find that sustainability programs positively impact net income. Their results also indicate that the marginal benefit of sustainability on net income became enhanced during the financial crisis ([Li et al., 2016](#)). Using an Australian sample, [Muhammad et al. \(2015\)](#) find a strong positive relationship between environmental and financial performance pre-financial crisis (2001–2007) and no association during the financial crisis (2008–2010). [Petitjean \(2019\)](#) finds no link between emission reduction or climate change policies and FP in US S&P 500 firms during the financial crisis.

Early studies on COVID-19 are mostly intra-country, and the financial impacts are often limited to stock markets. [Garel and Petit-Romec \(2021\)](#) find that large US firms with better environmental strategies have better stock returns during the COVID crisis. [Selmi et al. \(2021\)](#) suggest that investors reward US firms that are responsible on social and environmental issues during the pandemic. Similarly, [Broadstock et al. \(2021\)](#) find consistent results that higher ESG performance reduces financial risks triggered by COVID-19 and generates higher stock returns in China. [Huang et al. \(2020\)](#) and [Shen et al. \(2020\)](#) show the buffering effect of prior high CSR performance during the pandemic, and socially responsible Chinese firms could recover faster from the systemic shocks of the pandemic. [Ding et al. \(2021\)](#) use a global sample of more than 6,000 firms from 56 economies and observe less drop in stock returns for firms with more CSR activities pre-COVID.

To reduce the negative impact of COVID-19 crisis, governments in developed economies have provided a large amount of support to workers and businesses. For example, US and Canada sent stimulus checks to help unemployed workers. European governments took over salary payments from businesses to keep workers in their jobs. Strong institutional protection and timely government financial support are likely to maintain the SP-FP relationship for firms in developed economies during the COVID-19 crisis ([Crotty, 2016](#)). By comparison, the unprecedented COVID-19 crisis is likely to further expose the vulnerability of weaker institutional setups in emerging economies with

increasing pressures on limited resources. Governments in emerging economies provided lower fiscal support than their developed counterparts (Alberola *et al.*, 2021), as emerging economies could not afford the flexibility of increasing their debt levels.

Moreover, because of weaker legal institutions, businesses in emerging economies often belong to states, families, groups or conglomerates (Duque-Grisales and Aguilera-Caracuel, 2021). This practice allows firms in emerging economies to reduce the risk of enforcing contracts between two parties thanks to political connections or family networks (Dinh and Calabrò, 2019). Family employees are less likely to behave opportunistically as the family's reputation and strong connections are at stake (Gedajlovic *et al.*, 2012; Gulati, 1995). But connections and relations also make it difficult for family businesses to lay off their extended family members during crises as there are limited government support programs for unemployed or sick workers in emerging economies. For state-owned firms in emerging economies, political and economic factors are strong incentives to engage in sustainability (Li and Zhang, 2010). State-owned firms in emerging economies might be reluctant to lay off employees due to networks, reputation or political concerns. For instance, it is common to find employees of Chinese state-owned firms with relatives working in the Chinese government (Liu *et al.*, 2014). Hence, we hypothesize the following:

- H2. The impact of sustainability on FP would weaken in emerging economies compared to developed economies during the COVID-19 pandemic.

3. Methods

3.1 Sample

We collect FP, SP and firm-level control variables from the Refinitiv (formerly Thomson Reuters) Eikon database. We start with observations that have SP in Eikon. Then, we lag one-year data to capture the delayed relationship between SP and FP. Furthermore, we remove the countries with less than 50 observations in the sample to exclude the impact of low representation. After removing observations with missing control variables, our final sample contains 48,867 observations (6,994 unique firms) from 34 countries between 2003 and 2021. Table 1 lists the sample by country and year. About one-third of the observations come from the United States (15,219 observations), followed by Japan (5,678 observations) and the United Kingdom (4,072 observations).

Based on the World Bank's income group data, we classify 25 high-income countries as developed and the remaining nine countries (China, India, Indonesia, Malaysia, Philippines, Russia, South Africa, Thailand and Turkey) as emerging. Our sample has 42,117 observations (86.19%) classified as firms in developed economies and 6,750 observations (13.81%) as firms in emerging economies.

3.2 Variables

We use two accounting measures as the proxies for FP following Lee *et al.* (2016): return on assets (ROA) and return on equity (ROE). We use four proxies of SP from Refinitiv Eikon (formally known as Thomson Reuters Asset 4) following the recent studies on sustainability and COVID-19 (e.g. Bae *et al.* (2021), Demers *et al.* (2021), Garel and Petit-Romec (2021)): (1) overall ESG performance, (2) average of environmental and social performance (ES), (3) environmental performance and (4) social performance.

Corporate governance refers to how rules, practises and processes are used to manage firms (Campbell and Mínguez-Vera, 2008), which plays an essential role in firm FP. Good corporate governance effectively aligns managers' interests with shareholders'

Country	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total	
Australia	3	3	40	47	46	49	57	108	148	168	173	208	229	230	251	264	287	300	300	2,911	
Austria	4	5	7	9	9	11	11	11	11	11	11	9	12	12	13	12	24	24	28	29	239
Belgium	10	10	11	17	17	17	18	18	20	21	22	22	22	23	23	27	43	43	41	41	423
Canada	4	7	45	57	62	91	132	135	148	165	169	182	187	183	204	195	198	203	224	2,591	
China	1	1	5	7	8	12	24	55	104	112	108	119	126	136	141	320	367	584	810	3,040	
Denmark	12	13	14	16	16	19	19	19	21	19	20	20	22	23	24	24	36	38	48	423	
France	30	31	41	55	57	67	70	74	75	73	74	76	78	82	86	97	140	124	138	1,468	
Germany	21	24	37	44	45	50	58	59	63	60	65	63	73	78	80	97	149	151	211	1,428	
Greece	6	6	7	10	10	9	9	10	9	5	6	6	9	9	10	13	12	10	17	175	
India	0	0	0	0	0	5	12	25	47	64	66	68	74	82	85	87	91	120	135	961	
Indonesia	0	0	0	0	0	0	3	8	20	20	22	27	26	30	31	34	33	28	39	321	
Ireland	5	7	9	16	18	18	15	15	19	20	24	25	25	30	33	40	39	42	42	432	
Israel	1	1	1	1	1	1	1	3	6	8	8	7	6	9	11	11	13	11	22	130	
Italy	6	12	17	18	18	21	23	24	25	23	24	23	26	29	31	38	75	75	102	610	
Japan	23	23	173	288	296	303	307	316	323	325	322	338	346	361	369	379	394	375	417	5,678	
South Korea	1	1	3	3	3	7	14	24	74	78	81	91	101	107	106	120	118	52	43	1,027	
Luxembourg	0	0	3	3	3	4	4	4	4	5	6	6	7	7	10	13	16	24	33	165	
Malaysia	0	0	0	0	0	0	5	10	26	32	33	35	38	37	38	45	46	50	54	449	
Netherlands	14	15	19	22	22	24	23	23	24	26	27	28	30	34	36	37	55	54	63	576	
New Zealand	0	0	6	8	9	8	9	9	10	11	12	13	13	13	13	45	51	53	54	405	
Norway	8	8	13	14	15	15	15	15	16	16	16	15	17	18	17	21	43	41	40	363	
Philippines	0	0	0	0	0	0	1	4	12	15	12	15	18	18	21	21	21	13	23	194	
Poland	0	0	0	0	0	1	4	6	14	15	16	15	19	18	18	20	27	14	27	214	
Russia	0	0	0	0	0	0	12	16	22	27	30	27	30	28	29	25	33	24	26	329	
Saudi Arabia	0	0	0	0	0	0	1	5	5	5	5	4	5	7	8	9	20	13	24	116	
Singapore	0	0	16	21	21	24	25	32	32	32	32	33	32	32	32	32	32	50	72	550	
South Africa	1	1	1	1	1	1	1	9	12	36	49	69	81	80	80	81	78	63	64	776	
Spain	12	12	22	24	26	28	28	29	30	30	33	32	36	37	35	41	55	44	50	604	
Sweden	23	23	30	37	38	38	36	35	36	36	38	40	46	52	59	61	117	131	241	1,117	
Switzerland	29	28	36	37	38	46	49	55	55	54	59	61	64	64	65	71	121	109	140	1,181	
Thailand	0	0	0	0	0	2	4	7	13	14	17	21	25	27	30	31	37	73	110	411	
Turkey	0	0	0	0	0	0	0	8	10	17	18	18	19	19	19	20	33	26	44	269	
UK	57	61	147	176	181	187	182	191	194	215	217	216	223	262	265	280	316	322	380	4,072	
USA	181	208	298	376	398	433	514	600	633	662	642	664	683	1,091	1,421	1,536	1,635	1,487	1,757	15,219	
Total	452	500	1,001	1,307	1,358	1,492	1,709	1,973	2,292	2,434	2,477	2,595	2,748	3,298	3,729	4,148	4,766	4,767	5,821	48,867	

Note(s): China, India, Indonesia, Malaysia, Philippines, Russia, South Africa, Thailand, and Turkey are considered emerging economies according to the World Bank classification. The remaining countries are high-income developed economies. Out of 48,867 firm-year observations (6,994 unique firms), 42,117 observations (86.19 percent, 5,525 unique firms) are from developed economies and 6,750 observations (13.81 percent, 1,469 unique firms) are from emerging economies

Table 1.
Sample

and reduces agency costs. During the previous financial crises, corporate governance also affected FP (Ferrero-Ferrero *et al.*, 2012). Weak corporate governance (Johnson *et al.*, 2000) and excessive risk-taking caused the financial crisis of 2008 (Battaglia and Gallo, 2017); good corporate governance led to better FP before and during the 2008 financial crisis (Kowalewski, 2016). Thus, we use Eikon’s governance performance as the proxy for corporate governance. Since one of the proxies (ESG performance) already includes the governance dimension, we only include the governance performance as a control variable when the dependent variable is ES, environmental or social performance.

We also control leverage and firm size, following Lee *et al.* (2016). Leverage is the ratio of long-term debt to total capital. Firm size is the natural log of total assets. We include two country-level controls from the World Bank following Jacoby *et al.* (2019) and Lu and Wang (2021): GDP growth and country governance. GDP growth is the change of GDP per capita in constant 2010 USD. World Bank’s Worldwide Governance Indicators capture how well leaders govern countries based on six dimensions: voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, the rule of law and control of corruption. Each dimension ranges from weak (−2.5) to strong (2.5). We sum the scores of these six dimensions as our country-level governance scores.

Internationalization and cross-listing affect SP by exposing firms to different institutional environments other than their headquarter countries (Lu and Wang, 2021; Attig *et al.*, 2016). We use a dummy variable for multiple listings to indicate whether more than one stock exchange cross-lists a firm. A strong legal system discourages controlling shareholders’ self-dealing behavior at the cost of minority shareholders (Karolyi, 2012). Common law countries provide better legal protection to external shareholders (La Porta *et al.*, 2000), and legal protection of minority shareholders and law enforcement are important country-level institutional forces (Serrasqueiro and Oliveira, 2022). Thus, we include a control variable for common law as a proxy for legal protection. We winsorize all continuous variables at 1% and 99% by year to remove outliers.

Table 2 provides the descriptive statistics, and Table 3 shows the Pearson correlations.

3.3 Methods

We test our hypotheses using the ordinary least squares (OLS) below:

$$\begin{aligned} \text{Financial Performance}_{it} = & \beta_1 \text{Sustainability Performance}_{it-1} + \gamma' \text{Firms Controls}_{it-1} \\ & + \delta' \text{Country Controls}_{it-1} + \text{Year \& Industry Fixed Effects} + \varepsilon_{it} \end{aligned} \quad (\text{Eq 1})$$

where FP is either ROA or ROE, and SP is one of the four proxies.

In addition, we test the moderation impact of COVID-19 on the SP–FP relationship. We construct a dummy COVID which equals one for 2020 and 2021 and zero otherwise. We test the following equation using OLS:

$$\begin{aligned} \text{Financial Performance}_{it} = & \beta_1 \text{Sustainability Performance}_{it-1} + \beta_2 \text{COVID} \\ & + \beta_3 \text{Sustainability Performance}_{it-1} \times \text{COVID} \\ & + \gamma' \text{Firms Controls}_{it-1} + \delta' \text{Country Controls}_{it-1} \\ & + \text{Industry Fixed Effects} + \varepsilon_{it} \end{aligned} \quad (\text{Eq 2})$$

Variable	Description	Obs	Mean	Std. dev	Min	Max
ROA (percent)	Return on assets, net income divided by total assets	48,867	4.19	11.19	-335.40	44.77
ROE (percent)	Return on equity, net income divided by total equity of common shares	48,867	12.40	23.12	-192.03	114.44
ESG	Environmental, social and governance (ESG) score from Refinitiv Eikon (Asset 4)	48,867	42.21	21.11	0.12	87.83
ES	Average of environmental and social performance from Refinitiv Eikon (Asset 4)	48,867	38.14	24.56	0.07	90.47
Environmental	Environmental performance from Refinitiv Eikon (Asset 4)	48,867	33.78	29.09	0.00	93.22
Social	Social performance from Refinitiv Eikon (Asset 4)	48,867	42.51	23.97	0.12	93.67
Governance	Governance performance from Refinitiv Eikon (Asset 4)	48,867	48.22	23.34	0.11	93.80
Leverage (percent)	Long-term debt to total capital	48,867	28.79	23.19	0.00	141.78
Size	Natural log of total assets	48,867	22.26	1.55	13.59	25.28
GDP Growth (percent)	GDP per capita growth in constant 2010 USD from World Bank	48,867	0.99	2.98	-10.78	23.99
Country governance	Country governance from World Bank	48,867	6.65	3.60	-4.55	11.03
Multiple listings	Dummy variable one if a firm is cross-listed on more than one stock exchange and zero otherwise	48,867	0.63	0.48	0	1
Common law	Dummy variable one if a firm has its headquarters in a country that adopts a common law legal system and zero otherwise	48,867	0.59	0.49	0	1

Note(s): All variables except ROA and ROE are lagged

Table 2.
Summary statistics

4. Empirical results

4.1 Sustainability and financial performance results

Table 4 tests the relationship between ESG or ES and FP using OLS. We use ROA as the proxy for FP in columns 1–4. In column 1, firms with better ESG performance ($\beta = 0.03$, $t = 10.21$, $p < 0.01$) have higher ROA the following year in developed economies. Similarly, in column 2, using firms in emerging economies, we find a positive and significant relationship between ESG performance and ROA ($\beta = 0.03$, $t = 4.23$, $p < 0.01$). Columns 3 and 4 repeat the tests using ES as the proxy for SP. Consistent with the results in columns 1 and 2, firms with strong SP are more profitable in both developed (column 3, $\beta = 0.02$, $t = 6.45$, $p < 0.01$) and emerging economies (column 4, $\beta = 0.03$, $t = 4.54$, $p < 0.01$). We use ROE as the proxy for FP in columns 5–8 and find consistent results.

Table 5 splits the SP into environmental, social dimensions and investigates how environmental or social performance affects profitability. In columns 9 and 10, firms with better environmental performance have higher ROA in developed economies (column 9, $\beta = 0.02$, $t = 7.79$, $p < 0.01$) and emerging economies (column 10, $\beta = 0.02$, $t = 3.28$, $p < 0.01$). Similarly, columns 11 and 12 also support a positive association between social performance and ROA in developed (column 11, $\beta = 0.01$, $t = 3.42$, $p < 0.01$) and emerging economies (column 12, $\beta = 0.03$, $t = 5.01$, $p < 0.01$). Using ROE as a proxy for FP, columns 13–16 provide

Table 3.
Correlations

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
[1] ROA	1.00											
[2] ROE	0.58 (0.00)	1.00										
[3] ESG	0.07 (0.00)	0.08 (0.00)	1.00									
[4] ES	0.06 (0.00)	0.07 (0.00)	0.94 (0.00)	1.00								
[5] Environmental	0.07 (0.00)	0.06 (0.00)	0.86 (0.00)	0.94 (0.00)	1.00							
[6] Social	0.04 (0.00)	0.06 (0.00)	0.90 (0.00)	0.91 (0.00)	0.71 (0.00)	1.00						
[7] Governance	0.06 (0.00)	0.06 (0.00)	0.71 (0.00)	0.47 (0.00)	0.42 (0.00)	0.44 (0.00)	1.00					
[8] Leverage	-0.09 (0.00)	0.00 (0.72)	0.08 (0.00)	0.09 (0.00)	0.07 (0.00)	0.10 (0.00)	0.04 (0.00)	1.00				
[9] Size	0.06 (0.00)	0.08 (0.00)	0.43 (0.00)	0.44 (0.00)	0.45 (0.00)	0.34 (0.00)	0.27 (0.00)	0.23 (0.00)	1.00			
[10] GDP growth	0.06 (0.00)	0.03 (0.00)	-0.04 (0.00)	-0.07 (0.00)	-0.06 (0.00)	-0.07 (0.00)	0.06 (0.00)	-0.08 (0.00)	0.09 (0.00)	1.00		
[11] Country governance	-0.06 (0.00)	-0.03 (0.00)	0.05 (0.00)	0.05 (0.00)	0.03 (0.00)	0.07 (0.00)	0.02 (0.00)	0.10 (0.00)	-0.09 (0.00)	-0.30 (0.00)	1.00	
[12] Multiple listings	0.01 (0.00)	0.05 (0.00)	0.08 (0.00)	0.08 (0.00)	0.02 (0.00)	0.15 (0.00)	0.01 (0.08)	0.09 (0.00)	-0.11 (0.00)	-0.13 (0.00)	0.23 (0.00)	1.00
[13] Common law	-0.03 (0.00)	0.05 (0.00)	-0.12 (0.00)	-0.15 (0.00)	-0.22 (0.00)	-0.03 (0.00)	-0.03 (0.00)	0.17 (0.00)	-0.19 (0.00)	-0.09 (0.00)	0.22 (0.00)	0.32 (0.00)

Note(s): All variables except ROA and ROE are lagged. Numbers in parentheses are *p* values

Dependent variable	ROA			ROE				
	[1] Developed	[2] Emerging	[3] Developed	[4] Emerging	[5] Developed	[6] Emerging	[7] Developed	[8] Emerging
ESG	0.03*** (10.21)	0.03*** (4.23)	0.02*** (6.45)	0.03*** (4.54)	0.07*** (11.14)	0.09*** (7.02)	0.06*** (9.08)	0.09*** (7.46)
ES			0.01*** (4.32)	0.00 (-0.62)	0.01*** (2.27)	0.01** (2.27)	0.01** (2.27)	-0.01 (-1.04)
Governance			-0.04*** (-16.8)	-0.12*** (-19.09)	0.00 (-0.47)	-0.04*** (-2.82)	0.00 (-0.49)	-0.04*** (-2.76)
Leverage	0.45*** (10.01)	-1.18*** (-12.76)	0.45*** (9.87)	-1.21*** (-12.89)	1.18*** (12.49)	-2.07*** (-10.83)	1.14*** (11.85)	-2.17*** (-11.17)
Size	-0.08** (-2.21)	0.00 (-0.05)	-0.08** (-2.22)	0.00 (0.04)	-0.12 (-1.54)	-0.10 (-1.05)	-0.12 (-1.48)	-0.08 (-0.90)
GDP Growth	0.22*** (6.19)	-0.61*** (-6.60)	0.22*** (6.16)	-0.61*** (-6.62)	0.38*** (5.01)	-0.48** (-2.51)	0.37*** (4.95)	-0.48** (-2.53)
Country governance	0.57*** (4.60)	1.87*** (6.52)	0.59*** (4.76)	1.81*** (6.28)	1.45*** (5.57)	2.86*** (4.81)	1.42*** (5.47)	2.66*** (4.45)
Multiple listings	0.46*** (3.71)	0.66* (1.91)	0.45*** (3.56)	0.61* (1.75)	4.90*** (18.85)	-1.02 (-1.42)	4.99*** (18.94)	-1.20* (-1.67)
Constant	-4.69*** (-2.80)	33.66*** (5.30)	-4.77*** (-2.82)	34.73*** (5.45)	-19.74*** (-5.61)	58.96*** (4.48)	-18.65*** (-5.25)	62.52*** (4.74)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	42,117	6,750	42,117	6,750	42,117	6,750	42,117	6,750
Adj R-squared	7.24%	16.42%	7.23%	16.45%	5.37%	7.51%	5.37%	7.60%

Note(s): This table presents the OLS results of regressing FP on sustainability performance (ESG or ES) with year and industry fixed effects. Columns 1–4 use ROA as the proxy for FP, and columns 5–8 use ROE. Emerging economies include China, India, Indonesia, Malaysia, Philippines, Russia, South Africa, Thailand, and Turkey. We do not include corporate governance control variable when the dependent variable is ESG. Table 2 defines all variables. All independent and control variables are lagged. T-statistics are reported in parentheses. The superscripts ***, **, and * indicate significance at the 1%, 5%, and 10% confidence levels, respectively

Table 4.
Impact of SP on FP

Table 5.
Impact of
environmental or social
performance on FP

Dependent variable	ROA			ROE				
	[9] Developed	[10] Emerging	[11] Developed	[12] Emerging	[13] Developed	[14] Emerging	[15] Developed	[16] Emerging
Environmental	0.02*** (7.79)	0.02*** (3.28)	0.01*** (3.42)	0.03*** (5.01)	0.05*** (8.99)	0.06*** (5.77)	0.04*** (7.05)	0.09*** (7.81)
Social								
Governance	0.01*** (4.43)	0.00 (-0.16)	0.02*** (5.67)	0.00 (-0.59)	0.02*** (3.00)	0.00 (-0.40)	0.02*** (3.26)	-0.01 (-0.89)
Leverage	-0.04*** (-16.69)	-0.12*** (-19.04)	-0.04*** (-16.93)	-0.12*** (-19.11)	0.00 (-0.40)	-0.04*** (-2.71)	0.00 (-0.66)	-0.04*** (-2.78)
Size	0.42*** (9.20)	-1.18*** (-12.46)	0.53*** (12.16)	-1.17*** (-12.86)	1.14*** (11.81)	-2.12*** (-10.73)	1.30*** (14.19)	-2.03*** (-10.73)
GDP growth	-0.08** (-2.13)	0.00 (-0.08)	-0.09** (-2.49)	0.00 (0.02)	-0.12 (-1.50)	-0.10 (-1.06)	-0.14* (-1.73)	-0.09 (-0.97)
Country governance	0.22*** (6.04)	-0.61*** (-6.64)	0.23*** (6.56)	-0.60*** (-6.51)	0.38*** (4.98)	-0.50*** (-2.60)	0.40*** (5.33)	-0.45** (-2.35)
Multiple listings	0.62*** (5.03)	1.92*** (6.71)	0.63*** (5.10)	1.77*** (6.12)	1.56*** (6.03)	3.01*** (5.05)	1.45*** (5.55)	2.57*** (4.29)
Common law	0.53*** (4.18)	0.78** (2.28)	0.33*** (2.65)	0.50 (1.41)	5.11*** (19.17)	-0.64 (-0.90)	4.69*** (18.07)	-1.51** (-2.07)
Constant	-4.14** (-2.45)	34.23*** (5.36)	-6.52*** (-3.92)	33.83*** (5.33)	-18.70*** (-5.26)	61.45*** (4.64)	-22.21*** (-6.35)	59.08*** (4.49)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	42,117	6,750	42,117	6,750	42,117	6,750	42,117	6,750
Adj R-squared	7.27%	16.33%	7.16%	16.50%	5.37%	7.30%	5.30%	7.68%

Note(s): This table presents the OLS results of regressing FP on environmental or social performance with year and industry fixed effects. Columns 9–12 use ROA as the proxy for FP, and columns 13–16 use ROE. Table 2 defines all variables. All independent and control variables are lagged. T-statistics are reported in parentheses. The superscripts ***, **, and * indicate significance at the 1%, 5%, and 10% confidence levels, respectively

consistent results that there is a positive relationship between environmental or social performance and FP.

The results in Tables 4 and 5 confirm a positive SP-FP association in developed and emerging economies using multiple sustainability and financial performance proxies. Thus, we find support for H1.

4.2 Sustainability and financial performance during COVID-19: developed vs emerging economies

We further test whether COVID-19 moderates the SP-FP relationship. Table 6 uses ESG or ES as the proxy for SP. Column 17 displays a significant positive result between the interaction ESG*COVID and the dependent variable ROA in developed economies ($\beta = 0.05$, $t = 8.74$, $p < 0.01$), implying that the impact of the sustainability on ROA is pronounced during COVID-19. Compared with firms with lower SP, high-performing firms are more resilient during COVID-19. SP provides some protection during the crisis, and firms in developed economies with well-developed SP suffer less during COVID-19. In column 18, we find a non-significant association between ESG*COVID and the dependent variable ROA in emerging economies. This suggests that the marginal impact of sustainability remains the same before and during COVID-19 for firms in emerging economies.

In column 19, we use ES as the proxy for SP. We find a positive and significant interaction ES*COVID ($\beta = 0.05$, $t = 10.24$, $p < 0.01$), consistent with column 17's results that the impact of SP on FP becomes stronger during the COVID-19 pandemic for developed economies. In column 20, we do not find a significant interaction ES*COVID for firms in emerging economies, supporting the results in column 18. We use ROE as the proxy for FP in columns 21–24, and the results are consistent with the findings in columns 17–20.

Table 7 investigates how environmental, social or governance performance affects FP during COVID-19. In columns 25 and 26, we find a positive significant interaction Environmental*COVID on ROA for developed economies ($\beta = 0.06$, $t = 13.55$, $p < 0.01$) and emerging economies ($\beta = 0.02$, $t = 2.30$, $p < 0.05$). The results indicate more financial benefits for firms pursuing environmentally responsible activities during COVID-19.

Social performance's effect on FP during COVID-19 is inconsistent for firms in developed and emerging economies. Column 27 reports a positive significant interaction Social*COVID for developed economies ($\beta = 0.03$, $t = 5.33$, $p < 0.01$), and column 28 suggests a negative significant interaction Social*COVID for emerging economies ($\beta = -0.02$, $t = -2.41$, $p < 0.05$). This implies that socially responsible firms in developed economies perform better than their low-performing peers during COVID-19. There is a positive synergy between social performance and COVID on FP. For firms in emerging economies, the impact of socially responsible activities on profitability is weakened. This indicates a trade-off of resources between social and financial performance in emerging economies. During a crisis, missing or weaker government support programs in emerging economies are likely to expose firms to additional financial liabilities that negatively impact their FP. This is especially relevant when personal trust is an important driving factor in relevant contracts between family firms and employees (Scholes *et al.*, 2016). For example, family firms will have to extend additional financial help to employees during the pandemic as there are no reliable unemployment support programs in emerging economies.

In column 29, we find a significant and positive interaction of Governance*COVID in developed economies ($\beta = 0.02$, $t = 4.57$, $p < 0.01$). This implies that firms in developed economies with better corporate governance perform better during the COVID-19. However, we find insignificant interaction of governance performance and COVID in emerging economies (column 30).

Table 6.
Impact of SP, COVID
on FP

Dependent variable	ROA				ROE			
	[17] Developed	[18] Emerging	[19] Developed	[20] Emerging	[21] Developed	[22] Emerging	[23] Developed	[24] Emerging
ESG	0.00 (1.22)	0.02*** (3.35)	0.00 (-1.54)	0.02*** (3.23)	0.04*** (5.62)	0.08*** (5.34)	0.03*** (4.04)	0.07*** (5.43)
ES	-5.44*** (-18.65)	-0.74 (-1.36)	-5.37*** (-20.67)	-1.19*** (-2.66)	-5.96*** (-9.73)	-2.36** (-2.08)	-6.10*** (-11.17)	-2.94*** (-3.17)
COVID	0.05*** (8.74)	-0.01 (-0.89)			0.03** (2.20)	-0.01 (-0.26)		
ES*COVID			0.05*** (10.24)	0.00 (0.01)			0.03*** (2.93)	0.01 (0.34)
Governance			0.01*** (3.30)	0.00 (-0.69)			0.01** (2.03)	-0.01 (-0.95)
Leverage	-0.05*** (-17.86)	-0.12*** (-19.54)	-0.05*** (-17.85)	-0.12*** (-19.55)	-0.01 (-1.40)	-0.04*** (-3.19)	-0.01 (-1.41)	-0.04*** (-3.17)
Size	0.62*** (14.1)	-1.12*** (-12.11)	0.62*** (14.03)	-1.15*** (-12.25)	1.45*** (15.75)	-1.98*** (-10.35)	1.44*** (15.40)	-2.07*** (-10.65)
GDP growth	-0.17*** (-6.92)	0.02 (0.49)	-0.16*** (-6.84)	0.02 (0.65)	-0.22*** (-4.32)	-0.11 (-1.45)	-0.21*** (-4.24)	-0.09 (-1.26)
Country governance	0.22*** (6.13)	-0.71*** (-7.81)	0.21*** (5.98)	-0.71*** (-7.77)	0.41*** (5.43)	-0.70*** (-3.70)	0.40*** (5.36)	-0.70*** (-3.70)
Multiple listings	0.65*** (5.24)	1.99*** (7.20)	0.68*** (5.48)	1.94*** (6.99)	1.58*** (6.08)	3.08*** (5.38)	1.59*** (6.10)	2.92*** (5.08)
Common law	0.45*** (3.66)	0.97*** (2.91)	0.43*** (3.40)	0.92*** (2.76)	4.74*** (18.19)	-0.42 (-0.61)	4.78*** (18.11)	-0.56 (-0.81)
Constant	-7.51*** (-4.83)	31.07*** (13.56)	-7.70*** (-4.92)	32.12*** (13.81)	-25.50*** (-7.80)	55.69*** (11.75)	-25.17*** (-7.65)	58.69*** (12.20)
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	42,117	6,750	42,117	6,750	42,117	6,750	42,117	6,750
Adj R-squared	6.50%	15.40%	6.57%	15.41%	4.72%	6.80%	4.72%	6.87%

Note(s): This table presents the OLS results of regressing FP on the interaction of SP (ESG or ES) and COVID-19 (years 2020 and 2021) with industry fixed effects. Columns 17–20 use ROA as the proxy for FP, and columns 21–24 use ROE. Table 2 defines all variables. All independent and control variables are lagged. T-statistics are reported in parentheses. The superscripts ***, **, and * indicate significance at the 1%, 5%, and 10% confidence levels, respectively

Panel A: Dependent variable ROA	[25] Developed	[26] Emerging	[27] Developed	[28] Emerging	[29] Developed	[30] Emerging
Environmental	0.00 (-0.41)	0.01 (0.95)				
Social			-0.01** (-2.48)	0.03*** (5.02)		
COVID	-5.37*** (-24.25)	-1.82*** (-4.50)	-4.49*** (-15.73)	-0.33 (-0.72)	-4.39*** (-15.02)	-1.31** (-2.30)
Environmental*COVID	0.06*** (13.55)	0.02** (2.30)				
Social*COVID			0.03*** (5.33)	-0.02** (-2.41)		
Governance*COVID					0.02*** (4.57)	0.00 (0.48)
Governance	0.01*** (2.67)	0.00 (-0.23)	0.01*** (4.97)	0.00 (-0.78)	0.01*** (3.14)	0.00 (0.13)
Leverage	-0.04*** (-17.76)	-0.12*** (-19.59)	-0.05*** (-17.87)	-0.12*** (-19.49)	-0.05*** (-17.89)	-0.12*** (-19.46)
Size	0.57*** (12.69)	-1.14*** (-11.98)	0.66*** (15.57)	-1.11*** (-12.19)	0.64*** (15.89)	-1.05*** (-11.69)
GDP growth	-0.15*** (-6.44)	0.02 (0.60)	-0.16*** (-6.83)	0.01 (0.36)	-0.17*** (-6.90)	0.01 (0.25)
Country governance	0.20*** (5.52)	-0.69*** (-7.63)	0.24*** (6.63)	-0.72*** (-7.95)	0.23*** (6.58)	-0.69*** (-7.58)
Multiple listings	0.66*** (5.34)	2.03*** (7.35)	0.73*** (5.85)	1.89*** (6.80)	1.21*** (8.99)	2.13*** (7.77)
Common law	0.50*** (3.98)	1.06*** (3.20)	0.33*** (2.66)	0.84** (2.48)	0.04 (0.34)	1.14*** (3.45)
Constant	-6.62*** (-4.23)	32.13*** (13.69)	-8.76*** (-5.67)	31.14*** (13.66)	-8.51*** (-5.59)	30.03*** (13.35)
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Obs	42,117	6,750	42,117	6,750	42,117	6,750
Adj R-squared	6.77%	15.38%	6.39%	15.55%	6.49%	15.25%

(continued)

Table 7. Impact of environmental, social or governance performance and COVID-19 on FP

Table 7.

	[31]	[32]	[33]	[34]	[35]	[36]
Panel B: Dependent variable ROE	Developed	Emerging	Developed	Emerging	Developed	Emerging
Environmental	0.02*** (3.76)	0.04*** (2.97)				
Social			0.02*** (3.61)	0.09*** (6.97)		
COVID	-6.61*** (-14.17)	-4.03*** (-4.82)	-4.65*** (-7.75)	-1.29 (-1.38)	-5.21*** (-8.50)	-2.72*** (-2.30)
Environmental*COVID	0.05*** (5.55)	0.04** (2.40)				
Social*COVID			0.00 (-0.28)	-0.04* (-1.87)		
Governance*COVID						
Governance	0.01** (2.08)	0.00 (-0.35)	0.02*** (3.19)	-0.01 (-0.90)	0.01 (0.88)	0.01 (0.43)
Leverage	-0.01 (-1.31)	-0.04*** (-3.18)	-0.01 (-1.50)	-0.04*** (-3.10)	(4.15)	(0.64)
Size	1.40*** (14.94)	-2.05*** (-10.39)	1.52*** (16.96)	-1.93*** (-10.22)	-0.01 (-1.46)	-0.04*** (-2.99)
GDP growth	-0.20*** (-4.03)	-0.10 (-1.40)	-0.22*** (-4.30)	-0.12 (-1.56)	1.61*** (19.02)	1.69*** (-9.11)
Country governance	0.38*** (5.10)	-0.68*** (-3.59)	0.44*** (5.81)	-0.71*** (-3.78)	-0.22*** (-4.41)	-0.15** (-2.00)
Multiple listings	1.64*** (6.35)	3.19*** (5.58)	1.61*** (6.16)	2.82*** (4.91)	0.44*** (5.87)	0.63*** (-3.36)
Common law	4.91*** (18.45)	-0.11 (-0.16)	4.52*** (17.34)	-0.81 (-1.15)	3.15*** (11.12)	3.58*** (6.32)
Constant	-24.35*** (-7.39)	58.6*** (12.06)	-27.25*** (-8.38)	55.52*** (11.77)	-29.23*** (-9.13)	50.89*** (10.91)
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Obs	42,117	6,750	42,117	6,750	42,117	6,750
Adj R-squared	4.78%	6.69%	4.67%	7.00%	4.81%	6.30%

Note(s): This table presents the OLS results of regressing FP on the interaction of environmental, social or governance performance and COVID-19 (years 2020 and 2021) with industry fixed effects. Columns 25–30 use ROA as the proxy for FP, and columns 31–36 use ROE. Table 2 defines all variables. All independent and control variables are lagged. *T*-statistics are reported in parentheses. The superscripts ***, **, and * indicate significance at the 1%, 5%, and 10% confidence levels, respectively

Consistently, the interaction Environmental*COVID on ROE is also positive and significant in developed economies (column 31, $\beta = 0.05$, $t = 5.55$, $p < 0.01$) and emerging economies (column 32, $\beta = 0.04$, $t = 2.40$, $p < 0.05$). However, Social*COVID on ROE is not significant in developed economies (column 33) and is marginally negative in emerging economies (column 34, $\beta = -0.04$, $t = -1.87$, $p < 0.10$). This indicates weak protection of social performance on FP during COVID-19. We do not find any significant interaction of governance performance and COVID on ROE in both developed and emerging economies (column 35–36).

Overall, our results in Tables 6 and 7 suggest that there are strong sustainability benefits on FP for developed economies, but not for emerging economies. By splitting the SP into the environmental, social and governance dimensions, we find that environmental performance provides synergy for firms in emerging economies but not social or governance performance. The opposite direction of Environmental*COVID and Social*COVID explains the non-significant interaction ESG*COVID or ES*COVID in emerging economies. Thus, we find support for H2.

To unbox the puzzle of why SP does not benefit firms in emerging economies during COVID-19, we further test the impact of cross listings. European firms are leading North American firms in implementing sustainability actions to reduce greenhouse gas emissions (EcoVadis, 2020). Thus, firms in emerging economies cross-listed on Europe stock exchanges must follow more strict disclosure requirements and security laws. Table 8 repeats the tests from Tables 6 and 7 using firms in emerging economies cross-listed in Europe stock exchanges. Using ROA as the proxy for FP, we find the following positive interactions: ESG*COVID (column 37, $\beta = 0.07$, $t = 2.52$, $p < 0.05$), ES*COVID (column 38, $\beta = 0.08$, $t = 3.48$, $p < 0.01$), Environmental*COVID (column 39, $\beta = 0.08$, $t = 4.02$, $p < 0.01$), Social*COVID (column 40, $\beta = 0.04$, $t = 2.04$, $p < 0.05$) and Governance*COVID (column 41, $\beta = 0.04$, $t = 1.77$, $p < 0.10$). Columns 42–46 provide consistent results using ROE as the proxy for FP. Our results in Table 8 indicate that there is a positive synergy between SP and FP during COVID-19 for firms in emerging economies cross-listed in Europe. This shows the importance of external institutional mechanisms on firm profitability. Europe is the world leader in sustainability (EcoVadis, 2020). European Commission has proposed “Corporate Sustainability Reporting Directive (CSRD)”, which will soon require EU cross-listed firms to disclose SP. Thus, EU cross-listed firms have greater regulatory compliance pressure than their local non-cross-listed peers, especially in countries with low level SP. Cross-listed firms from emerging economies are exposed to additional media and regulatory pressure of being a “foreigner” (Boubakri *et al.*, 2016). Investors in developed economies might be skeptical of the reliability of information from firms in emerging economies (Boubakri *et al.*, 2016). Hence, cross-listed firms from emerging economies can demonstrate their trustworthiness and genuineness in implementing sustainability during the COVID-19 pandemic.

4.3 Robustness checks: self-reporting

We use a Heckman two-step method following Lu *et al.* (2022) as a robustness check to control for self-reporting selection bias. In the first step, we use a probit model to calculate the possibility of reporting SP. We add a dummy variable as one if a firm has a SP score and zero if the Eikon database does not rate the firm’s SP in a specific year. Following the best practice of conducting Heckman tests (Certo *et al.*, 2016), our exclusion restriction in the first step probit model is whether a firm has a sustainability committee (see Lu *et al.* (2021)). Sustainability committees have played a significant role in sustainability disclosure and performance (Guo and Yu, 2022). We add all control variables at the firm level (governance, leverage, size) and country level (GDP growth, country governance, multiple listings and common law) to the first step. In the second step, we repeat the main tests in Tables 6 and 7 using ROA as the proxy for FP and five proxies (ESG, ES, Environmental, Social or Governance) for SP.

Panel A: Dependent variable ROA	[37]	[38]	[39]	[40]	[41]
ESG	0.04*** (3.04)				
ES		0.03** (2.48)			
Environmental			0.01 (0.53)		
Social				0.04** (3.84)	
COVID	-6.29*** (-4.49)	-6.69*** (-5.65)	-6.07*** (-6.21)	-5.37*** (-4.28)	-4.64*** (-3.69)
ESG*COVID	0.07** (2.52)				
ES*COVID		0.08*** (3.48)			
Environmental*COVID			0.08*** (4.02)		
Social*COVID				0.04** (2.04)	
Governance*COVID					0.04* (1.77)
Governance		0.00 (-0.12)	0.01 (0.58)	0.00 (-0.21)	0.01 (0.51)
Leverage	-0.18*** (-14.00)	-0.18*** (-14.08)	-0.18*** (-14.05)	-0.18*** (-14.10)	-0.18*** (-13.88)
Size	-1.01*** (-5.49)	-1.04*** (-5.60)	-0.98*** (-5.22)	-0.98*** (-5.42)	-0.84*** (-4.64)
GDP growth	-0.04 (-0.55)	-0.03 (-0.41)	-0.06 (-0.74)	-0.03 (-0.33)	-0.08 (-1.00)
Country governance	-1.14*** (-5.98)	-1.13*** (-5.88)	-1.11*** (-5.76)	-1.14*** (-5.96)	-1.11*** (-5.86)
Common law	3.37*** (4.94)	3.33*** (4.88)	3.65*** (5.37)	3.20*** (4.68)	3.82*** (5.65)
Constant	32.53*** (4.66)	34.97*** (4.95)	33.21*** (4.69)	32.87*** (4.69)	27.76*** (3.99)
Industry fixed effect	Yes	Yes	Yes	Yes	Yes
Obs	2,578	2,578	2,578	2,578	2,578
Adj R-squared	16.87%	16.95%	16.74%	16.97%	16.16%

Panel B: Dependent variable ROE	[42]	[43]	[44]	[45]	[46]
ESG	0.14*** (5.97)				
ES		0.11*** (5.21)			
Environmental			0.07*** (3.49)		
Social				0.12*** (5.73)	
COVID	-10.91*** (-4.47)	-9.99*** (-4.83)	-8.87*** (-5.19)	-7.37*** (-3.36)	-8.10*** (-3.67)
ESG*COVID	0.14*** (3.01)				
ES*COVID		0.12*** (3.19)			

Table 8. Impact of sustainability, environmental, social or governance performance, and COVID-19 on FP using emerging firms cross-listed in Europe

(continued)

Panel B: Dependent variable ROE	[42]	[43]	[44]	[45]	[46]
Environmental*COVID			0.12*** (3.59)		
Social*COVID				0.07* (1.72)	
Governance*COVID					0.10*** (2.62)
Governance		0.01 (0.65)	0.03 (1.42)	0.02 (0.93)	0.03* (1.70)
Leverage	-0.08*** (-3.40)	-0.08*** (-3.49)	-0.08*** (-3.43)	-0.08*** (-3.52)	-0.07*** (-3.28)
Size	-2.45*** (-7.66)	-2.52*** (-7.80)	-2.47*** (-7.54)	-2.30*** (-7.25)	-1.93*** (-6.13)
GDP growth	0.00 (0.02)	0.02 (0.14)	-0.03 (-0.24)	0.02 (0.13)	-0.10 (-0.71)
Country governance	-1.41*** (-4.22)	-1.43*** (-4.26)	-1.41*** (-4.21)	-1.40*** (-4.17)	-1.28*** (-3.85)
Common law	4.55*** (3.83)	4.51*** (3.78)	5.14*** (4.33)	4.44*** (3.72)	5.91*** (4.98)
Constant	65.26*** (5.36)	69.39*** (5.63)	67.41*** (5.45)	62.72*** (5.12)	51.80*** (4.24)
Industry fixed effect	Yes	Yes	Yes	Yes	Yes
Obs	2,578	2,578	2,578	2,578	2,578
Adj R-squared	11.98%	11.79%	11.28%	11.55%	10.08%

Note(s): This table presents the OLS results of regressing FP on sustainability (ESG or ES), environmental or social performance, and COVID-19 (years 2020 and 2021) with industry fixed effects using a sample of firms in emerging economies cross-listed in European stock exchanges. Columns 37–41 use ROA as the proxy for FP, and columns 42–46 use ROE. Table 2 defines all variables. All independent and control variables are lagged. *T*-statistics are reported in parentheses. The superscripts ***, **, and * indicate significance at the 1%, 5%, and 10% confidence levels, respectively

Table 8.

We report our results using the Heckman two-step method in Table 9, which are consistent with the results in Tables 6 and 7. We find positive significant associations between ESG*COVID (column 47, $\beta = 0.06$, $z = 9.73$, $p < 0.01$), ES*COVID (column 48, $\beta = 0.06$, $z = 11.07$, $p < 0.01$), Environmental*COVID (column 49, $\beta = 0.06$, $z = 14.10$, $p < 0.01$), Social*COVID (column 50, $\beta = 0.03$, $z = 6.23$, $p < 0.01$), or Governance*COVID (column 51, $\beta = 0.03$, $z = 4.86$, $p < 0.01$) and ROA in developed economies. Our results suggest that the influence of sustainability on FP is strengthened during COVID-19 for developed economies.

We do not find significant results for emerging economies using ESG*COVID or ES*COVID or Governance*COVID. In column 54, there is a positive and significant interaction Environmental*COVID ($\beta = 0.02$, $z = 2.09$, $p < 0.05$) in emerging economies. Column 55 shows a negative and significant interaction Social*COVID ($\beta = -0.02$, $z = -2.69$, $p < 0.01$) in emerging economies, implying a trade-off between social and financial performance during COVID-19. Table 9 provides further support for H2.

4.4 Robustness checks: emerging economies excluding China

Compared to other countries, China has implemented a strict zero-COVID policy, so the impact of COVID on Chinese economy might be different from other emerging economies. To eliminate that, we repeat the tests in Tables 6 and 7 with a sample of firms in emerging economies excluding China and use ROA as the proxy for FP. As Table 10 Panel A shows,

Panel A: Developed	[47]	[48]	[49]	[50]	[51]
ESG	-0.01*** (-3.01)				
ES		-0.02*** (-5.82)			
Environmental			-0.012*** (-4.39)		
Social				-0.02*** (-6.02)	
COVID	-5.67*** (-19.49)	-5.50*** (-21.29)	-5.44*** (-24.68)	-4.68*** (-16.45)	-4.45*** (-15.29)
ESG*COVID	0.06*** (9.73)				
ES*COVID		0.06*** (11.07)			
Environmental*COVID			0.06*** (14.10)		
Social*COVID				0.03*** (6.23)	
Governance*COVID					0.03*** (4.86)
Governance		0.01*** (3.14)	0.01** (2.21)	0.01*** (4.38)	0.00 (1.20)
Leverage	-0.04*** (-16.81)	-0.04*** (-16.74)	-0.04*** (-16.77)	-0.04*** (-16.69)	-0.04*** (-16.83)
Size	0.13** (2.31)	0.13** (2.30)	0.10* (1.69)	0.15** (2.55)	0.12** (2.17)
GDP Growth	-0.08*** (-3.35)	-0.08*** (-3.22)	-0.08*** (-3.07)	-0.08*** (-3.11)	-0.08*** (-3.40)
Country Governance	0.14*** (3.87)	0.13*** (3.68)	0.12*** (3.31)	0.15*** (4.22)	0.15*** (4.19)
Multiple Listings	0.99*** (7.28)	1.05*** (7.66)	1.00*** (7.32)	1.11*** (8.04)	0.99*** (7.25)
Common Law	-0.35** (-2.54)	-0.44*** (-3.18)	-0.36** (-2.54)	-0.48*** (-3.50)	-0.40*** (-2.96)
Constant	5.17*** (2.81)	5.12*** (2.78)	5.59*** (3.04)	4.59** (2.49)	4.68** (2.54)
Inverse Mills	-2.16*** (-12.93)	-2.24*** (-13.31)	-2.14*** (-12.68)	-2.23*** (-13.46)	-2.06*** (-12.72)
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes
Total Observations	119,533	119,533	119,533	119,533	119,533
Selected	42,117	42,117	42,117	42,117	42,117
Non-selected	77,416	77,416	77,416	77,416	77,416
Chi-squared	2565.02***	2614.89***	2691.48***	2535.42***	2502.81***
Panel B: Emerging	[52]	[53]	[54]	[55]	[56]
ESG	0.03** (4.06)				
ES		0.03*** (3.92)			
Environmental			0.01 (1.49)		
Social				0.04*** (5.65)	

Table 9.
Robustness check
(Heckman two-step)

(continued)

Panel B: Emerging	[52]	[53]	[54]	[55]	[56]
COVID	-0.60 (-1.10)	-1.09** (-2.44)	-1.76*** (-4.35)	-0.23 (-0.50)	-1.26** (-2.21)
ESG*COVID	-0.01 (-1.18)				
ES*COVID		0.00 (-0.29)			
Environmental*COVID			0.02** (2.09)		
Social*COVID				-0.02*** (-2.69)	
Governance*COVID					0.00 (0.40)
Governance		0.00 (-0.52)	0.00 (-0.08)	0.00 (-0.54)	0.00 (0.36)
Leverage	-0.12*** (-19.77)	-0.12*** (-19.78)	-0.12*** (-19.74)	-0.12*** (-19.75)	-0.12*** (-19.55)
Size	-0.97*** (-8.96)	-1.00*** (-9.22)	-1.03*** (-9.44)	-0.94*** (-8.74)	-0.96*** (-8.92)
GDP growth	-0.01 (-0.16)	0.00 (0.01)	0.00 (0.13)	-0.01 (-0.35)	0.00 (-0.11)
Country governance	-0.67*** (-7.28)	-0.67*** (-7.25)	-0.66*** (-7.22)	-0.68*** (-7.36)	-0.66*** (-7.21)
Multiple listings	2.05*** (7.40)	1.99*** (7.16)	2.07*** (7.50)	1.95*** (7.00)	2.17*** (7.90)
Common law	1.01*** (3.03)	0.96*** (2.87)	1.10*** (3.32)	0.87*** (2.59)	1.18*** (3.58)
Constant	27.07*** (9.95)	28.20*** (10.33)	29.27*** (10.69)	26.72*** (9.84)	27.81*** (10.24)
Inverse mills	0.59*** (2.71)	0.59*** (2.72)	0.44** (2.02)	0.64*** (2.97)	0.30 (1.46)
Industry fixed effect	Yes	Yes	Yes	Yes	Yes
Total observations	48,600	48,600	48,600	48,600	48,600
Selected	6,750	6,750	6,750	6,750	6,750
Non-selected	41,850	41,850	41,850	41,850	41,850
Chi-squared	1155.18***	1157.61***	1151.09***	1172.16***	1135.88***

Note(s): This table presents the Heckman two-step 2nd step results of regressing ROA on the interaction of sustainability and COVID. Columns 47–51 use firms from developed economies. Columns 52–56 use firms from emerging economies. Table 2 defines all variables. All independent and control variables are lagged. Z-statistics are reported in parentheses. The superscripts ***, **, and * indicate significance at the 1%, 5%, and 10% confidence levels, respectively

Table 9.

we find a positive interaction of Environmental*COVID (column 59, $\beta = 0.03$, $t = 2.34$, $p < 0.05$) and a marginally positive interaction ES*COVID (column 58, $\beta = 0.02$, $t = 1.76$, $p < 0.10$) on ROA. We do not find significant results for the emerging economies (excluding China) sample using ES*COVID, Social*COVID or Governance*COVID. Panel B repeats the test in Table 8 using a sample of firms from emerging economies (excluding Chinese firms) that are cross-listed in Europe. We find significant positive interactions between ESG*COVID (column 62, $\beta = 0.06$, $t = 2.35$, $p < 0.05$), ES*COVID (column 63, $\beta = 0.06$, $t = 2.75$, $p < 0.01$), Environmental*COVID (column 64, $\beta = 0.06$, $t = 3.06$, $p < 0.01$), or Social*COVID (column 65, $\beta = 0.05$, $t = 1.97$, $p < 0.05$) and ROA. These results are consistent with our findings in Table 8 that there is a positive synergy between SP and FP during COVID-19 for firms in emerging

Panel A Emerging excl. China		[57]	[58]	[59]	[60]	[61]
ESG		0.02** (2.34)				
ES			0.02** (2.52)			
Environmental				0.01 (1.11)		
Social					0.02*** (3.51)	
COVID		-2.36** (-2.53)	-2.33*** (-2.91)	-2.17*** (-3.38)	-1.78** (-2.00)	-1.49* (-1.89)
ESG*COVID		0.03 (1.56)				
ES*COVID			0.02* (1.76)			
Environmental*COVID				0.03** (2.34)		
Social*COVID					0.01 (0.76)	
Governance*COVID						0.01 (0.93)
Governance			0.00 (-0.76)	0.00 (-0.23)	-0.01 (-0.86)	0.00 (0.01)
Leverage		-0.11*** (-16.47)	-0.11*** (-16.34)	-0.11*** (-16.40)	-0.11*** (-16.22)	-0.11*** (-16.30)
Size		-1.68*** (-14.61)	-1.73*** (-14.64)	-1.69*** (-14.27)	-1.70*** (-14.72)	-1.59*** (-14.13)
GDP growth		0.08** (1.98)	0.08*** (1.96)	0.08** (1.99)	0.07* (1.82)	0.07* (1.89)
Country governance		-0.64*** (-7.00)	-0.64*** (-7.05)	-0.63*** (-6.94)	-0.64*** (-7.07)	-0.61*** (-6.70)
Multiple listings		0.60* (1.86)	0.58* (1.82)	0.60* (1.87)	0.61* (1.90)	0.67** (2.09)
Common law		-0.68* (-1.88)	-0.70* (-1.92)	-0.62* (-1.71)	-0.76** (-2.10)	-0.61* (-1.70)
Constant		45.61*** (16.53)	46.83*** (16.52)	46.18*** (16.24)	46.19*** (16.54)	44.11*** (16.06)
Industry fixed effect		Yes	Yes	Yes	Yes	Yes
Obs		3,710	3,710	3,710	3,710	3,710
Adj R-squared		21.73%	21.75%	21.64%	21.80%	21.46%
Panel B EU cross listed in emerging excl. China		[62]	[63]	[64]	[65]	[66]
ESG		0.03** (2.10)				
ES			0.02 (1.42)			
Environmental				0.00 (0.41)		
Social					0.03** (2.16)	

Table 10. Robustness check (impact of sustainability, environmental, social or governance performance, and COVID-19 on FP in emerging economies excluding China)

(continued)

Panel B EU cross listed in emerging excl. China	[62]	[63]	[64]	[65]	[66]
COVID	-3.66** (-2.37)	-3.61*** (-2.67)	-2.87*** (-2.65)	-3.13** (-2.06)	-1.60 (-1.16)
ESG*COVID	0.06** (2.35)				
ES*COVID		0.06*** (2.75)			
Environmental*COVID			0.06*** (3.06)		
Social*COVID				0.05** (1.97)	
Governance*COVID					0.03 (1.28)
Governance		0.01 (0.55)	0.01 (1.15)	0.00 (0.29)	0.01 (1.12)
Leverage	-0.16*** (-13.10)	-0.16*** (-13.12)	-0.16*** (-13.16)	-0.16*** (-13.07)	-0.16*** (-13.02)
Size	-1.84*** (-9.67)	-1.86*** (-9.62)	-1.82*** (-9.37)	-1.84*** (-9.67)	-1.71*** (-9.14)
GDP growth	0.26*** (3.32)	0.26*** (3.37)	0.26*** (3.41)	0.25*** (3.21)	0.25*** (3.24)
Country governance	-1.17*** (-7.10)	-1.17*** (-7.11)	-1.16*** (-7.08)	-1.17*** (-7.11)	-1.16*** (-7.06)
Common law	0.89 (1.44)	0.94 (1.52)	1.05* (1.70)	0.94 (1.53)	1.14* (1.85)
Constant	49.99*** (5.59)	51.25*** (5.67)	49.79*** (5.51)	51.18*** (5.66)	46.81*** (5.19)
Industry fixed effect	Yes	Yes	Yes	Yes	Yes
Obs	1,649	1,649	1,649	1,649	1,649
Adj R-squared	26.89%	26.87%	26.78%	26.82%	26.35%

Note(s): This table presents the OLS results of regressing ROA on the interaction of sustainability (ESG, ES, environmental, social or governance performance) and COVID-19 (year 2020 and 2021). Panel A (columns 57–61) uses the emerging economies excluding China as the sample. Panel B (columns 62–66) uses EU cross-listed firms in emerging economies excluding China. Table 2 defines all variables. All independent and control variables are lagged. *T*-statistics are reported in parentheses. The superscripts ***, **, and * indicate significance at the 1%, 5%, and 10% confidence levels, respectively

Table 10.

economies cross-listed in Europe. However, the Governance*COVID interaction (column 66) is not significant.

5. Conclusions

This paper provides new empirical evidence investigating the SP-FP relationship during the COVID-19 pandemic using a sample of firms in 25 developed and nine emerging economies. Consistent with Lu *et al.* (2022), our results indicate that firms with strong SP have high subsequent FP. In addition, we find that COVID amplifies the strengths of sustainability on FP in developed economies but not in emerging economies.

Furthermore, we split sustainability into environmental, social and governance dimensions. We find increasing marginal benefits of environmental performance on FP in emerging economies. Sustainability issues are usually low on the list of priorities for emerging market stakeholders (Julian and Ofori-dankwa, 2013). The lack of institutional and primary stakeholders' support makes it more challenging for firms in emerging economies to

pursue sustainability. Environmental performance improvements take longer than social performance, and the required resources are more specific and challenging to redeploy. [Rahim \(2021\)](#) finds that environmental disclosure improves firm efficiency in Pakistan. Based on the empirical evidence of [Rahim \(2021\)](#), we argue that firms in emerging economies with environmental performance above industry norms are more efficient than their counterparts. Thus, environmentally responsible firms are more profitable during COVID-19 due to competitive advantages.

On the contrary, we find a weakened impact of social performance on FP in emerging economies. This might be because ownership and relation-based governance play important roles in emerging markets. It is difficult for socially responsible firms to maximize economic benefits at the cost of society during COVID-19 (e.g. laying off employees), and mistreating employees increases bankruptcy risk ([Leonard and Sun, 2022](#)). Thus, we find a diminishing benefit of social performance in emerging markets.

We further test the importance of internationalization and cross-listing. We argue that firms in emerging economies cross-listed in developed markets are under greater scrutiny from stakeholders who demand high SP. Moreover, firms in emerging economies that are responsive to these demands develop firm-specific advantages through the processes of internationalization. Thus, we find that firms in emerging economies cross-listed in Europe behave similarly to firms in developed economies, and the impact of SP on FP is pronounced during COVID-19.

We contribute to the contingency perspective of SP-FP relationship and crisis management literature by showing how different external institutional mechanisms (rule-based governance and relation-based governance) and cross-listing affect the SP-FP relationship during COVID-19. Our results show that firms with better SP are more resilient during the COVID-19 crisis in developed economies. This implies that SP is correlated with good management in these settings. Thus, sustainable firms are more likely to overcome pandemic-induced obstacles, thanks to their competent managers and support from stakeholders. Meanwhile, for firms in emerging economies, the COVID-19 crisis reduces available resources to invest in sustainability and forces managers to reconsider resource allocations; thus, we observe a declining marginal benefit of social performance on FP.

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Corresponding author

Jing Lu can be contacted at: jlul1@uoguelph.ca

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