Does being a responsible bank pay off?
Evidence from the COVID-19 pandemic

Alper Kara
Brunel University London

Steven Ongena
University of Zurich, KU Leuven, NTNU Business School,
Swiss Finance Institute, and CEPR

Yilmaz Yildiz
University of Kent

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Alper KARA

Brunel University London, Department of Economics and Finance, Kingston Lane, Uxbridge, London, UB8 3PH, United Kingdom

E-mail: a.kara@hud.ac.uk

Steven ONGENA

University of Zurich, Department of Banking and Finance, Rämistrasse 71, 8006 Zürich, Switzerland; also Swiss Finance Institute, KU Leuven, NTNU Business School, and CEPR

E-mail: steven.ongena@bf.uzh.ch

Yilmaz YILDIZ

University of Kent, Kent Business School, Canterbury, CT2 7FS, United Kingdom

E-mail: y.yildiz@kent.ac.uk

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Abstract

We investigate whether banks' initial responses during the first wave of the COVID-19 pandemic in supporting their customers, communities, and governments were perceived as value-enhancing by investors. Using a unique responsible banking measure for a sample of the largest US and European banks, we find a negative relationship between responsible bank behavior and stock market performance, particularly in the first wave of the pandemic. We also find that riskier banks were affected more negatively if they behaved responsibly. Overall, our findings show that banks' responsible behavior during a crisis reduces, or at best is not relevant to, shareholder value.

1. Introduction

Climate change poses the biggest threat to the planet and humankind. Banks can play a significant role in tackling the climate change as they are positioned at the center stage of economies, controlling the flow of funds and playing a key role in the distribution of credit in the economy. As they are directly connected to the providers and users of funds, they have a great potential to influence their customers' behavior regarding the environmental and social responsibility. Hence, responsible lending by banks may have significant externalities in achieving the long-term goals of tackling climate change and promoting sustainable economic growth.

Relatedly, banks were heavily criticized for irresponsible risk-taking and lending practices causing the Global Financial Crisis (GFC) of 2007–2008 and its devastating economic consequences (Diamond and Rajan, 2009). As a result, devoting resources to and engaging in responsible banking practices have been a priority for many banks across the globe since the GFC (Pérez and del Bosque, 2012). For example, around 270 of the world's largest banks, representing over 45% of the banking assets worldwide, have become signatories of *The Principles for Responsible Banking*, a United Nations (UN) initiative launched in 2019 to promote responsible banking (UNEP, 2022).[1] As part of their commitment, signatory banks are expected to align their strategy and practice to make a positive contribution toward the UN Sustainable Development Goals and the Paris Climate Agreement.

In this paper, we examine whether investors perceive responsible banking behavior as value-enhancing by utilizing the unique economic setting created by the COVID-19 pandemic. Specifically, we look at the link between the responsible behavior of banks during the first wave of the COVID-19 pandemic in supporting their customers, communities, governments, and their stock returns. To do so, we use the COVID-19 Bank Response Measure (*Responsible bank*), a comprehensive and unique responsible banking measure, developed by Kara *et al.* (2022), which captures over 300 American and European banks' immediate responses to the COVID-19 crisis

during the first wave of the pandemic. We examine the relationship between banks' responses to the COVID-19 pandemic and stock returns of the sample of banks during the first wave of the pandemic (February–July 2020) and end of 2020 (February–December 2020). Our key responsible banking variable, in the context of crises caused by the COVID-19 pandemic, is superior than generic responsibility measures, such as the commonly used environmental, social and governance (ESG) scores. This is because these generic ESG measures are unlikely to capture the responsible behavior that a specific crisis, such as the COVID-19 pandemic, would necessitate. Moreover, since the COVID-19 pandemic was a sudden and unpredictable event, ESG scores that are established in the long-term may be insignificant in capturing the banks initial responses to the crisis.

Banks' adoption of responsible banking practices is encompassed in the broader definition and activities of corporate social responsibility (CSR), an issue that has dominated corporate management practice (Crane *et al.*, 2015) and academic research agenda alike. When theorizing companies' behavior to explain CSR engagement, a key question is whether and why firms should choose maximization of shareholder value over stakeholder welfare. Accordingly, external drivers of CSR engagement are argued to be predominantly rooted in the stakeholder and institutional theories, whereas internal drivers of it are mainly explained by resource-based views and agency theories (Frynas and Yamahaki, 2016). The common denominator of these theories explaining CSR engagement is firms' dependency on and gaining approval from outside (such as society and governments) and inside stakeholders (such as employees and managers) to ensure their survival in the long term to maximize economic benefits and firm value. Overall, it is argued that CSR activities increase firm value when they align with the demands of the stakeholders (Hillenbrand, Money and Ghobadian, 2013; Bae *et al.*, 2021). Banks' rationale for CSR engagement, and theories applied to explain this behavior by academic studies, are no different.[2]

One of the most debated questions in the literature is whether firms' CSR choices have the predicted effects on firm value (Gillan, Koch and Starks, 2021). Theoretical studies examining this relationship argue that higher CSR performance increases firm value (Albuquerque, Koskinen and Zhang, 2019; Benabou and Tirole, 2010; Fatemi, Fooladi and Tehranian, 2015). An ample number of studies provide empirical evidence on the positive impact of CSR on firm value. For example, studies demonstrate that firms with high CSR performance have higher returns (Hong and Kacperczyk, 2009; Edmans, 2011; Dimson, Karakas and Li, 2015; Boubakri *et al.* 2016; Ferrell, Liang and Renneboog, 2016; Walker, Zhang and Ni, 2019; Barko, Cremers and Renneboog, 2022), even in periods of low trust (Lins, Servaes and Tamayo, 2017) and economic policy uncertainty (Jia and Li, 2020). Studies also report positive abnormal returns and, therefore, an increase in firm value when analyzing the stock market reaction to CSR-related news (Deng, Kang and Low, 2013; Flammer, 2015) and the issuance of green bonds (Tang and Zhang, 2020; Flammer, 2021). In a recent study, Orazalin, Ntim and Malagila (2023) find a strong relationship between actual greenhouse emissions and firm value. CSR performance is also found to reduce SEO flotation costs (Li and Wang, 2022).

In contrast, there is counter-evidence regarding the link between CSR performance and firm value. For example, Di Giuli and Kostovetsky (2014) argue that expanding CSR policies leads to future stock underperformance and a long-term deterioration in profitability. Similarly, Masulis and Reza (2015) find that the stock market reacts negatively to the announcement of corporate philanthropic contributions, suggesting that this type of CSR activity is not valued by investors. In the UK, Humphrey, Lee and Shen (2012) do not find any significant difference in the risk-adjusted performances of firms with high or low CSR activities. Servaes and Tamayo (2013) find that firms that do not advertise CSR engagement either harm or do not affect firm value. Moreover, Buchanan, Cao and Chen (2018) show that during the GFC, when agency conflicts became more severe, high-CSR-performing firms experienced higher declines in firm values.

Although there is a strand of studies examining these issues in the context of non-financial firms, there is a shortage of literature investigating the impact of CSR engagement and market-based firm value indicators in the banking sector. Nevertheless, studies have looked at whether CSR activity increases bank performance using balance sheet-based measures, and there is overwhelming evidence pointing to a positive relationship between the two (Ciciretti, Kobeissi and Zhu, 2014; Cornett, Erhemjamts and Tehranian, 2016; Forcadell and Aracil, 2017; Jo, Kim and Park, 2015; Mallin, Farag and Ow-Yong 2014; Moufty, Clark and Al-Najjar, 2021; Simpson and Kohers, 2002; Shen *et al.*, 2016, Wu and Shen, 2013).[3] In contrast, Scholtens and Dam (2007) report that the financial performance of banks that apply the Equator Principles does not differ significantly from that of non-adopters, and Soana (2011) does not find a link between CSR activities and performance.

The COVID-19 pandemic, which caused an unprecedented shock to the economies and financial markets, has intensified discussions about whether CSR as a risk-mitigating strategy would protect firm value during a crisis (Albuquerque *et al.*, 2020; Demers *et al.*, 2021). In this respect, the circumstances created by this extreme event and the subsequent crisis provided a unique opportunity for an emerging strand of the literature to test this hypothesis empirically. The evidence provided by these studies is contradictory. Many studies report that firms with stronger CSR performance had better stock returns (Albuquerque *et al.*, 2020; Ding *et al.*, 2021; Garel and Petit-Romec, 2021; Lu *et al.*, 2022; Zhai *et al.*, 2022) and lower return volatility (Albuquerque et al., 2020; Ding et al., 2021) in comparison to firms with poor CSR engagement. In a recent study, Li, Trinh and Elnahass (2022) investigate the relationship between environmental and social initiatives and banking stability during COVID-19 period. It is found that higher CSR initiatives enhance stability of the banks through increasing social capital and constraining aggressive risk taking. Similarly, Broadstock *et al.* (2021) find that high-ESG portfolios generally outperformed low-ESG portfolios during the COVID-19 pandemic period.

Overall, these studies advocate that CSR performance has the potential to mitigate financial risk during a crisis, alleviating the adverse impact on stock returns. In contrast, Bae *et al.* (2021) and Demers *et al.* (2021) find no supporting evidence linking a firm's CSR performance to its stock performance during the COVID-19 pandemic-induced crisis and, thus, CSR does not make firms more resilient in times when market uncertainty is high. Similarly, Yi, Zhang and Xiang (2022) report that Chinese firms with more pre-crisis CSR engagement had worse crisis-period stock returns during the COVID-19 pandemic.

Against this background, we examine whether responsible banking behavior was valued by the markets during the initial stages of the COVID-19 pandemic. This initial period of the crisis (defined as the first wave in many countries) created a rare setting of national lockdowns and closure of borders to halt the transmission of the virus, which, inevitably, had a heavy impact on economies. The economic tremor caused was one of the largest since the Second World War (World Bank, 2020). Such an abrupt economic slowdown prompted governments to take measures to curb the severely adverse economic impact, and consequently, many implemented extensive fiscal and monetary measures to support their economies. A significant number of these measures, particularly those directed at credit markets and banking systems—such as debt payment deferrals and government-backed credit and liquidity facilities for firms—required banks' collaboration in order to be implemented swiftly and efficiently. As a result, it can be argued that environmental and support measures taken by governments to tackle the pandemic created a testing ground where banks had to make quick decisions. Especially during the initial phase of the pandemic in the first half of 2020, when economic uncertainty was extremely high, banks assumed the social responsibility to provide support to their national economies, customers, communities, and governments. In the context of the COVID-19 pandemic-induced crisis, banks' social responsibilities, in addition to supporting governments' measures, included maintaining the provision of essential payment services, providing liquidity to businesses, and

accommodating distressed borrowers (Kara *et al.*, 2022). Our methodological approach is similar to Lins, Servaes and Tamayo (2017) and Bae *et al.* (2021). We utilize a number of estimators, controlling for various bank financial characteristics, ESG factors, and country-fixed effects, as well as various robustness tests.

We find a negative relationship between responsible banking behavior and stock market performance during the first wave of the pandemic. In other words, investors seemed to have penalized banks for their efforts to support customers, communities, and governments during this period, particularly in the first wave of the pandemic. We find that one standard deviation increase in *Responsible bank* leads to 1.8 and 2.6 percentage points decrease in excess stock returns in the first wave of the pandemic and end of 2020, respectively. Extending our analysis to risk effects, we find that at the end of 2020 riskier banks were affected more negatively if they behaved responsibly. Examining the sub-components of *Responsible bank*, our results show that banks' actions of introducing their own measures, strengthening equity capital, and providing more guidance and information to clients are the driving factors of the observed negative relationship. Using environmental scores, we also find that banks engaging in emissions reduction and environmentally innovative practices experienced significantly lower stock returns than their peers during this period. In contrast, investors seemed to reward community initiatives by banks during a health crisis, but only in the first wave of the pandemic.

We make several important contributions to the literature. First, our paper contributes and expands the strand of the literature that examines whether CSR behavior is value-enhancing for banks, particularly during crisis periods. In particular, we provide empirical evidence to support the discussion that responsible behavior may act as a risk-mitigating strategy for firms during a crisis (Albuquerque *et al.*, 2020; Demers *et al.*, 2021). However, even though banks played a crucial role during the pandemic, there is a shortage of literature that aims to understand whether responsible banking behavior was valued by markets and investors during the COVID-19 crisis.

Unlike the relative abundance of studies on the link between CSR and stock market performance, only Demir and Danisman (2021) provide, albeit limited, evidence for banks. As part of their analysis of bank-specific factors' impacts on stock returns, they find that while banks' environment and governance scores did not have a significant impact, higher social and CSR strategy scores intensified the negative stock price reaction to the COVID-19 pandemic. However, one of the shortcomings of their study (and similar studies on non-financial firms) is that the proxies used to capture responsible behavior are often generic measures, typically in the form of ESG scores or performance. These measures cannot capture the type of responsible behavior that the COVID-19 pandemic environment necessitated. Therefore, it is questionable whether the results of these studies are reliable in answering the question of whether corporate responsible behavior was valued by investors during the crisis.

Supporting our proposition, Bae *et al.* (2021) also suggest that there is a potential disconnect between firms' pre-COVID-19 pandemic CSR ratings and their actual revealed preferences during the crisis. They conclude that one needs to be cautious about drawing unambiguous or unconditional inferences about the value of CSR during a crisis. Hence, it is paramount to use more specific measures that capture the responsible behaviors that were more relevant to the conditions of the COVID-19 pandemic as the crisis folded. Accordingly, our second contribution to the literature is that this paper is the first empirical analysis to test the link between responsible banking behavior and stock market returns using a novel COVID-19-specific bank responsible behavior measure. In contrast, generic variables used to capture CSR behavior, such as the ESG scores, do not have the capacity to capture and measure the responsible behavior that a crisis may require.

Berger and Demirgüç-Kunt (2021) highlight that crisis, such as the COVID-19 pandemic, are sources of exogenous shocks that are employed as quasi-natural experiments to help address both existing and new research questions. From this perspective we also contribute to the strand

of the literature that examined the impact of the crisis caused by the COVID-19 pandemic on various outcomes such as bank regulation (Duncan et al., 2022; Bitar and Tarazi, 2022; Dursun-de Neef *et al.*, 2023), governmental support (Berger *et al.*, 2021; Pancotto *et al.*, 2023; Degryse and Huylebroek, 2023), lending (Dursun-de Neef and Schandlbauer, 2021; Park and Shin, 2021), non-performing loans (Ari *et al.*, 2021), performance (Demirgüç-Kunt *et al.*, 2021) and systemic risk (Duan *et al.*, 2021; Borri and di Giorgio), 2021, among others. Relatedly, the sudden emergence of the COVID-19 pandemic, which had a devastating impact on the world economy, has provided a rare opportunity to explore whether banks' and other financial intermediaries' efforts to be more responsible are valued by the investors and financial markets. For example, in a recent study, Döttling and Kim (2022) find that the demand for socially responsible investments falls during economic downturns. Using COVID-19 as an economic shock, they find that funds with higher sustainability ratings experienced sharper declines in retail flows during the pandemic. Hence, it is important to shed more light on this relationship as value-enhancing socially responsible behavior has the potential to incentivize banks, through market discipline, to further adopt responsible behavior. Therefore, we contribute to this literature by providing novel empirical evidence utilizing the uncertain environment caused by COVID-19 pandemic. Echoing, Döttling and Kim (2022) findings, we show market participants do not reward banks' responsible behavior during critical times when there is a sudden need for providing support to the economy.

The rest of the paper is structured as follows. In the next section, we explain the particulars of the data, empirical model, variables, and methodology. We discuss our main findings in Section 3, and Section 4 concludes the paper.

2. Data and methodology

2.1 Sample and data sources

Our sample consists of 303 of the largest listed banks in the US (205) and Europe (98). As of 2019, the total assets of the banks in our sample constituted more than 50% and 60% of all commercial banking assets in the US and Europe, respectively. We collect our data from various sources. First, we identify whether a bank has an ESG score (and its sub-components) reported in the 2019 Refinitiv Datastream because these indicators are indispensable as control variables in our modeling. We identify all US and European banks in Refinitiv Datastream with ESG available scores. Subsequently, we construct our *Responsible bank* variable (as explained in the following sub-section) for all sample banks by manually compiling the relevant textual information from their corporate web pages, including financial reports, corporate announcements, news, and other relevant documents. Finally, we obtain bank-specific financial data from the FitchConnect database.

2.2 COVID-19 Bank Response Measure

To examine whether banks' responsible banking practices were valued by the market during the first wave of the pandemic, we utilize *Responsible bank*, a unique measure created by Kara *et al.* (2022). This measure captures banks' specific responsible actions in response to the COVID-19 pandemic. *Responsible bank* was created by compiling textual self-reported information by banks (from their web pages, including documents such as reports, presentations, news and press releases, and speeches and announcements) on their response to the COVID-19 emergency during the first wave of the pandemic—between February 1, 2020, and June 20, 2020—when uncertainty was at its highest.[4] Kara *et al.* (2022) use the UN Environment Programme Finance Initiative on Principles for Responsible Banking to identify the possible actions of responsible behavior and classify six types of banks' responses to the COVID-19 emergency as follows:

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1) Readiness to facilitate the policy actions taken by governments and central banks. These policy actions include government-guaranteed loans, provision of liquidity, deferral of debt payments, and other measures that may have to be facilitated through the banking system. Banks are rated as 0, 1 and 2, based on the level of their participation, determined by the number of measures introduced in the country. A rating of 0 is assigned if a bank does not indicate participation in any measures introduced. We rate banks as 2 if they facilitate all the measures introduced in their respective countries. A rating of 1 is assigned to banks facilitating at least one of the measures.

2) Proactiveness in introducing own measures in addition to policymakers' schemes. These measures include actions such as payment breaks, interest rate freezes, increasing credit limits, providing additional credit, fee waivers, and payment facilitation. Banks are rated 0 if they do not record any points on aggregate. We then rank the banks based on their total points and assign a rating of 2 for banks that are in the top third. All remaining banks take the value of 1.

3) Efforts to strengthen their equity capital for financial stability. These efforts include i) reducing or canceling executive bonuses and other remuneration, and ii) dividend payments, and share buyback schemes. Banks are rated 0 if they have not adopted any of the measures. They are rated 1 if they have taken one of them and 2 if they have taken both (i and ii).

4) Charitable actions to support the community. These include cash donations, equipment donations, facilitation of fundraising, and access to food and shelter programs. Banks are rated 0 if they not undertaken any charity or donation activity. Remaining banks are ranked and we assign a rating of 2 for banks that are in the top third. All remaining banks take the value of 1.

5) Actions to protect and support employees' health and safety. These include introducing flexible working arrangements, increasing workplace safety, suspending job cuts and

redundancies, and offering other benefits such as health insurance, medical support, subsidized childcare, and extra resources for mental and physical well-being. Banks are rated 0 if they did not take any measures for this criterium. We then rank the banks based on their and assign a rating of 2 for banks in the top third. All remaining banks take the value of 1.

6) Actions to provide relevant information to customers during the uncertainty. These include support lines for dedicated information web pages about the COVID-19 pandemic and advice and guidance provided for applications to government measures. Banks are rated 0 if they have taken no measures, and 1 if they have provided at least one of them.

Subsequently, all the categories are aggregated for a comprehensive measure that takes a value between 0 and 11 for each bank. We also utilize a simplified version *Responsible bank* (*Responsible bank 2*) where each bank is given a rating of either 0 or 1 for the six sub-categories based on whether they have taken some action (i.e., 1) or no action (i.e., 0) in that specific category. We than aggregate these values which yields to a measure from 0 to 6 for each bank.

2.3 Empirical model

We estimate the following empirical model to test the impact of *Responsible bank* on excess stock returns during the first wave of the pandemic:

$$Excess\ return_i = f(\alpha + Responsible\ bank_i + B'\theta + F'\gamma) \tag{1}$$

where $Excess\ return_i$ indicates excess stock returns of the banks for both for the first wave period and end of 2020. We define the first wave pandemic period as February 18–June 5, 2020, because this period is considered the most volatile period in stock markets (Bae *et al.*, 2021). End of 2020 covers the period between February 18–December 31, 2020. We employ two proxies for both period of excess returns. Our first proxy (*Excess return*) is the difference between the cumulative weekly stock return (CAR) and the CAR of the benchmark index for the same period. For our second return proxy (*Market-adjusted excess return*), we estimate the

market model using historical returns for 60 months over the past five years (2015–2019). We use benchmark indices of each country when deriving all excess return figures.

In Equation (1), *Responsible bank* is the COVID-19 responsible banking measure ranging from 0 to 11. We also incorporate an alternative measure for responsibility (*Responsible bank 2*) ranging from 0 to 6. *B* denotes the set of bank-specific control variables, including *Size, Net loans, Return on average equity (ROAE), Deposits, Nonperforming, Equity, Tier 1 capital, Momentum,* and *Volatility,* and *F* denotes pre-COVID-19 ESG scores, including Refinitiv's environmental (*Environment*) and social (*Social*) pillar scores of the banks. In Table 1, we present the definitions of the variables used in the analysis. We mainly employ OLS regressions to estimate the models, controlling for country-fixed effects. In all estimations, standard errors are corrected for heteroscedasticity.[5] To address endogeneity concerns, we also estimate 2SLS instrumental variable (IV) regressions and propensity score matching (PSM), which we explain in Section 3.2 below.

2.4 Descriptive statistics

Table 2 presents the descriptive statistics for all variables. We observe that the first wave and end of 2020 excess returns for our sample banks are around -11.4% and -9.4%, respectively. These figures suggest that banks significantly underperformed the market both for the first wave and end of 2020. We observe a similar figure for our alternative market-adjusted cumulative return measure (*Market-adjusted return*). Our bank responsibility measure (*Responsible bank*) has a mean (median) value of 4.97 (5). We observe that some of the banks in our sample did not engage in any responsible action during the first wave of the pandemic. Regarding the Refinitiv *Environment* and *Social* scores, our sample banks have mean values of 19.34 and 40.33, respectively.

Table 1. Definitions of the variables

Variable	Definition
First wave excess return	Abnormal stock returns during the most volatile market period (February 18 – June 5, 2020). Abnormal stock return is calculated by subtracting the return of country benchmark index from stock returns.
End of 2020 excess return	Abnormal stock returns for 2020 (February 18 – December 31, 2020). Abnormal stock return is calculated by subtracting the return of country benchmark index from stock returns.
First wave market-adjusted return	Market model-adjusted stock returns during the most volatile market period (February 18 – June 5, 2020). The market model is estimated using 60 months of returns over 2015–2019 and the country benchmark index as the market return.
End of 2020 market-adjusted return	Market model-adjusted stock returns (February 18 – December 31, 2020). The market model is estimated using 60 months of returns over 2015–2019 and the country benchmark index as the market return.
Responsible bank	COVID-19 Bank Response Measure, taking a value between 0 and 11. It measures a bank's COVID-19 response based on the aggregate scores given in six subcategories: 1) facilitating government measures; 2) introducing own measures; 3) strengthening capital; 4) supporting communities; 5) protecting employees; and 6) providing information. The first five categories take a value of 0, 1 and 2 and the last category is given a value of 0 or 1.
Responsible bank 2	COVID-19 Bank Response Measure, taking a value between 0 and 6. It measures a bank's COVID-19 response based on the aggregate scores given in six subcategories: 1) facilitating government measures; 2) introducing own measures; 3) strengthening capital; 4) supporting communities; 5) protecting employees; and 6) providing information. All categories are given a value of 0 or 1.
Size	Natural logarithm of the total assets in US dollars.
Net loans	The ratio of net loans to total assets.
ROAE	Net income divided by average shareholders' equity.
Deposits	The ratio of total deposits to total assets.
Nonperforming	The ratio of nonperforming loans to gross loans.
Equity	The ratio of shareholders' equity to total assets.
Tier 1	The ratio of a bank's core tier 1 capital to its total risk-weighted assets.
Momentum	Annual abnormal stock return in 2019.
Volatility	Variance of the market-adjusted returns in 2019.
Environment	Environmental pillar score at the end of 2019 from Refinitiv.
Social	Social pillar score at the end of 2019 from Refinitiv.
UN signatory	Dummy variable equals 1 if the bank signed UN Principles of Responsible Banking and 0, otherwise.
Initial social	Initial Social scores of the banks that are available on Refinitiv.
Initial environment	Initial Environment scores of the banks that are available on Refinitiv.

This tables presents the definitions of the variables used in the study.

Table 2. Descriptive statistics

Variable	N	Mean	Std. dev.	Min	Median	Max
First wave excess return (%)	303	-11.412	13.912	-56.958	-10.939	44.650
End of 2020 excess return (%)	303	-9.284	19.181	-54.076	-10.143	87.938
First wave market-adjusted return (%)	303	-10.321	13.282	-53.922	-10.284	34.383
End of 2020 market adjusted return (%)	303	-7.892	19.215	-53.327	-8.711	87.566
Responsible bank	303	4.966	2.624	0.000	5.000	11.000
Responsible bank 2	303	3.353	1.558	0.000	3.000	6.000
Size	303	16.932	1.645	14.398	16.523	21.655
Net loans (%)	303	66.781	14.630	2.570	71.180	94.740
ROAE (%)	303	10.203	4.212	1.160	9.970	34.120
Deposits (%)	303	71.242	15.349	0.020	76.020	97.030
Nonperforming (%)	303	2.248	5.041	0.000	0.670	50.140
Equity (%)	303	10.766	3.646	1.250	11.110	37.550
Tier 1 (%)	303	14.019	3.239	9.700	12.980	25.370
Momentum (%)	303	-4.034	21.983	-192.103	-4.224	151.690
Volatility (%)	303	6.265	3.139	2.121	5.571	36.394
Environment	303	19.338	30.500	0.000	0.000	92.340
Social	303	40.330	21.715	1.060	33.460	96.820
UN signatory	303	0.138	0.000	0.000	0.000	1.000
Initial social	288	31.391	13.957	2.430	30.265	83.230
Initial environment	288	24.829	17.488	0.000	21.150	91.92

This table presents the descriptive statistics of the variables used in this study. Definitions of the variables are given in Table 1.

3. Empirical results

3.1 Main results

We present our main estimation results in Table 3, showing the relationship between *Responsible bank* and stock returns both in the first wave and end of 2020.

The dependent variables are reported as *Excess return* in Columns 1 and 2 and *Market-adjusted excess return* in Columns 3 and 4. We find a negative and statistically significant coefficient for *Responsible bank* in Column 1, suggesting that banks that engaged in more responsible activities during the first wave of the pandemic experienced negative stock returns in the first wave of the pandemic. This result is robust to the alternative (market-adjusted) measure of excess stock return (Column 3). One standard deviation increase in *Responsible bank* leads to 1.8 (2.62) percentage points decrease in excess stock returns for the first wave (end of 2020). Our results contradict those of Abuquerque *et al.* (2020), who demonstrate that firms with higher CSR scores had higher stock returns during the COVID-19 crisis. They also differ from those of Bae *et al.*

(2021), who show an insignificant relationship between CSR scores and the market performance of non-financial firms during the crisis period. There are several factors that drive these inconsistent results. First, prior literature mainly focuses on non-financial firms, which have significantly different characteristics than banks. Second and more importantly, we incorporate a novel COVID-19-specific responsibility measure into our analysis and utilize the ESG scores of the banks as a control variable. Interestingly, we do not find any significant relationship between the social pillar score from Refinitiv (*Social*) and first wave stock returns. This result is in line with Bae et al. (2021). However, we have mixed evidence on the relationship between the environmental pillar score (*Environment*) and first wave market performance of the banks. Specifically, the insignificant coefficient of *Environment* in Column 1 is negative and significant when we use *Market-adjusted excess return* as the dependent variable (Column 3). Regarding the control variables, we report that large and profitable banks outperformed the market during the first wave of the COVID-19 pandemic. On the other hand, banks with higher amounts of *Net loans* had lower excess returns. Other bank-specific control variables do not exert any significance in explaining first wave excess returns.

We present the results for the end of 2020 excess returns in Columns 2 and 4. The results suggest that the negative impact of *Responsible bank* on excess returns prevails at the end of 2020, regardless of the alternative excess return measures. Regarding the ESG scores, *Environment* displays a negative and significant coefficient, both in Columns 2 and 4, suggesting that market participants negatively reacted to engaging in environmental responsibility during the COVID-19 crisis. Similar to the first wave performance analysis, we do not find any significance in the *Social* scores of the banks in explaining the end of 2020 excess returns. Moreover, we find that larger and more profitable banks experienced positive excess returns by the end of 2020. Finally, we have mixed evidence for the impact of *Momentum* and *Risk* in determining the market performance of the banks.

Table 3. Responsible banking and market performance

	Excess return		Market-adjusted excess return	
	(1)	(2)	(3)	(4)
	First wave	End of 2020	First wave	End of 2020
Responsible bank	-0.007*	-0.010*	-0.007**	-0.009*
	(0.004)	(0.006)	(0.003)	(0.005)
Size	0.026***	0.040***	0.037***	0.045***
	(0.009)	(0.012)	(0.008)	(0.011)
Net loans	-0.002**	-0.000	-0.002**	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
ROAE	0.006**	0.009**	0.004*	0.007*
	(0.002)	(0.004)	(0.002)	(0.003)
Deposits	0.001	0.001	0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)
Nonperforming	-0.004	-0.012	-0.002	-0.008
	(0.004)	(0.007)	(0.004)	(0.006)
Equity	0.003	0.005	0.004	0.005
	(0.003)	(0.004)	(0.003)	(0.004)
Tier 1	0.003	0.001	0.003	0.002
	(0.003)	(0.005)	(0.003)	(0.004)
Momentum	0.085	-0.018	0.036	-0.185***
	(0.061)	(0.052)	(0.058)	(0.049)
Volatility	-0.206	1.016	0.178	1.515**
	(0.420)	(0.633)	(0.398)	(0.590)
Environment	-0.001	-0.002**	-0.001**	-0.003***
	(0.001)	(0.001)	(0.001)	(0.001)
Social	-0.000	0.001	-0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
Constant	-0.405*	-0.861***	-0.556***	-0.982***
	(0.211)	(0.318)	(0.186)	(0.274)
Country fixed	Yes	Yes	Yes	Yes
N	303	303	303	303
R^2	0.292	0.249	0.280	0.338

This table presents the impact of *Responsible bank* on market performance. Definitions of the variables are given in Table 1. Standard errors are in parentheses. ***, **, and * denote significance level at 1%, 5%, and 10%, respectively.

In Table 4, we present results for the alternative responsibility measure, *Responsible bank 2.* The results support our previous findings in terms of the relationship between responsible banking and first wave excess returns. One standard deviation increase in *Responsible bank 2* leads to approximately 2.02 percentage points decrease in excess stock returns in the first wave. However, we do not find any significant impact on end of 2020 performance which suggests that

negative impact of responsible banking on stock returns diminishes after a while. The results for the control variables are qualitatively similar.

Table 4. Responsible banking and market performance: Alternative measure for responsibility

	Excess return		Market-adjusted excess return	
	(1)	(2)	(3)	(4)
	First wave	End of 2020	First wave	End of 2020
Responsible bank 2	-0.013**	-0.013	-0.013**	-0.013
	(0.006)	(0.009)	(0.006)	(0.008)
Size	0.027***	0.038***	0.037***	0.044***
	(0.009)	(0.013)	(0.008)	(0.011)
Net loans	-0.002**	-0.000	-0.001**	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
ROAE	0.005**	0.009**	0.004*	0.007*
	(0.002)	(0.004)	(0.002)	(0.003)
Deposits	0.001	0.001	0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)
Nonperforming	-0.004	-0.012	-0.002	-0.008
	(0.004)	(0.008)	(0.004)	(0.006)
Equity	0.002	0.004	0.004	0.005
	(0.003)	(0.004)	(0.003)	(0.004)
Tier 1	0.003	0.001	0.003	0.003
	(0.003)	(0.005)	(0.003)	(0.004)
Momentum	0.087	-0.019	0.037	-0.186***
	(0.061)	(0.053)	(0.057)	(0.049)
Volatility	-0.217	1.020	0.166	1.516**
	(0.422)	(0.637)	(0.400)	(0.592)
Environment	-0.001	-0.002**	-0.001**	-0.003***
	(0.001)	(0.001)	(0.001)	(0.001)
Social	-0.000	0.000	-0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
Constant	-0.405*	-0.845***	-0.556***	-0.969***
	(0.213)	(0.319)	(0.188)	(0.273)
Country fixed	Yes	Yes	Yes	Yes
N	303	303	303	303
R²	0.295	0.247	0.283	0.336

This table presents the impact of our alternative responsibility measure (*Responsible bank 2*) on market performance. Definitions of the variables are given in Table 1. Standard errors are in parentheses. ***, **, and * denote significance level at 1%, 5%, and 10%, respectively.

Overall, our results suggest that responsible banks experience a loss in market value particularly in the first wave of the pandemic. Unreported results also suggest that our main findings regarding the relationship between *Responsible bank* and excess returns remain unchanged when we include in our model several corporate governance factors, such as board size, board

independence, board gender diversity, CEO-chair duality, and CEO compensation, which might have a significant impact on the banks' performance.

3.2 Robustness checks

3.2.1 Endogeneity

We conduct several robustness checks to ensure the reliability of our main inferences. Our results may suffer from selection bias for a few reasons. First, due to data limitations, we only include banks with a Refinitiv ESG rating in our sample. Second, some of the unobservable characteristics of the banks with higher responsibility scores (*Responsible bank*) may significantly differ from those with lower scores. To remedy these concerns, we employ a PSM technique, which allows us to compare the excess returns of two groups with similar characteristics. Specifically, we create two groups, *Treatment* and *Control*, based on their *Responsible bank* score and compare their excess returns in a multivariate setting. The *Treatment* (*Control*) group includes the banks with a *Responsible bank* score above (below) the median. We employ PSM analysis in two stages. First, we calculate propensity scores to match firms in the *Treatment* group with the banks in the *Control* group using a nearest-neighbor algorithm with replacement and common support. We use one to two matching algorithm to avoid any small sample bias. We use all the control variables in the matching algorithm. We find matches for 140 banks in the *Treatment* group, and our final sample size reduces to 207 after employing the matching process. In Table 5, we present the covariate balance test, which compares the differences in bank-specific factors in the *Treatment* and *Control* groups. The results show that mean differences for all variables between the *Treatment* and *Control* groups are insignificant, suggesting that the banks in the two groups share similar characteristics after the matching process.

Table 5. Propensity score matching – Covariate balance test

	High Responsible bank (Treatment)	Low Responsible bank (Control)	t-test (p value)	Variance ratio
Size	17.314	17.205	0.538	1.41
Net loans	66.812	69.068	0.138	1.17
ROAE	9.9654	10.358	0.453	1.28
Deposits	69.945	71.588	0.365	1.74
Nonperforming	2.6659	2.5317	0.855	1.07
Equity	10.609	10.645	0.932	1.11
Tier 1	13.846	13.497	0.407	0.81
Momentum	-0.042	-0.045	0.915	1.02
Volatility	.0645	0.060	0.280	2.10
Environment	24.504	21.125	0.381	1.21
Social	45.193	45.633	0.867	0.93

This table presents the covariate balance test for the treated (High Responsible bank) and control group (Low Responsible bank). Definitions of the variables are given in Table 1.

In the second stage of the analysis, we re-estimate the regression (Equation 1) with only the matched sample. Results presented in Table 6 suggest that banks with higher *Responsible bank* scores experienced significantly negative excess returns in the first wave. However, this effect diminished by the end of 2020, as evident by an insignificant coefficient of *Responsible bank* in Columns 2 and 4. These results confirm our earlier inferences. As a robustness check, we also employ matching without replacement, common support, and one-to-one matching algorithms. Moreover, we run our estimations using *Responsible bank 2* as the dependent variable. Our results remain unchanged.

As another robustness check to address endogeneity, we employ 2SLS IV regression analysis. Although we control for several bank-specific control variables, including the governance variables and country-fixed effects, to capture both firm and control-level factors, our results may still be biased due to unobservable omitted variables that are excluded from the regression. To address this concern, we employ IV regressions by using *Initial environment, Initial social* and *UN signatory* as the instruments for *Responsible bank*. Prior studies suggest that initial (or first) environment and social scores of the corporations significantly determines their current responsible behaviour (Ozkan, Temiz and Yildiz, 2022; Wang, Zhang and Xu, 2020).

Table 6. Regressions with matched sample

	Excess return		Market-adjusted excess return	
	(1)	(2)	(3)	(4)
	First wave	End of 2020	First wave	End of 2020
Responsible bank	-0.008**	-0.010	-0.007*	-0.007
	(0.004)	(0.006)	(0.004)	(0.006)
Size	0.025**	0.046***	0.038***	0.059***
	(0.012)	(0.015)	(0.011)	(0.014)
Net loans	-0.001	0.000	-0.000	0.001
	(0.001)	(0.001)	(0.001)	(0.001)
ROAE	0.008***	0.009**	0.006**	0.005
	(0.003)	(0.005)	(0.003)	(0.004)
Deposits	0.000	0.002	0.000	0.001
	(0.001)	(0.002)	(0.001)	(0.002)
Nonperforming	-0.004	-0.013*	-0.001	-0.006
	(0.004)	(0.008)	(0.004)	(0.006)
Equity	0.003	0.004	0.002	0.004
	(0.004)	(0.005)	(0.004)	(0.005)
Tier 1	0.007*	0.003	0.007*	0.006
	(0.004)	(0.006)	(0.004)	(0.006)
Momentum	-0.041	0.008	-0.060	-0.118
	(0.079)	(0.112)	(0.076)	(0.104)
Volatility	-0.148	0.396	0.049	0.485
	(0.500)	(0.848)	(0.440)	(0.828)
Environment	-0.000	-0.003**	-0.000	-0.003***
	(0.001)	(0.001)	(0.001)	(0.001)
Social	-0.001	0.001	-0.001	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
Constant	-0.459	-1.101***	-0.660**	-1.351***
	(0.314)	(0.406)	(0.292)	(0.377)
Country fixed	Yes	Yes	Yes	Yes
N	207	207	207	207
R^2	0.303	0.264	0.318	0.314

This table presents the impact of *Responsible bank* on market performance using a matched sample. Definitions of the variables are given in Table 1. Standard errors are in parentheses. ***, **, and * denote significance level at 1%, 5%, and 10%, respectively.

Moreover, we suggest that signing United Nations (UN) Principles for Responsible Banking significantly signals banks' commitment to impactful social change by aligning their mission, vision and practices with local and global sustainable development goals. Given that COVID-19 is an exogenous shock to stock markets, there is no reason to expect a significant impact of these variables on stock returns during the COVID-19 period. Specifically, we first predict *Responsible bank* by incorporating country-level *Responsible bank* and other variables from the main regression equation into our analysis in the first stage and use predicted *Responsible bank*

(*Responsible bank pred*) in the second stage. It is likely that initial social and environment scores and UN signatory condition of the banks have a significant impact on bank-level *Responsible bank* but is unlikely to have an impact on the excess stock returns of individual banks, which supports the relevance and exclusion criteria of the instruments.

We present the first stage results in Table 7, Column 1. As expected, *Initial social, Initial environment* and *UN signatory* have a significant impact on bank-specific *Responsible bank*, which confirms our relevance assumption. To further test relevance assumption, we also report Kleibergen-Paap rk LM statistic which suggests that our endogenous variable is significantly determined by excluded instruments. Since we have more instruments than endogenous regressor, we also report Hansen J statistic which tests overidentification restrictions. Insignificant Hansen J statistics in all our models suggest that our instruments are valid and our model do not suffer from overidentification. The estimated coefficients of *Responsible bank pred* are negative and statistically significant in all models, suggesting that our main inferences regarding the relationship between *Responsible Bank* and the performance of the banks are valid after addressing the endogeneity due to omitted variables. We also run 2SLS IV regression analysis using our alternative responsibility measure (*Responsible bank 2*). The results are qualitatively similar to those reported in Table 7, suggesting that banks engage in social responsibility during COVID-19 experience significant reduction in their market value, particularly in the first wave.

Table 7. 2SLS IV Regressions

	First stage	Second stage			
	(1)	(2)	(3)	(4)	(5)
	Responsible Bank	First wave	End of 2020	First wave	End of 2020
UN signatory	1.445***				
	(0.489)				
Initial social	0.021*				
	(0.012)				
Initial environment	-0.026***				
	(0.010)				
Responsible bank pred		-0.035**	-0.046*	-0.033*	-0.038*
		(0.017)	(0.024)	(0.017)	(0.023)
Size	0.587***	0.045***	0.061***	0.053***	0.062***
	(0.134)	(0.013)	(0.018)	(0.012)	(0.017)
Net loans	0.002	-0.002**	-0.000	-0.001**	0.000
	(0.010)	(0.001)	(0.001)	(0.001)	(0.001)
ROAE	-0.068**	0.003	0.006	0.002	0.005
	(0.033)	(0.003)	(0.004)	(0.003)	(0.004)
Deposits	0.028**	0.002*	0.002	0.001	0.001
	(0.012)	(0.001)	(0.002)	(0.001)	(0.001)
Nonperforming	-0.047	-0.004	-0.013*	-0.001	-0.009
	(0.048)	(0.004)	(0.007)	(0.004)	(0.006)
Equity	0.059	0.005	0.008˙	0.006**	0.007*
	(0.047)	(0.003)	(0.004)	(0.003)	(0.004)
Tier 1	-0.086*	0.002	-0.002	0.002	0.000
	(0.046)	(0.004)	(0.005)	(0.004)	(0.005)
Momentum	0.750	0.119*	0.021	0.059	-0.163***
	(0.586)	(0.063)	(0.060)	(0.062)	(0.053)
Volatility	-3.301	-0.431	0.753	0.009	1.368**
	(4.713)	(0.423)	(0.615)	(0.408)	(0.575)
Environment	0.013	-0.001	-0.002**	-0.001*	-0.003***
	(0.010)	(0.001)	(0.001)	(0.001)	(0.001)
Social	0.012	0.000	0.002	0.000	0.001
	(0.014)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	-4.803				
	(3.111)				
LM Statistic		13.003***	13.003***	13.003***	13.003***
Hansen J		0.454	2.300	0.634	2.461
N	288	288	288	288	288

This table presents the 2SLS IV regression results. Column 1 reports first stage regression results. We use *UN signatory, Initial social* and *Initial environment* as the instrument for *Responsible bank* at bank level. In Columns 2 and 3, the dependent variables are first wave and end of 2020 abnormal returns. In Columns 4 and 5, the dependent variables are first wave and end of 2020 market-adjusted abnormal returns. Definitions of the variables are given in Table 1. Standard errors are in parentheses. ˙˙˙, ˙˙, and ˙ denote significance level at 1%, 5%, and 10%, respectively.

3.2.2 Excluding "Strengthening Capital" dimension

Although our responsibility measure considers different stakeholders including customers, communities, employees as well as shareholders of the banks, it might be suggested that *Strengthening Capital* dimension (i.e. cancelling executive bonuses, cutting dividend payments) does not necessarily link to overall wellbeing of the society and also directly related to the stock performance of the bank. To alleviate these concerns, we generate an alternative responsibility measure (*Responsible bank 3*) which excludes strengthening capital dimension of responsibility measure and re-run our baseline regressions. Results, presented in Table 8, suggest that the negative relationship between responsibility and first wave market performance holds even after excluding the impact of financial actions taken by the banks. As a further robustness check, we also estimate IV regressions using *Initial environment, Initial social* and *UN signatory* as the instruments for *Responsible bank 3.* Untabulated results are qualitatively similar to that OLS regressions.

Table 8. Excluding strengthening capital dimension

	Excess return		Market-adjusted excess return	
	(1)	(2)	(3)	(4)
	First wave	End of 2020	First wave	End of 2020
US Banks				
Responsible bank 3	-0.006*	-0.009	-0.006*	-0.007
	(0.003)	(0.006)	(0.003)	(0.005)
Controls	Yes	Yes	Yes	Yes
R^2	0.291	0.247	0.278	0.335
N	303	303	303	303

This table presents the results using alternative responsibility measure. Definitions of the variables are given in Table 1. Standard errors are in parentheses. ***, **, and * denote significance level at 1%, 5%, and 10%, respectively.

3.2.3 Sub-sample analysis

As discussed in Section 2.1, our sample consists of publicly traded banks from the US and Europe. Although we control for country-fixed effects in all our regressions to capture any country-specific factors that may derive our results, the market reaction to engagement in

responsibility may differ between US and European banks. Therefore, we re-run our regressions for US and European banks separately to observe any differences in the market reaction to *Responsible bank.*

We present the results of our sub-sample analysis in Table 9. We do not report the results for control variables for brevity. We observe a negative and significant coefficient for *Responsible bank* for both samples when our dependent variable is *First wave excess return.* We also test the significance of differences in the coefficient of *Responsible bank* between US and European banks. Un-tabulated results suggest that there is no difference in the impact of *Responsible bank* on excess stock returns between the two sub-samples. Therefore, we can confirm that engaging in social responsibility during the first wave of the COVID-19 pandemic had a negative impact on bank market performance for both US and European banks. However, we do not have conclusive evidence for this relationship by the end of 2020.

Table 9. Subsample analysis

	Excess return		Market-adjusted excess return	
	(1)	(2)	(3)	(4)
	First wave	End of 2020	First wave	End of 2020
US Banks				
Responsible bank	-0.007*	-0.005	-0.007*	-0.003
	(0.004)	(0.006)	(0.004)	(0.005)
Controls	Yes	Yes	Yes	Yes
R²	0.162	0.270	0.178	0.268
N	205	205	205	205
European Banks				
Responsible bank	-0.015**	-0.002	-0.014**	-0.002
	(0.006)	(0.013)	(0.006)	(0.012)
Controls	Yes	Yes	Yes	Yes
R²	0.420	0.214	0.286	0.306
N	98	98	98	98

This table presents the results for US and European banks subsamples. Definitions of the variables are given in Table 1. Standard errors are in parentheses. ***, **, and * denote significance level at 1%, 5%, and 10%, respectively.

3.2.4 Sub-components of Responsible Bank

As discussed in Section 2.1, our *Responsible bank* measure consists of six sub-categories that might be perceived differently by the market participants. To identify which dimensions of *Responsible bank* may positively or negatively contribute to the market performance of the banks, we re-run our regression model for each dimension separately. Table 10 presents the results for the impact of individual components of *Responsible bank* on first wave and end of 2020 stock performance during the first wave of the pandemic (the results for control variables are not reported for brevity). First, we find that only the *Own measures* and *Providing information* dimensions of the *Responsible bank* categories exert significance in negatively affecting the first wave excess returns. This implies that market participants negatively perceive having a proactive strategy by introducing their own measures, such as payment breaks, fee waivers, and interest rate freezes during the first wave of the pandemic. Given that introducing these measures is costly and may have a negative impact on the financial position of the company, it is reasonable to find a negative association between *Own measures* and stock market performance. On the other hand, the *Providing information* dimension of *Responsible bank* includes offering support lines and COVID-19-specific websites that may be relatively helpful for the customers in terms of having up-to-date information about the COVID-19 pandemic, especially in the uncertainty during the first wave. However, these activities also carry additional costs to the implementing banks, which may lead to a negative reaction from the market, which depresses stock returns of the bank during the first wave. Regarding the end of 2020 performance, none of the sub-categories of *Responsible bank* except *Providing information* exert any significance in determining excess returns. The negative and significant coefficient of the *Providing information* dimension of *Responsible bank* in Columns 2 and 4 persists by the end of 2020 (Columns 3 and 5), albeit with a lower significance level.

Table 10. Subcategories of responsible banking

	Excess return		Market-adjusted excess return	
	(1)	(2)	(3)	(4)
	First wave	End of 2020	First wave	End of 2020
Own measures	-0.037**	-0.007	-0.041**	-0.015
	(0.017)	(0.023)	(0.017)	(0.021)
R^2	0.296	0.241	0.287	0.331
Supporting employees	-0.004	0.001	-0.002	0.008
	(0.019)	(0.024)	(0.018)	(0.021)
R^2	0.284	0.241	0.271	0.330
Government measures	-0.023	-0.028	-0.024	-0.028
	(0.024)	(0.038)	(0.022)	(0.034)
R^2	0.286	0.243	0.273	0.331
Strengthening capital	-0.011	-0.068	-0.026	-0.101*
	(0.026)	(0.053)	(0.028)	(0.058)
R^2	0.285	0.248	0.273	0.346
Providing information	-0.051**	-0.062*	-0.051**	-0.056*
	(0.022)	(0.032)	(0.021)	(0.029)
R^2	0.297	0.251	0.284	0.338
Donation	-0.010	-0.018	-0.007	-0.010
	(0.017)	(0.024)	(0.016)	(0.023)
R^2	0.285	0.242	0.271	0.330
Controls	Yes	Yes	Yes	Yes
Country fixed	Yes	Yes	Yes	Yes
N	303	303	303	303

This table presents the results for the impact of *Responsible bank* subcategories on market performance. In Columns 1 and 2, the dependent variables are first wave and end of 2020 abnormal returns. In Columns 3 and 4, the dependent variables are first wave and end of 2020 market-adjusted abnormal returns. Definitions of the variables are given in Table 1. Standard errors are in parentheses. ***, **, and * denote significance level at 1%, 5%, and 10%, respectively.

3.2.5 Components of Refinitiv's Environment and Social Scores

Bae *et al.* (2021) suggest that individual components of Morgan Stanley Capital International (MSCI) and Refinitiv ESG scores have a mixed impact on the performance of non-financial firms during the first wave of the pandemic. Although we control for both Refinitiv's *Environment* and *Social* scores in all our specifications, it is useful to test whether any components of the

Environment and *Social* scores provide significance in explaining the stock returns during the pandemic. To do so, we drop Refinitiv's *Environment* and *Social* scores from our regression model. We instead include three sub-categories of the environmental (*Resource use, Emission, and Innovation*) and four sub-categories of the social (*Workforce, Human rights, Community, and Product responsibility*) pillar scores in our models.

The results, presented in Table 11, provide several interesting implications. First, the negative and significant coefficients of *Responsible bank* suggest that COVID-19-specific responsibility continued to exert a negative influence on stock returns during the pandemic even after controlling for sub-categories of Refinitiv's *Environment* and *Social* scores. Second, we find negative and significant coefficient for *Innovation* components of the environmental pillar score. These results suggest that, particularly during the first wave of the pandemic, banks engaging in environmentally innovative practices experienced significantly lower stock returns than their peers. This implies that investors do not value environmental practices and investments during a health crisis. On the other hand, the positive coefficient of the *Community* dimension of the social pillar score (Columns 1 and 3) indicates that banks committed to public health and ethical practices were more likely to have positive returns during the first wave of the pandemic. However, this positive impact diminished by the end of 2020, as evident by an insignificant coefficient of *Community* when we use end of 2020 excess returns as the dependent variable (Columns 2 and 4). Turning to the impact of other components of ESG scores on end of 2020 performance, only the *Innovation* component has a negative and significant coefficient for determining the end of 2020 excess returns when we use market-adjusted excess returns as the dependent variable. This also supports the findings of Bae et al. (2021), which suggest that the majority of the Refinitiv and MSCI ESG scores do not exert any significance in explaining the stock returns of non-financial firms during the post-pandemic period.

Table 11. Refinitiv's environment and social dimensions

	Excess return		Market-adjusted excess return	
	(1)	(2)	(3)	(4)
	First wave	End of 2020	First wave	End of 2020
Responsible bank	-0.008**	-0.010*	-0.008**	-0.010*
	(0.004)	(0.006)	(0.003)	(0.006)
Resource use	-0.115	-0.063	-0.057	0.019
	(0.076)	(0.126)	(0.076)	(0.127)
Emissions	0.134*	-0.009	0.079	-0.062
	(0.068)	(0.103)	(0.074)	(0.095)
Innovation	-0.105*	-0.136	-0.122**	-0.200**
	(0.061)	(0.083)	(0.059)	(0.082)
Workforce	-0.065	-0.047	-0.092˙	-0.082
	(0.056)	(0.076)	(0.055)	(0.070)
Human rights	-0.001	-0.040	-0.017	-0.078
	(0.061)	(0.089)	(0.056)	(0.092)
Community	0.062*	0.060	0.069˙	0.079
	(0.036)	(0.058)	(0.035)	(0.057)
Product responsibility	-0.020	0.068	-0.028	0.043
	(0.041)	(0.071)	(0.042)	(0.066)
Constant	-0.415*	-0.825***	-0.527***	-0.883***
	(0.224)	(0.313)	(0.199)	(0.267)
Controls	Yes	Yes	Yes	Yes
Country fixed	Yes	Yes	Yes	Yes
N	303	303	303	303
R²	0.316	0.259	0.305	0.352

This table presents the results for the impact of Refinitiv Environment and Social dimensions on market performance. In Columns 1 and 2, the dependent variables are first wave and end of 2020 abnormal returns. In Columns 3 and 4, the dependent variables are first wave and end of 2020 market-adjusted abnormal returns. Definitions of the variables are given in Table 1. Standard errors are in parentheses. ***, **, and * denote significance level at 1%, 5%, and 10%, respectively.

3.2.6 Moderating effects of risk

One of the important factors considered by investors when making investment decisions during the COVID-19 pandemic period was the risk level of the companies. It is evident that several companies issued bankruptcy due to the sudden decline in economic activity, which in turn altered the risk tolerance of the stock market investors (Didier *et al.*, 2021; Liu *et al.*, 2021). In this section, we examine whether the risk levels of the banks moderate the relationship between *Responsible bank* and first wave and end of 2020 excess returns. We employ the interaction analysis using the following equation:

$$Excess return_i = \alpha + \beta_1 Responsible\ bank_i + \beta_2 Risk_i + \beta_3 Responsible\ bank_i x Risk_i + X_i \quad (2)$$

In Equation 2, *Risk* corresponds to three accounting and market risk proxies, namely *Equity*, *Nonperforming*, and *Volatility*. *Equity* is an inverse measure of risk, defined as the ratio of shareholders' equity to total assets. *Nonperforming* indicates the ratio of nonperforming loans to total loans. As a proxy for the market risk, we use *Volatility*, which is the variance of the market-adjusted returns in 2019. Other variables are previously defined. In this regression, our main emphasis is on the coefficients of the interaction terms.

Table 12 presents the results of the interaction analysis. For brevity, we do not report the results for the control variables. In Panel A of Table 12, we use *Equity* as our proxy for financial risk. The positive coefficient of the interaction term (*Responsible bank* x *Equity*) in Column 1 suggests that the negative impact of *Responsible bank* on first wave excess returns is significantly mitigated by having higher levels of equity. However, this coefficient is insignificant when we use market-adjusted excess returns (Column 3). On the other hand, negative coefficient of *Responsible bank* x *Nonperforming* in Column 1 suggests that banks with higher levels of nonperforming loans are more negatively affected than their peers if they engage in social responsibility during COVID-19.

Turning to the interaction effects of *Responsible bank* and risk proxies on end of 2020 excess returns (Columns 2 and 4), we observe that having higher levels of equity significantly moderates the relationship between *Responsible bank* and excess returns (Panel A). On the other hand, the coefficients of the interaction term in Panels B and C are negative and significant for the end of 2020 (Columns 3 and 4). This implies that banks with higher levels of non-performing loans and stock volatility significantly underperformed the market and their peers if they engaged in more social responsibility during the pandemic. Overall, our results suggest that riskier banks were penalized by the market by the end of 2020 if they invested in social responsibility during the pandemic. One rationale is that riskier banks are more vulnerable to external shocks, and during a crisis like the COVID-19 pandemic, investors may view social responsibility investments as

costly and unnecessary. This leads to a selling pressure on the stocks of responsible banks, which, in turn, lowers their stock prices.

Table 12. Moderating effects

	Excess return		Market-adjusted excess return	
	(1)	(2)	(3)	(4)
	First wave	End of 2020	First wave	End of 2020
Panel A. Moderating effect of Equity				
Responsible bank	-0.022**	-0.047***	-0.018**	-0.045***
	(0.009)	(0.014)	(0.009)	(0.013)
Equity	-0.002	-0.007	0.000	-0.006
	(0.003)	(0.006)	(0.004)	(0.006)
Responsible bank*Equity	0.001*	0.003***	0.001	0.003***
	(0.001)	(0.001)	(0.001)	(0.001)
R^2	0.301	0.276	0.285	0.361
Panel B. Moderating effect of Nonperforming Loans				
Responsible bank	-0.004	-0.003	-0.005	-0.001
	(0.004)	(0.006)	(0.004)	(0.005)
Nonperforming	0.002	0.004	0.003	0.012
	(0.005)	(0.011)	(0.005)	(0.010)
Responsible bank*Nonperforming	-0.001*	-0.003**	-0.001*	-0.004***
	(0.001)	(0.001)	(0.001)	(0.001)
R^2	0.301	0.276	0.285	0.361
Panel C. Moderating effect of Volatility				
Responsible bank	0.000	0.029***	-0.001	0.032***
	(0.007)	(0.011)	(0.007)	(0.010)
Risk	0.453	4.719***	0.703	5.434***
	(0.836)	(1.193)	(0.811)	(1.087)
Responsible bank*Volatility	-0.117	-0.658***	-0.093	-0.696***
	(0.114)	(0.190)	(0.111)	(0.178)
R^2	0.295	0.296	0.282	0.390
Controls	Yes	Yes	Yes	Yes
Country fixed	Yes	Yes	Yes	Yes
N	303	303	303	303

This table presents the results for role of *Equity*, *Nonperforming* and *Volatility* on the relationship between *Responsible bank* and market performance. In Columns 2 and 3, the dependent variables are first wave and end of 2020 abnormal returns. In Columns 4and 5, the dependent variables are first wave and end of 2020 market-adjusted abnormal returns. Definitions of the variables are given in Table 1. Standard errors are in parentheses. ***, **, and * denote significance level at 1%, 5%, and 10%, respectively.

4. Conclusion

The sudden and unexpected occurrence of the COVID-19 pandemic, with its devastating impact on the global economy, has provided a unique setting to examine the value of socially responsible behavior by companies. In this paper, we investigate whether banks' initial responses to the COVID-19 pandemic during the first wave in supporting their customers, communities, governments, and, in general, the economy were perceived as value-enhancing by investors. It is essential to shed more light on the value of banks' responsible behavior as they are positioned at the center stage of economies and play a key role in the distribution of funds that finance an economy. In this context, banks also have a great potential to influence their customers' behavior regarding the environment and social responsibility. We utilize a comprehensive and unique responsible banking measure that captures over 300 of the largest listed US and European banks' immediate response to the COVID-19 crisis during the first wave. We examine the link between banks' response to the COVID-19 pandemic and their first wave and end of 2020 stock returns.

Our results show that banks' responsible behavior during the COVID-19 pandemic was value-destroying during the first wave. The impact of engaging social responsibility on end of 2020 stock returns is less clear cut. Investors did not seem to attach value to banks' efforts to behave responsibly in supporting customers, communities, and governments during the first wave of the pandemic. We also find that for riskier banks, responsible banking behavior is more value-destroying than for less risky banks. As our sub-category analysis shows, our findings can be interpreted in the direction that some of the responsible banking actions taken by banks were seen as cost-generating activities impacting financial performance. In addition, we utilize sub-components of standard ESG scores as responsible banking indicators and find similar value-destroying outcomes for environmentally innovative practices. Investors only seem to have rewarded community initiatives by banks during this period. Our conclusions are very much in

line with the findings of Bae *et al.* (2021) and Döttling and Kim (2022) showing that market participants' demand for socially responsible behavior falls during economic downturns.

Our findings have broader policy implications. In the modern world, an extensive global effort and resources are dedicated to combating climate change and other pressing environmental and humanitarian challenges. Firms, and their socially responsible behaviors, are situated at the forefront of this fight. They are expected to dedicate more and more resources to combating these challenges and positively impacting the environment and society. However, as the worth of firms is determined in the market within the shareholder value maximization market model implemented in many countries, it is paramount that the responsible actions of firms are recognized, especially in crisis times, by market participants. Otherwise, losing sight of such efforts may encourage firms to move toward greenwashing in the future, when sustainability at all fronts of the economy will be needed the most. Overall, our results vouch for more incentives for investors in order to reward the socially responsible behaviors of firms in market economies.

Notes

[1] Another similar voluntary initiative is the Equator Principles (EP), a common baseline and risk management framework for banks to identify, assess, and manage environmental and social risks when financing projects. As of September 2022, 135 financial institutions in 38 countries have officially adopted the Equator Principles.

[2] See, for example, Galetta, Mazzu and Naciti (2022), who map the utilization of theories in the analysis of ESG performance in the banking industry literature.

[3] A strand of the literature also examines the link between CSR performance and bank risk-taking. See, for example, Anginer *et al.* (2018), Gangi *et al.* (2019), Chiaramonte *et al.* (2021), and Neitzer and Petras (2022).

[4] We provide a detailed explanation of the calculation of *Responsible bank* in the Appendix. You can also refer to Kara *et al.* (2022) for an extensive description of the processes and methods followed to create this measure. Note that Kara *et al.* (2022) called the same variable as C19BRM rather than *Responsible bank*.

[5] In alternative specifications, we also estimate our models without some of the outliers observed in the data, and the main results we report do not change. These results are available from the authors upon request.

[6] Available from the authors upon request.

References

Albuquerque, R., Y. Koskinen and C. Zhang (2019). 'Corporate social responsibility and firm risk: Theory and empirical evidence', *Management Science*, **65**, pp. 4451-4469.

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

Anginer, D., A. Demirguc-Kunt, H. Huizinga and K. Ma (2018). 'Corporate governance of banks and financial stability', *Journal of Financial Economics*, **130**, pp. 327-346.

Ari, A., S. Chen and L Ratnovski (2021). 'The dynamics of non-performing loans during banking crises: A new database with post-COVID-19 implications' *Journal of Banking and Finance*, **133**, 106140.

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

Barko, T., M. Cremers and L. Renneboog (2022). 'Shareholder engagement on environmental, social, and governance performance', *Journal of Business Ethics*, **180**, pp. 777-812.

Bénabou, R. and J. Tirole (2010). 'Individual and corporate social responsibility', *Economica*, **77**, pp. 1-19.

Berger, A. N. and A Demirgüç-Kunt (2021). 'Banking research in the time of COVID-19', *Journal of Financial Stability*, **57**, 100939.

Berger, A. N., A. Demirgüç-Kunt, F. Moshirian and A. Saunders (2021). 'The way forward for banks during the COVID-19 crisis and beyond: Government and central bank responses, threats to the global banking industry' *Journal of Banking and Finance*, **133**, 106303.

Bitar, M. and A Tarazi (2022). 'A note on regulatory responses to COVID-19 pandemic: Balancing banks' solvency and contribution to recovery' *Journal of Financial Stability*, **60**, 101009.

Boubakri, N., S. El Ghoul, H. Wang, O. Guedhami and C. C. Kwok (2016). 'Cross-listing and corporate social responsibility', *Journal of Corporate Finance*, **41**, pp. 123-138.

Borri, N. and G. Di Giorgio (2022). 'Systemic risk and the COVID challenge in the European banking sector' *Journal of Banking and Finance*, **140**, 106073.

Broadstock, D. C., K. Chan, L. T. Cheng and X. Wang (2021). 'The role of ESG performance during times of financial crisis: Evidence from COVID-19 in China', *Finance Research Letters*, **38**, 101716.

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

Chiaramonte, L., A. Dreassi, C. Girardone and S. Piserà (2021). 'Do ESG strategies enhance bank stability during financial turmoil? Evidence from Europe', *The European Journal of Finance*, **28**, pp. 1173-1211.

Ciciretti, R., N. Kobeissi and Y. Zhu (2014). 'Corporate social responsibility and financial performance: an analysis of bank community responsibility', *International Journal of Banking, Accounting and Finance*, **5**, pp. 342-373.

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

Crane, A., I. Henriques, B. Husted and D. Matten (2015). 'A new era for Business & Society', *Business & Society*, **54**, pp. 3-8.

Degryse, H. and C Huylebroek (2023). 'Fiscal support and banks' loan loss provisions during the COVID-19 crisis' *Journal of Financial Stability*, 101150.

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

Accounting, **48**, pp. 433-462.

Demir, E., and G. O. Danisman (2021). 'Banking sector reactions to COVID-19: The role of bank-specific factors and government policy responses', *Research in International Business and Finance*, **58**, 101508.

Demirgüç-Kunt, A., A. Pedraza and C. Ruiz-Ortega (2021). 'Banking sector performance during the COVID-19 crisis'. *Journal of Banking and Finance*, **133**, 106305.

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

Di Giuli, A. and L. Kostovetsky (2014). 'Are red or blue companies more likely to go green? Politics and corporate social responsibility', *Journal of Financial Economics*, **111**, pp. 158–180.

Diamond, D.W. and R. G. Rajan (2009). 'The credit crisis, conjectures about causes and remedies', *American Economic Review*, **99**, pp. 606–10.

Didier, T., F. Huneeus, M. Larrain and S. L. Schmukler (2021). 'Financing firms in hibernation during the COVID-19 pandemic', *Journal of Financial Stability*, **53**, 100837.

Dimson, E., O. Karakaş and X. Li (2015). 'Active ownership', *The Review of Financial Studies*, **28**, pp. 3225-3268.

Ding, W., R. Levine, C. Lin and W. Xie (2021). 'Corporate immunity to the COVID-19 pandemic', *Journal of Financial Economics*, **141**, pp. 802-830.

Döttling, R. and S. Kim (2022). 'Sustainability preferences under stress: Evidence from COVID-19', *Journal of Financial and Quantitative Analysis*, pp. 1-39.

Duan, Y., S. El Ghoul, O. Guedhami, H. Li, and X. Li, (2021). 'Bank systemic risk around COVID-19: A cross-country analysis' *Journal of Banking and Finance*, **133**, 106299.

Duncan, E., A. Horvath, D. Iercosan, B. Loudis, A. Maddrey, F. Martinez, and C. Wix (2022). 'COVID-19 as a stress test: Assessing the bank regulatory framework' *Journal of Financial Stability*, **61**, 101016.

Dursun-de Neef, H. Ö., A. Schandlbauer and C. Wittig (2023). 'Countercyclical capital buffers and credit supply: evidence from the COVID-19 crisis' *Journal of Banking and Finance*, 106930.

Dursun-de Neef, H. Ö., and A. Schandlbauer, (2021). 'COVID-19 and lending responses of European banks' *Journal of Banking and Finance*, **133**, 106236.

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

Fatemi, A., I. Fooladi and H. Tehranian (2015). 'Valuation effects of corporate social responsibility', *Journal of Banking & Finance*, **59**, pp. 182-192.

Ferrell, A., H. Liang and L. Renneboog (2016). 'Socially responsible firms', *Journal of Financial Economics*, **122**, pp. 585-606.

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

Flammer, C. (2021). 'Corporate green bonds', *Journal of Financial Economics*, **142**, pp. 499-516.

Forcadell, F. J., and E. Aracil (2017). 'European banks' reputation for corporate social responsibility', *Corporate Social Responsibility and Environmental Management*, **24**, pp. 1-14.

Frynas, J. G., and C. Yamahaki (2016). 'Corporate social responsibility: Review and roadmap of theoretical perspectives', *Business Ethics: A European Review*, **25**, pp. 258-285.

Galletta, S., S. Mazzù and V. Naciti (2022). 'A bibliometric analysis of ESG performance in the banking industry: from the current status to future directions', *Research in International Business and Finance*, **62**, 101684.

Gangi, F., A. Meles, E. D'Angelo and L. M. Daniele (2019). 'Sustainable development and corporate governance in the financial system: Are environmentally friendly banks less risky?', *Corporate Social Responsibility and Environmental Management*, **26**, pp. 529-547.

Garel, A. and A. Petit-Romec (2021). 'Investor rewards to environmental responsibility: Evidence from the COVID-19 crisis', *Journal of Corporate Finance*, **68**, 101948.

Gillan, S. L., A. Koch and L. T. Starks (2021). 'Firms and social responsibility: A review of ESG and CSR research in corporate finance', *Journal of Corporate Finance*, **66**, 101889.

Hong, H. and M. Kacperczyk (2009). 'The price of sin: The effects of social norms on markets', *Journal of Financial Economics*, **93**, pp. 15-36.

Humphrey, J. E., D. D. Lee and Y. Shen (2012). 'Does it cost to be sustainable?', *Journal of Corporate Finance*, **18**, pp. 626-639.

Jia, J. and Z. Li (2020). 'Does external uncertainty matter in corporate sustainability performance?', *Journal of Corporate Finance*, **65**, 101743.

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

Kara, A., A. Nanteza, A. Ozkan and Y. Yildiz (2022). 'Board gender diversity and responsible banking during the COVID-19 pandemic', *Journal of Corporate Finance*, **74**, 102213.

Li, T., V. Q. Trinh and M. Elnahass (2022). 'Drivers of global banking stability in times of crisis: the role of corporate social responsibility', *British Journal of Management*.

Li, Z. and P. Wang (2022). 'Flotation costs of seasoned equity offerings: Does corporate social responsibility matter?', *European Financial Management*, **28**, pp. 771-808.

Lins, K. V., H. Servaes and A. Tamayo (2017). 'Social capital, trust, and firm performance: The value of corporate social responsibility during the financial crisis', *The Journal of Finance*, **72**, pp. 1785-1824.

Liu, Y., B. Qiu, and T. Wang (2021). 'Debt rollover risk, credit default swap spread and stock returns: Evidence from the COVID-19 crisis' *Journal of Financial stability*, **53,** 100855.

Lu, J., K. Rodenburg, L. Foti and A. Pegoraro (2022). 'Are firms with better sustainability performance more resilient during crises?', *Business Strategy and the Environment*, **31**, pp. 3354-3370.

Mallin, C., H. Farag and K. Ow-Yong (2014). 'Corporate social responsibility and financial performance in Islamic banks', *Journal of Economic Behavior & Organization*, **103**, pp. S21-S38.

Masulis, R. W. and S. W. Reza (2015). 'Agency problems of corporate philanthropy', *The Review of Financial Studies*, **28**, pp. 592-636.

Moufty, S., E. Clark and B. Al-Najjar (2021). 'The different dimensions of sustainability and bank performance: Evidence from the EU and the USA', *Journal of International Accounting, Auditing and Taxation*, **43**, 100381.

Neitzert, F. and M. Petras (2022). 'Corporate social responsibility and bank risk', *Journal of Business Economics*, **92**, pp. 397-428.

Pancotto, L., O. ap Gwilym and P Molyneux (2023). 'Deal! Market reactions to the agreement on the EU Covid-19 Recovery Fund' *Journal of Financial Stability*, 101157.

Pérez, A. I. R. del Bosque (2012). 'The role of CSR in the corporate identity of banking service providers', *Journal of Business Ethics*, **108**, pp. 145–166.

Orazalin, N. S., C. G. Ntim and J. K. Malagila (2023). 'Board sustainability committees, climate change initiatives, carbon performance, and market value', *British Journal of Management*.

Ozkan, A., H. Temiz and Y. Yildiz (2022). 'Climate Risk, corporate social responsibility, and firm performance', *British Journal of Management*.

Scholtens, B. and L. Dam (2007). 'Banking on the equator. Are banks that adopted the equator principles different from non-adopters?', *World Development*, **35**, pp. 1307-1328.

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

Simpson, W. G. and T. Kohers (2002). 'The link between corporate social and financial performance: Evidence from the banking industry', *Journal of Business Ethics*, **35**, pp. 97-

109.

Shen, C. H., M. W. Wu, T. H. Chen and H. Fang (2016). 'To engage or not to engage in corporate social responsibility: Empirical evidence from global banking sector', *Economic Modelling*, **55**, pp. 207-225.

Soana, M. G. (2011). 'The relationship between corporate social performance and corporate financial performance in the banking sector', *Journal of Business Ethics*, **104**, pp. 133-148.

Tang, D. Y. and Y. Zhang (2020). 'Do shareholders benefit from green bonds?', *Journal of Corporate Finance*, **61**, 101427.

UNEP. (2022). Principles For Responsible Banking, United Nations Environment Finance Initiative. Retrieved 16 June 2022 from https://www.unepfi.org/about/

Walker, K., Z. Zhang and N. Ni (2019). 'The mirror effect: corporate social responsibility, corporate social irresponsibility and firm performance in coordinated market economies and liberal market economies', *British Journal of Management*, 30, pp. 151-168.

Wang, F., Z. Zhang and L. Xu (2020). 'Corporate social responsibility and financial statement comparability: Evidence from China', *Corporate Social Responsibility and Environmental Management*, **27**, pp. 1375-1394.

World Bank. (2020). COVID-19 to Plunge Global Economy into Worst Recession since World War II. Press Release. June 8, 2020. Retrieved from https://www.worldbank.org/en/news

Wu, M. W. and C. H. Shen (2013). 'Corporate social responsibility in the banking industry: Motives and financial performance', *Journal of Banking & Finance*, **37**, pp. 3529-3547.

Yi, Y., Z. Zhang and C. Xiang (2022). 'The value of CSR during the COVID-19 crisis: Evidence from Chinese firms', *Pasific-Basin Finance Journal*, **74**, 101795

Zhai, H., M. Xiao, K. C. Chan and Q. Liu (2022). 'Physical proximity, corporate social responsibility, and the impact of negative investor sentiment on stock returns: Evidence from COVID-19 in China', *International Review of Finance*, **22**, 308-314.

Appendix: Construction of the *Responsible Banking* measure

In this section we summarise the procedure that Kara *et al.* (2022) used to calculate the Responsible Banking measure, labelled as C19BRM in their paper. For a full length of explanation please refer to their paper.

In creating this measure Kara *et al.* (2022) use content analysis to extract information and follow a systematic process. They develop a framework by identifying the possible actions and responses that banks could take during the first wave of the unprecedented pandemic. To do so, they use the UNEP FI's Principles for Responsible Banking which provides a framework for banks to develop approaches in implementing the agreed responsible banking principles and a list of COVID-19 measures adopted by signatory banks. These two sources are used to to identify the textual data points to be selected. They then collect the textual data relating to the identified possible responses manually by scraping the relevant textual data from the banks' webpages (and relevant documents provided there). The relevant chunks of textual data is transferred into a spreadsheet and classified in to six categories as follows:

1) *Facilitating government measures*: During COVID-19 pandemic, countries introduced support measures such as including government-guaranteed credit and liquidity facilities, payment deferrals or reliefs. The effective implementation of these support measures largely depended on the banks facilitating their transmission to the wider economy. Prior to data collection, Kara *et al.* (2022) identify these measures at country level using the International Monetary Funds (IMF) *Policy Responses to COVID-19.* As the number of measures introduced by countries varies from two to four, they used a ranking method normalizing the banks' response in facilitating these measures based on the location of the bank. Hence, for each country, banks are rated as 0, 1 and 2, based on the level of their participation, determined by the number of measures introduced in the country. A rating of 0 is assigned if a bank does not indicate participation in any measures introduced, 2 if they facilitate all the measures introduced in their respective countries, and 1 is assigned to banks facilitating at least one of the measures.

2) *Introducing own measures*: Banks have also been supporting their customers through their own means. These are grouped as: i) Payment breaks and interest rate freezes; ii) Flexibility for loans and mortgages by providing emergency loans/liquidity and increasing credit limits; iii) Fee waivers for services (including contactless payments, credit and debit cards, loan processing and early withdrawal of deposits); iv) Payment facilitation (through increased ATM withdrawal, mobile and contactless limits, and mobile cash services). For each bank, they allocate one point for each group of actions if the bank has taken one within that group. They assign only one point per group of actions. For example, if a bank takes two similar actions within the same group then it will still be assigned one point. Banks are rated 0 if they do not record any points on aggregate. Banks are then ranked based on their total points and a rating of 2 is assigned for banks that are in the top third. All remaining banks take the value of 1.

3) *Strengthening capital*: Banks can maintain or strengthen their capital levels to withstand the impact of the expected financial distress. To reserve capital, they can reduce or cancel: i) cash dividend payments and/or share buy backs schemes, and ii) bonuses/remuneration. Banks are rated 0 if they have not adopted any of these measures. They are rated 1 if they have taken one and 2 if they have taken both (i and ii).

4) *Supporting communities*: Charitable actions and donations (or other similar activities) are classified as follows: i) Monetary donations (to healthcare services, affected communities, retirement and children homes, and other related charities); ii) Equipment donations to hospitals and/or similar (including respirators, ventilators, face masks, gloves, protective equipment for hospitals or computers, and laptops to schools for online teaching); iii) Equipment donations to schools and/or similar (including computers and laptops to schools for online teaching); iv) Facilitating fund-raising through active contributions and/or supporting access to food and shelter programs for the most vulnerable. For each bank, one point is allocated for each group of actions. Hence, maximum points that could be achieved by a bank is four. If banks have not undertaken any charity or donation activity, they are rated 0. Remaining banks are ranked based on total points, and a rating of 2 is assigned for banks that are in the top third. All remaining banks take the value of 1.

5) *Protecting employees*: Banks took various measures to protect the health and safety of its employees as follows: i) Suspending job cuts/redundancies; ii) Providing flexible working environment (including supporting special leave with full or part pay, flexible holiday entitlement, and flexibility for working from home); iii) Enhancing working environment safety (extensive hygiene and cleaning measures in branches/offices and provision of protective equipment); iv) Offering other benefits (such as health insurance, financial support for childcare costs, flu vaccination and other medical support, and resources for mental and physical well-being). For each bank, one point is allocated for each group of actions if the bank has taken one within that group, with four points being the maximum collected. Banks are rated 0 if they

do not record any points on aggregate. Banks are then ranked based on their total points and assign a rating of 2 for banks in the top third. All remaining banks take the value of 1.

6) *Providing information:* This element encapsulates the willingness and efforts of banks to provide information to its clients. Kara *et al.* (2022) checks whether banks include COVID-19 support lines and/or dedicated COVID-19 information webpages on the help offered and application processes on government introduced measures and advice. They rate each bank as 0 and 1. Banks are rated 0 if they have taken no measures, and 1 if they have provided one of them.

In the final stage, Kara *et al.* (2022) convert textual data into numerical values manually, using content analysis, without the aid of any software packages. To test the objectivity of the scoring approach, they use Krippendroff's alpha to assess the internal consistency of the calculated measure. To carry out the test, they randomly selected a sample of 30 banks (about 10% of the sample) and calculate the Krippendroff's alpha using the original scores with the two extra sets of scores produced independently by the authors. Results are reported to be higher (80%) then commonly accepted threshold level.

An example of coding for Bank X is presented below :

Chunks of data	Coding
"We are participating in a number of Covid-19 relief programmes to deploy a range of support measures for our customers at pace" "We have approved >118,000 applications for payment holidays for retail customers" "We have approved >£1.9bn of commercial lending for Covid-19 related financial support" "We have approved >4,200 loans under the CBILS worth >£600m" "We are committed to supporting businesses during these challenging times and have already provided customers with over £2.3 billion in support to help them through this outbreak. "We have been working at pace to deliver the Government backed schemes to ensure businesses are getting the funding they need" "We launched the Bounce Back Loans Scheme to support small and medium-sized businesses who have been affected by coronavirus (COVID-19)." "Announced new measures to support businesses by making CBILS more accessible for smaller companies and launching Coronavirus Large Business Interruption Loan Scheme for larger businesses" "We will reduce the minimum amount that sole traders and partnerships can borrow through CBILS from £25,001 to £10,000 to make it easier for smaller businesses to access liquidity"	Facilitating government measures: 2
"Rapid deployment of portals for relief measures; UK customers are able to apply for loans in <10 minutes" "Accelerated release of digital capabilities, including mobile authentication, mobile cheque deposits and online documents" "Ongoing investment in technology has enabled us to support customers" "Growth in lending balances in 1Q20 of $16bn (5%), as we support the liquidity and working capital needs of our customers" "Increase to existing overdraft buffer to £500 to help customers affected by COVID-19" "Further to introducing payment holiday options on mortgages, personal loans and credit cards, with an online application for credit cards going live tomorrow, we are providing additional support to millions of overdraft customers as they tackle the financial impact of Covid-19, the bank announced today" "Further to introducing payment holiday options on mortgages, personal loans and credit cards, with an online application for credit cards going live tomorrow, we are providing additional support to millions of overdraft customers as they tackle the financial impact of Covid-19"	Introducing own measures: 2
"We cancelled the 4Q19 interim dividend of $0.21. We also decided to make no ordinary share dividend payments until the end of 2020" "We will make no quarterly or interim dividend payments or accruals in respect of ordinary shares, or undertake any share buy-backs in respect of ordinary shares". "Our executive pay decisions in respect of 2020 will take into consideration the impacts of the pandemic"	Strengthening capital: 2
"A donation of £1 million to the National Emergencies Trust Coronavirus Appeal and British Red Cross to help support vulnerable people impacted by Covid-19" "Monies raised by the appeal are being distributed by the National Emergencies Trust to local Community Foundations and other charities so people dealing with the impact of illness, social isolation, or loss of income can get support as quickly as possible" "Aim to raise £2 million for The Big Night In Appeal"	Supporting communities: 2
"I take the well-being of our people extremely seriously. We have therefore paused the vast majority of redundancies to support our staff and to reduce the uncertainty they are facing at this difficult time" "We have put in place measures to better protect our employees' health and safety while doing all we can to support our customers". "We have activated business continuity plans including in-country split-site operations and homeworking capabilities."	Protecting employees: 2
"Focus has been put on ensuring our digital, telephone banking and transactional infrastructure allows our customers to bank, invest, trade and access a wide range of products and services so as to provide continuity of service" "In these challenging times, our ability to support our customers with all their banking and financial needs is all the more important" Has a dedicated Covid-19 information webpage: "Coronavirus guidance: We know many of you are worried about how your finances might be affected by the coronavirus (COVID-19) pandemic. We're working hard to make sure you have the support you need"	Providing information: 1

Source: Adapted from Kara *et al.* (2022)

Swiss Finance Institute

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