

The Impact of ESG on Bank Performance and Risk Around the COVID-19 Pandemic

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Abstract

Financial institutions' focus on using ESG (environmental, social, and governance) criteria in decisions has grown significantly over time despite growing controversy over its use. Prior papers have not solved the controversy as they have found mixed results of the benefits of ESG activity. Further, there may have been structural changes that accompanied the pandemic's period of economic stress. The paper examines the relation between ESG ratings and financial institutions' risk and performance measures. Lagged values of ESG and its components are significantly and negatively related to subsequent market performance measures during the pandemic period. During that period, there also appears to be a significant negative relation between accounting performance and higher ESG rated firms. There is also some evidence of a positive relation between risk and ESG ratings during the pandemic period. Overall, it appears that higher ESG financial institutions tended to do less well during the pandemic period.

JEL CLASSIFICATION: G01, G21, L25, M14

KEYWORDS: Bank, Pandemic, ESG, Performance

I Introduction

The concept of investing based on the criteria of environmental, social, and governance (ESG) factors has seen a rapid growth in popularity since the term ESG was coined in 2005 and now more than 90% of S&P 500 companies providing ESG information. (Perez, et al., 2022). On October 14, 2021 the Employee Benefits Security Administration published a proposed regulation "Prudence and Loyalty in Selecting Plan Investments and Exercising Shareholder Rights" to allow investments that consider ESG factors (Schultz, 2022). The growth in the focus on ESG criteria has also occurred in financial institutions which interact both through their internal operations and through their credit decisions.

Although ESG has long been in the investment lexicon, using those criteria for financial purposes has become quite controversial recently. For instance, 19 states are investigating large financial companies like Blackrock and Morningstar (Kerber, 2022), for potentially violating consumer-protection laws by using ESG criteria. Cheek and Jones (2022) also discuss anti-ESG legislation in various states addressing discrimination, exclusion, or special treatment due to ESG status. The question of whether pursuing ESG activities increases firm value lies at the crux of much of the discussion. It is potentially of even greater import for financial institutions since they interact with ESG considerations both through internal operations and their credit decisions.

This question may be even more challenging given potential structural shifts around the pandemic's economic crisis. Looking at the prior financial crisis of 2007-2008, various papers found systematic changes in financial institutions (Nippani and Ling, 2021), particularly related to ESG-type activities (Cornett, et al., 2016; Miralles, et al., 2019a). It is an open question how the

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most recent economic crisis may have changed the relation between ESG and financial institution risk and performance.

To determine if ESG ratings are informative of future performance, as is suggested by some literature, (Neitzert and Petras, 2021; Usman, et al., 2020), the paper examines 89 medium and large US-listed financial institutions. To provide greater detail, the ESG ratings are also broken into its three component factors. The evidence addresses to what degree the ESG performance of the financial institutions is associated with better performance and risk taking by financial institutions in the two following years that spanned the pandemic.

The remainder of the paper is organized as follows. Section 2 encompasses the literature review of ESG ratings related to firm performance and risk. Section 3 discusses the data used in the analyses. Section 4 provides the empirical methodology for the paper. Section 5 provides the results of the analysis, and Sections 6 covers the conclusions of the paper.

II Literature Review

A major focus of ESG research has been examining whether firm value is created by ESG-based investments (Huang, 2022). Understanding the value implications is of great practical import since American trust fiduciary law allows investing based on ESG criteria tied to firm performance but generally does not support investing on the purely stakeholder grounds (Schanzenbach and Sitkoff, 2020).

Schanzenbach and Sitkoff (2020) argue there are two different categories of ESG investment, risk-return ESG and collateral benefits ESG. Under risk-return, ESG investments are undertaken to create shareholder wealth through activities that either improve the firm's return or lower its risk. These benefits might be directly caused by the ESG investment, or may be indirect. For example, Cornell (2021) argues investors who value ESG criteria as a nonfinancial investment benefit, will prefer firms with strong ESG ratings and will tend to lower the cost of capital of those firms. Shareholders valuing implicit returns can generate an equilibrium where the firm sees lower financial required returns. Ahmed, et al. (2021) model where investors value both wealth and ESG investment. They find those investors appear to benefit from firms' investments in ESG.

The ESG investment decision may also generate indirect benefits that more than cover the costly investment (Albuquerque, et al., 2019; Huang, 2022). In this paradigm there may be benefits accruing to a variety of stakeholders, but stockholders are a net beneficiary of the activities. Cornell and Shapiro (2021) indicate that valuation increase may be explained through considering implicit claims, in addition to the explicit (or contractual) claims, on corporate operations. Implicit claims have minimal legal standing but companies still have an incentive to respect those claims as the ability to issue implicit claims for more than their cost can add value to the firm. Defaulting on such claims could impact the ability to issue valuable claims in the future. Thus, firms have a strong incentive, regardless of legal standing, to not only honor implicit claims but to expand them and increase firm value. Firms engaging in corporate social responsibility (CSR) may indirectly be benefitting shareholders through the creation of such claims.

Providing concrete examples, Albuquerque, et al. (2019) discuss using ESG investment as product differentiation leading to higher margins. Huang (2022) also argues that ESG considerations may be part of a firm strategy giving competitive advantage – attracting customers, retaining employees, reducing information asymmetry, etc. This suggests benefits are derived from signaling reputation to stakeholders. That can induce behavioral changes which lead to improved financial value to the company.

There has been a great deal written on the empirical relation between CSR and company financial performance (Ahmed, et al., 2021; Albuquerque, et al., 2019; Barnea and Rubin, 2010; Cornell, 2021; Davis and Lescott, 2019; Yoon, et al., 2018). These works generally show a positive connection between company accounting-based performance and ESG performance (Henisz and McGlinch, 2019), though the results are somewhat mixed. Huang (2021) finds the ESG-performance relation for a broad range of firms is stronger for accounting-based measures such as return on assets (ROA) and return on equity (ROE) in the literature. Although the broad literature provides insight into the ESG-performance relation, there is some evidence that the significance of ESG may differ between industrial firms and financial intermediaries (Brogi and Lagasio, 2018; Carnevale, et al., 2012).

Papers examining the ESG-performance relation in financial institutions are scarcer. Brogi and Lagasio (2018) find that a significant positive association between ESG performance and ROA with the results appearing to be stronger using a lagged ESG ratings. This is consistent with other works like Cornett, et al., (2016) who find a relation between performance and CSR activities. Other papers report results that vary by country (Buallay, et al., 2021; Carnevale, et al., 2012)

Multiple studies have also looked at the component pieces of ESG and have found mixed relations to performance. Some find a positive relation between performance and ESG ratings, but a negative relation for the social component (Buallay, et al., 2020; Miralles-Quiros, et al., 2019a; Miralles-Quiros, et al., 2019b). Shakil, et al., (2019) examine developing markets and finds a positive association with the social and environmental factors but no relation to governance.

Considering the relation between ESG performance and risk, Drago, et al. (2019) argue management teams more concerned about other company stakeholders would engage in lower risk-taking. More recently, Jones (2022) finds evidence supporting socially responsible investments being less risky during times of economic crisis. Fahlenbrach, et al. (2012) examines bank risk culture persistence. Their results suggest that the relation between risk and ESG is a signal of the underlying risk-taking culture in the bank. Neitzert and Petras (2022) use a sample of 582 banks worldwide to confirm a risk-mitigation association with corporate social responsibility behaviors. They find that the risk-reduction relates to ratings on the environmental category. Others also find a risk reduction effect (DiTommaso and Thornton, 2021; Gontarek and Belghitar, 2018; Henisz and McGlinch, 2019) associated with ESG ratings.

In contrast to the works above is the literature that finds the relations between ESG, performance, and risk, not significant or even reversed. Such findings are consistent with the collateral benefits of ESG theory which related CSR investment to externalities not tied to shareholder wealth maximization (Fama, 2021). Low, et al. (2021) discusses the concept as firms having responsibilities and obligations to all its stakeholders in excess of legal requirements. These obligations exist as corporate decisions impact stakeholders. Unlike the risk-return explanation, the collateral benefits framework of ESG may lead to lower firm valuation as resources may be allocated to activities not leading to improved financial performance or risk profile.

If pursuing collateral benefits, managers have wide discretion in the allocation of resources without the typical measuring stick of stockholder value. Cespa and Cestone (2007) argue that managers (themselves stakeholders in the firm) control over stakeholder protection can serve as an entrenchment strategy. There is an incentive for management to overinvest in ESG opportunities as now stakeholders would have an interest in retaining the current management team despite poor performance. Some papers find (Barnea and Rubin, 2010; DiTommaso and Thornton, 2020) evidence of overinvestment associated with CSR strategies. Consistent with that argument, Grougiou, et al. (2014) find that bank managers who are active in manipulating earnings

are also more involved in ESG-related activities. They argue managers may use these activities to divert attention from their questionable accounting methods.

Empirically, Buallay, et al. (2021) look at banks in 80 countries and find a negative impact of ESG ratings on accounting performance. La Torre, et al. (2021) looks at 44 European banks and compares ESG against a range of performance variables. They find no relation between ESG ratings and accounting performance, and a negative relation with market performance. DiTommaso and Thornton (2021) also find a negative relation to performance. Bhattacharyya, et al. (2021) examine mandatory CSR expenditures in 61 Indian banks but find no relation between accounting performance and CSR expenditures. They do find a significant negative relation to stock market returns. Forgione, et al. (2020) finds higher ratings for environmental or social tend to be associated with lower efficiency in banks in some countries and higher in others.

Many of the banking papers have faced data challenges. Some banking studies look across a large range of countries and over time. This provides more observations but may be a challenge given that some papers (Cornett, et al., 2016; Miralles-Quiros, et al., 2019b) found that the relation between ESG and financial performance changed after the last US financial crisis. The authors suggest there is value in examining shorter and more current periods. Too, the cross-country studies benefit from greater samples size, but there is evidence that the ESG-performance relation differs depending on the nature of the country considered (Caporale, et al., 2022; Carnevale, et al., 2012; Forgione, et al., 2020). These results suggests potential value in examining financial institutions' relation between ESG and performance over the pandemic period in a single market.

III Data

The paper assesses the potential relation between ESG ratings of financial institutions and future performance using data from 2015-2021. The initial sample included 101 mid-sized and large financial institutions with stock traded in the US markets that had ESG data reported. Six financial institutions that underwent Merger and Acquisition activity during the period were dropped, as were six missing necessary financial information. That left 89 financial institutions with 445 observations. Financial data was collected from Capital IQ and from call reports available from the Federal Financial Institutions Examination Council (ffiec.gov).

ESG rating data is taken from the Refinitiv Eikon ESG database which calculates scores based on more than 600 metrics and is widely employed in the literature (Miralles-Quiros, et al. 2019b).. Consistent with prior literature (Aevoae, et al., 2022; Forgione, et al., 2020; Miralles-Quiros, et al., 2019b), the paper also examines each of the component ratings. The ratings are transformed to range between zero and one.

Usman, et al., (2020) argue that there may be a time lag between ESG ratings and that information being reflected in the financial markets. Brogi and Lagasio (2018) used lagged values of ESG to predict future ROA. Serafeim and Yoon (2022) find that ESG ratings can predict future ESG news, with positive market reaction to positive ESG news and negative market reaction to negative news. Davis and Lescott, (2019) also emphasizes the long-term nature of potential competitive advantages derived from ESG-related activities. Given this evidence, lagged ESG values are used.

When evaluating firm performance, the literature widely uses ROA and ROE (Cornett, et al., 2016; Gontarek and Belghitar, 2018; Nippani and Ling, 2021; Shakil, et al., 2019) for accounting performance. The literature also frequently uses market measures of performance (DiTommaso and Thornton, 2020; LaTorre, et al., 2021; Fahlenbrach, et al., 2012).

Beta is used as a measure of risk estimated by using a rolling 60-month average. In addition to beta, three other risk measures are used. The first is the book-to-market (B/M) ratio. Balasubramnian, et. al, (2019), among others, reports the B/M ratio provides insight into future bank loan delinquencies, charge-offs, earnings volatility, and z-scores, four to nine quarters prior to the realization. To ensure a range of risk measures, another considered is the loan-to-deposit (LD) ratio used in LaTorre, et. al. (2021) as a measure of liquidity risk. Other papers, like Buallay, et al., (2020), also uses the LD ratio as a risk measure. The third is the provision for credit losses as a proportion of the total loan portfolio (PCL/TL). Papers such as Bikker and Vervliet (2017) use that variable as an estimator for credit risk.

The analysis also uses a set of control variables based on the characteristics of financial institutions that may explain performance or risk-taking. The natural log of total assets (LnTA), as a measure of size, is very common in the literature (Aevoae, et al., 2022; Albuquerque, et al., 2019; Miralles, et al., 2019b; Shakil, et al., 2019; Usman, et al., 2020). To account for the potential of different lending strategies with different risk profiles, the loan to asset ratio (TL/TA) is included (Aevoae, et al., 2022; Neitzert and Petras, 2022). Banks better able to attract deposits may have improved performance potential moving forward so the regressions also incorporate the ratios of deposits to assets (TD/TA) (Gontarek and Belghitar, 2018; Neitzert and Petras, 2022). Bank leverage has potential risk effects, so the regressions look at long-term debt to total assets ratio (LTD/TA) (Albuquerque, et al., 2019; Shakil, et al., 2019). Another factor that might impact risk, loan quality, is measured by the ratio of non-performing loans to total loans (NPL/TL) (Aevoae, et al., 2022; Buallay, et al., 2020). The credit loss reserve ratio, the allowance for credit loss divided by the total loans (ACL/TL) is also included (Christianson, et al., 2008) as it measures institutional actions to manage loan issues. The Federal Funds rate is use as an interest rate control variable, and the control variable for inflation is estimated using the GDP Price Deflator.

Table 1: Descriptive Statistics

Variable	Mean	Std. Dev.	Minimum	Maximum
ESG	0.444	0.149	0.083	0.833
Environmental	0.236	0.275	0.083	1.000
Societal	0.471	0.214	0.083	1.000
Governance	0.570	0.194	0.083	1.000
Market Value	23.902	60.147	0.292	459.587
Total Assets	194.382	506.805	2.593	3743.567
Total Loans	87.114	192.044	1.970	1052.640
Total Deposits	128.753	313.906	1.917	2462.303
Allowance for Loss	1.174	3.150	0.015	28.328
Provision for Loss	0.411	1.727	-9.256	17.480
Long-Term Debt	13.899	45.486	0.000	286.557
Non-Performing Assets	0.693	1.841	0.000	15.549

Note: * indicates significance at the 5% level, ** indicates significance at the 1% level. Financial data is in billions of dollars. ESG ratings are rescaled to vary between 0 and 1.

The first panel of Table 1 includes descriptive statistics averaged across the sample period with the ESG factors were converted on a scale of 0 to 1. It appears that the social and overall ESG ratings appear to have very similar means. The environmental factor appears to be much smaller, though having more dispersion. The minimum in each category is quite low, while the maximum for all but the overall ESG rating is at the maximum possible. The institutions in the sample tend to be large, with mean total assets of \$194.38 billion, and a minimum of \$2.593 billion. In addition, the mean market value in the sample is \$23.902 billion.

The correlation coefficients reported in Table 2 suggest that the ESG rating, and its components, are all significantly related. They all appear to be negatively related to the ROA but exhibit a positive relation to ROE for all but governance. The ESG ratings are also negatively related to the loan/deposit ratio, though not the other measures of risk. This suggests higher ESG banks may meet more of the financing needs of their loan portfolio through deposits. Interestingly there is a significant negative relation between the market performance measures and the ROA suggesting a potential divergence in market and accounting measures.

IV Methodology

The purpose of the study is to examine the ESG ratings of medium and large financial institutions listed in the United States immediately prior to the onset of the pandemic. That will be compared to the financial information of those institutions from two years later to determine if the changes to ESG ratings were associated with superior performance or risk reduction.

H1: The pre-pandemic levels of ESG and its components predicts subsequent performance of financial institutions

Consistent with the literature, the first hypothesis uses both accounting and market performance measures. The accounting variables are ROA, ROE while the market data used is the natural log of the market value (MV) of the financial institution. The literature has provided mixed evidence on the sign of the relation between these and ESG ratings.

The second hypothesis examines the ESG changes related to risk.

H2: The pre-pandemic levels of ESG and its components predicts subsequent changes to the risk of financial institutions

The second hypothesis uses four measures. Beta measures systematic risk, the B/M ratio relates to default risk, the loan/deposit ratio provides insight into liquidity risk, and the provision of credit losses to total loans informs credit risk. A negative coefficient on the beta suggests lower systematic risk associated with a higher ESG rating while a negative coefficient on the B/M ratio suggests a lower future default risk. Similarly, a negative coefficient on the LD ratio and the PCL/TL ratio suggest higher ESG rated financial institutions tend to have lower liquidity risk and credit risk.

To estimate the relation between ESG ratings and financial institutions' risk and performance the paper uses a fixed effects panel data model. The model includes clustering standard deviations by firm. Each uses the equation.

$$V_{i,t} = \beta_0 + \beta_1 * ESG_{i,t-2} + \beta_{2,j} * Controls_{i,t} + OtherFE + \varepsilon_{i,t}$$

Table 2: Correlation Coefficients

Variable	1	2	3	4	5	6	7	8	9	10	11
ESG	—										
E	0.66**	—									
S	0.79**	0.85**	—								
G	0.64**	0.31**	0.33**	—							
MV	0.60**	0.82**	0.81**	0.35**	—						
ROA	-0.31**	-0.33**	-0.36**	-0.12*	-0.28**	—					
ROE	0.11*	0.11*	0.10*	0.01	0.14**	0.37**	—				
Beta	-0.05	-0.15**	-0.13*	0.12*	-0.05	0.07	-0.19**	—			
B/M	-0.04	0.00	0.05	0.00	-0.06	-0.13	-0.21**	0.10*	—		
LD	-0.29**	-0.43**	-0.42**	-0.14**	-0.39**	0.15**	-0.12**	-0.10*	0.12**	—	
PCL/TL	0.09	0.04	0.08	0.07	0.11**	-0.28**	-0.31**	0.03	0.21**	0.14**	—

Note: * indicates significance at the 5% level, ** indicates significance at the 1% level.

The equation is used for all the regressions used in the paper. In the equation, $V_{i,t}$ is the chosen performance or risk variable for financial institution i in period t . The main dependent variable, $ESG_{i,t-2}$ is the lagged chosen ESG measure for financial institution. The ESG measures may either be the full ESG rating, the environmental rating, the social rating, or the governance rating. The lag relation is consistent with the literature and ensures that the effects of the pandemic do not impinge directly on the ESG ratings. The control variables, include the ratios created by scaling non-performing loans, total loans, deposits, and long-term debt by total assets. Also included are the natural log of total assets, ratio of the allowance for credit loss over total loans, the rate of inflation, and interest rates. They control for future changes in performance based on external conditions or current operations, separate from ESG. OtherFE includes firm and time fixed effects.

Table 3: Regression Results of the ESG and Environmental Factors on Bank Performance

Variable	MV	ROA	ROE	MV	ROA	ROE
Intercept	24.192**	-0.031	-0.267	29.591**	0.141	2.790
	2.947	-0.285	-0.116	3.763	1.306	1.234
ESG	0.120	-0.004*	-0.021			
	0.946	-2.331	-0.598			
ESG*PAND	-0.179**	-0.003**	-0.034*			
	-2.904	-4.144	-1.993			
Environment(E)				0.160	0.002	0.008
				1.356	1.406	0.228
E*PAND				-0.169**	-0.002**	-0.021
				-3.487	-3.312	-1.485
TL/TA	0.901**	0.014**	0.127	0.881**	0.015**	0.137*
	3.669	4.367	1.839	3.623	4.541	1.964
LnTA	0.885**	-0.001	0.021	0.823**	-0.002**	-0.006
	14.478	-0.905	1.252	14.711	-3.212	-0.395
TD/TA	0.008	0.004	0.103	-0.127	-0.002	0.024
	0.024	0.885	1.057	-0.373	-0.469	0.245
ACL/TL	5.411	-0.084*	-1.492	3.633	-0.157**	-2.640**
	1.927	-2.278	-1.884	1.435	-4.519	-3.630
LTD/TA	-1.158*	-0.006	-0.049	-1.148*	-0.007	-0.062
	-2.578	-1.083	-0.388	-2.571	-1.102	-0.480
NPL/TA	-2.551	0.000	0.511	-1.595	0.017	0.667
	-0.651	-0.007	0.465	-0.408	0.319	0.593
Interest Rate	-0.102**	-0.001**	-0.015**	-0.097**	-0.001**	-0.018**
	-7.333	-6.844	-4.488	-7.310	-5.927	-4.720
Inflation	22.096**	-0.477**	-7.661**	20.909**	-0.349**	-4.758**
	4.204	-7.289	-5.475	3.974	4.815	-3.146
R ²	0.993	0.761	0.521	0.993	0.741	0.504

Note: * indicates significance at the 5% level, ** indicates significance at the 1% level. Each estimate also includes a t-statistic below it.

V Results

Table 3 reports the results of analyzing performance measures on ESG and the environmental factor. Across the full period, the market value is unrelated to ESG. However, during the pandemic subperiod, the relation becomes negative and significant. It appears that financial institutions with stronger ESG ratings tended to see reductions in their market values, which is consistent with LaTorre, et. al, (2020).

Examining ESG in the context of the ROA, it appears there is a negative relation before the pandemic, and the relation is stronger during the pandemic. The ROE is also significantly negatively related to the ESG rating during the pandemic period. These results are consistent with some of the literature, such as Buallay, et al., (2021), that reports stronger ESG is negatively related to accounting performance. There appears to be consistency between the market-based relation to ESG during pandemic and the accounting-based results. This suggests the market price changes reflect the underlying performance changes of the financial institutions. However, the greater drop in market value of higher ESG firms appears inconsistent with the argument that market values of high-ESG financial institutions are greater than others who do not allocate the same level of resources to those activities.

The rest of the table evaluates performance relative to the environmental factor. Consistent with the ESG results the change in market value is negatively related to the environmental factor during the pandemic period. The results of ROA is also consistent with the findings on ESG during that period. In contrast, the ROE is not significantly related to the environmental factor. The results for the environmental factor again suggest lesser valuations, on average during the pandemic, for those financial institutions which had more actively cultivated a reputation for environmental performance.

Table 4 related measures of bank performance to the social and governance factors. For the social factor, the results are consistent with those of the ESG rating. The market value and the ROA are negatively related to performance during the pandemic period. Interestingly, the ROE was positively related to the social factor during the full period, but that was reversed during the pandemic. It appears that financial institutions with a greater focus on activities tied to the social rating did worse during the recent economic disruptions.

The results of the estimation for the governance factor is shown in the last three columns of Table 4. Consistent with the other performance results, there is a negative relation between performance, accounting and market-based, during the pandemic period and the governance factor rating. This may be somewhat surprising as the governance factor is, presumably, tied to factors associate with improved corporate governance of the institution. Indeed, the governance factor for the full period is positively related to market value but that effect was reversed during the pandemic. A strong governance factor would suggest that the company is better managed, and therefore would be expected to be more adaptable in minimizing the impact of the pandemic period. However, Table 2 shows a significant and positive relation between the governance factors and the other ESG-related factors. It may be these other factors, in institutions with a higher governance factor rating, which drives the results.

The measures of performance suggest that banks, which had earned higher ESG ratings, tended to do more poorly during the pandemic when controlling for other factors. It may be that the decisions of such firms tended to, on average, make them more sensitive to negative economic conditions. This is consistent with the collateral benefits model where financial institution risk-adjusted return is not the sole motivation of the firm.

Table 4: Regression Results of The Social and Governance Factors on Bank Performance

Variable	MV	ROA	ROE	MV	ROA	ROE
Intercept	25.572**	0.060	1.573	24.428**	-0.043	0.837
	3.212	0.554	0.699	2.955	-0.387	0.356
Social(S)	0.004	-0.002	0.028**			
	0.031	-0.888	3.180			
S*PAND	-0.168**	-0.003**	-0.038**			
	-3.354	-4.548	-2.705			
Governance(G)				0.159*	0.000	0.027
				1.989	0.171	1.167
G*PAND				-0.136**	-0.003**	-0.035*
				-2.811	-3.990	-2.567
TL/TA	0.915**	0.016**	0.135	0.933**	0.015**	0.143*
	3.748	4.720	1.958	3.793	4.455	2.048
LnTA	0.876**	-0.001	0.007	0.890**	-0.001	0.012
	14.895	-1.821	0.447	14.336	-0.770	0.706
TD/TA	0.083	0.002	0.087	0.030	0.002	0.064
	0.237	0.450	0.881	0.087	0.483	0.645
ACL/TL	5.753*	-0.103**	-1.865*	5.384	-0.086*	-1.898*
	2.092	-2.785	-2.399	1.913	-2.289	-2.372
LTD/TA	-1.068*	-0.005	-0.036	-1.129*	-0.007	-0.067
	-2.387	-0.876	-0.287	-2.513	-1.171	-0.524
NPL/TA	-2.025	0.008	0.443	-3.361	-0.002	0.401
	-0.515	0.151	0.399	-0.858	-0.029	0.360
Interest Rate	-0.104**	-0.001**	-0.021**	-0.100**	-0.001**	-0.020**
	-7.527	-6.840	-5.373	-7.366	-6.532	-5.141
Inflation	20.625**	-0.386**	-5.208**	22.474**	-0.425**	-4.342**
	3.927	-5.193	-3.507	4.307	-6.503	-2.926
R ²	0.993	0.750	0.519	0.993	0.754	0.512

Note: * indicates significance at the 5% level, ** indicates significance at the 1% level. Each estimate also includes a t-statistic below it.

The other consideration is the level of risk associated with the ESG ratings. Table 5 reports the results of ESG ratings related to four risk measures. Examining systematic risk, beta does not appear related to the usage of ESG. In contrast, the B/M analysis, with a positive coefficient, finds an increase in risk during the pandemic period. The LD ratio results also suggest greater risk during the pandemic period. However, this last effect appears to be offset by the results during the full period where the ESG rating are associated with lower liquidity risk. That full period result is consistent with the literature, but it appears that the existing relation is mitigated during the pandemic period. Finally, the PCL/TL exhibits a positive coefficient for both the full estimation period and the pandemic. That suggests the potential for higher credit risk in firms assigned higher ESG ratings. Across the four measures, the results are mixed, but it appears that most suggest greater risk in high ESG financial institutions during the pandemic. This is consistent with the idea of banks engaging in the generation of collateral benefits less focused on ensuring the financial institution is organized to be robust to negative economic conditions.

Table 5: Regression Results of the ESG Factor on Bank Risk

Variable	Beta	B/M	LD	PCL/TL
Intercept	8.140	-23.308**	5.521*	-0.403**
	0.732	-4.879	2.168	-3.902
ESG	0.290	-0.094	-0.133**	0.005**
	1.664	-1.273	-3.459	2.973
ESG*PAND	0.009	0.071*	0.068*	0.003**
	0.070	1.986	2.287	3.699
TL/TA	-0.072	-0.128		0.003
	-0.226	-0.894		0.815
LnTA	0.058	0.005	-0.080**	0.003**
	0.683	0.127	-4.331	3.891
TD/TA	1.773**	-0.131		0.001
	3.720	-0.642		0.221
ACL/TL	19.130**	-0.514	-6.064**	0.179**
	5.114	-0.315	-7.374	5.063
LTD/TA	0.688	0.538*	0.874**	0.008
	1.104	2.058	7.173	1.343
NPA/TA	0.994	2.095	-2.619*	-0.009
	0.196	0.919	-2.254	-0.190
Interest Rate	0.024	0.066**	0.060**	0.002**
	0.654	8.175	7.962	15.214
Inflation	-40.266**	-20.376**	-2.856	0.882**
	-2.602	-6.663	-0.820	14.483
R ²	0.610	0.850	0.945	0.707

Note: * indicates significance at the 5% level, ** indicates significance at the 1% level. Each estimate also includes a t-statistic below it.

The evidence from estimating the relation between the environmental factor and firm risk is shown in Table 6. The beta appears to be positively related to the environmental factor during the full period with some reversal during the pandemic. This would suggest that a higher environmental rating is associated with greater systematic risk, but that the level was, at least in part, moderated during the pandemic period. It may be that managerial commitments tied to environmental-related issues saw a reduction given the greater risk in the economy. The B/M results are consistent with those of the ESG ratings, but the other two risk measures are not significant. Consistent with collateral benefits, financial institutions with strong environmental scores also appear not to be well positioned, relative to their peers, to manage the risk challenges brought on by the pandemic.

Table 7 reports coefficients for the social factor. Again, consistent with the ESG results, the B/M ratio is significant and positively related to the social factor during the pandemic. Across the full period, the loan-to-deposit ratio is negatively related to the social factor. However, unlike the ESG analysis, there is no significant jump in the risk during the pandemic. The results are consistent with firms having higher social rating being managed to have less liquidity risk.

Table 6: Regression Results of the Environmental Factor on Bank Risk

Variable	Beta	B/M	LD	PCL/TL
Intercept	6.547	-24.389**	5.696*	-0.530**
	0.574	-4.658	2.133	-5.213
E	0.351*	-0.140	0.000	-0.001
	2.233	-1.778	0.009	-0.412
E*PAND	-0.148*	0.081*	0.017	0.000
	-2.166	2.521	1.049	0.397
TL /TA	-0.138	-0.109		0.001
	-0.436	-0.681		0.407
LnTA	0.035	0.028	-0.080**	0.004**
	0.400	0.746	-4.226	5.878
TD/TA	1.735**	-0.080		0.006
	3.675	-0.350		1.455
ACL/TL	19.145**	0.200	-5.990**	0.245**
	5.177	0.119	-7.221	7.412
LTD/TA	0.584	0.532	0.861**	0.007
	0.983	1.791	7.034	1.148
NPA/TA	1.969	1.558	-2.609*	-0.025
	0.388	0.599	-2.206	-0.501
Interest Rate	0.006	0.064**	0.049**	0.002**
	0.237	7.272	10.205	14.261
Inflation	-33.859**	-20.077**	2.758	0.824**
	-3.017	-5.730	1.072	12.968
R ²	0.608	0.848	0.943	0.688

Note: * indicates significance at the 5% level, ** indicates significance at the 1% level. Each estimate also includes a t-statistic below it.

Table 7: Regression Results of the Social Factor on Risk

Variable	Beta	B/M	LD	PCL/TL
Intercept	7.503	-23.576**	5.577*	-0.487**
	0.673	-5.075	2.166	-4.732
S	0.330	-0.029	-0.088*	0.002
	1.939	-0.393	-2.270	1.424
S*PAND	-0.024	0.073*	0.037	0.001
	-0.265	2.512	1.773	1.915
TL/TA	-0.086	-0.128		0.001
	-0.270	-0.901		0.458
LnTA	0.054	0.006	-0.079**	0.004**
	0.636	0.183	-4.206	4.824
TD/TA	1.796**	-0.179		0.004
	3.796	-0.492		0.832
ACL/TL	19.014**	-0.789	-6.003**	0.210**
	5.082	1.933	-7.233	5.881
LTD/TA	0.397	0.504	0.867**	0.006
	0.572	0.787	7.142	1.059
NPA/TA	1.958	1.805	-2.995*	-0.013
	0.381	0.025	-2.532	-0.266
Interest Rate	0.019	0.068**	0.054**	0.865**
	0.617	8.363	8.354	13.641
Inflation	-37.513**	-19.682**	-0.061	0.002
	-2.841	-6.423	-0.020	1.424
R ²	0.608	0.849	0.944	0.693

Note: * indicates significance at the 5% level, ** indicates significance at the 1% level. Each estimate also includes a t-statistic below it.

Table 8: Regression Results of the Governance Factor on Risk

Variable	Beta	B/M	LD	PCL/TL
Intercept	7.316	-23.359**	5.615*	-0.409**
	0.657	-4.858	2.194	-3.844
G	-0.126	-0.097*	-0.074**	-0.001
	-1.138	-2.085	-3.029	-0.626
G*PAND	-0.002	0.058*	0.033	0.002**
	-0.020	2.053	1.397	3.210
TL/TA	-0.191	-0.144		0.001
	-0.595	-1.009		0.436
LnTA	0.061	0.000	-0.083**	0.003**
	0.717	0.005	-4.527	3.800
TD/TA	1.857**	-0.160		0.003
	3.919	-0.792		0.779
ACL/TL	18.919**	-0.623	-6.108**	0.186**
	5.029	-0.381	-7.377	5.127
LTD/TA	0.668	0.517*	0.863**	0.008
	1.098	1.978	7.011	1.330
NPA/TA	0.785	2.555	-2.285	-0.011
	0.154	1.122	-1.951	-0.216
Interest Rate	0.023	0.066**	0.055**	0.002**
	0.657	8.359	7.591	14.889
Inflation	-40.372*	-20.287**	-0.040	0.831**
	-2.537	-6.685	-0.011	13.611
R ²	0.609	0.850	0.945	0.696

Note: * indicates significance at the 5% level, ** indicates significance at the 1% level. Each estimate also includes a t-statistic below it.

Table 8 reports the relation to the governance factor. The evidence on risk is mixed, but is broadly consistent with the ESG-related results. There is evidence of greater risk in the B/M ratio and in the PCL/TL. The loan-to-deposit ratio, again, has a significant negative coefficient suggesting lower liquidity risk across the full period.

It appears that firms with higher ESG, and component, ratings tend to have greater overall risk during the pandemic period. However, consistent with prior literature, there is evidence of lower liquidity risk across the full period including the pandemic.

VI Conclusion

This study evaluated how the performance and riskiness of financial institutions relate to ESG ratings across the economic disruption caused by the pandemic. Using panel data for banks, the relations were analyzed both for the sample period and the pandemic subperiod. Consistent with prior literature (Brogi and Lagasio, 2018; Usman et al., 2020), performance and risk measures were related to lagged changes in an ESG rating and its components to determine potential relations. The relations were controlled for many of the important operating characteristics of financial institutions including size, focus on loans, relative use of deposits, and others.

The results match the literature suggesting weaker performance by firms with stronger ESG ratings, but that relation predominantly occurred during the pandemic period. Looking specifically at banks through the pandemic period, it appears there is a negative relation of ESG and its components to both market and accounting estimates of performance during the pandemic period. It appears that firms, which had used resources to enhance their ESG ratings, had greater challenges in maintaining performance compared to peer institutions. It may be that banks took higher risk loans to support a stronger ESG ratings. In a market of elevated risk that is likely not an optimal strategy.

The results on risk across the full period is mixed, with the B/M value coefficients suggesting greater risk during the pandemic period. However, there is evidence of greater liquidity by higher ESG banks across the full period, which would be consistent with prior literature showing an inverse relation between ESG and risk (Drago, et. al., 2019; Neitzert and Petras, 2022).

Broadly speaking, the data suggests that banks that had higher ESG ratings saw a greater decline in value, both operationally and in the financial markets. It is an open question whether this effect may be temporary and tied to a period of serious economic distress, or whether it reflects a permanent change to the performance of such financial institutions as was observed during the prior financial crisis.

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