

RESEARCH ARTICLE

Banks and environmental, social and governance drivers: Follow the market or the authorities?

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Abstract

This paper goes beyond the relationship between a bank ESG performance (ESGP) and corporate financial performance (CFP). Here, the link between ESG factors and financial benchmarks is analysed to verify whether banks may find in the market reaction sufficient stimuli (higher CFP) to adopt ESG conduct spontaneously. Using panel estimation methods on European banks listed in STOXX Europe 600, between 2008 and 2019, this paper tests the relationship between ESGP and CFP considering different dimensions of financial performance at once, both accounted-based (ROA and ROE) and market-based (Capitalisation to Book Value, Tobin's Q). Besides, we employ VBM (EVA Spread) not previously considered. The main findings support the current approach of banking authorities, focusing on bank ESG risks, more than ESG opportunities, in order to “force” banks into adopting a new ESG business model, at this early stage of transition to sustainability.

KEYWORDS

Banks financial performance, CFP, ESG, ESG factors, ESG score, ESGP, value creation, VBM

1 | INTRODUCTION

A growing strand of literature on banking business models have started to focus on Environmental, Social and Governance (ESG) issues as new promising paradigms for business management (Galbreath, 2013). The attention on ESG issues in the bank decision-making processes (particularly for lending decisions) is driven by heightened pressure from shareholders and different stakeholders (Houston & Shan, 2019). The shareholders, as usual, are interested in those ESG practices that can increase their financial wealth (Friedman, 1962); the second (e.g., consumers, investors, businesses, employees, and governments) are moved from a variety of instances regarding ESG issues. For instance, policymakers and international institutions, involved in fostering sustainable economic growth, count on the prominent role of banks in the development of countries, due to their role as investment project selectors and risk managers (Beck, Demirgüç-Kunt, & Levine, 2010). The underlying assumption is that, if banks were willing to change their

investment strategies encompassing ESG factors, then sustainable growth could be possible (Ahmend, Ahmed, & Hasan, 2018; EBA, 2020). In this scenario, at the EU level, regulators and supervisors have pictured a precise ESG path that will lead banks to include ESG factors in their risk appetite framework by 2023 (EC, 2018; ECB, 2020). Moreover, the EBA has identified priorities and objectives for the integration of ESG factors into the EU banking regulatory and supervisory framework (EBA, 2020).

After the latest financial crisis, it seems that banks are exploring costs, risks and opportunities of reinventing their business under the umbrella of sustainability to restore the trust lost by some of their stakeholders. This leverages the growing attention of stakeholders to the new socially responsible practices (Carroll & Schwartz, 2003) and the application of proper governance practices (Cucari, Esposito De Falco, & Orlando, 2018; Widyawati, 2020).

While the value added in including ESG practices in their strategies may be less evident to banks (compared to other sectors), the long-term benefits may be equally significant. For example, preferring

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investments that include ESG factors in the selection process enables banks to finance more robust projects and businesses with more stable profitability (Ioannou & Serafeim, 2019). This class of investments is hailed due to its ability to align long-term economic and social environmental performance objectives (OECD, 2020). Also, including social goals in internal processes can allow efficiency recoveries and reduction of costs. Furthermore, according to Serafeim (2020), the attention to ESG issues helps the management to reduce the cost of capital (Dhaliwal, Li, Tsang, & Yang, 2011) and expand the shareholder base.

In the light of the above, it is crucial to understand whether banks find sufficient stimuli to be spontaneously ESG-oriented, or whether it is necessary to “force” them with regulatory prescriptions.

Therefore, looking for evidence from a positive relationship between Environmental, Social and Governance Performance (ESGP) and Corporate Financial Performance (CFP), this paper aims to investigate the motivation of banks to undertake voluntary ESG practises.

Even if the relationship between ESGP and CFP of firms has been explored in several previous studies, using different ESG dimensions and performance measures as evidenced by the abundance of literature reviews on the subject (Busch & Friede, 2018; del Mar Miras-Rodríguez, Carrasco-Gallego, & Escobar-Pérez, 2015; Hou, Liu, Fan, & Wei, 2016; López-Arceiz, Bellostas, & Rivera, 2018; Lu & Taylor, 2016; Revelli & Viviani, 2015; Rost & Ehrmann, 2017; Wang, Dou, & Jia, 2016), only a small number of studies is related to the banking system (Buallay, 2019; Buallay, Fadel, Al-Ajmi, & Saudagaran, 2020; Buallay, Hamdan, & Barone, 2019; Cornett, Erhemjants, & Tehranian, 2016; Forgione, Laguir, & Staglianò, 2020; Miralles-Quirós, Miralles-Quirós, & Redondo Hernández, 2019; Miralles-Quirós, Miralles-Quirós, & Redondo-Hernández, 2019; Miralles-Quirós, Miralles-Quirós, & Valente Gonçalves, 2018; Nizam, Ng, Dewandaru, Nagayev, & Nkoba, 2019; Shakil, Mahmood, Tasnia, & Munim, 2019). According to Finger, Gavius, and Manos (2018), this is because banks have peculiarities that lead to operating according to a shared regulation, which requires them to follow fixed rules, in terms of accounting and reporting. These peculiarities, together with process specificities, and often standardised and opaque information, tend to exclude banks from studies with multi-sector samples (Miralles-Quirós, Miralles-Quirós, & Redondo-Hernández, 2019).

Our analysis considered the banks listed in STOXX Europe 600, between 2008 and 2019, and covers 14 European countries. To verify the existence of the mentioned relationship, we used ESG score, as a proxy of ESGP, and CFP measures (both account-based and market-based), as well as value creation measures. The selected variables were used in our panel regression models.

Our findings allow us to deepen knowledge about the orientation of banks towards the implementation of ESG practises and to understand whether it is CFP and value creation that drives them to be ESG-oriented, or whether banks need to be driven by regulation and/or market pressure. Moreover, the research contributes to an increase in the scarcely explored strand of literature that has studied the relationship between ESGP and CFP of banks.

The paper was set out as follows: in Section 2, it developed the research question following the primary literature. In Section 3, it reported

the methodology used in the study; in Section 4, it showed the results of the analysis, discussed the results and then made some conclusions.

2 | BACKGROUND AND RESEARCH QUESTION DEFINITION

Since the concept of ESG was introduced (Compact, 2004), ESG performance has received much attention from scholars. First, ESG dimensions are used in Corporate Social Responsibility (CSR) studies to investigate the effect on profitability and value creation of socially responsible conduct voluntarily adopted by management. Second, in Social and Responsible Investing (SRI), ESG measures are employed as a proxy for the investment strategy that integrates ESG concerns with financial objectives into investment decision-making (Renneboog, Horst, & Zhang, 2008).

There is a significant part of literature that underlines the evolution of CSR and ESG and their related issues (Carroll, 2008; Sheehy, 2015; Montiel & Delgado-Ceballos, 2014; Huang, 2019). CSR is theoretically rooted in the stakeholder theory (Freeman, 1984; Jones, 1995), which implies identifying a firm's stakeholders and integration of their interests into the profit-maximising objectives of the firm. Starting from stakeholder theory and going through a CSR framework and CG best practices, different scholars have tried to demonstrate how important it is to meet both shareholder and stakeholder expectations to create value. Although the shareholders share the financial wealth (Friedman, 1962), the stakeholders (including employees, customers, local communities) are the final bearers of risk concerning the social impact (Freeman & Liedtka, 1991). The ESG can be considered as the evolution of the concept of CSR (Aguinis, 2011), since it specifies three core typologies of stakeholder-firm relationships: environmental, social and governance (Hassel & Semenova, 2013) and, in this sense, regarded as the modern “idea” of social responsibility (Barnett, 2007; Carroll, 1991; Clarkson, 1995; Donaldson & Preston, 1995; Wood, 1991).

By taking this approach, the ESGP becomes a tool of addressing the requirements of stakeholders in terms of ESG initiative and providing them with the knowledge to evaluate business practices. For stakeholder theorists, and followers of the “doing-good-while-doing-well” hypothesis (Kramer & Porter, 2011), ESG performance leads to better profits and market value by ensuring: (a) lower explicit costs (e.g., potential penalties and taxes); (b) greater operational efficiency (Brammer & Millington, 2005; Porter & Kramer, 2002); (c) recovery of employee productivity and a broader consumer base (Margolis, Elfenbein, & Walsh, 2007); (d) improved corporate reputation (Dhaliwal, Radhakrishnan, Tsang, & Yang, 2012); (e) increased competitiveness of the company through improved products and processes, which also generate profits dynamically (Lundgren & Marklund, 2015; Porter & Van der Linde, 1995).

Following this approach, since CSR practices of companies lead to the distribution of results to both shareholders and all stakeholders, helping to enhance long-term corporate growth and financial performance, then ESGPs are strictly related to CFP (Shirasu & Kawakita, 2020).

TABLE 1 Studies on the ESGP-CFP relationship

Author(s), date	Sample characteristic			Measures		Relation ESGP-CFP founded
	Country	No of entities	Time-period	ESGP	CFP	
1 Aboud & Diab, 2018	47 countries	1996	2012–2016	ESG Disclosure	Tobin's Q	⊕
2 Albuquerque, Koskinen, & Zhang, 2019	Listed in US	4670	2003–2015	MSCI index	ROA, Tobin's Q	⊕
3 Atan, Razali, Said, & Zainun, 2016	Malaysia, Denmark	164	2013	ESG Disclosure Index	EVA	⊗
4 Baron, Harijoto, & Jo, 2011	USA	1600	1996–2004	Aggregate CSR strengths index and CSR concerns index	Tobin's Q	↔
5 Bodhanwala & Bodhanwala, 2019	India	41	2010–2015	ESG score	Stock Price	⊕
6 Buallay et al., 2020 ^a	Mena Banks	59	2008–2017	ESG Total score	ROA, ROE, Tobin's Q	⊕
7 Buallay, 2019 ^a	Europe	235	2007–2016	ESG disclosure Total and partial score (Overall ESG index)	ROA, ROE, Tobin's Q	⊕
8 Buallay et al., 2019 ^a	80 countries	932	2008–2017	ESG disclosure Total and partial score (Overall ESG index)	ROA, ROE, Tobin's Q	⊖
9 Cai, Jo, & Pan, 2012	USA	475	1995–2009	Aggregate CSR index	Tobin's Q	⊕
10 Cek & Eyupoglu, 2020	USA	500	2010–2015	ESG partial score	Economic performance	⊕ ⊗
11 Cochran and Wood (1984)	USA, Europe	75	1970–1979	CSR reputation index	Operating earnings to asset, Operating earnings to sales, excess market valuation	⊕
12 Cornett, Erhemjants, & Tehranian, 2014 ^a	USA	190	2003–2011	ESG ratings	ROA, ROE	⊕
13 Cornett et al., 2016 ^a	USA	235	2003–2013	ESG Rating	ROE	⊕
14 Do & Kim, 2020	Korea	609	2011–2018	ESG rating	Short term abnormal returns (dividend yield, monthly market returns, stock price volatility)	⊕
15 Duque-Grisales & Aguilera-Caracuel, 2019	Brazil, Chile, Colombia, Mexico, Peru	104	2011–2015	ESG Score (total and partial score)		⊖
16 Forgiione et al., 2020 ^a	22 countries	131	2013–2017	ESG partial score	Efficiency scores (Profit before tax, Net loans, Other earning assets, Total deposits, Interest expenses to Total deposits, Depreciation to fixed assets, Staff expenses to n. of employees, Bank equity)	⊖
17 Garcia, Mendes-Da-Silva, & Orsato, 2019	Brazil, Russia, India, China, South Africa	365	2010–2012	ESG performance	ROA, Free cash flow, Market capitalisation, Systematic risk	↔
18 Garcia-Castro, Arino, & Canela, 2010	USA	658	1991–2005	Aggregate stakeholder relations measure	ROA, ROE, Tobin's Q, MVA	⊗

(Continues)

TABLE 1 (Continued)

Author(s), date	Sample characteristic			Measures		Relation ESGP-CFP founded
	Country	No of entities	Time-period	ESGP	CFP	
19 Jha & Rangarajan, 2020	India	500	2008–2018	ESG Score (total and partial score)	ROA, ROE, Tobin's Q	
20 Jo & Harjoto, 2011	USA	7750	1993–2004	Aggregate CSR index and governance index	CSR-combined scores	
21 Koh, Qian, & Wang, 2014	USA	3000	1991–2007	Aggregate CSR score	Z-score	
22 Landi & Sciarelli, 2019	Italy	40	2007–2015	ESG Rating	Abnormal returns	
23 Lo & Kwan, 2017	Hong Kong	17	2010–2012	ESG disclosure events	Stock Price	
24 McWilliams & Siegel, 2000	USA	524	1991–1996	Socially responsible indicator variable	Economic performance	
25 Miralles-Quirós et al., 2018 ^a	Brazil	73	2010–2015	ESG scores	Stock Price	
26 Miralles-Quirós, Miralles-Quirós, & Redondo Hernández, 2019 ^a	31 countries	166	2010–2015	ESG partial score (ESG Score)	Tobin's Q	
27 Miralles-Quirós, Miralles-Quirós, & Redondo-Hernández, 2019 ^a	20 different stock market	51	2002–2015	ESG Total and partial score (Overall ESG Pillar)	Stock Price	
28 Nizam et al., 2019 ^a	75	713	2013–2015	MSCI index	ROE	
29 Pava & Krausz, 1996	USA	106	1985–1991	Aggregate CSR score	Market Returns, P/E Ratio, Market to Book Value, ROA, ROE, ESP, Current Ratio, Altman's Z-Score	
30 Peng & Isa, 2020	20 countries	461 sh. Com.	2010–2017	ESG Score (total and partial score)	ROA, Econ	
31 Servaes & Tamayo, 2013	USA	10,712	1991–2005	Aggregate CSR index	Tobin's Q	
32 Shakil et al., 2019 ^a	Emerging market	93	2015–2018	ESG partial score (Overall ESG index)	ROA, ROE	
33 Velte, 2019	Germany	775	2010–2018	ESG in total and its three pillars	ROA	
34 Waddock & Graves, 1997	Listed in USA	467	1989–1991	Weighted average CSR index	ROA, ROE, ROS	
35 Wu & Shen, 2013 ^a	22 countries	162	2003–2009	Aggregate CSR index	ROA, ROE, Non-Performing Loan/Total Loan, Net interest income/(Net interest income + Non-interest income), Non-interest income/(Net interest income + Non-interest income)	
36 Yoon, Lee, & Byun, 2018	Korea	705	2010–2015	ESG Score (total and partial score)	Stock Price	

Note: positive; negative; mixed; no effect.
^aStudies focused on the banking sector.

Like other firms, banks are encouraged to include ESG factors for the promise of better micro and macro performances,¹ but differently from other sectors, assume more relevance affecting both the asset and liability side and the allocation process (direct investment and credit supply).

Under this premise, our opinion is that it seems to have particular importance in the banking sector to verify the existence of a positive relationship between ESGP and CFP, able to direct management towards ESG, considering the extensive impact of the conduct of banks in society (Beck et al., 2010; Miralles-Quirós, Miralles-Quirós, & Redondo-Hernández, 2019). Then, assuming the ESGPs as a measure of voluntary inclusion of ESG factors in business model by the management, our research question is: *Do banks' managers find sufficient stimuli in the market (CFP are higher enough) to be spontaneously ESG-oriented?* In the case of negative findings, policymakers may find reasons to force them with a mix of incentives and rules built to guide banks to ESG conduct.

Although the research strand focused on the relationship between “sustainability dimensions” and CFP as relatively old and populated by a substantial number of outstanding contributions, those considering ESG dimensions in the banking sector, and their impact on value creation, are much more limited in number and more recent.

As highlighted by Wu and Shen (2013), in the early 2000s, the studies in the banking sector on the CSR and CFP (Chih, Chih, & Chen, 2010; De la Cuesta-González, Muñoz-Torres, & Fernández-Izquierdo, 2006; Scholtens, 2009; Scholtens & Dam, 2007; Simpson & Kohers, 2002) focused on the engagement of CSR activities, or financial performance not strictly related to the pursuit of CSR issues, resulting in small empirical evidence of the link between CSR and CFP in the banking sector.

Studies on ESG in banking are recent. The overdue attention paid by banks to ESG issues, starting from the recent crisis, is mainly justified by attitude of managers to ESG dimensions to mitigate reputational risk. Only in recent years did ESG issues imply ameliorating economic performance (Barnea & Rubin, 2010; Cespa & Cestone, 2007; Klettner, Clarke, & Boersma, 2014). The “ESG regulatory pressure” on the banking sector is also recent. Since the Paris agreement on climate change, universally and legally adopted in December 2015, studies which more strictly appear focused on the ESGP-CFP relationship in the banking sector have started to intensify (Table 1). The Paris agreement on climate change has defined how

financial market participants, and financial advisors, should integrate ESG risks and opportunities into their processes as part of their duty to act in the best interests of their clients.

Recent studies analysing the banking system in the ESG viewpoint show differences in results compared with those on other sectors (Table 1, studies marked with *). Between 2015 and 2020, only about 40% of studies were focused on the banking sector, and most of them show conflicting results. In other sectors, we can find a generalised positive relationship² (Aboud & Diab, 2018; Albuquerque et al., 2019; Bodhanwala & Bodhanwala, 2019; Do & Kim, 2020; Lo & Kwan, 2017; Peng & Isa, 2020; Velte, 2019; Yoon et al., 2018); in the banking sector, only a few studies (Buallay et al., 2020; Cornett et al., 2016; Nizam et al., 2019) show the same tendency, while others found negative (Forgione et al., 2020) or mixed relationships (Buallay, 2019; Buallay et al., 2019; Miralles-Quirós et al., 2018; Miralles-Quirós, Miralles-Quirós, & Redondo Hernández, 2019; Miralles-Quirós, Miralles-Quirós, & Redondo-Hernández, 2019; Shakil et al., 2019). Methods, measures used, and geographical context may also influence the differences in results.

To better understand the relationship between ESGP and CFP, included market sentiment, our paper analyses a sample of listed European banks considering traditional performance measures and adds measures more related to Value-Based Metrics (VBM) not previously considered. The expectation is that, as in most other sectors, higher ESGP will be reflected in better banking performance.

3 | RESEARCH DESIGN

To analyse the relationship between ESGP and CFP of banks, we used panel data model estimates until a panel dataset contained both cross-sectional and time-series data. In particular, as per practice in literature, we first tested a Fixed Effects Model as expressed in the following baseline model:

$$Y_{it} = \alpha + \beta X_{it} + \gamma Z_{it} + \eta_i + \varepsilon_{it} \quad i = 1, 2, \dots, N \quad t = 1, 2, \dots, T \quad (1)$$

where:

- Y_{it} refers to the level of different measures of Financial Performance of bank i in year t ;

TABLE 2 Models considered in the analysis

	VBM	Market-based		Account-based	
	Model 1	Model 2	Model 3	Model 4	Model 5
Y_{it}	EVA_S	CAP_BV	T's_Q	N_ROA	N_ROE
X_{it}	ESG_S	ESG_S	ESG_S	ESG_S	ESG_S
	T1R	T1R	T1R	T1R	T1R
	LTD	LTD	LTD	LTD	LTD
	NIRR_IM	NIRR_IM	NIRR_IM	NIRR_IM	NIRR_IM
z_{it}	log_TA	log_TA	log_TA	log_TA	log_TA
	GDP_GRW	GDP_GRW	GDP_GRW	GDP_GRW	GDP_GRW



TABLE 3 The sample (distribution by country and Total asset, mln €)

Bank	Country	Total asset '19
BAWAG Group AG	Austria	45.662
Erste Group Bank AG	Austria	245.692
Raiffeisen Bank International AG	Austria	152.199
KBC Group NV	Belgium	290.735
Danske Bank A/S	Denmark	3.761.050
Credit Agricole SA	France	1.767.643
BNP Paribas SA	France	2.164.713
Societe Generale SA	France	1.356.303
Natixis SA	France	513.170
Commerzbank AG	Germany	463.636
Deutsche Bank AG	Germany	1.297.674
Bank of Ireland Group PLC	Ireland	131.883
Banco BPM SpA	Italy	167.038
FinecoBank Banca Fineco SpA	Italy	28.022
Intesa Sanpaolo	Italy	816.102
Mediobanca SpA	Italy	78.244
Unione di Banche Italiane S.p.A.	Italy	126.525
Unicredit SpA	Italy	855.647
ABN AMRO Bank NV	Netherland	375.054
ING Groep NV	Netherland	891.744
DNB ASA	Norway	2.793.294
Bank Polska Kasa Opieki SA	Poland	203.322
Powszechna Kasa Oszczednosci Bank Polski	Poland	348.044
Santander Bank Polska SA	Poland	209.476
Banco Bilbao Vizcaya Argentaria SA	Spain	698.690
Bankinter SA	Spain	83.732
CaixaBank SA	Spain	391.414
Banco de Sabadell SA	Spain	223.753
Banco Santander SA	Spain	1.522.695
Nordea Bank Abp	Sweden	554.848
Skandinaviska Enskilda Banken AB	Sweden	2.856.648
Svenska Handelsbanken AB	Sweden	3.069.667
Swedbank AB	Sweden	2.408.228
Julius Baer Group Ltd	Switzerland	102.035
Cembra Money Bank AG	Switzerland	7.485
Credit Suisse Group AG	Switzerland	787.295
UBS Group AG	Switzerland	972.183
Barclays PLC	United Kingdom	1.140.229
Close Brothers Group PLC	United Kingdom	10.561
HSBC Holdings PLC	United Kingdom	2.715.152
Lloyds Banking Group PLC	United Kingdom	833.893
Royal Bank of Scotland Group PLC	United Kingdom	723.039
Standard Chartered PLC	United Kingdom	720.398
Virgin Money UK PLC	United Kingdom	90.999

- X_{it} is a matrix containing the k indicators of banks in year t ;
- z_{it} is the bank control variables in year t ;
- α , β and γ , the $(1 + k)$ coefficient vectors, were to be estimated;
- $\eta_i + \varepsilon_{it}$ (U_{it}) is the error term that is assumed to be independent of the k regressors and the bank-specific control variable. The noise ε_{it} is assumed identically and independently distributed, whereas η_i (the time-invariant component) represents unobserved bank-specific heterogeneity in year t .

3.1 | Dependent variable (y_i)

Differences emerged in terms of bank performance measures used to deepen the ESGP-CFP relationship in previous studies (Table 1): (a) the major part of most recent studies (after 2015) considers account-based ratio alone (ROA and ROE, Shakil et al., 2019; ROE Nizam et al., 2019; Cornett et al., 2016); different efficiency scores (Forgione et al., 2020) or (b) combined with market-based metrics (ROA, ROE and Tobin's Q at once) (Buallay, 2019; Buallay et al., 2019; Buallay et al., 2020); (c) finally, another line of research focused on market-based metrics such as Stock Price (Miralles-Quirós et al., 2018; Miralles-Quirós, Miralles-Quirós, & Redondo-Hernández, 2019) or Tobin's Q (Miralles-Quirós, Miralles-Quirós, & Redondo Hernández, 2019).

Following the three main strands based on market prices, accounting ratios and total factor profitability (Bocean & Barbu, 2007), we used traditional CFP measures, both account-based and market-based; and unlike the others, we used VBM.

We then defined five models (Table 2) identified by different measures of the bank CFP, used as dependent variables (Y_i).

In Model 1, Y_i is represented by EVA Spread (EVA_S), the VBM through which investors may evaluate whether a firm is pointing in the direction of wealth creation (Fabozzi & Grant, 2008). The underlying assumption is that the benefits of management's attention to ESG issues may result both in higher and more stable returns affecting ROC, and in a reduction of the cost of capital (WACC) according to Clark, Feiner, and Viehs (2015) and Serafeim (2020). Therefore, considering that EVA_S is calculated as ROC-WACC, the final effect would be double.

We then expected a healthy and positive relationship between this metric and the bank ESGP; to the best of our knowledge, this relationship was still not explored in literature.

In Models 2 and 3, the dependent variables are based on market performance. We first considered the well-known Tobin's Q ratio (T's_Q) (Buallay, 2019; Buallay et al., 2019; Buallay et al., 2020; Miralles-Quirós, Miralles-Quirós, & Redondo Hernández, 2019) for its capability of synthesising both valuation and performance from the value creation perspective (Jha & Rangarajan, 2020) set to render the point of view of bank stakeholders in the long term. In Model 3, we decided to employ Capitalisation to Book Value (CAP_BV) as Y_i for its attitude to represent the adequacy of the reward of bank shareholders (Caprio, Croci, & Del Giudice, 2011), and for the possibility to measure the shareholder standpoint differently from previous

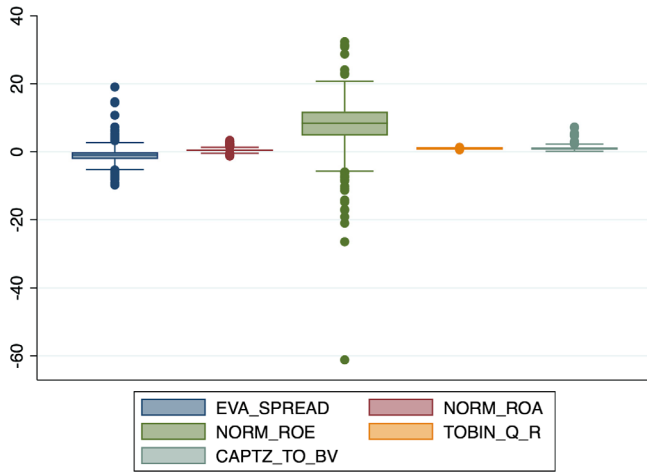


FIGURE 1 Boxplot of CFPs [Colour figure can be viewed at wileyonlinelibrary.com]

contributions. The two CFP, derived from the banking valuation carried out by the capital markets, are based, by definition, not only on historical data but also on future expectations (Jiao, 2010). In the semi-strong efficiency of the market, stock performance represents the best measure to approximate the value creation for both shareholders (Myers & Allen, 1991) and stakeholders.

The underlying hypothesis of the two models is that a wealth-maximising effect drives investors who prefer stocks with high ESGP due to a positive influence of ESG actions on future earnings and positive market expectations formed by institutional and individual investors beyond financial returns (Derwall et al., 2011; Greenwald, 2010; Borghers, Derwall, Koedijk, & Ter Horst, 2013).

The last two models are account-based and focus on the widely used ROA (Model 4) and ROE (Model 5) (Buallay, 2019; Buallay et al., 2019; Buallay et al., 2020; Shakil et al., 2019). On the one hand, ROA proxied the effectiveness of a bank producing profits by

TABLE 4 Descriptive statistic of the sample

Variables	Obs	Mean	SD	Min	Max
<i>Dependent</i>					
EVA_S	467	-1.207525	2.231605	-9.7764	14.7173
CAP_BV	469	0.9907002	0.6347832	0.1292	7.0875
T's_Q	469	1.003507	0.0515109	0.5689	1.3285
N_ROA	469	0.498191	0.5278417	-1.2504	2.9247
N_ROE	469	7.354817	7.151513	-61.182	31.4514
<i>Independent</i>					
ESG_S	470	71.03629	15.31011	12.86047	94.84375
T1R	466	14.12305	3.931928	6.39	33.67
LTD	467	131.8521	57.77807	9.7666	479.4041
NIRR_IM	470	12.63001	19.60668	-95.9298	45.4057
<i>Control</i>					
GDP_GRW	470	1.214468	2.4235	-5.7	25.2
log_TA	470	5.679662	0.6085131	3.707516	6.575309

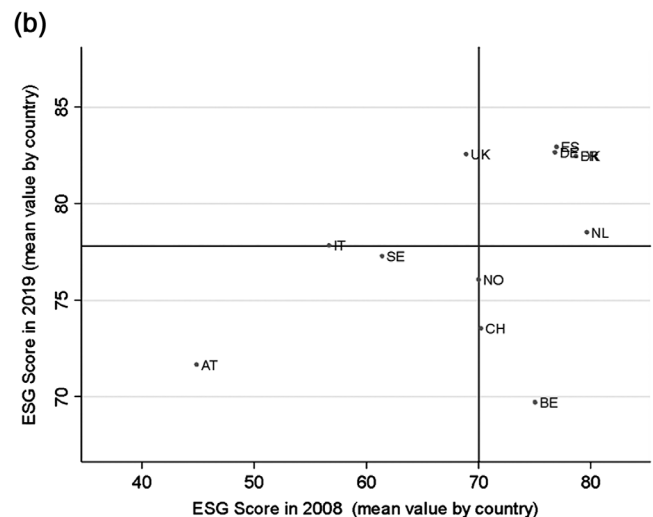
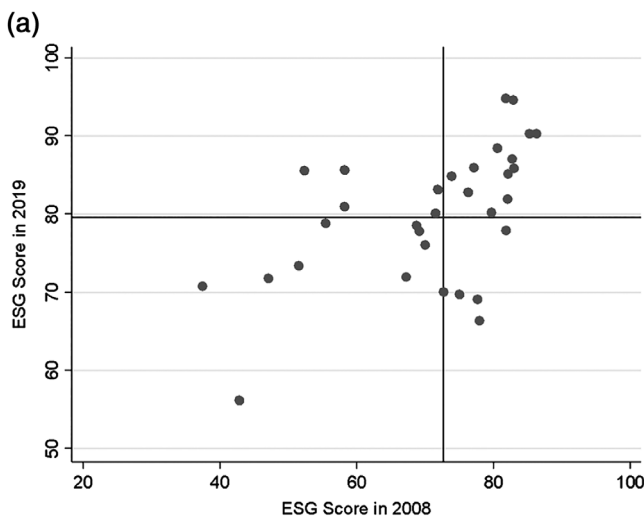


FIGURE 2 Evolution of ESG score of the sample

exploiting their internal assets; on the other hand, ROE measured how companies manage their capital to produce profits. According to previous contributions in different sectors, both ratios are supposed to grow in the presence of higher ESGP. We used the normalised ratios to omit the effects of seasonality, revenue, and expenses that are unusual or one-time influences.

3.2 | Independent (X_i) and control variables (z_i)

As ESGP, we employed the ESG score (ESG_S) calculated by Eikon Thomson Reuters. The annual score for each company ranges between 0 and 100 points, identifying the firm's level of transparency in financial and non-financial data management (Greenwald, 2010; Tarmuji, Maelah, & Tarmuji, 2016). ESG score allows a straightforward evaluation of management practices of each financial institution: for example, ESG Laggards (from 0 to 25) or ESG Leaders (from >75 to 100). The score is based on verifiable reported data from the public disclosure calculated using a subset of 186 metrics.

Being aware that bank CFP is not affected only by the level of ESG score, we included other explanatory variables (X_i) in the regression models, namely:

- TIER 1 Ratio (T1R) as a proxy of the ability of the bank to absorb unexpected losses (Cornett et al., 2014; Finger et al., 2018; Hu & Scholtens, 2014);
- Net Interest Rate Revenues to Intermediation Margin (NIRR_IM) as a proxy of the business model of the bank;
- Loan to Deposit (LTD) as a proxy of liquidity of banks (Van Den End, 2016).

For all models, we explored the possibility that CFP might depend on the specificity of the bank size (Chih et al., 2010; Cornett et al., 2016; Finger et al., 2018; Hu & Scholtens, 2014; Shen, Wu, Chen, & Fang, 2016) expressed by the logarithm of Total Asset ($z_i = \log_TA$). Besides, we controlled the models using the growth rate of GDP (GDP_GRW) to verify the possible dependence of the bank performance on the state of the economy in each country (Chih et al., 2010; Shen et al., 2016; Wu & Shen, 2013).

3.3 | Sample and data collection

The sample comprised all banks publicly listed³ in STOXX Europe 600,⁴ resulting in 44 banks, covering 14 countries of the European region (Table 3).

Our analysis used longitudinal data on ESG score from the Eikon Thomson Reuters, while market and accounting information was drawn from Bloomberg between 2008 and 2019. Table 4 summarises the descriptive statistics of the variables used in the analysis and highlights the presence of missing data in some years. Since it was not possible to replace the banks with typical missing data management

techniques, it was necessary to exclude one bank from the sample and to erase the observations relating to some years, also for ESG score. This exclusion led to the variability of observations among the performed models, ranging from 466 to 470.

For all banks included in the sample, we collected data annually, in the period during which we assisted in the reflection of financial turmoil impelled by the subprime crisis and the sovereign debt crisis suffered in some European countries. Broadly speaking, these circumstances affected all CFPs of the sample. Looking at Table 4 and Figure 1, we notice that all values tend to be close to the mean, and the range of variation is not so high, resulting in a generalised low level of financial performances (often negative) among the sampled banks.

As mentioned, we controlled the economic moment that banks were going through, taking into account differences in economic growth of countries and the size of banks. While GDP_GRW values are spread out over a broader range across time and countries, the size of banks in the sample is relatively homogeneous.

With reference to ESG_S (Table 4), mean descriptive statistics denote significant variations between sampled banks. Considering both ESG score and its variance between the beginning and the end of the considered period (Figure 2a), we notice that 39% of the sample (grouped by banks) is ESG Leader for both years and the remaining part of the sample is distributed in the intermediate band, between 25 and 75. Considering the geographical distribution (Figure 2b), five countries (ES, FR, DE, NL, DK, 36% of the sample) outlined better performances maintaining their banks the position as Leader between 2008 and 2019. Worthy of note is that banks without an ESG score in 2008 (eight) and/or 2019 (three) were not represented in the Figure.

4 | RESULTS AND DISCUSSION

The study exploited panel data model estimates as expressed in (1), to deepen the relationship between bank ESGP, economic performances and market sentiment towards banks ESG activities. Appendices A and B displays the summary of panel data variables.

To verify the validity and the consistency of instrumental variables chosen, we tested the five models applying the Hausman test (Hausman, 1978). Results revealed that, for Models 2–5, marked by a Prob > χ^2 0.0000 (Table 5), the estimator within (Fixed effects, Fe) was the most suitable, which made us reject the null hypothesis for the individual α_i effects which significantly correlated with at least one regressor. On the other hand, after finding a high Prob > χ^2 0.7035 for Model 1, we explored the possibility of better estimates using Random effects (Re). Results of Breusch and Pagan Lagrange Multiplier, Prob > χ^2 0.000, (Breusch & Pagan, 1980) suggested that the GLS estimator (Re) was the most appropriate to describe Model 1, excluding the OLS option. In the case of Model 1, panel data model estimates could be expressed with the following:

$$Y_{it} = b_1 X_{it} + g z_{it} + n_{it} \quad (2)$$

TABLE 5 Banks' ESG score and financial performance: Regression results

Variables	VBM	Market-based		Accounted-based		
	Model 1 EVA_S	Model 2 CAP_BV	Model 3 T's_Q	Model 4 N_ROA	Model 5 N_ROE	
ESG_S	0.02771013*	-0.00770337***	-0.00072833***	0.00034752	0.02392063	
T1R	0.01782534	0.01481327**	0.00110168**	0.00184551	-0.06273967	
LTD	-0.00612765*	-0.00063955	-0.00004573	-0.00050938	0.00303858	
NIRR_IM	0.04240622***	0.00390657***	0.00016462*	0.00989527***	0.21854028***	
logTA	-1.0157887**	-0.54207702**	-0.05320013***	-0.64609041***	-11.688762***	
GDP_GRW	-0.08496051*	0.00162363	-0.0004975	0.01684978**	0.26142945*	
const	2.8188256	4.4433538***	1.3475836***	4.0381387***	69.443233***	
Group Variable	Banks	Banks	Banks	Banks	Banks	
Time effect	Yes	Yes	Yes	Yes	Yes	
N. obs	460	462	462	462	462	
N. Groups	43	43	43	43	43	
Reg. Model	RE	FE	FE	FE	FE	
Prob > F	0.0000	0.0000	0.0000	0.0000	0.0000	
R-sq	Within	0.1506	0.1444	0.1482	0.4127	0.3968
	Between	0.4129	0.3134	0.3701	0.5542	0.2985
	Overall	0.1550	0.2012	0.2108	0.4448	0.2109

Note: Estimates table star (*0.05, **0.01, ***0.001).

where:

$$n_{it} = a_i + u_{it}$$

Examining the regression results (Table 5), we must point out relevant differences with previous empirical research. Our estimates exhibited a lack of causal effect between ESGP and both ROA and ROE in the banking sector, unlike studies that find evidence of a positive and statistically significant relationship with both CFPs (Buallay, 2019; Buallay et al., 2020; Cornett et al., 2014), or with ROE (Buallay, 2019; Cornett et al., 2016; Nizam et al., 2019), and those who revealed a negative relationship (Buallay et al., 2019). Exploring Model 4 and 5 seems that ROA and ROE are better explained by the business model used by banks (NIRR_IM, respectively 0.00989527*** and 0.2185***) and the macroeconomic condition (GDP_GRW, respectively 0.01684978** and 0.2614*), and negatively affected by the size of banks (log_TA, respectively -0.64609041*** -11.6887***).

Analysing the extent to which the ESGP may influence Tobin's Q (Model 3), results showed that the coefficient of the variable that represents the interaction between ESGP-CFP is statistically significant whereas negative (-0.00072833***), supporting Buallay et al. (2019). CFP in Model 3 also seems influenced by the capability of banks to absorb expected losses, confirming the attitude of this ratio to favour better evaluation in the stock market of banks (Miralles-Quirós, Miralles-Quirós, & Redondo Hernández, 2019).

As for Model 3, the dependent variable is based on market performance focusing on standpoint of shareholders in terms of reward, including future expectations. In Table 5, the relation between

CAP_BV and ESG_S is highly significant even when negative. As for the other model based on market, performance seems more relevant Tier 1 ratio (T1R, 0.01481327**) and the business model (NIRR_IM, 0.00390657***).

Finally, focus was on metrics that could help managers and investors to discriminate if a company points in the direction of wealth creation. In Model 1, we highlighted the relationship between ESGP and EVA_S, which helps investors to evaluate the direction in which companies moved in terms of value creation. We have chosen EVA_S as CFP in believing that incorporating ESG parameters in the management process may result in higher and more stable margins and a lower cost of capital. Our results appear to confirm the initial hypothesis displaying a positive and significant correlation (EVA_S, 0.02771013*). The low value is because EVA_S is almost always negative during the period considered. The LTD, measuring the coverage of loans with stable funding, is negatively correlated to the bank performance but only significant in the case of EVA_S. This was probably owing to a higher value of the ratio connected with a higher cost of funding, directly affecting WACC.

5 | CONCLUSIONS

The relationship between ESGP and CFP has been extensively investigated in several areas, with fewer inconclusive studies in the banking sector. The topic is relevant since banks are themselves the object of investment, and, at the same time, play a crucial role in the allocation of resources in the economy: selecting investment, managing risks,



and deciding who merits access to capital and what activities deserve to be financed (Beck et al., 2010).

By assuming ESGP as a measure of voluntary adoption of ESG factor in the bank decision-making process, we investigated the presence of sufficient stimuli for the management in the market to be spontaneously ESG-oriented.

The presence of a positive and verifiable relationship between ESGP and CFP would mean that bank management finds strong incentives to adopt such conduct, including selecting sustainable projects. In this manner, a virtuous circle would be set in motion to drive both banks as companies themselves and companies to see their sustainable-driven projects funded.

Previous studies carried out in the banking sector have mainly investigated the impact of individual E factors, S factors and G factors, and performance measures such as ROA, ROE and Tobin's Q.

This study went beyond prior research exploring the relationship between the ESG score and a broader number of previously considered performance indicators, as well as added EVA Spread and Capitalisation to Book Value to the previous studies.

The results show a positive and statistically significant relationship between the ESGP and VBM and no relationship with accounted-based performance. Surprisingly, the study found a negative and very faded relationship with both dependent variables chosen to express a bank's market performances and ESGP.

Even where statistically significant, the results do not seem to provide a strong indication of incentives, in terms of profitability, to direct bank management towards ESG practices, when adopting a short-term vision. These results also justify the current approach of banking authorities, who concentrate their supervisory perspectives on bank ESG risk, which, at this stage, are likely to appear as the main driver to "force" banks into adopting a new ESG business model.

Further investigations could take into account risk-adjusted performance measures in order to assess if the approach of banking authorities may be supported by evidence, as well as ESG ratings, in order to better capture the ESG attitude of banks. Also, it would be advisable to envisage regulatory impulses that can trigger the virtuous circle that leads bank managers to a long-term vision consistent with sustainable growth. In this way, banks would be pushed to embrace the "ESG philosophy" more comprehensively, and not only for short-term green-washing marketing strategies.

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ENDNOTES

¹ See Wu and Shen (2013) and Heal (2005).

² Studies focusing on one single pillar of ESG find a positive relationship between social and CFP (Cek & Eyupoglu, 2020; Cornett et al., 2014; Peng & Isa, 2020; Simpson & Kohers, 2002; Velte, 2019; Yoon et al., 2018), governance and CFP (Aebi, Sabato, & Schmid, 2012; Cek & Eyupoglu, 2020; Cucari et al., 2018; Peng & Isa, 2020; Velte, 2019;

Widyawati, 2020; Yoon et al., 2018), and environmental and CFP (Peng & Isa, 2020; Velte, 2019; Yoon et al., 2018). Conversely, other empirical research shows a negative relationship (Duque-Grisales & Aguilera-Caracuel, 2019; Nollet, Filis, & Mitrokostas, 2016; Soana, 2011), no significant relationship with sustainability business practices (Atan et al., 2016; Cek & Eyupoglu, 2020; Chih et al., 2010; Landi & Sciarelli, 2019), or mixed effect (Garcia et al., 2019; Jha & Rangarajan, 2020) supporting the so-called cost-concerned school which relies on economic disadvantage related to investing in ESG activities (Aupperle, Carroll, & Hatfield, 1985; Marsat & Williams, 2014). The conflicting conclusions on the ESGP-CFP relationship can be ascribed to the different motivations of the companies (e.g. strategic choices or green-washing), or the different samples, methods and periods used.

³ As of April 2020.

⁴ STOXX[®] Europe 600 is the stock index of the leading Eurozone company's representative of the main industrial sectors in the area. It is the broadest index used as a reference for investment products worldwide <https://www.stoxx.com/index-details?symbol= SX5E>.

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APPENDIX A. DATA PANEL DESCRIPTIVE STATISTIC

Variables		Mean	SD	Min	Max	Observations
GDP_GRW	overall	1.214.468	24.235	-5.7	25.2	N = 470
	between		1.003.136	-0.3727273	4.354.545	n = 44
	within		2.217.727	-8.240.077	2.205.992	T-bar = 10.6818
EVA_S	overall	-1.207.525	2.231.605	-97.764	147.173	N = 467
	between		1.901.437	-3.453.025	8.986.333	n = 44
	within		1.847.295	-8.930.775	8.756.113	T-bar = 10.6136
log_TA	overall	5.679.662	0.6085131	3.707.516	6.575.309	N = 470
	between		0.6779842	3.772.446	6.534.085	n = 44
	within		0.0752822	5.323.647	6.019.785	T-bar = 10.6818
T1R	overall	1.412.305	3.931.928	6.39	33.67	N = 466
	between		3.469.667	10.545	2.800.667	n = 43
	within		2.620.353	2.956.381	2.308.138	T-bar = 10.8372
LTD	overall	1.318.521	5.777.807	97.666	4.794.041	N = 467
	between		5.260.097	1.183.833	2.683.562	n = 44
	within		2.611.717	1.276.863	342.9	T-bar = 10.6136
N_ROA	overall	0.498191	0.5278417	-12.504	29.247	N = 469
	between		0.545082	-0.0823	27.635	n = 44
	within		0.2769299	-0.832534	1.279.116	T-bar = 10.6591
N_ROE	overall	7.354.817	7.151.513	-61.182	314.514	N = 469
	between		5.056.139	-1.378.842	2.766.917	n = 44
	within		5.774.763	-5.792.191	2.320.772	T-bar = 10.6591
T's_Q	overall	1.003.507	0.0515109	0.5689	13.285	N = 469
	between		0.0604533	0.9509083	1.276.867	n = 44
	within		0.0282807	0.604432	1.116.716	T-bar = 10.6591
CAP_BV	overall	0.9907002	0.6347832	0.1292	70.875	N = 469
	between		0.8634596	0.2818167	5.756.533	n = 44
	within		0.2815806	-0.1482415	2.321.667	T-bar = 10.6591
NIRR_IM	overall	1.263.001	1.960.668	-959.298	454.057	N = 470
	between		1.281.553	-1.785.889	3.688.089	n = 44
	within		1.535.903	-8.372.971	651.932	T-bar = 10.6818
ESG_S	overall	7.103.629	1.531.011	1.286.047	9.484.375	N = 470
	between		1.421.889	3.504.116	8.916.491	n = 44
	within		6.751.194	3.339.098	1.047.246	T-bar = 10.6818



APPENDIX B. CORRELATION MATRIX

	GDP_GRW	EVA_S	log_TA	T1R	LTD	N_ROA	N_ROE	T's_Q	CAP_BV	NIRR_IM	ESG_S
GDP_GRW	1.0000										
EVA_S	0.0332	1.0000									
log_TA	-0.0077	-0.0688	1.0000								
T1R	0.3142*	0.1159*	0.1136*	1.0000							
LTD	-0.2345*	-0.1010*	0.0314	-0.2000*	1.0000						
N_ROA	0.2625*	0.3101*	-0.4260*	0.2249*	-0.1047*	1.0000					
N_ROE	0.2050*	0.3877*	-0.1071*	0.2793*	-0.0563	0.7276*	1.0000				
T's_Q	0.1731*	0.1826*	-0.3639*	0.3559*	-0.1618*	0.6976*	0.4064*	1.0000			
CAP_BV	0.1572*	0.2891*	-0.3044*	0.4915*	-0.1566*	0.6132*	0.5250*	0.7795*	1.0000		
NIRR_IM	0.2338*	0.3632*	-0.0086	0.3188*	0.0492	0.5963*	0.6910*	0.3491*	0.4036*	1.0000	
ESG_S	-0.0595	0.0619	0.5585*	0.0678	-0.1818*	-0.2936*	-0.0178	-0.2536*	-0.1676*	-0.0426	1.0000

Note: Estimates table star (*0.05).