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The Impact of ESG Controversies on Bank Value and Risk-taking

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Abstract

ESG performance is one of the most important non-financial factors investors pay attention to when valuing a bank. Previous studies, devoted to bank ESG performance, rely solely on ESG ratings. The contribution of this paper to the existing literature is investigation of a new measure of ESG performance – ESG controversies. ESG controversies are covered in the media negative news that reflect a bank failure in ESG performance. The goal of this paper is to investigate the influence of negative ESG news on market value and stability of companies in a banking sector.

A cross-country sample of 134 banks and data on 1,200 controversies from 2016 to 2020 are used in this study. Our results provide evidence that ESG controversies negatively affect bank value and have no impact on its stability. However, the effect on share prices is not unified: it is stronger for banks that are in the scope of investor attention, and this relation is observed for developed markets with high freedom of press exclusively. Moreover, investors take into consideration the reason of ESG controversy occurrence. They react strongly to negative ESG news, related to community and workforce.

Keywords: bank ESG performance, ESG controversies, bank value, bank stability, value creation with non-financial data

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Introduction

Value creation concept is defined as a company's ability to generate future positive cash flows. Whereas stability can be interpreted as the provision of a consistent low-volatility flow. Historically, the main determinants of this cash flow were the financial and operating metrics of a specific business. In recent times investors pay attention to the companies' corporate social responsibility. Such responsible behavior is currently evaluated in terms of ESG (Ecological, Social, Governance) – a concept that includes a combination of factors, reflecting the involvement of the company in solving environmental, social and corporate governance issues.

ESG has two facets in terms of the value creation concept. Firstly, it creates value as a company, performing strongly on ESG, receives a positive reputation among investors, clients and government. Nevertheless, ESG activities can also destroy value and lead to high profit volatility because they require high costs, sometimes incurred simultaneously. Moreover, ESG issues are not exclusively positive: negative ESG news, covered in the media and called ESG controversies, can occur and destroy value when company is not responsible in its ESG[1] practices. Consequently, the total effect of ESG on value and stability of future cash flows is ambiguous and should be investigated further.

Nowadays, more companies are moving towards sustainable practices, incorporating ESG issues into their long-term strategies and reporting their sustainable achievements. This issue is currently relevant for banks as well. According to R. Bischof et al. [1], banks can no longer ignore ESG as it creates reputational and competitive advantages over their peers and becomes a "license to operate," as it was called by BlackRock CEO Larry Fink.

Even though, being a financial intermediary and an acting company, a bank does not have a huge direct negative effect on the environment, it does have a significant twofold impact on society. First, as D. Schoenmaker [2] emphasizes, financial institutions and banks accumulate money and should avoid investing in companies that produce negative effects on society. This concern exists mostly in regard to a bank's client portfolio. And second, according to F. Gangi et al. [3], a bank should incorporate ESG strategies into its own practice, as it has certain social and environmental influence, which mostly concerns bank employees. Consequently, the ESG concept is unique and different for banks and production firms, which is why it should be investigated separately.

Notwithstanding, there is no strict government regulation of ESG reporting and acting; companies and banks receive a certain evaluation of their ESG performance, reflected in an ESG rating from a range of rating agencies. Moreover, companies receive huge media coverage that nowadays pays a lot of attention to the level of firm sustainability, and the discovered violations of ESG practices are immediately publicized. Large-scale coverage of ESG in the media is becoming a powerful tool for influencing companies via public opinion. Since in the existing literature authors found contradictory results in regard to the relationship between ESG and bank value, in our research, following S. Glossner [4], we presume that ESG negative news are more informative compared to conventional ratings.

The goal of this paper is to establish the direction of influence of negative ESG news on a bank's value and risk-taking. Based on previous findings on production firms, we believe that ESG controversies should have the same effect on banks. Namely, ESG controversies are negatively reflected in banks' market prices and stability. In this paper we also question whether this effect is constant for diverse types of controversies and groups of banks.

This paper fills the gap in the existing literature. First, it contributes to the field of studies devoted to the impact of bank ESG performance on market prices and risk profiles. The second gap that is filled by this paper is the investigation of the impact of negative ESG news on bank value and stability. This is the novelty of the paper, since previous studies devoted to bank ESG performance rely solely on ESG ratings; nevertheless, an understanding of the role of ESG disputes in market value and stability is crucial for different parties.

The results of this paper will provide an understanding of the level of incorporation of ESG policies and disputes into market valuation and banks' risk-taking. It can provide bank management with useful insights about the level of influence of negative ESG actions taken by a bank on the value creation process and possible effects for bank shareholders and stakeholders. It is relevant for investors, since they can receive benefits or incur losses depending on share price movements due to ESG negative news announcements. As a result, this research can be used by bank management, investors, news agencies and policy makers.

A panel data econometrics approach is used in this research. The paper is based on a cross-country sample of 134 banks in 2016–2020, selected based on their market capitalization and data availability. The financial data is taken from Bloomberg, ESG ratings and controversies are gathered from Thomson Reuters, World Bank and Google Trends are used for macroeconomics and bank visibility data, respectively.

The paper is organized as follows. The first section covers the existing empirical studies devoted to ESG practices and its influence on bank value and stability. In the second section we develop the hypotheses. In the third section an empirical test of these hypotheses, result interpretation and the robustness check are presented. The end section contains the conclusions and limitations of the paper.

[1]Examples of ESG controversies for banks are presented in Appendix 1.

Literature review of the recent findings on the interrelation between ESG and value creation

To investigate the relationship between ESG controversies, on one side and bank value and risk-taking, on the other hand, we explored the existing findings in literature. First, we identified the role of ESG in value creation. Second, we discussed the concept of ESG for commercial banks and examine the existing studies devoted to ESG negative news. And finally, the effect of ESG on bank stability is examined.

The role of ESG non-financial factors in a value creation process

According to B. Van Bergen' et al. [5] KPMG report, cash flows that make up a company's value did not historically include the effect of externalities the company produces. Firms had not been punished for negative externalities (poor working conditions, environmental pollution) or rewarded for positive ones (environmentally friendly business, workforce protection, strong corporate governance). Nevertheless, this concept is disappearing, and externalities are being internalized. This opens up new opportunities to create positive value, and at the same time produces risks if a company is facing negative externalities. From B. Van Bergen' et al. [5] point of view, in order to "unlock value creation opportunities" it is necessary for investors and leaders to implement these new dynamics.

D. Schoenmaker [2] presents a framework for sustainable finance that takes into consideration financial, social and environmental returns simultaneously, rather than the purely financial side of value maximization. Three stages of sustainable financing are presented. On the first level (Sustainable Finance 1.0), financial companies avoid investing in "sin" companies[2]. In the second stage (Sustainable Finance 2.0), firms include social and environmental issues in their value creation mechanism. And finally, in Sustainable Finance 3.0, companies move from investing in ESG for the purpose of risk avoidance to aiming to create positive value. In the latter stages, companies move from financial value maximization to integrated value maximization that incorporate financial value, social and environmental impacts. Consequently, a society moves from pure value creation due to profit maximization, on the one side, and, on the other side, from ESG investing to ESG value creation in order to avoid risks.

Despite the society moves towards more general value creation, financial value creation is still one of the crucial parts of integrated value. McKinsey [6] developed five links to value creation by profit maximization with strong ESG performance:

1) More sustainable products attract more customers, leading to top-notch growth. Greater revenue increases business value.
2) Implementing ESG practices presupposes cost reduction through lower energy and water usage costs. This is another factor that leads to higher net income and future value.
3) Being green helps to receive government subsidies and support. This issue is highly relevant for banks as the value at stake is typically 50–60%, it is the most regulated industry with capital requirements and consumer protection.
4) Strong ESG strategy attracts motivated employees and talents. People are one of the core assets that create bank value through product diversification and capital allocation.
5) More sustainable machinery and equipment lead to better capital allocation and higher return on invested capital.

From another side, according to R. Bénabou and J. Tirole [7], poor ESG performance may destroy value, due to the exclusive managerial focus on short-term goals. It can increase short-term profits as there is no spending on ESG, nevertheless, it leads to ESG incidents, reputational damage, loss of trust and poor social capital [7; 8].

Consequently, companies are moving away from short-term profit extraction to long-term value creation using ESG practices and incorporating them into long-term company strategy [2; 9]. Good ESG performance, first of all, strengthens a company's reputation among investors and customers by demonstrating its concerns for the society, its employees and the future of the planet. Secondly, it enhances strong share performance due to financial value creation as it increases revenue, lowers costs and reduces cost of capital.

The influence of ESG performance on bank value

There is a huge scope of literature devoted to the influence of ESG on firm performance. G. Friede et al. [10] generalized conclusions from more than 2200 empirical studies. The author found that 62.6% of meta-analysis studies and 47.9% of vote-count studies reveal a positive impact of ESG on a firm's financial performance. In addition, the share of positive results is larger in emerging markets.

Some of the articles devoted to the interconnection between ESG and firm performance are related to value creation, but this scope of literature is much weaker. Mostly, researchers found a positive impact of ESG performance on company value and confirmation of the fact that investors incorporate ESG performance into share pricing on different markets and samples [11–14]. However, due to its specifics the banking industry is usually excluded from the analysis.

Indeed, it is important to understand that the ESG performance of financial institutions and banks, measured by

[2] Companies are called as "sin" if their products or services have negative effect on human health or well-being.

ESG rating, is slightly different from the ESG performance of production firms. Banks do not pollute the environment or produce huge emissions as industrial firms. The main determinants of strong performance are their care for their employees and a bank portfolio that excludes "sin" industries.

To understand the exclusiveness of a bank's ESG performance, we used the Sustainability Accounting Standards Board (SASB) materiality map that highlights the most relevant ESG topics by industry group. The aim of this concept is to create industry-specific material ESG components that listed companies should report. There are 5 most relevant categories in ESG reporting for commercial banks:

1) **Data Security**: proper risk management in regard to the protection of personal information;
2) **Access & Affordability**: providing access to bank products to broad categories of customers;
3) **Product Design & Lifecycle Management:** incorporation of ESG parameters into products and services granted;
4) **Business Ethics:** bank performance and involvement in corruption, fraud, bribery and other unethical actions;
5) **Systemic Risk Management**: bank concerns regarding its impact on the entire system and economy, reduction of negative risks to the system.

Consequently, the commercial bank industry is rather specific in terms of ESG reporting and performance. This can lead to varying directions of impact of ESG performance on value creation.

The literature devoted to the analysis of ESG performance on bank value is limited, compared to to studies of industrial firms. Notwithstanding, the results of their analysis are quite controversial. Most of the authors that used a cross-country sample of banks or a United States sample found a positive overall relation between ESG and bank value [9; 15–17]. Some papers [18–20] analyze that specific samples of emerging markets and European banks, report that this dependence is not straightforward. In emerging markets, the relation is non-linear: up to a certain threshold, investors react positively to ESG by increasing value, but further on they become indifferent and do not value banks' ESG activities. C. Di Tommaso and J. Thornton [19] founds that in Europe high ESG has a direct negative effect on value, but a positive indirect effect due to the resulting reduction of risks.

Moreover, the effect is not homogeneous. Firstly, M.M. Miralles-Quirós et al. [15] and A. Buallay [16] showed that this effect was not consistent with different ESG pillars: the social pillar has a negative effect on value, while the ecological and governance pillars exhibit a positive effect. Secondly, the authors using a cross-country sample of banks [15; 17] report that there is no homogeneity across certain bank characteristics, such as bank size and country specifics.

Some authors investigated the direct relationship between certain aspects of ESG (corporate governance, board structure and diversity) and bank value. For example, H. El-Chaarani et al. [21] and R. Bubbico et al. [22] found a positive relationship between the diverse features of strong corporate governance (board diversification, shareholder rights protection, disclosure, lack of political pressure) and bank value.

Consequently, the existing empirical studies do not offer a unique view on the interconnection between a bank's ESG scores and its value. Moreover, the results show strong diversification across bank and market characteristics. The aim of our study is, first of all, to test the interconnection between ESG and value. Secondly, we try to overcome the inconclusiveness in existing studies by adding another variable of ESG controversies that, according to S. Glossner, affects bank share pricing more than the ESG score itself, as it captures more investor attention [4].

The impact of ESG controversies on firm value

In several studies that examine the impact of ESG on firm value, authors incorporate a new ESG performance variable – ESG controversies. ESG controversies are covered in the media ESG-related negative news that follow a company's violation of social requirements for a responsible business. According to Thomson Reuters (TR) methodology, controversies are divided into 23 categories and include community, management, shareholder and other disputes [23]. Such negative news contains risks for company reputation and raise doubts regarding future firm performance from the investor's point of view.

What is more important, ESG controversies have a stronger effect on value relative to the ESG conventional rating since the ESG rating itself incorporates many criteria and poorly predicts future ESG misbehavior [4]. Moreover, ratings of different rating agencies are contradictory [24–26]. ESG incidents usually reveal a company's past behavior, realization of relative ESG risks and perception of controversies by investors. As a result, ESG controversies could be more informative compared to ESG conventional ratings.

In most of the articles, the main conclusions regarding ESG controversies and value are consistent [4; 27–30]: ESG controversies lead to a negative reaction of investors and, consequently, distract company value. This happens as investors expect a recurrence of such events in the future, and reflect it in lower earnings expectations, higher costs and, correspondingly, lower value [31]. However, A. Aouadi and S. Marsat [32] found that ESG controversies positively affect company value, being a way to attract investor attention to company shares.

Despite the existence of a certain effect of controversies on value, it is not a long-lasting one. Namely, on a sample of firms listed on the NYSE B. Cui and P. Docherty [27] proved that ESG controversies affect value during a certain period after a shock (ESG controversy) occurred, and share prices revert to previous values in one quarter. P. Krüger

[29] found that 21-day CAR (cumulative abnormal return) after such news is –1.31%.

The results regarding the level of reaction are controversial: S. Glossner [4] found that there is an underreaction to news, leading to underinvestment in ESG by management as market does not reflect such information. Meanwhile, B. Cui and P. Docherty [27] and P. Chollet and B.W. Sandwidi [33] reveal that overreaction takes place. Nevertheless, all authors argue that the opportunity to receive abnormal returns opens up for investors when the controversy happens. That is why the research of market reaction to ESG controversies could be useful for investors, managers and market makers.

Some authors found that the effect is not homogeneous across the sample [28; 32]. A. Aouadi and S. Marsat [32] states that results of their study hold only for firms that receive a high degree of attention firms. Authors included several control variables (firm visibility, press freedom index, size) and showed that controversies affect value only for those firms that are in the scope of investor attention, are large and situated in countries with a high level of press freedom. J.B. Wong and Q. Zhang [28] demonstrate the diversification of results across industries. Namely, there is no effect for "sin" companies, while for such industries as banking, candy, or steel production there exists a negative effect of controversies on value.

According to P. Chollet, B.W. Sandwidi [33] and G. Serafeim, A. Yoon [34], another sort of heterogeneity is a type of negative event. G. Serafeim and A. Yoon [34] found that there is an investor reaction solely to material ESG issues, social capital, and no such reaction exists to human capital issues. P. Chollet and B.W. Sandwidi [33] discovered that investors react to employees or environment alerts.

However, ESG controversies can lead to certain bias and overperformance due to existing information inefficiency. As mentioned by G. Dorfleitner et al. [35], it is better for small companies to have no controversies covered by the media because the investor can miss a company's ESG problems and not incorporate this negative effect in value. The authors calls these companies "small sinners," since while they actually have some problems, but due to their size and media coverage, these problems can be overlooked and not factored into share prices. Thus, investors incorporate ESG in company value for firms with high customer awareness [36]. According to Refinifiv [23], TR ESG controversy score incorporates this market capitalization bias, which leads to large capitalization companies suffering more, as they receive more media attention. The size is reflected in the severity weight, by which the number of controversies is multiplied. It is equal to 0.33 for large, 0.67 for mid-size and 1 for small cap companies [23].

Consequently, there is a rather unified view on negative ESG news in existing studies: there is a negative effect on share prices, since investors treat pessimistic news as a threat to a company's reputation and future prospects. Nonetheless, the banking industry is poorly covered in recent studies devoted to ESG controversies: only J.B. Wong and Q. Zhang [28] included the banking sector in the sample, and there are no articles devoted purely to banking sector. This study aims to fill this gap. As it was proven above, financial institutions are a special case in terms of ESG performance. Banks are also unique in terms of controversies, according to G. Serafeim and A. Yoon [34], who noted the materiality concept in investors' perception of controversies. According to the ESG materiality map, environmental disputes are not fully relevant for a bank, since controversies regarding water, paper or energy usage efficiency are too rare. Mostly social and governmental negative news, as well as issues regarding bank investments in environmentally unfriendly projects or companies contribute to ESG controversies for a bank, as demonstrated in Appendix 2. For that purpose, we examined the banking sector separately.

The role of ESG performance in a bank's risk-taking behavior

For banks, ESG issues are not purely an ethical question: there is a new type of risk nowadays, namely, an ESG risk [37]. To reflect this type of risk in their portfolio, banks should incorporate new measurement and scoring techniques. In case of ESG policy violation or incorrect portfolio compilation, banks become reluctant to take ESG risks that can distract their stability.

There are two general views on the relationship between bank risk-taking and ESG performance [38]: risk reduction and overinvestment. The risk reduction argument is rooted in the stakeholder theory. The logic is in the reduction of risks due to value creation with a strong reputation or the creation of "moral capital." Another argument stems from agency theory. According to that, managers overinvest in ESG practice and ESG reporting to satisfy different KPIs, which lead to increased risks. Consequently, from a theoretical view there is no unique answer as to the direction of ESG influence on bank performance.

Empirical studies that examine this issue using banks as an example [3; 19; 38], prove the first theoretical argument. Analysis of different samples confirms that bank fragility and risk-taking are lower for banks with high ESG scores. What is more important during financial crisis banks, having high ESG scores and long history of ESG reporting, are more stable [38].

Authors proved the relationship between different ESG pillars. C. Di Tommaso, J. Thornton [19] and W.S. Leung et al. [39] proved that the risk reduction is stronger in regard to the G-pillar. Risks decrease with a smaller, more independent, gender-diverse board of directors, and with directors having the power to consider the shareholders' interests. On the contrary, D. Anginer et al. [40] found that shareholder-friendly corporate governance leads to higher systemic risk for banks. F. Gangi et al. [3] found that risks are lower for highly environmentally committed banks, i.e., in regard to the E-pillar.

In the existing literature there are no articles devoted to the interrelation between ESG controversies and bank risks. However, there are several papers devoted to firm risk

and ESG controversies. M.H. Shakil [41] proved that ESG controversies have a moderating effect on the relationship between ESG performance and financial risk on a sample of oil & gas companies. Namely, ESG controversies limit the effect of the negative relationship between ESG scores and risk.

Hypothesis development

In this section, based on the literature review provided earlier, we developed five hypotheses for our empirical research that fill the above-described gaps in the existing literature.

Hypothesis 1. ESG controversies have a negative effect on bank value.

Following the existing literature [27–30], we presume that ESG controversies have a strong negative effect on value and risks that moderates the positive impact of ESG. This happens as investors who receive negative information regarding ESG question a bank's reputation and reflect these perceptions in future cash flows and share price. We suppose that investors mainly pay attention to ESG-related disputes covered in the media than to formal ESG ratings, according to S. Glossner [4].

Hypothesis 2. Investors reflect all types of ESG controversies equally in value.

Notwithstanding, previous studies [33; 34] report several differences in the investors' perception of controversies for firms, we assume that investors treat different controversy types equally in case of banks, as they mostly reflect banks' relationships with the community and different groups of stakeholders.

Furthermore, we understand that media coverage and a country's level of development are important. That is why to avoid bias in our conclusions we developed several control factors that capture these effects: bank visibility and the level of press freedom in the country.

Hypothesis 3. ESG controversies have an indirect effect on bank value depending on bank visibility.

Some firms receive more media attention [35]. As a result, controversies are more frequent for them and do not affect value as much as a single controversy for a firm that receives a low degree of attention. In our research, following previous studies [32; 42], we reflect bank visibility that is based on real investor attention to a particular bank.

Hypothesis 4. ESG controversies have an indirect effect on bank value depending on freedom of press in the country of domicile.

The second factor that leads to a potential result bias comprises the country specifics, reflecting the level of press freedom in a certain state. This can lead to ESG controversies not being covered by media, and consequently, not reflected in share price [32]. We split our sample to check whether the effect on value holds for different groups.

Hypothesis 5. ESG controversies moderate the relationship between ESG performance and bank risks.

According to previous empirical studies [3; 19; 38], we assume that ESG should have a positive effect on bank stability, corresponding to the stakeholder theory. However, according to M.H. Shakil [41], ESG controversies should lessen this effect.

The empirical test of these hypotheses is provided in the next section based on a cross-country sample of banks.

Research methodology

In this section we performed our own empirical study devoted to ESG controversies and their impact on bank performance based on a sample of banks from different countries.

Data and sample

A cross-country quarterly data for largest banks from 2016Q1 to 2020Q4 (20 quarters) is analyzed. The borders of the sample period are set by data availability of the ESG controversies variable. In TR, detailed information about the number of controversies and their content is available only for the last 5 years. We have formed a sample of over 200 largest banks by market capitalization (last calendar year market capitalization > $0.5 bln.). The banks were selected based on GICS industry classification: Sector – Financials, Industry – Banks. Due to data unavailability or substantial portion of missing values, a number of banks was deleted. Finally, a sample of 134 banks was obtained. The data was collected from Thomson Reuters, Bloomberg, World Bank and Google Trends.

Model specification

The dependent variables for hypothesis 1–4 are presented by Tobin's Q and Market Capitalization to Book Value (MC to BV), according to previous empirical studies devoted to the research of bank value (Model (*)). We use two dependent variables to cross-check the results. Tobin's Q is a ratio of a bank's market value to the replacement cost of its assets. It is usually used as a proxy for bank value [15; 19; 32; 43]. According to Y. Jiao [44], the advantage of this metric is its determination based not only on financial statements, but on future expectations as well. If Tobin's Q is greater than one, it means that the company is creating value, otherwise value is being destroyed. MC to BV measures a bank's market value relative to the book value of equity. This ratio is used in line with Tobin's Q as a proxy of value [32; 45].

To check the fifth hypothesis, a separate Model (**) is estimated with a Z-score dependent variable that reflects bank stability in terms of bankruptcy risk [46]. Z-score shows the level of bank stability and measures the distance from default [47–49]. The higher the Z-score value, the lower the probability of the default and the more stable the bank is. It is interpreted as the number of standard deviations needed to exhaust the capital [50]. This ratio is calculated as:

$$Z-\text{score}_{it} = \frac{\left(\text{ROA}_{it} + \text{CAR}_{it}\right)}{\sigma\left(\text{ROA}_{it}\right)},$$

where ROA is return on assets, CAR – capital to assets ratio and $\sigma(\text{ROA}_{it})$ – standard deviation of ROA as a proxy of return volatility. According to previous empirical studies, we have calculated the standard deviation of ROA for several previous years that are available, in our case – 2 years. According to K. Schaeck and M. Čihák [51], this allows to avoid the description of ROA volatility by capital level and profitability only. Following previous research, we used the natural Z-score logarithm as the distribution is skewed.

The main models are presented as follows:

$$\text{Value}_{it} = \beta_0 + \beta_1 \text{ESG}_{it} + \beta_2 \text{X}_{it} + \beta_3 \text{Z}_{it} + \varepsilon_{it} \quad (*)$$

$$\text{Z}-\text{score}_{it} = \beta_0 + \beta_1 \text{ESG}_{it} + \beta_2 \text{X}_{it} + \beta_3 \text{Z}_{it} + \varepsilon_{it}, \quad (**)$$

where Value_{it} represent bank value measured by either Tobin's Q Ratio or MC to BV. $\text{Z}-\text{score}_{it}$ is a metric that indicate bank stability. ESG_{it} includes ESG Score and ESG controversies ratio. X_{it} is a set of bank-specific control variables. Z_{it} is a set of country-specific variables that is included when a cross-country sample is analyzed to control for macroeconomic changes in the country of domicile. The description of variables and their usage in different hypotheses checks are presented in Appendix 2.

ESG score calculated by TR measures company performance based on 3 Pillars; ten main topics are weighted within each pillar (Figure 1). ESG combined score (ESG*C* score) inflate ESG score on significant controversies during a period that influenced a company [23]. In our further empirical research, a lag of ESG score is used as the score becomes available to investors after the end of calendar year, and they can incorporate this information into the next year's market prices.

Figure 1. TR methodology in ESG score calculation

ESGC score			
ESG score			ESG controversies
Environmental 1. Recourse use 2. Emissions 3. Innovation	Social 1. Workforce 2. Human rights 3. Community 4. Product responsibility	Governance 1. Management 2. Shareholders 3. ESG strategy	Controversies score based on 23 topics

Source: [23].

The ESG controversies score reflects the effect of ESG negative news. Controversies are reported separately as a list for each company over the last 5 years, allowing to work with uncontaminated data and adjusting it according to our own hypothesis. Furthermore, data was cleared from recent controversies that occurred after the reporting date but are reflected in current year till the next rating is published. Consequently, either ESG Combined score or ESG score with separate controversies variable will be used in further analysis to avoid a replication of data in several variables.

As it is reflected in G. Dorfleitner et al. [35] and H. Servaes, A. Tamayo [36], some information inefficiency regarding ESG controversies exists. Even though finding a solution to this issue is not the purpose of this paper, since it reflects the method to determine ESG controversies, we have made appropriate adjustments. We do not use the TR methodology [23] of applying severity weights for firms with different capitalization because of artificial weighting. In our paper, we introduce such variables as firm visibility and level of press freedom in the country, incorporated by A. Aouadi and S. Marsat [32].

As it was proven by B. Cui and P. Docherty [27] on a sample of non-financial firms, returns mean-revert 90 days after the controversy occurred, that is why the effect of ESG controversy, if it exists, should be reflected for banks as well on a one-quarter horizon, which we use further. Longer lag analysis is not necessary, as the negative effect of a controversy disappears.

X_{it} or a set of bank-specific control variables includes *profitability* measure (ROA, ROE or Profit margin), *size* of the bank, *credit risk, capital adequacy, business model, leverage* and *liquidity.*

To check the third hypothesis, the measurement of firm *visibility* (Google search volume index, GSV) is included. It is usually used in empirical papers as a proxy for investor attention and firm visibility [32; 52; 53]. The data was collected manually for each bank from the Google trends database. The index reflects bank popularity as a search query, with the index of 100 being the most popular, and 0 – the least popular. The index is reported monthly. To calculate a quarterly index, bring it to the quarterly basis we have computed the average GSV for each quarter.

Z_{it}, or a set of country-specific variables, includes *GDP growth, inflation* and a dummy variable that is equal to one for *developed* markets. A *Press freedom index* (*PFI*) variable reflects the freedom of press in the country and is included to test the fourth hypothesis. This variable shows the level of press freedom in the country and is published by Reporters Without Borders on an annual basis and then

reported by World Bank. Lower values correspond to the highest level of press freedom.

Preliminary data analysis

In this section we provide preliminary data analysis that consists of summary statistics, correlation analysis and a sample diversification analysis.

The initial data contains some unusual items that are treated as outliers and can bias future estimates. That is why the initial analysis using box plots was performed. We dropped 2 banks, as the Tobin's Q ratio was too high for them. Some values that were randomly missing were filled using linear interpolation methods to avoid loss of data.

To test for normality, a skewness-kurtosis test, which computes skewness, kurtosis and then combines these two tests into one test statistic, was used. A rejection of normality was observed.

The computed descriptive statistics after outlier deletion are presented in Table 1. Certain conclusions regarding dependent variables and variables of interest can be made:

- On average banks are traded higher than their book value, which proves the existence of a premium that can include the contribution of non-financial factors;
- ESG controversies occurred in 16% of the observations, while the number of controversies is rather volatile;
- The sample is heterogeneous in terms of countries, with 52% of banks operating in the developed market;
- Capital adequacy contains a lot of missing values, which is why it is not considered in subsequent analysis.

Table 1. Descriptive statistics

	Obs	Mean	Median	St. Dev.	Min	Max
Tobin's Q Ratio	2,680	1.03	1.01	0.06	0.92	1.43
MC to BV	2,680	1.22	1.14	0.59	0.14	3.99
Ln (Z-score)	2,680	4.82	4.87	0.87	0.00	7.87
ROA	2,680	1.03	0.93	0.63	–1.37	3.94
ROE	2,680	10.94	10.73	5.00	–27.69	30.97
Size	2,680	538.70	143.60	823.20	6.53	5,109
NPL to Total Loans	2,680	2.06	1.41	2.17	0.00	17.17
Capital adequacy	2,275	12.86	12.22	2.91	8.05	33.43
Provisions to Total Loans	2,680	0.75	0.46	0.81	–0.29	4.83
Business model	2,680	58.61	60.65	12.03	21.00	81.76
Equity to Assets	2,680	8.90	8.71	3.44	2.98	30.39
Cash to Total Assets	2,680	6.70	5.60	5.99	0.07	42.19
Profit Margin	2,680	27.16	27.42	17.24	–294.00	109.50
ESG Controversies	2,680	0.45	0	1.47	0	21
ESG Controversies Dummy	2,680	0.16	0	0.37	0	1
ESG	2,680	60.62	63.34	18.49	2.98	94.48
ESGC Score	2,680	56.07	57.74	17.03	2.98	89.66
GDP growth	2,680	1.56	2.24	3.53	-11.15	8.26
Inflation	2,680	1.74	1.62	2.14	-2.54	29.51
Developed	2,680	0.52	1	0.50	0	1
PFI	2,680	33.21	25.69	17.73	7.6	78.92
GSV	2,680	13.68	8	15.86	0	97.33

Source: Author's calculations.

The descriptive statistics does not allow us to detect the distribution of ESG controversies across the sample, which is why additional calculations were made. In Table 2, means and frequencies of observations for Tobin's Q and MC to BV in terms of ESG controversies were examined. ESG controversies occurred in 440 out of 2680 observations (16.4%). Moreover, means of variables are higher when controversies are absent, which can be a signal of value-distracting effect of controversies. Finally, we reported a sample of 1,204 ESG controversies (for more details, see Appendix 3).

Table 2. Tobin's Q and MC to BV by ESG Controversies

ESG Controversies Dummy	Tobin's Q		MC to BV		Frequency
	Mean	St. Dev.	Mean	St. Dev.	
0	1.0312	0.0636	1.2754	0.5992	2246
1	1.0004	0.0319	0.9562	0.4537	434

Source: Author's calculations.

Correlation analysis was also conducted. The results are presented in Appendix 5. There is a high positive significant correlation between Tobin's Q and MC to BV, which implies that both metrics can equally serve as a proxy for value. The high correlation between ROA, ROE and Profit Margin shows that the use of all three variables can cause multicollinearity problems, so only one metric should be used. ESG controversies have low, but statistically significant negative correlation with two metrics of value and ln (Z-score), meaning that an inverse relationship exists. Moreover, ESG controversies have positive moderate correlation with the size of the bank, implying that large banks may face more controversies than small ones. ESG total score and combined score also has a significant negative correlation with Tobin's Q and MC to BV and a correlation close to zero with ln (Z-score). However, pairwise correlations are not highly informative as they ignore other factors and do not take into account the division into groups. That is why more a complex regression analysis will be conducted in the next section.

Empirical models estimation

The sample requires panel data estimation, that is why we have initially run three models: pooled, fixed effects (FE) and random effects (RE). Pooled ordinary least squares (OLS) model is the most restricted as it presupposes similar patterns in all banks in all moments in time. In the FE model, each bank has a certain component α_i, which is invariant in time and reflects the influence of unobserved characteristics: $y_{it} = \alpha_i + x'_{it}\beta + \varepsilon_{it}$. As a result, the model cannot estimate time-invariant parameters separately as they are absorbed by α_i. In the RE model these individual effects α_i are treated as random, meaning that α_i are not correlated with explanatory variables.

Further, several tests were used to choose an appropriate model. The Breusch-Pagan Lagrange multiplier test for the presence of an individual random effect is used to choose between RE model and pooled regression. We found a strong rejection of the null hypothesis which results in RE model. The Wald test tests the hypothesis that all individual effects are equal to zero. It is used to choose between the FE model and the pooled model. The strong evidence of significance of individual effects was found, which is an argument in favor of the FE model. And finally, the Hausman test confirms the existence of a correlation between individual effects and explanatory variables. It helps to choose between the FE and RE models. As a result, according to the rejection of the null, FE model is the most adequate specification form for all models estimated below. The results of these tests are reported in Appendix 4 for Model 1. For all other models, the same procedure was performed, and the results are consistent with those reported above.

The FE models were then tested for the presence of heteroskedasticity, autocorrelation and multicollinearity. The multicollinearity test was conducted with the variance inflation factor (VIF) for panel data. The standard cutoff of 8 was used. Due to high multicollinearity, such variables as business model and NPL to Total Loans were deleted, and total assets were used instead of log of assets as a size proxy.

To test for heteroskedasticity in panel data, a modified Wald statistic for groupwise heteroskedasticity in the residuals was used. The strong rejection of the null (p-value close to zero) reflects the presence of heteroskedasticity, which should be corrected further.

The test for serial correlation of the first order (Wooldridge test) with the null of no autocorrelation in the residuals was performed. The null hypothesis was rejected, implying that a serial correlation should be corrected. The Pasaran test with the null hypothesis of cross-sectional independence was used to test for the presence of spatial autocorrelation. The null was rejected, meaning the presence of cross-sectional dependance. The results of all tests for Model 1 are reported in Appendix 4; the same procedure was performed for other models.

The presence of two types of autocorrelations requires double clustering: both by bank and by time. S.B. Thompson [54] argues that more robust standard errors lead to better performance of test statistics by reducing bias, but increase variance. That is why this method should be considered properly. As an example of a need for double-clustering, the author mentions regressions where some variables vary by firm and others – by time (for example, macroeconomic indicators). In this case single clustering

will eliminate the autocorrelation problem for one group of variables only (firm-specific or macroeconomic indicators) and will not solve the problem for the other group of variables.

And our sample contains regressors that vary both by bank (financial indicators) and by time (inflation, GDP, PFI). In addition, the ESG Score is constant during every four quarters for each bank, since it is reported on an annual basis. That is why Driscoll-Kraay standard errors (DK s.e.) were used [55] to correct the highlighted problems. They are applicable when the error structure is assumed to be heteroskedastic, time is autocorrelated up to a certain lag and correlated between the groups (when there is no cross-sectional independence and spatial autocorrelation is detected).

Table 3 reports a set of FE models with DK s.e.: Model 1 with ESGC Score and Model 2 with ESG Controversies and ESG Score.

Table 3. The effect of ESG controversies on bank value

	Model 1		Model 2	
VARIABLES	Tobin's Q Ratio	MC to BV	Tobin's Q Ratio	MC to BV
Profitability	–0.00019	0.00104	-0.00018	0.00137
	(0.0003)	(0.0037)	(0.0003)	(0.0036)
Size	0.00003***	0.00009*	0.00002***	0.00008*
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Loan provisions	–0.01511***	–0.11610***	-0.01506***	–0.11534***
	(0.0022)	(0.0228)	(0.0023)	(0.0234)
Leverage	–0.00472***	–0.06326***	-0.00468***	–0.06270***
	(0.0010)	(0.0112)	(0.0010)	(0.0112)
Liquidity	0.00059*	0.00305	0.00057*	0.00225
	(0.0003)	(0.0035)	(0.0003)	(0.0035)
ESG Controversies			-0.00123***	–0.01566***
			(0.0003)	(0.0030)
ESG Score			0.00016	0.00155
			(0.0001)	(0.0013)
GDP growth	0.00443***	0.04462***	0.00453***	0.04527***
	(0.0004)	(0.0045)	(0.0004)	(0.0042)
Inflation	0.00082	0.01952*	0.00081	0.01941*
	(0.0010)	(0.0095)	(0.0010)	(0.0096)
ESGC Score	0.00006	0.00160*		
	(0.0001)	(0.0008)		
Constant	1.05251***	1.60163***	1.04752***	1.60521***
	(0.0148)	(0.1834)	(0.0170)	(0.2138)
Observations	2,680	2,680	2,680	2,680
Number of groups	134	134	134	134

The table reports a set of FE models with DK s.e.: Model 1 with ESGC Score and Model 2 with ESG Controversies and ESG Score variables.

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Source: Author's calculations. 1-year lags of ESGC and ESG scores are used.

The effect of ESG Scores on bank value is statistically insignificant at 5% for MC to BV and for Tobin's Q in all specifications. The effect of ESG controversies is consistent in all model specifications: at a 5% level of significance, it has a negative effect on value in the current quarter. Consequently, the results for banks in terms of ESG controversies correspond to most of the literature devoted to producing firms, and our first hypothesis is not rejected.

The received result is an approval of investors' overreaction to negative news and salience theory [27; 56]. According to S.E. Taylor and S.C. Thompson [57], salience theory presupposes "disproportionate weighting" when the attention is directed to one set of information, and this set receives more weight. Thus, according to our results, the bank's entire ESG performance or positive ESG news can be within the "silent" set of information unless a negative event occurs, receives media coverage and becomes part of the information set with huge weighting by investors. As a result, investors overreact to negative ESG news considering that such events can occur in the future, and a bank is subject to ESG risks. This can be a confirmation of market inefficiency.

Diverse types of controversies

To check the second hypothesis, we aggregated the ESG controversies variable into three categories from the original seven ones, including 23 subcategories [23]: Community and Workforce, Product Responsibility, Shareholders. *Community* controversies reflect anti-competitive behavior, business ethics, tax fraud issues, and public health. It is the largest group, as it forms 69% of the sample. *Human rights* issues include problems of child labor and general human rights. *Management* disputes are about the inordinately high board compensations. *Product responsibility* is linked to company products or services, customer safety, privacy and product access (15%). *Recourse use* includes issues relevant to the company's use of natural resources. *Shareholders* issues are related to accounting issues, insider dealing, shareholder rights (6%). *Workforce* controversies reflect workforce diversity, health and safety, and wages (8%).

We combined Community and Workforce types into one category, as these types have similar patterns of a company concerned with social issues and people. In addition, due to the small number of observations of certain controversies, we added them to other categories based on their meaning: Resource use and Human Rights – to Community, and Management – to Shareholders. The latter is described by the relationship of these two types to corporate governance issues.

Estimation results are presented in Table 5 (Model 3). One group of controversies matters for bank share pricing: Community and Workforce. The variable is statistically significant at 5% level and reflects a decrease in value when these controversies occur. Consequently, the second hypothesis should be rejected according to the results received on our sample.

According to G. Serafeim and A. Yoon [34], one should look at SASB materiality map when considering different ESG news topics. Notwithstanding, product responsibility is one of the key aspects in bank materiality; investors do not react to such ESG news.

The received results partially correspond to the previous articles [33; 34], which mentioned that investors mostly react to social and environmental alerts and do not react to human capital issues. However, E-pillar issues are rare for financial institutions. Indeed, our sample captures only 1% of environmental controversies related to financing of oil companies. In contrast to the paper by G. Serafeim and A. Yoon [34], we observe the uniqueness of the banking sector, as investors do react to workforce issues (which mostly focus on human capital) as human capital is one of a bank's growth drivers.

Consequently, investors react to bank ESG controversies differently: they weight social and workforce negative news and are on average indifferent to product responsibility and shareholder controversies. Moreover, we have found an inconsistency for banks in terms of investor perception of material ESG issues, as not all material ESG controversies are reflected in share prices. These results do not correspond to controversy types, being reflected in share prices of producing firms.

The influence of bank visibility

We conducted a test for slope homogeneity of the ESG controversies coefficient. It is presented using the standardized version of Swamey's test for slope homogeneity for panel data described by M. Hashem Pesaran and T. Yamagata [58]. The null hypothesis is the slope homogeneity. The test compares two models: a restricted model with weighted FE estimator (that implies slope homogeneity) and an unrestricted cross-sectional unit specific OLS regression. Due to high test statistics and p-value = 0.000 for specifications with both dependent variables, the null about slope homogeneity is rejected. That is why we subsequently tested several hypotheses that check the sources of slope heterogeneity. These reasons are different levels of bank visibility and PFI in different countries.

In this section we test the hypothesis that states that the impact of controversies depends on the bank visibility level. The model that incorporates the influence of ESG controversies in the calculation of the GSV index is presented in Table 4 (Model 4). We incorporate the interaction of GSV and ESG controversies. From now the effect of controversies on value is mediated by bank visibility.

Results that are statistically significant at a 5% level strongly confirm the third hypothesis. The more popular the bank is (the higher its GSV), the stronger the negative effect of controversies on value. It means that the effect of ESG issues is stronger for banks that are in the scope of investor and public attention. For banks that are highly unpopular the effect is so small that it can be almost neglected.

Consequently, our results for the banking industry demonstrate the same bias as the existing results for industrial

firms described by G. Dorfleitner et al. [35]. Investors react poorly to controversies that occur in low-attention firms and overreact to disputes related to high-attention firms. There is a certain information inefficiency, which results in high degree of media coverage of ESG controversies for banks with high media coverage and investor attention. As a result, investors overreact to this news and share prices decline.

Table 4. The effect of ESG controversies on bank value: diverse types of ESG controversies and the effect of bank visibility

	Model 3		Model 4	
VARIABLES	Tobin's Q Ratio	MC to BV	Tobin's Q Ratio	MC to BV
Profitability	–0.00018	0.00126	–0.00019	0.00136
	(0.0003)	(0.0036)	(0.0003)	(0.0036)
Size	0.00002***	0.00008	0.00002***	0.00009*
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Loan provisions	–0.01508***	–0.11533***	–0.01502***	–0.11484***
	(0.0023)	(0.0232)	(0.0023)	(0.0232)
Leverage	–0.00466***	–0.06282***	–0.00474***	–0.06347***
	(0.0010)	(0.0112)	(0.0010)	(0.0111)
Liquidity	0.00057*	0.00230	0.00054	0.00182
	(0.0003)	(0.0035)	(0.0003)	(0.0034)
ESG Score	0.00016	0.00156	0.00015	0.00152
	(0.0001)	(0.0013)	(0.0001)	(0.0013)
GDP growth	0.00453***	0.04523***	0.00452***	0.04520***
	(0.0004)	(0.0043)	(0.0004)	(0.0043)
Inflation	0.00081	0.01951*	0.00080	0.01923*
	(0.0010)	(0.0095)	(0.0010)	(0.0095)
Controversies	–0.00127***	–0.01310***		
Community + Workforce	(0.0004)	(0.0030)		
Controversies	–0.00180	–0.01778		
Product Responsibility	(0.0013)	(0.0154)		
Controversies	–0.00044	–0.03231		
Shareholders	(0.0012)	(0.0205)		
ESG Controversies			–0.00003***	–0.00037***
#GSV			(0.0000)	(0.0001)
Constant	1.04752***	1.60653***	1.04783***	1.61004***
	(0.0171)	(0.2138)	(0.0169)	(0.2127)
Observations	2,680	2,680	2,680	2,680
Number of groups	134	134	134	134

The table reports a set of FE models with DK s.e.: Model 3 incorporates the effect of diverse types of controversies, Model 4 checks the influence of ESG controversies on value considering bank visibility

Source: Author's calculations

Standard errors in parentheses, * p < 0.1, ** p < 0.05, *** p < 0.01.

Evidence from country's level of press freedom

In this section we test the fourths hypothesis. To capture the additional effect of press freedom in a country, we introduce an additional variable, namely, PFI. 25% and 75% quartiles were taken for the two sub-samples with lowest and highest average PFI values (Table 5).

Table 5. PFI – Percentiles

5%	**25%**	50%	**75%**	95%
10.25	**23.93**	25.13	**42.15**	78.39

Source: Author's calculations.

The results of a model with low and high PFI estimation are presented in Table 6 (Model 5). ESG controversies have a negative statistically significant effect on value for banks, whose countries of domicile have high press freedom (low PFI values). The coefficient becomes positive, but statistically insignificant at the 5% level for countries with low press freedom, meaning that ESG controversies do not affect value. The presence of a relationship for the banking sector solely in countries with high degree of press freedom is consistent with the result for production firms described by A. Aouadi and S. Marsat [32], nevertheless, the direction of influence is opposite.

Consequently, except for the attention bias on the bank level, detected via Model 4, there is another bias on the country level. As companies in countries with high press freedom receive more media coverage, investors receive more information and react to ESG controversies.

Table 6. The effect of ESG controversies on bank value: sample split by PFI

	Model 5			
	Press Freedom Index			
VARIABLES	Tobin's Q Ratio		MC to BV	
	LOW	HIGH	LOW	HIGH
Profitability	0.00016	–0.00188**	0.00658	–0.01499**
	(0.0006)	(0.0008)	(0.0060)	(0.0062)
Size	0.00006***	–0.00000	0.00044**	–0.00007
	(0.0000)	(0.0000)	(0.0002)	(0.0001)
Loan provisions	–0.02772***	–0.01414***	–0.24659***	–0.12231***
	(0.0053)	(0.0040)	(0.0466)	(0.0297)
Leverage	–0.00274	–0.01261***	–0.07216***	–0.10603***
	(0.0022)	(0.0010)	(0.0216)	(0.0137)
Liquidity	0.00031	–0.00284*	0.00493	–0.01546
	(0.0003)	(0.0015)	(0.0041)	(0.0125)
ESG Score	–0.00002	–0.00006	–0.00160	–0.00241**
	(0.0002)	(0.0001)	(0.0022)	(0.0011)
GDP growth	0.00329***	0.00475***	0.04586***	0.03508***
	(0.0005)	(0.0004)	(0.0055)	(0.0038)
Inflation	0.00717*	0.00108	0.07339	0.03058**
	(0.0041)	(0.0012)	(0.0449)	(0.0108)
ESG	–0.00002***	0.00009	–0.00023***	0.00174*
Controversies #GSV	(0.0000)	(0.0001)	(0.0001)	(0.0008)

VARIABLES	Model 5 Press Freedom Index Tobin's Q Ratio LOW	Tobin's Q Ratio HIGH	MC to BV LOW	MC to BV HIGH
Constant	1.01129***	1.20305***	1.55884***	2.71789***
	(0.0403)	(0.0210)	(0.4426)	(0.2284)
Observations	1,160	700	1,160	700
Number of groups	58	35	58	35

The table reports a set of FE models with DK s.e.: Model 5 provides the evidence of the sample split on 2 sub-samples, based on low and high PFI

Standard errors in parentheses, * p < 0.1, ** p < 0.05, *** p < 0.01.

Source: Author's calculations.

ESG controversies and bank stability

We have constructed 3 models. In all models the lagged value for controversies was included in line with the current period as we assume that controversies can affect bank stability on a six-month horizon. Model 6 includes the one-quarter lag of the ESG controversies variable interacted with the ESG score. This model tests the fifth hypothesis regarding the moderating effect of controversies on bank risk. Model 7 includes the interaction between ESG controversies on the one hand, and GSV index and ESG score on the other. Model 8 reflects the difference in the level of press freedom in different countries. The results are presented in the Table 7.

Table 7. The effect of ESG controversies on bank stability

VARIABLES	Model 6	Model 7	Model 8 PFI LOW	Model 8 PFI HIGH
Size	0.0002	0.0002	0.0001	0.0003
	(0.0003)	(0.0003)	(0.0004)	(0.0004)
Profitability	–0.0062***	–0.0061***	–0.0087***	–0.0014
	(0.0011)	(0.0011)	(0.0015)	(0.0028)
Loan provisions	–0.3421***	–0.3446***	–0.5908***	–0.2154**
	(0.0941)	(0.0944)	(0.1248)	(0.0785)
Asset growth	0.0641	0.0646	0.3402	–0.2571
	(0.2630)	(0.2638)	(0.2610)	(0.2995)
Liquidity	–0.0341***	–0.0342***	–0.0305**	–0.0356**
	(0.0081)	(0.0083)	(0.0123)	(0.0149)
ESG Controversies #	0.0002		0.0002	0.0004
ESG Score	(0.0002)		(0.0002)	(0.0006)
ESG $\text{Controversies}_{(t-1)}$ #	0.0003*		0.0002	0.0001
ESG Score	(0.0001)		(0.0002)	(0.0006)

	Model 6	Model 7	Model 8 PFI	
VARIABLES			LOW	HIGH
ESG Score	0.0086***	0.0088***	0.0015	0.0127***
	(0.0020)	(0.0020)	(0.0031)	(0.0028)
GDP growth	0.0344*	0.0346*	0.0236	0.0389*
	(0.0185)	(0.0186)	(0.0211)	(0.0186)
Inflation	–0.0024	–0.0023	–0.0016	–0.0009
	(0.0244)	(0.0244)	(0.0474)	(0.0261)
ESG Controversies #		0.0001		
GSV		(0.0003)		
ESG Controversies #		0.0005		
$GSV_{(t-1)}$		(0.0004)		
Constant	4.7922***	4.8013***	5.1398***	4.5507***
	(0.2500)	(0.2514)	(0.1912)	(0.2909)
Observations	2,545	2,545	1,311	1,234
Number of groups	134	134	69	65

The table reports a set of FE models with DK s.e.: Model 6 with one-quarter lag of ESG controversies variable interacted with ESG score and ESG score, Model 7 with ESG controversies interacted with GSV index and ESG score and Model 8 with ESG controversies interacted with ESG score and difference in press freedom in different countries.

Standard errors in parentheses, * p < 0.1, ** p < 0.05, *** p < 0.01.

Source: Author's calculations.

ESG controversies do not have a moderating influence on the relationship between the ESG score and bank stability, and do not have a deferred effect due to its statistical insignificance at the 5% level. This result is constant across all model specifications, meaning consistency across sub samples. Bank stability is affected by more fundamental factors, such as the bank's business model and performance, but some disputes covered in the media do not influence a bank's operating performance and do not lead to a reduction in the ESG-positive influence on risks, thus no moderating effect is noted on a six-month horizon.

In addition, we have found an interesting effect of ESG scores. In the first 2 models, the coefficient is positive and highly statistically significant, which indicates that banks with higher ratings are more stable and less risky in terms of distance from default. This is the argument for ESG not creating create value but decreasing risks. And this positive relationship corresponds to the empirical studies [3; 19; 38].

However, the subsequent sample split in Models 3 and 4 shows that this effect in not constant for all banks. This effect exists for banks in countries with low press freedom, but for banks in countries with high press freedom, there is no significant effect on stability. It can be explained as follows: for the latter, the requirements have been high over a long period of time, and these banks have followed an ESG strategy. However, for banks in emerging markets, high scores are rare, and this is a way to attract new clients and investor attention, increase profits and decrease risks.

Robustness check

To check the validity and consistence of our results we performed a robustness check by[3]:

1) Using the system GMM approach to reflect endogeneity concerns. Following C. Di Tommaso and J. Thornton [19], we presumed that our model may suffer from the endogeneity problem, since banks with higher valuation are reluctant to have higher ESG scores (inverse causality is possible). We conducted a robust estimation collapsing the number of instruments [59]. Endogenous variables lag of the dependent variable and ESG score were used. 2 tests were conducted: the Arellano-Bond

[3] Results are reported in Appendix 6.

test for autocorrelation and the Sargan test for overidentifying restrictions. Test results confirm that there is no autocorrelation and restrictions are valid due to high p-values – Model A;

2) Using the Bloomberg ESG rating instead of TR scores to check the validity of results – Model B;
3) Applying a sample variation over the time period to check the stability of obtained results by deleting the COVID-19 pandemic period (four quarters of 2020), since during the pandemic bank risks and investor attitude towards investments were biased – Model C;
4) Using the Developed variable instead of PFI to split the sample. Developed and PFI are highly negatively correlated and have a significant correlation of –0.62 (Appendix 5). It means that the results of the sample split could provide equivalent results. Nevertheless, we conducted a robustness check of the results received for the sample split by PFI, as variables capture different aspects of country characteristics – Model D.

In all specifications we received equivalent results:

- There is a statistically significant negative effect of controversies on bank value, the result is consistent for both dependent variables;
- ESG scores do not affect value;
- There is negative statistically significant at 5% effect of ESG controversies interacted with GSV on value measured by both dependent variables in developed markets and there is no effect in emerging markets;
- There is no moderating effect of ESG controversies on risk-taking that is statistically significant at 5% in either market.

The only discovered difference is as follows: in Model B we received inverse results in terms of the ESG rating itself when incorporated in value regression. There is a positive influence of ESG scores on value for both specifications that is statistically significant at 5%. It can be described due to specifics of rating formation by different agencies. As it was described in recent papers [24–26], ratings provided by agencies can give substantially different results since the ESG pillar weighting method is not universal. Even when adjustments for explicit differences in definitions of CSR ratings are made, their results do not correspond to each other. According to these studies, the correlation of ratings is low as well. For this reason, investors and managers should be aware of discrepancies in the rating methodologies when considering ratings.

Consequently, the results obtained through the robustness check confirm the main conclusions of this paper regarding ESG controversies, and in most cases prove the effect of ESG scores on bank value and risk-taking.

Conclusions

In this paper we introduce a new ESG controversies variable that describes banks' compliance with socially approved ESG practices. The focus was exclusively on the banking sector due to the uniqueness of ESG practices for this type of companies, described by SASB materiality map. We confirm that in case of banks ESG controversies are more important for investors than an ESG conventional rating itself, unlike for production firms, according to S. Glossner [4]. This metric negatively influences bank valuation and has no effect on fundamental stability. In addition, we have tested the hypotheses regarding diverse types of controversies, the effect of bank visibility and country specifics. The main results obtained in this study are valid according to the robustness check conducted in the course of research.

We have found a negative effect of ESG controversies on bank value, meaning that investors react negatively to bank involvement in ESG disputes. The effect depends on bank visibility: the higher the investor interest in the bank, the stronger the negative response of the share prices. This happens due to information inefficiency as banks that are in the scope of attention receive more media coverage, investors dispose more information and reflect this information in share prices. Moreover, investors react exclusively to several types of controversies, i.e., community and workforce controversies, and do not reflect other ESG negative news in share pricing.

According to the obtained results, the reaction to news depends on market specifics as well, such as the level of press freedom and the level of country development. Namely, there is an effect of ESG negative news on bank value in countries with high degree of press freedom and level of development. This can happen due to the higher attention to ESG practices in such countries and more efficient information available to different parties.

In terms of reflection of ESG disputes on a bank's risk-taking, we did not find any significant approval of the initial hypothesis. Since ESG controversies are more a reputational issue, bank stability as a fundamental part of bank business is not affected by temporary losses of reputation neither in short-term, nor on longer-term horizon.

In this paper we investigated bank ESG practices separately, since banks' ESG performance is different from that of production firms, as mentioned above. Introduction and statistical significance of the new ESG controversies variable can describe the inconclusive results received for the relationship between bank value, stability and ESG performance. Moreover, we have found different effects of controversies for banks. Firstly, investors react to various types of controversies, and they are not necessarily in line with the SASB materiality map [60]. Secondly, controversies do not have a moderating effect on bank stability, which is the foundation of bank business.

Although we have conducted in-depth research of the reflection of ESG controversies in bank business, this study has several limitations and there is room for future research. The first limitation is data availability: we use a dataset of controversies for the five-year period from only one data source – Thomson Reuters. Notwithstanding, controversies are published by other agencies, and they do

not include the banking sector. Moreover, we rely solely on Thomson Reuters methodology in classifying certain news as a controversy. Secondly, this study provides a more general understanding of ESG controversies, nevertheless, it can be useful to make a time-series or conduct case study analysis and provide conclusions about the impact of the duration and volume of ESG disputes on prices.

There is space for future research. Firstly, despite ESG controversies, it can be useful to conduct research and compare the impact of positive and negative ESG news on a sample of banks, following the results obtained by P. Krüger [29] for production firms. Secondly, another proxy of ESG controversies could be found or constructed by a researcher to approve the validity of the results obtained in this paper.

This study provides useful insights into bank management, investors and policymakers. For these parties it is important to understand how bank valuation and fundamental stability are affected by reputational losses due to ESG policy violation. Moreover, investors and companies can lose or make money on share price fluctuations, when ESG controversy occurs, and market reacts to such news.

Overall, ESG is a relatively new topic, and a unified viewpoint in regard to it has not yet been formed by investors, clients and governments because a rather short period has passed since its implementation. However, it is especially important to incorporate ESG practices and goals into companies' and banks' long-term strategies. Today ESG controversies and their coverage by the media are becoming a powerful tool for influencing companies that do not follow ESG, pollute environment and do not care for their employees, as the negative consequences of their activities will be immediately reflected in their share prices. Even though there is still no universal impact on share prices in all countries or an effect on stability, it is already becoming a powerful tool of affecting the bank strategy, performance and share pricing.

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Appendixes

Appendix 1. Several examples of ESG controversies

1) **Type of controversy:** Shareholder.
Main party: Goldman Sachs.
Year: 2010.
Goldman Sachs was obliged to pay $550 mln. to government and 2 other banks (Deutsche Industriebank and Royal Bank of Scotland) for fraudulent deals with derivatives and deception of investors.
2) **Type of controversy:** Community, Anti-competition controversy.
Main party: Bank of Nova Scotia.
Year: 2020.
Bank of Nova Scotia had to pay over $7 mln. for preci ous metals price manipulation.
3) **Type of controversy:** Product Responsibility, Privacy controversies.
Main party: Sberbank.
Year: 2019.
Sberbank has investigated a potential client data leak.
4) **Type of controversy:** Workforce, Diversity and Opportunity Controversies.
Main party: Bank of America.
Year: 2020.
Justice Department induced Bank of America to resolve claims of disability discrimination and pay compensation to victims.
5) **Type of controversy:** Community, Business ethics.
Main party: Danske Bank.
Year: 2017.
Danske Bank was fined for money-laundering.
6) **Type of controversy:** Resource use, Environmental controversy.
Main party: HSBC.
Year: 2017.
Greenpeace challenged HSBC due to financing palm oil companies.

Appendix 2. Description of variables

	Variable	Source	Measure	Definition	Hypothesis[4]
	Tobin's Q Ratio	Bloomberg	Share	Ratio of a bank's market value to the replacement cost of its assets. Estimated as (Market Capitalization + Total Liabilities + Preferred Equity + Minority Interest) / Total Assets	1, 2, 3, 4
	Market Capitalization to Book Value	Bloomberg	Share	Measures relative value compared to the bank's market value	1, 2, 3, 4
	Z-score	Author's calculation	Units	Return on assets plus capital to assets ratio divided by standard deviation of ROA	5
Bank specific variables	ESG Score	Thomson Reuters	Units	Measure of ESG performance of a bank weighted on 3 pillars: Environmental, Social, Governance	1, 2, 3, 4, 5
	ESG Controversies	Thomson Reuters	Units	Number of ESG controversies during a quarter	1, 2, 3, 4, 5
	ESG Combined Score	Thomson Reuters	Units	Measure that combines ESG score with ESG controversies to provide an evaluation of a company's sustainability performance	1
	Return on Assets	Bloomberg	%	Measure of a bank's profitability. Shows how much income can be generated relative to the asset base	1, 2, 3, 4, 5
	Return on Common Equity	Bloomberg	%	Measure of a bank's profitability. Shows how much income can be generated relative to equity base	1, 2, 3, 4, 5
	Size	Bloomberg	bln. RUB.	Measured by logarithm of total assets or total assets	1, 2, 3, 4, 5
	Credit risk	Bloomberg	%	Measure of credit portfolio quality. Is calculated as Non-Performing Loans to Total Loans	1, 2, 3, 4, 5
	Capital adequacy	Bloomberg	%	Is measured by Tier 1 Common Equity Ratio	1, 2, 3, 4, 5
	Loan provisions	Bloomberg	%	Measure management expectations of future loan losses. Is calculated as Provisions for Loan Losses to Total Loan	1, 2, 3, 4, 5
	Business model	Bloomberg	%	Measured by the ratio of Total Loans to Total Assets. Reflects the percentage of assets used for providing traditional banking services	1, 2, 3, 4, 5
	Leverage	Bloomberg	%	Measured by the ratio of Common Equity to Total Assets	1, 2, 3, 4, 5
	Liquidity	Bloomberg	%	Measured by the ratio of Cash to Total Asset	1, 2, 3, 4, 5
	Growth of assets	Bloomberg	%	Measures the speed of bank development. Calculated as the ratio of assets in the current period to the previous one minus 1	5
	Firm Visibility	Google Trends	Units	Is measured by Google Search Volume Index. Shows the level of bank popularity and investor attention. Ranges from 0 to 100 with 100 being the most popular search	3
Country specific variables	Press Freedom Index	World Bank	Units	Shows the level of press freedom in each country. Score ranges from 0 to 100, with values close to zero having more freedom	4
	GDP growth	World Bank	%	Measure the level of total country-specific economic conditions and growth opportunities	1, 2, 3, 4, 5
	Inflation rate	World Bank	%	Measure macroeconomic and price fluctuations in the home country	1, 2, 3, 4, 5
	Developed	MSCI	Dummy	Equals 1 if the country is considered developed according to MSCI classification and 0 for emerging	4

Source: Author's analysis.

[4] The number of hypotheses where the variable is used in regression model estimation.

Appendix 3. Number of controversies by type

Community	**832**	**69.1%**
Anti-competition controversy	329	27.3%
Business Ethics controversies	365	30.3%
Critical controversies	7	0.6%
Intellectual Property controversies	5	0.4%
Public Health controversies	1	0.1%
Tax Fraud controversies	125	10.4%
Management	**5**	**0.4%**
Management Compensation controversies	5	0.4%
Product Responsibility	**186**	**15.4%**
Consumer Complaints controversies	100	8.3%
Privacy controversies	50	4.2%
Product Access controversies	5	0.4%
Product Delays	1	0.1%
Product Recall	2	0.2%
Responsible Marketing controversies	28	2.3%
Resource Use	**9**	**0.7%**
Environmental controversies	9	0.7%
Shareholders	**76**	**6.3%**
Acing controversies	3	0.2%
Auditor Early Resignation	2	0.2%
Insider Dealings controversies	4	0.3%
Profit Warnings	16	1.3%
Shareholder Rights controversies	51	4.2%
Workforce	**96**	**8.0%**
Diversity and Opportunity controversies	17	1.4%
Employees Health & Safety controversies	2	0.2%
Management Departures	50	4.2%
Strikes	8	0.7%
Wages Working Condition controversies	19	1.6%
Total number of controversies	**1204**	**100.0%**

Source: Author's calculations.

Appendix 4. The tests result

Breusch-Pagan Lagrange multiplier test

H0: Variance across entities is zero

	Tobin's Q	MC to BV
chibar2(01)	10749.49	9037.82
Prob > chibar2	0.0000	0.0000

Source: Author's calculations.

Wald test

H0: All individual effects are equal to zero

	Tobin's Q	MC to BV
F (133, 2537)	64.41	59.92
Prob > F	0.0000	0.0000

Source: Author's calculations.

Hausman test

H0: Difference in coefficients not systematic

	Tobin's Q	MC to BV
chi2(9)	227.00	223.46
Prob > chi2	0.0000	0.0000

Source: Author's calculations.

Modified Wald statistic for groupwise heteroskedasticity

H0: Homoscedasticity

	Tobin's Q	MC to BV
chi2 (134)	91886.85	47262.90
Prob > chi2	0.0000	0.0000

Source: Author's calculations.

Wooldridge test for time autocorrelation

H0: There is no first order autocorrelation

	Tobin's Q	MC to BV
F (1, 133)	201.928	167.659
Prob > F	0.0000	0.0000

Source: Author's calculations.

Pasaran test for cross-sectional independence (spatial autocorrelation)

H0: Cross-sectional independence

	Tobin's Q	MC to BV
Statistic	49.369	64.998
Prob	0.0000	0.0000

Source: Author's calculations.

Appendix 5. Correlation analyses

	Tobin's Q Ratio	MC to BV	LN (Z-score)	ROA	ROE	Size	Credit risk	Capital adequacy	Loan Provisions	Business model	Leverage	Liquidity	Profit Margin	ESG Controversies	Controversies Dummy	ESG score	ESGC score	GDP growth	Inflation	Developed	PFI	GSV
Tobin's Q Ratio	1																					
MC to BV	0.944***	1																				
LN (Z-score)	0.074***	0.104***	1																			
ROA	0.634***	0.612***	0.129***	1																		
ROE	0.479***	0.565***	0.190***	0.788***	1																	
Size	−0.320***	−0.366***	0.049*	−0.319***	−0.165***	1																
Credit risk	−0.154***	−0.209***	−0.317***	−0.051*	−0.151***	−0.004	1															
Capital adequacy	0.270***	0.206***	−0.060**	0.213***	0.069**	−0.110***	0.126***	1														
Loan provisions	−0.043*	−0.068**	−0.164***	0.177***	0.084***	0.002	0.386***	−0.026	1													
Business model	0.214***	0.257***	0.136***	0.405***	0.234***	−0.545***	−0.055**	0.062**	−0.068**	1												
Leverage	0.434***	0.371***	0.115***	0.708***	0.212***	−0.406***	−0.001	0.233***	0.180***	0.485***	1											
Liquidity	−0.157***	−0.233***	−0.052*	−0.206***	−0.074***	0.233***	−0.001	0.096***	−0.108***	−0.223***	−0.385***	1										
Profit Margin	0.336***	0.383***	0.168***	0.507***	0.588***	−0.108***	−0.194***	0.155***	−0.169***	0.214***	0.231***	0.007	1									
ESG Controversies	−0.117***	−0.126***	−0.129***	−0.198***	−0.191***	0.348***	−0.016	0.024	−0.055**	−0.363***	−0.176***	−0.040	−0.128***	1								
Controversies Dummy	−0.181***	−0.195***	−0.151***	−0.287***	−0.246***	0.401***	0.050*	0.005	−0.037	−0.430***	−0.273***	0.015	−0.179***	0.690***	1							
ESG score	−0.345***	−0.342***	−0.146***	−0.345***	−0.246***	0.322***	0.169***	0.071***	0.032	−0.295***	−0.357***	0.089***	−0.299***	0.272***	0.330***	1						
ESGC core	−0.227***	−0.202***	−0.020	−0.115***	−0.019	0.002	0.159***	0.072***	0.073***	0.064**	−0.158***	0.075***	−0.136***	−0.189***	−0.124***	0.773***	1					
GDP growth	0.163***	0.193***	0.260***	0.179***	0.265***	0.042*	−0.040	−0.095***	−0.083***	0.117***	0.066**	−0.033	0.206***	−0.025	−0.093***	−0.107***	0.016	1				
Inflation	0.101***	0.115***	−0.032	0.245***	0.208***	−0.010	0.040	−0.014	0.389***	0.023	0.172***	−0.099***	−0.032	0.009	−0.017	0.031	0.072***	0.263***	1			
Developed	−0.099***	−0.066**	−0.162***	−0.399***	−0.321***	0.083***	−0.187***	−0.093***	−0.498***	−0.240***	−0.280***	−0.020	−0.172***	0.229***	0.270***	0.086***	−0.145***	−0.262***	−0.172***	1		
PFI	−0.017	−0.060**	0.225***	0.276***	0.282***	0.250***	0.038	−0.126***	0.426***	0.059**	0.154***	0.165***	0.212***	−0.173***	−0.200***	−0.228***	−0.063**	0.327***	0.151***	−0.654***	1	
GSV	−0.167***	−0.214***	−0.180***	−0.141***	−0.211***	0.175***	0.294***	0.098***	0.127***	−0.278***	-0.115***	0.016	−0.260***	0.316***	0.330***	0.396***	0.157***	−0.148***	0.088***	0.079***	−0.190***	1

Source: Author's calculations.

Standard errors in parentheses, * p < 0.1, ** p < 0.05, *** p < 0.01.

Appendix 6. Robustness check

	Model A			Model B			Model C			Model D					
VARIABLES	Tobin's Q Ratio	MC to BV	LN (Z-score)	Tobin's Q Ratio	MC to BV	LN (Z-score)	Tobin's Q Ratio	MC to BV	LN (Z-score)	Tobin's Q Ratio	MC to BV	LN (Z-score)	Tobin's Q Ratio	MC to BV	LN (Z-score)
Lag of the	0.0568	0.1746	1.0608***												
dependent variable	(0.1088)	(0.1239)	(0.0555)												
Profitability	−0.0070*	−0.0661*	−0.0092***	−0.0002	0.0014	−0.0060***	−0.0005	−0.0020	−0.0078***	−0.0003	0.0018	−0.0087***	−0.0004	−0.0024	−0.0007
	(0.0040)	(0.0344)	(0.0034)	(0.0003)	(0.0036)	(0.0012)	(0.0004)	(0.0048)	(0.0008)	(0.0005)	(0.0048)	(0.0012)	(0.0007)	(0.0054)	(0.0032)
Size	0.0000	0.0002	0.0000	0.0000***	0.0001	−0.5533**	0.0000	−0.0000	0.0010***	0.0000*	0.0001	−0.0001	0.0000**	0.0000	0.0005
	(0.0000)	(0.0004)	(0.0001)	(0.0000)	(0.0000)	(0.2315)	(0.0000)	(0.0001)	(0.0002)	(0.0000)	(0.0002)	(0.0004)	(0.0000)	(0.0000)	(0.0004)
Loan Provisions	−0.0398	−0.2494	−0.2556*	−0.0149***	−0.1139***	−0.3466***	−0.0116***	−0.0876***	−0.1350*	−0.0221***	−0.1866***	−0.6185***	−0.0117***	−0.0885***	−0.2051***
	(0.0297)	(0.2624)	(0.1435)	(0.0023)	(0.0234)	(0.0885)	(0.0029)	(0.0261)	(0.0741)	(0.0062)	(0.0571)	(0.1258)	(0.0032)	(0.0240)	(0.0654)
Leverage	0.0036	−0.1103		−0.0048***	−0.0640***		−0.0056***	−0.0748***		−0.0040*	−0.0772***		−0.0059***	−0.0711***	
	(0.0045)	(0.0683)		(0.0011)	(0.0112)		(0.0016)	(0.0155)		(0.0020)	(0.0184)		(0.0010)	(0.0088)	
Liquidity	0.0072*	0.0361	−0.0324	0.0006*	0.0021	−0.0337***	0.0003	0.0053	−0.0444***	−0.0001	−0.0013	−0.0304***	−0.0004	−0.0013	−0.0264
	(0.0037)	(0.0288)	(0.0266)	(0.0003)	(0.0031)	(0.0100)	(0.0004)	(0.0039)	(0.0084)	(0.0003)	(0.0030)	(0.0082)	(0.0008)	(0.0062)	(0.0177)
Controversies	−0.0136**	−0.1197**		−0.0013***	−0.0159***		−0.0005**	−0.0128***							
	(0.0056)	(0.0700)		(0.0004)	(0.0031)		(0.0002)	(0.0038)							
ESG Score	0.0005	0.0067	0.0056*	0.0004**	0.0040**	0.0134***	0.0003**	0.0028*	0.0102***	−0.0001	−0.0018	−0.0010	0.0001	0.0012	0.0123***
	(0.0007)	(0.0068)	(0.0031)	(0.0002)	(0.0015)	(0.0037)	(0.0001)	(0.0015)	(0.0017)	(0.0001)	(0.0013)	(0.0044)	(0.0001)	(0.0009)	(0.0033)
GDP growth	0.0065***	0.0692***	0.0413***	0.0047***	0.0466***	0.0244	0.0048***	0.0492***	0.0384*	0.0022***	0.0310***	0.0170	0.0054***	0.0454***	0.0350*
	(0.0009)	(0.0095)	(0.0102)	(0.0004)	(0.0042)	(0.0173)	(0.0011)	(0.0115)	(0.0193)	(0.0005)	(0.0051)	(0.0201)	(0.0004)	(0.0041)	(0.0182)
Inflation	0.0043	0.0881*	−0.0782	0.0010	0.0208**		0.0004	0.0130	0.0394**	0.0117***	0.1332***	0.0366	−0.0001	0.0109	−0.0028
	(0.0046)	(0.0486)	(0.0478)	(0.0010)	(0.0095)		(0.0011)	(0.0098)	(0.0183)	(0.0037)	(0.0412)	(0.0666)	(0.0011)	(0.0106)	(0.0259)
Assets growth			0.4434			0.4578			−0.0248			0.4231			−0.4259
			(0.4245)			(0.3058)			(0.2479)			(0.2483)			(0.2780)
ESG Controversies			−0.0001			0.0004			0.0001			0.0002			0.0002
# ESG Score			(0.0002)			(0.0003)			(0.0002)			(0.0002)			(0.0007)
ESG Controversies			−0.0002			0.0004*			0.0003*			0.0002			−0.0003
# ESG Score (t-1)			(0.0002)			(0.0002)			(0.0002)			(0.0002)			(0.0007)
ESG Controversies #			−0.0001							−0.0000***	−0.0004***		0.0001	0.0013*	
GSV										(0.0000)	(0.0001)		(0.0001)	(0.0007)	
Constant	0.9367***	1.9477**	0.0588	1.0421***	1.5588***	11.6365***	1.0601***	1.7037***	4.1688***	1.0320***	1.6790***	5.3817***	1.0907***	1.9307***	4.4386***
	(0.1314)	(0.8023)	(0.4571)	(0.0166)	(0.2039)	(2.8605)	(0.0281)	(0.3095)	(0.1685)	(0.0295)	(0.3037)	(0.2604)	(0.0163)	(0.1594)	(0.3169)
Observations	2,546	2,546	2,545	2,676	2,676	2,541	2,144	2,144	2,010	1,400	1,400	1,330	1,280	1,280	1,215
Number of groups	134	134	134	134	134	134	134	134	134	70	70	70	64	64	64

The table reports a set of models: Model A – system GMM approach, Model B – FE models with DK s.e. that uses Bloomberg ESG rating, Model C – FE models with Driscoll-Kraay standard errors that is estimated without period of COVID-19 pandemics, Model D – FE models with Driscoll-Kraay standard errors that uses Developed variable instead of PFI.
Source: Author's calculations
Standard errors in parentheses, * p < 0.1, ** p < 0.05, *** p < 0.01.

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