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*All you need is G(overnance): Sustainable Finance  
Following Ambrogio Lorenzetti's Frescoes*

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## Abstract



*The Effects of Good Government, Ambrogio Lorenzetti, Siena*

This paper takes at firm level the inspiration of the *Allegory of the Good and Bad Government*, the 14<sup>th</sup> century series of frescoes by Ambrogio Lorenzetti. Namely, we investigate whether a good corporate governance stabilizes financial performance and whether such superior governance improves 'ESG (Environmental, Social, Governance) resilience' against controversies related to sustainability issues. Using a large sample of European listed firms from 2006 to 2019, we find that a good governance is the key factor not only in getting ESG controversies managed, therefore increasing firm sustainability resilience, but also in reducing equity volatility, therefore stabilizing firm financial performance.

## Introduction<sup>1</sup>

*The Allegory of the Good and Bad Government* is a series of three fresco panels painted between 1338 and 1339 by Ambrogio Lorenzetti and hosted within Siena's City Hall. The frescoes, commissioned by the administrators of the city, then governed by nine citizens, portray an allegory of the Good Government and the effects of good and bad government on Siena and its countryside. Placed high on three walls of the Sala del Consiglio – the true heart of the institutional life of the city – the painting was meant to guide the local government, inspiring leaders to rule Siena wisely

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<sup>1</sup> We are very grateful for the comments received at the Fourth Brunel Banking Conference on "Bank Performance, Macroprudential Policy and Sustainable Finance", 24<sup>th</sup> June 2022, Online on Zoom.

and profitably. The frescoes contain many symbolic elements and convey a series of important political-institutional messages consistent with the traditional philosophical doctrine.

Inspired by those frescoes, we explore at firm level whether governance stabilizes financial performance and improves ‘ESG resilience’ (Environmental, Social, Governance resilience), a proxy of sustainability risk defined as a firm’s ability to safely withstand unpredictable threats due to sustainability issues. Indeed, the occurrence of largely unexpected major shocks – e.g., the Global Financial Crisis (GFC) of 2008-2009, the Euro sovereign crisis of 2010-2012, the COVID-19 pandemic hitting the world since early 2020, and the invasion of the Ukraine by Putin’s Russia in 2022 – is urging the need to achieve resilient socio-economic behavior at the macro level. At the same time, those major shocks reinforce the importance of resilience at the firm level too, and ESG resilience turns out to be most relevant since ESG scores have become the true compass of assessing a firm’s value creation as well as of letting a firm tap the sustainable finance market (Henisz et al. 2019).

The role of good performance on environmental, social and governance issues in reducing a firm’s risk has been underlined by both the stakeholder theory (Clarkson 1995; Donaldson and Preston 1995; Parmar et al. 2010) and the risk management theory (Godfrey 2005). Based on those theoretical perspectives and on preceding empirical research on this topic, our paper first confirms that return volatility is lower for firms having higher ESG scores.

Next, we study which one of the three dimensions of the ESG score – Environment (E), Social (S) and Governance (G) – is the most significant driver of ‘ESG resilience’, analyzing whether the occurrence of an ESG controversy for a firm in a certain year depresses the firm’s ESG score in the following year conditional on the firm being a ‘Good Environment’, ‘Good Social’ or ‘Good Governance’ (i.e. with an E, S, or G score higher than the median of the sector). Our results show that ESG controversies impact least at Good Governance firms compared to Good Social or Good Environment firms.

Moreover, we find that when ESG controversies occur being a ‘Good Governance’ firm abates return volatility much more than being a ‘Good Environment’ firm or being a ‘Good Social’ firm.

Overall, our analysis shows that firms having a Good Governance enjoy greater ESG resilience, and more stable financial performance when ESG controversies occur. Hence, having a good governance is vital for firms that operate in complex ecosystems, making a parallel at the corporate level with what Ambrogio Lorenzetti envisaged for a sustainable organization at the city government level.

Moreover, the previous results obtained through econometric methodologies are substantially confirmed by a business case analysis which shows that the ESG resilience was clearly higher for comparable companies – both in the financial and non-financial sector – depending on whether they had a high G score vs low G score.

The rest of the paper is structured as follows. Section 2 presents the most relevant literature and the theoretical framework backing our analysis and also formulate our testable hypotheses. Section 3 describes the database we constructed to execute our analysis and reports descriptive statistics

of the variables we considered. Section 4 presents our empirical methodology as well as the main results and puts them to the test of various robustness checks, including the verification through instrumental variables that our results are not driven by endogeneity issues between ESG scores and performance. Section 5 shows a business case analysis confirming our econometric results. Section 6 wraps up our main findings and casts new avenues for future research.

## 2. Literature Review and Hypotheses Development

While the relationship between corporate social performance (CSP) and financial performance has been the object of a broad stream of literature, few papers have addressed the relationship between CSP and a firm's risk. Early on, Orlitzky and Benjamin (2001) performed a metanalytic review on this issue supporting the view that a higher CSP decreases a firm's financial risk. In a more recent comprehensive literature review, Sassen et al. (2015) confirms a negative relationship between a firm's non-financial performance and corporate risk at the aggregate level, whilst the picture at a disaggregate level is blurred, depending on the samples and databases employed, as well as on the non-financial performance and risk measures adopted.

Sassen et al. (2015) is crucial for us also because it reviews the impact of CSP - measured by ESG factors - on firm risk (both total, systematic and idiosyncratic) in Europe. The results of the paper suggest that social performance lowers firm total risk, environmental performance decreases idiosyncratic risk (and it has a negative effect on total and systematic risk in environmentally sensitive industries only); no specific significant effects are detected for corporate governance performance. Moved from these results our paper pays particular attention to the effect on this latter score on firms' total risk.

Among the papers addressing the relationship between non-financial performance and firm risk, Breuer et al. (2018) found evidence that good ESG performance reduces the cost of equity not through the reduction of systematic risk (i.e. reducing *Beta*) but rather through the investor base channel. In turn, D'Apice et al. (2020) found a negative relationship between compliance to the Global Reporting Initiative and equity volatility as well as the Altman score.

A specific situation in which the relationship between non-financial performance and corporate risk takes on a particular twist is when a firm is exposed to ESG controversies, a case which has been studied by scholars such as Li et al. (2018) and Dorfleitner et al. (2020). ESG controversies are negative or potentially negative corporate news regarding the environmental, social, and governance dimensions such as suspicious social behavior and/or product-harm scandals that place a firm under the media spotlight and, by extension, grab investors' attention (Cai et al. 2012; Klein and Dawar 2004). By casting doubts on the future prospects of a firm and (potentially) jeopardizing its reputation, this kind of news may damage firm value.

In line with the results underlined in the literature, we therefore formulate the first hypothesis of our paper:

*H1: Overall corporate social performance measured by an aggregate ESG score (or by its three dimensions) reduces a firm's total risk, even after the outbreak of controversies.*

Indeed, over the years sustainability has become a crucial element in the business world. By and large, after increasing with the GFC and the Euro sovereign crisis, that trend has even strengthened with the outbreak of the COVID-19 pandemic (and may heighten further after the invasion of the Ukraine). This situation led to a greater degree of monitoring – both within firms and by third parties – aimed at ensuring the reliability of firms on these issues and at unmasking *greenwashing* behavior (Delmas & Burbano 2011). The complexity of a globalized socio-economic ecosystem means, however, that controversies on sustainability aspects can emerge even at the best-intentioned companies (Aouadi & Marsat 2018).

In this context, a firm's resilience to the sequence of major shocks becomes even more salient than short term performance. And the paramount dimension of a firm's resilience regards its approach to the sustainable transition (Fiksel 2006). Quickly recovering from external or internal shocks is now a challenge that firms must face also in the ESG world. The spotlight on these issues has become so intense and the reputational and operational risks is so high that firms must avoid the occurrence of disputes affecting their ESG performance or, when a dispute arrives, recover as quickly as possible (Bebbington et al 2008; Michelon 2011). In a nutshell: Firms must learn to be resilient also in terms of sustainability, in order not to lose legitimacy in an area that can no longer be considered as a *nice-to-have* but is a *must-have*.

In this framework, our hypothesis, drawn from Lorenzetti's *frescoes*, is that Good Governance is of prime importance for sustainability resilience. In the *Effects of Good Government in the City and Countryside* the Sieneese painter documents that the city and countryside thrive only if there is a good government. Peace and harmony, flourishing trade, decent work, the gates of the city walls open to facilitate a continuous exchange with the countryside, agricultural activities that proceed energetically, all of these can only be the fruits of a government activity based on the virtues of the rulers called to govern Siena. The message of the allegory of Good Government is clear: Governing with wisdom under the protection of Christian virtues, operating to promote peace and the wealth of the city, but always with a firm hand, as testified by the presence of soldiers.

In portraying the good government and its effects in this way, Lorenzetti is referring to the political philosophy developed by St. Thomas Aquinas for whom virtues are the only channel to achieve personal happiness and the lever to have institutions capable of promoting the common good (Thomas Aquinas (1981, II-II, 47, 11). This approach to moral philosophy, also called virtue ethics, lays its foundations in Aristotle, and was significantly recovered since the second half of the twentieth century thanks to the works of Anscombe (1958) and MacIntyre (2007). More recently, the discipline of business ethics has also begun pondering the centrality of virtues in the corporate domain. In 1997, Thomas Morris published the celebrated book *If Aristotle Ran General Motors: The new soul of business*. Over the past two decades several authors have gone back to Aristotle, seeking new perspectives on organizations, management and corporate governance (e.g., Fontrodona and Melé 2002; Sison 2008, 2013; Wijnberg 2000; Dierksmeier and Pirson 2009; Sison and Fontrodona 2012, 2013).

In this sense, our work can also be interpreted as a first and partial attempt to link virtue ethics to the field of sustainable finance, at least on a theoretical level. In Lorenzetti's pictorial language, good government is the result of a life of rulers marked by the continuous search for virtues.

Among these, prudence – i.e., applying the means necessary to achieve a good end – implies, at the firm level, adopting the best corporate governance practices, i.e., to have a good G score. Tsoukas and Cummings (1997) stress the importance of the Aristotelian notions of practical rationality and practical wisdom for running organizations. Later on, other authors have applied the notion of practical wisdom to different aspects of management (Schwartz and Sharpe 2006; Nonaka and Toyama 2007; Roca 2008; Melé 2010).

In designing the mechanisms – processes and relations by which firms are controlled and directed –, the rules and procedures for making decisions on corporate affairs and how to distribute political rights and responsibilities among different stakeholders (such as the board of directors, managers, shareholders, creditors, auditors, regulators), practical wisdom provides a holistic approach which is key to achieve sustainable goals in both the financial and environmental/social dimensions.

Allowing the firm to achieve its mission requires exercising practical wisdom in combining all these elements in the most effective and just way. In particular, having a consistent organization requires a concrete agreement among shareholders on the purpose and the mission of the firm. Practical wisdom looks for suitable partners and investors to do business. The same is true with the composition of the board of directors; being in tune over the mission at corporate level goes beyond having a common short-term interest. This regards as well how to select senior managers and the purpose of the whole organization (Calleja and Melé 2016).

Recently, research on corporate governance has been enjoying renewed interest by both academics and regulators to steer firms towards new objectives (for an exhaustive review on this topic see Bebchuk & Tallarita 2020). If in 1997 the Business Roundtable – the association representing the CEOs of the top 200 US corporations – pledged to give priority to achieving the highest returns for their shareholders, in 2019, with a major U-turn, it referred to “generating long-term value for shareholders” and viewing stakeholders’ interests as the main corporate priorities (Gelles & Yaffe-Bellany 2019). In turn, the European Union has also started an ambitious process of rethinking corporate governance practices through the study on Sustainable Corporate Governance.<sup>2</sup>

In light of what stated above, we formulate our second hypothesis:

*H2: Good performance in the Governance dimension contributes to controversies management more than good performance in either the Environmental or the Social dimensions.*

The ferment that is currently addressing corporate governance to rethink the way businesses work suggests analyzing also the impact of corporate governance on financial stability. Moreover, we aim to understand how ESG controversies affect equity volatility so to shed light on financial resilience against the outbreak of sustainability issues.

The literature regarding the relationship between corporate governance and equity volatility is not univocal. Ferreira and Laux (2007) investigate a private information acquisition story in which governance provisions and informed trading interact to influence the incorporation of information into stock prices. They document a positive relationship between corporate governance and

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<sup>2</sup> Which has already collected numerous comments, not always positive: <https://ecgi.global/news/call-reflection-sustainable-corporate-governance>.



idiosyncratic risk, which is interpreted as a measure of information flow. On an analogous vein, Bartram et al. (2012) document a positive cross-country association between shareholder protections and equity volatility. This result is consistent with the idea that firms take more risks in an environment with better corporate governance (John et al. 2007).

On the opposite, Gagnon and Jeanneret (2020) exploit the exogenous time-variation in shareholder protection to assess the causal impact of governance reforms on equity volatility. They find that stronger governance reduces equity volatility, and that firms become less risky once such reforms are enforced. Accordingly, stronger corporate governance reduces the degree of manager-shareholder conflicts, which increases the level of cash flows available to investors and, thus, the value of the firm's equity, but it also induces the manager to take on more debt. Higher equity valuation and a higher debt level affect a firm's market leverage ratio in opposite directions, but they show that the first effect dominates. That is, stronger corporate governance reduces a firm's market leverage and, thus, its equity volatility.

Derived from the reasoning above, our third and last hypothesis runs as follows:

*H3: When ESG controversies occur, good performance in the Governance dimension curbs equity volatility more than good performance in either the Environmental or the Social dimensions.*

Following the theories reviewed in this section, we expect that firms with a good Governance score enjoy better sustainability resilience as well as more financial stability resilience.

### **3. Data and Methodology**

Our empirical analysis is divided into three parts related to the three hypotheses to be tested. The first one studies the association between equity volatility and ESG performance (H1); the second considers the effect of corporate governance in managing ESG controversies (H2); the third one addresses the effects of corporate governance on financial stability resilience (H3).

#### *Data*

Our analysis is based on a sample of European listed companies included in the Thomson Reuters Asset4 database – now called Refinitiv – from 2006 to 2019. From the original universe we excluded those companies for which market price data was unavailable obtaining an unbalanced panel dataset covering 10,421 firm level observations from 1,097 companies. Table 1, presents, the sample construction process (Panel A), the distribution of our sample by sector (Panel B), year (Panel C), and country (Panel D).

The most represented sectors are Industrials (20.2%) followed by Financials (18.0%) and Consumer Discretionary (17.1%), with the other eight sectors more evenly represented from the maximum of 7.9% for Basic Materials to the minimum of 4.1% for Utilities.

As expected, representativeness within the final sample decays moving from the latest years to the initial years: The percentages of observations referring to 2017, 2018 and 2019 make above 9% each of the total, while the percentages drop at a level between 7 and 8% in 2013 and 2014, and reach the minimum levels between 4 and 5% for the two initial years in 2006 and 2007.

**Table 1 – Construction of the Sample and Firms Distribution by Sector and Year**

| <b>Panel A</b>                                  |                                  |                |             |
|---|----------------------------------|----------------|-------------|
| <b>Construction of the Sample</b>               |                                  |                |             |
| Asset4EU Datastream Thomson Reuters             |                                  | Companies      |             |
| Initial universe                                | 1,159                            |                |             |
| Less:   |                                  |                |             |
| Firms with missing Price Data                   | 62                               |                |             |
| Final sample of EU Asset4 Universe              | 1,097                            |                |             |
| Observations                                    | 1,097 (id) * 14 (years) = 15,358 |                |             |
| Less:   |                                  |                |             |
| Missing observations (ESG scores or financials) | 4,937                            |                |             |
| Final sample of observations – unbalanced panel | 10,421                           |                |             |
| <b>Panel B</b>                                  |                                  |                |             |
| <b>Sector</b>                                   | <b>Freq.</b>                     | <b>Percent</b> | <b>Cum.</b> |
| Basic Materials                                 | 824                              | 7.91           | 7.91        |
| Consumer Discretionary                          | 1,785                            | 17.13          | 25.04       |
| Consumer Staples                                | 691                              | 6.63           | 31.67       |
| Energy  | 585                              | 5.61           | 37.28       |
| Financials                                      | 1,871                            | 17.95          | 55.23       |
| Health Care                                     | 631                              | 6.06           | 61.29       |
| Industrials                                     | 2103                             | 20.18          | 81.47       |
| Real Estate                                     | 583                              | 5.59           | 87.06       |
| Technology                                      | 446                              | 4.28           | 91.34       |
| Telecommunications                              | 474                              | 4.55           | 95.89       |
| Utilities                                       | 428                              | 4.11           | 100.00      |
| Total   | 10,421                           | 100.00         |             |
| <b>Panel C</b>                                  |                                  |                |             |
| <b>Year</b>                                     | <b>Freq.</b>                     | <b>Percent</b> | <b>Cum.</b> |
| 2006  | 460                              | 4.41           | 4.41        |
| 2007  | 515                              | 4.94           | 9.36        |
| 2008  | 575                              | 5.52           | 14.87       |
| 2009  | 605                              | 5.81           | 20.68       |
| 2010  | 641                              | 6.15           | 26.83       |
| 2011  | 692                              | 6.64           | 33.47       |
| 2012  | 720                              | 6.91           | 40.38       |
| 2013  | 734                              | 7.04           | 47.42       |
| 2014  | 772                              | 7.41           | 54.83       |
| 2015  | 863                              | 8.28           | 63.11       |
| 2016  | 905                              | 8.68           | 71.80       |
| 2017  | 978                              | 9.38           | 81.18       |
| 2018  | 1005                             | 9.64           | 90.83       |
| 2019  | 956                              | 9.17           | 100.00      |
| Total   | 10,421                           | 100.00         |             |
| <b>Panel D</b>                                  |                                  |                |             |
| <b>Country</b>                                  | <b>Freq.</b>                     | <b>Percent</b> | <b>Cum.</b> |
| Austria   | 173                              | 1.66           | 1.66        |
| Belgium   | 294                              | 2.82           | 4.48        |
| Czech Republic                                  | 39                               | 0.37           | 4.86        |
| Denmark   | 305                              | 2.93           | 7.78        |
| Finland   | 300                              | 2.88           | 10.66       |
| France  | 1113                             | 10.68          | 21.34       |
| Germany   | 1004                             | 9.63           | 30.98       |
| Greece  | 232                              | 2.23           | 33.20       |
| Hungary   | 35                               | 0.34           | 33.54       |
| Ireland   | 101                              | 0.97           | 34.51       |
| Italy   | 540                              | 5.18           | 39.69       |
| Netherlands                                     | 396                              | 3.80           | 43.49       |
| Norway  | 241                              | 2.31           | 45.80       |
| Poland  | 275                              | 2.64           | 48.44       |
| Portugal  | 84                               | 0.81           | 49.25       |
| Spain   | 460                              | 4.41           | 53.66       |
| Sweden  | 557                              | 5.34           | 59.01       |
| Switzerland                                     | 638                              | 6.12           | 65.13       |
| Turkey  | 271                              | 2.60           | 67.73       |
| United Kingdom                                  | 3363                             | 32.27          | 100.00      |
| Total   | 10,421                           | 100.00         |             |



Country-wise, our sample includes twenty countries so that the equal contribution to the sample would be 5% each. Of course, as expected, the largest contribution is given by the United Kingdom – which was part of the European Union during the entire observation period since the Brexit was enacted after 2019 – reaching almost one third (32.3%) of the total observations. The importance of the UK within the sample reflects the fact that the country hosts the largest Stock Exchange in Europe. This huge share of UK firms will require specific robustness checks to make sure that any of the results obtained survive the exclusion of the UK observations. The next two top contributing countries are France (10.7%) and Germany (9.6%), in which case those high percentages reflect more the size of their domestic economies than that of their domestic Stock Exchanges. The only three other countries contributing more than 5% to the total sample are Switzerland (6.1%), Sweden (5.3%) and Italy (5.2%). While the role of Italy descends from the size of the domestic economy, the top roles of Sweden and Switzerland appear to be linked to the fact that these two countries are home to several listed multinational enterprises as well as to the fact that the two countries rank particularly high in terms of ESG rankings (e.g., Candriam 2017).

Data on ESG performance were collected from the Thomson Reuters Asset4® - now called Refinitiv – database, while firm-level financial data were obtained from the Datastream Worldscope Thomson Reuters database. The Asset4 dataset is recognized as one of the leading databases in providing relevant and reliable information on companies' environmental (E), social (S), and governance (G) dimensions, with a broad global coverage and its use has been validated by uncountable past academic studies (e.g., Cheng et al. 2014; Ioannou and Serafeim 2012; Cupertino et al. 2019). In our analysis a key factor is the Governance Score which is composed of three sub-dimensions: the Management Score, which provides firm commitment and effectiveness towards best practices in corporate governance; the Shareholders Score, which measures firm effectiveness towards equal treatment of shareholders and the use of anti-takeover devices and CSR Strategy Score, which reflects a firm practices to integrate the economic (financial), social and environmental dimensions into its day-to-day decision-making processes.

To measure total equity risk we use stock price volatility, defined as the annualized standard deviation of daily stock returns.<sup>3</sup> A set of control variables commonly used in previous studies on equity volatility is also included in all the analyses: Total assets, ROA, Price to Book ratio, Leverage and Liquidity ratio.

Variables' definitions are presented in Table 2, Panel A while Table 2, Panel B reports descriptive statistics of the variables used in the analysis, considering annual firm-level observations.

To avoid the influence of possible outliers, the dependent variable and all the control variables used have been winsorized between the 1<sup>st</sup> and the 99<sup>th</sup> percentiles.

The covariance matrix in Table 3 reports the results of the linear dependence analysis. Correlation coefficients suggest that firms with a better ESG enjoy a lower firm risk.

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<sup>3</sup>  $equity\ volatility = \sigma(R_{it}) * \sqrt{252}$

**Table 2 – Variables: Description and Descriptive Statistics**

| Panel A          |                              |   |
|------------------|------------------------------|---|
| Variable         | Definition                   | Description   |
| ESG              | ESG Score                    | The equally weighted average of the environmental, social, and governance sub-scores.   |
| E                | Environmental Score          | The score of corporate environmental sustainability, as a proxy of the best management practices to avoid environmental risks and capitalize on environmental opportunities to generate long-term stakeholders' value   |
| S                | Social Score                 | The score of corporate social sustainability, as a proxy of the firm's capacity to enhance trust and loyalty with its main stakeholders, such as workforce, customers, and society, through best management practices in order to generate long-term corporate value.                               |
| G                | Corporate Governance Score   | The score of corporate governance sustainability, as a proxy of the firm's capacity to generate sustainable value through the implementation of control mechanisms and systems of responsibilities able to regulate board members' and executives' acts pursuing long-term stakeholder expectations |
| Volatility       | Annualized Return Volatility | $\sigma(R_{it}) * \sqrt{252}$   |
| TA               | Total Assets                 | Natural Logarithm of total assets.  |
| LEV              | Leverage                     | Leverage, as a proxy for firm's indebtedness calculated as the ratio of Total Debt over Total Assets  |
| ROA              | Return on Assets             | Proxy of firm's profitability   |
| PTB              | Price to book ration         | A measure of the market's valuation of a company relative to its book value   |
| CASH             | Liquidity                    | A firm's liquidity position, calculated as the natural logarithm of the ratio of Total Current Assets over Total Current Liabilities  |
| GRI              | Global Reporting Initiative  | It is a dummy variable that equals 1 whether the company has been compliant with the Global Reporting Initiative, and 0 otherwise   |
| ESG Controversy  | ESG Controversy              | The ESG controversies score is calculated based on 23 ESG controversy topics. During the year, if a scandal occurs, the company involved is penalized and this affects their overall controversies score and grading  |
| Good Governance  | Good Governance              | It is a dummy that equals 1 if the G score of a company in year (t) is greater than or equal to the median G score of the industry to which the firm belongs.   |
| Good Social      | Good Social                  | It is a dummy that equals 1 if the S score of a company in year (t) is greater than or equal to the median S score of the industry to which the firm belongs.   |
| Good Environment | Good Environment             | dummy that equals 1 if the E score of a company in year (t) is greater than or equal to the median E score of the industry to which the firm belongs.   |

  

| Panel B          |        |          |           |          |          |
|------------------|--------|----------|-----------|----------|----------|
| Variable         | Obs    | Mean     | Std. Dev. | Min      | Max      |
| ESG              | 10,421 | 51.89393 | 20.78133  | .63      | 94.68    |
| E                | 10,421 | 47.93114 | 28.44208  | 0        | 98.88    |
| S                | 10,421 | 53.75441 | 24.16306  | .43      | 98.63    |
| G                | 10,421 | 51.46899 | 22.50667  | .82      | 98.47    |
| Volatility       | 10,421 | .34787   | .15955    | .12728   | 1.01894  |
| TA               | 10,421 | 15.77744 | 1.98407   | 11.26857 | 21.04311 |
| LEV              | 10,421 | .52054   | 1.40696   | 0        | 10.63905 |
| ROA              | 10,421 | 5.98877  | 8.02752   | -26.68   | 36.51    |
| PTB              | 10,421 | 2.69463  | 3.19007   | -2.18    | 20.93    |
| CASH             | 10,421 | 13.07887 | 2.07861   | 7.25559  | 18.20175 |
| GRI              | 5,173  | .9431664 | .2315467  | 0        | 1        |
| ESG Controversy  | 10,421 | 89.45941 | 24.26018  | 0        | 100      |
| Good Governance  | 10,421 | .5051378 | .4999976  | 0        | 1        |
| Good Social      | 10,421 | .5059975 | .4999988  | 0        | 1        |
| Good Environment | 10,421 | .5073409 | .4999701  | 0        | 1        |

**Table 3 – Pairwise Correlations Matrix**

| Variables      | (1)     | (2)     | (3)     | (4)     | (5)     | (6)     | (7)     | (8)     | (9)     | (10)    |
|----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| (1) ESG        | 1.00000 |         |         |         |         |         |         |         |         |         |
| (2) E          | 0.860*  | 1.00000 |         |         |         |         |         |         |         |         |
| (3) S          | 0.904*  | 0.744*  | 1.00000 |         |         |         |         |         |         |         |
| (4) G          | 0.694*  | 0.406*  | 0.427*  | 1.00000 |         |         |         |         |         |         |
| (5) Volatility | -0.158* | -0.115* | -0.186* | -0.074* | 1.00000 |         |         |         |         |         |
| (6) TA         | 0.331*  | 0.329*  | 0.303*  | 0.192*  | -0.088* | 1.00000 |         |         |         |         |
| (7) LEV        | 0.115*  | 0.121*  | 0.082*  | 0.080*  | 0.050*  | -0.147* | 1.00000 |         |         |         |
| (8) PTB        | -0.059* | -0.071* | -0.035* | -0.052* | -0.075* | -0.078* | -0.070* | 1.00000 |         |         |
| (9) ROA        | -0.066* | -0.074* | -0.047* | -0.050* | -0.186* | -0.216* | -0.0210 | 0.064*  | 1.00000 |         |
| (10) CASH      | 0.337*  | 0.329*  | 0.303*  | 0.208*  | -0.057* | 0.844*  | -0.126* | -0.044* | -0.135* | 1.00000 |

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Overall, the pairwise correlations among the variables seem relatively low. Indeed, looking at the variance inflation factors (VIF) presented in Table 4, we notice that, given the low values of the VIFs, the independent variables do not suffer from severe multicollinearity (VIF => 10) and are, therefore, suitable to be included in the OLS regression model.

**Table 4 – Variance inflation factor**

|          | VIF   | 1/VIF |
|----------|-------|-------|
| TA       | 1.763 | .567  |
| CASH     | 1.488 | .672  |
| ESG      | 1.164 | .859  |
| LEV      | 1.067 | .938  |
| ROA      | 1.055 | .948  |
| PTB      | 1.018 | .982  |
| Mean VIF | 1.259 | .     |

### *Methodology*

The regressions estimated in the next paragraphs build on the following baseline model:

$$Y_{i,t} = \alpha_0 + \beta_1 X_{i,t} + \beta_2 \text{Firm controls}_{i,t} + \beta_3 \text{Fixed effects}_i + \varepsilon_{i,t} \quad (1)$$

where  $Y_{i,t}$  is alternatively the equity volatility (H1 and H3) or the ESG score (H2), while  $X_{i,t}$  is alternatively the ESG Score (H1 – H3), the E (H1 – H3), the S (H1 – H3), the G (H1 – H3) score or the ESG Controversy variable (H2). As firm controls, we include firm’s size, profitability, price to book, leverage and liquidity and the E, S or G when not considered as dependent variables.

Our coefficient of special interest is  $\beta_1$ , which represents the average effect of  $X_{i,t}$  on the firm’s  $Y_{i,t}$ . We predict a negative value for this coefficient for H1 and H3 indicating that firms with a high ESG score and Good Governance should have higher stability in the share price. Instead, we predict a positive coefficient for H2 since a Good Governance score should be key for sustainability resilience.

We also include fixed effects to limit the potential bias in the estimate of  $\beta_1$ . Firm fixed effects control for time-invariant, unobservable firm characteristics that can influence equity volatility. The term  $\varepsilon_{i,t}$  represents the idiosyncratic error term.

## **4. Empirical Results and Discussion**

### 4.1 Equity volatility and ESG score (H1)

We start verifying our first hypothesis (H1), that is the positive impact of ESG performance in reducing equity volatility. Before addressing that main issue, however, we analyze the effect of the variables used in the literature to explain equity volatility (Model 1). Our results, reported in Table 5, confirm that equity volatility is negatively related to Total Assets, the Price to Book ratio, the Return on Assets, and the Liquidity ratio, while it is positively related to the Leverage as more indebted firms are more sensitive to market changes. Moreover, inspired by the work of D’Apice et al. (2020), we confirm that equity volatility is lowered by the extent to which a firm complies with the Global Reporting Initiative (Model 2).

**Table 5.** Equity volatility and sustainability disclosure. This table presents regression estimates of a firm's equity volatility on its main explicatory variables identified by the literature (Model 1) and on its GRI and control variables (Model 2). These models include firm and time fixed effects. Heteroskedasticity-consistent standard errors are reported in parentheses. \*\*\* and \*\* indicate that the parameters estimate is significantly different from zero at the 1% and 5% level, respectively.

|              | (1)<br>Volatility      | (2)<br>Volatility      |
|--------------|------------------------|------------------------|
| TA           | -.04939***<br>(.00403) | -.04543***<br>(.00657) |
| Debt ratio   | .00665**<br>(.00301)   | .00849**<br>(.00345)   |
| PTB          | -.00711***<br>(.00059) | -.00734***<br>(.00092) |
| ROA          | -.0031***<br>(.00021)  | -.0025***<br>(.00033)  |
| CASH         | -.00748***<br>(.00218) | -.00723**<br>(.0032)   |
| GRI          |                        | -.0465***<br>(.01005)  |
| _cons        | 1.25921***<br>(.05534) | 1.24309***<br>(.09453) |
| Observations | 1,0421                 | 5,173                  |
| R-squared    | .06418                 | .05604                 |

*Standard errors are in parentheses*

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

To test the effect of a firm's ESG performance (both at the aggregate level and of the individual dimensions) on its equity volatility, we estimate the following base models:

$$\text{equity volatility}_{i,t} = \alpha_0 + \beta_1 \text{ESG}_{i,t} + \beta_2 \text{Firm controls}_{i,t} + \beta_3 \text{Firm fixed effects}_i + \varepsilon_{i,t} \quad (2)$$

$$\text{equity volatility}_{i,t} = \alpha_0 + \beta_1 E_{i,t} + \beta_2 \text{Firm controls}_{i,t} + \beta_3 \text{Firm fixed effects}_i + \varepsilon_{i,t} \quad (2a)$$

$$\text{equity volatility}_{i,t} = \alpha_0 + \beta_1 S_{i,t} + \beta_2 \text{Firm controls}_{i,t} + \beta_3 \text{Firm fixed effects}_i + \varepsilon_{i,t} \quad (2b)$$

$$\text{equity volatility}_{i,t} = \alpha_0 + \beta_1 G_{i,t} + \beta_2 \text{Firm controls}_{i,t} + \beta_3 \text{Firm fixed effects}_i + \varepsilon_{i,t} \quad (2c)$$

Our results in Table 6 show that there is a negative and highly significant relationship between the ESG score and a firm's equity volatility. This relationship is illustrated by the coefficient  $\beta_1$  of the independent variable ESG score, with a corresponding p-value lower than 1% in Model 1. The results are confirmed both in significance and sign when looking at the individual dimensions (Model 2, 3, 4).

This finding supports our empirical hypothesis (H1) that firms with a high ESG score have lower share price volatility. The point estimate of Model 1 means that one standard deviation increase of the ESG score can reduce sample firms' equity volatility by 10.4%. Similarly, one standard deviation increase of the E dimension can reduce it by 4.8%, of the S by 10.9% and of the G by 4%.

**Table 6.** Equity volatility and ESG score. This table presents regression estimates of a firm's equity volatility on its aggregated ESG score (Model 1) and on its single dimension E (Model 2), S (Model 3), G (Model 4). These models include firm and time fixed effects. Heteroskedasticity-consistent standard errors are reported in parentheses. \*\*\*, \*\* and \* indicate that the parameters estimate is significantly different from zero at the 1%, 5% and 10% level, respectively.

|              | (1)<br>Volatility      | (2)<br>Volatility      | (3)<br>Volatility      | (4)<br>Volatility      |
|--------------|------------------------|------------------------|------------------------|------------------------|
| ESG          | -.00174***<br>(.00018) |                        |                        |                        |
| TA           | -.03109***<br>(.00593) | -.04245***<br>(.00598) | -.02965***<br>(.00598) | -.04493***<br>(.00582) |
| LEV          | .0079<br>(.00525)      | .00729<br>(.00549)     | .00764<br>(.00516)     | .00699<br>(.00549)     |
| PTB          | -.00735***<br>(.00096) | -.00725***<br>(.00097) | -.0072***<br>(.00096)  | -.00721***<br>(.00096) |
| ROA          | -.00336***<br>(.00031) | -.00321***<br>(.00031) | -.00334***<br>(.00031) | -.00316***<br>(.00031) |
| CASH         | -.0058**<br>(.00293)   | -.00658**<br>(.00302)  | -.00525*<br>(.00292)   | -.00753**<br>(.00301)  |
| E            |                        | -.00059***<br>(.00014) |                        |                        |
| S            |                        |                        | -.00157***<br>(.00014) |                        |
| G            |                        |                        |                        | -.00063***<br>(.00013) |
| _cons        | 1.04048***<br>(.08141) | 1.16695***<br>(.08302) | 1.00392***<br>(.08212) | 1.22225***<br>(.07936) |
| Observations | 10,421                 | 10,421                 | 10,421                 | 10,421                 |
| R-squared    | .08119                 | .06784                 | .08693                 | .06859                 |

*Robust standard errors are in parentheses*

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

Regarding firm's control variables, Model 1 shows that firm size, profitability and price-to-book have a negative and highly significant effect on a firm's equity volatility. On the contrary, the positive effect of leverage on equity volatility found above (Table 5) becomes insignificant here after we control for either aggregate ESG or any one of its three components (E, S, G) (Table 6).

**Table 7.** Equity volatility quantiles and ESG score. This table presents regression estimates of a firm's equity volatility, divided in quartiles, on ESG score. These models include firm and time fixed effects. Heteroskedasticity-consistent standard errors are reported in parentheses. \*\*\*, \*\* and \* indicate that the parameters estimate is significantly different from zero at the 1%, 5% and 10% level, respectively.

|              | (Q1)<br>Volatility     | (Q2)<br>Volatility     | (Q3)<br>Volatility     | (Q4)<br>Volatility     |
|--------------|------------------------|------------------------|------------------------|------------------------|
| ESG          | -.00063***<br>(.00005) | -.00106***<br>(.00007) | -.00164***<br>(.00013) | -.00319***<br>(.00057) |
| TA           | -.01416***<br>(.00088) | -.0184***<br>(.00133)  | -.02194***<br>(.00241) | .02341**<br>(.01065)   |
| ROA          | -.00188***<br>(.00011) | -.00351***<br>(.00014) | -.00501***<br>(.00028) | -.00596***<br>(.00109) |
| PTB          | -.00131***<br>(.00027) | -.00262***<br>(.00019) | -.00467***<br>(.00063) | -.0115**<br>(.0053)    |
| LEV          | .00114**<br>(.00046)   | .00185*<br>(.00107)    | .00972***<br>(.00307)  | .01627***<br>(.00371)  |
| CASH         | .01***<br>(.00078)     | .01205***<br>(.00124)  | .0149***<br>(.00224)   | -.01455<br>(.01002)    |
| _cons        | .38358***<br>(.00866)  | .52491***<br>(.01168)  | .68615***<br>(.0215)   | .91938***<br>(.09831)  |
| Observations | 10,421                 | 10,421                 | 10,421                 | 10,421                 |
| R-squared    | 0.0303                 | 0.0420                 | 0.0565                 | 0.0658                 |

*Robust standard errors are in parentheses*

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

Moreover, we ask whether this negative effect of the ESG on equity volatility changes with the increase of volatility. Table 7 presents the results of the regressions across the quartiles of equity volatility and the ESG score. Our results suggest that for each independent variable, the negative and significant effect of the coefficient increases with the increase of volatility. This means that to have a more stable performance the role of the ESG score is greater when a firm is riskier. This mechanism holds true even for the single dimensions of the ESG score (see the Appendix: Tables A1.a, A1.b and A1.c).

### Robustness Checks

Endogeneity could be an issue in our estimations if an unobservable variable influences our results, or if there is simultaneity or reverse causality. We used a fixed effects model that controls for firms' characteristics, we therefore assume that an omitted variable bias should not be a problem in our data.

Our model presumes that ESG score affects firm risk. However, reverse causality or simultaneity might be another source of endogeneity, particularly with regard to the G dimension. Hermlin and Weisbach (2003) suggest that a firm's governance structure is endogenously determined: on the one hand a higher ESG decreases firm risk, on the other hand firms that suffer from higher risk have incentives to strengthen their corporate governance to avoid potential damage to the firm. Bouslah et al. (2013) found a bidirectional causality between firm risk and some corporate social measures for a US sample.

**Table 8.** Equity volatility and ESG score: robustness checks. This table presents regression estimates of a firm's equity volatility on its aggregated ESG score lagged by one period (Model 1) and on its single dimensions E (Model 2), S (Model 3), G (Model 4) lagged by one period. These models include firm and time fixed effects. Heteroskedasticity-consistent standard errors are reported in parentheses. \*\*\*, \*\* and \* indicate that the parameters estimate is significantly different from zero at the 1%, 5% and 10% level, respectively.

|              | (1)<br>Volatility      | (2)<br>Volatility      | (3)<br>Volatility      | (4)<br>Volatility      |
|--------------|------------------------|------------------------|------------------------|------------------------|
| IESG         | -.00262***<br>(.00019) |                        |                        |                        |
| l_TA         | -.00995<br>(.00725)    | -.02079***<br>(.00734) | -.01186<br>(.00728)    | -.03213***<br>(.00727) |
| l_LEV        | .01335**<br>(.00558)   | .01323**<br>(.00589)   | .0128**<br>(.00553)    | .01212**<br>(.006)     |
| l_PTB        | -.0017*<br>(.00089)    | -.0016*<br>(.00091)    | -.0014<br>(.0009)      | -.00137<br>(.00091)    |
| l_ROA        | -.0011***<br>(.00031)  | -.001***<br>(.00032)   | -.00103***<br>(.00031) | -.0008**<br>(.00032)   |
| l_CASH       | -.01372***<br>(.00349) | -.01411***<br>(.00354) | -.01328***<br>(.00352) | -.01638***<br>(.00367) |
| IE           |                        | -.00138***<br>(.00016) |                        |                        |
| IS           |                        |                        | -.00202***<br>(.00015) |                        |
| IG           |                        |                        |                        | -.00074***<br>(.00014) |
| _cons        | .82484***<br>(.09773)  | .93148***<br>(.10116)  | .8207***<br>(.09912)   | 1.11119***<br>(.0975)  |
| Observations | 9406                   | 9406                   | 9406                   | 9406                   |
| R-squared    | .06664                 | .04968                 | .06585                 | .03639                 |

*Robust standard errors are in parentheses*

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

We deal with simultaneity issues in two different ways. First, we use lagged independent variables. The use of lagged explanatory variables could at least partially address simultaneity (Harjoto and Jo 2015; Luo and Bhattacharya 2009). Using lagged explanatory variables does not eliminate simultaneity problems (Wintoki et al. 2012), however, it diminishes the impact of simultaneity since past ESG scores and current firm risk are not determined in the same period.

Table 8 shows the effect of a one period lag of the ESG score (both aggregate and in its three single dimensions) on equity volatility. The results confirm those of our base model.

Next, we also employ the instrumental variables (IV) approach, which requires the instrumental variable to be: (i) correlated with our test variable (i.e., the ESG score), (ii) not directly correlated with our dependent variables (i.e., firm's risk). Namely, we employ two instruments. The first is a dummy variable that equals 1 if the company has been compliant with the Global Reporting Initiative, and 0 otherwise. Indeed, we assume that being compliant with the GRI standards is a signal of sustainability disclosure. Even though there is not a conclusive theory for which firms complying to GRI standards present a more stable financial performance, D'Apice et al. (2020) show that there are two main reasons why those companies should enjoy a more stable performance than comparable but less sustainable companies: high quality sustainable disclosure practices imply a 'self-selection' by companies as behaving sustainably which, in turn, requires companies to adopt a long-term perspective to accommodate stakeholders demand therefore replacing the short-term goal of shareholders value maximization. We assume this variable to be a proxy of the 'input' information that firms give to the market to signal their commitment to behave sustainably; in this sense, the GRI variable should be thus correlated with the ESG score.

The second instrumental variable used in our model is the ESG Controversy Score (Aouadi and Marsat 2018; Li et al. 2019). Data on controversies are based on the Controversies score provided by Thomson Reuters Asset4. This is measured by considering the number of controversies for environmental, social, and governance issues and other negative events that firms have faced during the year, as collected by Thomson Reuters Asset4 from diverse media sources.

Thomson Reuters defines the ESG Controversy score we use in this paper as follows: "The ESG controversies score is calculated based on 23 ESG controversy topics. During the year, if a scandal occurs, the company involved is penalized and this affects their overall controversies score and grading".

Environmental controversies involve biodiversity, spills and pollution, and the environmental consequences of products; social controversies deal with health and safety, diversity, working conditions, child labor, and problems with customers concerning product quality; governance controversies are concerned with executive board compensation, non-transparent and aggressive accounting issues, or insider dealings.

Like the ESG Score, the ESG Controversies Score ranges from 0 to 100, and a high ESG Controversies Score indicates lower controversies of firms (i.e., companies with a high number of controversies will have a low ESG Controversies Score) which means that a high ESG Controversies Score must be interpreted as a favorable signal.

As a double-check process we also built a Controversies dummy variable (D\_Contr) that equals 1 if the firm has had at least one Controversy in the period analyzed in anyone of the following



topics: Anticompetitive behavior, Management Controversies, Consumption Controversies, Environment Controversies, Insider dealing Controversies and Wages Controversies.

**Table 9 – Pairwise correlations**

| Variables            | (1)    | (2)   | (3)   | (4)   | (5)   | (6)   | (7)   | (8)  |
|----------------------|--------|-------|-------|-------|-------|-------|-------|------|
| (1) Volatility       | 1.00   |       |       |       |       |       |       |      |
| (2) ESG              | -0.150 | 1.00  |       |       |       |       |       |      |
| (3) E                | -0.11  | 0.860 | 1.00  |       |       |       |       |      |
| (4) S                | -0.18  | 0.90  | 0.75  | 1.00  |       |       |       |      |
| (5) G                | -0.07  | 0.70  | 0.42  | 0.44  | 1.00  |       |       |      |
| (6) GRI              | -0.07  | 0.26  | 0.23  | 0.25  | 0.100 | 1.00  |       |      |
| (7) ESGControversies | -0.02  | -0.31 | -0.27 | -0.27 | -0.23 | -0.07 | 1.00  |      |
| (8) D. Contr         | -0.02  | 0.30  | 0.27  | 0.27  | 0.22  | 0.07  | -0.72 | 1.00 |

As shown in Table 9, the correlation between the Controversies score and the ESG score is, surprisingly, negative ( $-0.31$ ), implying that companies with a high ESG score tend to have a higher number of controversies. One explanation for this result might be that companies that tend to have high ESG scores are affected more greatly by controversies because of a higher monitoring over them, this reflected by the saying “the higher you fly, the harder you fall” (Dorfleitner et al. 2020) or, referring to an ancient Latin *motto*: “*corruptio optimi pessima*”. This data reinforces the relevance of the ‘ESG resilience’ concept we adopt in this paper given that even firms with high ESG scores cannot stay too comfortable.

**Table 10.** Equity volatility and ESG score: Additional robustness checks. This table shows a second battery of robustness checks on the relationship between equity volatility and ESG score. Model 1 is our baseline model; Model 2 uses GRI as an instrumental variable (IV) of ESG; Model 3 uses ESG Controversy Score as IV of ESG; Models 4 use a firm’s ESG Controversy Score and the compliance with GRI, as instruments for the ESG to tackle possible endogeneity in the estimate of the base models. Heteroskedasticity-consistent standard errors are presented in parentheses. \*\*\*, \*\* and \* indicate that the parameter estimate is significantly different from zero at the 1%, 5% and 10% level, respectively.

|                           | (1)                    | (2)                    | (3)                    | (4)                    |
|---------------------------|------------------------|------------------------|------------------------|------------------------|
|                           | Volatility             | Volatility             | Volatility             | Volatility             |
| ESG                       | -.00174***<br>(.00018) | -.00456***<br>(.00099) | .00954**<br>(.00396)   | -.00381***<br>(.00097) |
| TA                        | -.03109***<br>(.00593) | -.00915<br>(.01092)    | -.14955***<br>(.04193) | -.01584<br>(.01072)    |
| Debt ratio                | .0079<br>(.00525)      | .01173***<br>(.00354)  | -.00016<br>(.00487)    | .01114***<br>(.00351)  |
| PTB                       | -.00735***<br>(.00096) | -.00738***<br>(.00092) | -.0058***<br>(.00096)  | -.00736***<br>(.00091) |
| ROA                       | -.00336***<br>(.00031) | -.00292***<br>(.00035) | -.00169***<br>(.00065) | -.00283***<br>(.00035) |
| CASH                      | -.0058**<br>(.00293)   | -.0051<br>(.00324)     | -.01666***<br>(.00477) | -.00544*<br>(.00322)   |
| _cons                     | 1.04048***<br>(.08141) | .87269***<br>(.12717)  | 2.45608***<br>(.50237) | .93763***<br>(.12531)  |
| Observations              | 10421                  | 5173                   | 10421                  | 5173                   |
| R-squared                 | .08119                 | 0.1079                 | .0005                  | .1115                  |
| Instruments               | no                     | GRI                    | ESG Contr.             | GRI<br>ESG Contr.      |
| Instrumented              | no                     | ESG                    | ESG                    | ESG                    |
| Under-identification test |                        | 0.000                  | 0.000                  | 0.000                  |
| Sargan -Hansen statistic  |                        | 0.000                  | 0.000                  | 0.000                  |
| Endogeneity test          |                        | no                     | no                     | 0.1732                 |

*Standard errors are in parentheses*

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

Our assumption is that companies compliant with the GRI and with fewer ESG Controversies (higher score) are also oriented towards higher ESG scores and a more stable financial performance. Indeed, econometric results support this assumption as shown in Table 10. In

particular, the under-identification tests show that both GRI and ESG Controversy are good instrumental variables of our specification. Moreover, the endogeneity test has a p-value of 17.32% for equity volatility showing that an endogeneity problem is present in our specification.

Turning to the results of the IV estimates, in the volatility equation the coefficient of the ESG Score IV is only slightly higher and its statistical significance is unchanged.

## 4.2 Good Governance and sustainability resilience

Once underlined the role that ESG criteria have in reducing firms' total risk, our research proceeds to ask which of the three components has the largest impact on sustainability resilience (i.e., a good management of ESG controversies) and on financial stability (i.e., reducing equity volatility).

**Table 11** – Pairwise correlations

| Variables             | (1)    | (2)    | (3)    | (4)    | (5)  |
|-----------------------|--------|--------|--------|--------|------|
| (1) G                 | 1.00   |        |        |        |      |
| (2) Good Governance   | 0.841  | 1.00   |        |        |      |
| (3) ESG Controversies | -0.235 | -0.181 | 1.00   |        |      |
| (4) D_Contr           | 0.216  | 0.17   | -0.724 | 1.00   |      |
| (5) Volatility        | -0.070 | -0.045 | -0.019 | -0.018 | 1.00 |

To empirically test our hypotheses (H2 and H3), we proceed as follows. First, we create a Good Governance dummy that equals 1 if the G score of a company in year ( $t$ ) is at or above the median G score of the industry where the firm belongs. We also do the same for E (dummy Good Environment) and S (dummy Good Social). The descriptive evidence highlights a negative pairwise correlation between Good Governance and the ESG controversies score (Table 11).

**Table 12.** ESG Controversies on ESG. This regression analyses the effect of the ESG controversy ( $t$ ) on the ESG score ( $t + 1$ ) if the company ( $i$ ) had a Good Governance at ( $t-1$ ) – Model (1-2); a Good Environment at ( $t-1$ ) – (Model 3-4); a Good Social at ( $t-1$ ) – Model 5-6. These models include firm and time fixed effects. Heteroskedasticity-consistent standard errors are reported in parentheses. \*\*\*, \*\* and \* indicate that the parameters estimate is significantly different from zero at the 1%, 5% and 10% level, respectively.

| Dependent Variable | (1)                            | (2)                            | (3)                            | (4)                            | (5)                            | (6)                            |
|--------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
|                    | ESG( $t+1$ )<br>GG( $t-1$ )= 0 | ESG( $t+1$ )<br>GG( $t-1$ )= 1 | ESG( $t+1$ )<br>GE( $t-1$ )= 0 | ESG( $t+1$ )<br>GE( $t-1$ )= 1 | ESG( $t+1$ )<br>GS( $t-1$ )= 0 | ESG( $t+1$ )<br>GS( $t-1$ )= 1 |
| ESG Controversies  | .0028<br>(.00927)              | .02612***<br>(.00805)          | .01189<br>(.00968)             | .01585**<br>(.00753)           | .00192<br>(.00983)             | .01702**<br>(.00778)           |
| E                  | .20997***<br>(.01527)          | .12358***<br>(.01718)          |                                |                                | .33342***<br>(.01327)          | .15766***<br>(.01693)          |
| S                  | .30037***<br>(.01504)          | .22566***<br>(.01724)          | .38795***<br>(.0128)           | .20789***<br>(.01672)          |                                |                                |
| G                  |                                |                                | .13944***<br>(.01146)          | .08767***<br>(.01315)          | .15459***<br>(.01177)          | .10346***<br>(.01344)          |
| TA                 | 2.25421***<br>(.49983)         | -.62153<br>(.65806)            | 2.6543***<br>(.51736)          | -.05485<br>(.6435)             | 4.05241***<br>(.51999)         | .72802<br>(.63618)             |
| LEV                | -.8991*<br>(.53722)            | -.34658<br>(.34228)            | -.8436<br>(.64524)             | -.18253<br>(.31167)            | -.45421<br>(.47796)            | -.23074<br>(.34255)            |
| PTB                | .0436<br>(.06195)              | -.1379<br>(.09449)             | .0248<br>(.06753)              | -.12184<br>(.08593)            | .05735<br>(.06929)             | -.1729**<br>(.08492)           |
| ROA                | .03161<br>(.02412)             | -.00239<br>(.03061)            | -.03117<br>(.02342)            | .05398*<br>(.03048)            | -.0358<br>(.02387)             | .05997*<br>(.03121)            |
| CASH               | .02716<br>(.25416)             | .26047<br>(.31917)             | .19575<br>(.26638)             | .16947<br>(.29128)             | .66333**<br>(.26687)           | .11009<br>(.29871)             |
| _cons              | -13.46329*<br>(6.97277)        | 45.94456***<br>(9.32879)       | -24.94451***<br>(7.06629)      | 44.33788***<br>(9.24201)       | -47.35263***<br>(7.22672)      | 35.17443***<br>(9.12336)       |
| Obs.,              | 4568                           | 4613                           | 4568                           | 4610                           | 4560                           | 4618                           |
| R-squared          | .29047                         | .09899                         | .30284                         | .06433                         | .27713                         | .04988                         |

Standard errors are in parentheses

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

Table 12 illustrates the findings of the regression analysis conducted to test the sustainability resilience. We study the effect of a firm's ESG Controversy Score on its ESG Score lagged by one year, all conditioned on having had a Good E, S, G, score as stated in our H2. In particular, we estimate the following base models:

$$ESG_{i,t+1} = \alpha_0 + \beta_1 ESG\ Controversy_{i,t} + \beta_2 Firm\ controls_{i,t} + \beta_3 Firm\ fixed\ effects_i + \varepsilon_{i,t} \quad (7)$$

Results show that for firms labelled as Good Governance in  $t - 1$  the occurrence of controversies on sustainability issues in  $t$  does not result into a reduction of the ESG score in  $t + 1$ , but quite the opposite. Moreover, its impact is statistically more significant and higher than that for firms labelled as Good Environment or Good Social.

We can conclude that Good Governance implies higher sustainability resilience.

**Table 13.** Equity volatility and Good Governance/Environment/Social. This table presents regression estimates of a firm's equity volatility on a dummy Good Governance (Model 1), on a dummy Good Social (Model 2), and on a dummy Good Environment (Model 3). These models include firm and time fixed effects. Heteroskedasticity-consistent standard errors are reported in parentheses. \*\*\*, \*\* and \* indicate that the parameters estimate is significantly different from zero at the 1%, 5% and 10% level, respectively.

|                  | (1)<br>Volatility      | (2)<br>Volatility      | (3)<br>Volatility      |
|------------------|------------------------|------------------------|------------------------|
| Good Governance  | -.0077*<br>(.00456)    |                        |                        |
| TA               | -.03041***<br>(.00598) | -.03937***<br>(.00596) | -.02828***<br>(.00596) |
| ROA              | -.00332***<br>(.00031) | -.00324***<br>(.00031) | -.00336***<br>(.00031) |
| PTB              | -.00718***<br>(.00095) | -.00726***<br>(.00096) | -.00725***<br>(.00096) |
| Debt ratio       | .00742<br>(.00517)     | .00732<br>(.00546)     | .00777<br>(.00516)     |
| CASH             | -.00554*<br>(.00294)   | -.00688**<br>(.00301)  | -.0054*<br>(.0029)     |
| E                | .00026<br>(.00017)     | -.0004***<br>(.00015)  |                        |
| S                | -.00169***<br>(.00017) |                        | -.0015***<br>(.00014)  |
| Good Social      |                        | -.01556***<br>(.00593) |                        |
| G                |                        | -.00053***<br>(.00013) | -.00035***<br>(.00013) |
| Good Environment |                        |                        | .00158<br>(.00593)     |
| _cons            | 1.01818***<br>(.08248) | 1.14867***<br>(.0821)  | .99757***<br>(.08185)  |
| Observations     | 10413                  | 10413                  | 10413                  |
| R-squared        | .08796                 | .07229                 | .08822                 |

*Robust standard errors are in parentheses*

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

### 4.3 Good Governance and equity volatility

To test the impact of the dummy Good Governance, Good Social or Good Environment on equity volatility, as stated in our H3, we estimate the following base models:

$$Equity\ volatility_{i,t} = \alpha_0 + \beta_1 Good\ Governance_{i,t} + \beta_2 Firm\ controls_{i,t} +$$

$$\beta_3 \text{Fixed effects}_i + \varepsilon_{i,t} \quad (8a)$$

$$\text{Equity volatility}_{i,t} = \alpha_0 + \beta_1 \text{Good Environment}_{i,t} + \beta_2 \text{Firm controls}_{i,t} + \beta_3 \text{Fixed effects}_i + \varepsilon_{i,t} \quad (8b)$$

$$\text{Equity volatility}_{i,t} = \alpha_0 + \beta_1 \text{Good,Social}_{i,t} + \beta_2 \text{Firm controls}_{i,t} + \beta_3 \text{Fixed effects}_i + \varepsilon_{i,t} \quad (8c)$$

Results presented in Table 13 show how the highest impact in reducing equity volatility is obtained from being a ‘Good Social company’ (a company that therefore obtains a score above the industry median as regards the workforce, compliance with human rights, responsibility towards the community and regarding the product), followed by being a ‘Good Governance’ and finally a ‘Good Environment’ (this latter with insignificant results).

To bring our analysis one step forward, however, we asked what would happen to the equity volatility in the presence of controversies concerning ESG issues. Therefore, in studying the implications of having had a Good Governance in  $t - 1$ , we found that the ESG score instrumented by the GRI compliance and the ESG Controversies has a more significant effect in reducing equity volatility (-.007107 \*\*) compared to having been a Good Env (-.004821 \*) or a Good Social (-.005922 \*\*) (Table 14).

**Table 14.** Equity volatility and ESG score instrumented by ESG Controversy and GRI compliance. This table shows the relationship between equity volatility and ESG score instrumented if a firm has a Good Governance (Model 2); a Good Environment (Model 4); a Good Social (Model 6). Heteroskedasticity-consistent standard errors are presented in parentheses. \*\*\*, \*\* and \* indicate that the parameter estimate is significantly different from zero at the 1%, 5% and 10% level, respectively.

|              | (1)                      | (2)                      | (3)                      | (4)                      | (5)                      | (6)                      |
|--------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|              | Volatility<br>GG(t-1)= 0 | Volatility<br>GG(t-1)= 1 | Volatility<br>GE(t-1)= 0 | Volatility<br>GE(t-1)= 1 | Volatility<br>GS(t-1)= 0 | Volatility<br>GS(t-1)= 1 |
| ESG          | -.00534***<br>(.00144)   | -.0069**<br>(.00316)     | -.00627***<br>(.00143)   | -.00465*<br>(.00275)     | -.00435***<br>(.00155)   | -.00583**<br>(.00241)    |
| TA           | -.0026<br>(.0181)        | -.00319<br>(.0219)       | .01403<br>(.02189)       | -.02492<br>(.02026)      | .01131<br>(.02644)       | -.02189<br>(.01642)      |
| Debt ratio   | .011<br>(.01007)         | .01407***<br>(.00408)    | .08755***<br>(.02144)    | .00907**<br>(.00384)     | -.00421<br>(.00725)      | .01368***<br>(.00408)    |
| PTB          | -.00466***<br>(.00151)   | -.00964***<br>(.00129)   | -.00528**<br>(.00231)    | -.00595***<br>(.0011)    | -.00497***<br>(.0017)    | -.00694***<br>(.00117)   |
| ROA          | -.00176***<br>(.00062)   | -.00279***<br>(.00047)   | -.00217***<br>(.00062)   | -.00267***<br>(.00046)   | -.00245***<br>(.00064)   | -.00278***<br>(.00044)   |
| CASH         | -.00301<br>(.00541)      | -.00907*<br>(.00473)     | .00968<br>(.00703)       | -.01042***<br>(.004)     | -.00256<br>(.00671)      | -.01003**<br>(.00402)    |
| _cons        | .73252***<br>(.22478)    | 1.02448***<br>(.1877)    | .29453<br>(.28333)       | 1.23604***<br>(.17847)   | .44191<br>(.33894)       | 1.26579***<br>(.14739)   |
| Obs.,        | 1922                     | 3081                     | 1284                     | 3719                     | 1346                     | 3657                     |
| Instrumented | ESG                      | ESG                      | ESG                      | ESG                      | ESG                      | ESG                      |
| Instruments  | GRI<br>ESGControv.       | GRI<br>ESGControv.       | GRI<br>ESGControv.       | GRI<br>ESGControv.       | GRI<br>ESGControv.       | GRI<br>ESGControv.       |
| R-squared    | .0823                    | .0312                    | .0065                    | .0622                    | .0323                    | .0766                    |

Standard errors are in parentheses

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

We acknowledge that there is an overlap among firms with a Good Governance, Good Environment and Good Social. For this reason, as a further robustness check, we want to disentangle that portion of the Good Environment and Good Social which are not explained by the

Governance Score. We therefore estimated the residuals of a baseline regression of the Good Governance over the Good Environment and Good Social.

**Table 15.** Equity volatility and Good Governance residuals. This table shows the relationship between equity volatility and Good Governance residuals. Heteroskedasticity-consistent standard errors are presented in parentheses. \*\*\*, \*\* and \* indicate that the parameter estimate is significantly different from zero at the 1%, 5% and 10% level, respectively.

|                           | (1)<br>Volatility  |
|---------------------------|--------------------|
| Good Governance Residuals | -.678***<br>(.046) |
| TA                        | -.022***<br>(.006) |
| Debt ratio                | .006<br>(.005)     |
| PTB                       | -.007***<br>(.001) |
| ROA                       | -.004***<br>(0)    |
| CASH                      | -.003<br>(.003)    |
| _cons                     | 1.111***<br>(.078) |
| Observations              | 10466              |
| R-squared                 | .101               |

Robust standard errors are in parentheses

\*\*\* p<.01, \*\* p<.05, \* p<.1

We then regress these values over the Equity Volatility, with results of Table 15 which confirm our principal model, in the sense that even that portion of the Good Governance that does not depend on the Good Environment nor the Good Social, contributes in the Volatility reduction. More formally:

$$Good\ Governance_{i,t} = \alpha_0 + \beta_1 Good\ Environment_{i,t} + \beta_2 Good\ Social_{i,t} + \beta_3 Time\ fixed\ effects_i + \varepsilon_{i,t} \quad (9a)$$

$$Equity\ volatility_{i,t} = \alpha_0 + \varepsilon_{i,t} + \beta_1 Firm\ controls_{i,t} + \beta_2 Firm\ fixed\ effects_i \quad (9b)$$

The role of Good Governance for financial resilience is also confirmed. Results of Table 16 show firstly that the lower the levels of ESG controversies the higher the equity volatility reduction (Model 1); secondly that the interaction between the dummy Good Governance and the ESG Controversy has also a significant effect on the reduction of volatility.

Results obtained in Tables 12, 14 and 16 are of particular relevance in underlining how the application of corporate governance best practices allow not only to manage disputes on environmental and social issues but also to pursue a greater financial resilience.

**Table 16.** Equity volatility and ESG Controversy. This table shows the relationship between equity volatility and ESG Controversy Score (Model 1) and with the interaction of ESG Controversy Score with the dummy Good Governance (Model 2), the dummy Good Environment (Model 3) and the dummy Good Social (Model 4). Heteroskedasticity-consistent standard errors are presented in parentheses. \*\*\*, \*\* and \* indicate that the parameter estimate is significantly different from zero at the 1%, 5% and 10% level, respectively.

|                    | (1)<br>Volatility      | (2)<br>Volatility      | (3)<br>Volatility      | (4)<br>Volatility      |
|--------------------|------------------------|------------------------|------------------------|------------------------|
| ESGControversies   | -.00025***<br>(.00007) | -.00007<br>(.00013)    | -.00014<br>(.00015)    | -.00018<br>(.00014)    |
| ESG                | -.00177***<br>(.00018) |                        |                        |                        |
| TA                 | -.03127***<br>(.00593) | -.04848***<br>(.0058)  | -.04774***<br>(.00584) | -.04757***<br>(.00584) |
| Debt ratio         | .00814<br>(.00531)     | .00691<br>(.0056)      | .00698<br>(.00562)     | .00679<br>(.00556)     |
| PTB                | -.00728***<br>(.00096) | -.00712***<br>(.00096) | -.00703***<br>(.00097) | -.00702***<br>(.00096) |
| ROA                | -.00332***<br>(.00031) | -.00309***<br>(.00031) | -.00309***<br>(.00031) | -.00309***<br>(.00031) |
| CASH_w             | -.00599**<br>(.00294)  | -.00791***<br>(.00304) | -.00747**<br>(.00305)  | -.0076**<br>(.00304)   |
| Good Governance    |                        | .00934<br>(.01442)     |                        |                        |
| ESGControv ## D_GG |                        | -.00025*<br>(.00015)   |                        |                        |
| Good Environment   |                        |                        | -.00469<br>(.01822)    |                        |
| ESGControv ## D_GE |                        |                        | -.00012<br>(.00018)    |                        |
| Good Social        |                        |                        |                        | -.01716<br>(.01698)    |
| ESGControv ## D_GS |                        |                        |                        | -.00005<br>(.00017)    |
| _cons              | 1.06924***<br>(.08138) | 1.26173***<br>(.07995) | 1.25225***<br>(.08145) | 1.25901***<br>(.0812)  |
| Observations       | 10421                  | 10413                  | 10421                  | 10421                  |
| R-squared          | .0826                  | .06671                 | .06643                 | .06785                 |

*Robust standard errors are in parentheses*

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

## 5. Further evidence from business cases' perspective.

After having explored the empirical analysis, necessary to identify results that go beyond anecdotal stories, we offer the reader some cases of sustainability resilience (both from the non-financial and the financial sector), which can highlight what lies behind the quantitative aspects. This approach is driven by the need to provide a 'face' to our hypothesis so that practitioners and regulators, among all, may quickly understand the relevance of our findings.

### *ESG Resilience in the Non-Financial Sector*

The first story concerns Petra Diamonds limited (PDL)<sup>4</sup>, an English company active in the mining sector and present in South Africa and Tanzania with its diamond mining activities. This sector is characterized by controversies related in particular to the possible mistreatment of illegal diggers who enter the mines in search of precious stones. To completely eradicate this phenomenon is

<sup>4</sup> Please find more information at Petra Diamonds Limited's ESG and Sustainability Report 2021.

unlikely given the nature of the business, which is why mining companies are rather called upon to try to avoid the mistreatment of illegal diggers, or worse still their killing, while avoiding being robbed. In this context, PDL has been called to respond in court by some independent NGOs who have been monitoring it since 2018 for alleged breaches of human rights, personal injuries and deaths suffered at and surrounding its mine in Tanzania (i.e. WDA) from the security operations. Faced with this accusation, the PDL decided to set up a Board Sub-Committee comprised entirely of independent Non-executive Directors to oversee the matters and undertake an investigation into the allegations.

The Sub-Committee found evidence that since 2012, there were over 7,100 recorded incursions onto the SML, which resulted in more than 1,700 arrests taking place. While most of these incursions were resolved peacefully, there is evidence of many incidents of aggression, both on the side of the illegal diggers as well as that of the security providers. A further problem identified by the Committee and useful for the purpose of our analysis concerns the poor management of the communication of these facts between the management of the mine and the Board of the company. The Sub-Committee investigation, which included tracking PDL internal email communications, found no information to suggest information was escalated, substantiating the lack of PDL Board knowledge.

In light of these facts, PDL has taken steps that mainly concern the governance of the company in order to minimize similar problems in the future. Appropriate disciplinary processes have been instigated; in addition, certain individuals have left the Company. Moreover, Reporting structures at WDL and PDL have been revised to address historical gaps and ensure accountability, enabling the more timely, accurate and transparent reporting of all incursions and incidents. The revisions entail a new incident escalation procedure to PDL, including fully transparent reporting to the PDL Board, as well as to the Audit and Risk, and the Social, Ethics and Diversity Committees through two independent reporting lines. The company appointed a new security contractor. Finally, the company has also tried to act on the prevention of the illegal digging phenomenon by working with the reference communities, from an educational, cultural and health point of view.

For the purpose of our analysis, it is noteworthy to underline how PDL managed an ESG controversy linked in particular to the Social pillar. In doing so, it has shown a remarkable sustainability resiliency as the result of a work carried out in terms of governance. In terms of ESG scores, this is shown in an ESG Controversies Score which in 2018 (the year in which the facts described were disclosed by the media) was 15.69 (underlining the seriousness of the Controversies), an S score of 65.8 and a G score of 94.95. In 2019, in the face of the changes made at the Governance level, all the score underwent an improvement: ESG Controversies of 100 (to indicate the absence of controversies), an ESG score of 78.93, an S score of 68.21, and a G score of 95.65.



The second case concerns Software AG, a Germany-based software developer and provider of information technology (IT) platforms for businesses: one of Europe's largest software companies<sup>5</sup>.

The controversy that this company faced concerns the accusation of having paid bribes to secure state contracts in South Africa. In particular, in July 2017, Software AG has been caught red-handed entering questionable commission agreements with a Gupta-controlled company in the hope of securing lucrative state contracts. The Gupta family were close allies of former South Africa President Jacob Zuma and, as witnessed by the #GuptaLeaks investigations they used their influence in order to win deals with state-controlled companies or agencies or private firms.

In the case of Software AG, the German company agreed to pay Global Softech Solutions (GSS) up to 35% of the value of the contracts it secured with Transnet, the South African department of correctional services, Mangaung municipality, Sasol and MultiChoice. The Guptas' Sahara Systems was in the process of buying into GSS, an IT services company, at the time.

Software AG launched an internal investigation after the media report alleged it had paid kickbacks as part of a wide-ranging South African scandal in which fellow German software maker SAP has also been caught up. Software AG stated that "it is not aware of any non-compliant business practices in its South Africa operations," but added: "Based on current media speculations, the company has started an internal review." The spokesman said Software AG could not make further comment until its review has been completed but since then, at least to our knowledge, there has been no trace of it.

This misbehavior of Software AG together with its inaptitude to disclose any results or changes in the conduct, has been evidenced also in its ESG Score performance. When the controversy was raised in 2017, the firm had already a Governance Score (32.23 in 2016) well below the median's sector. To avoid facing what was happening resulted in a further decrease of the ESG score, from 53.52 to 47.67. This means that the company has not been able to manage correctly the controversy arose in 2017, showing a low sustainability resilience.

It is noteworthy to highlight how other companies, tangled in analogous issues, have behave differently. Let's consider the case of SAP – a Software's AG competitor – that was also involved in the #GuptaLeaks. Differently from its compatriot firm, SAP acknowledged its misconduct and acted consequently: It suspended its top four executives in South Africa and commissioned an international law firm to probe the allegations against it with the aim to cover SAP's entire South African operation, and include a review of all contracts. SAP's attempt to restore confidence after a similar controversy has been appreciated by the media and the analysts. As a consequence, its ESG score increased from 93.43 in 2017 to 93.51 in 2018 notwithstanding the allegations, and that SAP Governance Score moved from 94.08 in 2017 to 96.26 in 2018.

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<sup>5</sup> Please find more information about Software AG case at: [#GuptaLeaks: Another software giant implicated in 'kickback' payments - amaBhungane.](#)

## *ESG Resilience in the Financial Sector*

The first story concerns Unicredit (henceforth also the ‘Bank’), an international banking group headquartered in Milan (Italy), which has been sanctioned by the Italian Data Protection Authority (DPA) for the data breach suffered by the Bank between 2016 and 2017.

The violations involved unauthorized access to the data of approximately 762,000 customers following an intrusion into the application systems for managing loan requests. According to Unicredit itself, the information subject to the violation concerned personal and contact data, profession, level of study, identification details of an identity document as well as information relating to the employer, salary, loan amount, payment status, “Approximation of the customer's credit rating” and Iban identifier.

Despite the circumstances that characterized the cyber-attack on Unicredit systems the banking institution did not decide to communicate the Data Breach to all interested parties, by publishing a press release on its website. On the other hand, direct communication of illegal access to customers' personal data took place against the 6,859 Data Subjects whose PIN code used to access their reserved area of the online banking service was also identified.

Upon the outcome of the investigations carried out, the DPA contested to the Bank the violation of several Articles of the Privacy Code due to the failure to adopt the minimum security measures and non-compliance with the provisions issued by the DPA, as well as for having committed the aforementioned violations in relation to databases of particular importance and size. Eventually the DPA fined the Bank for the amount of 600 thousand euros.

In the specific, the fact that Unicredit did not communicate the Data Breach to all affected customers - as it should have, given the high risk associated with the Data Breach itself - led to a lack of transparency on the part of the Bank, which did not accessible to interested parties fundamental information relating to the processing of personal data of the latter and, that is, the occurrence of the Data Breach. Furthermore, in the face of the violation of the principle of transparency (due to Unicredit's failure to communicate the violation of personal data to all interested parties), another cardinal principle of the Privacy Code could be considered violated, namely the principle of accountability. In fact, according to this principle, the data controller must implement appropriate technical and organizational measures to ensure and be able to demonstrate that the processing of personal data carried out by the data controller respects the principles established within the Code (these principles have also been recalled in the GDPR that, however, at the date of the violations was still inactive).

Beyond risks to investors, data privacy issues are human rights issues, which fall under the “S” of ESG. According to Human Rights Watch: “Comprehensive data protection laws are essential for protecting human rights—most obviously, the right to privacy, but also many related freedoms that depend on our ability to make choices about how and with whom we share information about ourselves.”<sup>6</sup>

The rising profile of data privacy issues among socially responsible investors and the rest of the world stands to positively impact the lives of billions of people. Many companies’ business models

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<sup>6</sup> <https://www.hrw.org/news/2018/06/06/eu-general-data-protection-regulation>.

rely heavily on users trusting that their data will be secure, safe not only from hackers but also from the companies themselves. So despite improvements, data privacy issues in their full scope haven't yet been resolved, positioning ESG investing to play an ongoing role in the information-driven, digital world so many participate in.

Following the inspections, Unicredit has adopted measures to restore the correct functioning of the authorization, log and alert systems, as well as scheduled the performance of internal audit activities to increase the security of the information systems and prevent similar data breach events (so-called "Crash program").

For the purpose of our analysis, it is noteworthy to underline how Unicredit managed an ESG controversy linked in particular to the Social pillar. In doing so, it has shown a remarkable sustainability resiliency as the result of a work carried out in terms of governance. In terms of ESG scores, this is shown in an ESG Controversies Score which in 2017 (the year in which the facts described were disclosed by the media) was 50, an S score of 79.03 and a G score of 73.48 (well above the median sector, even though not particularly high). In 2018, in the face of the changes made at the Governance level – as shown from the tasks given to internal audit - , all the score underwent an improvement: ESG Controversies of 100 (to indicate the absence of controversies), an ESG score of 87.4 (vs an ESG score in 2017 of 77.55), an S score of 88.96, and a G score of 86.5.

The second financial case concerns the National Westminster Bank, commonly known as NatWest (henceforth, also the Bank), which is a major retail and commercial bank in the United Kingdom.

In December 2021, the Bank was convicted of failing to comply with anti-money laundering regulations, marking the first time that the Financial Conduct Authority (FCA) had pursued criminal charges against a financial institution for money laundering failings<sup>7</sup>.

The facts concerned a jewelers, Fowler Oldfield, depositing in the Bank £365m between 2012 and 2015 of which £264m was in cash, despite predicted annual turnover of £15m. FCA lawyers stated that large volumes of cash were deposited in black bin bags, and that the quantity of notes failed to fit within the branch vaults. Some of the bank's employees, who were responsible for handling these cash deposits, reported their suspicions to bank staff responsible for investigating suspected money laundering, however no appropriate action was ever taken. In addition, the bank's automated transaction monitoring system incorrectly recognised some cash deposits as cheque deposits. As cheques carry a lower money laundering risk than cash, this was a significant gap in the bank's monitoring of a large number of customers depositing cash, of which Fowler Oldfield was one.

According to the FCA: "NatWest is responsible for a catalogue of failures in the way it monitored and scrutinised transactions that were self-evidently suspicious. Combined with serious systems failures, like the treatment of cash deposits as cheques, these failures created an open door for money laundering. Anti-money laundering controls are a vital part of the fight against serious crime, like drug trafficking, and such failures are intolerable ones that let down the whole

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<sup>7</sup> Please, see more at: [NatWest fined £264.8 million for anti-money laundering failures | FCA.](#)

community, which, in this case, justified the FCA’s first criminal prosecution under the Money Laundering Regulations.”

Moreover, NatWest did not properly look into numerous warnings generated by its systems. One rule designed to flag suspicious activity was disabled by the bank because it created too many alerts, so the bank decided it should be deactivated.

NatWest’s Annual Report 2021 stated that: “the Bank takes its responsibility to prevent and detect financial crime extremely seriously. We deeply regret that we failed to adequately monitor one of our customers between 2012 and 2015 to prevent money laundering. And while the case has now come to an end, we continue to invest significant resources in the ongoing fight against financial crime and fraud.”<sup>8</sup>

However, the issues related to the money laundering were not even mentioned in the Annual Reports of years interested of the events. We guess that this is a significant lack of transparency towards the investors and a proof of scarce ESG resiliency. In fact, the ESG scores decreased from 77.05 in 2012 to 74.58 in 2015 with an ESG controversies ranging from 6.82 to 15.22 signaling the magnitude of these events. The S score - that comprehends also anti-money laundering policies – decreased from 83.39 to 74.74 and the G score from 77.63 to 72.97.

## **6. Conclusions, Limitations, and further research**

Our research has been inspired by Ambrogio Lorenzetti’s *frescoes* where the Good Government steers both the city and the countryside towards a sustainable development. Even though Lorenzetti was addressing the governors of Siena, we argue that the allegory of the Good Government can also work for the business community.

We acknowledge however that in doing so we have to foster a specific view of the corporation which is not the mainstream one, assuming the firm as a community oriented toward the common good (Sison and Fontrodona 2012).

At first sight treating and governing a firm in this way (with a common good) is at odds with the economic rationale of self-interest, with many business practices, and with at least some existing legal regulations too.

Despite movements aimed at changing capitalism are growing, especially as a response to the consequences of the COVID-19 pandemic on global economies, the modern corporation is still far from considering the business firm as a community of any kind (Williamson 1981), prevailing the approach of shareholders value maximization. Indeed, the multiple links existing in a firm and, as Barnard (1968) pointed out, the necessity of trust and cooperation to be an effective organization suggest the idea of community. This perspective is reinforced by the importance of achieving high levels of organizational social capital, which requires stability over time, interdependence, interaction, and closure (Nahapiet and Ghoshal 1998). In the Aristotelian tradition, some scholars take a comprehensive and holistic view of the firm (Comeau-Kirschner and Wah 1999) and see it

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<sup>8</sup> You can find more at: [natwest-group-annual-report-accounts-2021.pdf \(natwestgroup.com\)](https://www.natwestgroup.com/~/media/2021/04/natwest-group-annual-report-accounts-2021.pdf).

as a human community within society at large. This has been suggested by Solomon (1994, 2004) who, drawing on Aristotle, affirmed: “the corporation is itself a citizen, a member of the larger community and inconceivable without it.” (Solomon 2004: 1028). Other authors have claimed that the business firm is specifically a “community of work” (Naughton 2006; Sison and Fontrodona 2012) or a “community of persons for the business mission”, that is, for providing goods and services in an efficient and profitable way (Melé 2012).

The idea of the firm as a community is key if we want to bring the notion of good governance, as described by financial literature, closer to Lorenzetti's good government. Along this line, to obtain positive consequences in terms of environmental, social and financial performance, sustainability and stability implies having a good governance. In turn, to have a good governance is not only a matter of good practices but also of virtuous people called to lead the business-community. It is by no coincidence that the *Allegory of the Good Government* emphasizes the centrality of the classical virtues: it is the pursuit of these that must inspire good governors (managers) if they want the prosperity of their political (business) community.

While our paper tried to emphasize theoretically the relevance of a Good Governance as a combination of virtuous people and good practices, at an empirical level our analysis concerns those governance practices that have been identified as positive.

Investigating the connection between corporate sustainable behavior and the volatility of stock returns, the sustainability resilience and the financial resilience in presence of controversies related to sustainability issues, our paper shows that a good governance, also at the company level, is the key factor not only in getting ESG controversies managed, therefore increasing firm sustainability resilience, but also and in reducing equity volatility, therefore stabilizing firm financial performance.

Managers' ethics still remain to be assessed at a quantitative level so that the corporate community can truly flourish; this is a challenge known to business ethics scholars, but which remains difficult to solve.

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## Appendix

**Table A1.a.** Equity volatility quantiles and E score. This table presents regression estimates of a firm's equity volatility, divided in quantiles, on its E score. These models include firm and time fixed effects. Heteroskedasticity-consistent standard errors are reported in parentheses. \*\*\*, \*\* and \* indicate that the parameters estimate is significantly different from zero at the 1%, 5% and 10% level, respectively.

|              | (1)                    | (2)                    | (3)                    | (4)                    |
|--------------|------------------------|------------------------|------------------------|------------------------|
|              | Volatility             | Volatility             | Volatility             | Volatility             |
| E            | -.00039***<br>(.00004) | -.00053***<br>(.00006) | -.0008***<br>(.0001)   | -.00206***<br>(.0004)  |
| TA           | -.01439***<br>(.00096) | -.02013***<br>(.00143) | -.02134***<br>(.0025)  | .01791**<br>(.00785)   |
| ROA          | -.00188***<br>(.00013) | -.00355***<br>(.00015) | -.00486***<br>(.00031) | -.0061***<br>(.0011)   |
| PTB          | -.00124***<br>(.00035) | -.00256***<br>(.00022) | -.00458***<br>(.00071) | -.01284***<br>(.00249) |
| Debt ratio   | .00091<br>(.00062)     | .00108<br>(.00129)     | .00691***<br>(.00252)  | .0162***<br>(.00446)   |
| CASH         | .0096***<br>(.00087)   | .0127***<br>(.00134)   | .01187***<br>(.0023)   | -.01759***<br>(.00649) |
| _cons        | .37793***<br>(.00913)  | .51472***<br>(.01218)  | .6677***<br>(.02294)   | .9953***<br>(.08015)   |
| Observations | 10421                  | 10421                  | 10421                  | 10421                  |
| R squared    | 0.0269                 | 0.0361                 | 0.0475                 | 0.0615                 |

*Robust standard errors are in parentheses*

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

**Table A1.b.** Equity volatility quantiles and S score. This table presents regression estimates of a firm's equity volatility, divided in quantiles, on its S score. These models include firm and time fixed effects. Heteroskedasticity-consistent standard errors are reported in parentheses. \*\*\*, \*\* and \* indicate that the parameters estimate is significantly different from zero at the 1%, 5% and 10% level, respectively.

|              | (1)                    | (2)                    | (3)                    | (4)                    |
|--------------|------------------------|------------------------|------------------------|------------------------|
|              | Volatility             | Volatility             | Volatility             | Volatility             |
| S            | -.00063***<br>(.00004) | -.00101***<br>(.00006) | -.00155***<br>(.0001)  | -.00336***<br>(.00055) |
| TA           | -.01432***<br>(.00091) | -.01773***<br>(.00132) | -.02017***<br>(.00235) | .02204*<br>(.012)      |
| ROA          | -.00187***<br>(.00012) | -.0035***<br>(.00014)  | -.00501***<br>(.00027) | -.00605***<br>(.00116) |
| PTB          | -.00109***<br>(.00023) | -.00264***<br>(.00026) | -.00438***<br>(.00058) | -.01177**<br>(.00587)  |
| Debt ratio   | .00103***<br>(.00032)  | .00166<br>(.00125)     | .00939***<br>(.00255)  | .01413***<br>(.00354)  |
| CASH         | .00988***<br>(.00081)  | .01142***<br>(.00122)  | .01338***<br>(.00219)  | -.01048<br>(.01116)    |
| _cons        | .38883***<br>(.00885)  | .52251***<br>(.01175)  | .67414***<br>(.02065)  | .8993***<br>(.10359)   |
| Observations | 10421                  | 10421                  | 10421                  | 10421                  |

