

Article

The Role of Environment, Social, and Governance Performance in Shaping Corporate Current and Future Value: The Case of Global Tech Leaders

Lingfu Kong ¹, Minhas Akbar ^{2,*} and Petra Poulova ² 

¹ School of Business, Zhengzhou University of Aeronautics, Zhengzhou 450046, China; klf@zua.edu.cn

² Department of Informatics and Quantitative Methods, Faculty of Informatics and Management, University of Hradec Kralove, 500 03 Hradec Kralove, Czech Republic; petra.poulova@uhk.cz

* Correspondence: minhas.akbar@yahoo.com

Abstract: Corporations that prioritize Environment, Social, and Governance (ESG) considerations tend to have a more sustainable approach to business operations with a lower impact on the environment and society. Extant literature is available on the impact of ESG on firm performance, risk-taking, profitability, the cost of capital, cash flows, and default risk. However, very little is known about the role of ESG performance in shaping the current and future value of a corporation. Similarly, hi-tech firms, being a part of the rapidly growing sector of the world, are facing greater scrutiny from investors, regulators, and consumers to demonstrate their commitment to sustainability and social responsibility. This paper investigates the effect of ESG performance on the corporate present and future value of top global tech leaders for a period of eight years (2010 to 2017). Panel data techniques such as the fixed effects model and random effects model based on the Hausman test were used to observe this relationship. Earnings per share (EPS) and the price-to-earnings ratio (PE ratio) were used as a measure of firm current and future value, respectively. The results revealed that ESG has a significantly positive association with both proxies of corporate value of the top global tech companies. However, as compared to EPS, it had a more pronounced impact on the PE ratio of the sampled firms. Unlike many earlier studies that claimed that the ESG score impacts firm performance in the corresponding period, the present research is novel, as it asserts that investors are not only benefiting from firms' higher investment in ESG through an increase in EPS but are also highly optimistic about the future performance of the firm and thus are paying more for each dollar of earnings. These findings contribute to the existing body of literature on the ESG and firm value nexus and are supported by the stakeholder theory of corporate social responsibility. Thus, policymakers for the tech sector should pay keen attention to firms' ESG performance to earn the long-term trust of shareholders.

Keywords: ESG; firm value; EPS; PE ratio; global tech leaders



Citation: Kong, L.; Akbar, M.; Poulova, P. The Role of Environment, Social, and Governance Performance in Shaping Corporate Current and Future Value: The Case of Global Tech Leaders. *Sustainability* **2023**, *15*, 13114. <https://doi.org/10.3390/su151713114>

Academic Editors: Thomas A. Clark and David K. Ding

Received: 11 May 2023

Revised: 21 August 2023

Accepted: 25 August 2023

Published: 31 August 2023



Copyright: © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

Over the last three decades, the increasing concentration toward sustainable issues has increased the attention of corporations to social responsibility performance. Now, companies are more concerned and ambitious regarding the provision of non-financial information. The concept of Environment, Social, and Governance (ESG) is grounded in socially responsible investment [1,2], while the term “Sustainable Investment” has also been used as an alternative by scholars [3].

Since the inception of the concept of ESG in 2004, it has been widely practiced, examined, and accepted by both developing and developed nations of the world. The three ESG indicators (environment, society, and governance) are considered to be three pillars of sustainability [4]. Thus, the number of institutions, investors, and policymakers associated with sustainable investment is increasing drastically from the past two decades. Overall, the

increasing focus on sustainable investment reflects a growing recognition that ESG factors are essential considerations in corporate investment decision making.

In the same stance, capital markets have become more and more attached to ESG data, as such data are considered to have a significant impact on firm performance. For instance, in 2013, Euronext took the initiative on the New York Stock Exchange and launched multiple ESG indexes that can be employed as a benchmark for corporate managers and firms. Therefore, the requirement of responsible investment keeps on flourishing.

The need for ESG is somewhat grounded in the Global Financial Crisis (GFC). The GFC has shaken the trust of stakeholders. In its aftermath, the consequences of the GFC led authorities like the government and NGOs to actively perform their roles in order to attain organizational transparency and show accountability to their stakeholders [5]. Corporate financial and non-financial considerations play a pivotal role in fulfilling the satisfactions of stakeholders, who are always considered a key success element for organizations [6,7].

A sustainability and responsible Investment annual report on the US market exposed a total of a 38% increase in SRI within just two years, as in 2010 it was USD 2.71 trillion and reached USD 3.74 trillion in 2012. ESG investment now is about USD 20 trillion, and it is flourishing day by day. Due to this rapid growth in ESG, many third-party data providers rate firms' performances on the bases of ESG dimensions.

The nexus of ESG and firm performance has been considered for decades [8]. This nexus has been widely debated by business executives and scholars [9]. Some scholars argued that social activities at the cost of profitability bury the interest of shareholders and therefore should be separated from the fiduciary responsibilities of firms. Other researchers posited that sustainable investments form a resource that crafts a competitive advantage [10]. The contributions of researchers in exploring and explaining this nexus is incessant, but these contributions have contradictory results, which opens new ways of discussion regarding this nexus. Although a plethora of research is available to ascertain the role of ESG performance in shaping a firm's corresponding value, still there are many unanswered questions in the literature, such as: Can ESG play a pivotal role in determining the future value of a firm? Does ESG performance positively contribute to the value of hi-tech corporations? The present study is an attempt to answer these imperative questions.

Most studies were conducted in the US economy and ignored the rest of the world. Moreover, it was found that the value of ESG practices in business can vary from industry to industry [3,11,12]. While the hi-tech sector, being the most competitive sector in the world, has been overlooked by researchers, almost the entire world now is at the cutting edge of the competition. Hence, the improved technology can be a weapon in the war on the competition. So, our work is pioneering in the study of the global hi-tech leaders (a list of top 100 global technology leaders was provided by Thomson Reuters in 2018).

The topic becomes more tempting when we embrace the prone side of the technology, as it is a risky sector for investors in which innovation cannot be successful all the time. Investors require some assurance regarding the returns on their investments. The technology sector is not at the edge to ensure them regarding all upcoming projects; on the other hand, there always exists the fear of duplication and imitation of new projects [13].

Therefore, this drift in research was inspired by the lack of empirical work on the association between ethical and sustainable investment and the current and future value of a firm, particularly in the global technology sector, in which fierce competition among hi-tech companies exists with all of its traits.

Contribution of the Study

Our study is different from the prevailing studies from several aspects. First, although several studies have focused on the association between a firm's social performance and the resulting corporate financial performance [8,14,15], there is a dearth of studies explaining the role of a firm's performance on the Environment, Social, and Governance matrix in influencing corporate current and future value. Second, the existing studies explored this relationship by using traditional measures of firm performance, i.e., ROA, ROE, and

profit margin [13], while it is equally important to incorporate future-expectation-oriented variables such as the PE ratio. Third, growth in the technology industry is imperative for economic development [12]. Hence, by observing the proposed nexus in the top 100 technology companies, the study findings will explicate the essential role played by ESG performance in promoting investor confidence reflected in market performance indicators [14].

The rest of this paper is structured as follows. Section 2 consists of a literature review and hypothesis development. The third section contains the data and research methodology, and empirical findings are provided in the fourth section. The final section summarizes the research and provides the conclusions.

2. Theoretical Underpinning, Literature Review, and Hypothesis Development

2.1. Theoretical Underpinning

With the emergence of the concept of socially responsible investment, several theories have been proposed by researchers to define the association between a firm's social and environmental engagement and its corresponding effects on corporate performance. One of the most cited theories in this context is the stakeholder theory supported in [14]. It claims that corporations that are supportive of their stakeholders (customers, suppliers, and creditors) yield better financial performance. Conversely, the trade-off theory suggests that although socially responsible conduct helps firms to gain certain financial benefits, the associated costs will lessen these benefits [15]. Likewise, the slack resources theory is of the view that firms with better financial performance have more access to financial resources, which is considered a determinant to socially responsible investment. More precisely, higher financial resources improve corporate ability to invest in areas such as employee relations, customer welfare, and social services, among others [16].

The theoretical foundation of the current study is based on stakeholder theory, as it has a dominant and potent standpoint in the extant literature [17]. Stakeholder theory has emerged as a fundamental framework for understanding the complex relationships between organizations and their stakeholders. Developed initially by Freeman [18], the theory posits that organizations should consider the interests of all their stakeholders, including employees, customers, suppliers, communities, and the environment, rather than solely focusing on maximizing shareholder value. The concept of the stakeholders dates back to the early 20th century, but it gained prominence with the seminal work of Freeman [18]. Initially, stakeholder theory focused on the ethical obligations of organizations to their various stakeholders. However, subsequent research expanded the scope of the theory by highlighting the strategic importance of stakeholders and their potential to impact organizational performance [19]. The stakeholder salience model introduced by Mitchell et al. [20] further refined stakeholder theory by emphasizing the importance of power, legitimacy, and urgency as determinants of stakeholder influence.

Stakeholder theory encompasses several key concepts and principles that guide its application in organizational settings. These include stakeholder identification, prioritization, and engagement [21]. Stakeholder identification involves identifying individuals or groups who can affect or be affected by an organization's activities. Stakeholder prioritization involves assessing the relative importance and influence of different stakeholders. Stakeholder engagement refers to the process of involving stakeholders in decision making and fostering mutually beneficial relationships [21]. Stakeholder theory juxtaposes that the better management of a firm's relationship with its stakeholders can ensure corporate success in the long run. Stakeholders entail individuals or groups who are directly or indirectly influenced by a corporation's operations, either positively or negatively [18]. Hence, a firm's success lies in how efficiently it addresses the concerns of its stakeholders, including employees, customers, creditors, and suppliers, and not just the shareholders. Therefore, from an ESG standpoint, environmental, governance, and social performance optimize a firm's operating and market performance, since the firm will appear more responsible and be viewed favorably by the stakeholders. For instance, promoting

ESG endeavors will result in satisfied employees, which will enhance their performance at work. Likewise, customer satisfaction will yield loyalty to the enterprise. Similarly, better handling of suppliers and creditors through ESG activities will enhance corporate reputation. Lastly, ESG performance will garner a soft image of the firm, and investors will be eager to undertake an environmentally and socially responsible enterprise [22]. Furthermore, ESG undertakings positively influence a firm's financial performance and corporate sustainability because these activities can help minimize the potential conflict of interest between a firm's management and its stakeholders [23]. Thus, performance on the ESG front can prove instrumental in increasing shareholder value [24].

2.2. Literature Review and Hypothesis Development

Green and circular business models have gained considerable traction in recent literature [25]. There have been two types of studies published on the ESG. First, researchers examined the relationship between the individual dimensions of ESG and corporate performance. Studies of the second type are based on socially responsible investment funds. Researchers usually compare the group of socially responsible funds with non-responsible funds to assess the outcomes regarding firm value and stock returns [11].

Gutiérrez-Ponce and Wibowo [26] explored the influence of ESG ratings on financial performance (ROA, ROE, and Tobin's Q) of Indonesian banks. The results suggested that although the overall impact of ESG on bank performance is negative, the social pillar has a significantly positive association with both ROA and ROE. Ng and Rezaee [12] argued that the sustainability of the business is the basic part of the theme of 21st century. They found that ESG negatively affects the cost of acquiring capital. Ghoul et al. [27] examined the association between ESG and firm market value in 48 industries. By deploying univariate and multivariate regression analyses, the study documented that a higher ESG decreases the market value of firms. This was aligned with the previous literature but added a valuable point that involvement in the "sin" industries (like those for nuclear power and tobacco) increases the corporate cost of capital. Sahut and Pasquini-Descomps [28] examined the effect of news-based ESG scores on stock returns. They documented that variations in the overall ESG scores were significant for the UK firms only. It was also documented that minor changes in GRI exhibited small and significant changes in the stock prices of the firms. Finally, it was concluded that the association between ESG scores and stock market returns is non-linear.

Another study [29] examined the impact of green innovation and corporate ESG investments on the performance of growth enterprise market firms in China. The study found that both factors positively contributed to corporate performance. Likewise, Akbar et al. [30] found that environmental investments by financially non-constrained (constrained) firms have a positive (negative) impact on corporate financial and market value. Firms with better ESG scores strengthen corporate value, while weak ESG performance is linked with lower firm value [31]. In the context of Korean listed firms, although ESG practices enhance firm market value, the strength of this association depends on different firm level characteristics [32]. Wong et al. [33] examined the effect of ESG performance on two different measures of firm value (Tobin's Q and the cost of capital), and the results revealed that ESG activities increase (decrease) a firm's Tobin's Q (cost of capital).

Nazir et al. [34] also reported the potential positive influence of ESG scores on the cost of capital (COC) of tech firms. A recent study [35] examined the role of ESG scores in determining the profitability of Chinese manufacturing multinational firms; additionally, the study also assessed the moderating effects of culture between ESG and firm profitability. The findings suggested a positive and significant effect of ESG on firm performance, while cultural distance also moderated this relationship.

Investors' orientations toward society and ESG practices bring changes in organizational policies and practices. The firms that more anxiously practice responsible investment (RI) can find ESG-oriented investors. Ng and Rezaee [12] confirmed the aforesaid argument: firms that engage in more RI practices have more growth opportunities.

Earnings quality supports ESG disclosure as an antecedent. Good earnings quality generates more expensive ESG disclosure, and this disclosure produces a lower cost of debt that ultimately boosts a firm's value. Financial institutions advance loans at a lower interest rate to ESG-oriented companies. Meanwhile, investors develop faith in the ESG disclosure and demand lower returns. Francis et al. [36] confirmed the aforesaid chain of relationships with the help of a sample of American firms from 1991 to 2001. Panel data regression results showed that the expensive ESG voluntary disclosure is the consequence of better earnings quality, and firms with more voluntary ESG disclosures enjoy more trust from the investors. Reverte [37] also investigated the effect of ESG investment scores on firm value through the lens of the cost of capital. The study supported the supposition of a negative association between ESG and COC. More quality in the reporting decreases the information asymmetries between the investors and managers and produces a more precise valuation of the firm. Vanwalleghem [38] sheds light on the disagreement between the "Doing Well While Doing Good" hypothesis and firm value. This study proposed that SRI screening practices raised the interest and trust of the shareholders to trade at a lower or a higher rate. The argument was that the SRI practice limits the level of risk diversification and that traditional investors do not demand additional risk premiums. In short, the firms that were screened through the SRI can enjoy better corporate value and vice versa.

In the context of the American banking sector, Ersoy et al. [39] found an inverted U-shaped association between corporate market value and ESG performance and a U-shaped association between market value and the environmental pillar score. In China, the authors of Jin and Lei [40] studied the mechanism of ESG and its pillars' impact on firm value in the context of the Sustainable Development Goals. They found that ESG and its three individual pillars (environment, social, and governance) have a positive impact on corporate innovation and value. Further, institutional quality plays a moderating role between these associations. A recent study suggested that corporate gender diversity directly spurs firm ESG disclosures that can lead to better corporate value [41]. In the context of Korea, ref. [42] found a diverse and heterogeneous impact of ESG scores on firms' accounting, market, and export performances. They stated that environment and social pillars have positive insignificant associations with financial (market) performance, while both negative and positive impacts were observed in the export performances of the sampled firms.

Clinch and Verrecchia [43] contributed to the debate by adding voluntary disclosure. It was documented that the voluntary disclosure of ESG activities brought a positive vibe to the organization. More disclosure builds up the trust of the investors and financial institution, and they grant them capital at lower rate of interest, which provides a competitive edge and boosts firm value in the market. Eliwa et al. [44] argued that ESG performance is integrated in the lending decisions of financial institutions. Moreover, they failed to distinguish between the ESG performance and ESG disclosure. Finally, they suggested that ESG performance can be significantly fruitful in boosting a firm's value among the stakeholder-oriented regions. The positive influence of improved ESG scores on corporate value is stronger (weaker) for state-owned (non-state-owned) Chinese corporations [45]. Qureshi et al. [46] asserted that the ESG performance of the 100 best corporate citizens is a good predictor of the future financial performance of the firm.

Stakeholder theory provides valuable insights into the relationship between ESG performance and firm value. Stakeholders, including employees, customers, suppliers, and communities, influence and are influenced by a company's ESG practices. By considering the interests of stakeholders and engaging in meaningful dialogue, organizations can better align their strategies and actions with stakeholder expectations, leading to improved firm value. For example, a study by Maso et al. [47] demonstrated that firms with strong stakeholder engagement practices had higher firm values.

Furthermore, stakeholder theory underscores the interconnectedness of different stakeholder interests. Organizations that effectively manage stakeholder relationships and balance diverse stakeholder needs tend to achieve better overall firm performance [48].

A study by Zhao et al. [49] highlighted the positive relationship between stakeholder engagement and firm financial performance.

Considering the above findings, it is inevitable to mention that ESG performance does not only allow assessment of the current value of the firm but also conjecture regarding the future endeavors of the corporations. Therefore, the present study formulated the following two hypotheses:

H1. For global tech leaders, ESG performance has a positive association with a firm's present value.

H2. For global tech leaders, ESG performance has a positive association with a firm's future value.

3. Research Framework

3.1. Sample

The firms contained in the Thomson Reuters 2018 report “top 100 global tech leaders” was the sample for the current research. To become a part of the top 100 global leaders, it was a prerequisite that a firm have a minimum annual revenue of USD 1 billion. Further, Thomson Reuters assessed the short-listed firms against twenty-eight parameters across eight pillars (such as financial performance, management and investor confidence, innovation, legal compliance, environmental impact, people and social responsibility, reputation, and risk and resilience). Our sample period was 2010 to 2017. We did not consider 2018 and onward, as once a firm is listed among the top 100 tech leaders, investors will have an automatic upward inclination to buy the stocks of such a firm. Out of these 100 firms 36 did not have sufficient data available on key independent and dependent variables. Thus, the final sample consisted of 64 firms with 512 firm-year observations.

Figure 1 shows the distribution of our sampled firms across sixteen countries and three continents of the world. The United States of America had the largest portion of our sample, as 50% of the firms belonged to this country. Japan was in the second spot with around 19% share in the final sample. The rest of the fourteen countries shared either 1 or 2 firms to the sample.

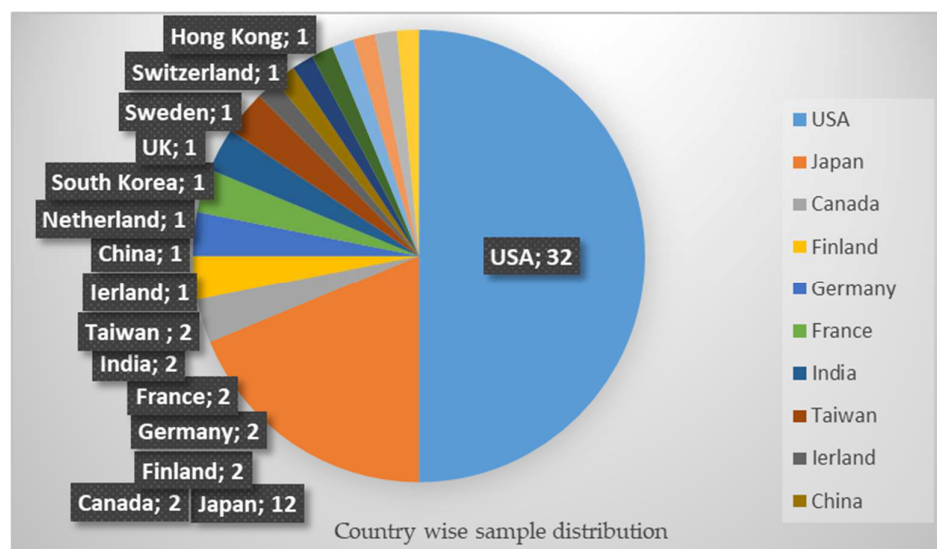


Figure 1. Country-wise sample distribution.

3.2. Data Collection

Data on ESG, firms' current and future values (EPS and PE ratio), and other control variables were collected from the Thomson Reuters Eikon database. To understand the influence of ESG on corporate value, this study employed a one-period lag for ESG, consistent with [50]. Using lagged independent variables serves several purposes: (1) The impact of certain policies such as ESG investments might take some time to fully manifest;

(2) lagged independent variables help to mitigate the issues of autocorrelation and serial correlation, thus improving the accuracy of statistical outcomes; and (3) lagged ESG scores will lead to more stable and reliable models by smoothing short-term fluctuations with an emphasis on long-term trends. Therefore, we used ESG data from 2009 to 2017; for other variables, we used data from 2010 to 2017. Based on the prior literature, we converted all variables to logarithmic form.

3.3. Variable Measurements

The use of market-based measures has been debated for many decades in the past as an indicator of firm value [51]. To capture both the accounting and future performance of firms, this paper used market-based measures (EPS and PE ratio) to analyze the value of the top global hi-tech companies. The Thomson Reuters database calculates the EPS and PE ratio using the following formulas:

$$\text{EPS} = \frac{\text{Net Income} - \text{Preferred Dividend}}{\text{No of Common Stock Outstanding}}$$

$$\text{PE ratio} = \frac{\text{Price Per Share}}{\text{Earnings Per Share}}$$

The motivation behind using the EPS and PE ratio as measure of firm value is very clear. Traditional historical cost-based variables such as ROA, ROE, and profit margin do not allow researchers to account for future expectations and growth prospects of a firm, which eventually undermines the empirical outcomes of the study. In contrast, we used EPS (and in particular, the PE ratio) as a measure of firm value. The PE ratio reflects investors' market perception of a firm's future earnings potential. Thus, a higher PE ratio will indicate that investors have positive sentiments regarding future performance of the firm and therefore are paying more for each dollar of earnings.

ESG was measured using ESG ratings provided by the Thomson Reuters database. Thomson Reuters has operated in more than 100 countries for more than 100 years and is a reliable source for the delivery of intelligence, technology, and human expertise needed to meet the challenges of the emerging era of competition.

Husted and Allen [52] argued that researchers have suggested to control for firm size, profitability, and leverage in this context. These variables have overwhelmingly been used in ESG literature as control variables [53] to ensure that any relationship between ESG and a firm's value was not the outcome of any missing variables [54].

3.4. Estimation of Models

As our data set exhibited a panel data structure, the presence of unobserved heterogeneity could significantly undermine the robustness of statistical outcomes. To effectively tackle this challenge, this study utilized fixed effects and random effects models. A fixed effects model is most effective when unobserved heterogeneity is correlated with the independent variables. However, if unobserved heterogeneity is uncorrelated with the independent variables, then a random effects model produces a more stable and reliable outcome. The results of the Hausman test indicated that unobserved heterogeneity was correlated with the independent variables, thus we employed the fixed effects model in our analysis.

The regression models below were modified based on the previous studies presented in [12,55]:

$$\text{L.FV}_{it} = \alpha + \beta_1 \text{L.ESG}_{it-1} + \beta_2 \text{L.SIZE}_{it} + \beta_3 \text{L.NPM}_{it} + \beta_4 \text{L.FS}_{it} + \beta_5 \text{L.LEVERAGE}_{it} + \mu_{it} \quad (1)$$

$$\text{L.FV}_{it} = \alpha + \beta_1 \text{L.Eit}_{-1} + \beta_2 \text{L.Sit}_{-1} + \beta_3 \text{L.Git}_{-1} + \beta_4 \text{L.SIZE}_{it} + \beta_5 \text{L.NPM}_{it} + \beta_6 \text{L.FS}_{it} + \beta_7 \text{L.LEVERAGE}_{it} + \mu_{it} \quad (2)$$

where:

$L.FV_{it}$ = natural log of firm value (Either EPS or PE ratio) for i firm in period t ;

$L.ESG_{it-1}$ = natural log of ESG scores for i firm in t_{-1} period;

$L.E_{it-1}$ = natural log of environmental scores for i firm in t_{-1} period;

$L.S_{it-1}$ = natural log of social scores for i firm in t_{-1} period;

$L.G_{it-1}$ = natural log of governance scores for i firm in t_{-1} period;

$L.SIZE_{it}$ = natural log of total Assets for i firm in t period;

$L.NPM_{it}$ = natural log of net profit margin for i firm in period t ;

$L.FS_{it}$ = natural log of financial sustainability for i firm in period t ;

$L.LEV_{it}$ = natural log of leverage for i firm in period t ;

μ = error term.

4. Empirical Findings

4.1. Descriptive Statistics

Table 1 represents the results of the descriptive statistics for the variables used in this study. The results suggested that the annual mean value of L.EPS was 66.38% with a 1.04 standard deviation value. On average, the L.PE ratio value was 55.47% with a 1.27 standard deviation. The ESG mean value for the global technology sector was 1.74 with minimum and maximum values of 1.24 and 1.98, respectively, while the individual ESG pillars of environment, social, and governance had mean values of 1.57, 1.28, and 0.89, respectively. Moreover, the summary statistics showed that the average values for firm size, NPM, FS, and leverage [53] were 10.76, -1.12 , 0.08, and -0.93 , respectively.

Table 1. Descriptive statistics.

Variable	Mean	Std. Dev	Minimum	Maximum	95% Confidence Interval	
L.EPS	0.6638	1.0425	−2.3667	4.5485	0.5644	0.7632
L.PE ratio	0.5547	1.2680	−4.3701	4.8793	0.4336	0.6759
L.ESG	1.7378	0.1325	1.2381	1.9763	1.7252	1.7503
L.E	1.5672	0.7015	0.0000	1.9921	1.5063	1.6281
L.S	1.2822	0.8556	0.0000	1.9936	1.2079	1.3565
L.G	0.8917	0.8881	0.0000	1.9914	0.8146	0.9689
L.SIZE	10.7626	2.4440	6.5989	19.5251	10.5468	10.9785
L.NPM	−1.1225	0.4887	−3.3403	−0.0908	−1.1686	−1.0764
L.FS	0.0828	0.1806	−0.1228	1.3281	0.0669	0.0987
L.LEV	−0.9305	0.6725	−5.2436	−0.1381	−0.9932	−0.8678

Table 2 exhibits the correlation between firm value and ESG along with other independent variables in the study. The correlation coefficients among the independent variables were less than 0.7, which showed that there was no multicollinearity issue in our data. The benchmark value of 0.7 was proposed in [56]

Table 2. Correlation Matrix.

Variable	1	2	3	4	5	6	7	8	9	10
1 L.EPS	1.00									
2 L.PE ratio	−0.63	1.00								
3 L.ESG	−0.07	0.08	1.00							
4 L.E	0.12	−0.06	0.48	1.00						
5 L.S	0.07	−0.08	0.12	0.67	1.00					
6 L.G	−0.03	0.01	0.02	0.44	0.65	1.00				
7 L.SIZE	0.20	0.33	−0.05	0.11	0.00	−0.09	1.00			
8 L.NPM	0.29	−0.38	−0.17	0.04	0.03	−0.01	−0.13	1.00		
9 L.FS	−0.07	0.27	0.07	0.05	0.00	0.00	0.07	0.27	1.00	
10 L.LEV	−0.18	−0.05	−0.07	0.01	−0.04	−0.10	−0.24	0.03	−0.32	1.00

4.2. Regression Results

Table 3 presents the results for Equations (1) and (2) of our econometric model. The proxy of a firm's current value, i.e., L.EPS, was separately regressed on the ESG combined and individual performance pillars in the presence of the control variables. In the context of the ESG combined scores, the positive coefficient of the L.EPS ($\beta_1 = 0.2380$) was significant at $p < 0.001$, indicating that a one-unit increase in corporate ESG corresponded to a 0.238% improvement in EPS. This confirmed the positive influence of ESG performance on the corporate value of the global tech leaders, supporting H1. Furthermore, the individual pillar L.S had a positive coefficient (0.0273) with EPS ($p < 0.01$). It depicts that increase in the social scores has a positive effect on the earnings of the hi-tech sector. These findings indicate that even though the hi-tech sector is considered to be a risky sector in which the failure of newly proposed technology could lead to heavy losses, investors are still receiving the benefit of corporate ESG investments in the form of higher earnings. These findings are consistent with the stakeholder theory of corporate social responsibility.

Table 3. Association between ESG and the corporate value measure EPS.

	Expected Sign	EPS	EPS
L.ESG	+	0.2380 *** (2.70)	
L.E	+		0.0121 (0.55)
L.S	+		0.0273 * (1.83)
L.G	+		0.0260 (0.94)
L.SIZE	+ ?	−0.045 *** (−3.16)	−0.0173 (−1.23)
L.NPM	+	1.003 *** (28.12)	1.0030 *** (33.07)
L.FS	+ ?	−0.0368 (−0.13)	−0.6060 * (−2.51)
L.LEV	−	−0.0118 (−0.51)	−0.0148 (−0.69)
Constant		1.945 *** (8.77)	1.9900 *** (13.13)
R-Square		0.7736	0.7908
F-Statistics		0.0000	0.0000
Hausman Prob > Chi ²		0.0000	0.0000

Note: the *t*-statistics are in parentheses, while ***, **, and * indicate a significance level of 1%, 5%, and 10%, respectively.

Surprisingly, firm size was negatively associated with corporate earnings performance at $p < 0.001$. This showed that global tech giants with large amounts of assets produce lower EPS. The positive coefficient of L.NPM ($\beta_3 = 1.003$) was significant at $p < 0.001$. Furthermore, corporate financial sustainability was also found to have a negative effect on firm earnings, indicating that firms with a higher financial sustainability tend to preserve more capital in a liquid form and thus have a lower amount to invest in long-term projects that ultimately lower the earnings level of the tech sector. Hence, our results suggest that the association between ESG and a firm's current value is positive in the context of global hi-tech leaders.

To corroborate the results obtained from the previous estimation, we tested the proposed relationship by deploying a future-oriented proxy of firm value: the PE ratio (Table 4). The positive coefficient of the L.PE ratio ($\beta_1 = 0.3930$) for ESG was significant at $p < 0.005$, supporting H₂. This affirmed that higher ESG scores not only exhibit a significantly positive

association with a firm's current value (i.e., EPS) but also amplify investor expectations for the firm's future prospects as reflected in an elevated PE ratio. Furthermore, a higher coefficient (0.393) for the L.PE ratio when compared to L.EPS (0.238) indicated that although better a ESG score boosts the current earnings of a firm, it has more pronounced effects on the prospects of the firm. The individual pillars L.S ($p < 0.001$) and L.G ($p < 0.05$) also positively contribute to a firm's value.

Table 4. Association between ESG and the corporate value measure PE ratio.

	Expected Sign	PE Ratio	PE Ratio
L.ESG	+	0.3930 ** (2.40)	
L.E	+		−0.0207 (−0.58)
L.S	+		0.1230 *** (5.13)
L.G	+		0.0904 ** (2.04)
L.SIZE	+	0.343 *** (13.10)	0.335 *** (14.83)
L.NPM	+ ?	−1.0270 *** (−15.74)	−0.988 *** (−20.31)
L.FS	+	0.4800 (0.91)	0.3420 (0.88)
L.LEV	−	−0.0573 (−1.34)	−0.072 ** (−2.10)
Constant		−3.789 *** (−9.26)	−4.175 *** (−17.16)
R-Square		0.6325	0.6969
F-Statistics		0.0000	0.0000
Hausman Prob > Chi ²		0.0000	0.0000

Note: the *t*-statistics are in parentheses, while ***, **, and * indicate a significance level of 1%, 5%, and 10% respectively.

In the context of the control variables, firm size positively and significantly contributed to the corporate PE ratio. However, the profitability measure L.NPM had a negative association with the price-to-earnings ratio of the tech sector. One likely justification of this negative association could be that during decision-making processes, investors overly rely on the 'wealth maximization' principal while ignoring a firm's underlying financial performance in the context of earnings/profitability.

5. Conclusions and Discussion

This study was an attempt to investigate the influence of ESG performance on firms' current and future values in the context of the top global hi-tech companies ranked by Thomson Reuters in 2018. It covered the eight-year time span from 2010 to 2017. We used two different proxies, i.e., earnings per share and the corporate PE ratio, to determine the corporate current and future values, respectively.

The results of the panel data fixed effects model (based on the Hausman test) revealed that overall, the ESG scores had a positive and statistically significant impact on a firm's value. Notwithstanding, when compared to the current value, this impact is more promising for corporate future value. Furthermore, individual pillars such as L.S and L.G also significantly influenced the corporate value of hi-tech companies. Studies such as Kotsantonis et al. [57] also found that companies with a better ESG performance experienced higher stock returns and valuation multiples. They argued that superior ESG practices create intangible value, attract socially responsible investors, and mitigate risks,

leading to improved corporate value. Likewise, Khan [58] conducted a meta-analysis of more than two hundred studies and concluded that a majority of the studies showed a positive relationship between the ESG scores and corporate financial performance. They highlighted that companies with strong ESG practices tended to have lower costs of capital, reduced risks, and improved long-term value.

On the other hand, Yoon et al. [32] found an insignificant relationship between the ESG performance and a firm's value. They argued that the financial market's perception of ESG factors may differ across industries and that other factors, such as financial performance, may dominate investors' decisions.

Moreover, the study of Behl et al. [59] suggested that the relationship between ESG performance and a firm's value depends on various factors such as the industry, country, and time period. They found that the impact of ESG performance on a firm's value also varied across different pillars of ESG, leading to varying effects on the firm's value.

In a nutshell, while many studies supported a positive relationship between corporate ESG performance and a firm's value, there were also contrasting views. The impact of ESG performance on a firm's value may depend on industry-specific factors, country-level differences, and the specific ESG pillars.

A great deal of literature on ESG's effect on firm performance and value indicators is available in the context of different countries and regions of the world. However, there is a serious lack of literature when it comes to different industrial sectors, and the hi-tech sector is not an exception. This study provides empirical evidence that would be useful for the policymakers of hi-tech companies who are reluctant to invest in ESG undertakings, especially due to the perceived cost escalations.

The findings suggest that despite the increased risk of ESG investments in the hi-tech sector, firms with higher ESG scores not only report higher earnings performance, but investors also are optimistic about future financial prospects of such firms. These empirical outcomes are consistent with the assertions of the stakeholder theory, which emphasizes that efficient handling of stakeholder expectations through ESG endeavors can enhance a corporation's reputation with its stakeholders. Consequently, a favorable relationship between an enterprise and its employees, customers, creditors, shareholders, and society at large would assist a firm in achieving a sustainable prospective financial and market performance. Therefore, the top management of tech firms should devise policies to optimize their ESG performance that would positively contribute to such firms' value. Moreover, the study findings also led us to postulate that ESG endeavors not only help an enterprise in attaining better market performance in the short term, but the perception of a responsible corporate citizen in the minds of stakeholders also contributes to a sustained corporate value in the future. Hence, corporate managers should not get carried away with the cost associated with ESG undertakings; rather, they should consider such activities as an investment in the company's future that will reap long-term rewards such as employee motivation, customer loyalty, better terms with creditors, and trust of the shareholders, leading to an improved stock market performance.

Research Limitations and Future Recommendations

Finally, like other empirical investigations, this study also bears some limitations. First, the study was conducted in the context of giant tech leaders; therefore, the findings may not be generalized to other small/country-level technology firms. Second, the study used ESG scores provided in the Thomson Reuters Eikon database, so the results could be different for ESG values provided in any other database. The future research agenda should focus on the proposed association in the context of small and emerging tech corporations. Moreover, future studies can also explore the changes in the ESG and corporate performance nexus at different stages of the corporate life cycle [60–62].

Author Contributions: All authors equally contributed to the present research. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by National Social Science Foundation of China “research on the construction of government’s two-way information communication capacity for the governance of online public opinions in emergencies” under grant number 21BTQ048.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Data will be made available upon reasonable request.

Acknowledgments: The Open access of this paper is funded by “Excellence project 2205” faculty of informatics and management, University of Hradec Kralove, Hradec Kralove, Czech Republic.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Khosravi, A.A.; Poushaneh, K.; Roozegar, A.; Sohrabifard, N. Determination of factors affecting student satisfaction of Islamic Azad University. *Procedia-Soc. Behav. Sci.* **2013**, *84*, 579–583. [\[CrossRef\]](#)
2. Gazman, V.D. A New Criterion for the ESG Model. *Green Low-Carbon Econ.* **2023**, *1*, 22–27. [\[CrossRef\]](#)
3. Derwall, J. *The Economic Virtues of SRI and CSR*; Erasmus University Rotterdam: Rotterdam, The Netherlands, 2007.
4. Barkemeyer, R.; Holt, D.; Preuss, L.; Tsang, S. What happened to the ‘development’ in sustainable development? Business guidelines two decades after Brundtland. *Sustain. Dev.* **2014**, *22*, 15–32. [\[CrossRef\]](#)
5. Galbreath, J. ESG in focus: The Australian evidence. *J. Bus. Ethics* **2013**, *118*, 529–541. [\[CrossRef\]](#)
6. Gates, S.; Very, P. Measuring performance during M&A integration. *Long Range Plan.* **2003**, *36*, 167–185.
7. Maltz, A.C.; Shenhar, A.J.; Reilly, R.R. Beyond the balanced scorecard: Refining the search for organizational success measures. *Long Range Plan.* **2003**, *36*, 187–204. [\[CrossRef\]](#)
8. Carroll, A.B.; Shabana, K.M. The business case for corporate social responsibility: A review of concepts, research and practice. *Int. J. Manag. Rev.* **2010**, *12*, 85–105. [\[CrossRef\]](#)
9. Wang, H.; Lu, W.; Ye, M.; Chau, K.; Zhang, X. The curvilinear relationship between corporate social performance and corporate financial performance: Evidence from the international construction industry. *J. Clean. Prod.* **2016**, *137*, 1313–1322. [\[CrossRef\]](#)
10. Bhagat, S.; Bolton, B. Corporate governance and firm performance. *J. Corp. Financ.* **2008**, *14*, 257–273. [\[CrossRef\]](#)
11. Bauer, R.; Derwall, J.; Otten, R. The ethical mutual fund performance debate: New evidence from Canada. *J. Bus. Ethics* **2007**, *70*, 111–124. [\[CrossRef\]](#)
12. Ng, A.C.; Rezaee, Z. Business sustainability performance and cost of equity capital. *J. Corp. Financ.* **2015**, *34*, 128–149. [\[CrossRef\]](#)
13. Khan, M.K.; He, Y.; Akram, U.; Zulfiqar, S.; Usman, M. Firms’ technology innovation activity: Does financial structure matter? *Asia-Pac. J. Financ. Stud.* **2018**, *47*, 329–353. [\[CrossRef\]](#)
14. Donaldson, T.; Preston, L.E. The stakeholder theory of the corporation: Concepts, evidence, and implications. *Acad. Manag. Rev.* **1995**, *20*, 65–91. [\[CrossRef\]](#)
15. Waddock, S.A.; Graves, S.B. The corporate social performance–financial performance link. *Strateg. Manag. J.* **1997**, *18*, 303–319. [\[CrossRef\]](#)
16. Preston, L.E.; O’bannon, D.P. The corporate social-financial performance relationship: A typology and analysis. *Bus. Soc.* **1997**, *36*, 419–429. [\[CrossRef\]](#)
17. Peng, L.S.; Isa, M. Environmental, social and governance (ESG) practices and performance in Shariah firms: Agency or stakeholder theory? *Asian Acad. Manag. J. Account. Financ.* **2020**, *16*, 1–34.
18. Freeman, R.E. The politics of stakeholder theory: Some future directions. *Bus. Ethics Q.* **1994**, *4*, 409–421. [\[CrossRef\]](#)
19. Harrison, J.S.; Wicks, A.C. Stakeholder theory, value, and firm performance. *Bus. Ethics Q.* **2013**, *23*, 97–124. [\[CrossRef\]](#)
20. Mitchell, R.K.; Agle, B.R.; Wood, D.J. Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts. *Acad. Manag. Rev.* **1997**, *22*, 853–886. [\[CrossRef\]](#)
21. Mitchell, R.K.; Lee, J.H. Stakeholder identification and its importance in the value creating system of stakeholder work. *Camb. Handb. Stakehold. Theory* **2019**, *1*, 53–73.
22. Pachot, A.; Patissier, C. Towards Sustainable Artificial Intelligence: An Overview of Environmental Protection Uses and Issues. *arXiv* **2022**, arXiv:2212.11738. [\[CrossRef\]](#)
23. Jo, H.; Harjoto, M.A. The causal effect of corporate governance on corporate social responsibility. *J. Bus. Ethics* **2012**, *106*, 53–72. [\[CrossRef\]](#)
24. Ghoul, S.E.; Guedhami, O.; Kim, Y. Country-level institutions, firm value, and the role of corporate social responsibility initiatives. *J. Int. Bus. Stud.* **2017**, *48*, 360–385. [\[CrossRef\]](#)
25. Thanh, T.T.T.; Phuong, A.N.T.; Thu, H.N. Advancing the Circular Business Models in Developing Countries: Lessons from China. *Green Low-Carbon Econ.* **2022**. [\[CrossRef\]](#)
26. Gutiérrez-Ponce, H.; Wibowo, S.A. Do Sustainability Activities Affect the Financial Performance of Banks? The Case of Indonesian Banks. *Sustainability* **2023**, *15*, 6892. [\[CrossRef\]](#)

27. El Ghouli, S.; Guedhami, O.; Kwok, C.C.; Mishra, D.R. Does corporate social responsibility affect the cost of capital? *J. Bank. Financ.* **2011**, *35*, 2388–2406. [\[CrossRef\]](#)
28. Sahut, J.-M.; Pasquini-Descomps, H. ESG impact on market performance of firms: International evidence. *Manag. Int.* **2015**, *19*, 40–63. [\[CrossRef\]](#)
29. Zheng, J.; Khurram, M.U.; Chen, L. Can green innovation affect ESG ratings and financial performance? evidence from Chinese GEM listed companies. *Sustainability* **2022**, *14*, 8677. [\[CrossRef\]](#)
30. Akbar, A.; Jiang, X.; Qureshi, M.A.; Akbar, M. Does corporate environmental investment impede financial performance of Chinese enterprises? The moderating role of financial constraints. *Environ. Sci. Pollut. Res.* **2021**, *28*, 58007–58017. [\[CrossRef\]](#)
31. Fatemi, A.; Glaum, M.; Kaiser, S. ESG performance and firm value: The moderating role of disclosure. *Glob. Financ. J.* **2018**, *38*, 45–64. [\[CrossRef\]](#)
32. Yoon, B.; Lee, J.H.; Byun, R. Does ESG performance enhance firm value? Evidence from Korea. *Sustainability* **2018**, *10*, 3635. [\[CrossRef\]](#)
33. Wong, W.C.; Batten, J.A.; Mohamed-Arshad, S.B.; Nordin, S.; Adzis, A.A. Does ESG certification add firm value? *Financ. Res. Lett.* **2021**, *39*, 101593. [\[CrossRef\]](#)
34. Nazir, M.; Akbar, M.; Akbar, A.; Poulou, P.; Hussain, A.; Qureshi, M.A. The nexus between corporate environment, social, and governance performance and cost of capital: Evidence from top global tech leaders. *Environ. Sci. Pollut. Res.* **2022**, *29*, 22623–22636. [\[CrossRef\]](#) [\[PubMed\]](#)
35. Xu, X.; Liu, Z. ESG, Cultural Distance and Corporate Profitability: Evidence from Chinese Multinationals. *Sustainability* **2023**, *15*, 6771. [\[CrossRef\]](#)
36. Francis, J.; Nanda, D.; Olsson, P. Voluntary disclosure, earnings quality, and cost of capital. *J. Account. Res.* **2008**, *46*, 53–99. [\[CrossRef\]](#)
37. Reverte, C. The impact of better corporate social responsibility disclosure on the cost of equity capital. *Corp. Soc. Responsib. Environ. Manag.* **2012**, *19*, 253–272. [\[CrossRef\]](#)
38. Vanwalleghe, D. The real effects of socially responsible investing: Disagreement on the doing well while doing good hypothesis and the cost of capital. *J. Bus. Ethics* **2013**, *7*, 1–36.
39. Ersoy, E.; Swiecka, B.; Grima, S.; Özen, E.; Romanova, I. The Impact of ESG Scores on Bank Market Value? Evidence from the US Banking Industry. *Sustainability* **2022**, *14*, 9527. [\[CrossRef\]](#)
40. Jin, X.; Lei, X. A Study on the Mechanism of ESG's Impact on Corporate Value under the Concept of Sustainable Development. *Sustainability* **2023**, *15*, 8442. [\[CrossRef\]](#)
41. Dempere, J.; Abdalla, S. The Impact of Women's Empowerment on the Corporate Environmental, Social, and Governance (ESG) Disclosure. *Sustainability* **2023**, *15*, 8173. [\[CrossRef\]](#)
42. Yang, O.-S.; Han, J.-H. Assessing the effect of corporate esg management on corporate financial & market performance and export. *Sustainability* **2023**, *15*, 2316.
43. Clinch, G.; Verrecchia, R.E. Voluntary disclosure and the cost of capital. *Aust. J. Manag.* **2015**, *40*, 201–223. [\[CrossRef\]](#)
44. Eliwa, Y.; Aboud, A.; Saleh, A. ESG practices and the cost of debt: Evidence from EU countries. *Crit. Perspect. Account.* **2021**, *79*, 102097. [\[CrossRef\]](#)
45. Yu, X.; Xiao, K. Does ESG Performance Affect Firm Value? Evidence from a New ESG-Scoring Approach for Chinese Enterprises. *Sustainability* **2022**, *14*, 16940. [\[CrossRef\]](#)
46. Qureshi, M.A.; Akbar, M.; Akbar, A.; Poulou, P. Do ESG endeavors assist firms in achieving superior financial performance? A case of 100 best corporate citizens. *Sage Open* **2021**, *11*, 21582440211021598. [\[CrossRef\]](#)
47. Dal Maso, L.; Liberatore, G.; Mazzi, F. Value relevance of stakeholder engagement: The influence of national culture. *Corp. Soc. Responsib. Environ. Manag.* **2017**, *24*, 44–56. [\[CrossRef\]](#)
48. Wang, H.-M.D.; Sengupta, S. Stakeholder relationships, brand equity, firm performance: A resource-based perspective. *J. Bus. Res.* **2016**, *69*, 5561–5568. [\[CrossRef\]](#)
49. Zhao, X.; Shao, F.; Wu, C. Do stakeholder relationships matter? An empirical study of exploration, exploitation and firm performance. *Manag. Decis.* **2021**, *59*, 764–786. [\[CrossRef\]](#)
50. Atan, R.; Alam, M.M.; Said, J.; Zamri, M. The impacts of environmental, social, and governance factors on firm performance: Panel study of Malaysian companies. *Manag. Environ. Qual. Int. J.* **2018**, *29*, 182–194. [\[CrossRef\]](#)
51. Saleh, M.; Zulkifli, N.; Muhamad, R. Looking for evidence of the relationship between corporate social responsibility and corporate financial performance in an emerging market. *Asia-Pac. J. Bus. Adm.* **2011**, *3*, 165–190. [\[CrossRef\]](#)
52. Gentry, R.J.; Shen, W. The relationship between accounting and market measures of firm financial performance: How strong is it? *J. Manag. Issues* **2010**, *22*, 514–530.
53. Husted, B.W.; Allen, D.B. Strategic corporate social responsibility and value creation among large firms: Lessons from the Spanish experience. *Long Range Plan.* **2007**, *40*, 594–610. [\[CrossRef\]](#)
54. Grougiou, V.; Leventis, S.; Dedoulis, E.; Owusu-Ansah, S. Corporate social responsibility and earnings management in US banks. *Account. Forum* **2014**, *38*, 155–169. [\[CrossRef\]](#)
55. Huang, J.; Duan, Z.; Zhu, G. Does corporate social responsibility affect the cost of bank loans? Evidence from China. *Emerg. Mark. Financ. Trade* **2017**, *53*, 1589–1602. [\[CrossRef\]](#)

56. Dhaliwal, D.S.; Li, O.Z.; Tsang, A.; Yang, Y.G. Voluntary nonfinancial disclosure and the cost of equity capital: The initiation of corporate social responsibility reporting. *Account. Rev.* **2011**, *86*, 59–100. [[CrossRef](#)]
57. Ford, J.K.; Quiñones, M.A.; Sego, D.J.; Sorra, J.S. Factors affecting the opportunity to perform trained tasks on the job. *Pers. Psychol.* **1992**, *45*, 511–527. [[CrossRef](#)]
58. Kotsantonis, S.; Pinney, C.; Serafeim, G. ESG integration in investment management: Myths and realities. *J. Appl. Corp. Financ.* **2016**, *28*, 10–16.
59. Khan, M.A. ESG disclosure and firm performance: A bibliometric and meta analysis. *Res. Int. Bus. Financ.* **2022**, *61*, 101668. [[CrossRef](#)]
60. Behl, A.; Kumari, P.R.; Makhija, H.; Sharma, D. Exploring the relationship of ESG score and firm value using cross-lagged panel analyses: Case of the Indian energy sector. *Ann. Oper. Res.* **2022**, *313*, 231–256. [[CrossRef](#)]
61. Akbar, M.; Akbar, A.; Maresova, P.; Yang, M.; Arshad, H.M. Unraveling the bankruptcy risk-return paradox across the corporate life cycle. *Sustainability* **2020**, *12*, 3547. [[CrossRef](#)]
62. Wang, Z.; Akbar, M.; Akbar, A. The interplay between working capital management and a firm's financial performance across the corporate life cycle. *Sustainability* **2020**, *12*, 1661. [[CrossRef](#)]

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.