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## **ENVIRONMENTAL, SOCIAL AND GOVERNANCE SCORE CORRELATION TO VALUATION OF PUBLIC COMPANIES: EVIDENCE FROM 2012 TO 2021**

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### **Abstract**

This study investigates the empirical relationship between Environmental, Social, and Governance (ESG) scores and the valuation of publicly traded companies, using cash flows as a proxy for corporate value. Drawing from the Thomson Reuters EIKON database, the research analyzes data from 74 large firms across 16 countries over a ten-year period (2012–2021). A longitudinal linear regression approach was employed, with ESG scores as the independent variable and cash flows as the dependent variable, while firm size was controlled using market capitalization. Results reveal a statistically significant, positive correlation between ESG scores and cash flows for each year analyzed, although the strength of this relationship is modest, with  $R^2$  values ranging from 0.122 to 0.189. These findings support the hypothesis that ESG efforts contribute positively, albeit moderately, to financial performance. The research aligns with stakeholder theory, highlighting how ESG initiatives may enhance long-term value by addressing broader stakeholder interests. Despite variability introduced by external events like the COVID-19 pandemic and political cycles, the correlation remained consistent. This study expands upon existing literature by uniquely focusing on cash flows as a valuation metric and offering a decade-long, globally representative analysis. It offers practical insights for corporate decision-makers and investors by reinforcing ESG's role in financial strategy and value creation.

### **Keywords**

Environmental, Social, and Governance (ESG), Cash Flow, Corporate Governance, Financial Reporting

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### **Purpose**

The purpose of this study is to investigate empirically the impact of Environmental, Social, and Governance (ESG) on valuation of companies as measured by cash flows for large publicly traded companies between 2012 and 2021.

### **Design/methodology/approach**

The authors derived ESG scores and cash flow information from the Thomson Reuters EIKON database for 74 large publicly traded companies, measured by market capitalization, located in 16 countries. The authors performed a linear regression analysis with the dependent variable as cash flows and the independent variable as ESG scores. The authors examined the statistical significance and strength of the relationship correlation between these variables. A longitudinal correlation examining data over a 10-year period was conducted.

## Findings

The authors found that ESG has a statistically significant and positive correlation to cash flows, but the effect is low.

## Originality

Most of the prior studies did not focus on the relationship between ESG and cash flows. Distinct from the previous studies, this study examines the impact of ESG on corporate valuation as measured by cash flows over a 10-year period from 2012-2021.

## 1. Introduction

Distinct from the previous literature our study examines the impact of ESG on corporate valuation as measured by cash flows over 10 years. We examine the statistical significance and strength of the relationship correlation between these variables.

This study is important for two primary reasons. First, it calls attention to the effect ESG has on organizational cash flows. Second, it identifies potential stakeholder benefits due to corporate value via ESG efforts.

Moreover, the study adds to the existing literature in two key areas. First, it adds empirical findings between ESG and cash flow. This is significant to financial managers as they seek to maximize corporate value. Second, it contributes to stakeholder theory by considering ESG factors' effects on stakeholder value. This is significant to organizations as they seek to promote ESG efforts and enhance stakeholder relationships.

### Review of previous literature

Researchers have explored the relationship between Environmental, Social, and Governance (ESG) practices and financial performance from various perspectives and methodologies. A common theme across these studies is the investigation into how ESG practices impact corporate value and financial metrics such as stock returns, earnings per share (EPS), and return on invested capital (ROIC). There are inconsistent findings regarding the impact of ESG practices on financial performance. While some studies report positive relationships, others find negative or mixed results, highlighting the complexity of the ESG and financial performance linkage. The varying methodologies, regional focuses, and periods covered by these studies further contribute to the diverse findings in the literature.

### Positive Impacts of ESG on Financial Performance

Bodhanwala and Bodhanwala (2018) examined the relationship between corporate sustainability and profitability among 58 Indian firms using Thomson Reuters data. A multivariate panel data model and a parametric t-test reveal a significant positive correlation between sustainability practices and financial performance metrics, suggesting that sustainable development strategies lead to higher profitability (Bodhanwala and Bodhanwala, 2018).

Ting *et al.* (2019) investigated the impact of ESG initiatives on financial performance using Thomson Reuters data and found that these initiatives have a significant positive effect on firm performance. They also find that developed market firms receive positive valuation effects due to ESG initiatives, compared to emerging market firms (Ting *et al.*, 2019). Research shows that firms with strong ESG scores are often linked to better financial performance, lower cost of capital, and improved stakeholder relationships (Friede *et al.*, 2015; Velte, 2017).

Ahmad *et al.* (2021) re-examined the relationship between ESG and financial performance when measured by return on assets (ROA) of United Kingdom (UK) firms, specifically focusing on the FTSE350 index from Thomson Reuters ASSET4 database from 2002 to 2018. The study utilizes static and dynamic panel data techniques to estimate the impact of both total ESG performance and individual ESG dimensions on corporate financial performance. Additionally, Ahmad *et al.* (2021) explored the differential impact of high and low ESG scores on firm financial performance and considered firm size as a potential moderating factor in the ESG-financial performance relationship. The findings of Ahmad *et al.* (2021) suggest a positive and significant relationship between total ESG performance and firm financial performance. The study confirmed that firms with higher ESG scores tend to exhibit better financial performance compared to firms with lower ESG scores and that firm size does indeed moderate the relationship between ESG performance and financial performance.

Abukari *et al.* (2022) found a significantly positive association between corporate sustainability performance and firm financial performance using Thomson Reuters ESG metrics data on 266 Canadian companies over the 2007–2017 period. Abukari *et al.*'s hypothesis was to determine the relationship (positive, negative, or none) between corporate sustainability performance to financial performance. They suggested that consistent sustainability efforts can lead to better financial outcomes compared to inconsistent efforts (Abukari *et al.*, 2022).

### **Negative Impacts of ESG on Financial Performance**

Velte (2019) examined the influence of ESG performance using Thomson Reuters scores on earnings management among German companies, within the German two-tier system. They found that ESG performance negatively impacts accruals-based earnings management (AEM) but not real earnings management (Velte, 2019). They found that governance is the most influential ESG factor in reducing AEM compared to environmental and social factors (Velte, 2019).

Cohen (2023) analyzes the relationship between ESG sustainability scores and corporate valuations, particularly for S&P 500 firms from 2019 to 2021. The study found that the overall ESG score is decreasing, indicating that ESG risks are becoming more recognized in the global economy (Cohen, 2023). Cohen also found that environmental risks do not significantly impact firm valuation. However, the study found that social risks negatively affect the simple excess return for S&P 500 and Nasdaq100 stocks (Cohen, 2023).

### **Mixed and Inconsistent Findings**

Abdi, *et al.* (2020) examined the influence of ESG disclosures on the firm value and financial performance of the airline industry through an analysis of 27 airlines worldwide from 2013 to 2019 using panel data analysis on data from the Thomson Reuters Eikon database. They found a positive relationship between environmental and governance scores and market value and financial efficiency (Abdi, *et al.*, 2020). Abdi, *et al.* findings support a positive relationship between environmental and governance scores and firm value and financial performance, while the social pillar shows a negative association with firm value and financial performance. They suggested that improving environmental and governance aspects can enhance market value and returns for airlines.

Rahi *et al.*'s (2021) study examined the effects of sustainability practices on the financial performance of the Nordic financial industry and found both positive and negative impacts of ESG practices on financial performance. Rahi *et al.* analyzed Thomson Reuters Eikon data from 152 firm-years and 39 financial companies across four Nordic countries from 2015 to 2019 using regression and generalized method of moments. They reported a negative relationship between ESG practices and certain financial performance metrics but a positive relationship between governance and return on assets (Rahi *et al.*, 2021). The research highlighted that while ESG practices may pose risks to financial firms, good governance structures can have a positive impact on financial outcomes.

Kabderian Dreyer *et al.* (2023) examined the influence of ESG practices on stock returns in the United States (US) market from 2002 to 2020 utilizing stochastic selection to minimize fund manager bias and compared results from MSCI and Thomson Reuters ESG ratings. Kabderian Dreyer *et al.* found that ESG portfolios have a lower systematic risk than neutral stocks, but this gap is narrowing over time, and risk-adjusted returns are inconsistent across different ESG rating providers, showing no clear performance trend. They suggest that the ESG label is not a determinant of portfolio performance (Kabderian Dreyer *et al.*, 2023).

Kalani *et al.* (2024) investigated the relationship between ESG operations and financial performance in India's publicly traded manufacturing firms. In their study, they analyzed 701 manufacturing companies from 2018 to 2022 and found no substantial positive impact of ESG on overall financial performance. They found that ESG disclosures had varying impacts on financial performance, specifically a positive effect on ROIC but not on Earnings per Share (Kalani *et al.*, 2024).

### **Summary of methodologies**

The methodology used by the researchers varied, but generally, the studies employed quantitative methods such as panel data analysis, regression analysis, and correlation analysis to examine the impact of ESG on firm value and financial performance. For example, Abdi, *et al.* (2020) utilized panel data analysis to examine the relationship between ESG disclosures and firm value and financial performance of airlines. Similarly, Kabderian Dreyer *et al.* (2023) quasi-replicated previous studies and investigated the influence

of ESG practices on stock returns in the US stock market. Additionally, Ahmad *et al.* (2021) conducted a study on the impact of ESG on the financial performance of UK firms using static and dynamic panel data techniques.

The dependent variables in these studies include firm value proxies such as market-to-book ratio, Tobin's Q, ROIC, return on equity (ROE), ROA, and EPS. The independent variables are the ESG scores or dimensions, which encompass environmental, social, and governance pillars. For instance, Abdi, *et al.* (2020) used the environmental pillar score and governance pillar score as independent variables, while Ahmad *et al.* (2021) examined the impact of total ESG and individual dimensions of ESG on corporate financial performance.

Overall, the studies aimed to understand the relationship between ESG and firm financial performance. However, there are diverse results regarding the specific impact of ESG dimensions on financial performance, as some studies find positive associations between certain ESG dimensions and financial performance, while others find negative associations or inconsistent results (Abdi, *et al.*, 2020; Ahmad *et al.*, 2021; Cohen, 2023; Kabderian Dreyer *et al.*, 2023).

## 2. Theoretical Perspective and Hypothesis Formulation

### 2.1 Theoretical perspective

This study has a greater theoretical foundation, connecting with stakeholder theory which examines the relationship of actions on those with a direct or indirect connection who have an effect or can be affected by decisions of an organization (Lin *et al.*, 2018). Stakeholder theory identifies the internal and external stakeholders to the organization as customers, employees, suppliers (Freeman *et al.*, 2004; Laplume *et al.*, 2008), the media, competitors, local, state, and federal governments, shareholders, advocacy groups (Laplume *et al.*, 2008), and the community (Phillips *et al.*, 2003). Stakeholders share certain characteristics: they have some stake in or claim to the organization (Freeman, 2001), have varying degrees of importance to the organization (Friedman and Miles, 2002), and can benefit from or be injured by the organization (Freeman, 2001). Moreover, it is "just good business" (Freeman, 1994, p. 411) for the organization to manage relationships with every stakeholder group.

The primary critique of stakeholder theory is that it goes against hundreds of years of organizational management research that argues the key goal for firms is maximizing shareholder wealth. Freeman (1994) states the theory has been viewed "as a kind of rallying cry against the stockholder theory" (p. 413). Moreover, the primary model of organization has been to put shareholders central to the firm (Stieb, 2008). Finally, according to Laplume *et al.* (2008), several scholars and practitioners consider stakeholder theory as one that "promotes mismanagement because it gives managers too much power to distribute shareholder wealth in questionable ways" (p. 1179). Stakeholder theory challenges the usual management approach in advocating for a shift in the primary focus, changing focus from focusing on short-term profit or hitting various financial ratios in favor of long-term success. Stakeholder theory is complex due to multi-contextual application, which adds to the theory's richness (Miles, 2017). Additionally, Phillips *et al.* (2003) argue that stockholder theory and stakeholder theory are only in conflict when the major recipient of a firm's benefits is a stockholder, otherwise the two converge over value maximization. Moreover, as firms have been held accountable for unethical acts such as those of Enron and WorldCom, it has become more apparent to scholars and practitioners that firms are responsible to "people and entities beyond their stockholders" (Wagner Mainardes *et al.*, 2011, p. 231).

This study connects the viewpoint that multiple stakeholders, including environmental, social, and governance stakeholders as well stockholders, can benefit from value maximization through the effects of ESG on cash flows. Galbreath (2018) states ESG scores create observability in quantifying actions of corporations to then be measured against financial metrics corporations report.

### 2.2 The effects of ESG on cash flows

Based on what has been put forward on existing studies, we propose to test the following hypothesis:

Hypothesis 1: ESG scores are positively correlated to cash flows.

### 3. Research Methodology

This section presents the sample studied, data collection, variable measurements, and the model specifications used in this study.

The research method proposed is a quantitative study. Non-experimental quantitative correlations are appropriate to measure relationships between variables with random sampling (Hankerson, 2016). The study sought to examine changes over time, requiring the performance of a longitudinal correlational study examining data from 2012 to 2021. Data collection from 2012 to 2021 will examine each year as stipulated in the data collection process to ensure consistent reporting. The influence on the study relating to using the years is essential to understand how changes over time are seen. Arayssi *et al.* (2016) supported the idea with their finding that using multiple data points over time increases the acceptability of outcome as opposed to a single data point or comparison of two points where trends outside of the data points would go unseen. Data points in the study are years, supported by the best method of ensuring valid findings being the use of consistent data (Gillet-Monjarret, 2018), which Eikon provided.

Supporting the research design included using a control variable, firm size. The firm size is not a data point that can be collected. Thus, a proxy was required. Market capitalization serves as a proxy in that market capitalization is widely accepted as a determinant of firm size (Drempetic *et al.*, 2019; Tamimi and Sebastianelli, 2017). The need for a control variable was created because differing firm sizes contain differing resources and thus scalability realities when responding to a challenge (Drempetic *et al.*, 2019). Research from Drempetic *et al.* (2019) as well as Tamimi and Sebastianelli (2017) each note a firm with a market capitalization of \$10 billion US dollars or more is identified as a large firm.

Due to the need for a control variable and measuring the independent and dependent variables over multiple years, a longitudinal study is appropriate. Eikon utilizes a single communication channel for metrics reported over multiple years (Gillet-Monjarret, 2018), adding confidence to the study outcomes. Probability sampling served as the design to assess the relationship ESG scores and public companies cash flows. Dell (2017) notes that probability sampling aligns with regression models to predict the dependent variable when the independent variable uses categorical grouping such as the research design sets to do.

#### 3.1 Sample selection

Large companies as measured by market capitalization. The sample size was 74 large companies located in 16 countries.

Based on the purpose of the research, the appropriate population was targeted. The research population is well-defined, representing a collection of participating large firms with reported data for all years. The sample was chosen from a sample frame in the Thomson Reuters Eikon database based on the stated requirements for the population, large publicly traded firms with data for all years. In statistics, a sampling frame represents the source material from which the sample is drawn (Durante *et al.*, 2018). The size of the sample was determined scientifically to allow an effect.

Birindelli *et al.* (2020) noted Eikon is a commonly used resource for financial research. Karaman *et al.* (2018) noted the acceptance of Eikon as a trusted instrument due to the audited information Eikon reports. The nature of the study requiring multiple years supports the use of the database as a single instrument due to the need for a consistent communication channel over the years (Gillet-Monjarret, 2018).

#### 3.2 Variable measurements

The independent variable used in this study is ESG scores. The dependent variable examined in this study is cash flows. Each variable was extracted from Thomson Reuters Eikon database for the reporting periods of 2012 to 2021. Thomson Reuters published the Eikon database, widely used and accepted in reporting sustainability and corporate governance (Karaman *et al.*, 2018).

The independent variable ESG score from Thomson Reuters Eikon is calculated from 400 measures, comprising 178 critical measures among 23 categories of controversy (Thomson Reuters, 2017). The categories represent neo-institutional theory and sustainability ratings, in addition to the three main areas of environmental, social, and governance (Drempetic *et al.*, 2019). The variable will be measured using a ratio scale of 0 to 100 (Chevrollier *et al.*, 2020).

#### 3.3 Model specification

The research sought an explanation to how closely ESG scores are correlated with financial performance, measured by a firm's cash flows. Using a regression to measure each year in a ten-year period allows for

three distinct stages of analysis (Allen, 1997). Allen (1997) defines the stages as model specification, estimation of parameters, and interpretation.

Equally as important to the model specification is the selection of variable(s) to measure as context around ESG factors for certain industries or firm size can play a role (Lee and Suh, 2022). These factors create the need for a layered approach where ESG score and cash flows are seen on the top, but control variables such as firm size, complete data for all years, and external disruption factors such as a pandemic must be investigated.

#### 4. Results and Interpretations

This section presents the results of the statistical analysis of this study.

This study examines the impact of ESG on corporate valuation as measured by cash flows over 10 years. We examined the statistical significance and strength of the relationship correlation between these variables. A longitudinal correlation examining data from 2012 to 2021 was conducted. For each year, a linear regression was used with the dependent variable as cash flows and the independent variable as ESG scores. The  $R^2$ ,  $p$ -value,  $F$ -score, and correlation of each year are shown in Table 1.

| Year | $R^2$ | $P$ -value | $F$ -Score            | Correlation |
|------|-------|------------|-----------------------|-------------|
| 2021 | 0.125 | .002       | $F_{(1,72)} = 10.290$ | 0.354       |
| 2020 | 0.189 | < .001     | $F_{(1,72)} = 18.030$ | 0.448       |
| 2019 | 0.173 | < .001     | $F_{(1,72)} = 15.093$ | 0.416       |
| 2018 | 0.122 | .002       | $F_{(1,72)} = 9.968$  | 0.349       |
| 2017 | 0.123 | .002       | $F_{(1,72)} = 10.137$ | 0.351       |
| 2016 | 0.162 | < .001     | $F_{(1,72)} = 13.894$ | 0.402       |
| 2015 | 0.137 | .001       | $F_{(1,72)} = 11.421$ | 0.370       |
| 2014 | 0.155 | < .001     | $F_{(1,72)} = 13.246$ | 0.394       |
| 2013 | 0.155 | < .001     | $F_{(1,72)} = 13.160$ | 0.393       |
| 2012 | 0.132 | .001       | $F_{(1,72)} = 10.956$ | 0.363       |

**Table 1 -  $R^2$ ,  $p$ -value,  $F$ -score, and Correlation Results by Year**

**Source: Author's own work**

We find that the  $p$ -value for each year is significant at the .01 level. Moreover, the  $F$ -score for each year is greater than the critical value of 7.00 when  $df_1 = 1$  and  $df_2 = 72$ . We also find that  $R^2$  for each year ranges from a low of 0.122 in 2018 to a high of 0.189 in 2020. This suggests that, in general, of the factors that affect corporate cash flows, the effect of ESG scores is approximately 12.2% to 18.9% of the total effect. In Table 2 and Table 3, we provide the descriptive statistics for the years with the highest and lowest  $R^2$ , 2020 and 2018, respectively.

| Variable             | Mean         | Standard Deviation | N  |
|----------------------|--------------|--------------------|----|
| Cash Flow (USD) 2020 | 3368581446.3 | 5404609258.1       | 74 |
| ESG Score 2020       | 68.321250648 | 14.482815513       | 74 |

**Table 2 - Descriptive statistics for 2020**

**Source: Author's own work**

| Variable             | Mean         | Standard Deviation | N  |
|----------------------|--------------|--------------------|----|
| Cash Flow (USD) 2018 | 1981111725.3 | 3199666896.2       | 74 |
| ESG Score 2018       | 66.086614419 | 14.836019634       | 74 |

**Table 3 - Descriptive statistics for 2018**

**Source: Author's own work**

To validate the results, we examined the goodness of fit via residual plots for each year and found this condition to be met. To further validate these results, we checked the assumption of no autocorrelation. This was confirmed via the Durbin-Watson statistic for each year shown in Table 4.

| Year | D-W Statistic |
|------|---------------|
| 2021 | 1.943         |
| 2020 | 2.025         |
| 2019 | 1.926         |
| 2018 | 1.731         |
| 2017 | 1.826         |
| 2016 | 1.907         |
| 2015 | 2.218         |
| 2014 | 2.095         |
| 2013 | 2.118         |
| 2012 | 2.137         |

Table 4 - Durbin-Watson Statistic by Year

**Source: Author's own work**

Years 2020, 2015, 2014, 2013, and 2012 lean toward negative autocorrelation with DW statistics of 2.025, 2.218, 2.095, 2.118, and 2.317 respectively. Years 2021, 2019, 2018, 2017, and 2016 lean toward positive autocorrelation with DW statistics of 1.943, 1.926, 1.731, 1.826, and 1.907, respectively. However, each year's DW statistic is very close to 2 and a DW range of 1.5 – 2.5 is generally considered acceptable (Bobbitt, 2020). Therefore, we can accept that ESG scores are positively correlated to cash flows, in general, yet with a small effect overall.

It is important to note that a small effect does not necessarily indicate an issue with the model. There are situations in which small values are associated with good models (Taylor, n.d.). This can be seen in industries in which there is moderate to high variability due to effects of various human behaviors exhibited by organizational managers (Field, et al., 2023). For example, with the firms in this study, we do not know which of them place more emphasis on environment, social, or governance factors found in ESG scores or the types and amounts of resources put toward ESG efforts. A separate factor is that ESG factors are weighted differently among various ESG models available to organizations (Garefalakis & Dimitras, 2020; Lee, Raschke, & Krishen, 2023). This further affects variability and could affect our model's results. It is also important to note that presidential elections occurred in 3 of the 10 years included in this study: 2012, 2016, and 2020. However, variations in the results of each of these years are nominal compared to the remaining 7 years, so do not have a significant impact on this study's overall results. Also of note is the COVID-19 pandemic from 2020 in which organizations across the globe received infusions of cash for COVID relief. For example, firms in the private sector in the U.S. received a total of \$1.8 trillion, with airlines receiving \$32 billion in relief funds (Meier & Smith, 2021). There are 2 domestic airlines in our study and one 1 international airline. There are also firms in the dataset that are in industries considered to be complementary to airlines. Therefore, to further validate the results, we tested the effect of cash flow from operations on ESG scores and found similar results. This indicates that the infusions of cash for COVID relief do not have a significant effect on organizational cash flow or the results of this study.

## 5. Conclusion

Research throughout the study and discussion of results confirmed a positive predictive and statistically significant relationship of ESG scores and cash flows. Stakeholder theory was studied to understand the extent to which ESG scores impact cash flows of firms in the study. The research question investigated the impact of ESG on corporate valuation as measured by cash flows over 10 years. Stakeholder theory relates to the variables as a component, affecting the outcome of actions. The investigation found a statistically significant positive relationship between firms ESG scores and cash flows. The findings indicate a positive correlation between ESG efforts and corporate cash flows, albeit with a small overall effect. This relationship underscores the growing recognition of ESG factors in financial decision-making and their potential to contribute to corporate value.

Despite the modest impact observed, the consistency of the correlation across various years and industries suggests that ESG practices can be beneficial to a company's financial health. However, the study also acknowledges the inherent variability in ESG impacts due to differing organizational priorities and the varied weighting of ESG factors. Additionally, external factors like the COVID-19 pandemic and political events, while present, did not significantly skew the results. These insights contribute to the

broader literature on ESG and corporate finance, offering valuable considerations for managers and stakeholders aiming to integrate sustainability into their business strategies.

## 6. References

- Abdi, Y., Li, X., and Càmara-Turull, X. (2020), "Impact of sustainability on firm value and financial performance in the air transport industry", *Sustainability*, Vol. 12 No. 23. <https://doi.org/10.3390/su12239957>
- Abukari, K., Musah, A., and Assaidi, A. (2023), "The role of corporate sustainability and its consistency on firm financial performance: Canadian evidence", *Accounting Perspectives*, Vol. 22 No. 1, pp. 55–86. <https://doi.org/10.1111/1911-3838.12309>
- Ahmad, N., Mobarek, A., and Roni, N.N. (2021), "Revisiting the impact of ESG on financial performance of FTSE350 UK firms: Static and dynamic panel data analysis", *Cogent Business and Management*, Vol. 8 No. 1. <https://doi.org/10.1080/23311975.2021.1900500>
- Allen, M.P. (1997), *Understanding Regression Analysis*, Springer, Boston, MA. [https://doi.org/10.1007/978-0-585-25657-3\\_35](https://doi.org/10.1007/978-0-585-25657-3_35)
- Analyttica Datalab (2021). "Understanding Durbin-Watson Test", available at: <https://medium.com/@analyttica/durbin-watson-test-fde429f79203> (accessed July 31, 2024).
- Arayssi, M., Dah, M., and Jizi, M. (2016), "Women on boards, sustainability reporting and firm performance", *Sustainability Accounting, Management and Policy Journal*, Vol. 7 No. 3, pp. 376–401. <https://doi.org/10.1108/SAMPJ-07-2015-0055>
- Birindelli, G., Chiappini, H., and Savioli, M. (2020), "When do women on board of directors reduce bank risk?", *Corporate Governance*, Vol. 20 No. 7, pp. 1307–1327. <https://doi.org/10.1108/CG-03-2020-0089>
- Bobbitt, Z. (2020), "How to perform a Durbin-Watson Test in Python", available at: <https://www.statology.org/durbin-watson-test-python> (assessed 31 July 2024).
- Bodhanwala, S., and Bodhanwala, R. (2018), "Does corporate sustainability impact firm profitability? Evidence from India", *Management Decision*, Vol. 56 No. 8, pp. 1734–1747. <https://doi.org/10.1108/MD-04-2017-0381>
- Chevrollier, N., Zhang, J., van Leeuwen, T., and Nijhof, A. (2020), "The predictive value of strategic orientation for ESG performance over time", *Corporate Governance*, Vol. 20 No. 1, pp. 123–142. <https://doi.org/10.1108/CG-03-2019-0105>
- Cohen, G. (2023). "The impact of ESG risks on corporate value", *Review of Quantitative Finance and Accounting*, Vol. 60 No. 4, pp. 1451–1468. <https://doi.org/10.1007/s11156-023-01135-6>
- Dell, G. (2017), "Regression, critical thinking, and the valuation problem today", *The Appraisal Journal*, Vol. 85 No. 3, pp. 217–230.
- Drempetic, S., Klein, C., and Zwergel, B. (2019), "The influence of firm size on the ESG score: Corporate sustainability rating under review", *Journal of Business Ethics*, Vol. 167 No. 2, pp. 333–600. <https://doi.org/10.1007/s10551-019-04164-1>
- Durante, A.C., Lapitan, P., Megill, D., & Rao, L.N. (2018), "Improving paddy rice statistics using area sampling frame technique", *Asian Development Bank Economics Working Paper Series*, No. 565. <http://dx.doi.org/10.22617/WPS189643-2>
- Field, E., Hancock, B., Smallets, S. & Weddle, B. (2023), "Investing in middle managers pays off – literally", available at: <https://www.mckinsey.com/capabilities/people-and-organizational-performance/our-insights/investing-in-middle-managers-pays-off-literally> (accessed on 31 July 2024).
- Freeman, R.E. (1994), "The politics of stakeholder theory: Some future directions", *Business Ethics Quarterly*, Vol. 4 No. 4, pp. 409–421. <https://doi.org/10.2307/3857340>
- Freeman, R.E. (2001), "A stakeholder theory of the modern corporation. *Perspectives in Business Ethics* Sie, Vol. 3 No. 144, pp. 38–48.
- Freeman, R.E., Wicks, A.C., and Parmar, B. (2004), "Stakeholder theory and "the corporate objective revisited"", *Organization Science*, Vol. 15 No. 3, pp. 364–369. <https://doi.org/10.1287/orsc.1040.0066>
- Friede, G., Busch, T., & Bassen, A. (2015). ESG and financial performance: Aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment*, 5(4), 210–233. <https://doi.org/10.1080/20430795.2015.1118917>



- Friedman, A.L., and Miles, S. (2002), “Developing stakeholder theory”, *Journal of Management Studies*, Vol. 39 No. 1, pp. 1-21. <https://doi.org/10.1111/1467-6486.00280>
- Galbreath, J. (2018), “Is board diversity linked to financial performance? The mediating mechanism of CSR”, *Business and Society*, Vol. 57 No. 5, pp. 863-889. <https://doi.org/10.1177/0007650316647967>
- Garefalakis, A., Dimitras, A. (2020), “Looking back and forging ahead: the weighting of ESG factors”, *Analysis of Operations Research*, No. 294, pp. 151–189. <https://doi.org/10.1007/s10479-020-03745-y>
- Gillet-Monjarret, C. (2018), “Assurance reports included in the CSR reports of French firms: A longitudinal study”. *Sustainability Accounting, Management and Policy Journal*, Vol. 9 No. 5, pp. 570-594. <https://doi.org/10.1108/SAMPJ-09-2017-0098>
- Hankerson, B.S. (2016), *Empirical study of internal accounting controls used by churches and factors that relate to the level of those controls* (Doctoral dissertation, Capella University).
- Kabderian Dreyer, J., Moreira, M., Smith, W.T. and Sharma, V. (2023), “Do environmental, social and governance practices affect portfolio returns? Evidence from the US stock market from 2002 to 2020”, *Review of Accounting and Finance*, Vol. 22 No. 1, pp. 37-61. <https://doi.org/10.1108/RAF-02-2022-0046>
- Kalani, R., Sengupta, D.A., and Didwania, D.M. (2024), “The impact of ESG techniques on ROIC and EPS for manufacturing firms: research from listed companies in India”, *Migration Letters*, Vol. 21 No. S6, pp. 362–380. <https://doi.org/10.59670/ml.v21iS6.7920>
- Karaman, A.S., Kilic, M., and Uyar, A. (2018), “Sustainability reporting in the aviation industry: worldwide evidence”, *Sustainability Accounting, Management and Policy Journal*, Vol. 9 No. 4, pp. 362-391. <https://doi.org/10.1108/SAMPJ-12-2017-0150>
- Laplume, A.O., Sonpar, K., and Litz, R.A. (2008), “Stakeholder theory: Reviewing a theory that moves us”, *Journal of Management*, Vol. 34 No. 6, pp. 1152-1159. <https://doi.org/10.1177/0149206308324322>
- Lee, M.T., Raschke, R.L., Krishen, A.S. (2023), “Understanding ESG scores and firm performance: Are high-performing firms E, S, and G-balanced?”, *Technological Forecasting and Social Change*, Vol 195. <https://doi.org/10.1016/j.techfore.2023.122779>
- Lee, M.T., and Suh, I. (2022), “Understanding the effects of environmental, social, and governance conduct on financial performance: Arguments for a process and integrated modeling approach”, *Sustainable Technology and Entrepreneurship*, Vol. 1 No. 1. <https://doi.org/10.1016/j.stae.2022.100004>.
- Lin, T.-L., Liu, H.-L., Huang, C.-J., and Chen, Y.-C. (2018), “Ownership structure, board gender diversity and charitable donation”, *Corporate Governance*, Vol. 18 No. 4, pp. 655-670. <https://doi.org/10.1108/CG-12-2016-0229>
- Meier, J.M., & Smith, J. (2021), “*The COVID-19 Bailouts*”, available at: <https://www.aeaweb.org/conference/2022/preliminary/paper/St6HY32Q> (accessed on 31 July 2024).
- Miles, S. (2017), “Stakeholder theory classification: A theoretical and empirical evaluation of definitions”, *Journal of Business Ethics*, Vol. 142 No. 3, pp. 437-459. <https://doi.org/10.1007/s10551-015-2741-y>
- Phillips, R., Freeman, R.E., and Wicks, A.C. (2003), “What stakeholder theory is not”, *Business Ethics Quarterly*, Vol. 13 No. 4, pp. 479-502. <http://www.jstor.com/stable/3857968>
- Rahi, A.F., Akter, R. and Johansson, J. (2022), “Do sustainability practices influence financial performance? Evidence from the Nordic financial industry”, *Accounting Research Journal*, Vol. 35 No. 2, pp. 292-314. <https://doi.org/10.1108/ARJ-12-2020-0373>
- Stieb, J.A. (2008), “Assessing Freeman's stakeholder theory”, *Journal of Business Ethics*, Vol. 87, pp. 401-414. <https://doi.org/10.1007/s10551-008-9928-4>
- Tamimi, N., and Sebastianelli, R. (2017), “Transparency among S&P 500 companies: An analysis of ESG disclosure scores”, *Management Decision*, Vol. 55 No. 8, pp. 1660-1680. <https://doi.org/10.1108/MD-01-2017-0018>
- Taylor, S. (n.d.), “*R-Squared*”, available at: <https://corporatefinanceinstitute.com/resources/data-science/r-squared/#> (accessed 31 July 2024).

- Thomson Reuters (2017), “Thomson Reuters ESG Scores”, available at:  
[https://www.esade.edu/itemsweb/biblioteca/bbdd/inbbdd/archivos/Thomson\\_Reuters\\_ESG\\_Scores.pdf](https://www.esade.edu/itemsweb/biblioteca/bbdd/inbbdd/archivos/Thomson_Reuters_ESG_Scores.pdf) (assessed 28 July 2024).
- Ting, W.K., Azizan, N.A., Bhaskaran, R.K., and Sukumaran, S.K. (2020), “Corporate social performance and firm performance: Comparative study among developed and emerging market firms”, *Sustainability*, Vol. 12 No. 1. <https://doi.org/10.3390/su12010026>
- Velte, P. (2019), “The bidirectional relationship between ESG performance and earnings management – empirical evidence from Germany”, *Journal of Global Responsibility*, Vol. 10 No. 4, pp. 322-338. <https://doi.org/10.1108/JGR-01-2019-0001>
- Velte, P. (2017). Does ESG performance have an impact on financial performance? Evidence from Germany. *Journal of Global Responsibility*, 8(2), 169–178. <https://doi.org/10.1108/JGR-11-2016-0029>
- Wagner Mainardes, E., Alves, H., and Raposo, M. (2011), “Stakeholder theory: Issues to resolve”, *Management Decision*, Vol. 49 No. 2, pp. 226-252. <https://doi.org/10.1108/00251741111109133>