



The Effect of sustainability reporting on financial performance

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ABSTRACT

Identifying factors affecting financial performance evaluation in today's competitive markets. This study investigates the effect of sustainability reporting on financial performance evaluation. The panel data method is used considering the data type and the available analysis methods. The required data is collected through document analysis and referring to databases, and inferential statistics are used to conclude. The statistical population of this study includes all companies listed on the Tehran Stock Exchange (TSE) during the period 2012-2021. The panel data regression model tests the research hypotheses, and the Stata software (Version 14) is employed to analyze the data. The results indicate that the three measures of corporate financial performance (return on assets, return on equity, and economic value added) are favorably affected by sustainability reporting. Furthermore, the results demonstrate that companies with a sustainable approach to environmental, social, and governance (hereafter ESG) issues build the trust and confidence of investors, creditors, and shareholders, which leads to an increase in firm value and, ultimately, the improvement of corporate performance. Using the results of this study, investors and creditors can identify and invest in companies that take sustainable ESG actions, which leads to an increase in their return on investment.

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1. Introduction

The values of financial assets play a significant role in the investor's decision because investors are interested in knowing their value before buying all kinds of assets. In this regard, the economic environment and the performance of the financial enterprise in the industry are examined based on the value of the asset and its rate of return. By explaining the company's value in the process of stock valuation, evidence is obtained based on which it can measure the company's financial performance and provide practical and executive solutions regarding the future performance of the stock company and continuity of activity. Financial assets are intangible assets with a future benefit or reasonable cash value (Al-ahdal and Hashim, 2022). The performance of financial companies is influenced by effective factors, including coordination and cooperation of production factors, inventory management, working capital management, and marketing and sales costs (Arianpoor et al., 2023). All the abovementioned factors contribute to the improvement of the company's financial performance (Alsmady, 2022). In this regard, it is one of the environmental, social, and corporate governance issues that must be sustainable in relation to environmental issues. It is taken into consideration and can change the company's financial performance.

Sustainability reporting is a report published by a company or organization about the economic, environmental, and social factors that daily activities create (Hahn, 2013). It also expresses the organization's values and governance models and shows the relationship between the organization's strategies and a stable global economy (Berman, 2017). Sustainability reporting can help organizations measure and communicate their economic, environmental, social, and governance performance. Sustainability (the ability to sustain) something for a long time or indefinitely depends on the performance in these four key areas. In addition to financial information, sustainability reporting discloses extra financial information (Arianpoor and Salehi, 2021).

Therefore, with this introduction, this study examines sustainability reporting on the company's financial performance. In other words, from a research point of view, the present researcher is answering how sustainable environmental, social, and corporate governance increases the company's financial performance.

2. Theoretical underpinnings and hypotheses development

2.1. Financial performance

One of the most important goals for a company is to maximize shareholders' wealth by achieving the best financial performance (Arianpoor et al., 2023). The financial performance of representative business units is a critical concern for companies, as it influences decision-making regarding capital allocation, relationships, and project investment. Performance measurement serves as the basis for evaluating and selecting investment opportunities (Falshaw et al. 2006). Failure to evaluate and control the performance of companies can result in suboptimal allocation of resources, impacting shareholders and, ultimately, the macro-level economy. It is essential to effectively assess and monitor company performance to ensure efficient resource allocation and overall economic stability. Performance assesses how well the company has achieved its plans (Falshaw et al. 2006). In other words, one of the investors' concerns is choosing a company with the best performance to achieve the goal of shareholders' investment (Battisti et al., 2019).

2.2. Sustainability reporting

In the past, the company's financial resources have considered the maximization of shareholder value as the company's only goal (Battisti et al., 2019). However, according to the stakeholder theory, the company's goals are tied to the interests of other stakeholders and provide the basis for corporate social responsibility research (Hamid et al., 2022; Belyaeva et al., 2020). Corporate social responsibility (CSR) has a long history that evolved as businesses developed and led to the emergence of society's needs (Hamid and Purbawangsa, 2022; Belyaeva et al., 2020; Salehi and Arianpoor, 2021). From a company's perspective, CSR disclosure refers to the sharing of information in the annual report related to some operations, activities, and programs that affect both the public and public stakeholders (Chan et al., 2014). Previous studies have also proven that corporate social responsibility disclosure has a major impact on building trust, which is one of the prerequisites of corporate reputation (Park et al., 2014). Corporate social responsibility strategies include a wide range of actions

companies can take to meet the expectations of various stakeholders, such as the environment, society, and shareholders (Erhemjamts and Huang, 2019; Fiore et al., 2020).

Therefore, environmental, social, and corporate governance strategies have become policies that companies use to achieve environmental and social goals and meet the needs of all stakeholders (Bresciani et al., 2016). Following the resource-based perspective, environmental and social activities can lead to the development of a competitive advantage by creating unique capabilities and skills in a company (Dressler and Paunović, 2020). When a company aims to protect the environment and promote future generations' welfare, it enhances its reputation among various stakeholders (Kim et al., 2018). However, many studies on the impact of strategies of environmental, social, and corporate governance factors on financial performance had different results (Kyerem, 2021). The financial performance relationship of environmental, social, and corporate governance factors is more complex than a simple cause-and-effect relationship. For instance, customers may hold skepticism towards corporate social responsibility practices, which can undermine the effectiveness of these strategies. Some researchers argue that methods focused on environmental, social, and corporate governance factors only impose costs on companies without providing tangible benefits and may even result in reduced performance (Mohammad and Wasiuzzaman, 2021). On the contrary, others (for example, Moradi et al., 2022) have emphasized the positive impact of a company's sustainable behavior on financial performance. A company's environmental and social concerns can have benefits in various areas, including tax reduction, operational risk reduction, improved ability to conclude more favorable contracts, consumer retention, and increasing favorable reputation (Battisti et al., 2019).

2.3. Sustainability reporting and financial performance

One aspect of corporate social responsibility, which seems to be neglected in the literature, is related to sustainable environmental, social, and corporate governance practices. Klein and Davar (2004) stated that if a company has implemented sustainability measures in the past, there is a negative event for the company. The positive activities of the company's sustainability measures in the past can reduce the risk of losing the company's reputation. In particular, actual sustainability practices can enhance the company's reputation among stakeholders and lead to better financial performance (Park et al., 2014).

In this context, Kim et al. (2018) suggested that a company's sustainable practices improve the company's reputation and financial performance due to its commitment to the well-being of future generations. Companies that disclose environmental, social, and corporate governance factors in developed markets are associated with lower systematic market risks due to less likelihood of litigation or negative market reaction (Burke et al., 1996). Porter et al. (2006) claim that disclosure of environmental, social, and corporate governance factors is associated with a firm's competitive advantage because the firm provides sustainable solutions to environmental and social issues. In addition, by participating in environmental, social, and corporate governance factors, companies can define their product offerings in accordance with the needs of society for better environmental protection and quality of life. However, Ortiz et al. (2023) claim that environmental disclosure is negatively related to financial performance in the UK. In recent studies of US companies from 2009 to 2018, it was observed that the disclosure of environmental, social, and corporate governance factors improves the company's financial performance. Still, environmental disclosure reduces the company's financial performance (Al-ahdal and Hashim, 2022).

This contradictory finding requires the study of the impact of sustainable environmental, social, and corporate governance measures on the company's financial performance. Studies conducted in developed countries show that the positive relationship between sustainable environmental, social, and corporate governance actions is greater due to the lower risk of information related to the disclosure of environmental, social, and corporate governance factors (Sun, 2023). Apart from better long-term performance, Li et al. (2022) found that, based on a sample of companies from 15 European Union countries, lending institutions appreciate and recognize the value of companies that disclose their environmental, social, and corporate governance (ESG) factors, offering companies lower costs and favorable financial terms, rewarding the debt. Using a dataset of 23 countries from the Organization for Economic Co-operation and Development from 2007 to 2012, Ruan and Liu (2021) show that

borrowing costs or debt costs are lower in countries with high disclosure of environmental, social, and corporate governance factors.

Reducing the cost of borrowing enables companies to gain a competitive advantage due to lower risks and lower financing costs associated with issuing their bonds (Ruan and Liu, 2021). The activities of environmental, social, and corporate governance factors increase the returns of institutional investors and reduce risks. Furthermore, Uyar et al. (2023) argue that companies that embrace corporate social responsibility (CSR) strategies often enjoy improved access to finance due to enhanced stakeholder participation and transparency. Social responsibility allows companies to engage in activities that enable efficient allocation of resources (Hasan et al., 2018). Therefore, the company's desire to implement more disclosure may be associated with its desire to increase competitive advantage through lower financing costs because companies with high environmental, social, and corporate governance disclosure scores not only seek to optimize the final product line but also advance solutions to improve the quality of life (Dhoraisingam et al., 2022). Li et al. (2022) found a positive relationship between corporate environmental responsibility and long-term stock returns. In a highly competitive developed market, the disclosure of environmental, social, and corporate governance factors facilitates trust and enhances a company's ability to create superior performance compared to its competitors; moreover, it encourages companies to actively disclose environmental, social, and corporate governance factors which contribute to meeting market expectations more effectively (Li et al., 2022).

Similarly, environmental, social, and corporate governance (ESG) factors, in addition to social responsibility (CSR), facilitate increased corporate returns by reducing the cost of capital and favorable borrowing conditions, leading to better access to (Peters, 2014). Studies related to environmental, social, and corporate governance factors in emerging markets are different. Evidence shows that disclosing environmental, social, and corporate governance factors reduces information asymmetry and improves investors' understanding and knowledge of the company's investment strategies (Chairani and Siregar., 2021). Park's (2017) study of 175 emerging Korean companies from 2010 to 2012 shows that CSR positively affects long-term firm performance and provides direct and indirect value to firms through positive feedback on their reputation. Mohammad and Wasiuzzaman (2021) stated that in emerging markets such as Malaysia, creating value through the activities of environmental, social, and corporate governance factors in a company's long-term strategy increases shareholder value through an effective corporate governance structure. In Iran, the disclosure of environmental, social, and corporate management factors, as well as social responsibility, is weak because there is no requirement for disclosure. Poor disclosure of CSR activities may lead to inconsistencies in CSR disclosure findings because researchers rely on very limited information (Atan et al., 2018).

The findings of previous studies also show that increased social responsibility disclosure and corporate financial performance are associated with government ownership and the introduction of corporate governance standards. Government support in setting standards, facilities, and resources for the development of disclosure of environmental, social, and corporate governance factors is necessary because these, directly and indirectly, affect the company's long-term performance and competitive advantage. Government and financial institution recognition increases investor confidence and improves the company's competitive advantage regarding the weighted average cost of capital (WACC). In addition, stakeholder initiatives to create greater awareness and recognition of environmental, social, and corporate governance disclosure encourage companies to engage in environmental, social, and corporate governance. Companies that participate in the disclosure of environmental, social, and corporate governance factors are recognized as the most advanced and admired companies in the market (Bahmandoost et al., 2019). Given the above theoretical underpinnings and the research background, the research hypotheses are stated as follows:

The main hypothesis is that sustainability reporting positively affects corporate financial performance.

Sub-hypothesis 1: Sustainability reporting positively affects return on assets (ROA). Sub-hypothesis 2: Sustainability reporting positively impacts return on equity (ROE).

Sub-hypothesis 3: Sustainability reporting positively impacts the economic value added (EVA).

3. Research background

Mohammad and Wasuazzaman (2021) investigated the relationship between environmental, social, and corporate governance disclosure, competitive advantage, and corporate performance in Malaysia. In this regard, the data of 661 companies from 2012 to 2017 were reviewed. The findings show that the disclosure of environmental, social, and corporate governance factors, measured by environmental disclosure scores, and corporate governance factors, measured by environmental disclosure scores and the disclosure score of environmental, social, and corporate governance factors, has a positive relationship with performance. Also, the evidence shows the positive moderating effect of competitive advantage on the relationship between the disclosure of environmental, social, and corporate governance factors and performance. When companies have a competitive advantage, more disclosure improves the company's financial performance. In contrast, in companies that do not have a competitive advantage, increasing the disclosure of environmental, social, and corporate governance factors reduces the company's financial performance.

Dressler and Paunović (2020) investigated the relationship between the activities of environmental, social, and corporate governance factors and company value. For this purpose, the shares accepted in the American Stock Exchange from 2009 to 2018 were reviewed. The results showed an inverted U-shaped relationship between the performance of environmental, social, and corporate governance factors and growth opportunities. Also, this non-linear relationship remains in environmental and social dimensions, but corporate governance has no statistically significant effect on growth opportunities. The results also show that the higher value of growth opportunities reduces the effects of increasing the performance value of environmental, social, and corporate governance factors on the company's total value.

Chairman and Siregar (2021) examined companies in Indonesia, Malaysia, the Philippines, Singapore and Singapore. Chairman and Siregar (2021) examined companies in Indonesia, Malaysia, the Philippines, Singapore, and Thailand from 2014 to 2018. They showed that the company's risk management has a positive and significant effect on the company's financial performance and value. This article also shows that environmental, social, and governance performance has a significant role in increasing the effect of corporate risk management on corporate value.

Ruan and Liu (2021) investigated the role of environmental, social, and corporate governance factors on the performance of Chinese companies. In this regard, the data of the companies admitted to the Shanghai and Shenzhen Stock Exchanges, which proposed data on environmental, social, and corporate governance factors from 2015 to 2019, were considered as examples. The results showed that companies' environmental, social, and corporate management factors have a significant negative effect on the company's financial performance. Further research shows that compared to public and environmentally sensitive companies, non-public and non-environmentally sensitive companies provide stronger evidence to support the above results.

Shakil et al. (2020) showed that the general model of environmental, social and corporate governance factors had a significant relationship with economic performance. In addition, the findings of these researchers showed that social performance and corporate governance significantly affect economic performance in all regression models. However, environmental performance and economic performance could not show a significant relationship.

4. Research Methodology

4.1. Research type

This paper constitutes a primary research study that utilizes data from multiple channels, including Rahavard-e-Novin software, companies' financial statements, and the CODAL.¹ Website. This study employs panel data and multivariable regression models to examine the research hypotheses. The Stata software (version 14) is utilized to estimate the model.

1. *Comprehensive Database Of All Listed Companies* (<https://www.codal.ir/>)

4.2. Data collection method and statistical population

This study uses the screening method to determine the research sample. According to the structural research concepts and information limitations in Iran's capital market, all the companies admitted to the stock exchange from 2012 to 2021 are included in the sample, and others are excluded. Therefore, 196 companies were selected as the final sample of this research from the companies admitted to the stock exchange from 2012 to 2021.

Table 1. Sample selection

Condition	Number of companies
Statistical population by the end of 2021	450
Companies with no change in their fiscal year-end over the research period	(45)
Companies that have been active on the TSE in all the research years	(73)
Companies that are not financial intermediaries, investment, insurance, and holding companies	(89)
Companies whose information and data are available and accessible	(47)
The final sample	196

4.3. Research models

The research models are presented as follows:

Model 1:

$$FP_{i,t} = \beta_0 + \beta_1 \text{Sustainability Reporting}_{i,t} + \sum \beta_k \text{Control Variable}_{i,t} + \sum \beta_n \text{Year \& Industry}_{i,t} + \varepsilon_{i,t}$$

Model 2:

$$ROA_{i,t} = \beta_0 + \beta_1 \text{Sustainability Reporting}_{i,t} + \sum \beta_k \text{Control Variable}_{i,t} + \sum \beta_n \text{Year \& Industry}_{i,t} + \varepsilon_{i,t}$$

Model 3:

$$ROE_{i,t} = \beta_0 + \beta_1 \text{Sustainability Reporting}_{i,t} + \sum \beta_k \text{Control Variable}_{i,t} + \sum \beta_n \text{Year \& Industry}_{i,t} + \varepsilon_{i,t}$$

Model 4:

$$EVA_{i,t} = \beta_0 + \beta_1 \text{Sustainability Reporting}_{i,t} + \sum \beta_k \text{Control Variable}_{i,t} + \sum \beta_n \text{Year \& Industry}_{i,t} + \varepsilon_{i,t}$$

Where:

FP: Corporate financial performance.

ROA: Return on assets.

ROE: Return on equity.

EVA: Economic value added.

Sustainability reporting: ESG Factors.

Control Variable: Control variables.

The dummy variables, Year and industry, are included in the above models to control for the effects of year and industry.

4.4. Variables measurement

The variables used in this study consist of dependent, independent, and control variables, which are measured as follows:

4.4.1. Corporate financial performance (FP):

This study uses two approaches to measure corporate financial performance: traditional (financial performance) and modern (economic performance). Following Sun et al. (2023) and Alsmadi (2022), return on assets (ROA) and return on equity (ROE) are used as traditional measures. Moreover, in line with Hamid and Purbawangsa (2022) and Ortiz et al. (2023), economic value added (hereafter EVA), which is an economic measure of financial performance, is used as the modern approach to performance measurement.

4.4.1.1. Return on assets (ROA):

Net income is divided by total assets (Sun et al., 2023; Alsmadi, 2022).

4.4.1.2. Return on equity (ROE):

Net income is divided by shareholders' equity (Sun et al., 2023; Alsmadi, 2022).

4.4.1.3. Economic value added (EVA):

A measure based on the residual income indicates a company's financial performance. EVA is equal to net operating profit after taxes (NOPAT) minus the weighted average cost of capital (WACC) multiplied by total assets minus current liabilities or the capital employed (CAPITAL) (Hamid and Purbawangsa, 2022; Ortiz et al., 2023).

Relationship 1: $CapEVA = NOPAT - (WACC * Capital)$

The measurement of the overall corporate financial performance (homogenizing the measures of corporate financial performance):

Given the varying significance assigned to financial performance measures and the diverse interpretations of these measures by investors, analysts, academics, and other stakeholders, similar to Li et al. (2022), we use the overall score of financial performance, which is created by homogenizing the scores of the three distinct measures. The combined score of the corporate financial performance is the sum of the homogenized scores of the three measures of corporate financial performance. To homogenize the scores of corporate financial performance, each of which has a different weight, first, the scores of each of these financial performance measures are calculated for every firm and then multiplied by the differential determination coefficient obtained from the effect of each of these measures on the cost of capital to calculate the new weight of each of these.

Relationship 2: $FP = \sum Attribute_{j,t}^k \times IC_k$

In this model, IC_k equals the differential coefficient obtained from the following model. $Attribute_{j,t}^k$ is equal to the score of the Kth performance measure for firm j in year t. The following regression model determines the effect of each financial performance measure on the cost of capital (the crucial factor in investors' decisions).

Model 7: $CC_{j,t} = \beta_0 + \beta_1 FPAttribute_{j,t} + \beta_2 ROA_{j,t} + \beta_3 SIZE_{j,t} + \beta_4 BM_{j,t} + \epsilon_{j,t}$

CC: The cost of capital

FP Attribute: the score of corporate financial performance based on distinct measures (5 measures)

ROA: return on assets

SIZE: Firm size

BM: The growth rate

To measure the cost of capital, the following model (the Gordon growth model) is employed:

Relationship 2: $CC_{j,t} = \left(\frac{D_1}{P_0} \right) + g$

Where:

P_0 : Stock price at the beginning of period t

g : Dividend growth rate

The differential determination coefficient is employed to assess the correlation between each of the three measures and the cost of capital. This coefficient is calculated by comparing the determination coefficients of two models: one with the inclusion of the score of corporate financial performance and one without. The discrepancy between these coefficients represents the score of corporate financial performance. A firm's financial performance score is determined by summing the weights assigned to the three measures. (Li et al., 2022)

4.4.2. Sustainability reporting:

The study by Ligorio et al. (2022) provides a framework or methodology for measuring sustainability reporting in this piece. In this respect, a content analysis of the board activity report is performed. Moreover, the disclosure score of each dimension is the average of the scores of the criteria related to that dimension.

Disclosure items generally include 30 indicators, which are presented in Table 2. The score of each criterion is calculated as follows:

- Suppose the sustainability reporting criteria are disclosed quantitatively or non-quantitatively, or the details are presented in pictures, charts, or tables. In that case, the disclosure score takes the value 1.
 - The disclosure score equals zero if the sustainability reporting criteria are not disclosed.
- Finally, these scores are divided by 30; thus, the sustainability reporting score is calculated.

Table 2. Indicators of sustainability disclosure

Indicators		
Environmental factors	Environmental risk assessment	
	Environmental education	
	Environmental transparency	
	Climate change	
	Biodiversity	
	Pollution and waste	
	Environmental management system (EMS)	
	Energy and water efficiency	
	The environmental issues of the supply chain goods and services	
	Social factors	Socially responsible investment
Social education		
Social transparency		
Production health		
The social issues of customers and the supply chain		
Brand protection and anti-competitive behavior		
Labor rights		
Health, safety, and productivity		
Compliance with human rights principles		
Social development and Philanthropy		
Social perception of stakeholders		
Non-discrimination and social inclusion		
Governance factors	Investment risk management	
	Monitoring measures and risk management	
	Transparent governance	
	Board composition	
	Committees	
	Performance-based compensation	
	Adherence to law	
	Ethics, corruption, and a Code of Conduct	
Protecting shareholder rights		

Based on the study of Ligorio et al. (2022)

4.4.3. Control variables

After reviewing studies on the role of different factors in corporate financial performance, a comprehensive set of control variables is identified. In Table 3, these factors and the studies using them are presented. It should be noted that only the variables previously used in domestic studies (in the context of Iran) are presented in this study.

Table 3. Control variables affecting corporate performance

Variable	Measurement
Firm size (Size)	Natural log of total assets
Liquidity (Liq)	Current assets to total assets
Financial leverage (LEV)	Total debt to total assets
Growth opportunity (MB)	The ratio of equity market value to its book value
Sales growth (SG)	The current year's sales minus the previous year's sales divided by the previous year's sales
Firm age (Age)	Natural log of the TSE company age
Auditor change (AudChg)	Equals 1 if there is a change in the auditor and 0 otherwise.

5. Descriptive statistics

The descriptive statistics for the research variables are presented in Table 4. Among the research quantitative variables, growth opportunity (*BM*) and return on assets (*ROA*) have the highest and the

lowest standard deviation values, respectively; in other words, the values of ROA are concentrated close to the mean and more precise. The calculated mean, max, and min values for corporate financial performance equal 1.230, 3.695, and 0.390, respectively, suggesting that, on average, the investigated companies deliver a good performance. The calculated mean, max, and min values for ROA equal 0.146, 0.438, and -0.048, respectively, showing that generally, the TSE companies have good profitability, and the number of loss-making companies is not considered in the investigated companies and periods. The calculated mean, max, and min values for the economic value added (EVA) equal 0.0548, 0.5639, and -0.9648, respectively, indicating that companies investigated in this study generally have high true economic profit. The calculated mean, max, and min values for sustainability reporting equal 0.438, 0.662, and 0.174, respectively, demonstrating that the investigated companies generally take appropriate ESG actions and properly disclose them, leading to beneficial effects on their financial performance. As shown in Table 4, on average, companies have nearly 34 percent sales growth and their size is 14.736. Moreover, auditor change is not considered in these companies.

Table 4. Descriptive statistics for the research variables

Variable	Mean	Median	Max	Min	Standard Deviation	Skewness	Kurtosis
Corporate performance	1.230	0.978	3.695	0.390	0.820	1.626	5.208
Sustainability reporting	0.438	0.441	0.662	0.174	0.084	-0.200	2.522
Return on assets	0.146	0.121	0.438	-0.048	0.135	0.629	2.474
Return on equity	0.300	0.283	0.734	-0.132	0.239	0.096	2.086
Economic value added	0.054	0.092	0.563	-0.964	0.341	-1.433	5.379
Firm size	14.736	14.499	18.152	12.296	1.555	0.550	2.623
Liquidity	0.654	0.671	0.929	0.299	0.189	-0.299	1.962
Financial leverage	0.535	0.537	0.878	0.175	0.200	-0.090	2.077
Growth opportunity	4.137	2.634	15.989	0.720	3.928	1.837	5.633
Sales growth	0.346	0.287	1.262	-0.279	0.413	0.559	2.606
Firm age	2.890	2.890	3.713	2.079	0.434	-0.021	2.470
Auditor change	0.275	0.000	1.000	0.000	0.446	1.004	2.009

5.1. Inferential statistics

Before testing the research hypotheses, the Breusch-Pagan and the Hausman tests are employed to determine the panel data model (fixed effects vs. random effects). Table 5 presents the results of these tests.

As presented in Table 5, the significance level of the Hausman test for both models is less than 0.05; thus, the fixed-effects model should be used to estimate the coefficients. The Wald and Wooldridge tests are used to assess the presence of autocorrelation and the heterogeneity of variance. The results of these two tests are presented in Tables 6 and 7.

Table 5. The results of the Breusch-Pagan and the Hausman tests

Research hypotheses	The Breusch-Pagan test			The Hausman test		
	Test statistic	Statistic probability	Test result	Test statistic	Significance level	Test result
The main hypothesis	3477.56	0.000	panel	180.35	0.000	Fixed effects
The first sub-hypothesis	186.25	0.000	panel	147.41	0.000	Fixed effects
The second sub-hypothesis	412.54	0.000	panel	132.92	0.000	Fixed effects
The third sub-hypothesis	26.84	0.000	panel	159.32	0.000	Fixed effects

Table 6. The results of the Wald test

Dependent variable	Null hypothesis	Test statistic	Statistic probability	Result
The main hypothesis	There is no heterogeneity	2451.66	0.000	The null hypothesis is rejected
The first sub-hypothesis	There is no heterogeneity	1623.01	0.000	The null hypothesis is rejected
The second sub-hypothesis	There is no heterogeneity	505.57	0.000	The null hypothesis is rejected
The third sub-hypothesis	There is no heterogeneity	847.58	0.000	The null hypothesis is rejected

Table 7. The results of the Waldridge test

Variable	Null hypothesis	Test statistic	Statistic probability	Result
The main hypothesis	There is no auto-correlation	4.516	0.034	The null hypothesis is rejected
The first sub-hypothesis	There is no auto-correlation	10.968	0.016	The null hypothesis is rejected
The second sub-hypothesis	There is no auto-correlation	22.844	0.000	The null hypothesis is rejected
The third sub-hypothesis	There is no auto-correlation	15.203	0.000	The null hypothesis is rejected

According to the Wooldridge and Wald test results, all three models have autocorrelation and variance heterogeneity. If there is autocorrelation or heterogeneity of variance, the generalized least squares (GLS) method can be used to estimate the coefficients (Gajarati, 2015). Thus, for the final estimation of the model and to address autocorrelation and the heterogeneity of variance, the GLS method is employed to test the research hypotheses.

5.2. Analysis of the results

The first sub-hypothesis: Sustainability reporting positively affects return on assets.

Table 8. The results of the effect of sustainability reporting on ROA

$ROA_{i,t} = \beta_0 + \beta_1 ESG\ Factors_{i,t} + \sum \beta_k Control\ Variable_{i,t} + \sum \beta_n Year\ \&\ Industry_{i,t} + \varepsilon_{i,t}$						
Variable	Coefficient	Error	The t-statistic	The t-statistic probability	Variance inflation factor (VIF)	Tolerance
Sustainability reporting	0.406	0.095	4.250	0.000	4.660	0.214
Firm size	0.005	0.025	0.230	0.819	6.580	0.151
Liquidity	0.036	0.094	0.390	0.698	1.440	0.695
Financial leverage	-2.363	0.099	-23.720	0.000	1.740	0.573
Growth opportunity	0.343	0.004	71.930	0.000	1.540	0.651
Sales growth	0.116	0.043	2.680	0.007	1.410	0.708
Firm age	0.036	0.039	0.920	0.359	1.290	0.776
Auditor change	0.088	0.034	2.570	0.010	1.020	0.980
Intercept	1.744	0.473	3.680	0.000	-	-
The coefficient of determination (R ²)	Adjusted R-squared		F-statistic		F-statistic probability	
0.840	0.838		486.3		0.000	

Since the tolerance level of the variance inflation factor in this model was less than 10; therefore, there is no collinearity problem in this model. As can be seen, the value of the F statistic is 486.3, and the probability of the F statistic is 0.000. This value is less than 0.05, so the null hypothesis is rejected at 95% confidence, meaning the model is generally significant. This result shows that at least one of the coefficients of the explanatory variables is non-zero and the regression model is significant at the 95% confidence level. Also, the adjusted coefficient of determination equals 0.838; independent and control variables can explain 83.8% of dependent variable changes. According to the results in the above table, the estimated coefficient for sustainability reporting is equal to 0.406, which shows that sustainable environmental, social, and corporate governance actions positively affect the company's asset returns. Since the corresponding significance level (0.000) is less than 0.05, it can be said that the impact of sustainability reporting on asset returns is statistically significant, so the first sub-hypothesis of the research is confirmed. In other words, it can be stated that companies that adopt sustainable environmental, social, and corporate management practices and consistently communicate their efforts

should enhance their reputation among investors, creditors, and shareholders. So, the positive view of investors, creditors, and shareholders leads to an increase in the company's value and, consequently, an increase in the company's yield, which increases the company's asset yield and ultimately leads to an improvement and increase in the company's financial performance.

The second sub-hypothesis: Sustainability reporting positively impacts return on equity.

Table 9. The results of the effect of sustainability reporting on ROE

$$ROE_{i,t} = \beta_0 + \beta_1 ESG\ Factors_{i,t} + \sum \beta_k Control\ Variable_{i,t} + \sum \beta_n Year\ \&\ Industry_{i,t} + \varepsilon_{i,t}$$

Variable	Coefficient	Error	The t-statistic	The t-statistic probability	Variance inflation factor (VIF)	Tolerance
Sustainability reporting	0.050	0.023	2.170	0.030	4.660	0.214
Firm size	0.018	0.006	2.960	0.003	6.580	0.151
Liquidity	0.137	0.023	5.860	0.000	1.440	0.695
Financial leverage	-0.030	0.024	-1.250	0.212	1.740	0.573
Growth opportunity	0.007	0.001	6.480	0.000	1.540	0.651
Sales growth	0.087	0.010	8.160	0.000	1.410	0.708
Firm age	-0.010	0.009	-1.130	0.260	1.290	0.776
Auditor change	0.007	0.008	0.930	0.353	1.020	0.980
Intercept	-0.383	0.116	-3.300	0.0010	-	-
The coefficient of determination (R ²)	Adjusted R-squared		F-statistic		F-statistic probability	
0.535	0.529		106.1		0.000	

Since the tolerance level of the variance inflation factor in this model was less than 10; therefore, there is no collinearity problem in this model. As can be seen, the value of the F statistic is 106.1, and the probability of the F statistic is 0.000, and this value is less than 0.05, so the null hypothesis is rejected at 95% confidence; that is, the model is generally significant. This result shows that at least one of the coefficients of the explanatory variables is non-zero and the regression model is significant at the 95% confidence level. Also, the adjusted coefficient of determination equals 0.529; independent and control variables can explain 52.9% of dependent variable changes. According to the results in the above table, the estimated coefficient for environmental factors is equal to 0.050, which shows that sustainable environmental, social, and corporate governance measures positively affect the company's asset returns. However since the corresponding significance level (0.030) is less than 0.05, it can be said that the impact of sustainability reporting on equity returns is statistically significant, so the second sub-hypothesis of the research is confirmed. In other words, it can be concluded that companies that prioritize sustainable environmental, social, and corporate governance actions tend to experience enhanced company value. This, in turn, can lead to increased net profit, improved return on equity, and ultimately result in stronger overall financial performance for the company.

The third sub-hypothesis: sustainability reporting positively affects economic value added.

Table 10. The results of the effect of sustainability reporting on EVA

$$EVA_{i,t} = \beta_0 + \beta_1 ESG\ Factors_{i,t} + \sum \beta_k Control\ Variable_{i,t} + \sum \beta_n Year\ \&\ Industry_{i,t} + \varepsilon_{i,t}$$

Variable	Coefficient	Error	The t-statistic	The t-statistic probability	Variance inflation factor (VIF)	Tolerance
Sustainability reporting	0.031	0.009	3.160	0.002	4.660	0.214
Firm size	0.003	0.037	0.100	0.924	6.580	0.151
Liquidity	0.038	0.037	1.030	0.305	1.440	0.695
Financial leverage	-0.122	0.039	-3.100	0.002	1.740	0.573
Growth opportunity	-0.012	0.001	-6.510	0.000	1.540	0.651
Sales growth	0.024	0.017	1.440	0.150	1.410	0.708
Firm age	0.002	0.015	0.130	0.896	1.290	0.776
Auditor change	-0.027	0.012	-2.160	0.031	1.150	0.867
Intercept	-0.366	0.187	-1.950	0.051	-	-
The coefficient of determination (R ²)	Adjusted R-squared		F-statistic		F-statistic probability	
0.403	0.397		62.47		0.000	

Since the tolerance level of the variance inflation factor in this model was less than 10; therefore, there is no collinearity problem in this model. As can be seen, the value of the F statistic is equal to 62.47 and the probability of the F statistic is 0.000 and this value is less than 0.05, so the null hypothesis is rejected at 95% confidence; that is, the model is generally significant. This result shows that at least one of the coefficients of the explanatory variables is non-zero and the regression model is significant at the 95% confidence level. Also, the adjusted coefficient of determination equals 0.397; independent and control variables can explain 39.7% of dependent variable changes. According to the results in the above table, the estimated coefficient for environmental factors is equal to 0.031, which shows that environmental factors positively affect the return of the company's assets. However, since the corresponding significance level (0.002) is less than 0.05, it can be said that the effect of sustainable environmental, social, and corporate management measures on economic added value is statistically significant, so the third sub-hypothesis of the research is confirmed. In other words, it can be concluded that companies that adopt sustainable environmental, social, and corporate management practices tend to enhance their company value. This, in turn, can lead to increased net profit and a reduction in the company's cost of capital. As a result, the company experiences an increased economic added value, ultimately contributing to improved financial performance.

The main hypothesis: Sustainability reporting has a positive effect on corporate financial performance.

First, the three sub-hypotheses (the three measures of financial performance) should be developed and tested using regression models to test the main hypothesis. The acceptance or rejection of the research's main hypothesis should be decided based on the three distinct measures of corporate financial performance using the research's main model. Considering the lack of overlap among the corporate financial performance measures (according to the results of correlation coefficients among financial performance measures), the overall score of corporate financial performance is used to accept or reject the main hypothesis, which the results are presented as follows:

Table 11. The results of the effect of sustainability reporting on financial performance

$$FP_{i,t} = \beta_0 + \beta_1 ESG\ Factors_{i,t} + \sum \beta_k Control\ Variable_{i,t} + \sum \beta_n Year\ \&\ Industry_{i,t} + \varepsilon_{i,t}$$

Variable	Coefficient	Error	The t-statistic	The t-statistic probability	Variance inflation factor (VIF)	Tolerance
Sustainability reporting	0.689	0.098	6.970	0.000	3.740	0.267
Firm size	0.004	0.024	0.170	0.862	9.360	0.106
Liquidity	0.464	0.078	5.960	0.000	1.440	0.692
Financial leverage	-1.678	0.084	-19.940	0.000	1.890	0.530
Growth opportunity	0.109	0.003	27.920	0.000	1.570	0.637
Sales growth	-0.063	0.035	-1.780	0.075	1.410	0.708
Firm age	0.047	0.032	1.490	0.137	1.290	0.774
Auditor change	-0.045	0.026	-1.730	0.084	1.160	0.862
Intercept	1.945	0.447	4.350	0.000	-	-
The coefficient of determination (R ²)	Adjusted R-squared		F-statistic		F-statistic probability	
0.564	0.559		109.13		0.000	

Since the tolerance level of the variance inflation factor in this model was less than 10; therefore, there is no collinearity problem in this model. As can be seen, the value of the F statistic is 109.13 and the probability of the F statistic is 0.000. This value is less than 0.05, so the null hypothesis is rejected at 95% confidence, meaning the model is generally significant. This result shows that at least one of the coefficients of the explanatory variables is non-zero and the regression model is significant at the 95% confidence level. Also, the adjusted coefficient of determination equals 0.559; independent and control variables can explain 55.9% of dependent variable changes. According to the results in the above table, the estimated coefficient for sustainability reporting is equal to 0.689, which shows that sustainability reporting positively affects the company's financial performance. And since the

corresponding significance level (0.000) is less than 0.05, it can be said that implementing sustainable environmental, social, and corporate management measures has a statistically significant positive impact on company performance, thereby confirming the main hypothesis of the research.

6. Conclusion and suggestions

The current research aimed to investigate sustainability reporting on the financial performance of companies listed on the TSE. Sustainable and sustainable environmental, social and corporate governance provides ways that companies act in their business spaces and are responsive to society's expectations, their commercial, legal, ethical and social expectations. Undoubtedly, individuals, groups, organizations, companies, and various institutions of society consider themselves responsible for various events and crises, and each of them does not know within their responsibilities and scope of work in solving extraordinary crises, many of the problems of a healthy and peaceful society are reduced. In other words, how companies operate affects their performance. The present research results can create a suitable platform for the company's financial performance by the stock exchange organization and the companies active in this field. Developed doors are companies that disclose the company's environmental, social and governance factors in the market, with less risks of market systems available in the market. Also, the disclosure of environmental, social and corporate governance factors is associated with the company's competitive advantage because the company provides sustainable solutions for environmental and social issues. In addition, companies can define and offer their products to social needs by participating in environmental, social and corporate governance activities for better environmental protection and quality of life. As a result, companies that disclose environmental, social, and corporate governance factors are superior to other companies in gaining the trust of investors, credible shareholders, and shareholders with higher shareholders than other companies. In other words, investors and creditors are interested in companies that implement and disclose various reports widely. It is implemented that these companies find higher credibility with investors and creditors through the clauses of the sustainability report, which increases the company's financial performance. The terms of the present research were: Since the characteristics mentioned in the sample selection among the companies in the statistical population are based on the mentioned characteristics, the research results may be related to the group of companies admitted to the TSE with different characteristics. It should be taken with caution with the desired sample. Due to the existence of a necessary standard regarding environmental, social and corporate governance disclosure in Iran, collecting the disclosure information of each environmental, social and corporate governance sample was problematic. The results of this study are consistent with those of Al-ahdal and Hashim (2022), Belyaeva et al. (2020), Ferrell et al. (2019) and Ortiz et al. (2023).

Practical implications and suggestions for future research

Based on the results of the research, it is recommended that listed companies pay enough attention to the economic, social and environmental effects of their activities for better transparency and accountability to the stakeholders and consider them in formulating the environmental, social and corporate management strategies of the companies and their programs. It is recommended that companies establish an independent sustainability reporting unit or committee within their organizational structure. This unit would be responsible for developing sustainability reporting strategies, setting goals and plans, and implementing monitoring and disclosure practices across various dimensions, all guided by a sustainable development approach. Enhancing the framework and content of the board of directors' activity reports and annual company reports with a sustainability focus and placing greater emphasis on disclosing indicators related to environmental, social, and corporate governance dimensions. Compilation of appropriate requirements and regulations by relevant institutions in the field of corporate reporting, including the Stock Exchange Organization, in cooperation with institutions active in the social and environmental fields of the country, to meet the expectations of stakeholders, as well as apply pressure and influence of the government to require and commit companies to disclose environmental, social and Corporate governance in the annual reports of all companies active in the industry, especially state-owned and large companies. Investors, shareholders, and other interested groups are suggested to pay attention to the type of ownership structure of companies when investing in companies based on information related to sustainability

reporting because the level of environmental, social, and corporate governance disclosure in companies is different according to the type of ownership of companies. Researchers are suggested to investigate the relationship between the negative skewness of stock returns and the company's financial performance. Researchers are also suggested to investigate the relationship between stock returns and the company's financial performance. Examining the relationship between green accounting and the company's financial performance is also suggested. Finally, this study contributes to developing corporate social responsibility literature and stakeholder theory by clarifying the concept of sustainability reporting in the context of corporate social responsibility. It also provides empirical evidence about the positive relationship between sustainability reporting and financial performance. In fact, in the literature, the issue of sustainability reporting and its possible positive impact on the company's financial performance has been neglected. As a result, this study improves knowledge in solving the ambiguity of corporate social responsibility and investigates the positive effect of sustainability reporting on financial performance in the case of companies listed on the TSE.

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