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Aim and Scope:

The Journal of Emerging Technologies in Accounting (JETA) has started with the aim of expanding the concepts of accounting, auditing and finance in English in order to identify and eliminate gaps in these areas.

The Journal of Emerging Technologies in Accounting (JETA) accepts the articles in the form of Research Article, Review Article, Short Papers, Case-study, Methodologies including these items:

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- Integrated and modern accounting information systems in the organization
- Other research topics related to emerging technologies in accounting

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Investigating the Effects of Cost Leadership Strategy and Product Differentiation on the Comparability of Financial Statements of Firms

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Abstract

Objectives: This study aims to investigate the impact of cost leadership and product differentiation strategies on the comparability of financial statements among firms listed on the Tehran Stock Exchange (TSE). As two major strategic approaches, these methods are expected to reduce costs, diversify products, and enhance the evaluation of firms by users of financial information.

Methodology/Design/Approach: A sample of 142 firms listed on the TSE during the period 2014–2022 was analyzed. The research hypotheses were tested using multivariate regression and panel data methodology, implemented through EViews-13 software.

Findings: The empirical results reveal that both product differentiation and cost leadership strategies are positively and significantly associated with financial statement comparability. Specifically, product differentiation enhances comparability by emphasizing unique characteristics, while cost leadership improves comparability through systematic cost reduction.

Innovation: This study contributes to the accounting literature by demonstrating how strategic management choices influence financial reporting quality. The findings highlight that cost leadership and product differentiation strategies not only strengthen operational efficiency but also provide measurable benchmarks that facilitate comparability in financial statements.

Keywords: Comparability, Product Differentiation, Cost Leadership, Business Strategy, Financial Information.

1. Introduction

Accounting information constitutes the essence and core of the economic environment, serving two fundamental roles: informative and operational. The informative role arises from investors' demand for information to forecast future cash flows and assess associated risks. Today, managers, investors, and market participants rely on accounting information as a crucial source for decision-making. However, accounting information reported by economic entities is effective for investment decisions only when it is of high quality. Moreover, managerial decision quality depends to a significant extent—estimated at up to 80 percent—on the quality of information available to managers (Moghaddam et al., 2006).

Among the qualitative characteristics of accounting information, financial statement comparability is particularly valued by managers and investors. According to the Financial Accounting Standards Board (FASB), comparability is defined as "a qualitative characteristic that enables users to identify similarities and differences between two sets of economic phenomena" (FASB, 2008). As emphasized by De Franco et al. (2011), alongside relevance and reliability, comparability is one of the three key qualitative characteristics embedded in the conceptual framework of financial reporting. Essentially, the comparability of financial information is strongly emphasized by standard-setting bodies and is considered vital for enhancing the decision-usefulness of financial statements, thereby facilitating informed decision-making (Barth, 2013). Iranian accounting standards also recognize comparability as an important qualitative characteristic of useful financial information. In summary, comparability enhances financial information quality by enabling the identification of similarities and differences among firms, improving the assessment of their economic performance, and facilitating the optimal allocation of capital resources (Iranian Accounting Standards Board, 2010).

On the other hand, to achieve organizational objectives, firm managers must align goals with ongoing activities (Ansoff, 1965) and demonstrate proficiency in the effective utilization of resources. This capability constitutes a fundamental element in the successful implementation of organizational strategies (Goudarzi & Sheikhzadeh, 2006). To increase the likelihood of success and improve firm performance, managers frequently adopt product differentiation and cost leadership strategies (Azimiyancheshmeh et al., 2015).

Product differentiation and cost leadership strategies reflect the degree of variation in business environments and operational activities between a firm and its peers and, therefore, may influence the comparability of accounting information (Nalebuff & Stiglitz, 1983). From Porter's perspective (1985), firms must choose between minimizing production costs within an industry (cost leadership strategy) and offering a unique product (product differentiation strategy). Essentially, these strategies represent a critical dimension of market competition, affecting both the information available to investors and the mechanisms of managerial monitoring and discipline (Nalebuff & Stiglitz, 1983).

However, the effect of product differentiation and cost leadership strategies on accounting comparability remains ambiguous. Product market competition may increase the amount of information available to investors, potentially reducing their reliance on comparable accounting information. Moreover, because product market competition often requires information disclosure, some firms may be reluctant to fully reveal proprietary information, which can lead to lower comparability in reported financial information (Verrecchia, 1990). Consequently, it remains unclear whether product differentiation and cost leadership strategies significantly influence the comparability of accounting information.

Accordingly, this study seeks to address this gap by examining the impact of product differentiation and cost leadership strategies on accounting information comparability. In doing so, the study provides empirical evidence on how strategic positioning affects the comparability of financial reporting.

2. Literature Review and Hypothesis Development

Firms adopt strategies to increase their likelihood of success and enhance performance in domestic and international markets (Azimiyancheshmeh et al., 2015), to achieve organizational objectives (Namazi, 2013), and to respond effectively to organizational constraints and opportunities (Miles & Snow, 1978). Organizational strategy is generally implemented through two primary approaches—cost leadership and product differentiation—which firms employ to gain a competitive advantage. Under a cost leadership strategy, a firm seeks to capture a larger market share by offering products at lower prices than its competitors. In contrast, a product differentiation strategy involves securing a defined segment of the market by offering unique and distinctive products or services, thereby outperforming competitors (Porter, 1985).

Product differentiation strategies are typically associated with higher levels of risk (Jermias, 2008), whereas firms pursuing cost leadership strategies tend to experience more stable performance outcomes (Ganjizadeh & Daneshyar, 2021). Accordingly, firms can achieve success either by producing goods at lower costs than competitors or by delivering products that are distinct and unique (Deyanti-Dilami et al., 2015). This suggests that the choice between cost leadership and product differentiation strategies is directly linked to organizational success (Azimiyancheshmeh et al., 2015).

The cost leadership strategy represents a competitive context that is not easily attainable by all firms. Larger firms, benefiting from greater resource availability, often compete through cost leadership or attempt to differentiate their products and services from those of competitors. This strategy entails lower risk when a firm possesses strong financial capacity, advanced technologies, extensive distribution networks, access to low-cost raw materials, and favorable access to external resources. Within a cost leadership framework, managers place strong emphasis on productivity in both production and distribution processes (Wu et al., 2015).

The cost leadership strategy has been shown to significantly affect earnings management. Empirical evidence suggests a positive relationship between cost leadership and earnings management, indicating that firms adopting this strategy tend to engage in higher levels of real earnings management. Furthermore, as competitive pressure intensifies, the extent of earnings management associated with this strategy increases (Meshki Miyavqi et al., 2018). At the same time, cost leadership plays a critical role in enhancing economic value added, as managers seek to increase sales through cost reductions (Kordestani & Mohammadi, 2016). Firms pursuing this strategy aim to minimize production, distribution, and selling costs while increasing output volume and exploiting economies of scale to reduce unit costs and capture a larger market share. Generally, cost leadership strategies are more prevalent in markets characterized by high price sensitivity among customers (Rezaei & Azem, 2012). In addition to reducing production costs, factors such as procuring low-cost raw materials, improving operational capacity, eliminating excess machinery, and optimizing production processes also contribute significantly to cost efficiency (Esmaeili-Shahmirzadi, 2013).

Amini and Salar (2013) emphasize that the cost leadership strategy focuses on reducing production costs while delivering products that meet industry quality standards, thereby achieving a competitive advantage through the lowest feasible prices. In recent decades, as product quality has become increasingly critical in corporate strategy, sustaining a strong market position requires maintaining acceptable quality levels and offering products and services that meet established standards. Consequently, the primary objective of this strategy is to attain the position of a low-cost producer without sacrificing quality, ensuring market sustainability, and reducing risk exposure. Within this strategic orientation, innovation is not prioritized; rather, the emphasis is placed on offering competitively priced goods and services while

maintaining reasonable profitability and customer satisfaction. Firms adopting this strategy are generally better positioned to withstand competitive pressures, as customers are unable to find alternative products offering comparable quality at lower prices (DamanKeshan & Ameri-Siahui, 2021).

Product differentiation, by contrast, refers to the degree to which a firm's products are non-substitutable (Demsetz, 1997). When a firm exhibits lower levels of product differentiation, its products tend to be more similar to those of competitors and are therefore more easily substitutable (De Franco et al., 2011). Managers with a long-term orientation typically invest consistently in research and development, as such investments strengthen sustainable competitive advantage, enhance market positioning, and support corporate strategy over time (Nikkar et al., 2022). Moreover, in environments characterized by low differentiation, firms tend to be more similar to one another than in markets with high levels of product differentiation (De Franco et al., 2011).

Low product differentiation, or high product substitutability, is expected to result in greater similarity in economic events and in the manner in which these events are reflected in accounting information (De Franco et al., 2011). Accordingly, it is reasonable to expect that a product differentiation strategy may reduce accounting comparability. In addition, product differentiation can influence financial reporting in general—and accounting comparability in particular—through its effect on product market competition. Such competition encompasses various dimensions, including product substitutability, market size, entry barriers, and market concentration (Raith, 2003). Product differentiation is fundamentally a marketing process that highlights the unique attributes of a product, creates value for customers, and generates competitive advantage. Consequently, low product differentiation intensifies market competition, which in turn affects investment-related information, managerial incentives, and financial reporting practices (Laxmana & Yang, 2014).

Organizations seeking competitive superiority—particularly in product development—require continuous innovation and creativity and are therefore inclined toward differentiation strategies. The primary objective of this strategy is to offer products that are distinct from those of competitors and appeal to relatively price-insensitive customers. This strategic approach allows for greater flexibility in production volume, improved adaptability to market changes, and reduced equipment maintenance costs (Haddadian et al., 2014).

In summary, cost leadership and product differentiation strategies may influence accounting comparability through the degree of similarity or dissimilarity in firms' products, business environments, and operational processes. The cost leadership strategy emphasizes cost reduction, which enhances profit margins and lowers the cost of goods sold, thereby facilitating clearer and more transparent financial information. This clarity assists analysts and investors in comparing financial performance across peer firms and enables more accurate forecasting of future performance, ultimately enhancing accounting comparability. Conversely, the product differentiation strategy emphasizes innovation and uniqueness, often resulting in higher selling prices and requiring firms to provide detailed and accurate information about new products and their capabilities. Such transparency in financial reporting can also enhance comparability by enabling analysts and stakeholders to make more informed evaluations of firm growth and performance. Based on these arguments, the research hypotheses are formulated as follows:

H1: Product differentiation strategy is significantly associated with the comparability of financial statements.

H2: Cost leadership strategy is significantly associated with the comparability of financial statements.

3. Research Methodology

This study adopts a quantitative approach and is ex post facto in nature, relying on actual firm-level data. From a purpose-oriented perspective, the research is

classified as applied. The data were collected and organized using Microsoft Excel, and the final econometric analyses were conducted using EViews 13.

The statistical population comprises all firms listed on the Tehran Stock Exchange (TSE) during the period 2014–2022 (corresponding to 1393–1401 in the Iranian calendar). Firms operating in the investment, holding, insurance, and banking sectors were excluded from the sample. In addition, only firms reporting positive operating profit were included in the analysis. Since financial information comparability is assessed at the industry level, only industries with a minimum of seven active firms throughout the study period were considered. Based on these criteria, a total of 142 firms were selected as the final research sample.

The required firm-level data were obtained from the Rahavard Novin software and the official website of the Securities and Exchange Organization of Iran. The variables employed in this study are defined as follows:

The dependent variable in this study is the **financial statement comparability.** The measure employed in this research is based on the premise that if the accounting systems of two firms report similar accounting numbers in response to a common set of economic events, they are considered more comparable (De Franco et al., 2011). Following De Franco et al. (2011), this study uses each firm's **reported accounting profit** as a representation of accounting numbers, while **returns** serve as a general proxy for economic events. In the De Franco et al. framework, two firms are deemed similar if they produce comparable financial reports (e.g., accounting profits) for the same set of economic events (e.g., returns). For each firm-year observation, to calculate comparability between firms *i* and *j*, **Model 1** is first estimated using quarterly data for the past four years (i.e., the previous 16 quarters) for each firm.

$$Earnings_{i,t} = \alpha_i + \beta i Return_{i,t} + \varepsilon_{i,t} \quad (1)$$

In the above model, $Earnings_{i,t}$ represents the firm's quarterly net income divided by the market value of equity at the beginning of the period, and $Return_{i,t}$ denotes the stock price return in quarter t. The estimated coefficients $*\alpha_i$ and $*\beta_i$ represent firm i's accounting system, linking the firm's economic events (stock returns) to accounting numbers (reported earnings). Similarly, for firm j, analogous to firm i's accounting system, the estimated coefficients $*\alpha j$ and $*\beta j$ capture the relationship between reported earnings and returns for firm j. The similarity between the accounting systems of firms i and j is then measured by comparing their accounting responses to the same set of economic events. Specifically, the predicted earnings of firms i and j are calculated using their respective accounting functions applied to the economic events of firm i.

$$E(Earnings)_{i,i,t} = \alpha_i* + \beta_i*Return_{i,t} \quad (2)$$
$$E(Earnings)_{i,j,t} = \alpha_j* + \beta_j*Return_{i,t} \quad (3)$$

In the above relationships, $E(Earnings)_{i,\ i,t}$ represents the predicted earnings of firm i based on firm i's accounting function and its return in period t. Similarly, $E(Earnings)_{i,j,t}$ denotes the predicted earnings of firm j based on firm j's accounting function and the return of firm i in period t. The pairwise comparison between firms i and j ($CompAcct_{i,j,t}$) reflects the accounting comparability of the firms, defined as the negative absolute value of the difference between the predicted earnings using the accounting functions of firms i and j, as expressed below:

$$Compacct_{i,j,t} = -\left(\frac{1}{16}\right)\sum_{t-15}^{t} \left|E(Earnings)_{i;i;t} - E(Earnings)_{i;j;t}\right| \quad (4)$$

A smaller difference between $E(Earnings)_{i,\ i,t}$ and $E(Earnings)_{i,j,t}$ results in a higher $CompAcct_{i,j,t}$ indicating greater accounting comparability between firms i and j. Within each industry, similar to firm i, $CompAcct_{i,j,t}$ is estimated for every firm i /j pair (j = 1, …, J و $i \neq j$); this explicitly controls for similarities in

economic events across firms while isolating comparability of financial statements (De Franco et al., 2011). Finally, firm i's comparability index is calculated as the average $CompAcct_{i,j,t}$ of the 10 firms j with the highest comparability to firm i during year t ($CompAcct10_{i,t}$).

In other words, the comparability measure is constructed as follows: first, for firms i and j, adjusted earnings—calculated as the ratio of net income to market value of equity—are computed over the past 16 quarters. Next, regression is used to estimate the intercept and slope coefficients, which are then employed to calculate predicted earnings. Finally, the predicted earnings for firms i and j are subtracted from each other. Considering the period from t−15 to t, the resulting difference is divided by 16. In this manner, the comparability metric for the two firms is obtained.

The independent variables in this study are product differentiation strategy and cost leadership strategy. Following Chen et al. (2018), Yamakawa et al. (2011), and David et al. (2002), the product differentiation variable is measured using the ratio of research and development (R&D) expenses to total sales. This ratio reflects the firm's willingness to invest in marketing and sales efforts to differentiate its products from competitors and peers, as well as to enhance its brand image and after-sales services. Product differentiation is captured and revealed through innovation activities. A higher ratio indicates a greater likelihood that the firm pursues a differentiation strategy, either through service marketing, branding, or new product innovation and performance (David et al., 2002; Yamakawa et al., 2011). Firms pursuing a cost leadership strategy typically aim to achieve operational excellence by improving their processes and efficiency. In this study, the approach proposed by Wu et al. (2015) is employed to measure the cost leadership strategy. Wu et al. (2015) operationalized cost leadership using the following relationship:

Operating Turnover Ratio = Sales / Operating Assets (5)

However, Fernando (2016) argues that for a cost leadership strategy, firms must be able to meet their investment requirements in tangible and physical assets. Furthermore, previous studies in Iran indicate that listed firms on the Tehran Stock Exchange often face financial resource constraints (Setayesh et al., 2013; Rezaei et al., 2022). Accordingly, in this study, similar to the approach of Eghdami and Bani-Mehdi (2019), the cost leadership strategy is measured using the following equation:

Cost Leadership Strategy = Sales / Assets (6)

Previous studies indicate that firm-specific characteristics may influence a firm's accounting choices. Following Daske et al. (2008), Lang et al. (2010), and Cheng (2021), firm size (Size), growth opportunities (MTB), financial leverage (Lev), and stock return volatility (Volat) were included as control variables. Firm size (size) is measured as the natural logarithm of the firm's total sales at the end of the year. Growth opportunities (MTB) are measured by the market-to-book ratio of equity. Financial leverage (Lev) is defined as the ratio of total debt to total assets, while stock return volatility (Volat) is calculated as the standard deviation of monthly stock returns over the past 60 months. For data analysis, both descriptive statistics (including central tendency and dispersion measures) and inferential statistics were employed. Inferential analysis was conducted using a multivariate linear regression model based on panel data. To test the first and second hypotheses of the study, the following regression models were applied:

$$AC_{it} = \alpha_0 + \beta_1 PDS_{it} + \beta_2 Size_{it} + \beta_3 Lev_{it} + \beta_4 MTB_{it} + \beta_5 Volat_{it} + \varepsilon_{it} \quad (7)$$

$$AC_{it} = \alpha_0 + \beta_1 CLS_{it} + \beta_2 Size_{it} + \beta_3 Lev_{it} + \beta_4 MTB_{it} + \beta_5 Volat_{it} + \varepsilon_{it} \quad (8)$$

In the above model, AC represents the accounting comparability measure, CLS denotes the cost leadership strategy, and PDS indicates the product differentiation strategy. Size refers to firm size, MTB

represents growth opportunities, Lev denotes financial leverage, and Volat indicates stock return volatility.

4. Findings

Table 1 reports the descriptive statistics of the study variables for a sample of 142 firms over the period 2014–2022 (corresponding to 1393–1401 in the Iranian calendar). The accounting comparability measure (AC), which reflects the extent to which firms' performance can be compared with one another, has a mean value of 0.037 and a standard deviation of 0.005. These results indicate relatively low dispersion and suggest that firms exhibit a fairly homogeneous level of comparability. Such stability enhances the ability of analysts and investors to conduct cross-firm performance evaluations and make more informed investment decisions.

The cost leadership strategy (CLS) variable captures firms' emphasis on cost reduction and resource optimization. The mean value of 0.980 and the relatively high standard deviation of 0.940 reveal substantial variation across firms. This dispersion suggests that while some firms have been highly successful in implementing cost leadership strategies, others have achieved more limited outcomes, potentially reflecting differences in managerial capabilities and strategic orientations. From an accounting perspective, effective cost leadership can contribute to cost control and margin improvement, thereby enhancing overall financial performance.

Product differentiation reflects a firm's ability to offer unique and distinctive products in the market. The mean of 0.500 and the standard deviation of 0.290 indicate moderate variability, implying that some firms have successfully increased their competitive advantage and market share through differentiation strategies, whereas others have been less effective. From an accounting standpoint, product differentiation can generate additional value and enable firms to charge premium prices, positively affecting profitability.

Growth opportunities represent firms' potential for expansion and future development. This variable exhibits a mean of 10.470 and a notably high standard deviation of 74.151, indicating considerable heterogeneity among firms. The wide dispersion suggests that while certain firms have been successful in identifying and exploiting growth opportunities, others face substantial constraints. From an accounting perspective, the recognition of growth opportunities supports strategic planning and efficient resource allocation, ultimately contributing to firm value enhancement and investor attraction.

Stock return volatility measures fluctuations in firms' stock prices. The mean value of 0.068 and the standard deviation of 0.542 reflect significant variability, which may be driven by macroeconomic conditions, political factors, and firm-specific risks. From an accounting perspective, higher volatility signals increased investment risk and underscores the importance of effective risk management practices.

Firm size, which reflects firms' financial capacity and resource availability, has a mean of 13.842 and a standard deviation of 0.675. These statistics indicate noticeable variation in firm size across the sample. Larger firms typically benefit from greater access to resources and economies of scale, which may enhance operational efficiency and reduce unit costs.

Finally, financial leverage shows a mean value of 0.674 and a standard deviation of 0.136, suggesting differences in capital structure choices among firms. The negative skewness of this variable indicates an asymmetric distribution, with a higher concentration of firms exhibiting lower leverage levels. From an accounting perspective, while leverage can amplify returns on investment, it also increases exposure to financial risk and debt-related obligations.

The following section presents the results of the hypothesis tests. Table 2 reports the results related to the first hypothesis. Since the Chow test yielded a significance level below 5%, a panel data approach was employed. Moreover, the Hausman test also produced a significance level below 5% for this model, indicating that the fixed effects model is appropriate. The F-statistic reported in Table 2 for the full sample (23.224) confirms that the model is statistically

significant at the 95% confidence level. In addition, the Durbin–Watson statistic reported for all firms is 2.135, suggesting that serial correlation in the regression residuals can be rejected.

The adjusted R^2 value is 0.093, indicating that approximately 9% of the variation in accounting comparability is explained by the product differentiation strategy and the control variables included in the model. According to the results presented in Table 2, the first hypothesis of the study is supported. Specifically, there is a positive and statistically significant relationship between the product differentiation strategy and accounting comparability at the 95% confidence level.

Furthermore, firm size and stock return volatility also exhibit positive and statistically significant relationships with accounting comparability at the 95% confidence level. In other words, with 95% confidence, it can be concluded that firm size, stock return volatility, and product differentiation jointly explain variations in accounting comparability and can be utilized in the analysis and prediction of firms' financial reporting characteristics. These findings indicate that firms implementing product differentiation strategies tend to present their financial statements more comparably, thereby enhancing transparency and facilitating performance evaluation across firms.

Table 1: Descriptive Statistics

Variable	Mean	Median	Minimum	Maximum	Std. Dev.	Skewness	Kurtosis
Comparability (AC)	0.037	0.035	0.025	0.065	0.005	1.200	4.880
Cost Leadership (CLS)	0.980	0.804	0.002	18.500	0.940	8.590	130.700
Product Differentiation (PDS)	0.500	0.496	0.012	7.730	0.290	12.210	301.680
Growth Opportunities (MTB)	10.470	4.980	-288.890	255.215	74.151	32.056	1093.067
Stock Return Volatility (Volat)	0.068	0.052	0.042	0.085	0.542	0.720	2.810
Firm Size (Size)	13.842	6.620	12.223	17.023	0.675	0.760	3.420
Financial Leverage (Lev)	0.674	0.561	0.153	1.965	0.136	-0.320	2.330

Table 2: Summary of Regression Coefficients for the H1

Variable	Coefficient	Std. Error	t-Statistic	Significance
Constant	0.011	1.029	3.580	0.020
Product Differentiation Strategy (PDS)	0.971	0.202	3.194	0.002
Firm Size (Size)	0.615	0.280	2.081	0.029
Stock Return Volatility (Volat)	0.186	0.028	2.751	0.017
Financial Leverage (Lev)	-0.110	0.029	-0.035	0.721
Growth Opportunities (MTB)	0.142	0.097	1.450	0.145
R^2	Adjusted R^2	Durbin-Watson	F-statistic	Significance (F)
0.101	0.093	2.135	23.224	0.000
Test	**Chow Test (F)**		**Hausman Test (Chi-square)**	
	Statistic	Significance	Statistic	Significance
	4.280	0.000	32.233	0.000

Table 3 presents the results of testing the second hypothesis. Since the Chow test yielded a significance level below 5% for this model, a panel data approach was employed. In addition, the Hausman test also produced a significance level below 5%, indicating that the fixed effects model is appropriate. The F-statistic reported in Table 3 for the full sample (21.142) confirms that the model is statistically significant at the 95% confidence level. Moreover, the Durbin–Watson statistic for all firms, reported as

2.623, suggests the absence of serial correlation in the regression residuals. The adjusted R^2 value of 0.413 indicates that approximately 41.3% of the variation in accounting comparability is explained by the cost leadership strategy and the control variables included in the model. Table 3 also reports the estimated regression coefficients along with their corresponding significance levels for testing the second hypothesis.

According to the results presented in Table 3, there is a positive and statistically significant relationship between the cost leadership strategy and accounting comparability at the 95% confidence level. In addition, the findings related to the control variables reveal that firm size and growth opportunities have significant relationships with accounting comparability. Based on these results, it can be concluded that the cost leadership strategy has a positive and significant effect on the comparability of financial statements. This finding implies that firms adopting a cost leadership strategy tend to present their financial information more comparably. Furthermore, the results demonstrate that control variables such as firm size and growth opportunities also exhibit positive and significant associations with accounting comparability. These findings provide useful insights for investors, financial analysts, managers, and other decision-makers in selecting effective strategies to enhance the comparability and analytical usefulness of financial statements.

The regression results also indicate that some control variables are not statistically significant, which may be attributable to several factors. First, financial leverage and stock return volatility, with coefficients of −0.789 and 0.576, respectively, do not show a significant impact on the dependent variable. This lack of significance may stem from the fact that these variables do not directly influence accounting comparability, or that their effects are mediated by other explanatory variables included in the model. Second, financial leverage may fail to exhibit a direct effect due to potential multicollinearity with other variables, such as cost leadership or product differentiation strategies, which could weaken the observable impact of leverage in the regression model. Third, stock return volatility is often affected by external and uncontrollable factors, including market-wide conditions and macroeconomic fluctuations, which may reduce its explanatory power in predicting accounting comparability.

Table 3: Summary of Regression Coefficients for the H2

Variable	Coefficient	Std. Error	t-Statistic	Significance
Constant	0.032	1.061	0.071	0.923
Cost Leadership Strategy (CLS)	0.213	0.094	2.295	0.025
Firm Size (Size)	0.185	0.017	2.751	0.017
Growth Opportunities (MTB)	0.971	0.202	3.194	0.002
Financial Leverage (Lev)	-0.007	0.029	-0.026	0.789
Stock Return Volatility (Volat)	0.049	0.088	0.558	0.576
R^2	Adjusted R^2	Durbin-Watson	F-statistic	Significance (F)
0.421	0.413	2.623	21.142	0.000
Test	**Chow Test (F)**		**Hausman Test (Chi-square)**	
	Statistic	**Significance**	**Statistic**	**Significance**
	2.064	0.000	28.316	0.000

5. Results and Recommendations

The objective of this study is to examine the relationship between cost leadership and product differentiation strategies and the comparability of financial statements. Based on the results of testing the first hypothesis, it can be concluded that the product differentiation strategy is positively and significantly associated with financial statement comparability. This

finding implies that the adoption or intensification of product differentiation strategies enhances the degree of comparability in financial reporting. Prior empirical evidence also supports this relationship in practice (Cheng, 2021).

Furthermore, the results of testing the second hypothesis indicate a positive and significant relationship between the cost leadership strategy and financial statement comparability. This finding suggests that as firms increasingly rely on cost leadership strategies, the comparability of their financial statements improves accordingly, confirming a meaningful and positive association between the two variables.

Given that improvements in financial reporting quality enhance investors' awareness of firm operations, the role of comparability becomes increasingly critical in the decision-making process. Investors and creditors consistently seek to evaluate firms' financial and operational conditions and to benchmark them against competitors in order to make optimal decisions. In this context, comparability serves as one of the most effective informational attributes. Accordingly, investors demand higher levels of comparability, as enhanced comparability can increase firms' incentives to adopt effective and transparent strategies.

With respect to the cost leadership strategy, the emphasis on reducing unnecessary expenditures and efficiently allocating resources leads to process simplification and improved operational performance, which, in turn, enhances financial statement comparability. Regarding the product differentiation strategy, the focus on innovation and research, and development provides a structured basis for assessing similarities and differences among products and services, thereby making financial information more transparent and reinforcing comparability.

Based on these findings, it is recommended that investors consider corporate strategies as critical determinants of financial statement comparability. In addition, it is suggested that the Stock Exchange Organization and regulatory authorities establish disclosure requirements related to firms' internal operations and strategic orientations to further promote comparability. Such initiatives can significantly enhance comparability and improve the overall quality of financial information. Access to relevant, transparent, and comparable information enables investors and other stakeholders to make more effective and well-informed decisions. These practices not only benefit investors but also contribute to the stability and integrity of the capital market.

To further advance understanding in this area, future research may examine the effects of cost leadership and product differentiation strategies on firms' financial performance and explore their interaction with financial statement comparability.

In all firms, one of the key drivers of research effectiveness is the availability of timely, comprehensive, and accessible information. Such information is essential for enhancing the usefulness of financial statements in informed decision-making. However, limitations in data availability are often unavoidable. Accordingly, given the characteristics of the sample firms in this study, caution should be exercised when generalizing the results to all firms.

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The Role of Intellectual Capital Efficiency and Its Components in Predicting Stock Returns

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Abstract

Objectives: This study aims to examine the effect of intellectual capital efficiency and its components—human capital, structural capital, and employed capital—on the future stock returns of companies listed on the Tehran Stock Exchange. The Value-Added Intellectual Coefficient (VAIC) model is used to measure intellectual capital efficiency.

Methodology/Design/Approach: This applied study employs a descriptive-correlational and causal research design. The statistical population consists of all companies listed on the Tehran Stock Exchange from 2018 to 2023. A sample of 104 companies was selected using the systematic elimination method. Panel data analysis and multiple regression models were used to test the hypotheses, with EViews software employed for data analysis.

Findings: The results indicate that overall intellectual capital efficiency, human capital, and structural capital positively and significantly affect future stock returns, while employed capital shows no statistically significant relationship. Furthermore, control variables such as growth opportunities and sales growth also have significant impacts on market returns.

Innovation: The findings highlight the critical role of intangible assets—particularly human capital and organizational infrastructure—in value creation for shareholders. This underscores the importance of investing in knowledge-based resources to improve financial performance and stock market returns.

Keywords: Intellectual Capital, Human Capital, Structural Capital, Stock Return.

1. Introduction

In today's rapidly evolving global economy, intangible assets have become increasingly critical in determining the true value of economic entities. While traditional economic systems primarily recognized physical capital and tangible assets as the main sources of production and profitability, intellectual capital has emerged as a key driver of value creation and sustainable competitive advantage. This shift has placed intellectual capital at the forefront of modern theories in economics, financial management, and accounting (Bontis, 2001).

Intellectual capital encompasses a broad range of intangible assets, including employees' knowledge and skills, organizational structures, information systems, internal and external relationships, innovation capacity, and brand reputation. Although these elements may not be directly reflected in conventional financial statements, their impact on value creation and corporate profitability is undeniable (Lev, 2001). Consequently, recent decades have witnessed significant theoretical and empirical efforts to identify, measure, and analyze the influence of intellectual capital on financial performance.

One of the most widely used models for measuring intellectual capital is the Value-Added Intellectual Coefficient (VAIC) model, introduced by Pulic (2000). This model employs accounting data to quantify intellectual capital through three main components: human capital efficiency (HCE), structural capital efficiency (SCE), and capital employed efficiency (CEE). Due to its simplicity and applicability to publicly available data, the VAIC model has gained considerable attention, particularly in developing countries (Zeghal et al., 2010).

In financial literature, stock returns are regarded as a fundamental indicator of corporate performance and a critical criterion for investor decision-making. Researchers have long examined factors influencing stock returns, including profitability, cash flows, market-to-book ratios, and other financial metrics. However, in the era of knowledge-driven economies, the role of intangible assets—especially intellectual capital—has gained increasing prominence in predicting stock returns (Wang et al., 2005). Theoretical perspectives suggest that firms with stronger capabilities in generating, developing, and leveraging intellectual capital can achieve sustainable competitive advantages, ultimately leading to higher returns for shareholders.

Despite the theoretical importance of intellectual capital, empirical findings have been mixed. Some studies report a positive and significant relationship between intellectual capital efficiency and future stock returns, indicating that investors respond favorably to firms with strong knowledge-based assets (Xu et al., 2020). Others, however, find negative or statistically insignificant relationships, particularly in developing countries where intangible assets are often undervalued in financial analyses (Charles et al., 2024). These discrepancies may result from differences in institutional structures, market maturity, industry characteristics, or measurement methodologies.

In the context of Iran, intellectual capital has attracted growing attention in recent years, yet limited research has examined its role in predicting stock returns. Given the unique characteristics of the Iranian capital market—such as its emphasis on tangible assets, limited transparency, and reliance on traditional financial metrics—it is essential to empirically assess the impact of intellectual capital efficiency on stock market performance. Such an investigation may uncover overlooked dimensions of investor behavior and corporate valuation.

Therefore, this study aims to evaluate the effect of intellectual capital efficiency and its main components—human capital efficiency, structural capital efficiency, and capital employed efficiency—on stock return predictions for firms listed on the Tehran Stock Exchange. The findings are expected to provide empirical evidence from Iranian firms and offer insights into the significance of intellectual capital for value creation in Iran's financial market.

2. Literature Review

This section first examines the theoretical background of intellectual capital and then reviews empirical studies in this field.

2.1. Theoretical Background

Intellectual capital, as an intangible asset composed of three main pillars—human capital, structural capital, and employed capital—plays a foundational role in explaining corporate financial performance and market value, particularly in knowledge-based economies. Theoretical perspectives suggest that intellectual capital enables companies to leverage knowledge, skills, and organizational capabilities, enhancing their competitiveness and shareholder value (Bontis, 2001).

The Value-Added Intellectual Coefficient (VAIC) model, first introduced by Pulic (2000), quantifies intellectual capital efficiency by incorporating three components:

- **Human Capital Efficiency (HCE):** Measures the effectiveness of a company's workforce in generating value.
- **Structural Capital Efficiency (SCE):** Reflects the organizational infrastructure, systems, and processes supporting employee productivity.
- **Capital Employed Efficiency (CEE):** Assesses the company's ability to utilize physical and financial assets in value creation.

This model offers a practical framework for evaluating how firms utilize their intellectual and organizational resources, and it has been widely adopted in international research examining the relationship between intellectual capital and stock market performance (Firer et al., 2003).

Several studies have argued that intellectual capital positively influences stock returns, suggesting that firms with higher levels of intellectual capital tend to outperform others in financial markets. For example, Clarke et al. (2011) found that Australian firms with greater intellectual capital achieved higher stock returns, highlighting the importance of knowledge-based assets in investor valuation. Similarly, Pradana et al. (2023), using an updated VAIC model, reported that physical and human capital exert the strongest impact on stock returns, whereas structural capital showed no significant effect.

Conversely, some researchers have documented negative or statistically insignificant relationships between intellectual capital and stock performance. For instance, Firer and Williams (2003) found no substantial correlation between intellectual capital components and financial indicators in South Africa, concluding that traditional assets remained dominant in stock valuation. Likewise, Charles et al. (2024) reported that intellectual capital did not predict future stock returns in certain markets, emphasizing that factors such as economic structure, industry type, and investor behavior influence how capital markets perceive intangible assets.

2.2. Empirical Studies

Global empirical studies indicate that the impact of intellectual capital on stock returns varies according to market structure, industry characteristics, and the level of economic development. For example, Ghazal and Aziz (2025) studied Indian companies and found that overall intellectual capital negatively affected stock returns. Specifically, human capital efficiency exhibited a negative correlation, whereas employed capital had a positive effect, suggesting that investors in developing economies may undervalue intangible assets relative to physical capital.

Similarly, Weqar et al. (2021) examined the Indian banking sector and reported that employed capital efficiency was the strongest predictor of financial performance, while human and structural capital exerted a smaller influence. They emphasized that tangible assets remain highly influential in emerging financial markets. Meanwhile, Chatterjee et al. (2021) highlighted that the relationship between intellectual capital and stock returns is contingent on firm-specific factors such as firm age, leadership diversity, and

company size, indicating that organizational characteristics can shape financial outcomes.

In South Africa, Firer and Stainbank (2003) applied the VAIC model to assess intellectual capital and firm performance, concluding that no significant relationship existed between intellectual capital components and financial indicators, including return on assets and market value. Likewise, Xu et al. (2020) studied Taiwanese technology firms and found that human capital efficiency was the most influential component for stock returns, whereas structural and employed capital had a lesser effect, underscoring the industry-specific impact of intellectual capital.

In contrast, Clarke et al. (2011) found a positive relationship between intellectual capital and stock returns in Australia, particularly for firms with transparent financial disclosures and strong corporate governance. They suggested that well-regulated markets enable investors to better recognize and leverage intangible resources.

2.3. Iranian Context

Empirical evidence on the role of intellectual capital in Iran's stock market remains relatively limited. Khezrlou and Zeinali (2022) reported that human capital efficiency and capital employed efficiency exert a significant influence on firms' financial performance, whereas structural capital efficiency did not show a statistically meaningful effect. Similarly, Sinayi and Rangbari Khini (2014) compared the explanatory power of intellectual capital measures with traditional financial indicators and found that models incorporating intellectual capital variables provided superior predictive accuracy in stock valuation.

Moreover, Shahreza et al. (2022) examined the Iranian banking sector and demonstrated that financial capital efficiency had the strongest impact on profitability, while human capital efficiency positively affected earnings. In contrast, structural capital and innovation capital were negatively associated with profitability, indicating that Iranian financial institutions continue to rely more heavily on traditional, tangible assets than on intangible resources.

Overall, the evidence from Iranian studies suggests that, although intellectual capital is increasingly recognized as a value-relevant factor, its components do not exert uniform effects on market and financial performance. In particular, financial and human capital efficiencies appear to play a more prominent role than structural capital, reflecting the specific institutional and market characteristics of Iran's capital market.

3. Research Methodology

3.1. Study Type and Scope

This study is applied in terms of purpose and adopts a descriptive, correlational, and causal research design. The statistical population comprises all companies listed on the Tehran Stock Exchange during the period 2018–2023. Using a systematic elimination procedure, a final sample of 104 firms that satisfied the study's selection criteria was identified for empirical analysis.

3.2. Data Collection and Analysis

To test the research hypotheses, panel data techniques and multiple regression models were employed, with all data processing and estimations conducted using EViews software. Four regression models were specified to examine the effects of overall intellectual capital efficiency and its individual components on future stock returns, as follows:

$$RI_{it} = \alpha + \beta_1 IC_{it} + \beta_2 SIZE_{it} + \beta_3 ROA_{it} + \beta_4 LEV_{it} + \beta_5 SG_{it} + \beta_6 MTB_{it} + \varepsilon_{it}$$

$$RI_{it} = \alpha + \beta_1 HCE_{it} + \beta_2 SIZE_{it} + \beta_3 ROA_{it} + \beta_4 LEV_{it} + \beta_5 SG_{it} + \beta_6 MTB_{it} + \varepsilon_{it}$$

$$RI_{it} = \alpha + \beta_1 SCE_{it} + \beta_2 SIZE_{it} + \beta_3 ROA_{it} + \beta_4 LEV_{it} + \beta_5 SG_{it} + \beta_6 MTB_{it} + \varepsilon_{it}$$

$$RI_{it} = \alpha + \beta_1 CEE_{it} + \beta_2 SIZE_{it} + \beta_3 ROA_{it} + \beta_4 LEV_{it} + \beta_5 SG_{it} + \beta_6 MTB_{it} + \varepsilon_{it}$$

Where:

- **Independent Variables:**
  - **IC** = Intellectual Capital Efficiency
  - **HCE** = Human Capital Efficiency
  - **SCE** = Structural Capital Efficiency
  - **CEE** = Capital Employed Efficiency
- **Dependent Variable:**
  - **RI** = Predicted Stock Returns
- **Control Variables:**
  - **SIZE** = Company Size (Natural Log of Total Assets)
  - **ROA** = Return on Assets (Net Profit / Total Assets)
  - **LEV** = Financial Leverage (Total Debt / Total Assets)
  - **MTB** = Market-to-Book Ratio (Market Value of Equity / Book Value of Total Assets)
  - **SG** = Sales Growth (Annual Change in Revenue)

3.3. Data Validity and Model Selection

Before estimating the regression models, several classical regression assumptions were evaluated. The Breusch–Pagan–Godfrey test was applied to examine heteroskedasticity, and the results confirmed the presence of non-constant error variance across all estimated models. Accordingly, the generalized least squares (GLS) estimation method was employed to obtain efficient and reliable parameter estimates.

To determine the appropriate panel data specification, both the Chow test and the Hausman test were conducted. The test results supported the fixed-effects panel model as the most suitable approach for data analysis. Furthermore, multicollinearity among the independent variables was assessed using the variance inflation factor (VIF), and the findings indicated that multicollinearity did not pose a serious concern in the estimated models.

4. Research Findings

4.1. Descriptive Statistics

To provide a comprehensive overview of the sample, descriptive statistics were calculated for all key variables, including independent, dependent, and control variables. These statistics encompass the mean, median, minimum, maximum, standard deviation, skewness, and kurtosis, offering insights into the central tendency, dispersion, and distributional characteristics of the data.

Table (1) Descriptive statistics

Skewness	Elongation	Standard deviation	The lowest	The most	Middle	Average		name
4.250	1.372	3.356	1.411	14.214	4.010	4.997	IC	Intellectual capital efficiency
4.602	1.512	3.087	1.054	12.747	2.957	4.019	HCE	KaraYiColdYHHumanY
2.428	0.501	0.155	0.100	0.660	0.301	0.330	CEE	KaraYiColdYHUsed
2.428	-0.672	0.243	0.096	0.937	0.674	0.614	SCE	KaraYiColdYHStructureY
2.898	1.046	0.749	-0.056	2.486	0.405	0.718	RI	Stock return forecasting
2.088	-0.009	0.185	0.180	0.827	0.507	0.504	LEV	Financial leverage
4.025	1.371	3.827	0.901	14.872	3.253	4.608	MTB	Growth opportunities
2.566	0.443	0.382	-0.093	1.339	0.484	0.535	SG	Sales growth
2.694	0.537	1.395	13.505	18.801	15.571	15.700	SIZE	Company size
2.312	0.433	0.138	0.001	0.490	0.191	0.203	ROA	Return on assets

4.2. Regression Model Results

Before model estimation, the classical regression assumptions were assessed to ensure the statistical validity of the results. The Breusch–Pagan–Godfrey test indicated the presence of heteroskedasticity across the estimated models; therefore, the generalized least squares (GLS) method was employed to obtain efficient and unbiased estimates. In addition, the results of the Chow and Hausman tests supported the use of a fixed-effects panel data model as the most appropriate specification for the analysis.

The first hypothesis examines whether overall intellectual capital efficiency (IC) significantly affects future stock returns (RI). The regression results demonstrate that the model exhibits substantial explanatory power, with an adjusted R^2 of 0.37, indicating that approximately 37% of the variation in stock returns is explained by the included variables. The F-statistic is statistically significant ($F = 62.62$; $p < 0.001$), confirming the overall validity of the estimated model.

Moreover, the coefficient of intellectual capital efficiency is positive and statistically significant ($\beta = 0.035$; $t = 4.513$; $p < 0.001$), providing strong evidence that higher levels of intellectual capital efficiency are associated with superior stock returns. These findings suggest that firms that more effectively utilize intellectual capital—particularly intangible and knowledge-based resources—are better positioned to create long-term value and achieve higher market performance, thereby supporting theoretical perspectives that emphasize the role of intellectual capital in sustainable value creation.

Model 1: Intellectual Capital Efficiency and Stock Returns

Results from the estimation of the research model (1)

Inflation factor	Meaning fulness	Statistics	Standard error	Coefficient	Symbol	name
1.287	0.000	4.513	0.008	0.035	IC	Intellectual capital efficiency
1.878	0.720	0.358	0.022	0.008	SIZE	Company size
1.596	0.075	1.784-	0.192	-0.343	ROA	Return on assets
1.338	0.078	1.767	0.132	0.234	LEV	Financial leverage
1.062	0.040	2.061	0.061	0.125	SG	Sales revenue growth
1.773	0.000	14.336	0.007	0.107	MTB	Growth opportunities
-	0.535	-0.620	0.364	-0.225	C	Width from origin
	62/62		Statistics	0/37		Adjusted coefficient of determination
	0/000		Statistical probability	01/2		Watson camera

Model 2: Human Capital Efficiency and Stock Returns

Results from the estimation of the research model (2)

Inflation factor	Meaning fulness	Statisticst	Standard error	Coefficient	Symbol	name
1.265	0.000	4.592	0.008	0.038	HCE	Human capital efficiency
1.877	0.689	0.401	0.022	0.009	SIZE	Company size
1.578	0.088	1.710-	0.191	-0.326	ROA	Return on assets
1.338	0.082	1.744	0.132	0.231	LEV	Financial leverage
1.062	0.046	2.003	0.061	0.122	SG	Sales revenue growth
1.768	0.000	14.449	0.007	0.107	MTB	Growth opportunities
-	0.545	-0.606	0.363	-0.220	C	Width from origin
	82/62		StatisticsF	0/37		Adjusted coefficient of determination
	0/000		Statistical probability	01/2		Watson camera

The second hypothesis investigates the role of human capital efficiency (HCE) in predicting future stock returns. The regression results indicate that the coefficient of HCE is positive and statistically significant ($\beta = 0.038$; $t = 4.592$; $p < 0.001$), confirming a strong association between human capital efficiency and stock performance. The adjusted coefficient of determination remains at 0.37, reflecting the model's robust explanatory power.

These findings underscore human capital as a critical driver of firm value and financial performance. Firms with more skilled, knowledgeable, and committed employees tend to achieve superior stock returns, highlighting the strategic importance of investment in employee development, learning, and retention as key sources of competitive advantage.

The third hypothesis evaluates the effect of structural capital efficiency (SCE) on future stock returns. The regression results reveal that the coefficient of SCE is positive and statistically significant ($\beta = 0.385$; $t = 4.153$; $p < 0.001$), indicating that structural capital efficiency plays a meaningful role in explaining variations in stock returns. The adjusted coefficient of determination for this model is 0.36, which, although slightly lower than that of the preceding models, still reflects a substantial level of explanatory power.

These findings suggest that organizational infrastructure, internal processes, information systems, and innovation-related capabilities contribute positively to firms' stock market performance. Structural capital enhances the effectiveness of human capital by providing supportive mechanisms that facilitate knowledge utilization and organizational learning, thereby generating a synergistic effect that strengthens overall value creation.

Model 3: Structural Capital Efficiency and Stock Returns

Results from the estimation of the research model (3)

Inflation factor	Meaningfulness	Statisticst	Standard error	Coefficient	Symbol	name
1.207	0.000	4.153	0.093	0.385	SCE	Structural capital efficiency
1.795	0.323	0.989	0.021	0.021	SIZE	Company size
1.564	0.114	1.582-	0.188	-0.298	ROA	Return on assets
1.342	0.049	1.976	0.120	0.238	LEV	Financial leverage
1.061	0.086	1.720	0.060	0.103	SG	Sales revenue growth
1.762	0.000	12.741	0.008	0.108	MTB	Growth opportunities
-	0.155	1.425-	0.353	-0.504	C	Width from origin
	41/60		StatisticsF	0/36		Adjusted coefficient of determination
	0/000		Statistical probability	00/2		Watson camera

Model 4: Capital Employed Efficiency and Stock Returns

Results from the estimation of the research model (4)

Inflation factor	Meaningfulness	Statisticst	Standard error	Coefficient	Symbol	Persian name
1.207	0.928	0.091-	0.191	0.017-	CEE	Efficiency of capital employed
1.346	0.000	5.566-	0.047	0.260-	SIZE	Company size
1.755	0.282	1.076	0.334	0.360	ROA	Return on assets
1.760	0.001	3.308-	0.293	0.968-	LEV	Financial leverage
1.348	0.119	1.564	0.076	0.118	SG	Sales revenue growth
1.060	0.000	7.194	0.013	0.092	MTB	Growth opportunities
-	0.000	5.783	0.817	4.723	C	Width from origin
	89/2		StatisticsF	0/24		Adjusted coefficient of determination
	0/000		Statistical probability	2/35		Watson camera

The final hypothesis examines the effect of capital employed efficiency (CEE) on future stock returns. The regression results indicate that the coefficient of CEE is negative and statistically insignificant ($\beta = -0.017$; $t = -0.091$; $p = 0.928$), suggesting that capital employed efficiency does not contribute meaningfully to explaining variations in stock returns. In addition, the adjusted coefficient of determination for this model (Adjusted $R^2 = 0.24$) is notably lower than that of the other estimated models, indicating weaker explanatory power.

These findings imply that the efficiency of physical and financial capital plays a relatively limited role in stock valuation compared to intellectual and intangible resources. This result is consistent with the characteristics of knowledge-driven markets, in which investors place greater emphasis on firms' intellectual capital and growth-related capabilities rather than on traditional asset-based measures.

With respect to the control variables, the market-to-book ratio (MTB) exhibits a strong and positive association with stock returns ($p < 0.001$), underscoring the importance of growth opportunities in shaping market expectations. In contrast, financial leverage (LEV) shows a negative and statistically significant effect on stock returns ($p = 0.001$), indicating that higher debt levels are perceived unfavorably by investors and may weaken confidence in firms' future performance.

5. Discussion and Conclusion

This study investigated the role of intellectual capital efficiency and its components in predicting future stock returns of firms listed on the Tehran Stock Exchange. Drawing on the resource-based view, human capital theory, and signaling theory, the findings provide empirical evidence that intellectual capital constitutes a critical determinant of market-based performance in an emerging economy context.

The results demonstrate that overall intellectual capital efficiency exerts a positive and statistically significant effect on future stock returns. This finding suggests that firms capable of efficiently transforming intangible resources into value are more likely to achieve superior market performance. In environments characterized by increasing uncertainty and competition, intellectual capital serves as a strategic asset that enhances firms' ability to generate sustainable returns and signal long-term growth potential to investors.

Among the components of intellectual capital, human capital efficiency emerged as the most influential factor in explaining stock returns. This result highlights the central role of employees' knowledge, skills, and expertise in value creation. Firms that effectively invest in workforce development, learning, and innovation are better positioned to improve productivity and competitiveness, which is ultimately reflected in higher market valuations. This finding supports the notion that, in knowledge-driven economies, human capital represents the core mechanism through which intellectual capital affects financial outcomes.

Structural capital efficiency was also found to have a positive and significant relationship with stock returns. This indicates that organizational processes, information systems, routines, and internal infrastructures play a complementary role in enhancing firm performance. Structural capital enables firms to codify knowledge, support employee effectiveness, and ensure continuity of value creation beyond individual human resources. Consequently, strong structural capital enhances the scalability and sustainability of intellectual capital benefits.

In contrast, capital employed efficiency did not exhibit a significant effect on stock returns. This finding suggests that traditional physical and financial assets are less relevant in explaining market performance compared to intangible resources. In the context of the Tehran Stock Exchange, investors appear to place greater emphasis on growth potential and knowledge-based capabilities rather than on the efficiency of tangible capital utilization. This result aligns with the gradual shift in capital markets toward

valuing intangible assets over conventional accounting-based indicators.

Overall, the findings indicate that intellectual capital—particularly its human and structural components—plays a more prominent role than physical capital in shaping investor expectations and stock return behavior. This underscores the growing importance of intangible assets in firm valuation and highlights the need for both managers and investors to reconsider traditional approaches to performance assessment.

These results align with studies by Clarke et al. (2011), Wang et al. (2005), and Xu et al. (2020), reinforcing that firms with higher intellectual capital efficiency outperform competitors in stock markets. The lack of significance for capital employed efficiency mirrors findings in developing economies, where investor focus shifts from tangible assets to knowledge-based resources.

5.1. Managerial Recommendations

Based on the findings of this study, several practical implications can be drawn for corporate managers and policymakers. First, managers should place greater strategic emphasis on the development and retention of human capital. Investments in employee training, knowledge enhancement, and skill development are not merely operational decisions but key drivers of long-term firm value and market performance.

Second, firms should strengthen their structural capital by improving organizational processes, information systems, and internal control mechanisms. Efficient structures facilitate knowledge sharing, innovation, and operational consistency, thereby amplifying the value generated by human capital. Enhancing structural capital also reduces firm dependence on individual employees and supports sustainable performance over time.

Third, given the limited explanatory power of physical capital efficiency, managers should avoid overreliance on asset-heavy growth strategies. Instead, they should focus on leveraging intellectual resources and integrating them into corporate strategy and decision-making processes.

Finally, firms are encouraged to improve the transparency of disclosures related to intellectual capital. Clear communication of investments in human resources, innovation, and organizational capabilities can reduce information asymmetry and enable investors to better assess the firm's long-term value creation potential.

6. Suggestions for Future Research

Future research may extend the findings of this study in several directions. First, scholars can examine the mediating or moderating roles of innovation capability, corporate governance quality, or information transparency in the relationship between intellectual capital and stock returns. Such analyses may provide deeper insights into the mechanisms through which intellectual capital influences market performance.

Second, industry-specific studies could be conducted to explore whether the impact of intellectual capital varies across different sectors, particularly between knowledge-intensive and asset-intensive industries. This would help clarify the contextual nature of intellectual capital valuation.

Third, future studies may incorporate alternative measures of intellectual capital beyond the VAIC model or combine quantitative and qualitative approaches to better capture the multidimensional nature of intangible assets. Such approaches could enhance the robustness and explanatory power of intellectual capital research in emerging markets.

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Predictors of Life Satisfaction through Financial Anxiety and Financial Optimism among Accounting Students

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Abstract

Objectives: This study aims to examine the effects of financial anxiety and financial optimism on life satisfaction among accounting students. Given the increasing financial pressures faced by university students, understanding the psychological dimensions of financial behavior is essential for improving their overall well-being.

Methodology/Design/Approach: The statistical population comprised undergraduate accounting students, from which 113 participants were selected through a simple random sampling method. Data were collected using standardized questionnaires and analyzed through Pearson correlation and simultaneous linear regression to test the hypothesized relationships.

Findings: The results indicate a significant negative relationship between financial anxiety and life satisfaction and a significant positive relationship between financial optimism and life satisfaction. Furthermore, both financial anxiety and financial optimism jointly and significantly predict students' life satisfaction.

Innovation: This study contributes to the literature by integrating psychological and financial perspectives to explain students' life satisfaction. The findings emphasize the need for educational institutions to incorporate financial management training and psychological counseling into academic programs to promote financial well-being and emotional resilience among students.

Keywords: Financial Anxiety; Financial Optimism; Life Satisfaction; Accounting Students.

1. Introduction

Universities and their counseling centers are increasingly confronted with a growing number of students seeking psychological assistance for anxiety-related problems. This rising trend has prompted researchers to identify the key stressors that adversely affect students' mental health. Among these stressors, financial concerns are particularly salient for students who are responsible for financing their education, as they are more likely to experience emotional difficulties such as anxiety and depression. Undergraduate students, in particular, represent a vulnerable population due to rising tuition costs and limited financial literacy, which can lead to substantial student debt, loan default, and even withdrawal from university. Consequently, financial difficulties frequently serve as a significant source of stress. Financial stress has been defined as a state of pressure or excessive strain arising from financial challenges and constraints (Contreras, 2023; Cadaret & Bennett, 2019).

Extant research indicates that financial stress can impede academic success by negatively affecting students' persistence, academic performance, and graduation rates (Hicks, 2021). Anxiety resulting from various stressors is consistently reported as one of the most prevalent mental health concerns among university students and is frequently cited as a primary reason for seeking counseling services. In recent years, financial stress has emerged as a particularly widespread concern within this population and has been closely linked to adverse physical and psychological health outcomes (Northern, 2007; Tran et al., 2018).

Financial stress is commonly conceptualized as anxiety associated with an individual's current financial condition and is ranked among the top five stressors experienced by students. Prior studies have demonstrated that financial stress is associated with higher levels of anxiety and depression, as well as lower academic achievement. Notably, financial stress contributes uniquely to anxiety variance beyond that explained by academic-related distress, underscoring its distinct and significant role in students' mental health (Hicks, 2021).

In contrast, financial optimism plays a critical role in shaping individuals' financial behaviors and supporting their overall economic well-being. Financial optimism reflects positive expectations about one's future financial situation and is influenced by factors such as financial literacy. Higher levels of financial literacy can alleviate the negative effects of economic uncertainty, enhance financial decision-making, and improve overall life satisfaction. Financially literate individuals are better equipped to manage future uncertainty through effective saving and investment strategies (Chhatwani & Kumar Mishra, 2021).

Life satisfaction is a multidimensional construct that encompasses satisfaction across various domains of life. Improvements in one domain tend to contribute positively to overall life satisfaction. Accordingly, life satisfaction can be conceptualized as a function of domain-specific satisfactions, including financial satisfaction, job satisfaction, housing satisfaction, and relationship satisfaction. Empirical evidence suggests that job and financial satisfaction are among the strongest predictors of overall life satisfaction. Given that higher income levels and occupational status are often associated with greater job satisfaction, financial satisfaction may exhibit the strongest relationship with life satisfaction (Medgyesi & Zólyomi, 2016). Therefore, financial optimism is expected to be associated with lower levels of financial anxiety and higher levels of life satisfaction. Against this backdrop, the present study aims to examine the effects of financial optimism on financial anxiety and life satisfaction among accounting students.

2. Theoretical Framework

To gain a deeper understanding of the effects of financial pressure on students, prior research has drawn upon Maslow's hierarchy of needs and systems theory. Maslow's hierarchy conceptualizes human needs within a five-level pyramidal framework, in which each level represents a distinct category of

needs that must be sufficiently satisfied before individuals can progress to higher levels. Advancement toward self-actualization—the highest level of the hierarchy, characterized by personal fulfillment, life satisfaction, and the realization of one's full potential—requires the adequate fulfillment or alleviation of deficiencies at lower levels. Accordingly, unmet basic needs, particularly financial security, can obstruct individuals' progression toward self-actualization and overall well-being (Contreras, 2023).

Stress, in its broadest sense, was defined by Hans Selye as "the nonspecific response of the body to any demand placed upon it," arising when individuals perceive that external demands exceed their coping capacities (Selye, 1974). Within this framework, financial stress can be conceptualized as the intense and multifaceted pressure associated with managing financial obligations in the context of insufficient resources. A conceptual distinction is often made between *financial strain* and *financial stress*: financial strain refers to the objective experience of financial difficulties, whereas financial stress reflects the subjective emotional response to those difficulties. Consequently, financial strain serves as an antecedent to financial stress, while individuals facing fewer financial problems tend to experience lower levels of financial stress (Jaffar et al., 2023). In contemporary societies, financial stress has become increasingly prevalent due to structural factors such as high household debt, inadequate savings, and recurrent economic downturns (Wilmie Vosloo et al., 2014).

Insights from the University of Michigan's Consumer Sentiment Index indicate that pessimistic economic perceptions can outweigh optimistic expectations, leading individuals to delay consumption and investment decisions. This highlights the broader economic and social importance of sustaining financial optimism. Financial optimism is conceptually distinct from general life optimism, as it pertains specifically to expectations regarding one's future financial situation. Financially optimistic individuals tend to assign greater weight to favorable outcomes and discount unfavorable ones, which facilitates long-term financial planning and motivates adaptive financial behaviors. Financial optimism influences key household decisions related to consumption, saving, and investment, thereby contributing to financial well-being.

Financial literacy plays a critical moderating role in this process by enhancing individuals' capacity to interpret macroeconomic indicators—such as inflation, economic growth, and unemployment—and evaluate their potential future consequences. Moreover, financial literacy can attenuate the negative effects of adverse economic sentiment on financial optimism, particularly during periods of financial crisis (Chhatwani & Kumar Mishra, 2021).

Empirical evidence suggests that exposure to financial stressors—such as student loan debt and the absence of emergency savings—is strongly associated with elevated levels of financial stress among students (Jaffar et al., 2023). Financial anxiety, particularly in economic contexts, has been defined as uncertainty and fluctuating expectations that influence the behavior of economic agents and, when intensified, may contribute to financial instability and crises (Alavitar et al., 1400). Despite its significant implications, financial anxiety among individuals, including students facing economic pressures, remains relatively underexplored in the literature (Naderi Nobandegani & Taghizadeh, 1400). Alongside personal and familial stressors, financial stressors—such as high consumer debt and unexpected expenses—can undermine financial well-being and, in turn, diminish overall life satisfaction.

Financial satisfaction, as a component of subjective well-being, reflects individuals' evaluative judgments regarding their financial condition. Beyond objective income levels, subjective perceptions of financial adequacy play a pivotal role in shaping well-being outcomes. Higher financial satisfaction has been associated with lower levels of stress and depression, greater self-esteem, and an enhanced sense of control over one's life. Consequently, financial satisfaction and financial optimism emerge as key determinants of

overall life satisfaction, with prior research indicating that financial satisfaction—and the optimism it fosters—exhibits one of the strongest associations with life satisfaction (Medgyesi & Zólyomi, 2016). Nevertheless, it is important to acknowledge that excessive or unrealistic optimism may also entail adverse consequences, particularly when it leads to suboptimal financial decision-making.

3. Literature Review

Moza (2014), in the study "Perceived Stress in Undergraduate Students in Greece due to the Economic Crisis," examined whether undergraduate students in Greece experienced increased stress levels in 2013 compared to 2009 due to the economic crisis. The participants included 223 undergraduate business management students in 2009 and 200 students in 2013. Multiple linear regression analysis was employed, and all necessary validity tests were conducted. The results indicated that female students, older students, and students from low-income families experienced higher stress levels related to both academic and non-academic activities in both years, with particularly acute stress observed in 2013. Additionally, students residing in the local city highlighted the need for policymakers and faculty to implement effective stress management programs to mitigate the negative effects of the economic crisis.

Chhatwani and Kumar Mishra (2021), in their study "Financial Fragility and the Link to Financial Optimism during COVID-19: Does Financial Literacy Matter?" investigated the adverse effects of financial fragility on financial optimism and its long-term consequences. Using nationally representative data from over 2,500 U.S. respondents, the study controlled for predictors such as socioeconomic status and trait optimism. The results revealed a negative relationship between financial fragility and financial optimism, which was particularly pronounced among women. Robustness analyses, including instrumental variable regression and propensity score matching, were employed to address potential endogeneity. These findings provide insights into strategies for enhancing financial optimism during the COVID-19 pandemic.

Civit (2015), in the study "Resilience and Life Satisfaction in Undergraduate Students: The Role of Social Comparison Orientation," examined 326 undergraduate students in Turkey using multivariate analysis of covariance (MANCOVA) to assess differences in resilience and life satisfaction between students with low and high social comparison orientation. Results indicated that students with lower social comparison orientation exhibited higher resilience and life satisfaction than those with high social comparison orientation. Moreover, social comparison orientation did not moderate the relationship between resilience and life satisfaction, underscoring its significant role in shaping these outcomes among undergraduates.

Northern (2007), in "Development, Evaluation, and Validation of a New Financial Stress Measure," explored the adverse health outcomes of financial stress and developed a valid and reliable scale. This scale was administered electronically to 177 undergraduate students, demonstrating sufficient reliability and validity. Further validation, using cardiovascular reactivity to laboratory stressors among 43 students, confirmed its predictive validity for certain cardiovascular responses.

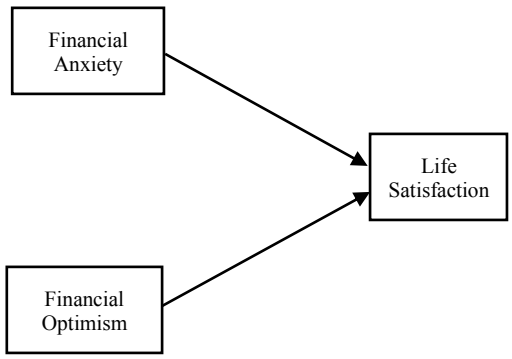
Esai (2018), in "Financial Distress, Anxiety, Depression, and Suicide among American College Students," investigated the link between financial distress and mental health among 3,598 undergraduate students. Independent variables included financial problems and first-generation college status, with covariates such as age, gender, race, ethnicity, program year, and transfer status. Outcome variables measured anxiety, depression, and suicidal ideation. Linear regression analyses indicated that students experiencing financial problems were at a higher risk of anxiety, depression, and suicidal thoughts.

Overall, previous research demonstrates that financial anxiety and financial optimism are critical psychological constructs for explaining subjective well-being and life satisfaction. While many studies

have examined financial anxiety, the simultaneous inclusion of both financial anxiety and financial optimism in a predictive model of life satisfaction—particularly among students—remains limited. The present study aims to address this gap by investigating how financial anxiety diminishes and how financial optimism enhances students' life satisfaction.

4. Research Methodology

This study aims to examine the relationships among financial anxiety, financial optimism, and life satisfaction. Accordingly, the research employs an exploratory, survey-based, and cross-sectional design. A standardized questionnaire was utilized, comprising scales for financial anxiety, financial optimism, and life satisfaction. The study population consisted of accounting students at the University of Yazd. After collecting the questionnaires and removing incomplete or invalid responses, a total of 113 completed questionnaires were used in this study. Based on the above, the research model is as follows:



5. Research Instruments

The study employs three validated scales to measure financial anxiety, financial optimism, and life satisfaction among students.

Financial Anxiety Scale (FAS): Developed by Archuleta, Dale, and Spann (2013) based on the GAD-7 scale, this seven-item instrument assesses anxiety related to personal finances. Sample items include "I feel anxious about my financial situation" and "Due to my financial situation, I have difficulty concentrating on my studies/work." Responses are rated on a seven-point Likert scale (1 = Never to 7 = Always), yielding total scores between 7 and 49. Higher scores indicate greater financial anxiety. Reliability has been reported as excellent, with Cronbach's alpha of 0.94 (Archuleta et al., 2013; Tran, Lam, & Leg, 2019).

Financial Optimism Scale (FOS): Developed by Puri and Robinson (2007), this two-item scale measures the degree of optimism regarding one's financial future. Items are rated on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree), with higher scores reflecting greater financial optimism.

Life Satisfaction Scale (LSS): Developed by Diener, Emmons, Larsen, and Griffin, this five-item scale evaluates overall life satisfaction. Respondents use a seven-point Likert scale (1 = Strongly Disagree to 7 = Strongly Agree), with scores ranging from 5 to 35; higher scores indicate higher life satisfaction. The scale has demonstrated strong reliability in prior studies, with Cronbach's alpha of 0.82 and test-retest reliability of 0.87. In Iranian samples, Bayani, Koochaki, and Goodarzi reported Cronbach's alpha of 0.83 and test-retest reliability of 0.69. Convergent validity with the Oxford Happiness Questionnaire was 0.71, and divergent validity was -0.59, both statistically significant.

Together, these scales provide a robust framework for examining the interrelationships between financial anxiety, financial optimism, and life satisfaction in student populations, ensuring both reliability and validity of the measures used.

6. Research Hypotheses

Based on the above, the research hypotheses are defined as follows:

Hypothesis 1: There is a significant relationship between financial anxiety and life satisfaction.

Hypothesis 2: There is a significant relationship between financial optimism and life satisfaction.

Hypothesis 3: Financial anxiety and financial optimism can predict life satisfaction among students.

7. Findings

Table 1 presents the means and standard deviations of the research variables.

Table 1: Means and Standard Deviations of Variables (Financial Optimism, Financial Anxiety, and Life Satisfaction)

St. Deviation	Mean	Variables
1.359	4.159	Financial Optimism
8.513	35.469	Financial Anxiety
3.982	14.106	Life Satisfaction

As shown in Table 1, financial anxiety has the highest mean score (35.469) and standard deviation (8.513), while financial optimism has the lowest mean score (4.159) and standard deviation (1.359).

Table 2 presents the correlation matrix of the research variables.

According to the above table, the correlation between life satisfaction and financial optimism (r = 0.34) is significant at the 0.01 level, indicating a positive relationship between these two variables. Additionally, the correlation between life satisfaction and financial anxiety (r = -0.40) is significant at the 0.05 level, indicating a negative relationship. The correlation between financial optimism and financial anxiety is -0.21, which is also significant at the 0.05 level and reflects a negative relationship.

Table 3 presents the results of the simultaneous regression analysis for predicting life satisfaction among students.

As shown in Table 3, financial optimism and financial anxiety are capable of predicting life satisfaction. The F-value (17.03) indicates that the research variables can significantly predict life satisfaction, and the R^2 value shows that 23% of the variance in life satisfaction is explained by financial optimism and financial anxiety.

Table 2: Correlation Matrix of Research Variables (Financial Optimism, Financial Anxiety, and Life Satisfaction)

Life Satisfaction	Financial Anxiety	Financial Optimism	Variables
		1	Financial Optimism
	1	-0.21*	Financial Anxiety
1	**-0.40	**0.34	Life Satisfaction

Table 3: Simultaneous Regression Analysis for Predicting Life Satisfaction Based on Research Variables (Financial Optimism and Financial Anxiety)

F. sig	F	R^2	R	Sig	T	Beta	B	Variables
0.000	17.03	0.237	0.486	0/002	3/172	0.270	0.792	Financial Optimism
				0/000	-4.119	-0.351	-0.164	Financial Anxiety

8. Discussion and Conclusion

The findings of this study indicate a significant negative relationship between financial anxiety and students' life satisfaction, suggesting that higher financial anxiety corresponds with lower life satisfaction. This result aligns with prior research (Hicks, 2021; Jaffar et al., 2023), highlighting that financial concerns can negatively affect students' mental health, academic engagement, and overall well-being. The psychological impact of financial stress underscores the importance of addressing financial anxiety, as it not only impairs short-term academic

performance, such as concentration and motivation, but also reduces overall life satisfaction.

Additionally, a significant positive relationship was observed between financial optimism and life satisfaction. This finding is consistent with Chhatwani & Kumar Mishra (2021) and Medgyesi & Zólyomi (2016), emphasizing that a positive outlook regarding current and future financial conditions can enhance students' motivation for prudent financial decision-making and improve overall life satisfaction. Financial optimism functions as a psychological resource that mitigates worries about future financial uncertainty and strengthens coping mechanisms, thereby supporting mental well-being.

The simultaneous regression analysis further demonstrated that financial optimism and financial anxiety jointly predict life satisfaction, explaining approximately 23% of its variance. This finding indicates that, alongside financial circumstances, psychological traits—such as optimism and the ability to manage financial stress—play a significant role in students' overall life satisfaction. Although a portion of the variance remains unexplained, suggesting the influence of additional individual, social, and environmental factors, the results emphasize the importance of financial anxiety and optimism as key psychological determinants.

These outcomes are consistent with Maslow's hierarchy of needs, which positions financial security as a fundamental requirement for achieving higher-order needs, such as self-actualization. When financial needs are unmet, individuals may struggle to attain greater life satisfaction, underscoring the relevance of financial management and psychological support in promoting well-being.

In conclusion, the findings suggest that universities and counseling centers should provide both practical financial education and targeted psychological interventions to reduce financial anxiety and enhance financial optimism. Future research could expand predictive models of life satisfaction by incorporating additional environmental, social, and personal factors, thereby offering a more comprehensive understanding of students' well-being.

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Economic Fluctuations, Managerial Ownership, and Firm Value

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Abstract

Objectives: The main purpose of this study is to investigate the relationship between economic fluctuations, managerial ownership, and firm value among firms listed on the Tehran Stock Exchange (TSE). The research specifically examines how macroeconomic variables such as inflation rate fluctuations and GDP growth interact with managerial ownership, investment growth, and financial leverage to influence firm value.

Methodology/Design/Approach: This study is applied in nature and adopts a causal (ex post facto) correlational design. The statistical population includes all firms listed on the TSE, from which 133 firms were selected using the systematic elimination sampling method. The study covers seven years from 2017 to 2023, and data were analyzed using multiple regression models.

Findings: The results show an inverse relationship between inflation rate fluctuations and firm value, while no significant relationship is found between GDP growth and firm value. The interaction between managerial ownership and GDP growth positively affects firm value, whereas the interaction between managerial ownership and inflation rate fluctuations has no significant effect. Moreover, the interaction between investment growth and GDP growth has a positive effect on firm value, but its interaction with inflation rate fluctuations does not. Finally, the interaction between financial leverage and inflation rate fluctuations has an inverse impact on firm value, while the interaction between financial leverage and GDP growth is insignificant.

Innovation: This study contributes to the understanding of how economic fluctuations interact with firm-specific characteristics to shape firm value in emerging markets. The findings provide policymakers and managers with practical insights, emphasizing the importance of managing ownership structures and leverage decisions under varying macroeconomic conditions.

Keywords: Economic Fluctuations, Managerial Ownership, Firm Value.

1. Introduction

One of the most important sectors of any economy is the capital market, with the stock exchange and its listed firms playing a central role due to their close connection with the country's economic structures. Among the various factors influencing the capital market, macroeconomic variables appear to have a greater impact than microeconomic ones. Consequently, financial researchers, analysts, and economists strive to identify the determinants of firm performance and value, as well as the magnitude of their effects. Such analyses support informed investment decisions and help create an efficient stock exchange, fostering high-performing and high-value firms.

In this context, the effects of macroeconomic indicators—such as employment growth, GDP, inflation, and stock price index growth—on investor decision-making and risk assessment (particularly systematic risk) require careful examination. Fluctuations in these macroeconomic factors can affect all investing firms and, ultimately, the capital of stakeholders. Economic fluctuations, commonly referred to as business cycles, represent periodic increases and decreases in the production of goods and services within an economy. Market-oriented economies, particularly in Western countries, have experienced successive cycles of production changes reflected in GDP.

Each business cycle consists of four phases: recovery, boom, recession, and stagnation. These cycles repeat over time, with long-term trends being either bullish or bearish. Each stage of economic fluctuation presents unique challenges. During downturns, unemployment rises due to reduced labor demand, and the economy operates below its production possibilities frontier, resulting in underutilization of labor and other production factors. Conversely, during recovery, prices and wages generally increase, which can contribute to inflation. In boom periods, employment and production levels rise rapidly, while in recessions, these levels decline sharply. Despite these short-term fluctuations, long-term trends generally show an increase in overall production. Boom phases represent the highest level of economic activity, whereas recessions reflect periods of declining production and high unemployment. Recovery phases signify expanding production and decreasing unemployment, illustrating how economic fluctuations can directly affect firm value and performance (Mohtasham Dolatshahi, 2011).

Severe variations in macroeconomic variables, such as inflation and GDP growth, along with environmental factors, directly influence investors' decisions and the valuation of firms listed on the Tehran Stock Exchange. To manage risk and achieve expected returns, investors must accurately evaluate the impact of these uncertainties on future cash flows. This underscores the importance of understanding how such effects are moderated by corporate ownership structures and strategic decisions.

Determining the extent and direction of both direct and interactive impacts of economic fluctuations on firm value is a fundamental research problem in corporate finance. Beyond macroeconomic influences, managerial ownership plays a critical moderating role, particularly when directors hold significant shares and are primary beneficiaries. How management responds to shocks from economic fluctuations, in combination with structural variables such as financial leverage and investment levels, can create opportunities or threats that affect firm value.

The present study seeks to address this knowledge gap by disentangling these complex relationships and providing empirical evidence from the Iranian capital market, aiming to develop a comprehensive framework for understanding firm valuation in turbulent economic environments. In today's context, macroeconomic volatility, uncontrolled inflation, and sudden governmental policy changes can profoundly affect market conditions and firm performance. Firms that fail to identify and adapt to these factors risk losing competitive advantage and stakeholder trust. Understanding external economic and policy factors enables firms to strategically position themselves ahead of competitors, sustain firm value, and

maximize returns for investors. Therefore, investigating the relationships among economic fluctuations, firm value, and managerial ownership is more essential than ever.

In the continuation of this research, the study first presents the development of theoretical foundations, hypotheses, and an empirical framework, followed by the methodology and operational definitions of research variables, and concludes with the presentation of findings and research conclusions.

2. Theoretical Foundations of Research

Investors closely monitor macroeconomic factors and their volatility in making investment decisions, as these factors directly influence systematic risk and the potential to achieve expected returns. Consequently, macroeconomic variables and their fluctuations significantly impact both the current and future performance of firms and investments (Pourzamani et al., 2011).

Inflation is generally defined as a disproportionate and sustained increase in the general price level of goods and services in an economy. While definitions vary, a widely accepted perspective since the 19th century considers inflation as an increase in the volume of non-convertible currency not backed by gold. Inflation represents a key economic risk that affects the supply-demand balance and, ultimately, investment decisions. In economies like Iran, which has experienced persistent inflation over the past two decades, low inflation is often regarded as an indicator of economic stability.

During inflationary periods, preserving purchasing power becomes the primary concern for investors, individuals, and firms. Rising living costs reduce disposable income and savings, which in turn may decrease stock market activity and lower corporate stock returns. Conversely, the demand for tangible consumer goods tends to increase. In such conditions, the real value of money declines, while the value of non-monetary assets—such as fixed assets or inventory—remains relatively stable on financial statements (Zamani Amoughin et al., 2014).

Among macroeconomic indicators, Gross Domestic Product (GDP) holds particular importance. GDP is not only a key measure of overall economic performance but also serves as a summary of numerous microeconomic activities. It represents the total value of final goods and services produced by economic units within a country over a specific period, whether annual or seasonal (Lashkari et al., 2018).

Economic expansions (production increases relative to long-term trends) influence investor expectations regarding profitability and investment confidence. Higher economic growth reduces uncertainty and raises anticipated returns, which, together with increased wealth expectations, elevates demand for all types of assets, including stocks. Changes in stock prices, in turn, affect household wealth, consumption, and firm investment and production decisions. Conversely, during economic recessions, corporate sales growth, profit margins, and investment levels are expected to decline, while the opposite occurs in boom periods.

Therefore, economic conditions are expected to have differential effects on firm performance and value. This relationship is bidirectional, as GDP reflects the aggregate outcomes of micro-level firm activities and profitability. In other words, the performance and profits of individual firms collectively shape the macroeconomic output, and macroeconomic variables, in turn, influence firm performance through their impact on expected profits. Given the close interaction between the capital market and the macroeconomy, it is reasonable to expect that macroeconomic variables significantly affect corporate performance and profitability.

Accordingly, the first hypothesis of the present study is as follows:

H1: There is a significant relationship between economic fluctuations and firm value.

The global financial crises highlight the critical importance of a country's financial stability and the effectiveness of its monetary and fiscal policies, as well as their impact on the private sector and individual firms. Macroeconomic policies directly

influence corporate financial performance, growth, and development (Tehrani & Najafzadeh Khoei, 2018). For example, during the East Asian financial crisis of 1997, many firms and financial institutions went bankrupt due to inadequate risk management of both systematic and non-systematic risks. Similarly, in the 2007–2008 global financial crisis, the use of risk management tools to identify and control financial and non-financial risks—including market risks such as inflation, interest rates, and currency fluctuations—became particularly widespread.

Firms face a variety of market risks, including exchange rate risk and inflation, as well as firm-specific risks such as liquidity and financial crises. Effective risk management can help mitigate these threats. The role of managers who are also shareholders is particularly noteworthy, as they actively engage in risk management to preserve firm value and attract investor confidence. Empirical evidence shows that greater managerial ownership often aligns managers' interests with those of the firm, enhancing performance, while many managers tend to be risk-averse and avoid excessive risk-taking (Zamir et al., 2021).

Valuation of firms is essential for both managers and investors, as it reflects how corporate strategy and financial structure influence market value. Firm valuation is critical for shareholders, investors, managers, creditors, and other stakeholders in evaluating the firm's future, estimating investment risk and returns, and determining stock prices (Pourzamani & Buyer, 2013; Hassas Yeganeh et al., 2008). In financial decision-making, risk and return considerations are fundamental: for a given level of return, investors expect minimal risk, and for a given level of risk, the highest possible return (Markowitz, 1959).

Managers increasingly focus on investment decisions and risk management to minimize potential losses. Traditional risk measures, such as duration, beta coefficient, variance, and standard deviation, have limitations due to their sensitivity and volatility, particularly in complex modern markets, which can lead to suboptimal investment decisions. In this context, Value at Risk (VaR), which estimates the worst expected loss under normal market conditions, has become a widely used tool to assess risk comprehensively and inform managerial decisions (Kargar & Zanganeh, 2018).

Given the systematic risks faced by firms—such as inflation and its fluctuations—and the influence of managerial and shareholder ownership on performance and strategic decision-making, it is critical to understand how these factors collectively impact firm value (Baghaei et al., 2009).

Accordingly, the second hypothesis of the present study is formulated as follows:

H3: Investment growth affects the relationship between economic volatility and firm value.

Economic fluctuations can significantly influence a firm's capital structure, particularly its financial leverage. The determinants of capital structure can be classified into internal and external factors. Internal factors, such as managerial decisions and firm policies, are within the control of management, whereas external factors, including macroeconomic conditions, are largely beyond managerial control. Understanding the effects of these internal and external determinants enables managers to make informed decisions regarding capital structure under varying economic conditions, aiming to achieve financial stability and sustainable growth (Mopit & Farid, 2019).

Accordingly, the present study hypothesizes that the interaction between capital structure and economic fluctuations can affect firm value. Thus, the fourth hypothesis of the study is formulated as follows:

H4: Financial leverage affects the relationship between economic volatility and firm value.

Zamir et al. (2021), in a study examining the effects of economic fluctuations and managerial shareholders on firm value, stated that market derivatives and macroeconomic factors, including the inflation rate, can influence firm value. They noted that managerial shareholders may not always be risk-takers, as they directly benefit from the firm. The study's findings indicated that economic fluctuations

affect firm value, and managerial ownership can serve as a moderating variable in this relationship.

Khavela et al. (2021), in a study titled *"The Effect of Economic Variables (Workers' Remittances, Bank Deposits, GDP, and Inflation) on Stock Returns"*, emphasized the critical role of macroeconomic factors in stock performance. The research highlighted that investors can make better investment decisions when market variables are identified and volatility is predicted. The study examined the effects of interest rates, inflation, and bank deposit rates on stock fluctuations. The results demonstrated that all variables significantly influence stock movements, with stock returns fluctuating more in response to changes in each variable. Specifically, GDP showed a strong positive relationship with stock returns, whereas inflation exhibited an inverse relationship.

Nuho (2021), in a study titled *"The Impact of Exchange Rate Fluctuations on Inflation in Nigeria"*, showed that both money supply and nominal exchange rates have a positive and significant effect on the consumer price index, indicating that inflation in Nigeria is driven by exchange rate fluctuations as well as increases in the money supply. The study recommended that the central bank control money supply growth to minimize inflation.

Musarat and Elul (2021), in a study titled *"The Impact of the Inflation Rate on the Cost of Construction Budgets"*, emphasized the significant role of the construction industry in economic growth due to its contribution to GDP and other sectors. They highlighted that inflation is a critical factor affecting economic growth, whether positively or negatively. The study found that ignoring inflation in economic planning and budgeting for construction projects increases project costs because prices of building materials, labor wages, and machinery rentals fluctuate annually. Moreover, the study proposed a framework demonstrating the strong relationship between inflation and the construction industry, which can be useful for future budget estimation models to prevent cost overruns caused by inflation.

Baccheri et al. (2021), in their study titled *"The Effect of Leverage, Profitability, Agency Cost, and Inflation Rate on Predicting Corporate Factors,"* examined the impact of leverage (measured by the debt-to-equity ratio), profitability (measured by return on assets), agency cost, and inflation rate on predicting firm-level financial distress, considering interest rate fluctuations as a moderating variable. The sample included 50 real estate firms listed on the Indonesian and Malaysian stock exchanges between 2014 and 2018. Dummy logistic regression analysis was employed to test the hypotheses. The results indicated that leverage has a positive and significant effect on financial distress, whereas the inflation rate has a significant negative effect. Additionally, agency cost, profitability, and interest rate fluctuations significantly influence firms' financial distress.

Machado et al. (2021), in a study titled *"The Impact of Economics on Corporate Governance and Stock Market Volatility,"* found that corporate governance mechanisms significantly affect stock market fluctuations when analyzed alongside GDP changes. However, governance mechanisms alone do not have a significant impact on market volatility.

Doha and Rana (2021), in their study *"Determinants of Inflation in the Gulf Cooperation Council (GCC) Countries,"* aimed to assess the effects of GDP and money supply on inflation levels. The results showed that money supply significantly affects inflation across most countries, and increases in GDP were also associated with higher inflation.

Ben Lee (2019) investigated the effects of working capital, firm value, profitability, and corporate risk. The findings revealed a negative and significant relationship between working capital and firm value, profitability, and risk, suggesting that managers must balance working capital management to achieve profitability while controlling risk.

Zargar and Abdulshakur (2016) studied the effects of managerial ownership on the relationship between goodwill and firm value. Their results showed a significant positive relationship between goodwill reporting and firm value. However, managerial

ownership, as a moderating variable, exhibited a negative effect on the relationship between goodwill and firm value.

Park et al. (2016) examined the impact of managerial capability on firm value in the context of tax avoidance. The study found a negative relationship between tax avoidance and firm value, and managers' abilities mitigated the adverse effects of tax avoidance on firm value.

Kazemimanesh and Dastgir (2020), in their study titled *"The Effect of Firm Value and Profitability on Stock Return Risk,"* emphasized working capital. They reported that firm value negatively affects stock return risk, and working capital amplifies the impact of both firm value and profitability on stock return risk.

Montashari and Farid (2019), in their study *"Volatility in Capital Structure and the Role of Macroeconomic Variables,"* noted that fluctuations in firms' capital structures disrupt managerial focus on maintaining and improving returns, consequently affecting performance. One of the key managerial duties is deciding on an optimal combination of financing sources. The study investigated the role of macroeconomic variables on capital structure volatility for 89 firms listed on the Tehran Stock Exchange between 2014 and 2018, selected via the systematic elimination method. The results indicated that increases in inflation raise volatility in both short-term and long-term debt structures, while rising interest rates reduce this volatility. Additionally, higher economic growth slightly increases volatility in long-term debt structures.

Babaei and Khanmohammadi (2018), in their study entitled *Economic Variables and Financial Performance of Firms*, stated that macroeconomic factors such as exchange rates, inflation, and interest rates can directly and indirectly affect firms, particularly manufacturing firms. Their findings indicated that in the oil and pharmaceutical industries, exchange rate fluctuations have an inconsistent relationship with financial performance, whereas the inflation rate aligns with corporate financial performance. In the automotive industry, both exchange rate fluctuations and inflation rates show an inconsistent relationship with firm performance.

Kargar and Zanganeh (2018), in their study entitled *The Effect of Business Strategy on the Relationship between Risk-Taking and Firm Value*, reported a positive and significant relationship between risk-taking and firm value. They found that a defensive business strategy has a direct and significant effect on the relationship between risk-taking and firm value, while an aggressive business strategy has a significant inverse effect on this relationship.

Tehrani and Najafzadeh Khoei (2017), in their study entitled *Inflation Uncertainty on Capital Structure*, reported that inflation rate uncertainty negatively affects the capital structure of 55% of the sample firms, while it has a positive effect on the capital structure of 41% of the firms studied.

Mehrabanpour et al. (2017), in a study focusing on risk management and firm value, indicated that increasing risk management (environmental uncertainty) tends to increase firm value. They also found that in firms with institutional owners, the effect of risk management on firm value is higher than in other firms, although this effect is not statistically significant. Furthermore, an increase in board independence does not significantly enhance the effect of risk management on firm value. The presence of an audit committee in listed firms similarly does not significantly alter the impact of risk management on firm value.

Salehnejad and Vaghegi (2016), in their study entitled *The Effect of Earnings Forecasting by Management on Firm Risk and Value*, used the beta coefficient as a measure of systematic risk and the Tobin Q index as a measure of firm value. Their findings indicated that management earnings forecasts significantly affect firm value, whereas such forecasts do not significantly impact stock risk.

Zamani Amoughin et al. (2014), in a study entitled *The Effects of Inflation on the Financial Performance Evaluation Indicators of Tehran Stock Exchange Firms*, concluded that inflation rates have a substantial effect on firms' financial performance. Specifically,

high or low inflation in a country can respectively have favorable or unfavorable effects on corporate financial performance, highlighting inflation as a key external factor influencing firm performance.

Pourzamani et al. (2011), in their study entitled *Investigating the Effect of Macroeconomic Indicators Volatility on Stock Returns*, reported that employment rate growth does not significantly affect stock returns. GDP growth has a limited effect, inflation exerts a minor negative effect, and stock price index growth has a significant impact on stock returns.

3. Research Methodology

Given the existence of established theoretical foundations related to the study variables, the present research is classified as applied research in terms of its purpose. In terms of methodology, since it does not manipulate an independent variable to observe its effect on a dependent variable, but rather examines the variables as they naturally occur, it is classified as descriptive-causal research.

The study relies on historical and post-event data, which were collected using library and archival methods to obtain the information required to test the research hypotheses. Due to accessibility and reliability, the statistical population consists of all firms listed on the Tehran Stock Exchange (TSE). Firms were excluded if their fiscal year did not end in March, if they changed their financial period during the research timeframe, if they lacked sufficient information to ensure comparability, or if they were investment firms, banks, or insurance firms.

To ensure data homogeneity given the differing nature of firm activities and reporting, a systematic screening method was applied, resulting in a final sample of 133 firms. Data were collected for a period of seven years (2017–2023), consistent with similar studies. The hypotheses were tested using EViews 12 software, employing logistic regression and appropriate statistical techniques for the final analysis.

4. Research Regression Models

4.1. Test Model of the First Hypothesis

$$Q_{j,t} = \beta 0 + \beta_1 Q_{i,t-1} + \beta_2 \text{inflation}_{i,t} + \beta_3 \text{GDP growth}_{i,t} + \beta_4 \text{ACCES}_{i,t} + \beta_5 \text{RISK}_{i,t} + \beta_6 \text{SIZE}_{i,t} + \beta_7 \text{GROWTH}_{i,t} + \beta_8 \text{LEV}_{i,t} + \varepsilon_{i,t}$$

4.2. Testing Model of Second, Third, and Fourth Hypotheses

$$Q_{j,t} = \beta 0 + \beta_1 Q_{i,t-1} + \beta_2 \text{inflation}_{i,t} + \beta_3 \text{GDP growth}_{i,t} + \beta_4 MO_{i,t} + \beta_5 (\text{inflation}_{i,t} * MO_{i,t}) + \beta_6 (\text{GDP growth}_{i,t} * MO_{i,t}) + \beta_7 (\text{inflation}_{i,t} * \text{GROWTH}_{i,t}) + \beta_8 (\text{GDP growth}_{i,t} * \text{GROWTH}_{i,t}) + \beta_9 (\text{inflation}_{i,t} * \text{LEV}_{i,t}) + \beta_{10} (\text{GDP growth}_{i,t} * \text{LEV}_{i,t}) + \beta_{11} \text{ACCES}_{i,t} + \beta_{12} \text{RISK}_{i,t} + \beta_{13} \text{SIZE}_{i,t} + \beta_{14} \text{GROWTH}_{i,t} + \beta_{15} \text{LEV}_{i,t} + \varepsilon_{i,t}$$

Table 1: Introduction of the components of the research model

Variable Title	Variable Symbol	Variable Role
Q. Tobin	Q	Dependent Variable
Inflation rate fluctuations	inflation	Independent Variable
GDP growth	GDP growth	Independent Variable
Dividend	ACCES	Control Variable
Systemic risk	RISK	Control Variable
Firm Size	SIZE	Control Variable
Investment Growth	GROWTH	Control and Moderating Variable
Leverage	LEV	Control and Moderating Variable
Managerial Ownership	Mo	Moderator Variable

5. Operational Description of Research Variables

5.1. Independent Variable: Economic Volatility

To measure economic volatility, two measures of inflation rate fluctuations and GDP growth are used:

Inflation fluctuations are the standard deviation of the last three periods of the inflation rate.

Gross Domestic Product (GDP Growth)

GDP growth = (GDPt – GDPt-1)/GDPt-1

5.2. Dependent Variable: Corporate Value

To measure the value of the firm following the research of Zamir et al. (2021), the Tobin Q criterion is used, and to measure the Tobin Q following Salehnejad and Waghegi (2016), Tobin's Q is measured as follows:

Tobin Q Index (Q)
Tobin Q = M.V.S. + B.V.D. / B.V.A.
M.V.S. = Shareholders' Market Value
B.V.D. = Book Value of Debts
B.V.A. = Book Value of Assets

5.3. Moderating Variable: Managerial Ownership (MO)

To measure the moderating variable, the percentage of shares owned by the board members of the firms will be used.

5.4. Control variables of the research

SIZE: Natural Logarithm of Total Assets
GROWTH: The amount invested in fixed assets divided by the fixed assets of the first period.
LEV: The ratio of total liabilities to total assets
RISK: To calculate the systematic risk, the information of the new Rahavard software is used, and the following model, which is the pricing model of capital assets, has been used to calculate it:

$$E(r_j) = R_f + (E(R_m) - R_f)\beta_j$$

In these patterns:
E(rj); the expected return of the asset j,
RF, Risk-Free Returns
E(Rm), the expected return of the market portfolio
ACCES: It is a two-value variable (0 and 1) that will be 1 or zero if the firm has distributed profits in the current period.

6. Findings Research

The findings of the research include descriptive statistics and inferential statistics, which are presented below.

The primary measure of central tendency is the mean, which represents the equilibrium point or the "center of gravity" of the distribution and serves as a useful indicator of data centrality. For instance, the mean value of the financial leverage variable is 0.56, indicating that most of the data is concentrated around this point.

Dispersion parameters, on the other hand, are used to assess the degree of spread among data points or their deviation from the mean. One of the most important measures of dispersion is the standard deviation. For example, financial leverage has a standard deviation of 0.20, which is the lowest among the variables.

The minimum and maximum values indicate the range of each variable. For instance, the highest observed financial leverage in the sample is 1.12.

Table (2): Descriptive Statistics of Quantitative Research Variables

Variable	Mean	Max	Min	ST.D
Inflation	7.30	12.92	1.24	4.01
GDP growth	0.24	1.39	-0.068	0.47
Mo	60.2	99.00	0.00	26.28
Q	2.58	7.29	1.01	1.78
SIZE	14.67	18.47	11.52	1.44
LEV	0.56	1.12	0.12	0.20
GROWTH	0.30	1.21	0.002	0.37
RISK	0.67	3.83	1.84-	0.87

Table 3: Frequency Distribution of Dividend Variable

Description	Symbol	Value	Abundance	Frequency
It has dividends	ACCES	1	731	78.52
There is no dividend.	ACCES	0	200	21.48
Total	-	-	931	100

As can be seen in Table 3, the total number of years of the firms under review is equal to 931 cases, of which 731 cases, equal to 78.52% of the year-firms, had

dividends, and 200 cases, equal to 21.48% of the year-firms, did not have dividends.

According to the results obtained in Table 4, it can be seen that the significance level of the variables in the validity test is less than 5% and indicating the reliability of the variables.

Table 4: Durability Test (Levin, Lin, and Chu) Quantitative Research Variables

Variable Name	Test Statistics	Significance level	Results
Inflation	-1984.95	0.0000	Stationary
GDP growth	-160.635	0.0000	Stationary
Mo	-16.7417	0.0000	Stationary
Q	-38.2061	0.0000	Stationary
SIZE	-55.6463	0.0000	Stationary
LEV	-32.1185	0.0000	Stationary
GROWTH	-34.8179	0.0000	Stationary
RISK	-27.060	0.0000	Stationary

Table (5): Results of the F. Limmer (Chow) test

Test Model	Test Statistics	Significance level
Model First	1.22	0.29
Model II	1.28	0.25

According to the results presented in Table 5, the significance level for the research models is higher than 5%, indicating that the use of the random effects model is preferable to the fixed effects model. Therefore, in this case, performing the Hausman test is not necessary (Banimahd et al., 2016). Since the statistical tests were robust to variance heterogeneity and serial autocorrelation, these two issues were further addressed by applying the robust standard errors approach and the generalized least squares (GLS) method using the Ives 10 software, in line with recent global research practices.

The results in Table 6 show that the significance level of the test in the research models is less than 5% and indicate the existence of variance heterogeneity in the disturbance sentences, which has been solved in the final estimation of the models by implementing the GLS.

According to the results of Table 7, it can be seen that the significance level of the serial autocorrelation test of the research models was more than 5% and indicated the absence of serial autocorrelation in the models.

Table (6): Results of Variance Variance Test

Test Model	Test Statistics	Significance level
Model First	21.51	0.0000
Model II	17.19	0.0000

Table 7: Results of the Serial Autocorrelation Test

Test Model	Test Statistics	Significance level
Model First	0.96	0.38
Model II	1.00	0.36

The results presented in Table 8 indicate that the inflation rate fluctuation variable, with a negative coefficient (-0.030) and a significance level below 5% (0.03), has an inverse and significant relationship with firm value. Therefore, the first part of the first hypothesis is supported at the 5% significance level. The second part of the first hypothesis, which considers GDP growth as a measure of economic fluctuation, is not supported, as its significance level exceeds 5% (0.11).

Regarding the control variables, all except corporate risk exhibit a significant relationship with the dependent variable at the 5% significance level. The coefficient of determination (R^2) is 0.34, indicating that the independent and control variables in the model collectively explain 34% of the variation in the dependent variable. The Durbin-Watson statistic is 1.98, suggesting no presence of autocorrelation in the residuals of the model. Additionally, the model demonstrates good overall fit, as confirmed by the test statistic with a significance level below 5%. The variance inflation factor (VIF) values are below 5 and close to 1, indicating the absence of strong multicollinearity among the research variables.

Table (8): The result of the first hypothesis

$Q_{j,t} = + \beta \beta 0_1 Q_{i,t-1} + \beta 2 \text{ inflation}_{i,t} + \beta 3 \text{ GDP growth}_{i,t} + \beta 4 \text{ ACCES}_{i,t} + \beta 5 \text{ RISK}_{i,t} + \beta 6 \text{ SIZE}_{i,t+} \beta 7 \text{ GROWTH}_{i,t} + \beta 8 \text{ LEV}_{i,t} + \varepsilon_{i,t}$					
Dependent Variable: Corporate Value					
Variables	**Coef**	**Stdev**	**T Statistic**	**Sig**	VIF
Q t-1	0.95	0.048	19.44	0.0000	1.40
inflation	-0.030	0.014	-2.17	0.030	1.07
GDP growth	0.002	0.0018	1.56	0.11	1.24
SIZE	0.060	0.011	5.35	0.0000	1.11
RISK	-8.52	0.0001	-0.051	0.95	1.18
LEV	0.033	0.013	2.50	0.012	1.40
GROWTH	0.050	0.018	2.80	0.0052	1.14
ACCES	-0.013	0.003	-3.73	0.0002	1.16
C	0.54	0.069	7.94	0.0000	-
Determination Coefficient		0.34			
Watson Durbin		1.98			
Statistic F		34.39			
Significance level		0.0000			

Table 9: The result of the second, third, and fourth hypotheses

$Q_{i,t} = \beta 0 + \beta_1 Q_{i,t-1} + \beta_2 \text{ inflation}_{i,t} + \beta_3 \text{ GDP growth}_{i,t} + \beta_4 MO_{i,t} + \beta_5 (\text{inflation}_{i,t} * MO_{i,t)} + \beta_6 (\text{GDP growth}_{i,t\,i,t} * MO_{i,t)} + \beta_7 (\text{inflation}_{i,t} * \text{GROWTH}_{i,t)} + \beta_8 (\text{GDP growth}_{i,t} * \text{GROWTH}_{i,t)} + \beta_9 (\text{inflation}_{i,t} * \text{LEV}_{i,t)} + \beta_{10} (\text{GDP growth}_{i,t} * \text{LEV}_{i,t)} + \beta_{11} \text{ACCES}_{i,t} + \beta_{12} \text{ RISK}_{i,t} + \beta_{13} \text{ SIZE}_{i,t} + \beta_{14} \text{GROWTH}_{i,t} + \beta_{15} \text{ LEV}_{i,t} + \varepsilon_{i,t}$					
Dependent Variable: Corporate Value					
Variables	**Coef**	**Stdev**	**T Statistic**	**Sig**	VIF
Q t-1	0.95	0.049	19.47	0.0000	1.13
Inflation	-0.0046	0.0020	-2.24	0.025	1.06
GDP growth	0.003	0.0019	1.78	0.074	1.09
Mo	0.052	0.022	2.28	0.022	1.10
inflation * MO	0.023	0.012	1.85	0.063	1.15
GDP growth * MO	0.004	0.002	2.05	0.040	1.56
inflation * GROWTH	0.0009	0.003	0.28	0.77	1.31
GDP growth * GROWTH	0.081	0.038	2.13	0.032	1.27
inflation * LEV	-0.058	0.029	-1.99	0.046	2.66
GDP growth * LEV	0.005	0.003	1.51	0.12	1.86
SIZE	0.069	0.011	5.90	0.0000	1.92
RISK	-2.06	0.0001	-0.12	0.90	1.97
LEV	0.038	0.013	2.79	0.0052	1.05
GROWTH	0.050	0.015	3.28	0.001	1.28
ACCES	0.012	0.003	3.58	0.0003	1.09
C	0.55	0.074	7.46	0.0000	-
Determination Coefficient		0.35			
Watson Camera		1.98			
Statistic F		23.63			
Significance level		0.0000			

The results presented in Table 9 pertain to the second hypothesis, which examines the moderating role of managerial ownership on the relationship between economic fluctuations and firm value. Managerial ownership exhibits a significant positive relationship with firm value, with a coefficient of 0.052 and a significance level of 0.02 (<5%). Regarding the interaction effects, the interaction between inflation rate fluctuations and managerial ownership is not significant, with a coefficient above 5% (0.06). However, the interaction between GDP growth and managerial ownership is significant, with a positive coefficient of 0.004 and a significance level of 0.04 (<5%), indicating a meaningful effect on firm value.

For the third hypothesis, the interaction between investment growth and inflation rate fluctuations is not significant (significance level = 0.77). In contrast, the interaction between investment growth and GDP growth shows a significant positive effect on firm value, with a coefficient of 0.081 and a significance level of 0.032 (<5%).

The fourth hypothesis results reveal that the interaction between financial leverage and inflation rate fluctuations has a significant negative effect on firm value, with a coefficient of -0.058 and a significance level of 0.046 (<5%). Conversely, the interaction between financial leverage and GDP growth is not significant, with a p-value of 0.12 (p> 0.05).

7. Research Conclusion

The main purpose of this study is to investigate the relationship between economic fluctuations, managerial ownership, and firm value. The results indicate that the inflation rate fluctuation has a negative coefficient and is significant at the 5% level, demonstrating an inverse and significant relationship with firm value. Therefore, the first part of the first hypothesis is supported. In contrast, the second part of the first hypothesis, which examines GDP growth as an economic fluctuation, is not confirmed, as its significance level exceeds 5%.

Investors pay attention to macroeconomic factors and their volatility when making investment decisions because these factors influence systematic risk and expected returns. Accordingly, macroeconomic conditions significantly affect firm value and performance. The results of this study suggest that fluctuations in the inflation rate within a country's capital market can impact firm performance. When inflation is unstable or increasing, firms' performance and customer demand are adversely affected. Increased inflation fluctuations reduce firm value due to lower sales, decreased demand, higher raw material costs, and investors' preference for alternative investment opportunities offering better returns. The lack of a significant effect of GDP growth on firm value aligns with prior research by Lashkari et al. (2018), Pourzamani et al. (2011), Montashari and Farid (2019), Zamani Amoughin et al. (2014), and Zamir et al. (2021), who also highlighted that economic fluctuations, particularly inflation, affect firm performance. Lashkari et al. (2018) and Pourzamani et al. noted that GDP has little to no effect on firm value.

Regarding the second hypothesis, which examines the moderating role of managerial ownership, the results show that managerial ownership has a direct positive effect on firm value. This finding supports the convergence-of-interests hypothesis, suggesting that when managers hold equity in their firms, they are incentivized to increase firm value. Higher managerial ownership motivates managers to supervise operations more effectively, as their personal financial gains are aligned with firm performance. Ownership structure, including concentration, sustainability, and the presence of major and minor shareholders, serves as a key governance mechanism. Institutional and managerial shareholding ensures long-term commitment, aligning managers' interests with those of shareholders and enhancing firm performance. However, excessive managerial power without adequate oversight can reduce future performance.

The results further indicate that the interaction between inflation rate fluctuations and managerial ownership is not significant, while the interaction

between GDP growth and managerial ownership is significant. This implies that manager-shareholders can mitigate the negative impact of inflation fluctuations and leverage economic growth opportunities to enhance firm value. Capable managers with strategic plans can transform threats into opportunities, preserving or increasing firm value. These findings are consistent with the studies of Valipour et al. (2013), Abdi et al. (2017), Sandra Murati et al. (2003), Zamir (2021), and Gol Khandan (2017), which demonstrate a positive relationship between managerial ownership and firm value.

The third hypothesis examined the interaction of investment growth with economic fluctuations. The interaction between investment growth and inflation fluctuations is not significant, while the interaction between investment growth and GDP growth is positive and significant. Investment growth, reflecting changes in tangible fixed assets, is a crucial determinant of future firm performance and shareholder returns. Firms with higher investment growth are more likely to generate future profits, thereby increasing their market value. When investment growth aligns with GDP growth, the combined effect enhances firm value in the capital market. These findings are consistent with Yeganeh and Tavakolnia (2021), Izadinia and Azimi Dastgerdi (2014), and Maham and Heidari (2014), who emphasized that investment in fixed assets promotes firm value.

The fourth hypothesis assessed the interaction of financial leverage with economic fluctuations. The interaction between leverage and inflation rate fluctuations has a negative and significant effect on firm value, while the interaction between leverage and GDP growth is not significant. Financial leverage, the ratio of total liabilities to total assets, measures financial risk and fixed financial obligations. Although debt financing can be cost-effective for long-term projects, excessive leverage increases financial risk and reduces flexibility. Firm credibility and market value are highly influenced by capital structure, making leverage a key determinant of firm valuation. The negative effect of the interaction between inflation fluctuations and leverage suggests that high debt magnifies the adverse impact of inflation on firm value. These results align with the findings of Nazemi and Taftian (2014) and Aligholi (2018), who reported a significant relationship between financial leverage and firm value.

8. Practical Research Suggestions

Based on the results of the first hypothesis, it is suggested that the government, by implementing codified and stable economic plans, can help stabilize corporate performance through effective control of the inflation rate. Uncontrolled inflation may lead to the unfair distribution of wealth, unsupported incomes in certain sectors, and the destruction of some jobs. Therefore, maintaining inflationary stability can significantly support firms in achieving sustainable performance.

According to the findings of the second hypothesis, to reduce conflicts of interest between owners and managers, firm owners should consider selecting managers from among the shareholders or providing managers with equity participation as a reward. This approach aligns managerial interests with those of the firm and all stakeholders. Additionally, employing capable and skilled managers can enhance firm value through their expertise and by establishing systematic programs to mitigate the effects of economic fluctuations.

Based on the results of the third hypothesis, it is recommended that firms strategically invest in fixed assets to maximize investment opportunities. Such investments can also serve as collateral, providing security to compensate for any debt obligations.

Regarding the fourth hypothesis, firms are advised to maintain a permissible level of financial leverage. While external financing can improve liquidity and create investment opportunities, excessive leverage may expose the firm to significant risks during financial crises. Therefore, maintaining a balanced leverage level is crucial.

Investors are recommended to carefully examine corporate financial statements and evaluate the firm's value in relation to market volatility and economic fluctuations. Such assessments enable investors to gauge corporate and managerial performance and make informed investment decisions.

Finally, it is suggested that the Securities Exchange Organization provide necessary training to investors on investment concepts and regulations, as well as the impact of macroeconomic variables—such as exchange rates and inflation—on firm growth. This training can help small shareholders achieve higher investment returns while promoting more informed decision-making.

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Investigating the Relationship between Social Responsibility and Firm Performance: The Moderating Effect of Financial Leverage

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Abstract

Objectives: This study aims to examine the relationship between corporate social responsibility (CSR) and firm performance, focusing on the moderating effect of financial leverage among firms listed on the Tehran Stock Exchange (TSE). CSR is viewed as a strategic managerial decision through which organizations address social and environmental issues to generate a positive impact beyond their boundaries.

Methodology/Design/Approach: The study is applied in nature and adopts a causal (ex post facto) correlational design. The statistical population includes all firms listed on the TSE, from which 134 firms were selected using the systematic elimination sampling method. The research spans ten years from 2015 to 2024. The study employed multiple regression analysis to test the proposed hypotheses.

Findings: The results indicate a direct and significant relationship between CSR and financial performance. Moreover, financial leverage moderates this relationship, suggesting that higher debt levels can weaken or even reverse the positive impact of CSR on firm performance. Thus, while CSR contributes to enhanced firm performance, excessive leverage increases financial risk and alters this positive association.

Innovation: This study contributes to the growing body of literature on CSR by providing empirical evidence from an emerging market context. It highlights how financial leverage—representing a firm's financial risk—can shape the effectiveness of CSR in driving financial outcomes. The findings offer practical insights for managers and policymakers seeking to balance social commitments with sound financial strategies to ensure sustainable performance.

Keywords: Corporate Performance, Social Responsibility, Financial Leverage, Corporate Financing.

1. Introduction

The existence of strong and efficient financial markets, along with active and well-functioning financial institutions, is a key determinant of a country's economic growth and development. The primary objective of firms is to achieve optimal financial performance, making it crucial to examine the factors that can influence corporate performance. One such factor is corporate social responsibility (CSR). CSR refers to the alignment between an organization's activities and values in a way that reflects the interests of all stakeholders, including shareholders, customers, employees, investors, and the public, within the firm's policies and performance (Nikkar et al., 2017).

Social responsibility encompasses ethical considerations regarding a firm's behavior and decision-making in areas such as human resource management, environmental protection, occupational health, social relations, and interactions with suppliers and customers. Engaging in CSR activities not only enhances shareholder satisfaction but also positively affects the firm's reputation (Khajavi et al., 2011). Firms have an ethical obligation to create safe work environments, prevent environmental pollution, and produce healthy products. However, implementing such initiatives involves costs, and not all firms are willing to bear these voluntarily.

In contexts where CSR practices and their disclosure serve as criteria for firm accreditation and stakeholder satisfaction, firms that underperform in this area may struggle to attract capital. Conversely, firms that excel in CSR can enhance their credibility, improve stakeholder perception, attract new investment, expand production, and ultimately achieve higher profits and better financial performance.

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Financial leverage, which indicates the proportion of long-term debt used in capital formation, can influence a firm's ability to meet future obligations. Debt financing is often the most accessible form of investment funding, making leverage levels critical. Its interaction with other factors, such as CSR, can significantly affect firm performance. Given the inconclusive findings and diverse perspectives in the literature regarding the effect of financial leverage on the relationship between CSR and corporate performance, addressing this research gap highlights the necessity of the present study.

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2. Theoretical Foundations

Performance, in general, refers to the state or quality of executing tasks. Financial performance of a firm indicates how effectively the firm utilizes its assets to generate revenue. It is also used as a general measure to assess a firm's financial health over a specific period, and evaluating financial performance reflects the extent to which the firm has achieved the objectives outlined in its plans (Wahba & Elsayed, 2015). Financial performance encompasses shareholder returns, customer service, social responsibility (e.g., corporate citizenship, community engagement), and employee stewardship—the organization itself does nothing; rather, its managers perform assigned tasks, and the aggregation of these tasks constitutes organizational performance. Financial performance serves as an objective metric showing the degree to which an organization has used its assets to produce income (Golmohammadi et al., 2016). It is one of the most important indicators for evaluating a firm's overall performance and the achievement of predetermined goals. Financial ratios are commonly used to assess financial performance, providing shareholders with insights derived from a firm's financial statements (Dastgir et al., 2014).

Several factors can influence corporate financial performance, among which corporate social responsibility (CSR) has received considerable attention in recent years (Wafa & Kabore, 2023). Conceptually, CSR faces challenges similar to defining social responsibility itself. The multiplicity of methods and dimensions of this complex concept makes it difficult to provide an objective measure of its components, which are largely subjective and often assessed based on ethical or social criteria. The initial definition of CSR dates back to the 1950s, encompassing three elements: firm, community, and responsibility (Dakhili & Ansi, 2012). Previous research defines CSR as the process of creating wealth, enhancing a firm's competitive advantage, and maximizing societal value, emphasizing the firm's commitment to employees, customers, the local community, and society at large, while contributing to sustainable economic development (Fakhari et al., 2016).

CSR reflects the alignment between organizational activities and values, ensuring that the interests of all stakeholders—including shareholders, customers, employees, investors, and the public—are integrated into corporate policies and performance, often independently of the firm's direct profit motives (Nikkar et al., 2017). Over the past three decades, CSR and corporate social initiatives have received extensive attention, particularly in management and organizational economics literature (David et al., 2019). The benefits of CSR should be viewed dynamically, as it opens avenues for firms to enhance performance (Tesina et al., 2020). Hence, CSR is considered a strategic decision, enabling organizations to address social and environmental challenges and positively impact external stakeholders (Masoud & Vi, 2021).

Engagement in CSR raises key questions: How do social initiatives enhance financial performance? How should firms balance financial interests with public welfare and environmental protection? Does CSR generate costs, or can it improve financial performance? (Wafa & Kabore, 2023). The relationship between financial and non-financial performance remains debated, with advocates on both sides. Classical perspectives, such as Avisheh et al. (2020), argue that corporate responsibility is primarily to increase shareholder wealth, and social activities are the duty of individuals or society, not business organizations. This view suggests a negative or inconclusive relationship between CSR and financial performance, as social initiatives may incur costs that reduce competitiveness and profitability (Cao et al., 2018).

From an agency theory perspective, corporate social participation may reflect agency problems, where managers pursue personal interests through social investments or enhance their reputation at shareholders' expense. Involvement in social activities may lead to a net resource loss. Conversely, other scholars emphasize CSR's positive impact, arguing

that by meeting stakeholder expectations—including shareholders, employees, customers, suppliers, and the community—CSR can improve corporate reputation, ultimately enhancing financial performance and profits (Agudelo et al., 2019; Cao et al., 2019). Accordingly, many studies affirm that a firm's success depends on its relationships with stakeholders as a whole (Jamil Rashid, 2023).

Based on these theoretical foundations, the first hypothesis of the present study is as follows:

H1: There is a significant relationship between social responsibility and firm performance.

Leverage refers to the amount of debt used in a firm's capital structure. Financial leverage is a measure of financial risk that arises from fixed financial costs. The percentage of financial leverage is the ratio of the book value of the total liabilities to the book value of the total assets. From the point of view of the cost of capital, the cheapest sources of financing for the firm are long-term debts, and the financing of the desired financial resources for the implementation of the firm's plans or to reform the firm's financial structure can be from debt or equity (Dolo & Vaniki, 2018). Excessive use of equity increases the expected returns of shareholders and increases the firm's financing costs, and on the other hand, excessive use of debt, both short-term and long-term, increases the firm's financial risk and reduces its financial flexibility (Arab et al., 2021). Therefore, considering the importance of financial leverage and the amount of the firm's debt in financing, it can be said that financial leverage can affect the relationship between social responsibility and financial performance (Vafa & Kaboor, 2023). Therefore, the second hypothesis of the research is rough:

H2: Financial leverage affects the relationship between social responsibility and firm performance.

3. Research Background

Jin and Drozdenko (2010) studied the relationship between ethics, social responsibility, and organizational performance. They concluded that managers of organized firms exhibit higher levels of social responsibility and ethical behavior compared to those in machine-based organizations.

Wang and Sarkis (2017) investigated the effect of social responsibility disclosure on firms' financial performance, using return on assets and the Q ratio as performance indicators. Their findings indicated that social responsibility disclosure positively affects both financial performance measures.

Wuttichindanon (2017) examined social responsibility disclosure among 451 firms listed on the Thailand Stock Exchange in 2014. The results showed that state-owned enterprises and large corporations were more inclined to report sustainability information.

Shahbaz Sheikh (2018) analyzed the effect of social responsibility disclosure on optimal capital structure, considering the moderating role of product market competition. He found that social responsibility disclosure negatively affects firm leverage only under high competition; under low competition, no significant effect was observed.

David et al. (2019), in a study of 320 Japanese firms between 2008 and 2016, examined the relationship between corporate social responsibility (CSR) and innovation capacity. Their findings revealed a nonlinear relationship: CSR enhances firms' innovation capacity, which ultimately improves operational and financial performance.

Tasnia et al. (2020) investigated the impact of taxes on the relationship between social responsibility and stock price volatility using data from 37 U.S. banks (2013–2017). They concluded that CSR legitimizes banks' activities but can increase costs, leading to stock price fluctuations. Higher taxation amplifies this effect, prompting shareholders to reconsider investments, and the interaction between taxes and CSR positively influences stock volatility.

Masoud and Vij (2021) analyzed 310 annual reports from 95 state-owned enterprises (2010–2018) to examine factors affecting CSR disclosure. Content analysis indicated that disclosures were mostly descriptive, focusing on charity and donations. Regression analysis showed that firm size, age, type of

services, and manager characteristics were positively and significantly related to CSR disclosure.

Eesa et al. (2021) explored the role of CSR disclosure in enhancing the transparency of sustainability reporting. They concluded that CSR disclosure contributes to higher transparency in accounting information.

Wafa Kabore (2023) found an inverse relationship between CSR and financial performance, with financial leverage moderating this relationship.

Rahman et al. (2024) examined CSR and green financing behavior, showing that CSR positively influences green finance adoption and promotes sustainable tourism. Tax incentives and subsidies encourage firms to participate more in green finance.

Odo et al. (2024) reviewed ethical supply chain management, highlighting the balance between profit, CSR, and environmental monitoring. They emphasized that integrating ethical practices strengthens sustainability, competitiveness, and shareholder trust.

Fakhari et al. (2016) found that CSR disclosure improves investment efficiency among 90 active firms listed on the Tehran Stock Exchange between 2009 and 2014.

Namazi and Moghimi (2018) studied innovation and CSR as moderators of financial performance in various industries on the Tehran Stock Exchange. They found that CSR significantly enhances financial performance, particularly in the mineral, pharmaceutical, chemical, and plastic industries.

Kordestani et al. (2018) showed that CSR disclosure positively affects return on assets, earnings per share, and economic value added, while reducing the cost of capital. No significant effect was found on market value added or stock return rates.

Ghayur et al. (2019) examined CSR, ethical reputation, and brand equity, highlighting the mediating role of customer trust. CSR positively impacts ethical reputation and brand equity, with trust strengthening this relationship.

Jamei and Najafi (2019) investigated CSR disclosure and audit fees, concluding that limited CSR disclosure reduces audit risk and fees due to the lack of specific legal requirements for CSR.

Mehravar and Kargar (2020) studied the effect of information technology on the relationship between innovation strategies and CSR among Tehran Stock Exchange firms. They found that IT strengthens the link between R&D strategy and CSR, but not between management practices or technology strategies and CSR.

Hassas Yeganeh et al. (2020) analyzed CSR reporting and corporate value, concluding that CSR reports positively correlate with firm value, reflecting their economic, social, ethical, and environmental aspects.

Mohammadi and Karimi (2021) found that macroeconomic variables such as inflation, exchange rate, and interest rate significantly affect stock price synchronization, while CSR measures do not.

Mirmohammadi Shaktaei and Shahriari Rad (2023) examined financial leverage and investment decisions, finding that leverage negatively affects investment, while information asymmetry positively influences this relationship.

Hekmat and Keshavarz Mirzamohammadi (2023) investigated profitability, CSR, and financial risk. They found that management fees of investment funds influence profitability more than other variables, while CSR did not show a significant effect on profitability, fees, or financial risk in Iranian portfolio management firms, though foreign comparisons suggest CSR can positively impact profitability.

4. Research Methodology

The present research is of an applied nature and also methodological, as it investigates events after their occurrence and is of the causal and post-event correlation type. The statistical population of this study comprises firms listed on the Tehran Stock Exchange (TSE), and the study period spans from 2015 to 2024. Firms were selected through systematic elimination to form the final sample.

The selection criteria included the following: the firms' financial year should end in March and remain

unchanged during the 10-year review period; the firms must disclose the information required for the research, and this information should be publicly available. Additionally, subsidiaries of banks, insurance firms, and investment firms were excluded from the sample. By applying these criteria, 134 firms were included in the final sample. Considering the 10 years, the total observations amounted to 1,340 firm-years.

Since the dependent variable of this research is qualitative (coded 0 and 1), the most appropriate regression method is logistic regression, which does not require preliminary tests typically necessary for linear regression, such as stationarity, Chow test, Hausman test, heteroskedasticity, or serial correlation tests. After performing the logistic regression, the model's prediction accuracy and the Hausman-Lemeshow test are reported to evaluate the model fit (Aflatooni, 2017).

5. Research Regression Models

Regression models based on the research of Sahraoui Kabore (2023) are presented as follows:

5.1. Regression Model of Testing the First Research Hypothesis

$$ROA_{it} = \alpha_0 + \alpha_1 CSR_{it} + \alpha_2 Growth_{it} + \alpha_3 MTB_{it} + \alpha_4 Age_{it} + \alpha_5 SIZE_{it} + \varepsilon_{it}$$

5.2. Regression Model of Testing the Second Research Hypothesis

$$ROA_{it} = \alpha_0 + \alpha_1 CSR_{it} + \alpha_2 LEV_{it} + \alpha_3 (CSR_{it} \times LEV_{it}) + \alpha_4 Growth_{it} + \alpha_5 MTB_{it} + \alpha_6 Age_{it} + \alpha_7 SIZE_{it} + \varepsilon_{it}$$

5.3. Operational Definitions of Research Variables

5.3.1. Dependent Variable: Corporate Performance (ROA)

Following the research of Vafa and Kabur (2023), financial performance is used to measure the firm's performance, which is derived from *the ratio of net profit to total assets of the firm.*

5.3.2. Independent Variable: Corporate Social Responsibility (CSR)

Corporate social responsibility (CSR) has been considered as an independent research variable. To measure CSR, the criterion developed by the KLD Institute was used, following the methodology of Mishra et al. (2011), Hajiha & Sarfaraz (2014), and Namazi & Moghimi (2018).

The KLD Institute annually ranks organizations based on social and environmental criteria. CSR is divided into four dimensions: social participation, employee relations, environment, and product characteristics, with each dimension having its own strengths and weaknesses. The measurement method is as follows: if a firm discloses its strengths and weaknesses, each is assigned a score of one (1). By separating weaknesses from their respective strengths, a net score for each dimension is calculated. Finally, the overall CSR score for the firm is obtained by summing the scores across all four dimensions (Namazi & Moghimi, 2018).

The following table presents the indicators related to the dimensions of CSR, and the necessary information has been extracted from the firms' board of directors' reports. The general model is as follows:

CSR-S= CSR-COM-S + CSR-EMP-S + CSR-ENV-S + CSR-PRO-S

In relation to the above:
CSR-S: Social Responsibility Score
CSR-COM-S: Social Participation Disclosure Score calculated from the difference of its specific strengths and weaknesses as follows:
CSR-COM-S = ∑Strengths - ∑Concerns
CSR-EMP-S: Employee Relationship Disclosure Score
CSR-ENV-S: Environmental Disclosure Score
CSR-PRO-S: Product Feature Disclosure Score
All the above-mentioned cases are obtained through the above relationship (Hajiha & Sarfaraz, 2014).

Table (2): Dimensions of Social Responsibility with Their Strengths and Weaknesses

Dimensions of Responsibility	Strengths	Weaknesses
Social Participation	Charitable Giving and Innovative Contributions (Assistance to Non-Profit Organizations and Participation in Public Initiatives)	Negative economic impact (negative impact on quality of life, factory closure) and non-payment of taxes
Employee Relations	Sharing cash benefits and retirement benefits	Poor health and safety, and a reduced workforce
Environment	Clean energy (using less fuel or pollution) and controlling air pollution, and reducing greenhouse gases	Hazardous waste generation and payment of fines due to the role of waste management
Product Feature	Product Quality & Product Safety	Paying a penalty for product safety and paying a penalty for negative advertising

5.3.3. Moderating Variable: Financial Leverage (LEV)

If the direction or strength of the relationship between the independent and dependent variables changes significantly at different levels of a third variable, this third variable is called a **moderating variable**. In this context, a moderating variable in a correlation analysis framework is considered as a third variable that significantly alters the zero-order correlation between the independent and dependent variables (Souri, 2011). **Financial leverage** is calculated as the ratio of total liabilities to total assets of the firm (Vafa & Kaboor, 2023).

5.3.4. Control variables of the research

Following the research of Vafa and Kabur (2023), the following control variables are included in the model:

- **Sales Growth:** Calculated as the difference between current-period sales revenue and the previous period's sales, divided by the sales of the previous period.
- **Firm Age:** Measured as the natural logarithm of the difference between the year of the firm's establishment and the year under consideration.
- **Firm Growth (MTB):** Defined as the ratio of market capitalization to the book value of shareholders' equity.
- **Firm Size (SIZE):** Measured as the natural logarithm of total assets.

Descriptive Findings

The main measure of central tendency is the mean, which represents the equilibrium point and center of gravity of the distribution. It serves as a good indicator of the centrality of the data. For example, the mean value for the leverage variable is 0.52, indicating that most of the data are concentrated around this point.

Dispersion parameters are used to assess the degree of variability among observations or their spread relative to the mean. One of the most important measures of dispersion is the standard deviation. In this study, the standard deviation is 4.12 for firm growth and 0.15 for firm performance, indicating that these two variables exhibit the highest and lowest variability, respectively. The minimum and maximum values further illustrate the range of each variable.

According to the results obtained in Table 4, it can be seen that the significance level of the Jarque-Bera test for the remaining sentences for the research model is more than 5%, which indicates that the model disruption sentences are normal.

The results in Table 5 show that the significance level of the test in the research model is less than 5% and indicate the existence of variance heterogeneity in the disturbance sentences, which has been solved in the final estimation of the models by implementing the GLS command and also using the facilities of the standard powerful tool in Ives 12 software.

According to the results of Table 6, it can be seen that the significance level of the serial autocorrelation test in the research model with a significance level of less than 5% indicates the existence of serial

autocorrelation in the model that has been identified in the final model (Aflatoni, 2018).

According to the results obtained in Table 7, it can be seen that the significance level of the variables in the validity test is less than 5% and indicating the reliability of the variables.

According to the results obtained in Table 8, it can be seen that the significance level of the Chow test for the research hypothesis test model is less than 5% and indicates the acceptance of the panel data model that needs to be presented to ensure the Hausman test, which is presented below (Platouni, 2018).

According to the results obtained in Table 9, it can be seen that the significance level of the test in the test model of the research hypothesis is less than 5% and indicating the acceptance of fixed effects.

Table (3): Descriptive Statistics of Research Variables

Variable Name	Mean	High	Low	Stdev
ROA	0.15	0.56	-0.18	0.15
CSR	2.49	7.00	1.00	1.37
LEV	0.52	1.05	0.094	0.21
Growth	0.40	1.80	-0.38	0.46
Age	3.67	4.18	2.83	0.34
SIZE	15.16	19.9	11.9	1.65
MTB	4.95	15.3	1.02	4.12

Table 4. Jarque–Bera Test Results for Model Residuals

Hypothesis (model)	Test Statistics	Significance level
The first research model	0.96	0.61
The second research model	0.32	0.85

Table 5: Results of Variance Variance Test

Test Model	Test Statistics	Significance level
The first research model	162.12	0.0000
The second research model	215.09	0.0000

Table (6): Results of the Serial Autocorrelation Test

Test Model	Test Statistics	Significance level
The first research model	460.3	0.0000
The second research model	395.4	0.0000

Table 7: Durability Test (Levin, Lin, and Chu) Research Variables

Variable Name	Test Statistics	Sig
ROA	-13.9500	0.0000
CSR	-22.7644	0.0000
LEV	-13.6236	0.0000
Growth	-12.9506	0.0000
Age	-5.03631	0.0000
SIZE	-7.22183	0.0000
MTB	-15.5354	0.0000

Table 8: F. Limmer Test

Test Model	Test Statistics	Sig
The first research model	11.001	0.0000
The second research model	8.337	0.0000

Table 9: Hausman Test

Test Model	Test Statistics	Sig
The first research model	44.993	0.0000
The second research model	36.774	0.0000

Table 10: The result of the first hypothesis test of the research

Variables	Coef	Stdev	T Statistic	Sig	VIF
CSR	0.010	0.002	4.20	0.0000	1.00
Growth	0.074	0.008	8.45	0.0000	1.18
MTB	0.002	0.0008	2.92	0.003	1.13
AGE	0.36	0.18	1.97	0.048	1.01
SIZE	0.023	0.008	2.71	0.006	1.07
AR(1)	0.37	0.15	2.46	0.013	-
C	-1.47	0.62	-2.37	0.017	-
Determination Coefficient	0.82				
Watson Camera	2.09				
Statistic F	27.961				
Significance level	0.0000				

The results presented in Table 10 indicate that social responsibility has a direct and positive relationship with the firm's financial performance, with a coefficient of 0.010 and a significance level below 5% (0.000). Therefore, the first hypothesis of the research is accepted at the 5% error level.

All control variables—including sales growth, firm growth, firm age, and firm size—also exhibit a significant relationship with the dependent variable, with significance levels below 5%. The coefficient of determination (R^2) is 0.82, indicating that the independent and control variables together explain 82% of the variation in the dependent variable, demonstrating high validity for the research model.

Additionally, the Durbin-Watson statistic is 2.09, which falls within the acceptable range of 1.50 to 2.50, suggesting that there is no severe autocorrelation among the residuals. The collinearity statistics are below 5, indicating the absence of strong multicollinearity among the research variables. Finally, the F-statistic is significant at a level below 5%, confirming that the research model has a good overall fit.

The results presented in Table 11 indicate that the interaction between social responsibility and financial leverage has a negative effect on the firm's financial performance, with a coefficient of -0.024 and a significance level below 5% (0.0008). Given the negative coefficient, the influence is inverse. Therefore, the second hypothesis of the study is supported at the 5% significance level.

All control variables, except firm size, exhibit a significant relationship with their respective dependent variables at a significance level below 5%. The coefficient of determination (R^2) is 86%, indicating that the independent and control variables in the model

collectively explain 86% of the variation in the dependent variable, reflecting the high validity of the research model in this context.

Additionally, the Durbin-Watson statistic is 2.09, which falls within the acceptable range of 1.50 to 2.50, suggesting no strong autocorrelation among the regression residuals. Furthermore, multicollinearity tests indicate that there is no severe correlation between the independent variables. Finally, the F-statistic, with a significance level below 5%, confirms that the research model has a good overall fit.

Table 11: The result of the second hypothesis test of the research

Variables	Coef	Stdev	T Statistic	Sig	VIF
CSR	0.002	0.004	0.54	0.58	1.01
LEV	-0.50	0.033	-15.2	0.0000	1.36
CSR× LEV	-0.024	0.007	-3.36	0.0008	1.37
Growth	0.060	0.007	7.64	0.0000	1.27
MTB	0.003	0.0008	4.90	0.0000	1.19
AGE	0.43	0.15	2.85	0.004	1.01
SIZE	0.001	0.007	0.16	0.86	1.17
AR(1)	0.29	0.14	1.98	0.047	-
C	-1.13	0.49	-2.30	0.021	-
Determination Coefficient	0.86				
Watson Camera	2.098				
Statistic F	37.215				
Significance level	0.0000				

6. Discussion and results of the research

As mentioned above, the main purpose of this study is to investigate the relationship between corporate social responsibility (CSR) and firm performance, with a focus on the moderating effect of financial leverage. The benefits of CSR for firms should be understood dynamically, as it opens opportunities for enhancing performance. Accordingly, CSR is considered a strategic decision through which committed organizations can address social and environmental issues while positively impacting stakeholders outside the organization. Today, CSR has become an essential practice that can also improve financial performance.

Statistical results indicate a direct relationship between CSR and the financial performance of firms. Specifically, as the level of managerial commitment to CSR increases, the financial performance of the firm improves. The relationship between financial and non-financial performance, however, remains debated among researchers. Classical proponents, such as Avisha et al. (2020), argue that a corporation's primary responsibility is to increase shareholder wealth and that social activities are the responsibility of individuals or society, not business organizations. In contrast, Latapi Agudelo et al. (2019) emphasize the positive impact of CSR on financial performance, noting that meeting the expectations of stakeholders—including shareholders, environmental advocates, employees, customers, suppliers, and the community—enhances the firm's reputation, which in turn leads to higher net financial performance and increased profits. Similarly, Jameel & Rashid (2023), Cao et al. (2018), and Parandin et al. (2023) assert that a firm’s success depends on its relationships with all stakeholders. The findings of the present study align with these results, supporting the positive influence of CSR on firm performance.

Financial leverage reflects the amount of debt utilized within a firm’s capital structure and represents

a measure of financial risk arising from fixed financial obligations. The leverage ratio is calculated as the book value of total liabilities divided by the book value of total assets, from the perspective of the firm's cost of capital. Firms may adjust their capital structure by raising funds through either debt or equity. Excessive reliance on equity increases the expected returns of shareholders and raises the firm's financing costs, whereas excessive debt—whether short-term or long-term—increases financial risk and reduces financial flexibility.

The statistical results further reveal that the interaction between financial leverage and CSR can have a negative effect on firm performance. In other words, as corporate debt levels increase, the positive impact of CSR on performance diminishes. Introducing financial leverage into the relationship between CSR and firm performance can even transform this positive association into a negative one (2023).

7. Practical Suggestions

According to the test of the first hypothesis, corporate managers can strengthen their positions as senior executives by enhancing the social performance dimensions of their firms. In organizations with high social engagement, financing conditions are also improved, which, in turn, can lead to enhanced overall firm performance.

Based on the second hypothesis test, firms with low leverage are advised to actively utilize their credit and pursue targeted debt financing, such as green bonds or sustainability-related loans. Issuing bonds for financing environmental or social projects—like developing sustainable products or installing pollution control equipment—typically carries lower interest rates than conventional bonds because capital is attracted to ESG-focused initiatives. Using debt for social responsibility, when the firm can manage it efficiently, signals to the market a strong commitment to sustainability without increasing bankruptcy risk. This positive interaction can enhance stock value, improve credit ratings, and ultimately strengthen financial performance.

Investors can make more informed and confident decisions by evaluating a firm's social initiatives and reviewing disclosed programs related to debt financing.

Furthermore, regulatory bodies such as the Ministry of Silence and the Stock Exchange Organization can encourage firms to enhance their social performance by recognizing and rewarding firms that actively engage in social initiatives. They can also promote social responsibility through training programs, practical guidance, and resources, thereby supporting organizations in expanding their social impact and benefiting both stakeholders and society at large.

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Unconditional Conservatism and Capital Cost: Explaining the Role of Corporate Social Responsibility

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Abstract

Objectives: This study aims to investigate the effect of unconditional conservatism on capital cost, considering the role of corporate social responsibility. The research seeks to understand how these factors interact and influence the overall cost of capital for firms.

Methodology/Design/Approach: To achieve this purpose, the modified model by Givoly and Hayn (2000) was employed to calculate unconditional conservatism, following the methodologies of previous studies such as Krishnan and Viswanathan (2008) and Ahmed and Dolman (2007). This model emphasizes the estimation of unconstrained conservatism based on standardized accruals relative to total assets (TA). The criteria used to measure corporate social responsibility were adapted from Anis and Utah (2016). Data were collected from a sample of 102 firms listed on the Tehran Stock Exchange over five years from 2018 to 2022. Multivariate regression analysis of panel data was utilized for data analysis.

Findings: The results of the hypothesis testing revealed that social responsibility has a negative and significant effect on corporate capital cost, while unconditional conservatism does not exhibit a significant effect on the cost of capital. Additionally, a positive and significant relationship was found between unconditional conservatism and social responsibility.

Innovation: This research contributes to the existing literature by exploring the interplay between unconditional conservatism, corporate social responsibility, and capital costs within the context of Iranian firms. It highlights the importance of understanding how social responsibility initiatives can influence financial metrics, thereby providing practical insights for managers aiming to optimize capital costs through enhanced corporate governance practices.

Keywords: Unconstrained Conservatism, Cost of Capital, Corporate Social Responsibility.

1. Introduction

Basu (1997) defines accounting conservatism as "the tendency to require a higher degree of verification to recognize good news as gains than to recognize bad news as losses," emphasizing asymmetry in the recognition and verification of financial outcomes. This asymmetry implies that losses are recognized more readily than gains, reflecting a cautious approach to financial reporting. The practical implication of conservatism is that financial statement information becomes more prudent, which can influence the usefulness of financial statements in capital markets. Specifically, conservatism affects the relevance of financial information for investors attempting to assess a firm's fundamental value, as overly conservative reporting may delay the recognition of gains while highlighting losses, thereby affecting stock prices and investment decisions (Remco Polman, 2007; Watts, 2003).

Accounting conservatism is typically distinguished into conditional and unconditional forms. Conditional conservatism, or asymmetric timeliness, recognizes losses promptly when adverse events occur but defers the recognition of gains until they are realized. This approach is commonly applied through accounting rules such as the lower-of-cost-or-market method for inventories or immediate expensing of tangible asset repairs. Unconditional conservatism, also referred to as balance sheet conservatism, emphasizes a systematic understatement of net asset values regardless of current economic events, ensuring that book values remain prudently conservative over time. Both forms of conservatism aim to reduce the risk of overstatement in financial reporting, though they operate through different mechanisms (Hashemi et al., 2011).

The degree of conservatism in financial reporting has implications for a firm's cost of capital, defined as the discount rate used by investors to convert expected future earnings into present value. Investors, including both creditors and shareholders, require returns commensurate with the risk associated with their investment (Khani, 2012). Firms that adopt conservative accounting practices may reduce informational risk, improve transparency, and signal prudence to investors, thereby lowering the perceived risk of investment and ultimately reducing the cost of capital. Conversely, excessive conservatism may limit the timeliness of gain recognition, potentially affecting investment valuation and firm attractiveness in capital markets. Additionally, corporate social activities and responsible behavior can mitigate societal friction, reduce operational and reputational risks, and further decrease the firm's cost of capital, enhancing overall corporate value (Hajiha et al., 2014).

In sum, accounting conservatism, whether conditional or unconditional, serves as a critical mechanism for risk mitigation in financial reporting. By influencing investors' perceptions and the firm's cost of capital, conservatism interacts with corporate strategies, including social responsibility initiatives, to enhance transparency, reduce financial and operational risk, and support sustainable value creation.

2. Literature Review

Uncertainty and ambiguity are inherent in all aspects of human decision-making, including financial reporting, where ambiguities arise in recognizing and measuring economic events such as debt collection, asset-based income generation, and contingent liabilities. Accounting conservatism, or the prudence principle, addresses these uncertainties by requiring that potential losses be recognized promptly while gains are deferred until realized, providing more reliable and cautious financial information (Setayesh & Jamalian, 2010; Schroeder et al., 2008). Watts (2003) identifies four economic factors shaping conservatism: contracting, litigation, regulation, and taxation. The contracting view posits that conservatism mitigates moral hazard from asymmetric information between managers and stakeholders. By delaying the recognition of gains and emphasizing verifiability, conservatism limits opportunistic managerial behavior, aligns shareholder expectations, and reduces the cost of equity capital (Pourzamani & Mansouri, 2014). Conservatism can be conditional (news-dependent, ex

post) or unconditional (balance-sheet-oriented, ex ante). Conditional conservatism reflects asymmetric recognition of gains and losses based on observable economic events, whereas unconditional conservatism emphasizes prudence regardless of news, such as accelerated depreciation or immediate expensing of R&D costs (Basu, 2005; Qing, 2007; Ise, 2002). Evidence shows that unconditional conservatism enhances financial reporting credibility, facilitating credit access and reducing capital costs (Ishida, 2014; Kenneth, 2022; Zahir, 2019). Conditional conservatism can serve as a credibility mechanism for managers of R&D-intensive firms when forecasting earnings under uncertainty (Kanan, 2023).

Corporate social responsibility (CSR) represents an organization's commitment to ethical principles, environmental stewardship, and social well-being alongside economic objectives (McKenney, 2008; Tucker, 2009). CSR practices influence stakeholders' perceptions, impacting corporate value and financial policies. Research demonstrates that firms with stronger CSR engagement experience lower capital costs, reduced financial risk, and higher firm value (Harjoto & Lakshmana, 2016; Larosa et al., 2017; Lee & Liu, 2017). Studies also examine the interaction between CSR and conservatism. KANGARLOUEI et al. (2010) found a significant positive relationship between CSR and conservatism in firms listed on the Tehran Stock Exchange, indicating that ethical behavior aligns with prudent financial reporting. Hashemi et al. (2011) showed that conditional conservatism inversely relates to the cost of equity capital, suggesting that higher conservatism reduces financing costs. Similarly, corporate disclosure of CSR information enhances transparency, providing decision-useful information for investors (Hajiha et al., 2014; Pourali, 2014; Arab Salehi et al., 2013).

Empirical studies confirm the influence of conservatism and CSR on various financial and operational outcomes. Zalghi and Bayat (2016) observed that both conditional and unconditional conservatism reduce systematic risk, highlighting the stabilizing role of reliable financial reporting. Keravat (2012) found that conservative accounting reduces managers' inclination toward high-risk investments. Ton (2013) reported increased conservatism when lenders are actively involved in financing decisions. Saros and Tomayo (2013) indicated that CSR positively affects firm value, especially in companies with higher public or customer awareness. Badavar Nahandi et al. (2014) and Moradi et al. (2014) confirmed that CSR enhances performance and market value by optimizing capital allocation and working capital strategies. Hajiha et al. (2014) and Lee & Liu (2017) concluded that improved CSR disclosure reduces equity and debt costs, particularly for larger or environmentally sensitive firms. In Iran, Mohammadi (2012) and Pourali (2014) highlighted limited CSR implementation due to insufficient public awareness and corporate knowledge, while Arab Salehi et al. (2013) emphasized the positive relationship between CSR and financial performance in TSE-listed firms.

Studies also indicate that conservatism improves the credibility and quality of financial reporting, enhancing the willingness of banks and financial institutions to extend credit (Ishida, 2014). Hamdan (2012) reported that larger firms exhibit higher conservatism than smaller firms, while highly leveraged firms adopt more conservative practices. Research by Saros & Tomayo (2013) and Harjoto & Lakshmana (2016) suggests that CSR acts as a mechanism to control excessive risk-taking, balance stakeholder interests, and increase firm value. Zalghi and Bayat (2016) found a negative relationship between conservatism and systematic risk, supporting the role of reliable reporting in stabilizing firm operations. Arab Salehi et al. (2013), Pourali (2014), and Hajiha et al. (2014) collectively demonstrate that CSR disclosure and responsible corporate behavior reduce financing costs, enhance transparency, and strengthen investor confidence.

Overall, accounting conservatism and CSR function as complementary mechanisms that improve financial reporting reliability, reduce managerial opportunism, enhance stakeholder trust, and positively influence firm value and risk management.

Conservatism provides a safeguard against overstatement of earnings and assets, while CSR promotes ethical, social, and environmental accountability, collectively contributing to the long-term sustainability and credibility of firms.

3. Research Variables

3.1. Unconditional conservatism

The unconditional conservatism, known as news-dependent or ex post conservatism, refers to those accounting standards that reduce profit independently of current economic news. Under unconditional conservatism, the book value of net assets decreases below the expected value through predetermined accounting procedures (Kordestani, 2012). One of the non-conditional conservative estimation criteria is the Beaver and Ryan (2000) model. This model emphasizes the stock market value more. Versions of this model are considered in studies such as Lara et al. (2007) and Ahmad Dolman (2007). According to Asadi and Jalalian (2012), the following formula will be used to calculate non-conditional conservatism. (Izadinia, 2013).

$$\text{Unconditional conservatism} = \frac{\text{Book value of equity}}{\text{Market value of equity}} \times -1$$

3.2. Capital cost

Each company has its own risk and return. Each group of investors, such as holders of bonds, blue-chip stocks, and common stocks, seeks a rate of return that is appropriate for it. The cost of capital is defined as "the minimum return that a company should obtain to provide the desired returns for investors in the company." The following formula is used to calculate the cost of capital:

$$WACC = (Kb * (1-Tc) * D/V) + (KS * S/V)$$

WACC: The cost of capital of the company at time t
S: (equity (reflecting the equity by the end of the year
D: total debt
V: The value of the company, which is derived from the total value of debt and equity.
Kb: Loan Rate: Financial costs (from the income statement divided by total debt)
Tc: Tax Effect: Tax Costs (from the income statement divided by pre-tax earnings1).
KS: is the adjusted realized return, the capital provided by the shareholders (Valipour et al., 2011).

3.3. Corporate social responsibility

51 indicators are used based on corporate social responsibility disclosure to investigate the level of corporate social responsibility disclosure (Barzegar, 2013) and Anis and Atama (2016). These indicators have arisen in two social and environmental dimensions, each of which has a series of components. The content analysis of the annual report is made by the corporate board of directors to measure the percentage of corporate social responsibility disclosure. Thus, the number 1 is given if each of the proposed indicators is disclosed, and otherwise the number zero is given (Ernst Varnst, 1978; Abbott Wumansen, 1979; Anis and Utma, 2016), and then the percentage of disclosure of each social responsibility of companies is calculated.

3.4. Firm size

The bank size is measured by the total assessment of the bank's assets, and the importance of the bank size is due to its relationship with the ownership structure and access to stock capital. Bank access to stock capital can increase the bank's flexibility against bankruptcy costs; therefore, larger banks need fewer capital requirements due to easier access to capital markets and having more diverse portfolios. As a result, the capital adequacy ratio 2increases by

[1] Pretax earnings are a company's income after all operating expenses, including interest and depreciation, have been deducted from total sales or revenues, but before income taxes have been subtracted. ... Also known as pretax income or earnings before tax (EBT).

[2] Capital Adequacy Ratio (CAR), also known as Capital to Risk (Weighted) Assets Ratio (CRAR), is the ratio of a

increasing the bank size; therefore, there is a positive relationship between the bank size, including total assets, and the capital adequacy ratio.

3.5. Return on equity (ROE)3

This variable is a measure of the profitability of a company using the resources provided by shareholders. The net profit and average equity are used to calculate this ratio. This ratio can be used to calculate the bank's earnings per one rial of equity. In such a way that the profit after tax is divided by equity, and using the return on equity, the relationship between earnings and equity is determined. Long-term deposits, short-term deposits, and savings increase shareholders' wealth when the return on investment is more than the interest rate on deposits.

3.6. Return on assets 4(ROA)

The return on assets refers to effective management in relation to the use of assets in order to generate profit, which is calculated by dividing the annual profit by the total assets of the company. This ratio relates the ratio of operating profits to all resources managed by the bank. This ratio is considered one of the most important ratios to evaluate the efficiency and management ability, and it evaluates the net income generated by the use of all bank assets.

3.7. Financial leverage (LEV)

The financial leverage represents a percentage of the debts that are covered by capital. This variable is used by companies to increase returns on equity. Increasing the use of financial leverage increases the risk involved; therefore, higher capital requirements will be generated.

4. Research Hypotheses

Hypothesis 1: Unconditional conservatism has a significant positive effect on the corporate capital cost.
Hypothesis 2: Social responsibility has a significant negative effect on the corporate capital cost.
Hypothesis 3: Unconditional conservatism has a significant positive impact on corporate social responsibility.

5. Methodology

This study seeks to answer the question, "How does unconstrained conservatism affect capital cost by emphasizing the mediating role of social responsibility?" Therefore, the present research is considered an empirical study and is considered a descriptive study based on regression analysis in terms of data collection, although it is considered an applied study in terms of purpose.

The statistical population of the present study includes the companies listed on the Tehran Stock Exchange (TSE). From 2018 to 2022, the stock of these companies has been actively traded on the stock exchange. The limited sampling method was used. The criteria are as follows:

1) Before 2012, they were listed on the stock exchange and were active on the stock exchange until the end of 2016, and were not unprofitable.
2) To achieve comparable information, these companies have not changed financial periods during the period studied, and the end of their fiscal year is Esfand 29.
3) To achieve homogeneous information, they shouldn't be among the investment companies or financial intermediaries, including insurance and banks.
4) Their financial information should be available on the stock exchange site.

bank's capital to its risk. ... The enforcement of regulated levels of this ratio is intended to protect depositors and promote stability and efficiency of financial systems around the world.

[3] In corporate finance, the return on equity (ROE) is a measure of the profitability of a business in relation to the book value of shareholder equity, also known as net assets or assets minus liabilities. ROE is a measure of how well a company uses investments to generate earnings growth.

[4] The *return on assets* (*ROA*) shows the percentage of how profitable a company's assets are in generating revenue.

According to the limitations imposed and defined, 102 companies were selected as the final sample; therefore, the total data studied was 502 cases (year-company).
First, the library method (from books, specialized Persian journals, Latin papers, articles, and theses) was used for theoretical topics and relevant literature. Then the collected data were entered and classified in a spreadsheet, and EVIEWS software was used for econometric analysis and necessary estimates. Finally, the analysis was carried out using the common statistical indicators and the results of the estimation.
The regression analysis and correlation were used to test the research hypotheses. The F test, T test, determination coefficient, correlation coefficient, and Durbin Watson test were used to measure the significance of the patterns. The panel data method has been used due to the type of data and available statistical methods. Panel data covers the past trends of variables and ensures the dynamics of variables. The models used in this study are based on the base article.5 As follows:

$$COD_{it} = \beta_0 + \beta_1 CONSV_{it} + \beta_2 CSRD_{it} + \beta_3 EBIT_{it} + \beta_4 MBA_{it} + \beta_5 LEV_{it} + \beta_6 SIZE_{it} + \beta_7 ROA_{it} + \beta_8 ROE_{it} + \beta_9 AGE_{it} + \varepsilon_{it}$$

$$CSRD_{it} = \beta_0 + \beta_1 CONSV_{it} + \beta_2 EBIT_{it} + \beta_3 MBA_{it} + \beta_4 LEV_{it} + \beta_5 SIZE_{it} + \beta_6 ROA_{it} + \beta_7 ROE_{it} + \beta_8 AGE_{it} + \varepsilon_{it}$$

6. Results

In order to perform the tests and select the appropriate model of the panel data patterns, for the homogeneity test, firstly, the model was estimated in the form of two methods of common coefficients and coefficients with constant effects. According to the F-statistic, the random effects model was selected to test the hypotheses of the research in both models.

In this section, regression and panel data models were used to evaluate the results of each of the hypotheses. Finally, the overall result for each model is estimated. Table 1 shows the results of the first and second hypotheses testing.

In investigating the significance of the whole model, given that the probability of F-statistics is smaller than 0.05 (0.000), at the confidence level of 95%, the significance of the whole model is confirmed. The coefficient of determination of the model also indicates that 29.03% of corporate social responsibility changes are explained by the variables entered in the model. In investigating the significance of coefficients in the third hypothesis testing, according to the results presented in Table 2, at an error level of less than 5%, there is a significant relationship between unconditional conservatism and the corporate social responsibility disclosure. As a result, the relationship between unconstrained conservatism and corporate social responsibility disclosure at a confidence level of 95% is confirmed, and according to the obtained coefficient, 0.66, which indicates the direct relationship between the two variables, as a result, at a confidence level of 95%, it can be claimed that there is a positive and significant relationship between unconditional conservatism and the corporate social responsibility disclosure; thus, the third hypothesis is confirmed. The Durbin-Watson statistic (1.66) represents the lack of self-correlation between independent variables, and the homogeneity of variance test indicates that there is heterogeneity of variance in components in different studies, which has been resolved using the EGLS method.
The results of the third hypothesis test are presented in Table 2.

Finally, according to the control variables test, there is a positive and significant correlation between pre-tax profit and tax with corporate social responsibility disclosure, and it also showed that there is an inverse relationship between the variables of market-to-book and company size with the corporate social responsibility disclosure.

[5] Idrianita Anis a, Sidharta Utama (2016), The effect of conditional conservatism on cost of debt and mediation role of CSR disclosure: Empirical evidence from IDX.

Table 1: Results of the first and second hypothesis testing

Variable	Estimated coefficient	standard error	The t-statistics	P-value
y-intercep	0.590515	0.173631	3.400986	0.0007
Unconditional conservatism	0.122593	0.189072	0.648392	0.5168
Disclosure of corporate social responsibility	-0.157375	0.044291	-3.553234	0.0004
Profit before interest and taxes	0.095320	0.023068	4.132129	0.0000
Financial Leverage	0.133543	0.054547	2.448212	0.0000
Market value to book value	-0.001935	0.002682	-0.721489	0.4707
Return on investment	-0.358997	0.137410	-2.612592	0.0090
Return on equity	-0.475082	0.111811	-4.248960	0.0000
Company size	-0.146496	0.039239	-3.733436	0.0002
Company age	0.015222	0.005481	2.777411	0.0055
Coefficient of determination 0.242		Adjusted coefficient of determination: 0.239		
Durbin-Watson Statistics 2.16	The F-statistic is 12.374		probability of F statistics 0.000	

Table 2: Results of the third hypothesis testing of the research

Variable	Estimated coefficient	standard error	The t-statistics	P-value
y-intercep	0.466807	0.221153	2.110795	0.0349
Conditional conservatism	0.668628	0.262687	2.545341	0.0454
Profit before interest and taxes	0.110070	0.033441	3.291462	0.0010
Financial Leverage	0.149919	0.197161	0.760391	0.4471
Market value to book value	-0.014104	0.003288	-4.289579	0.0000
Company size	-0.115737	0.033199	-3.486106	0.0005
Return on equity	-0.230608	0.151048	-1.526725	0.1270
Return on investment	0.418019	0.279615	1.494978	0.1350
Company age	0.008483	0.004446	1.907996	0.0565
The coefficient of determination is 0.295923.		Adjusted coefficient of determination 0.29032		
Durbin-Watson Statistics 1.669796	The F-statistic is 33.18283.		probability of the F-statistic: 0.000000	

7. Conclusion

The main aim of the present study is to answer the question, "What is the relationship between unconditional conservatism and the cost of capital by emphasizing the corporate social responsibility disclosure? For achieving this purpose, hypotheses have been developed according to the criteria of theoretical foundations and the research background. Hypotheses have been tested for 5 years from 2018-2022. Data are also calculated on an annual basis. The variables of this study were calculated using Excel software, and then the IEEE 7 software was used for analysis of the data. The model estimation is also a panel type, and multivariate regression is used.

The results of the first hypothesis test showed that there is no meaningful relationship between unconditional capitalism and capital cost, which means that unconditional conservatism does not affect the cost of capital of companies.

According to the results of the second hypothesis testing, there is no significant negative relationship between the unconditional conservatism and the cost of capital.

Unconstrained conservatism does not affect the cost of corporate capital. According to the results of the second hypothesis testing, there is a negative and significant relationship between the social responsibility disclosure and the corporate cost of capital.

In other words, if corporate social responsibility disclosure increases, the corporate cost of capital reduces, and a unit of change (increase or decrease) in corporate social responsibility disclosure leads to an inverse change of 0.15 unit in the cost of capital, which is consistent with the findings of Larosa et al. (2017) and Lee and Liu (2017), which show that there is a negative relationship between the quality of corporate social responsibility disclosure and the cost of capital. And this negative correlation is even more obvious among environmentally sensitive industries. And it's of utmost importance for state-owned companies. Finally, according to the results empirically, there is a negative relationship between the disclosure level of corporate social responsibility and the cost of stock capital among large companies, which is greater than for smaller ones.

Finally, according to the results of the third hypothesis testing, there is a positive and significant relationship between unconditional conservatism and corporate social responsibility. In other words, if unconstrained conservatism increases by one unit, it leads to a direct change of 0.66 units of the corporate social responsibility disclosure.

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