Int. J. Nonlinear Anal. Appl. In Press, 1–7
ISSN: 2008-6822 (electronic)
http://dx.doi.org/10.22075/ijnaa.2022.28460.3898

Investigating the effect of financing cost on the reliability of financial statements of companies active in the Tehran stock exchange

Najme Habib, Mohammad Mehdi Abbasian*, Abbas Alipour Aghajan

Department of Accounting, Faculty of Humanities, Qaemshahr Branch, Islamic Azad University, Qaemshahr , Iran

(Communicated by Mohammad Bagher Ghaemi)

Abstract

The reliability of financial statements plays an important role in increasing the profit of a company; therefore, the purpose of this study was to investigate the effect of financing costs on the reliability of financial statements of companies active on the Tehran Stock Exchange. The statistical population of this descriptive-correlation study included all the companies accepted and active in the Tehran Stock Exchange from the years 2015 to 2019, and the data of the financial statements of 119 active companies during this time period were analyzed using regression models. The results showed that the cost of financing had an inverse and significant effect on the reliability of the companies' financial statements. Therefore, taking advantage of the reliable structure of financial statements for financing can be one of the goals of companies in order to increase profits.

Keywords: financing cost, financial statements, stock exchange
2020 MSC: 91G15

1 Introduction

According to the theoretical concepts of financial reporting in Iran, the timeliness of financial reporting as one of the limitations governing the qualitative characteristics of financial information is described in paragraphs 2-33 as follows: If there is an undue delay in reporting information, the information may be relevant. Lose yourself to provide timely information, it may often be necessary to report available information before all aspects of a transaction or event are known, which reduces its reliability [10]. On the contrary, if reporting is done with a delay to clarify all the mentioned aspects, the information may be completely reliable, but it will be useless for the users who have to make decisions during this period [5]. To achieve a balance between the characteristics of relevance and reliability concerning the legal requirements regarding the time of providing information, the most important issue that should be considered is how to best respond to the economic decision-making needs of users [12]. Timeliness is a fundamental feature of financial reporting to the representatives to enable them to make informed decisions about the economic entity. The financial research that has been conducted in the field of the stock exchange and company reporting has emphasized the nature of information and its relationship with stock price returns, stock volume, and their role in

*Corresponding author
Email addresses: najmehhabibi@gmail.com (Najme Habib), mm.abbasian@yahoo.com (Mohammad Mehdi Abbasian), abbas_acc46@yahoo.com (Abbas Alipour Aghajan)

Received: June 2022 *Accepted:* September 2022

determining stock prices; and the time of providing this information has not been paid much attention [1]. Also, although the relationship between the time of disclosure of financial statements and company performance, as well as the market's reaction to this relationship, has been tested since the 1970s, sufficient results are not available for developing markets. Provide reliable information that is free from significant errors and biases and that honestly represents what it claims to state or is reasonably expected to state. Honest expression, the priority of content over form, impartiality, caution, and completeness are the necessary features to be reliable [7]. On the other hand, financing through debt is considered a more favorable solution for financing due to tax savings and its lower rate compared to the expected return of shareholders. But what is important for the lenders regarding the granting of loans and credit is the ability to pay the principal and interest of the loan and credits paid by the borrower [3]. Much research has been done about the financial decisions of companies as well as factors affecting the capital structure of companies. Many activities and theoretical works have described the choice between financing through debt or capital shares by companies that choose the optimal level of debt ratio according to the principle of cost and benefit [4]. The cost of debt is the cost that the company incurs for the funds provided through loans or the issuance of long-term bonds. This rate also indicates the expected return of lenders [6]. The important advantage of the cost of debt compared to other financing sources is that it is one of the acceptable tax costs; therefore, a part of these costs is returned to the business entity by saving the tax paid, and its other advantage is that it is a relatively cheaper source of financing than ordinary and preferred shares [9]. On the other hand, the cost of debt shows the pressure and financial weakness, the representative of debt, and the conflict of representation between managers and investors and creditors or between different groups of investors. In developing countries, unlike in developed markets, there are limitations to choosing the debt maturity structure. Due to lower profitability and limited access to the market, companies in developing countries use much less long-term debt than companies in developed countries [11]. Therefore, it is important to investigate the reasons for choosing the maturity structure and also to study the factors that determine the time structure of debt in developing countries. In line with the studies of the researchers, it is proof that the cost of financing plays an important role in the statements of companies. In their study, Salehi and Alkhyyoon (2021) reported that there is a significant relationship between managerial strength, disclosure of social responsibility, growth of corporate social responsibility, and risk-taking and shareholder activity in Iranian stock exchange companies [9]. Because in the past studies, no study separately investigated the effect of financing cost on the reliability of financial statements, the main question of this study is whether the cost of financing affects the reliability of financial statements of active companies. Does it have a significant effect on the Tehran Stock Exchange?

2 Theoretical framework

2.1 Research background

In [9], Salehi and Alkhyyoon discussed the relationship between managerial strength, social responsibility, and risk-taking of the company and shareholder activity. The results obtained from the hypothesis test shows that there is a significant relationship between managerial strength, disclosure of social responsibility, growth of corporate social responsibility, and risk-taking and shareholder activity in Iranian stock exchange companies.

Steckal et al. in [10], examined the relationship between CEO job characteristics, debt, and cash value. The results show that as the CEO's age and tenure increase, and also if the company's debts increase, it ultimately causes the company's cash value to decrease.

Ho et al. [6] analyzed the moderating effect of corporate governance and ownership characteristics in reducing earnings management through free cash flows. The results of their research show that managers often use profit measurement tools to report a profit. Profit management evaluation variables were discretionary accrual items using the Kotari model. To evaluate corporate governance, the variables of audit committee independence, quality of independent auditors, institutional shareholders, and management ownership have been used. According to them, considering the creation of free cash flows, corporate governance mechanisms are a tool to play a supervisory role in managers' behavior to reduce profit management.

Martinova et al. [8] studied the relationship between managerial strength and debt maturity. According to the results obtained in this research, it was shown that the use of different scales of managerial strength had a significant impact on the debt maturity of companies. Therefore, the advantages of managerial strength can control debt maturity.

3 Research method

The research method of this research is correlational in nature and content, which uses data extracted from the financial statements of companies admitted to the Tehran Stock Exchange to analyze the correlation relationship.

The statistical population of this research consists of all the companies accepted and active in the Tehran Stock Exchange, which were active in the stock exchange from the years 2014 to 2018, and the systematic elimination method was used to determine the sample size. Also, Hib restrictions were applied to determine the sample size in the sampling process, which were that the end of the financial year of the companies should be the end of March, and the companies should have a continuous presence in the stock market during the years 2014 to 2018, and the company's financial information be available in the study period. Finally, after applying sampling limits, 119 companies were studied (Table 1).

Table 1: Description of research sampling

Sampling description	**All companies**	**Elimination companies**
Accepted and active companies in the stock market until the end of 2018	583	
Companies that were not present in the stock market from 2014 to 2018.		237
Companies whose financial year did not end on March 29.		89
Companies that changed their financial year during the study period.		34
The financial information of the company was not available in the studied period.		83
They were part of holding, insurance and investment companies.		21
The total number of companies that did not meet the sampling criteria.	464	
The total number of companies that were selected as samples.	119	

The following methods are used to collect information: Library studies: To collect information in the field of theoretical foundations and research literature, library resources, articles, required books, and the global information network are used. Field research: To collect data and information for analysis, the financial statements of the companies admitted to the Tehran Stock Exchange and Rahavard Novin software were used.

Data analysis is done in the form of descriptive and inferential statistics:

A. Descriptive statistics: This section includes the concentration and distribution indices of each of the research variables for the set of companies, during the studied years, which includes indices such as average, standard deviation, skewness, and elongation.

B. Inferential statistics: In this section, research hypotheses and related pre-tests are tested. The tests used in this section are:

1. Jarque-Bra test: The Jarque test is used to check the normality of data distribution.
2. Dicky Fuller test: The use of the OLS estimation method and most econometric models in experimental work is based on the assumption that the used time series variables are stable. On the other hand, the prevailing belief is that many time series variables in economics are not stable. Therefore, before using these variables, it is necessary to ensure their reliability or unreliability. The first step in determining the reliability of a variable is to observe the time series graph of that variable. Of course, it is possible that a time series variable, while having a time trend, is stable around this time trend. This is where the discussion of definite trends and random trends is raised. Determining the existence of a random process in a time series is possible simply through the unit root test. One of the most useful tests in the field of stasis is the generalized Dicky-Fuller test. Suppose that the y_t series, based on its simplest form, is a first-order autoregressive model (3.1); that's mean:
$$y_t = \alpha y_{t-1} + \varepsilon_t \tag{3.1}$$
In this test, the null hypothesis is the reason for uncertainty, and the ideal state occurs when the null hypothesis is rejected.
3. Chow and Hasman test: To investigate the issue of "Is there a common origin for all data or not?", the following hypothesis is tested:
$$\begin{cases} H_0: & \text{All observations have a common origin.} \\ H_1: & \text{Not all observations have the same latitude from the origin.} \end{cases}$$

This hypothesis is tested according to Limer's F-statistic or Chaw's test. If hypothesis H_0 is rejected and hypothesis H_1 is accepted, the companies will not have the same width from the origin and the panel method will be used, if the null hypothesis is confirmed, the pooling method will be used.
The specification of this test is as follows (3.2):

$$F = \frac{(R^2_{fe} - R^2_{pis})/(N-1)}{(1-R^2_{fe})/(NT-K-N)} \tag{3.2}$$

in this regard, R^2_{fe} is the coefficient of determination in the fixed effects method, R^2_{pis} is the coefficient of determination in the integrated least squares method, N is the number of sections, k is the number of explanatory variables, and T is the length of the time period. If the calculated F is greater than the critical F, then the fixed effects method will be chosen.
By using composite (panel) data, efficient estimations can be achieved. The general form of the composite data model, which is known as the error component model, is as follows (3.3):

$$y_{it} = \beta_1 + \sum_{j=2}^{k} \beta_j X_{jit} + \sum_{p=1}^{s} \gamma_p Z_{pi} + \delta t + \varepsilon_{it} \tag{3.3}$$

in the above relationship, Y represents the dependent variable, X is the observed explanatory variable, and Z represents the unobservable explanatory variables affecting the dependent variable at each time point, for a better explanation of the combined data model, these variables are separated from the values of the error components. The symbol i represents the observed sections or units, t represents the time period, and j and p represent the number of unobserved and observed variables, respectively. This model is known as the two-way mixed data model.
Since Z variables cannot be measured, the sum of all of them can be represented as a variable α_i, in which case the above equation can be rewritten as follows (3.4):

$$y_{it} = \beta_1 + \sum_{j=2}^{k} \beta_j X_{jit} + \alpha_i + \varepsilon_{it}. \tag{3.4}$$

Another method is to use the first-order difference of the variables instead of them in the model. In this case, the width from the origin is removed from the model and the problem of a large number of parameters for estimation is also solved. Therefore, in fixed effects models, to achieve effective estimates, the method of removing unobservable influential variables in the model is used. Using this method eliminates many important variables. Therefore, instead of considering these variables, they can be included in the error components. This method is known as the random effects model. To estimate this model, it should be noted that in this case, the variances related to different sections are not the same, and our model has a heterogeneous variance, which should be estimated using the GLS estimator, and the main model can be as follows Rewrote (3.5):

$$y_{it} = \beta_1 + \sum_{j=2}^{k} \beta_j X_{jit} + u_{it}. \tag{3.5}$$

The necessary condition for using this model is the non-dependence of α_i variables on other explanatory variables in the model. If this condition is not met, the estimation of the random effect model will be non-stationary and skewed. In this case, the fixed effects model is used.
The definition of Hasman's test is as follows (3.6).

$$H = (\beta f_e - \beta_{re})'[cov f_e - cov_{re}]^{-1}(\beta f_e - \beta_{re}) \sim \chi^2 \tag{3.6}$$

where K is the number of explanatory variables, βf_e and β_{re} are respectively the vector of coefficients in the fixed and random effects method, $cov f_e$ and cov_{re} are respectively the covariance matrix of the coefficients in the fixed and random effects method.
The results of the Hasman test have an asymptotic χ^2 distribution and the number of degrees of freedom is equal to the number of explanatory variables in the model.
If this statistic indicates the estimation of the model using random effects, the LM test should be performed to choose one of the random effects models or data integration [2]. The assumptions of this test are as follows:

$$H_0 : \delta'_a = 0 \Rightarrow \text{pool}$$

$$H_1 : \delta'_a > 0 \Rightarrow \text{random effect}$$

in these assumptions, δ'_a represents the variance of the cross-sectional effect of the model estimated through the random effect. If the variance of the cross-sectional effects in the random effect model is insignificant, the method of combining all the data (integration) and using ordinary least squares estimation can be used to estimate the relationships between variables. To calculate the statistics, the estimation error of the integrated data is used as follows (3.7):

$$LM = \frac{NT}{2(T-1)} \left[\frac{T' \sum \bar{e}_{i.}^2}{\sum \sum e_{ij}^2} - 1 \right]^2 \sim \chi^2 \tag{3.7}$$

4. Combined data regression model: After determining the estimation method of the model (tabular or integrated) and also determining the desired effects of the model (random or fixed), the fitting of the multiple linear regression model is used in the combined data method.
5. The goodness of model fit: In order to determine the goodness of fit of the regression model of the research, coefficient of determination indices, regression model variance analysis test, and Durbin-Watson's statistic are used. The coefficient of determination of the model is indicative of the power of the model in predicting the future values of the dependent variables. The analysis of the variance test shows the general appropriateness of the regression model, and Durbin-Watson's statistic is also evaluated to confirm the absence of autocorrelation between the error components of the regression model of the research. It is worth noting that the data collected using Excel software after the necessary corrections and classification based on the investigated variables, were entered into Eviews10 software and the final analyzes were performed.

4 Findings

According to the significance level of Chow's test in Table No. 2 to determine the significance of cross-sectional effects in the regression model of the research, which is smaller than the type 1 error of 0.05, the null hypothesis of this test based on the non-significance of cross-sectional effects in the research model is rejected and it can be He accepted that the regression model of this section should be estimated by panel data method.

Table 2: Results of Chaw's test

Model	Significant probability	Degrees of freedom	Statistics	Test
Reliability	0.0000	469.118	2.801838	Chow

In order to determine which method (fixed effects or random effects) is more suitable for estimation, the Hasman test was used. The results of the Hausman test related to the research model are shown in Table 3. The significance level of Hausman's test in Table 3 to determine whether the cross-sectional effects are fixed or random in all models is smaller than the first type error of 0.05, which indicates the rejection of the null hypothesis in this test, that the cross-sectional effects are random in the research model. Therefore, the regression model of the research has been estimated using the panel data method with fixed effects.

Table 3: Hasman test results

Model	Significant probability	Degrees of freedom	Statistics	Test
Reliability	0.0000	7	2.774439	Hasman

White's test statistic can be used to check the lack of autocorrelation of the remaining sentences of the models; According to the results presented in table 4, the significance probability value in the third model (dependent variable: profit quality) is greater than 0.05, so there is no serial autocorrelation between the sentences.

Table 4: The result of the non-stationarity test of the variance of the error sentence (residuals)

Model	Significant probability	Degrees of freedom	Statistics	Test
Reliability	0.0000	560.34	2.196513	White

According to the significance level obtained to measure the effect of the financial determination cost on the reliability of the company's financial statements and comparing it with the first type error of 0.05, it can be seen that the financial

determination cost had an inverse and significant effect on the reliability of the companies' financial statements. Therefore, the cost of financial determination has an effect on the reliability of the financial statements of companies admitted to the Tehran Stock Exchange, and the research hypothesis is confirmed at the error level of 0.05.

5 Discussion and conclusion

The results of the test of the effect of the cost of financing on the reliability of financial statements in companies showed that the cost of financing with a significance level smaller than 0.05 had an inverse and significant effect on the reliability of financial statements of companies. Therefore, there is a significant relationship between the cost of financing and the reliability of the financial statements of companies. Some researchers have emphasized the lack of a relationship between these factors, others have acknowledged the existence of a direct relationship, and others have concluded that there is a direct relationship between these indicators. The results of previous research in this area have had different implications, including Salehi and Alkhyyoon (2021) suggesting that fixed debt payments reduce the company's free cash and thus effectively allow managers to waste the company's resources for their interests. does not give [9]. Therefore, the cost of financing in companies has a large impact on all the structures of a company and even on the financial statements of a company, therefore it is important to pay attention to the cost of financing in all companies active in the stock market and securities market [5]. Therefore, for the reported financial information to be the basis for evaluating the performance and profitability of a company to the users and for them to estimate their expected return based on this information, the presentation of the information should be in a way that makes it possible to evaluate the past performance of the company. and be effective in measuring profitability and predicting future activities [7]. Therefore, in addition to the fact that the figures included in financial reporting are essential for investors and have an impact on their decisions, the quality of reporting and disclosure is also one of the dimensions of financial information of particular interest to investors [1].

One of the limitations of the research is the impossibility of generalizing the research model to all listed companies and also the impossibility of examining a more comprehensive model due to the time limit of the research. This research included the companies admitted to the Tehran Stock Exchange from the years 2015 to 2019 with the increase in information and the number of observations of the test results and a result, the research result will have higher credibility, it is possible that with the increase of the period, different results will be obtained.

According to the results of the study, it is suggested to the investors in the country's capital market that, while paying attention to the inverse and significant effect of debt maturity cost on the reliability of financial statements, they should consider the inappropriate structure of financing in companies, leading to a decrease in the quality of profits and becomes a reporter (and vice versa). Therefore, investors can use this result to choose better investment options and make appropriate decisions.

References

[1] S.R. Alavipour and D. Arditi, *Time-cost tradeoff analysis with minimized project financing cost*, Autom. Construct. **98** (2019), 110–121.

[2] B.H. Baltagi, *Econometric analysis of panel data*, 3rd ed., Wiley, New York, 2005.

[3] F. Di Meoa, J.M. Garcia Lara and J.A. Surroca, *Managerial entrenchment and earnings management*, J. Account. Public Policy. **36** (2017), no. 5, 399–414.

[4] P. Gompers, J. Ishii and A. Metrick, *Corporate governance and equity prices*, Quart. J. Econ. **118** (2003), no. 1, 107–156.

[5] C.A. Hennessy and T.M. Whited, *How costly is external financing? Evidence from a structural estimation*, J. Finance **62** (2007), no. 4, 1705–1745.

[6] P. Ho and G. Taylor, *Corporate governance and different types of voluntary disclosure*, Pacific Account. Rev. **25** (2013), no. 1, 4–29.

[7] J.D. Kleinke and N. McGee, *Breaking the bank: three financing models for addressing the drug innovation cost crisis*, Amer. Health Drug Benefits **8** (2015), no. 3, p. 118.

[8] M. Martynova and L. Renneboog, *What determines the financing decision in corporate takeovers: Cost of capital, agency problems, or the means of payment?*, J. Corporate Finance **15** (2009), no. 3, 290–315.

[9] M. Salehi and H. Alkhyyoon, *The relationship between managerial entrenchment, social responsibility, and firm's risk-taking and shareholders' activity*, Soc. Respons. J. **18** (2021), no. 5, 1035–1049.

[10] J.C. Steckel and M. Jakob, *The role of financing cost and de-risking strategies for clean energy investment*, Int. Econ. **155** (2018), 19–28.

[11] J.C. Stein, *Efficient capital markets, inefficient firms: A model of myopic corporate behavior*, Quart. J. Econ. **104** (1989), no. 4, 655–669.

[12] D. Xiang, J. Chen, D. Tripe and N. Zhang, *Family firms, sustainable innovation and financing cost: Evidence from Chinese hi-tech small and medium-sized enterprises*, Technol. Forecast. Soc. Change **144** (2019), 499–511.