Int. J. Nonlinear Anal. Appl. 14 (2023) 6, 119–129
ISSN: 2008-6822 (electronic)
http://dx.doi.org/10.22075/ijnaa.2022.28287.3852

Investigating the impact of the financial statement verification triangle on earnings response coefficient in the Tehran Stock Exchange

Mohammad Varei[a], Ataollah Mohammadi Malgharni[a,*], Safiyar Amini[b], Adel Fatemi[c]

[a]*Department of Accounting, Sanandaj Branch, Islamic Azad University, Sanandaj, Iran*

[b]*Department of Economics, Sanandaj Branch, Islamic Azad University, Sanandaj, Iran*

[c]*Department of Statistics, Sanandaj Branch, Islamic Azad University, Sanandaj, Iran*

(Communicated by Mohammad Bagher Ghaemi)

Abstract

Studying the triangle impact of financial statements (financial manager, CEO, and auditor) on earnings response coefficient (ERC), based on economic aspects of information, financial reporting, and accounting system play a vital role in the capital market. So, the present research is an applied, methodological and causal study that aims to investigate the effect of the triangle of financial statement approval on ERC in the Tehran Stock Exchange. The statistical population was composed of the companies listed on the Tehran Stock Exchange out of which 166 companies were selected by the systematic sampling method. The time frame is from 2016 to 2020. This study used a panel data model to investigate the relationship of the triangle sides with ERC and their relationship with ERC in poor accounting conditions. The results showed that any changes in each of the triable sides had a significant effect on ERC. The single, dual, and triple substitution in the confirmation triangle significantly reduced the year-end ERC, and compared to the three replacement sizes, the sum of ERC for dual substitution was greater than that for single and triple substitution. Also, variations in each of the triangle sides under poor accounting conditions had a significant effect on ERC. The single substitution in the confirmation triangle increased ERC, but the dual substitution reduced ERC significantly, but the impact of the triple substitution was not significant.

Keywords: Financial Statement Verification Triangle, Earnings Response Coefficient, Panel Data, Tehran Stock Exchange
2020 MSC: 91G15

1 Introduction

Financial information is nowadays essential for optimal decision-making in accounting and auditing units. Financial statements are the center of gravity of financial reporting and information. These statements report the management's claims about the financial position, the results of operations during the reporting period, and the performance of their

*Corresponding author
Email addresses: mohammdvarei@gmail.com (Mohammad Varei), ata.mm@iausdj.ac.ir (Ataollah Mohammadi Malgharni), 16@iausdj.ac.ir (Safiyar Amini), adelfatemy@gmail.com (Adel Fatemi)

Received: June 2022 *Accepted:* September 2022

management or accounting duties against the sources at their disposal. They are also used to obtain the necessary credit by an independent auditor when required [11].

Financial statements are useful in decision-making and accountability when they are reliable, transparent, and of good quality. Although the preparation of financial statements based on accounting standards guarantees their relative utility and quality, the quality of information can be distorted for some reason and may result in misstatements based on existing theories, including the agency theory and the contract theory. Failure to do so may result in an incorrect assessment of a company's stock market value. Users of financial statements and accounts need a control mechanism to ensure that the financial statements are not compromised to optimally eliminate contamination (prevention and detection of distortion) and ensure the reliability of the information presented. This task is performed by an independent auditor. In fact, the primary role of the independent auditor is to create trust in the financial statements [16].

But, the financial scandals at the beginning of the third millennium, including Enron and WorldCom, which are referred to as auditing failures, have led to charges to auditors and resulted in laws to enhance auditing independence and quality, which can be achieved under the Sarbanes–Oxley Act (2002) cited by the US Congress. This law requires audit firms to replace their responsible business partners after five consecutive audits of a single owner [19]. In Iran, auditor substitution is also a phenomenon that has emerged since the formation of the Society of Certified Public Accountants. Business executives are always trying to make their performance positive, so auditors need to comment on the financial statements of the business under their control. The problem, however, starts when managers use a set of procedures that do not necessarily comply with auditing principles and standards and require independent auditors to comment favorably on these practices, which may be disadvantageous. The independence of the auditors will be demonstrated [10]. The existence of transparent and comparable financial information is the cornerstone of accountability and informed economic decision-making and one of the key requirements for economic development and growth in the private and public sectors. Capital owners, creditors, the government, and other users need reliable, relevant, and understandable financial information to make decisions about buying, selling, holding stocks, lending, evaluating managers' performance, and other important economic decisions. Although financial information can be extracted from a variety of sources, financial statements now form the core of financial information sources. The US Securities and Exchange Act provides for joint and individual responsibility for the accuracy of information and fair presentation of financial statements to the three groups of managers, CEOs, and auditors. (The term "confirmation triangle" is used to describe the relationship that exists between these three parties.) Despite their distinct independence, each is under the direct supervision of the board. From the perspective of the board of directors of each party, they have quality contracts with different board committees. In particular, the Audit Committee of the Board of Directors is directly responsible for the appointment, dismissal, and oversight of the elected auditor. While the remuneration committee of the board of directors is responsible for overseeing the CEO and the financial director, these committees compel each party to develop specific skills. On the other hand, according to the representation theory, each of the three parties intends to increase their interest, and according to the theory of contracts, each side of the triangle must have interactions and coordination with other parties to increase shareholder wealth [15].

The purpose of this study is to investigate the effect of the triangle of financial statements on the earnings response coefficient (ERC) in the Tehran Stock Exchange. Accordingly, this study seeks to answer the questions as to whether the financial statement verification triangle has an impact on ERC in the Tehran Stock Exchange, how a firm's year-end profitability coefficient is affected by different triangle changes, and what if the change in the triangle is due to unfavorable accounting conditions.

2 Review of the research background

Investigating the impact of the financial statement verification triangle on the profitability coefficient has become a global issue and drawn the attention of experts and researchers in different countries over the past few decades. A study in this field in Iran is Drekhshan Mehr and Karami [7] who examined the impact of CEO tenure and audit firm size on the quality of accounting information. The findings indicated that there was no significant relationship between CEO tenure and the quality of accounting information. But, there was a significant negative relationship between audit firm size and the quality of accounting information.

Hatamian et al. [9] investigated the impact of the comparability of financial statements on ERC with emphasis on audit quality among companies listed in the Tehran Stock Exchange. The results indicated that the comparability of financial statements had a direct effect on ERC and that the quality of audit had a direct effect on the relationship between the comparability of financial statements and accounting ERC.

Abedini and Faridnia [1] examined the effect of capital structure and corporate social responsibility reporting on asset returns and ERCs among the companies listed in the Tehran Stock Exchange. The results showed that the capital structure had a significant and negative impact on the return on assets and profitability coefficient. The effect of the social responsibility of the company was also found to be significant and negative on the return on assets and profitability ratio.

Banaei et al.[4] explored the effect of ERC, abnormal stock return volatility, and earnings forecast error as earnings sensitivity dimensions on board remuneration. The results revealed that in managers' rewards system, ERC, earnings response rate, and earnings relevance of stocks had a positive effect on managers' remuneration and anomalous fluctuations in stock returns and earnings forecast error. Managers had a significant negative impact on their performance.

Lari Dasht Bayaz and Oradi [14] addressed the relationship of the CEO's tenure and financial knowledge with audit fees. The findings indicated a positive and significant relationship between the CEO's tenure and audit fee and a negative and significant relationship between the CEO's financial knowledge and audit fee.

Ebrahim Pour Zarandi et al. [17] focused on qualifying firms in a study on the relationship between earnings management and earnings response based on accounting variables. The results showed that there was a significant negative relationship between earnings management and earnings response. ERC was also higher in firms that managed earnings than those that didn't.

This issue has been investigated in other parts of the world, too. For example, Dhaliwal and Reynolds [8] and Kim et al. [13] in two separate studies have argued that in addition to systematic risk, the risk of default could also reduce the profit response coefficient. They used debt ratings to measure debt risk, and by systematically controlling the risk factors and stabilizing the profitability process, they proved that debt risk could also be negatively impacted by the interest rate response. Collins and Kothari [6] examined the relationship between systematic risk and ERC. They found that the growth opportunity rate factor positively influenced ERC and one of the factors that reduced ERC was (β) systematic risk.

The impact of auditor change on earnings quality and ERC has been investigated and hypothesized that ERC for firms that changed their auditors would change significantly. Statistical results of the studies did not show any significant changes, so the researches hypothesis were not confirmed.

Yermack [20] addressed the relationship between the tenure of the board of directors and the management of earnings, stock risk, and wealth created for shareholders. The results revealed that the tenure of the board of directors was related to earnings management directly and to stock risk and wealth created for shareholders indirectly.

Jenkins and Velury [12] argues that giving two posts to the board of directors and CEO gives a person too much power and makes it easier for him or her to make decisions that may result in fraudulent actions. Therefore, he predicts that the SAME-DIRit coefficient is positive at the specified date. He argues that big corporate boards are less effective and that executives are the ones that drive company growth and in support of this notion, Yermack [20] found that small companies had better financial performance.

A US study was conducted by Jenkins and Velury [12] on the impact of the auditor's tenure on conservative profit reporting. This study investigated the relationship between auditor tenure and conservative profit reporting. Based on the results, a positive relationship was found between conservatism in reported earnings and the duration of the auditor-client relationship. The results also showed that conservatism was lower for a shorter tenure.

3 Theoretical Foundations

In this research, the effect of the financial statement verification triangle on the profitability coefficient of the Tehran Stock Exchange was investigated using a regression model. The efficient market theory states that a market responds to new information quickly. As a result, it is important to know when the reported net profit should be first made public. If a researcher wants to determine the effect of this news on trading volume and stock prices, it is too late to investigate even a few days after the news because even though there is such news, no trace of it can be seen. To address this, the researchers have used the history of net profit in the financial media as reported. If an efficient market is to react, it must exhibit such a reaction from a small window over a period of several days on this date [18].

Usually, good or bad news in net profit is measured by the expectation of investors. For example, if a company declares a net profit of $2 million and this is what investors expect, it is unlikely that the net profit will have an information burden. But if investors expect a net profit of $2 million and the company announces a $3 million profit, then the good news is that investors will be reassessing their beliefs positively and speedily. Eyes on the future size of

the company become more optimistic [5]. There are always a number of events that affect the trading volume and stock prices and are not easily informed by the market reaction to reported net profit. For example, suppose a company reports its net profit, which contains good news, and at the same time the government makes such a statement that affects the price of all securities, and in turn, the price effect of the news announcement overshadows the company's net profit. Therefore, it is advisable to separate the factors affecting the stock market throughout the market.

Earnings Response Coefficient (ERC): The unexpected returns of the stocks identified by Ball and Brown [3] were averaged, meaning that they showed that companies had, on average, unexpected positive returns for good news and unexpected negative returns for bad news. Of course, an average can deviate greatly from the average, so the unexpected return of some companies is probably above average and some below average. This raises the question of why a market is more responsive to some companies' good and bad news than others. If the answer can be found, accountants can improve their understanding of why accounting information can be useful to investors. This can initially lead to very useful financial information. Consequently, one of the most important guides in empirical financial accounting research since Ball and Brown's [3] research is to identify and explain different market responses to profit information. This is called earnings response coefficient (ERC) research. ERC measures the unexpected return of the market in response to the unexpected earnings components reported by the company. Based on what has been stated, this study examines the relationship between changes in each of the triangle sides and the profit coefficient. The study is applied, methodological, and causal. The statistical population was composed of the companies listed in the Tehran Stock Exchange. Using the systematic sampling method, 166 companies were selected as the research sample. The time frame was selected from 2012 to 2016. The research hypothesized that changes in each of the triangle sides would affect ERC and changes in each of the triangle sides in the bad accounting condition would affect ERC. The research regression models are as follows according to the operational definition of the variables presented in Table 1:

$$\begin{aligned} CAR_t = {} & \beta_1 UE_t + \beta_2 SINGLE_t + \beta_3 DOUBLE_t + \beta_4 TRIPLE_t + \beta_5 SINGLE * UE_t + \beta_6 DOUBLE * UE_t \\ & + \beta_7 TRIPLE * UE_t + \beta_8 CEO\_CHR_t + \beta_9 INST\_PCT_t + \beta_{10} LAG\_ADV_t \\ & + \beta_{11} Firm\_Fundamentals_t + \beta_{12} Performace\_Index_t + \beta_{13} Control\_Variables * UE_t \end{aligned} \tag{3.1}$$

$$\begin{aligned} CAR_t = {} & \beta_1 UE_t + \beta_2 SINGLE_t + \beta_3 DOUBLE_t + \beta_4 TRIPLE_t + \beta_5 SINGLE * UE_t \\ & + \beta_6 DOUBLE * UE_t + \beta_7 TRIPLE * UE_t + \beta_8 SINGLE * LAG\_QOP * UE_t \\ & + \beta_9 DOUBLE * LAG\_QOP * UE_t + \beta_{10} TRIPLE * LAG\_QOP * UE_t + \beta_{11} LAG\_QOP_t \\ & + \beta_{12} LAG\_QOP * UE_t + \beta_{13} Control\_Variables_t + \beta_{14} * Control\_Variables * UE_t \end{aligned} \tag{3.2}$$

Table 1: The operational definition of the variables

Dependent variables	**Symbol**	**Definition**
Abnormal returns	CAR	Anomalous to cumulative returns for a three-day period (-1, 0, and +1) on the days around the statement of earnings that do not take into account dividend yields equal to actual stock returns minus market value adjusted for value.
Independent variables	**Symbol**	**Definition**
Unexpected profit	UE	The difference between the earnings per share of the current year and the earnings per share of the previous year, which is scaled based on the earnings per share of the prior year.
Single replacement	SINGLE	That's equal to 1 if the CEO, CFO, or AUD is equal to 1, otherwise, it's equal to 0. CEO-CFO, CEO-AUD and CFO-AUD and CEO-CFO-AUD items are also deleted.
Dual replacement	DOUBLE	It equals 1 if CEO_CFO, CEO_AUD or CFO_AUD are equal to 1, otherwise, it is 0 except when CEO=1, CFO=1 or AUD=1 and CEO-CFO-AUD=1.
Triple replacement	TRIPLE	It equals 1 if the CEO-CFO-AUD is equal to 1, otherwise, it is 0. Unless the CEO, CFO, AUD, CFO-AUD, CEO-CFO, CEO-AUD are equal.

Moderating variables	Symbol	Definition
Unique replacement with unexpected profit	$SINGLE * UE$	Replacing a single multiplier on unexpected profits
Double replacement adjusted with unexpected profit	$DOUBLE * UE$	Double replacement multiplied by unexpected profit
Triple replacement with unexpected profits	$TRIPLE * UE$	Triple substitution multiplies unexpected profit
Unique replacement with adjusted bad sentiment and unexpected profit	$SINGLE * LAG\_QOP * UE$	Replace single multiplier on unexpected profit and bad accounting conditions
Adjusted dual replacement with bad sentiment and unexpected profit	$DOUBLE * LAG\_QOP * UE$	Double replacement multiplied by unexpected profit and bad accounting conditions
Modified triple replacement with bad sentiment and unexpected profit	$TRIPLE * LAG\_QOP * UE$	Triple substitution multiplied by unexpected profit and bad accounting conditions
Control variables	**Symbol**	**Definition**
Basic Characteristics of the Company	Firm_Fundamentals	Group variables include LOG_MV and LEV.
Lever	LEV	Debt that is scaled by assets.
Size	LOG_M	Total logarithm of market value
Beta (systematic risk)	BETA	Systematic risk is the sensitivity of a company's stock returns to total stock market returns.
The value of the ordinary stock market	MB	The market value of a common stock, which is measured on the book value
Performance measures	Performance-Index	Group variables including LOSS, ROA, ROA-IND, RET-IND.
Losses	LOSS	It is equal to 1 if the net profit is less than 0, otherwise, it is 0.
Stock returns	RET	Stock returns per year
Adjusted rate of return on investment	ROA-IND	Adjusted industry ROA, which is equal to the industry average ROA.
Investment Return Rate	ROA	Operating profit before interest and tax, which is scaled by total assets.
Institutional investors	INST_PCT	Percentage of company stock held by institutional investors.
Managing Director of the Board of Directors	CEO_CHR	If the CEO is the chairman of the board, it is equal to 1, otherwise, it is 0.
Unacceptable opinion last year	LAG_QOP	If the auditor's contingent, disagreed, or disagreed opinion on financial reporting has been in place for the past twelve months, it is equal to 1 and is otherwise equal to 0.
Unbelievable opinion last year adjusted with unexpected profit	$LAG\_QOP_t * UE_t$	Unbelievable opinion last year multiplied by unexpected profits
Control variables	$Control\_Variables$	Group variables include performance metrics, core firm characteristics, and corporate governance.
Adjusted control variables with unexpected profit	$Control\_Variables * UE$	Group variables include performance metrics, core firm characteristics, and corporate governance multiplied by unexpected profits.

4 Research Method

The research used the panel data model due to the data structure, which is described below. The panel data method is a method for combining cross-sectional and time-series data. This type of data is better suited to study

changes dynamically. Using these data, we can also study more complex behavioral models. In models that are not explicitly incorporated, the model coefficients must be estimated such that the disruption of each time period is not correlated with the explanatory variable of the same time period. In cross-sectional data structure - time series, one of the important issues is related to the invisible effect; an effect that cannot be explicitly talked about, but its existence cannot be disproved. It is not possible to claim that the pattern disorder statement is unrelated to the explanatory variables of the same time period. But, within the framework of integrated models and provided that certain hypotheses are established, one can come up with consistency estimates of the model coefficients. In the panel data model, it is assumed that the observations of the individual N are during the T period. For example, a variable such as firm production (Y) accepts different values from one firm to another and from time to time. To illustrate these two dimensions of data, two indices i and t are used:

$$t = 1, ..., T = 1, ..., N,\ iy_{it}$$

Here, we have a single linear regression equation model where we regress Y on the independent variable $x_1, ..., x_n$ and there is a random disruption sentence. Given that the data is a panel, for person i at time t we have:

$$y_{it} = \beta_{1it}x_{1it} + ... + \beta_{kit}x_{kit} + u_{it} = x_{it}\beta_{it} + u_{it} \tag{4.1}$$

in which β_{kit} is the parameter to be estimated, x_{it} is a vector of $k(1 \times k)$ that are explanatory variables, and β_{it} is a column vector of regression coefficients. In the models we are examining, we need to know whether the model will have a width of origin. It is clear that both models can be considered. If we consider the width of total origin for the regression, we will have $1 = x_{1it}$ for all i and t. However, we can generalize this point by writing Equation (4.2) as follows.

$$Y_{it} = \beta_{1it} + \beta_{2it}X_{it} + ... + \beta_{kit}X_{kit} + U_{it} = \beta_{1it} + \widetilde{X}_{it}\widetilde{\beta}_{it} + U_{it} \tag{4.2}$$

We have added this fixed sentence model. The vector $\widetilde{X}_{it}$ here contains $k-1$ the value of exogenous variables and β_{it} likewise (including $k-1$ coefficient). These relationships are the most general explanation of the panel data regression problem.

In this research, according to the data type and statistical analysis methods available, the combined data method was used to estimate the model parameters and to test the hypotheses. The first step in the econometric process is to evaluate the maneuverability of the variables. In this study, the Lenvin-Linchu test was used. There are various methods for estimating the model based on panel data such as fixed effects and random effects methods, as applicable.

The Chow test The Chow test is performed to determine the application of the fixed-effect model against the integration of the entire data set. The assumptions of this test are as follows:

H_0 : Pooled Model

H_1 : Fixed Effect Model

The null hypothesis states that all fixed effects are equal to zero. This test can be performed with the F-statistic. This is a simple Chow test with the Consolidated State Residual Squares (RRSS) of performing the least squares on the integrated model (without fixed effects, which is the bound state to apply the zero equality constraint) and the Absolute State Residual Squares. (URSS) estimation of LSDV with fixed effects. If N is large, the intra-group conversion can be performed and the sum of residual squares can be used as URSS. In this case:

$$F_0 = \frac{(RRSS - URSS)/(N-1)}{URSS/(NT - N - 1)} \sim F_{N-1,N(T-1)-K} \tag{4.3}$$

If F_0 is greater than the critical value with $N-1$ and $N(T-1)-K$ degrees of freedom, the assumption H_0 is rejected and the effects are accepted. The fixed effects approach is acceptable when the difference between the sections can be explained by the width statements of the origin, but in the integrated or integrated data method, the same state of width is used [2].

The Hausman test

The Hausman test is used to select the fixed-effects and random-effects method, which tests the null hypothesis of consistency of the random-effects method. The null hypothesis in the Hausman test is as follows:

$H_0 : \alpha = \alpha_s$

$H_1 : \alpha \neq \alpha_S$

The null hypothesis means that there is no relationship between the disturbance component and the explanatory variable and they are independent of each other. While the opposite hypothesis implies that there is a correlation between the disruption component and the explanatory variable, and because there is a problem of bias and incompatibility when there is a correlation between the disruption component and the explanatory variable, it is better to adopt H_1 (reject H_0). We used the fixed-effects method. Under the H_0 hypothesis, the fixed-effects and random-effects methods are both compatible, but the random-effects method is ineffective. That is, if the hypothesis H_0 is rejected, the fixed-effects method is consistent and the random-effects method is incompatible and we must use the fixed-effects method. Eviews 9 software was used to perform different estimation steps of the model.

5 Results and Discussion

5.1 Descriptive statistics of research data

The first step in any statistical analysis of data is to calculate descriptive indices. Therefore, to enter the data analysis stage, descriptive statistics including central indices, dispersion, and deviation from convergence, as well as the Jarque-Bera test for normal distribution of residues were calculated. The results are presented in Table 2.

Table 2: Approaches of ECG in ML

Jarque-Bera test		**S.D.**	**Min**	**Max**	**Middle**	**Ave.**	**Variables**
Probability	**statistics**						
0.000	131444.2	0.672814	−0.992563	10.32647	0.136104	0.210585	CAR
0.000	2808074	61.24070	−1281.000	109.5000	−0.015397	−4.329317	UE
0.000	138.9301	0.492284	0.000000	1.000000	0.000000	0.410843	SINGLE
0.000	514.6963	0.370368	0.000000	0.000000	0.000000	0.163855	DOUBLE
0.000	72822.56	0.141727	0.000000	1.000000	0.000000	0.020482	TRIPLE
0.000	22229238	28.94954	−827.3305	75.16666	0.000000	−0.746031	$SINGLE * UE$
0.000	3568528	7.927480	−172.5000	109.5000	0.000000	0.265542	$DOUBLE * UE_t$
0.000	23597019	10.10340	−291.0000	1.816583	0.000000	−0.360137	$TRIPLE * UE_t$
0.000	207.3260	0.430096	0.000000	1.000000	0.000000	0.244578	CEO_CHR_t
0.000	92.71090	32.67380	0.000000	99.45086	67.80000	57.02597	$INST\_PCT_t$
0.000	207.3260	0.430096	0.000000	1.000000	0.000000	0.244578	LAG_ADV_t
0.000	148.2553	0.629353	4.400624	8.192088	5.946670	6.017778	$Firm\_Fundamentals_t$
0.000	765.3818	0.348194	0.000000	1.000000	0.000000	0.140964	$Performance\_Index_t$
0.000	1671003	41.68797	−741.4826	92.79655	−0.008717	−3.147847	$Control\_Variables * UE_t$
0.000	23645209	23759.03	0.000000	684475.8	0.000000	836.8039	$SINGLE * LAG\_QOP * UE_t$
0.000	4977441	7.574130	−172.5000	109.5000	0.000000	−0.194904	$DOUBLE * LAG\_QOP * UE$
0.000	23652732	2939.319	0.000000	84681.00	102.0846	102.0846	$TRIPLE * LAG\_QOP * UE_t$
0.000	138.3467	0.499078	0.000000	1.000000	1.000000	0.534940	LAG_QOP_t
0.000	2842747	61.15281	−1281.000	109.5000	0.000000	−4.231463	$LAG\_QOP_t * UE_t$

According to the estimated probability of the Jarque-Bera statistic, since the calculated error level of all variables is less than 0.05, it indicates the normal distribution of these variables.

5.2 Reliability

To estimate the pattern, it is necessary to first examine the maneuverability of the variables. Therefore, the single root test is one of the most common tests used to detect the failure of a process. Therefore, before estimating the model, the statistical properties of the panel data are examined in terms of manufacturing or existence of the Levin-Lin-Cho unit. The results show that all variables are at the zero level. The results of the unit root test for the model variables are presented in Table 3.

Computer Attachment (Software Output) Description: Critical values at the 5% level.

Table 3: The reliability test

Variable	Test	Test statistics	P-Value	Test result
CAR	Levin, Lin, Chu	−10.23	0.000	Reliability at zero level
UE	Levin, Lin, Chu	−6.23	0.000	Reliability at zero level
SINGLE	Levin, Lin, Chu	−7.89	0.000	Reliability at zero level
DOUBLE	Levin, Lin, Chu	−15.25	0.000	Reliability at zero level
TRIPLE	Levin, Lin, Chu	−9.85	0.000	Reliability at zero level
$SINGLE * UE$	Levin, Lin, Chu	−5.23	0.000	Reliability at zero level
$DOUBLE * UE_t$	Levin, Lin, Chu	−21.35	0.000	Reliability at zero level
$TRIPLE * UE_t$	Levin, Lin, Chu	−17.82	0.000	Reliability at zero level
CEO_CHR_t	Levin, Lin, Chu	−22.78	0.000	Reliability at zero level
$INST\_PCT_t$	Levin, Lin, Chu	−5.61	0.000	Reliability at zero level
LAG_ADV_t	Levin, Lin, Chu	−3.36	0.000	Reliability at zero level
$Firm\_Fundamentals_t$	Levin, Lin, Chu	−8.69	0.000	Reliability at zero level
$Performance\_Index_t$	Levin, Lin, Chu	−7.25	0.000	Reliability at zero level
$Control\_Variables * UE_t$	Levin, Lin, Chu	−13.24	0.000	Reliability at zero level
$SINGLE * LAG\_QOP * UE_t$	Levin, Lin, Chu	−8.21	0.000	Reliability at zero level
$DOUBLE * LAG\_QOP * UE$	Levin, Lin, Chu	−6.32	0.000	Reliability at zero level
$TRIPLE * LAG\_QOP * UE_t$	Levin, Lin, Chu	−9.32	0.000	Reliability at zero level
LAG_QOP_t	Levin, Lin, Chu	−15.62	0.000	Reliability at zero level
$LAG\_QOP_t * UE_t$	Levin, Lin, Chu	−7.82	0.000	Reliability at zero level

Table 4: The results of testing the normality of the dependent variable of the research

Variable name	Symbol	No.	Statistics Value	Sig. level
The difference between the earnings per share of the actual end of the year and the last earnings forecast	CAR	830	131964.5	0.000
The difference between the earnings per share of the actual end of the year and the last earnings forecast	CAR	830	8071731	0.000

5.3 Normality of dependent variable

According to this type of significance level, the dependent variable is less than 0.05. Thus, the dependent variable is normally distributed at the 95% confidence level.

The Limer Test: We first have to consider the Limer test and choose between stacked and non-stacked data (fixed-effects or random-effects) in which the hypothesis H_0 regarding the homogeneity of the y-intercepts (hybrid method) is investigated against hypothesis H_1 regarding the heterogeneity of y-intercepts (panel method).

If the calculated F is greater than the table F with $(n-1)$ and $(nt-n-k)$ degrees of freedom, then the hypothesis becomes zero and the regression is not valid and the width of different sources must be taken into account. The results of the Limer test for both models are presented in Table 5.

Table 5: The output of the F Limer test

Models result	Prob	D.f.	Statistic	Test Summary
Model (1): Constant effect verification against consolidated data	0.000	(165,652)	1.64	Cross-section F
	0.000	165	289.006	Cross-section Chi-square
Model (2): Constant effect verification against consolidated data	0.000	(165,650)	9.99	Cross-section F
	0.000	165	186.57	Cross-section Chi-square

As can be seen, prob is less than 0.05, so the regression has a width of different origin, confirming the constant effect against the least squares method, i.e., confirming the pool data over pool data in both models.

The Hausman test: The Hausman test was used to investigate the differences in the origin of the cross-sectional units. The results are presented in Table 6.

According to the results of the Hausman test, the first model assumes zero, since it is less than 0.05. Therefore, model (1) must be estimated with fixed effects, confirming fixed effects against random effects. Model (2) has to be

Table 6: The output of the Hausman test

Result of Models	Prob	Chi-sq. d.f.	Chi-Sq. Statistic	Test Summary
Model (1): Confirmation of fixed effects against random effects	0.000	13	180.19	Cross-section random
Model (2): Confirm random effects versus fixed effects	0.96	14	6.08	Cross-section random

estimated with random effects. Therefore, according to the results of the Limer and Hausman tests, a fixed-effects hybrid model for model (1) and a random-effects hybrid model for model estimation should be estimated.

5.4 The results of the estimation of the first hybrid model with fixed effects

After explaining the model and choosing the best method, the results of the first model estimation for the selected companies are as shown in Table 7.

Table 7: The output of the first model

variable	Coefficient	S.D.	z statistics	prob
UE	0.092531	0.046231	1.994623	0.0405
SINGLE	0.020923	0.090497	2.216703	0.0167
DOUBLE	0.062588	0.012783	4.851547	0.0000
TRIPLE	0.062610	0.018562	3.349929	0.0000
$SINGLE * UE$	−0.010413	0.002941	−3.401902	0.0000
$DOUBLE * UE_t$	−0.001164	0.000536	−2.052525	0.0481
$TRIPLE * UE_t$	−0.003400	0.001818	−1.871887	0.0534
CEO_CHR_t	0.007445	0.001406	5.260687	0.0000
$INST\_PCT_t$	0.001854	0.000389	2.575356	0.0152
LAG_ADV_t	−0.182004	0.100020	−1.829080	0.0618
$Firm\_Fundamentals_t$	0.281148	0.050816	5.516098	0.0000
$Performance\_Index_t$	−0.056686	0.012121	−4.626510	0.0000
$Control\_Variables * UE_t$	0.002445	0.000456	5.260687	0.0000
c	7.541835	0.660627	11.41618	0.0000
R^2	0.81			
$\overline{R}^2$	0.79			
$D.W.$	2.1			
F	1.72			0.000

According to Table 7, the estimation model with respect to the coefficient of determination and Watson's camera shows the good fit of the model. The coefficients obtained were also statistically significant. Therefore, the results show that the first hypothesis of the research, i.e., changes in each of the triangle sides affects the profitability coefficient, is accepted in the companies listed in the Tehran Stock Exchange.

5.5 The results of estimating the second hybrid model with random effects

After explaining the model and choosing the best method, the estimation results for the selected companies are as shown in Table 8.

Table 8: The model output

variable	Coefficient	S.D.	z statistics	prob
UE	0.220588	0.110552	1.997266	0.0520
SINGLE	0.261999	0.140322	1.865787	0.0594
DOUBLE	0.211218	0.115384	1.824665	0.0598
TRIPLE	0.244670	0.101265	2.371009	0.0207
$SINGLE * UE$	0.051353	0.022816	2.250751	0.0247

$DOUBLE * UE_t$	0.086563	0.003255	26.42601	0.0000
$TRIPLE * UE_t$	0.075967	0.023437	3.203609	0.0000
$SINGLE * LAG\_QOP * UE_t$	0.052361	0.025120	2.077728	0.0380
$DOUBLE * LAG\_QOP * UE$	−0.987211	0.038973	−25.33052	0.0000
$TRIPLE * LAG\_QOP * UE_t$	0.001265	0.000375	3.207221	0.0000
LAG_QOP_t	0.026259	0.012149	2.147960	0.0324
$LAG\_QOP_t * UE_t$	0.990425	0.044514	22.24650	0.0000
$Control\_Variables_t$	0.182722	0.040534	4.499173	0.0000
$Control\_Variables * UE_t$	0.013520	0.006016	2.247263	0.0249
c	2.357846	0.441729	5.322141	0.0000
R^2	0.89			
$\overline{R}^2$	0.86			
$D.W.$	2.05			
F	36559.9			0.000

Table 8 shows that the estimation model with respect to the coefficient of determination and Durbin Watson statistic show the good fit of the model. The coefficients obtained were also statistically significant. Therefore, the results reveal that the second research hypothesis regarding the significant effectiveness of changes in each of the triangle sides in bad accounting conditions in the profitability coefficient is accepted in the companies listed in the Tehran Stock Exchange.

6 Summary and Suggestions

This study investigated the effect of the triangle of financial statement approval on ERC in the Tehran Stock Exchange. A combined data panel model was used to test the hypotheses and the research hypotheses were tested. The results of model estimation showed that changes in each of the triangle sides had a significant effect on ERC and changes in each of the triangle sides had a significant effect on the earnings response factor in bad accounting conditions, so the first and second hypotheses were confirmed. Financial statements are useful in decision-making and accountability when they are reliable, transparent, and of good quality. Although the preparation of financial statements based on accounting standards guarantees its relative utility and quality, based on existing theories, including agency theory and contract theory, the quality of information can be distorted for some reason and may result in misstatements. Financial misstatement can result in these values being misstated. Users of financial statements and accounts need a control mechanism to ensure that the financial statements are not compromised to optimally eliminate contamination (prevention and detection of distortion) and ensure the reliability of information is presented.

This is the responsibility of the independent auditor. In fact, the primary role of the independent auditor is to trust the financial statements. The triangle reset can be used as a response by the board of directors to replace those responsible for previous financial reporting errors or inappropriate relationships in the Triangle relationship, and the board expects that this reset will rebuild investor confidence in the validity of the statements. Financial and the market's negative response to the auditor's replacement after his or her contingent opinion is less than the expression of correct opinion.

This research challenges the core assumption of a team of executives in accounting research by identifying three key decision-makers in the financial reporting system and thus extends the research that state that financial reports are the result of a joint management and auditor effort. It also studies the dynamic interaction in the verification triangle and the effect of different substitution sizes on ERC.

The results show that single, dual, and triple replacement in the confirmation triangle decreases the end-of-year ERC significantly, and comparing the three replacement sizes shows that the sum of ERC for dual replacement is greater than the single replacement and triple replacement. In general, the results show that the single and triple ERC replacements at the end of the year show a greater decrease than the dual replacement.

Also, given the negative accounting information, the single replacement in the confirmation triangle increases ERC, but the dual replacement will reduce ERC significantly although the effect of the triple replacement is not significant. From a market perspective, this result suggests that investors often expect the board to identify the responsible person after identifying accounting errors. Therefore, it is recommended that to efficiently allocate investments, investors pay more attention to the profitability factor in their decisions to discuss the triangle of financial statement approval. It is

also recommended that business managers and accounting standard makers consider improving financial statements to assist investors in evaluating corporate performance.

References

[1] B. Abedini and A. Faridnia, *Investigation of the impact of capital structure and corporate social responsibility report on asset returns and earnings response coefficient in companies listed in Tehran Stock Exchange*, J. Econ. Stud. Financ. Manag. Account. **4** (2019), no. 2.

[2] H. Abrishami, *The basics of econometrics; Volume II*, University of Tehran Publications, Fourth Edition, 2006.

[3] R. Ball and P. Brown, *An empirical evaluation of accounting income numbers*, J. Account. Res. **9** (1968).

[4] R. Banaei, S.A. Waez and A.H. Montazer Hojat, *The effect of profit sensitivity dimensions (profit reaction coefficient, abnormal return fluctuations and profit forecast error) on the remuneration of the board of directors*, J. Financ. Res. **19** (2016), no. 4, 615–642.

[5] P.K. Chaney and D.C. Jeter, *The effect of size on the magnitude of long-window earnings response coefficients*, Contemp. Account. Res. **8** (2016), no. 2.

[6] D.W. Collins and S.P. Kothari, *An analysis of intertemporal and cross-sectional determinants of earnings response coefficients*, J. Account. Econ. **11** (1989), no. 2–3, 143–181.

[7] A. Derakhshan Mehr and S. Karami, *The impact of CEO tenure and audit firm size on the quality of accounting information*, J. Account. Manag. Persp. **2** (2019), no. 6.

[8] D. Dhaliwal and S. Reynolds, *The effect of the default risk of debt on the earnings response coefficient*, Account. Rev. **69** (1994).

[9] V. Hatamian, M. Babazadeh and N. Khatinejad, *Investigating the effect of comparability of financial statements on accounting earnings response coefficient with emphasis on audit quality in companies listed in Tehran Stock Exchange*, J. Account. Manag. Persp. **1** (2018), no. 4.

[10] A. Jahanshad and M. Navai Lavassani, *The impact of auditor tenure and auditor type on conservative earnings reporting*, Financ. Account. Audit. Res. **5** (2013), no. 18.

[11] S. Jamshidi Fard, *Comparative study of financial statement responsibility*, Account. Mag. **215** (2009).

[12] D.S. Jenkins and U. Velury, *Does auditor tenure influence the reporting of conservative earnings?* J. Account. Public Policy **27** (2008), no. 2, 115–132.

[13] Y.H. Kim, *The relationship between default risk, size and financial performance from Korean firms*, Korea Int. Account. Rev. **48** (2013).

[14] M. Lari Dasht Bayaz and J. Oradi, *The relationship between tenure and CEO financial knowledge with audit fees*, J. Account. Audit. Rev. **24** (2016), no. 1.

[15] D. Li, *The certifying triangle of financial reports*, LSU Doctoral Dissertations, Louisiana State University, 2016.

[16] S. Modaresi and M. Nazaripour, *The effect of personality characteristics of financial and executive directors on the quality of financial reporting*, Eur. Online J. Natural Soc.Sci. **2** (2013), no. 3(s).

[17] I. Pour Zarandi, M. Hassani and Z. Taheri, *The relationship between earnings management and earnings response coefficient based on accounting variables to investigate eligible companies*, J. Manag. Account. Audit. Knowledge **2** (2013), no. 5.

[18] A. Saghafi, *Investigating and explaining the relationship between profit quality and market response*, J. Account. Audit. Rev. **78** (2014).

[19] T.E. Vermeer, *Do CEO/CFO certifications provide a signal of credible financial reporting?* Res. Account. Regul. **18** (2005), 163–175.

[20] D. Yermack, *Higher market valuation of companies with a small board of directors*, J. Financ. Econ. **40** (1996), no. 2, 185–211.