The Relationship between Corporate Governance and Volatility of Profit and Loss Components

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Abstract

The present study is concerned about the relationship between corporate governance and the volatility of profit and loss components in companies listed on the Tehran Stock Exchange.

This paper's statistical population includes 129 listed companies on the Tehran Stock Exchange during 2012-2017. For testing the study's hypotheses, the multivariate linear regression is used based on the panel data.

The study's findings show no significant relationship between institutional shareholders' ownership percentage and profit volatility and loss. Moreover, the results indicate a negative and significant relationship between the percentage of major shareholders and volatility of profit and loss. The study's findings suggest a positive and significant relationship between board independence, financial expertise, and CEO education, and volatility of profit and loss.

This paper fills the gap by presenting logical reasoning and empirical evidence on the Tehran Stock Exchange and further develops the conducted studies on corporate governance.

Keywords: Corporate Governance, Net Profit, Volatility of Profit, Loss Components.

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1. Introduction

Earnings forecast by the management provides some information about the firm future. One of the factors that should be considered in the earnings forecast is earnings volatility. Sometimes, the managers' earnings smoothness prevents high earnings volatilities, so we can say that earnings volatility is one of the useful resources of earnings forecast (Hundal, 2013).

Corporate governance is an essential part of the operational setting for running a business firm. The studies on corporate governance created contradictory evidence. Some irregularities can be solved by launching a reliable and effective evaluation system in the firm (Seifzadeh et al., 2020). In the broad sense, corporate governance refers to decision-making processes and structures in the organizational framework, aiming to balance managers' and other beneficiaries' behaviors. Corporate governance is a prerequisite for monitoring the firm's management, separating the economic firm from the owner, and finally preserving investors' and other beneficiaries' rights (Salehi et al., 2020a). When corporate governance is appropriate, we expect managers' behavior to align with shareholders' interests. In other words, corporate governance leads to the decline of profit and loss volatilities (Yau Man Ze-To, 2017).

Corporate governance encompasses various aspects of the firm, including the board structure, ownership structure, control, institutional shareholders' presence (Lari Dashtbayaz et al., 2020), compensation plans for managers and employees, capital structure, market competition, product competition, etc. Hence, based on the criteria above, different indices will be created for corporate governance. These indices include about 20-100 criteria from corporate governance mechanisms and depend on each country's economic, social, and cultural context. For example, the indices that covered most of the mechanisms of corporate governance in Europe and England were created by Bauer et al. (2004), Drobetz et al. (2004) in Germany, and Compers et al. (2010) in the U.S. These indices are used for measuring the rank of corporate governance. In this study, the topic of corporate governance is considered by using seven major factors of institutional shareholders' ownership percentage, major shareholders' ownership percentage, the percentage of unbounded members of the board, CEO duality, CEO education, CEO financial expertise, and CEO industry specialization(Salehi et al., 2020b) and this study aims to realize whether the external factors can lower the range of instability (volatility) of profit and loss components or not, for which two main theories of information asymmetry and agency theory have been used (Diallo, 2017).

The mechanisms of corporate governance, including institutional shareholders' ownership percentage, major shareholders' ownership percentage, the percentage of unbounded members of the board, CEO duality, CEO education, and CEO financial expertise, contribute significantly to eliminating information asymmetry the agency costs.

An appropriate corporate governance system can help the firms gain investors' trust and encourage them to invest (Black et al., 2006). According to the conducted empirical studies, the effective incorporation of this system's principles would enhance financial performance (reduce the firm's performance volatility) and increase the firm value. Moreover, corporate governance provides a framework to ensure the financial suppliers will earn an attractive return on their investment (Sloan, 2001). On the other hand, corporate governance can contribute to the firm through supervisory mechanisms and motivational incentives. Further, effective corporate governance can control and decrease managers' self-interest behavior, which leads to the transfer of wealth toward them.

On the other hand, given the influential corporate governance, we can create managers' required motivation to maximize the firm value toward shareholders' interests. Hence, these scholars claim that an effective corporate governance system would enhance the information transparency and lower the information asymmetry, and this would

strengthen the efficiency of the capital market, such that it is expected from earnings volatility and decreased loss to cause the creation of an attractive and safe market for new investors. They also declare that a corporate governance system provides excellent profitable opportunities for the existing investors and would lead to the development of liquidity, market depth, price transparency, and productivity and social welfare (Mama, 2018). Thus, according to the facts above, the present study attempts to assess the relationship between corporate governance and the volatility of profit and loss components. In other words, this study tries to figure out whether corporate governance quality contributes to the volatility of profit and loss components or not. Studies on corporate governance and instability (volatility) of profit and loss components are vital for three reasons: 1. There are limited studies in this field, 2. The instability (volatility) of profit and loss components in Iran is generally high due to adverse economic conditions and the recession of Iranian industries (which are exacerbated by Western countries' economic sanctions). Hence, firms seek to increase corporate governance quality to minimize the instability (volatility) of their profit and loss components, and 3. Understanding the contributing factors to the instability (volatility) of profit and loss components maintains shareholders' interests. It causes the firm's growth and flourishment and finally increases the profitability and satisfaction of shareholders. Hence, limited studies are conducted in Iran to identify the contributing factors to the instability (volatility) of profit and loss components.

2. Theoretical issues

2.1. Corporate governance

Corporate governance is a set of responsibilities and methods applied by the board and bounded managers to determine the strategic path to ensure the objectives, risk control, and wise consumption of resources (Chung and Hsiang, 2007). Corporate governance is not related to the firm's operation but about managing the economic firm, supervising, and controlling executive managers' behavior and responsiveness to all beneficiaries. Corporate governance has various structures, and different criteria can be used for its measurement. This study has considered the topic of corporate governance by using seven major factors of ownership percentage of institutional shareholders, the ownership percentage of major shareholders, the percentage of unbound board members, CEO duality, CEO education, CEO financial expertise, and CEO industry specialization (Duppati et al., 2017).

2.2. Net profit

Accounting profit measures a business firm's performance and indicates business activities and the manner of value creation by economic firms. Net profit in business is the input or earnings of an institute during an accounting period, which is calculated by subtracting the operational costs and tax on income. To put it simply, if the firm's operational costs and tax are subtracted from a certain period, for example, a fiscal year, the calculated figure indicates the firm's net profit from that firm's income. The positivity or negativity of this figure is directly associated with firm performance. Moreover, net profit's positivity would lead to the growth of stock value and finally, the equity.

2.3. Profit and loss volatility

Higher volatility occurs with a higher risk, and it is under the influence of various factors. On the other hand, there is a strong relationship between earnings volatility and future earnings predictability. The earnings predictability is one of the qualitative and time-series characteristics of the earnings. It is defined as the capability of current profits in predicting future long-term and short-term profits. The economic and accounting

factors are among those elements that influence the relationship between volatility and earnings predictability (Brzel and Dang, 2008).

3. Hypothesis development

Earnings volatility is one of the time-series features of earnings quality under the influence of various factors. Higher volatility would lead to a higher risk. Two main reasons for earnings volatility are economic factors, including the fluctuations of the currency rate, the changes that come from the reassessment of properties, changes that occurred due to bank facilities' rate, and firms' accounting methods in the economic setting. One contributing factor to the amount of volatility of profit and loss components is the corporate governance structure. Corporate governance is a supervisory process to ensure that the firm manager is working in line with shareholders' interests (Eika et al., 2014). The mechanisms of corporate governance are classified into two groups outside the organization and inside the organization. Those mechanisms inside the organization refer to institutional shareholders, ownership of major shareholders, the board independence, CEO duality, the education of the board members, financial expertise of the board members, CEO education, CEO financial expertise, and the like and mechanisms outside the organization include all rules, regulations, and requirements the organization must apply in its operation and structure, like those rules related to the financial structure of the firm and manner of management compensation and incentives (Azibi et al., 2011). We predict that an appropriate corporate governance system will increase information transparency, lower the information asymmetry, and enhance capital market efficiency. We expect decreased earnings instability and loss and an attractive and reliable market for new investors. The corporate governance system's presence provides some useful profitability opportunities for existing investors. It would lead to the growth of liquidity, market depth, price transparency, and finally, productivity and social welfare enhancement (Mama, 2018). Hence, the following studies are carried out in this field:

Bealsey (2010) declares that the board's independence and the audit committee's perseverance (number of sessions) positively and significantly affect the audit fee. Dhaliwal et al. (2016) point out that concentrated ownership and the board composition for management supervision are two suitable alternatives for one another and also concluded that there is a relationship between the board composition (CEO independence and duality) and audit fee. Azibi et al. (2011) perceived that the board size, foreign managers, and the average age of managers and CEO duality have a negative effect on the performance. This occurs while the number of committee members and the type of auditor has a positive effect. Brzel and Dang (2008) argue that there is no significant relationship between most corporate governance system variables and audit fees. There is a negative and significant relationship between audit committee independence and audit fee. Bathala et al. (2015) posit that corporate governance is weaker for firms that disclose individuals' transactions, including selling or buying properties, goods, and services. Chung and Hsiang (2007) declare that corporate governance will enhance and increase research and development investment. Gupta et al. (2018) discovered that countries with strong corporate governance have a lower capital cost. These results reveal that establishing a corporate governance system would lead to financial development. Paniagua et al. (2018) state a positive and significant relationship between corporate governance and financial performance. This study's findings show that board independence positively impacts the relationship between corporate governance and financial performance. Kieschnick and Moussawi (2018) argue that there is no relationship between firm age and firm governance. The findings of this study show a positive relationship between firm age and debt ratio. Lqbal et al. (2019) demonstrate that a strong corporate governance system will enhance financial performance. Given the facts

above, the hypotheses of the study are as follows:

H_1: There is a significant relationship between the ownership percentage of institutional shareholders and the volatility of profit and loss statements.

H_2: There is a significant relationship between the ownership percentage of major shareholders and volatility of profit and loss.

H_3: there is a significant relationship between board independence and volatility of profit and loss statement.

H_4: There is a significant relationship between CEO duality and volatility of profit and loss statement.

H_5: There is a significant relationship between CEO education and volatility of profit and loss statement.

H_6: There is a significant relationship between CEO financial expertise and volatility of profit and loss statement.

H_7: There is a significant relationship between CEO industry specialization and volatility of profit and loss statement.

4. Research methodology
4.1. The population under study
The present study's statistical population is all listed firms on the Tehran Stock Exchange during 2012-2017.

The systematic elimination method is used for sampling, and finally, after applying the following conditions, the statistical sample of the study will be selected:

1. The financial yearend of the firms should be set on March 20, and firms should have no change in their financial period;
2. Firms should be active constantly during the period of the study, and their shares should be transacted (no more than 6 months of transaction halt is accepted);
3. Firms should present the required financial information during the period of the study; and,
4. Firms should not be affiliated with investment companies, banks, insurance, and financial intermediaries.

The required primary and raw information and data for hypothesis testing were collected using the databank related to the Tehran Stock Exchange, including Tadbir Pardaz and Rah Avard-e Novin and also the published reports of Tehran Stock Exchange via direct access (by analyzing the disclosed reports in the Codal Website and then manual collection) to the CDs provided by the Tehran Stock Exchange and also the information of rdis.ir website and other necessary resources.

4.2. Data analysis method
In this paper, the multivariate linear regression method is used for testing the hypotheses. Descriptive and inferential statistical methods are used for data analysis. Such that frequency distribution is used for describing the data, and at the inferential level, to test the research hypotheses, F-Limer, Hausman, normality, and multivariate linear regression tests were employed.

4.3. Research model
In this study, according to the study of Duppati et al. (2017), the following multivariate linear regression model is used based on the panel data:
Model (1)

$$SANI_{TA_{it}} = \beta_0 + \beta_1 INS_{it} + \beta_2 MAJ_{it} + \beta_3 Indepent_{it} + \beta_4 Duality_{it}$$
$$+\beta_5 CEOEducation_{it} + \beta_6 CEOExpertise_{it} + \beta_7 CEOIndustry_{it}$$
$$+\beta_8 MTB_{it} + \beta_9 ROA_{it} + \beta_{10} CFO_{it} + \beta_{11} LEV_{it} + \beta_{12} SIZE_{it}$$
$$+\beta_{13} AGE_{it} + \beta_{14} Restatment_{it} + \beta_{15} ROT_{it} + \beta_{16} BoardChange_{it}$$
$$+\beta_{17} MT_{it} + \beta_{18} Binter_{it} + \beta_{19} BCO_{it} + \beta_{20} B.OWNER_{it} + \varepsilon_{it}$$

Where the operational definition of variables is as follows:

Dependent variable and its calculation method

1- Profit and loss volatility ($SDNI\_TA_{it}$): in this paper, the standard deviation of net profit to mean total properties within the 5 previous years is used as the criterion for measuring volatility or instability of net profit (Barbedo et al., 2007).

2- Independent variable and its calculation method

3- Ownership percentage of institutional shareholders (INS_{it}): is the ownership percentage of shares available to institutional shareholders, including investment companies, banks, leasing, retirement funds (Guvenen et al., 2014).

4- Ownership percentage of major shareholders (MAJ_{it}): is total ownerships more than 10 percent of the firm i in the year t (Duppati et al., 2017). In Iran, there is no special necessity for the disclosure of major ownerships. However, based on Declaration 131 of the Board of Financial Accounting Standards, if the ownership percentage of a shareholder is 10 percent or more of a total 10 percent of the structure firm ownership, these owners will be named the major shareholders (controllers).

5- The board independence (independen$_t$): the board independence is equal to the number of unbounded members of the board to total board members of the board of the firm i in the year t (Zafar et al., 2014).

6- CEO duality of the firm (Duality$_{it}$): a virtual variable that if the firm manager is the director of the board (duality will be created) 1, otherwise, 0 will be assigned (Chen et al., 2010).

7- CEO education (CEOEducation$_{it}$): a dummy variable that if the CEO has a master's, Ph.D., or higher degree 1; otherwise, 0 will be assigned (Duppati et al., 2017).

8- CEO financial expertise (CEOExpertise$_{it}$): a dummy variable if the CEO has a degree in accounting or finance 1; otherwise, 0 will be assigned (Gupta et al., 2018).

9- CEO industry specialization (CEOIndustry$_{it}$): a dummy variable that if the firm CEO has a specialization in industry 1, otherwise, 0 will be assigned.

Control variable and its calculation method

Firm growth (MTB$_{it}$): is equal to the market value to book value of equity and growth measurement criterion of the firm.

Return on assets (ROA$_{it}$): is a variable for performance measurement, which is equal to net profit to the market value of assets (market value of assets is equal to book value of debts plus the market value of equity) (Sloan, 2001).

Operational cash flow (CFO$_{it}$): is equal to operational cash flow to book value of assets.

Financial leverage (LEV$_{it}$): is equal to the book value of debts to the book value of assets (Duppati et al., 2017).

Firm size (SIZE$_{it}$): is equal to the natural logarithm of the book value of firm assets (Selik et al., 2012).

Firm age (AGE$_{it}$): is equal to the natural logarithm of firm age from the establishment date.

Financial restatement (Restatement$_{it}$): is a virtual variable that if the firm i in the year t restated its financial statements 1; otherwise, 0 will be assigned.

Return on equity (ROT$_{it}$): is equal to net profit to book value of equity.

Change in the board members (BoardChange$_{it}$): is a virtual variable that if in the firm i in the year t at least one of the members has changed 1; otherwise, 0 will be assigned

(Duppati et al., 2017).

CEO tenure (MT_{it}): is equal to the number of years the CEO is the manager of the firm i.

Membership in the board of other firms ($Binter_{it}$): is a virtual variable that if at least one of the board members is at the same the member of another firm 1; otherwise, 0 will be assigned. Information related to this variable will be extracted from the firm's activity report (Mama, 2018).

Board compensation (BCO_{it}): is equal to the board compensation to net sales. Compensation is extracted from the assembly report (Diallo, 2017).

Stock ownership of the board ($B.OWNER_{it}$): is equal to the ownership percentage of stock available to the board members (Huang et al., 2016).

5. Results and analysis
5.1. Descriptive statistics

The results of the descriptive statistics of research variables are depicted in Table 1. Mean is the most significant central index, which shows the balance point and center of gravity of distribution and is an appropriate index for showing the centrality of data. The mean of the variable of ownership percentage of institutional shareholders is almost 0.601. The median is 0.723, minimum 0.000, and maximum 0.990 with a standard deviation of about 0.334. This suggests that the range of institutional ownership in the firms under study is almost 60%. The mean of the major ownership percentage variable is almost 0.687, median 0.741, minimum 0.000, and maximum 0.981 with a standard deviation of about 0.222. This shows that the range of major ownership (more than 10%) in the study firms is 68%. The percentage of unbounded board members is almost 0.732, median 0.800, with a minimum of about 0 and a maximum of 1 with a standard deviation of about 0.172, which shows that the number of unbounded is about 73%, total board members.

Table 1. Descriptive statistics of quantitative variables of the study

Variable	Mean	Median	Std. dev.	Min.	Max.
The volatility of profit and loss (SDNI_Tait)	0.762	0.115	1.573	0.001	6.050
Ownership percentage of institutional shareholders (INSit)	0.601	0.723	0.334	0.000	0.990
Ownership percentage of major shareholders (MAJit)	0.687	0.741	0.222	0.000	0.981
The board independence (Independentit)	0.732	0.800	0.172	0.000	1.000
Firm growth(MTBit)	3.443	2.840	2.066	0.978	8.501
Return on assets(ROAit)	0.183	0.067	0.236	-0.148	0.590
Operational cash flow to property (CFOit)	0.129	0.125	0.168	-0.710	0.923
Financial leverage (LEVit)	0.593	0.597	0.197	0.144	0.934
Firm size (SIZEit)	14.200	13.882	1.517	10.532	19.149
Firm age (AGEit)	6.038	7.238	1.713	2.639	7.240
Return on equity (ROTit)	0.272	0.258	0.253	-0.223	0.694
CEO tenure (MTit)	3.345	2.000	2.586	1.000	13.000
Managerial compensation to net profit (BCOit)	0.001	0.0005	0.003	0.000	0.066
Ownership percentage of the board stock (BOWNERit)	0.214	0.012	0.287	0.000	0.954

According to Table 1, the mean market value to book value of equity is about 3.443, and its median is about 2.840. The amount of standard deviation is 2.066, the minimum and maximum values are 0.978 and 8.501, respectively. This indicates that the amount of market value of equity is, on average, about 2.4 times more than the book value. The mean of the variable of return of assets is about 0.183, with a median of about 0.067. The standard deviation value is 0.236, the minimum and maximum values are -0.148 and

0.590, respectively. The mean of the variable of operational cash flow to book value of assets is about 0.129, with a median of about 0.125. Its standard deviation is about 0.168 with minimum and maximum values of -0.710 and 0.923. This indicates that the amount of firms' operational cash is about 95% of the book value of assets on average.

According to Table 1, the mean managerial compensation to sales is about 0.001, with a median of about 0.0005. Its standard deviation is 0.003, and the minimum and maximum values are 0 and 0.066, respectively. This shows that the amount of managerial compensation is, on average, about 1% of net profit. The mean of the variable of ownership percentage of the CEO is about 0.214, with a median of about 0.012. Its standard deviation is 0.287, the minimum and maximum values are 0 and 0.954, respectively, so the range of managerial ownership in the firm is about 21%.

Table 2. Descriptive statistics of qualitative variables of the study

Variable	Condition	Absolute frequency	Frequency percentage
CEO duality (Dualityit)	1 = with duality	159	25%
	0 = with no duality	486	75%
	Total	645	100%
CEO education (CEOEducation)	1 = with education	277	63%
	0 = with no education	368	57%
	Total	645	100%
CEO financial expertise (CEOExpertise)	1 = with financial expertise	147	77%
	0 = with no financial expertise	495	23%
	Total	645	100%
CEO industry specialization	1 = with specialization	239	27%
	0 = with no specialization	406	63%
	Total	645	100%
Financial restatement (Restatementit)	1 = with restatement	531	82%
	0 = with no restatement	114	18%
	Total	645	100%
Change in board members (BoardChangeit)	1 = with change	186	29%
	0 = with no change	459	71%
	Total	645	10%
Membership in the board of other firms (Binterit)	1 = with members	177	27%
	0 = with no members	468	73%
	Total	645	100%

Table 2 shows the results of the qualitative variables. The percentage of relative frequency for the variable of CEO duality is about 75%. This is indicative of the presence of CEO duality in 75% of firms under study. Moreover, the percentage of relative frequency for the variable of CEO education is about 63%, which shows about 63% of managers in the firms under study have a master's degree or higher. The percentage of relative frequency for the variable of CEO specialization is about 77%, which shows about 77% of managers in the firms under study have a finance certificate.

5.2. Inferential statistics

The appropriate model is selected among simple linear regression, simple linear regression with the time factor, fixed effects panel method, random effects panel method, pooled data panel method, adjusted regression (EGLS). After model fitting, the estimated coefficients and their significance will be reported.

Unit root test (variables durability)

In time-series data, some tests like Dicky-Fuller and adjusted Dicky-Fuller will be used for analyzing the durability of variables (unit root test). However, as for the panel data, such tests cannot be used for analyzing the durability of variables, but a kind of cumulative durability of variables should be examined. Hence, the tests of Im, Pesaran,

and Shin should be used. According to this test, the level of significance should be less than 5%. In this paper, model (1), which is presented in section 3, will be used to test the research hypotheses. As shown in Table 4, the level of significance and related t statistic to the study variables indicates the research variables' durability.

Table 3. The results of the test of Im, Pesaran, and Shin

Variable	T statistic	Sig.
SDNI_Tait	-6.6408	0.0000
INSit	-7.4701	0.0000
MAJit	-10.093	0.0000
Indepentit	-12.849	0.0000
Dualityit	-12.188	0.0000
CEOEducationit	-10.464	0.0000
CEOExpertiseit	-12.252	0.0000
CEOIndustryit	-10.362	0.0000
MTBit	-13.876	0.0000
ROAit	-9.3108	0.0000
CFOit	-13.335	0.0000
LEVit	-10.929	0.0000
SIZEit	-7.8284	0.0000
AGEit	-2.7747	0.0000
Restatmentit	-16.768	0.0000
ROTit	-15.161	0.0000
BoardChangeit	-26.765	0.0000
MTit	-13.341	0.0000
Binterit	-15.667	0.0000
BCOit	-14.694	0.0000
B.OWNERit	-12.405	0.0000

5.3. Analyzing the autocorrelation of research variables

The panel method should be examined for using the panel methods of the basic hypothesis. The condition for using the panel method is that the model residuals have not autocorrelation.

Table 4. Breusch-Godfrey test

Null hypothesis (H0)	Chi-square statistic	P-value	Result
Serial autocorrelation does not exist	1.851	0.224	H0 is accepted, and H1 is rejected

Provided that the model residuals have autocorrelation, the panel method cannot be used, and the adjusted panel method should be employed. The adjusted panel methods have no basic hypothesis, and the R^2 coefficient will not be reported for them. The Breusch-Godfrey test is used for examining the autocorrelation of model errors, the null hypothesis of which indicates that there is no autocorrelation among model errors, and there is an autocorrelation among errors in the opposite hypothesis. The results of this test are depicted in Table 4, which shows that there is no autocorrelation problem in the research model.

Test of collinearity of research variables

Table 5. The result of the collinearity test among variables using the VIF test

Variable	VIF
INSit	2.025366
MAJit	1.634802
Indepentit	1.102096
Dualityit	1.056701
CEOEducationit	1.143841
CEOExpertiseit	1.169176
CEOIndustryit	1.357756
MTBit	1.271993
ROAit	2.349639
CFOit	1.342081

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LEVit	1.825078
SIZEit	1.929391
AGEit	1.156083
Restatmentit	1.066910
ROTit	1.532211
BoardChangeit	1.551879
MTit	1.786334
Binterit	1.080074
BCOit	1.235277
B.OWNERit	1.200789

Practical experiences show that if the variance inflation factor (VIF) is larger than 5, a probable risk exists. If it is larger than 10, serious risk should be considered, and this shows the regression coefficients were not estimated rigidly due to multivariate collinearity. When the dispersion is close to 0, there is a high multi-linearity correlation, and the standard deviation of the regression is inflated. Table 5 illustrates the results of the variance inflation factor for the research models. As can be seen, the variance inflation factor of all variables is less than 5. It shows no collinearity problem, so this classic regression hypothesis (lack of collinearity among independent variables of the study) is accepted.

Variance heterogeneity test

One of the tests for examining the variance heterogeneity is the White test. According to the results of Table 6, since the level of significance is less than 5%, there is variance heterogeneity. The adjusted regression method should be used in the research model to solve the problem of variance heterogeneity. This method is also used in this paper.

Table 6. The results of the White test

Null hypothesis (H0)	F statistic	Level of significance	Result
Serial autocorrelation does not exist	3.604	0.000	H1 is accepted, and H0 is rejected. So there is no variance heterogeneity

F-Limer (Chow) and Hausman test

The F-Limer test shows that at a 5% error level, between panel regression method and pooling method, the pooling regression method should be used (p<001.0)

Table 7. F-Limer test

Null hypothesis (H0)	F statistic	Level of significance	Result
Panel method is prioritized to the pooling method	384.16	0.000	H0 is rejected. (pooling method is better)

Now, the most appropriate model should be selected between fixed effects and random-effects models. If the significance level is less than 5%, the fixed effects method, and if it is more than 5%, the random effects method is prioritized.

Table 8. Hausman test

Null hypothesis (H0)	F statistic	Level of significance	Result
Use of panel with random effects is prioritized to the fixed effects method	23.304	0.000	H0 is rejected. (fixed effects method is better)

Provided that in the Hausman test (Table 8), the significance level is less than 5%, the

fixed effects method is prioritized. Given the obtained results from the Hausman test, since the level of significance is less than 5%, the panel with fixed effects is more appropriate for the model of the study.

5.4. Analyzing the results of the hypotheses of the study

Table 9. The results of the research hypothesis

$SDNI\_TA_{it} = \beta_0 + \beta_1 INS_{it} + \beta_2 MAJ_{it} + \beta_3 Indepent_{it} + \beta_4 Duality_{it} + \beta_5 CEOEducation_{it} + \beta_6 CEOExpertise_{it} + \beta_7 CEOIndustry_{it} + \beta_8 MTB_{it} + \beta_9 ROA_{it} + \beta_{10} CFO_{it} + \beta_{11} LEV_{it} + \beta_{12} SIZE_{it} + \beta_{13} AGE_{it} + \beta_{14} Restatment_{it} + \beta_{15} ROT_{it} + \beta_{16} BoardChange_{it} + \beta_{17} MT_{it} + \beta_{18} Binter_{it} + \beta_{19} BCO_{it} + \beta_{20} B.OWNER_{it} + \varepsilon_{it}$					
Dependent variable: volatility of profit and loss (SDNI_TA)					
Variable	**Coefficient**	**Std. dev.**	**T statistic**	**Level of significance**	**VIF**
Fixed value	-1.645850	0.187583	-8.774003	0.0000	-
INS_{it}	0.039703	0.033056	1.201088	0.2302	2.025366
MAJ_{it}	-0.207619	0.051930	-3.998027	0.0001	1.634802
$Indepent_{it}$	0.218481	0.050217	4.350761	0.0000	1.102096
$Duality_{it}$	0.028655	0.020484	1.398872	0.1623	1.056701
$CEOEducation_{it}$	0.109777	0.021677	5.064219	0.0000	1.143841
$CEOExpertise_{it}$	0.198141	0.034608	5.725315	0.0000	1.169176
$CEOIndustry_{it}$	0.039251	0.018230	2.153069	0.0317	1.357756
MTB_{it}	0.015191	0.004665	3.256296	0.0012	1.271993
ROA_{it}	1.239581	0.119789	10.34800	0.0000	2.349639
CFO_{it}	0.161218	0.068398	2.357044	0.0187	1.342081
EV_{it}	-0.528377	0.074586	-7.084134	0.0000	1.825078
$SIZE_{it}$	0.130684	0.014380	9.087871	0.0000	1.929391
AGE_{it}	0.016292	0.006258	2.603315	0.0095	1.156083
$Restatment_{it}$	-0.011708	0.017876	-0.654935	0.5128	1.066910
ROT_{it}	-0.230149	0.039217	-5.868551	0.0000	1.532211
$BoardChange_{it}$	0.018601	0.019250	0.966263	0.3343	1.551879
MT_{it}	0.008839	0.004483	1.971592	0.0491	1.786334
$Binter_{it}$	0.020261	0.020443	0.991101	0.3220	1.080074
BCO_{it}	1.073708	1.230503	0.872576	0.3832	1.235277
$B.OWNER_{it}$	-0.042874	0.029743	-1.441469	0.1500	1.200789
The adjusted coefficient of determination	0.368944		F statistic	19.82558	
Durbin-Watson statistic	1.837498		Level of significance	0.000000	

In Table 9, the coefficient of the variable of ownership percentage of institutional shareholders (INSit) is equal to 0.039, and the t statistic is 1.201. Given the significance level (0.230), no observation is evident between independent and dependent variables. This result shows no significant relationship between the ownership percentage of institutional shareholders and the volatility of profit and loss, so the first hypothesis is rejected.

The study's second hypothesis declares a significant relationship between the ownership percentage of major shareholders and volatility of profit and loss. In Table 9, the coefficient of the variable of ownership percentage of major shareholders (MAJit) is equal to -0.207, and the t statistic is -3.998. This result shows a negative and significant relationship between ownership concentration and volatility of profit and loss. In other words, earnings volatility is lower in companies where the range of ownership of more than 10% is higher, so the second hypothesis is accepted negatively.

The study's third hypothesis declares a significant relationship between board

independence and volatility of profit and loss. In Table 9, the coefficient of the variable of board independence (Indepentit) is equal to 0.218. T statistic is 4.350, which is significant at (0.000) level, and since it is less than the prediction error (5%), the significance of the independent variable is confirmed at more than 95% confidence level. This result shows a positive and significant relationship between board independence and volatility of profit and loss. In other words, the volatility of profit and loss components is higher in companies where the number of independent members of the board is higher, so the third hypothesis is accepted positively.

The study's fourth hypothesis declares a significant relationship between CEO duality and volatility of profit and loss. In Table 9, the variable of CEO duality (Dualityit) is equal to 0.109. The t statistic is 1.398 that, given the significance level (0.162), no observation is evident between independent and dependent variables. This result shows no significant relationship between CEO duality and volatility of profit and loss, so the fourth hypothesis is rejected.

The study's fifth hypothesis declares a significant relationship between CEO education and volatility of profit and loss. In Table 9, the coefficient of the variable of CEO education (CEOEducationit) is equal to 0.109. T statistic is 5.064, which is significant at (0.000) level, and since it is less than the prediction error (5%), the significance of the independent variable is confirmed at more than 95% confidence level. This result shows a positive and significant relationship between CEO education and volatility of profit and loss. In other words, the volatility of profit and loss components is higher in companies where the CEO has a master's degree, so the fifth hypothesis is accepted positively.

The study's sixth hypothesis declares a significant relationship between CEO financial expertise and profit volatility and loss. In Table 9, the coefficient of the variable of CEO financial expertise (CEOExpertiseit) is equal to 0.198, and the t statistic is 5.725, which is significant at (0.000) level. Since it is less than the prediction error (5%), the independent variable's significance is confirmed at more than 95% confidence level. This result shows a positive and significant relationship between CEO financial expertise and volatility of profit and loss. In other words, the volatility of profit and loss components is higher in companies where the CEO has a certificate in finance or accounting, so the sixth hypothesis is accepted positively.

In Table 9, the coefficient of the variable of CEO industry specialization (CEOIndustryit) is equal to 0.039, and the t statistic is 2.53, which is significant at (0.031) level. Since it is less than the prediction error (5%), the independent variable's significance is confirmed at more than 95% confidence level. This result shows a positive and significant relationship between CEO industry specialization and volatility of profit and loss. In other words, the volatility of profit and loss components is higher in companies where the CEO has a specialization in the industry, so the seventh hypothesis is accepted positively.

The results of control variables of the study also show that there is a positive and significant relationship between the variables of firm growth (MTB), return on assets (ROA), operational cash flow (CFO), firm size (SIZE), firm age (AGE), CEO tenure (MT), and volatility of profit and loss (SDNI_TA). Moreover, the results show a negative and significant relationship between financial leverage (LEV) and return on equity (ROT) and profit and loss volatility. The study results show no significant relationship between other control variables and volatility of profit and loss. Besides, the F statistic (Fisher) and the level of significance of (0.000) indicate the model's significance.

6. Conclusion

This paper's findings show no relationship between the firm's institutional shareholders' ownership percentage and the volatility of profit and loss, indicating no

significant relationship between these two variables. This result is in contrast with that of Duppati et al. (2017). Moreover, the present study is concerned about the relationship between the ownership percentage of major shareholders and volatility of profit and loss. This study suggests a negative and significant relationship between ownership concentration and volatility of profit and loss. In other words, earnings volatility is lower in firms with more than 10% of ownership. This finding is in contrast with the results of Duppati et al. (2017).

On the other hand, the present study analyzes the relationship between board independence and profit and loss volatility. The study's findings show a positive and significant relationship between board independence and profit and loss volatility. In other words, the volatility of profit and loss is higher in companies where the number of independent members is higher. This result is in line with that of Duppati et al. (2017). Moreover, the present study assesses the relationship between CEO duality and volatility of profit and loss. The results of hypothesis testing show that there is no significant relationship between these two variables. This result reveals no meaningful relationship between CEO duality and volatility of profit and loss, which contrasts with that of Duppati et al. (2017). This study also evaluates the relationship between CEO education and volatility of profit and loss, showing a positive and significant relationship between CEO education and volatility of profit and loss. In other words, in companies where the CEO has a master's degree, the volatility of profit and loss is higher. This result is in line with that of Duppati et al. (2017). This paper also investigates the relationship between CEO financial expertise and volatility of profit and loss. The hypothesis testing results demonstrate a positive and significant relationship between CEO financial expertise and profit volatility and loss. In other words, in companies where the CEO has a finance or accounting certificate, the volatility of profit and loss is higher. This result conforms with that of Duppati et al. (2017).

On the other hand, this study assesses the relationship between CEO industry specialization and volatility of profit and loss and found a positive and significant relationship between these two variables. In other words, the volatility of profit and loss is higher in firms where the CEO has a specialization in the industry. This finding is in line with that of Duppati et al. (2017).

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**The
Relationship
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