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The Impact of Audit Quality on Reducing Collateral Facilities and the Role of Major Shareholders in Listed Companies of Tehran Exchange Market

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Abstract: The purpose of this paper was to investigate the impact of audit quality on the reduction of collateral facilities, taking into account the role of major shareholders, in companies listed on the Tehran Stock Exchange during the period 2017 to 2022. Considering the research conditions, 179 companies were selected as the statistical sample of the research (From a total number of 895 companies). The research method is descriptive and this an applied research in terms of nature and content. The panel data method was used to test the research hypotheses. The findings emphasized that audit quality reduces collateral facilities. The rotation of the auditor increases collateral facilities. However, the auditor's expertise in the industry does not have a significant effect on collateral facilities. Also, the ownership percentage of major shareholders does not affect the intensity of the impact of audit quality and expertise in the audit industry and audit turnover on collateral facilities.

Keywords: Audit quality; Collateral facilities; Major shareholders.

Mathematics Subject Classification (2010): 91G50, 91B84.

1. Introduction

Foreign institutional investors put a lot of pressure on auditors to provide higher audit quality. From the lenders point of view, self-protection and considering the cost and benefits of transactions, is important. So, a creditor is more likely to use external audit and collateral as a substitute for lower credit risk. On the other hand, it is expected that by increasing the degree of separation of ownership and controlling improvement of corporate governance activities, large shareholders be more willing to monitor managers and thus investment efficiency improves. Also, the role of control and supervisory structures of the owners is one of the parameters that can affect these communications. Since major shareholders have higher power, experience, and access to external resources, they can influence organizational variables (Ting et al. (2010)). The provision of financial resources, especially long-term ones, is one of the topics that is increasingly being paid attention to, not only in Iran, but also in many other countries, and has become one of the most controversial and attractive topics in the markets. It has changed money. In the national and international arena, the banking system has provided long-term financial resources, traditionally. With the emergence of major financial crises such as the one that happened in East Asia in 1997 and 1998 AD and the vast financial crisis that involved Europe and the American states in 2007 and 2008 AD, the revision of financial structures became a necessity, and undeniable. One of the domestic economic methods outside Iran's companies is borrowing from active banks in the form of contracts with names such as bailment of a capital Sharecropping and contract of reward, civil partnership, and installment sales. Usually, due to the high credit of the listed companies, banks tend to have a listed company guarantees the borrower. A bank loan guarantee by a stock exchange company is considered desirable for the lender and borrower in terms of reducing financial restrictions and reducing the risk of loan default. However, companies that take on the guarantee of another person face the risk of debt default, because, in case of non-payment by the borrower, the responsibility for the default of the debt is with the guarantor of the loan (Wang et al. (202)).

In general, financing through borrowing has advantages for companies. Among other things, the guaranteed profit of the debts is part of the acceptable tax expenses. As a result, it brings tax savings (shield), and its grantors will not have a share of the company's profit except the guaranteed profit. On the other hand, financing in this way does not reduce the share of shareholders in the control of the company, and its repayment will be cheaper in the inflationary period. Financing through debt, regardless of the advantages mentioned above, can also bring several disadvantages. The guarantee of the payment of the guaranteed interest of the debt and the need to repay the principal at the due date, and the possible restric-

tions imposed by the terms of the loans taken on the company are among these things. Also, excessive use of debt increases the financial risk, and as a result, the cost of capital for the company. It has been argued that collateral is at the center of communication between lenders and borrowers. Collateral requirements arise from agency problems, which specifically weaken financial ties to debt financing. Collaterals are not only a mechanisms for predicting interest adjustment, but also a mechanisms to predict internal resources of the organization, which are used to monitor borrowers and minimize losses when borrowers fail to repay their debts. On the other hand, the purpose of the publication of financial reports is to fulfill the responsibility of managers towards beneficiaries and corporate stakeholders. For this reason, transparency in financial reports has an impact on the decision-making process and reduces related risks. However, considering the gap arising from the conflict of representation between management and ownership, how can we be sure about the accuracy of the reported information, and fair accountability of the management? From the point of view of the users of financial statements, information is reliable if an independent organization has supervised its reporting process [Mohapatra et al. \(2022\)](#).

[Mohapatra et al. \(2022\)](#) showed that Despite the importance of registration with the PCAOB, there is surprisingly little academic research on the registration process and its impact on audit outcomes ([Abernathy et al. \(2014\)](#)). The PCAOB allows the registration of audit firms from non-US countries. However, China and a few other countries do not allow the PCAOB to conduct inspections of audit firms. [Mohapatra et al. \(2022\)](#) used this setting to investigate whether PCAOB-registered audit firms improve audit quality in the absence of inspections and whether they charge an audit fee premium. Their findings indicate that audit quality increases following PCAOB registration and that clients pay higher audit fees for audits by PCAOB-registered firms.

[Hong and Watson \(2019\)](#) examined the relationship between the ranking of accounting firms and audit quality in 100 Chinese companies. For this purpose, they examined the information of 15,345 company-years from 2003 to 2013. The results showed that clients who were audited by higher-rated accounting firms reported fewer discretionary accruals than clients who replaced their lower-ranked accounting firms with higher-ranked accounting firms.

[Alareeni \(2019\)](#) investigated the relationship between audit firm characteristics and audit quality. For this purpose, the information of 51 companies from 1992 to 2016 was examined. The findings showed a significant relationship between audit clients, audit costs, and audit quality. In comparison, non-audit services and company size had a negative relationship with audit quality.

[Shen and Lin \(2016\)](#) have investigated the external communication of the board of

directors, and profit management. The external connection of the board of directors, is at least one member outside the board of directors and profit management, and the level of discretionary accruals is measured from the model. The number of research samples includes 5940 companies from 2007-2011. Empirical findings showed that the external relationship of the board of directors has a negative correlation with the level of profit management.

The scientific research results of [Vakilifard et al. \(2015\)](#) showed that in large companies, the auditor's tenure of 5 years is more likely to reduce discretionary accruals. On the other hand, companies that use expert auditors are likely less willing to receive a conditional report.

[Yang \(2014\)](#) showed that the audit quality has an inverse relationship with the amount of collateral facilities, because the trust that the auditors convey to the creditors regarding the company's financial statements, reduces the amount of collateral received by the creditors.

[Chen et al \(2012\)](#) showed that the use of collateral leads to costs of screening and monitoring of pledged assets, and also lenders lose from the sale of certain assets.

[Azibi et al. \(2011\)](#) investigated the relationship between foreign institutional investors and audit quality in French companies between 2001 and 2007. The results of this study have shown that there is a positive relationship between foreign institutional investors and audit quality.

[Fernandes \(2007\)](#) concluded that the non-executive members of the board of directors do not have a strong supervisory role. Also, companies with zero non-executive members have better regulation and balance between the interests of shareholders and managers, and there are fewer representation problems in these companies.

[Pittman and Fortin \(2004\)](#) investigated the effect of auditor reputation on the cost of debt of US companies that went public from 1977 to 1988, within nine years after these companies were admitted to the stock market. They found that companies that hired large accounting firms, reported lower average costs of debt. Again, these findings show that creditors are sensitive to the auditor's reputation and credibility as a measure of audit quality, therefore to the quality of financial statements published by newly publicized companies. On the other hand, from the point of view of external users, audit quality can be obtained by appointing independent and competent auditors. It is generally accepted that famous audit institutions provide diverse and high-quality services in most cases. This can lead to a high-quality audit process that ultimately leads to the provision of high-quality financial information and reporting. High-quality financial reporting gives creditor confidence in decision-making and reduces their information risk. Therefore, audit quality has an inverse relationship with the cost of debt of companies

and also with the risk of creditors.

According to the mentioned literature, the main problem of the current research is the lack of transparency regarding the way lenders make decisions about how to trust borrowers based on more emphasis on obtaining collateral or relying on the financial reporting environment in Iran. Increasing the quality of auditing financial statements by external auditors can improve the creditor's attitude toward the company. In addition, increasing or decreasing the amount of collateral and higher trust between lenders and borrowers can lead to an increase in the organization's ability to access resources and reduce financing risks. On the other hand, the role of control and supervisory structures of the owners is one of the things that can affect these communications. Since major shareholders have higher power, experience, and access to external resources, they can influence organizational variables. In this way, the main question which this research tries to answer can be specified as follows: Do major shareholders affect the relationship between audit quality indicators and collateral facilities in Tehran Stock Exchange companies?

2. Theoretical and Research Hypotheses

From the self-protection point of view, agency costs can be reduced by using regulatory mechanisms to solve the agency problem between lenders and borrowers. Pledge and external audit are two such mechanisms (Yang (2014)). Information asymmetry between lenders and borrowers has made collateral mandatory, so collateral has become a standard component of bank loans. Chan and Kanatas (1985) found that given information asymmetry, collateral can reduce interest costs and may be interpreted as a sign of better credit quality. Many researchers have focused on the role of external audits. Becker et al. (1998) and Francis et al. (1999) have shown that clients of larger audit firms use less discretionary accruals than those of smaller audit firms. Xu and Lacina (2009) and Wu and Koh (2001) have shown that larger audit firms have better audit quality. Khurana and Raman (2004) stated that the use of larger audit firms could reduce the cost of equity and debt (Pittman and Fortin (2004)). These researchers argue that external auditing can improve the quality of borrowers' financial information and reduce information risk, thereby helping lenders to make decisions. In addition, lenders who pay close attention to borrowers' financial information make better decisions (Goncharov and Zimmermann (2007)), and thus reduce credit risk. Verdi (2006) found that many debt contracts are based on accounting criteria. Krishnan and Wang (2015) have shown that the role of financial criteria and accounting information is important in lenders' decision-making. They, also have shown that lenders consistently pay attention to borrowers' accounting information. Gosh and Moon (2010) found

that lenders pay particular attention to amendments toward financial statements in their debt agreements with borrowers. In addition, [Chen et al \(2012\)](#) showed that the use of collateral leads to costs related to the screening and monitoring of pledged assets, and also lenders lose from the sale of certain assets. [Thakor \(1996\)](#) argued that lenders generally seek to lend their capital to high-quality borrowers. However, when it comes to costs, benefits, and the level of competition, lenders' decisions are also very conservative. Even in a less developed bank loan market, lenders use collateral as a proxy for ineffective supervision ([Love et al. \(2016\)](#)). [Chaiwong \(2012\)](#) showed that the effects of high audit quality and more senior auditors reduces interest expense and increases debt maturity. [Bikker and Metzmakers \(2005\)](#) found that as the auditor's reputation increases, the ratio and amount of credit bank loans to borrowers' increases. [Chen et al \(2012\)](#) showed that lenders generally view collateral and conservatism as substitutes, but when the borrower has low credit quality or a high proportion of intangible assets, the lender reverses this assumption. In other words, it looks at collateral and conservatism as complementary.

The research hypotheses are compiled as follows:

1. Expertise in the audit industry affect the collateral facilities of the company.
2. The rotation of the auditing firm affect the collateral facilities of the company.
3. Ownership percentage of major shareholders affect the relationship between audit quality and collateral facilities.
4. Ownership Percentage of major shareholders affect the relationship between audit firm turnover and collateral facilities.

3. Methodology

In terms of purpose, this research is a practical one, because its results can be used by a wide range of users. Also, In terms of nature, it is a correlational research because it tries to investigate the relationship and impact of two variables on each other.

In this research, the companies admitted to the Tehran Stock Exchange constitute are the target statistical population, and the systematic elimination method was used for sampling. In this way, considering the statistical population (all companies admitted to the stock market until 2022) and the criteria explained below, a sample of 179 companies has been selected.

The criteria used to select a sample from the statistical population are as follows:

1. Companies which are present at the stock market during the research period (2017 to 2022).
2. Companies whose financial year ends on March 19.
3. Companies that are not part of leasing and financial mediation companies.
4. Companies that their necessary information is available during the research period (2017 to 2022).

After considering all the above criteria, 179 companies remained as the screened society, all of which were selected as the research sample. Therefore, our observations reach 895 firm-years (5 years in 179 firms) from 2017 to 2022.

In order to test the research hypotheses, and achieve the primary goal of the research, the following multiple linear regression (LS) models were used.

$$\begin{aligned}
 Collateral_{i,t} &= a + \beta_1 Audit_{i,t} + \beta_2 size_{i,t} + \beta_3 Lev_{i,t} + \beta_4 ROA_{i,t} + \varepsilon_{i,t} \\
 Collateral_{i,t} &= a + \beta_1 cycle_{i,t} + \beta_2 size_{i,t} + \beta_3 Lev_{i,t} + \beta_4 ROA_{i,t} + \varepsilon_{i,t} \\
 Collateral_{i,t} &= a + \beta_1 Audit_{i,t} + \beta_2 Major_{i,t} + \beta_3 Audit_{i,t} * Major_{i,t} \\
 &\quad + \beta_4 size_{i,t} + \beta_5 Lev_{i,t} + \beta_6 ROA_{i,t} + \varepsilon_{i,t} \\
 Collateral_{i,t} &= a + \beta_1 cycle_{i,t} + \beta_2 Major_{i,t} + \beta_3 cycle_{i,t} * Major_{i,t} \\
 &\quad + \beta_4 size_{i,t} + \beta_5 Lev_{i,t} + \beta_6 ROA_{i,t} + \varepsilon_{i,t}
 \end{aligned} \tag{3.1}$$

Hence, in this research, the effect of three components of audit quality have been investigated on the reduction of leveraged facilities and its impact on the future of assurance from the perspective of major shareholders in companies listed on the Tehran Stock Exchange. The introduction and classification and measuring method of the research variables are as described in table 1.

4. Results

4.1 Normal distribution

To check the normality of the dependent variable of the research models, the Jarko-Bera test was used. The significance level of the Jarko-Bera test is less than 0.05, so according to the table 2, the dependent variable of the research is not normal. One of the necessary presuppositions (conditions), in order to use the linear regression model, is the normality of the dependent variable. Since the dependent variable data do not follow the normal distribution, therefore, a regression model cannot be used to test the hypotheses of the research. In such situations, there is a solution:

1. Use of non-parametric tests (such as Spearman's correlation coefficient)
2. Normalizing the dependent variable and using the regression model to test the research hypotheses.

Table 1: The introduction and classification and measuring method of the research variables

Variable name	symbol	variable role	How to measure
Collateral facility	Collateral	Dependent	The amount of the facility obtained by the guarantee is divided by the total facilities of the company. The data related to collateral facilities are extracted from the notes accompanying the financial statements of the companies.
audit quality	Audit	Independent	A dummy variable, if the company was audited by the audit organization in the year under review, we assign a value 1, otherwise we assign zero to it.
Expertise in auditing industry	Profation	Independent	A dummy variable, which means that if the auditing institution has at least 7 employers in the same industry, it will be given a value 1 and it will be considered an expert, otherwise, we will assign to 0 to it.
Audit firm rotation	Cycle	Independent	A dummy variable, which means that if the company has changed its auditor in the current year, we assign the value 1 and otherwise value 0 to it.
Percentage ownership of major shareholders	Major	modifier	Shareholders whose names appear in the accompanying notes to the financial statements and it is obtained by deducting the ownership % of others from the number 100.
size of the company	Size	Controlling	The natural logarithm of the total assets of the company.
Financial leverage of the company	Lev	Controlling	The ratio of total liabilities to total assets.
Return on assets	ROA	Controlling	Net profit divided by total assets.
cash ratio	Cash	Controlling	Cash at the end of the period divided by total assets.
Audit quality indicators	(audit quality proxy)	Controlling	(size, expertise in the industry and rotation of the audit firm) of the company
company's major shareholders	Shareholders	Controlling	The percentage of ownership of the company's major shareholders
growth	Growth	Controlling	Company's growth
Current ratio	Current	Controlling	Current ratio of the company
total facilities	Ltdebt	Controlling	The ratio of long-term facilities to the company's total facilities
intangible assets	Intangible	Controlling	The ratio of intangible assets to the company's total assets
debt coverage	Debtcov	Controlling	The company's debt coverage ratio

Table 2: Examination of the normality of the dependent variable of the research

Variable	Collateral
Jarko statistics	60.34
The significance level	0.0000
Compared to 0.05	smaller
Test result	Data distribution is not normal

3. Ignoring the non-normality of the data due to the large number of observations and the use of parametric tests (multiple linear regression model).

It is obvious that the third solution has priority over the first and second solutions because data normalization (the second solution) causes manipulation and distortion of the data, and this causes insufficient reliability of the research findings. On the other hand, non-parametric tests (the first solution) is not as accurate as parametric tests, and it is better to use parametric tests such as linear regression models.

In the current research, the number of observations (year-company) of the variables (including the dependent variables of the research) is equal to 895 cases and this number is considered to be large enough, therefore third method has been used to analyze the data.

So, in order to analyze the data in this research, we use a multiple linear regression model, and due to the large number of observations (year-company), the non-normality of the dependent variable of the research does not create a problem and the findings of the statistical analysis, will have sufficient reliability.

In order to check the significance of the variables used in the models that have been considered to test hypothesis of this research, Hadari's unit root test, was used to determine the significance of the research variables. The results of this test are as described in table 3.

According to table 3, the significance level of Hadri's Z statistic for all research variables is less than 0.05, and this evidence shows that there is no single root problem for any of the variables. Therefore, it can be claimed that all the variables used in the regression models of the research are static, in the time frame of the research.

4.2 Model Recognition Test

In order to test the four hypotheses of the research, the following multiple linear regression model was used. Before estimating the models, we examined three basic assumptions related to linear regression models. The findings of White's test to

Table 3: Analysis of the significance of the research variables (Hadri's unit root test)

Variable	Z statistic	P-value
<i>Audit</i>	7.770	0.0000
<i>Cash</i>	18.51	0.0000
<i>Colateral</i>	10.19	0.0000
<i>Cycle</i>	15.77	0.0000
<i>Size</i>	27.61	0.0000
<i>Profation</i>	5.830	0.0000
<i>ROA</i>	20.42	0.0000
<i>Lev</i>	23.80	0.0000
<i>Major</i>	21.33	0.0000

Table 4: White's test

Model	F statistic	P-value
1	10.58	0.0000
2	10.79	0.0000
3	10.33	0.0000
4	7.09	0.0000
5	6.48	-

check the presumption of equality of variance of the residuals of the models are as described in table 4. According to table 4, the presumption of the same variance of the residuals is not confirmed. Because the significance level of White's test statistic of the research models is less than 5%. In order to solve the problem of heterogeneity of variance of the residuals, we estimate the research models via generalized least squares (GLS) method instead of the ordinary least squares (OLS) method.

The results of the Brosch-Godfrey test to check the presumption of the absence of serial autocorrelation between the residuals of the research models are as described in table 5. According to table 5, the assumption of the non-existence of serial autocorrelation between the residuals of the model is not confirmed. To solve this problem, we use the generalized least square (GLS) method instead of the ordinary least square (OLS) method, to estimate the models.

The results of the VIF test (variance inflation factor) in order to check the assumption of non-collinearity between the independent and control variables of the research are as described in table 6. According to this table, the variance inflation factor of all independent and control (explanatory) variables is less than 10.

Table 5: Brosch-Godfrey test

Model	F statistic	P-value
1	415.21	0.0000
2	416.09	0.0000
3	400.08	0.0000
4	402.34	0.0000

Table 6: VIF test

Variance	Variance coefficient	Variance coefficient variable
<i>Audit</i>	0.00	1.08
<i>Profation</i>	0.00	1.07
<i>Cycle</i>	0.00	1.02
<i>Major</i>	2.91	1.19
<i>Size</i>	4.62	1.16
<i>Lev</i>	0.00	1.81
<i>ROA</i>	0.00	1.84

Therefore, the assumption of non-collinearity between the independent variables of the model is confirmed.

The findings of the Jarco-Bera test, are described in table 7. According to this table, the residuals of the research models do not follow the normal distribution, but in the conditions where the sample size is large, the non-normality of the residuals does not create a problem in the analysis process. Since the sample size which has been used in this research is large enough (895 observations for each variable), the non-normality of the residuals do not create a problem.

4.3 Determining the Estimation Method

At this stage, the results of the Leimer and Housman test are reported in order to determine the estimation method of the research models. The results of these two tests are as described in table 8.

Table 7: Jarco-Bera test

Model	Jarco statistic	P-value
1	1202	0.00
2	1212	0.00
3	1209	0.00
4	1170	0.00

Table 8: Tests to Determine the Estimation Method of Research Models

Model	F	P-value	model type	Hasman	P-value	Result
1	12.308	0.000	panel	10.139	0.038	Fixed effects
2	12.327	0.000	panel	9.511	0.050	Fixed effects
3	12.239	0.000	panel	15.316	0.018	Fixed effects
4	12.148	0.000	panel	12.319	0.055	Fixed effects

Table 9: Testing the First Hypotheses

Variable	β	St.d	T-test	P-value
C	0.910	0.000	94.52	0.000
Audit	-0.001	0.000	-10.00	0.001
Size	-0.003	0.000	-3.65	0.000
Lev	0.011	0.000	2.49	0.014
ROA	0.010	0.000	2.56	0.012
D.W	1.550	The assumption of independence of errors from each other is accepted.		
R^2	0.78	%78 of dependent variable changes are expressed by significant independent variables.		
F-test	20.21	At this significance level, the model is accepted.		
P-value	0.000	The assumption that the model is meaningful is confirmed. It means that the model is linear.		

4.4 Regression results

According to table 9, the significance level of the T statistic of the coefficient of the independent variable *Audit* with a value of -0.001 is equal to 0.0007, which is less than 10%. Therefore, it can be concluded that *Audit* affects the collateral facilities of the company, and due to the negative coefficient of this variable, the direction of the relationship is inverse. That is, as the *Audit* variable increases, the Collateral variable decreases and vice versa. Therefore, the first hypothesis of the research, which states: Expertise in the audit industry affects the collateral facilities of the company, is confirmed.

According to table 10, the significance level of the T statistic of the coefficient of the independent variable *Cycle* with a value of 0.03 is equal to 0.0268, which is less than 10%. Therefore, it can be concluded that the variable *Cycle* has a significant effect on the dependent variable Collateral. Due to the positive coefficient of this variable, the direction of the relationship is direct, that is, with an increase of one unit in the independent variable *Cycle*, the dependent variable Collateral increases by 0.03. Therefore, the second hypothesis of the research, which states: Auditor

Table 10: Testing the Second Hypotheses

Variable	β	St.d	T-test	P-value
C	1.23	0.25	4.61	0.000
Cycle	0.03	0.01	2.23	0.027
Size	-0.03	0.01	-1.97	0.051
Lev	0.20	0.06	3.48	0.001
ROA	0.21	0.07	2.79	0.006
D.W	1.54	The assumption of independence of errors from each other is accepted.		
R^2	0.76	%76 of dependent variable changes are expressed by significant independent variables.		
F-test	13.15	At this significance level, the model is accepted.		
P-value	0.000	The assumption that the model is meaningful is confirmed. It means that the model is linear.		

rotation affects the collateral facilities of the company, is confirmed.

According to table 11, the significance level of the T statistic of the coefficient of the independent variable *Audit* with a value of -0.01 is equal to 0.0242, which is less than 10%. On the other hand, the significant level of *Major* modifier variable coefficient is equal to 0.8037, which is more than 10%. Since the significance and confirmation of the modifying role of the *Major* variable and its effect on the relationship between the two variables *Audit* and Collateral depend on the confirmation of the significance of the coefficient of the two variables *Audit* and *Major* and also the significance of the expression $Major * Audit$ together and simultaneously; it can be concluded that the *Major* variable does not have a significant effect on this relationship. Hence, the third hypothesis of the research, which states that the percentage of ownership of major shareholders affects the relationship between audit quality and collateral facilities, is not confirmed.

According to table 12, the significance level of the T statistic of the coefficient of the independent variable *Cycle* with a value of 0.0003 is equal to 0.0413, which is less than 10%. On the other hand, the significant level of *Major* modifier variable coefficient is equal to 0.6792, which is more than 10%. Since the significance and confirmation of the modulating role of the *Major* variable on the relationship between the two variables *Cycle* and Collateral depend on the confirmation of the significance of the coefficient of the two variables *Cycle* and *Major* and also the significance of the term $Major * Cycle$ at the same time, therefore it can be concluded that the *Major* variable does not have a significant effect on the relationship between the independent variable *Cycle* and the dependent vari-

Table 11: Testing the Third Hypotheses

Variable	β	St.d	T-test	P-value
C	0.92	0.01	83.11	0.000
Audit	-0.01	0.01	-1.62	0.024
Major	-8.83	3.61	-0.23	0.804
Major*Audit	-0.0002	0.00	-1.71	0.082
Size	-0.002	0.00	-2.96	0.003
Lev	0.01	0.00	2.07	0.038
ROA	0.01	0.00	1.95	0.051
D.W	1.53	The assumption of independence of errors from each other is accepted.		
R^2	0.78	%78 of dependent variable changes are expressed by significant independent variables.		
F-test	1460	At this significance level, the model is accepted.		
P-value	0.000	The assumption that the model is meaningful is confirmed. It means that the model is linear.		

able *Major*. Therefore, the fourth hypothesis of the research, which states that the ownership percentage of major shareholders affects the relationship between auditor rotation and collateral facilities, is not confirmed.

5. Conclusion and discussion

5.1 Conclusions

In the present research, to operationalize the audit quality, variable following [DeAngelo \(1983\)](#), from the artificial variable of auditor type (audit organization = large auditor and equal to one and other audit institutions = small auditor and equal to zero), has been used. Another conclusion that can be drawn based on the results of the test of this hypothesis is that the audit quality of the owners of the audit organization (companies that are audited by the audit organization) are evaluated by the lenders in a higher position. The lenders due to the higher quality of the audit, charge the owners of the audit organization less fees in order to grant them a loan. These findings show that lenders pay attention to other features of financial statement audits, such as audit quality and auditor type, in order to determine the amount of the loan which is granted to financial facilities. This claim is consistent with the findings of [Fernando et al. \(2010\)](#); [Yang \(2014\)](#); [Alareeni \(2019\)](#); [Hong and Watson \(2019\)](#), and [Mohapatra et al. \(2022\)](#) on

Table 12: Testing the fourth Hypotheses

Variable	β	St.d	T-test	P-value
C	0.91	0.01	55.30	0.000
Cycle	0.0003	0.001	0.19	0.041
Major	-1.73	4.25	-0.40	0.679
Major*Cycle	-7.07	3.06	-0.02	0.982
size	-0.001	0.001	-1.19	0.032
Lev	0.004	0.005	0.91	0.063
ROA	0.005	0.005	0.95	0.036
D.W	1.55	The assumption of independence of errors from each other is accepted.		
R^2	0.80	%80 of dependent variable changes are expressed by significant independent variables.		
F-test	5573	At this significance level, the model is accepted.		
P-value	0.000	The assumption that the model is meaningful is confirmed. It means that the model is linear.		

the effect of audit quality on secured loans. Since the stability of the auditor is one of the criteria for determining the quality of the audit, and one of the factors affecting the quality of the audit, the rotation of the audit causes the quality of the audit to be impaired. It increases the asymmetry of information for the users of the company's financial statements (including lenders). It should be noted that the result of this process will be an increase in the company's collateral in order to receive loans, because lenders, in order to observe caution and neutralize the information risk caused by information asymmetry, receive more collateral in order to grant loans to applicants.

According to the findings, it can be concluded that, firstly, the presence of major owners in the ownership structure of a company is not a guarantee for lenders. Secondly, lenders, in order to adjust the risk caused by information asymmetry, only pay attention to audit quality. In this context, they do not pay attention to the presence of major owners in the ownership structure of companies. The findings of the test of this hypothesis are not in accordance with the findings of Yang (2014) which Yang (2014) showed that major ownership leads to a decrease in audit quality and, as a result, a decrease in collateral to obtain a loan. The difference between the above findings and the findings of the present research indicates the difference in the structure of corporate governance in different countries. These findings indirectly show that lenders pay attention to other aspects, such as audit quality and auditor rotation, in order to adjust their information risk and

determine the amount of collateral to be granted to financial facilities. The findings from the research of [Fernando et al. \(2010\)](#); [Yang \(2014\)](#); [Alareeni \(2019\)](#); [Hong and Watson \(2019\)](#) and [Mohapatra et al. \(2022\)](#), support the above claim and show that lenders pay attention to audit quality in order to determine the amount of collateral.

The results show that major ownership does not affect the relationship between auditor rotation and collateral facilities; that is, major ownership cannot play an adjusting role in the relationship between auditor rotation and collateral facilities. According to the findings, it can be concluded that, firstly, the presence of major owners in the ownership structure of a company is not a guarantee for lenders, and secondly, lenders adjust the risk caused by information asymmetry to ownership. These findings indirectly show that lenders pay attention to other aspects, such as audit quality and auditor rotation, in order to adjust their information risk and determine the amount of collateral to be granted to financial facilities. However, they make their decisions based on the presence or absence of the auditor. The presence of major owners does not change the ownership structure of companies applying for loans. The findings from the research [Fernando et al. \(2010\)](#); [Yang \(2014\)](#); [Alareeni \(2019\)](#); [Hong and Watson \(2019\)](#), and [Mohapatra et al. \(2022\)](#), support the above claim and show that lenders pay attention to audit quality to determine the amount of collateral.

According to the result of the first hypothesis of the research about the effect of the audit quality on collateral facilities, which has been confirmed, it is suggested that all the companies present in the Tehran Stock Exchange, increase their audit quality. Furthermore, concluding a contract with auditors who perform audit operations with high quality, reduce information asymmetry for users of financial statements, and thus provide benefits such as obtaining loans with less collateral. Since the dummy variable of the type of auditor has been used in the current research in order to operationalize the variable of audit quality following [DeAngelo \(1983\)](#), the current research suggests that companies present in the Tehran Stock Exchange are better to enter into the auditing organization, and entrust the auditing of their financial statements to the auditing organization annually. Since, according to the evidence obtained in the present research, the owners of the auditing organization have less advantages than the owners of other institutions, such as obtaining loans with collateral. These advantages are due to the fact that the auditing of the financial statements of these companies was the responsibility of the auditing organization.

According to the result of the third hypothesis of the research about the effectiveness of the rotation of the auditing firm on collateral facilities, which has been approved, it is suggested that all companies active in the Tehran Stock Exchange,

have their auditors up to the limit. It is not advisable to change (except for the cases of forced change or rotation), because according to the evidence obtained in the current research, auditor rotation reduces the continuity (stability) of the auditor, and this issue can reduce the quality of the audit, the need for collateral for financial facilities.

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