



New Evidence on the Determinants of Internal Control Weaknesses

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Abstract

The present study evaluates whether there is a significant relationship between investment, earnings management, ownership structure, and internal control weaknesses.

For the study purpose, panel data, including the financial variables of sample companies listed on the Tehran Stock Exchange, were evaluated during 2012-2018. To test the hypothesis, we analyzed the effect of seven descriptive variables on the dependent variable of internal control weakness; three models of Logit Pooled, LPM Pooled, and Probit Pooled are used for hypothesis testing.

The results showed a negative and significant relationship between board compensation, real earnings management, accrual earnings management, capital structure, family ownership, and internal control weakness. Moreover, a positive and meaningful relationship was discovered between institutional ownership and internal control weaknesses.

The current study's outcomes significantly show the relationship between internal control weaknesses, investment, earnings management, and firm ownership in a developing country.

Keywords: internal control weakness, earnings management, ownership structure, financial reporting quality.

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1. Introduction

Since management is responsible for financial statements and the internal control system, internal audit services increasingly investigate an internal control system (Jarvinen and Myllymaki, 2016).

Among the significant factors for efficient operation, we could refer to the successful establishment of internal control systems in business firms, improving accountability and financial transparency, complying with regulations and preventing fraud and financial abuse. Hence, professional bodies and law-making authorities in different countries are concerned about compiling frameworks, declarations, and guidelines on how internal controls are established, evaluated, and reported by management and how they are audited by the business's auditors firms (Wang and Hooper, 2017).

Internal controls are formulated to ensure the effective implementation of an operation and guarantee reliable financial statements. We expect firms with weak internal control systems, a low operational efficiency level, investment functionality, and financial reporting quality. Thus, the internal control problems can contribute to the amount of cash available for executing the firm missions, directly or indirectly. Besides, since internal control weaknesses can indicate a lack of effectiveness in providing services, business firms with internal control weaknesses are considered unreliable organizations compared with firms with efficient internal control systems; receive fewer financial resources from people (Kim et al., 2017).

In short, a high-quality internal control would lower the risk of incorrect selection and moral hazard and due to the improvement of shareholders and creditor's capabilities in controlling and monitoring the managerial operations, would abate the costs for monitoring managers, oblige the managers to select appropriate and efficient projects, and consequently lower the risk and cost of financing. Further, as a result of these factors, a firm's chance of investment inefficiency would be declined, which means ignoring the investment opportunities in projects with positive net present value and/or investing in projects with negative net present value (Tadesse and Murthy, 2018).

Hu et al. (2014) indicated that internal control could make more transparent, concise, and flawless reports, which is of great importance for investors and users and strengthen their confidence in the published reports. Lenard et al. (2016) discovered a positive relationship between firms' distorted real activities and internal controls. Gady et al. (2018) noticed that companies with significant weaknesses in internal controls are entangled with more complicated operations and reorganized recently. Hence, such companies' accounting risk has a growing trend, and they have lower financial resources for internal control investments.

2. Theoretical Issues and Literature Review

2.1. The board compensation

From the early 20th century, when public companies' management is separated from the rulers and their shareholders, board compensation becomes one of the main items of shareholders' decisions in the general assembly of stock owners. In the beginning, shareholders made different arrangements to encourage and attract the managers to maximize shareholders' capital. The conventional method was to pay a bonus based on a percentage of particular interest in the company. Within the past two decades, the basis for conducted experimental studies in developed countries is alternative incentive schemes for specific earnings schemes. Based on this scheme, instead of paying a bonus to the managers' stocks, they will encourage them, like shareholders, to maximize the firm's market value and increase their interests (Huang et al., 2018).

An effective bonus contract will motivate the manager to maximize the value of a company. An effective contract plus a bonus scheme would connect managers' interests

with that of the shareholders (Gomes, 2016).

Managers contribute to the labor market and would be compensated based on their performance and the organization where they belong, and the so-called market would regulate their performance. So, if the defined compensation does not conform to the performance, the manager who is rewarded less than his/her performance will quit the company. Therefore, managers and shareholders' interests converge where the compensation schemes are designed; otherwise, the firm and manager value will be declined in the labor market. Managers' behavioral characteristics are also among those factors that contribute to the amount of compensation, one of which is the authorities the board has to manipulate real activities that will lead to internal control weaknesses (Friese et al., 2008).

Alali (2011) realized that since managers attempt to maximize their compensations' value, they may manipulate the profit, so a positive relationship is probably established between the increase of managers' compensation and the manipulation of real activities. Isidro and Marques (2013) believe that systematic increases in senior managers' compensation are due to corporate governance's robustness and higher managerial leadership than the previous periods. The corporate governance system's improvement raises this possibility that a poor managerial performance will be eliminated. Regarding this point of view, risk aversion managers ask for higher compensation to cover this probability.

Andreou et al. (2014) declare that rewarding would motivate managers to present high-quality financial reports and a high-quality audit firm to explore the errors and significant internal weaknesses. Gomes (2016) found a significant relationship between board compensation and corporate governance mechanisms. Huang et al. (2018) noted that companies with controlling shareholders are more inclined toward low-quality audit firms with internal control weaknesses to conceal their opportunistic efforts for more profit and compensation.

H₁: There is a negative and significant relationship between board compensation and the weaknesses of internal control.

2.2. Investment opportunities

Investment can be defined as follows: buying an item of the real or financial asset, the amount of return of which is equal to the expected risk. To put it simply, investment is any type of sacrificing values at present (which is usually definite) in the hope of achieving more value in the future (Chuen et al., 2018).

Investment opportunities do not occur customarily, but they should be realized or created. Different levels of corporate sections may drive different types of investment opportunities. Some investment opportunities may be presented by top organizational management or board members. The partnership of top management in presenting investment opportunities is usually limited to some strategic efforts, like developing firm activities through financial policies and entering new markets. Since investment opportunities cause the allocation of financial resources to profit or decrease the costs, regular and systematic financial policies may be executed by the firms for this purpose (Datta, 2017).

Financial constraints would oblige the managers of listed companies on the capital market to reduce their amount of investments and, due to lack of financial resources, even to refrain from investment opportunities with positive net present value due to lack of financial resources (Giriati, 2016).

Recently the role of internal control quality is growing increasingly in investment efficiency. The higher the quality of the internal controls, the more the managers' responsibility and the better the surveillance would be. This would cause information

asymmetry and follow that the inappropriate selection and ethical risks would be reduced and, consequently, decrease the problems related to overinvestment and underinvestment.

Sun and Al Farooque (2018) found that companies' investment amount would decline after disclosing internal control weaknesses and would increase after such companies alleviate the so-called weaknesses.

Jarvinen and Myllymaki (2016) indicated that companies with internal control weaknesses are inclined toward investment inefficiency, and the number of internal control weaknesses contributes negatively to the investment efficiency.

Chendra-mouli et al. (2018) noticed that investment opportunities are a considerable and developing portion of a firm's firm assets. In addition to this, a substantial amount of a firm's growth potential to improve the economic resources and firm value lies in the investment opportunity.

H₂: There is a negative and significant relationship between investment opportunities and the weaknesses of internal control.

2.3. Real earnings management

The collected evidence indicates that managers' concerns regarding the firm performance motivate them toward earnings management within the current period. This occurs due to managerial pessimism because external investors and analysts rely on the current period's profit. Since managers are usually rewarded based on the profit-based contracts, this motivates them to manage and enhance the current period's profit. In other words, they borrow from the income and profit of the future periods and will transfer them to the current period. Presently, the investors and other financial statements users are more inclined toward financial reporting, especially the reported net profit value, to analyze the firm units. Recent studies revealed that investors select those companies with more stable and higher quality profit within the process of decision-making. In cases where business units are entangled with economic fluctuations and are under marginal pressures, managers attempt to have an influence on the reflected rate of profit of financial statements to organize the firm status, in/directly, and to lead to the positive view of users of financial statements, especially the investors. All these efforts are called earnings management (Ipion and Parbonetti, 2016).

Real earnings management is a method in which the profit is manipulated through the firm's real activities. Real earnings management contributes directly to the cash flows of a firm. In this method, the cash is sacrificed to the accrued profit, and the most important damage is the loss of firm value due to the reduction of future cash flows. Managers are more in pursuit of real earnings management than accrual earnings management, which is occurred during the current period and causes the firm loss at the end of the period (Einhorn et al. 2018).

The resultant earnings management from real activities could have some direct and deleterious consequences on current and even future cash flows, which is difficult to understand by the investors and usually is taken for granted by the board, auditors, financial statement providers, and other stakeholders (Ding et al. 2018).

Beuselinck et al. (2014) found that after the announcement of corporate governance corrective laws in these two companies, the amount of earnings management not only did not decrease, but it is increasing.

By evaluating a large sample of multinational companies, Miko and Kamedin (2015) proved that such companies manage the integrated profit more through their subsidiaries in countries with weaker internal control regulations.

Abadi et al. (2016) noticed an inverse relationship between internal control mechanisms and real earnings management, which signifies that the amount of manipulation would decrease with the former increase in real activities with the former

increase.

Benjamin et al. (2018) argued that new regulations were made on the internal control structure after recent financial scandals. Managers preferred real earnings management to earnings management through discretionary accruals. They also believed that the use of real accruals for earnings management could indicate the ethical degradation of managers in facing with the earnings management, which arouses more concerns for accountants.

H₃: There is a negative and significant relationship between real earnings management and internal control weaknesses.

2.4. Accrual earnings management

The accrual earnings management includes accounting selections in the form of approved accounting principles and tries to make the economic performance unclear or to cover that. Accrual earnings management is also called accounting earnings management. Through optional discretionary accruals, management is concerned about forming accounting figures following a set of desired objectives. In general, the method is derived from selecting appropriate accounting methods by the management to achieve the desired level of earnings. The earnings management tool is a facility that enables the management to manipulate the reported profit to its benefit. Since accrual earnings management occurs through optional discretionary accruals, it is the main accrual earnings management tool. Discretionary accruals are defined in a way that indicates the difference between accounting profit and cash components. In other words, it is a difference between cash flow and the timing of transaction recognition. Positively, this means that large discretionary accruals show the additional reported profit than the firm's cash flow. Such a difference is due to the accrual accounting system (Ball and Shivakumar, 2005). Suitable earnings management policies apply when managers perform them ethically. When managers can increase the stock price via these policies, empower the firm for financial supply, and create a sense of confidence concerning the firm's continuity.

Lenard et al. (2016) concluded that companies with internal control weaknesses have a higher earnings management level. Alhadab and Clacher (2017) realized that earnings management's negative effect is less on companies with suitable internal control. However, earnings management's negative effect is higher on the value of companies with weak internal control because such companies are more vulnerable to opportunistic managers. Sayari and Omri (2017) believed that the accrual earnings management includes accounting selections in accepted accounting principles, which try to either make the real economic performance unclear or cover that.

Jong et al. (2018) concluded that discretionary accruals' earnings management is decreased considerably after the Sarbanes–Oxley Act provision. Managers use the earnings management of real activities instead of earnings management of discretionary accruals, which become limited due to that organization's declarations.

H₄: There is a negative and significant relationship between accrual earnings management and internal control weaknesses.

2.5. Capital structure

Capital structure is one way to carry out the operations and develop a firm's future using a combination of liabilities and shareholders' wages. Such liabilities involve short-term and long-term debts, and long-term ones include bonds, long-term loans, etc., while the short-term debts comprise short-term loans, accounts payable, etc. Besides, the capital structure includes common stocks, preferred stock, and accumulated profit. We could say that capital structure is a combination of shareholders' debt and equity, called leverage (Kayo et al., 2018).

The corporate governance components monitor the managers to determine the optimum capital structure and affect their decision on this issue. The optimum structure of capital in each company causes an increase in firm value. Consequently, it leads to all firm beneficiaries' satisfaction—further, the contributing factors to corporate governance attempt to maximize the firm value. So, the capital structure and corporate governance try to maximize the firm value and satisfy all beneficiaries, so we could say in general that the corporate governance contributes significantly to the capital structure (Albassam, 2014).

Firm managers, as the agents of shareholders, are trying continuously to regulate the capital structure in a way to minimize the capital costs of the firm and to maximize the value and profitability because managers are motivated enough to present a favorable image of firm profitability procedures via profit smoothing to satisfy the creditors. Capital structure is one of the main contributing factors to firm valuation and inclination in the capital market. The changing and unstable environment of today has made the firms' credential gradation dependent, to a great extent, on the capital structure. The experimental evidence shows that firms' capital structure could affect firms' investment decisions and efficiency (Ramalho et al., 2018).

Kayo and Ripamonti (2016) found that internal control quality could affect both equity and debt in the capital structure.

Gloria and Mantovany (2017) realized that the board size, CEO duality, and compensation structure have a negative effect on the debt to equity ratio of shareholders. Still, the number of board members in meetings, managerial ownership, and firm size positively affects financial leverage.

Jiang et al. (2018) conducted a study on the contributing factors to small and medium-sized companies' capital structure in China. They noted a significant relationship between capital structure and firm value.

H₅: There is a negative and significant relationship between capital structure and the weaknesses of internal control.

2.6. Institutional ownership

By institutional ownership, we mean determining the context and composition of firm shareholders. Irrespective of the legal framework, companies' ownership structure could also influence the development of the corporate governance model. The ownership structure is two-sided, named ownership concentration and shareholders' identity. The identity of shareholders includes institutional ownership, managerial ownership, state ownership, and family ownership, and ownership concentration is a condition where a substantial amount of shares belongs to major shareholders or the majority (Jong et al., 2018).

Institutional investors are major investors, including banks and insurance companies. The position of institutional investors in corporate governance is complicated, theoretically. On the one hand, we could say that the institutional investors depict a different type of corporate governance mechanism, such that it could monitor the firm management. In this situation, significant results can be obtained to align management interests with those of the shareholders. The monitoring role of institutional investors is growing increasingly (Miguel et al., 2018).

The institutional investors are those adroit investors who benefit from their relative advantage in collecting and processing information. Such investors have become one of the main components of the capital market recently. Due to their long-term investment, the company's institutional owners are more willing to consume the resources to affect and monitor the management. The presence of institutional ownership directs the firm management to concentrate on economic performance and avoid opportunistic behaviors.

Moreover, the presence of institutional owners in a firm leads to high-quality financial reporting. Hence, one of the results of institutional owners' presence in companies is providing high-quality accounting information (Goncharov and Zimmermann, 2012).

Chung and Zheng (2011) found that the proportion of shares maintained by institutional investors could increase internal control quality.

In a study on the relationship between institutional ownership, internal controls, and earnings management, Lin et al. (2014) discovered that earnings management enhances internal controls' growth. Moreover, they found a negative relationship between earnings management and institutional investors.

Schmidt and Fahlenbrach (2016) revealed that institutional investors are not alike and do not have the same motivations to monitor the firms' adopted policies.

Jong et al. (2018) realized that firms' institutional investors might help investors deal with the agency problems derived from the separation of management and ownership. Moreover, financial firms are willing to invest in large corporations with smaller financial leverage.

H₆: There is a positive and significant relationship between institutional ownership and the weaknesses of internal controls.

2.7. Family ownership

Family firms can be defined in different aspects. The membership of family members on the board, the percentage of share ownership by the family members, the control, or the family's substantial influence in the firm, which will be explained in the second section, are among the family firms' determining factors. According to the proposed definitions, the ownership of at least 5% and more than 50% of shares is a condition for the family members. Hence, based on the business definitions, a family firm is a type of company. At least 20% of shares of which is possessed by a family and/or one of the family members is affiliated in the board and possessed at least 5% of the common stocks. In family companies, family members, as the owner, possess a proportion of the firm stocks. Thus, such people are both the owner and the agent, and there would be no problem concerning the agent-owner relations, as long as such a view puts forward on this issue (Chiraz and Lesage, 2012).

There is an enormous difference between family firms and other firms. Family firms attempt to transfer the firm from generation to generation. So, such companies are faced with a variety of commercial risks and challenges than other companies. A family firm combines family, business, and ownership. Although it is believed that such areas are independent of others in family firms, these three areas are strictly interwoven (Stephan et al., 2017).

Family firms' culture usually depends strongly on "supporting all shareholders and family members in society". The firm is responsible for staff, customers, and contractors. In most family companies, personnel replacement is not that much and may draft their contracts with the personnel from one generation to another. Family companies' shares are often non-cash and transfer from one generation to the other in inheritance, gratuitous aid, and/or trade. Some of the family firms are listed on the stock market, which increases the stock liquidity and provides a new capital (Jong et al., 2018).

Jaggi et al. (2009) believed that family members are less willing to participate in Iranian family firms' financial strategies and policies.

Block, Jaskiewicz, and Miller (2011) declared that family companies' performance is more than 50% of companies with no family management.

Mcconaughey et al. (2011) set no condition about the percentage of share possession in family companies. They maintained that family companies are those where the board is composed of the same family members, leading to internal control weakness.

Miguel et al. (2018) stated that family ownership reduces the conflict of interests between managers and shareholders and would lead to the decline of internal control weaknesses.

H7: There is a negative and significant relationship between family ownership and the weakness of internal controls.

3. Research Methodology

3.1. Statistical population and sample

The population under study should have the following unique qualifications. The information about these companies is studied for 7 years from 2012-2018.

The sample of the study is selected from the statistical population of companies listed on the Tehran Stock Exchange through a systematic elimination method, such that those with the following features will be included:

1) The statistical population of this study comprises all listed companies on the Tehran Stock Exchange with the following qualifications:

- Being listed on the Tehran Stock Exchange until the end of 2012;
- Should not change their financial yearend during the term of study;
- Should be active during the term of study and their stocks being transacted;
- Should completely present their financial information during the term of study; and,
- It should not be affiliated with investing, banks, and financial intermediaries.

In this paper, the screening (elimination) method is used to determine the statistical population. The qualified companies are selected and evaluated as the study sample, and other companies were eliminated. The study sample is achieved after placing the limitations mentioned earlier on the statistical population, and then the information related to research variables is obtained for these companies.

3.2. Research pattern

In this paper, we are concerned about the effect of internal control weaknesses on investment, earnings management, and profit ownership. The following model is used to evaluate the relationship and variable processing:

Model (1)

$$INW_{i,t} = \beta_0 + \beta_1 BC_{i,t} + \beta_2 INOP_{i,t} + \beta_3 REALE_{i,t} + \beta_4 ACCE_{i,t} + \beta_5 COPS_{i,t} + \beta_6 ION_{i,t} + \beta_7 FON_{i,t} + \beta_8 MON_{i,t} + \beta_9 LEV_{i,t} + \beta_{10} SIZE_{i,t} + \beta_{11} AREP_{i,t} + \beta_{12} EXP_{i,t} + \beta_{13} INDUSTRY_{i,t} + SYear + \varepsilon_{i,t}$$

3.3. Measuring variables

3.3.1. Dependent variable

INW: internal control weakness of company i in the year t. The significant weak points of internal control are achieved through the report of independent auditors. Since the audit report only mentions significant weak points of the internal control as a specified term and avoids presenting all weak points the auditors referred to previously in the management letter, in this paper, all terms related to internal control weaknesses are considered as the significant weak points of the internal control. The numbers of significant weaknesses of the internal control in the audit report of listed companies on the Tehran Stock Exchange were extracted during the study. Hence, by significant weaknesses in the present study, we mean those weaknesses the auditor referred to in his/her report, which will normally be tackled during the fiscal year and will remain constant in some cases. In case the company has an internal control weakness, we assign 1; otherwise, 0.

3.3.2. Independent variable

BC: the board compensation of the company *i* in the year *t*. Based on Article 134 of the Business Law enacted in 1968, in case it is forecasted in the letter of association, the general assembly following Article 241 of the same law can allocate a certain proportion of the annual net profit of the firm to the board members as compensation, with the condition that the amount of compensation in the public corporations should not be more than 5% of the profit pay to the shareholders in the same year and the private companies should not be more than 10% of the profit pay to the shareholders in the same year.

INOP: investment opportunities of the company *i* in the year *t*, for calculating which the Tobin's Q ratio is used. It is equal to the total market value of shares and book value of debts divided by the book value of assets.

REALE: real earnings management of the company *i* in the year *t* shows the optional section of operational cash flows. It means setting the regular operational policies aside to reach a short-term profit. This variable occurs in the current period and causes an increase in a firm loss at the end of the period. Real earnings management, which is discretionary operational cash flow, is calculated using the improved version of the Roychowdhury model (2006) using the data of companies suspected of fraud, placed at the database of financial research the Stock Exchange for each year.

Model (2)

$$CFO_{it} = a_0 + a_1 SALE_{it} + a_2 \Delta SALE_{it} + a_3 ROA_{it} + \epsilon_{it}$$

CFO_{it} : operational cash flow of the company *i* in the year *t*, which is achieved through the cash flows obtained from the operation divided by total assets at the beginning of the period.

$SALE_{it}$: sales of the company *i* in the year *t*, which is calculated through net sales in the current period divided by total assets at the beginning of the period.

$\Delta SALE_{it}$: annual change in sales of the company *i* in the year *t*, which is calculated according to the annual change of sales of the current year compared with the previous year divided by total assets at the beginning of the period.

ϵ_{it} : the sum of the four right items of the model indicates non-discretionary cash flows obtained from the operation.

ACCE: accrual earnings management of company *i* in the year *t*, which indicates the discretionary accruals. This includes the accounting selections in accepted accounting principles, which makes the real economic performance unclear. Since most of the scholars used the model proposed by Kothari et al. (2005) for the estimation of the accruals, in this paper, the discretionary accruals are measured using the Kothari et al. (2005) article as follows:

Model (3)

$$TACC_{it} = b_0 + b_1 PPE_{it} + b_2 \Delta SALE_{it} + b_3 ROA_{it} + \epsilon_{it}$$

$TACC_{it}$: total accruals of the company *i* in the year *t*, which is calculated according to the difference between cash flows obtained from the operation and the net profit after tax divided by total assets at the beginning of the period.

PPE_{it} : gross properties, machinery, and equipment of the company *i* in the year *t*, which is achieved through gross properties, machinery, and equipment at the beginning of the period, divided by total assets.

ROA_{it} : return of assets in the current period of the company *i* in the year *t*, which is achieved through the profit before tax divided by total assets.

COPS: the company's capital structure of the company *i* in the year *t* indicates the firm's debt ratio and is considered the most conventional definition of the capital structure (Chendra-mouli et al. 2018). This variable is equal to the ratio book value of total assets to the market value of assets. To calculate the market value of assets, the total book value

of debts and the market value of common shareholders' equity is used.

ION: institutional ownership of the company *i* in the year *t*, which involves the number of common stocks of the firm, namely, the percentage of stocks related to insurance, investment companies, and banks. To calculate the percentage of institutional ownership in each firm, total institutional ownership shares are divided into the firm's total common stocks at the end of the period.

FON: family ownership of company *i* in the year *t*. In this paper, those companies are considered as family firms, the real shareholders of which possesses at least 20% of the common stocks and/or at least one of the relative members are among the board members and/or is the executive manager, actively interact with the board members, and works in managerial and operational positions. We assign 1 if the company has family ownership; otherwise, 0 will be shown.

3.3.3. Control variables of the study

LEV: financial leverage of the company *i* in the year *t*, which is equal to total debts divided by the company's total assets.

SIZE: The size of the company *i* in the year *t*, which is equal to the natural logarithm of total firm assets.

AREP: is the type of auditor report. Audit report and statement can be described as the final product of auditing a business firm, a report wherein auditors present the employer's financial statements. The testimony of auditors is expressed in the form of professional statements. The testimony indicates an auditor's opinion and belief concerning the range of conformity of the reported information with the predefined criteria. In this paper, the audit reports are divided into accepted and conditional groups and indicated with 1 and 0.

EXP: the export of the company *i* in the year *t*. In case the company exports, we assign 1; otherwise, 0 will be used.

INDUSTRY: the auditor industry expertise of the company *i* in the year *t*, which indicates the amount of concentration and skill of the auditor in the desired industry and the ability to explore the risks and threats related to the industry. Hence, we study the industries with a large number of population in the Stock Exchange (basic metal, chemicals, automotive, part manufacturing, pharmaceutical materials and products, cement, plaster, and lime, and other non-metallic mineral materials).

4. Research Findings

4.1. Descriptive statistics

First, we describe how certain numbers of companies have remained for fitting in Table 1:

Internal control weaknesses, family ownership, type of auditor's report, and export are dummy variables specified with code 1 and 0. Frequency, frequency percentage, and mode are used to describe these variables regarding their measurement scale.

As can be seen in Table 2, the frequency percentage of 0 is related to internal control weakness and shows that the listed companies on the Tehran Stock Exchange are more concentrated on the rules and regulations of the significant points of internal control weaknesses, recently and the internal controls of such companies become much stronger. Moreover, the frequency percentage of 1 is related to exports and indicates that most stock companies have the so-called variable.

Table 1. Number of firms in the statistical population by imposing the conditions

Description	Eliminated firms in total periods	Total number of firms
Total listed firms on the Tehran Stock Exchange		445
Eliminating financial intermediaries, financial supply, insurance, and investment firms	107	
Firms with more than 6 months of transaction halt	112	
Eliminating firms entered the Stock Exchange during the study period	4	
Eliminating due to lack of access to information	113	
Statistical population		109

Table 2. The frequency of variables

Variable	Frequency		Frequency percentage	
	0	1	0	1
Internal control weaknesses	298	247	54.6	45.3
Family ownership	495	50	90.8	9.1
Type of auditor's report	241	304	44.2	55.7
Export	51	494	9.3	90.6

First, the descriptive statistics of the research variables, including mean, standard deviation, etc., are presented in Table 3, by separating the variables and years:

Table 3. Descriptive statistics of the entire

Variable	Minimum	Maximum	Mean	Standard deviation
Accrual earnings management	-0.71	0.77	0.004	0.11
Board compensation	0.000	17486	1263	1714
Capital structure	0.16	3.17	0.70	0.24
Investment opportunity	0.71	5.65	1.68	0.66
Institutional ownership	0.000	96.47	44.74	29.25
Financial leverage	0.14	2.31	0.63	0.23
Real earnings management	-0.46	0.43	0.006	0.10
Firm size	11.56	19.14	14.27	1.32
Internal control weakness	0.000	1.000	0.43	0.49
Family ownership	0.000	1.000	0.09	0.28
Type of auditor's report	0.000	1.000	0.56	0.49
Export	0.000	1.000	0.91	0.27

By comparing the minimum and maximum value and the mean between the accrual earnings management, real earnings management, and board compensation, we could observe that earnings management's increase enhances the board compensation. As depicted in Table 3, maximum institutional ownership by 96.47% indicates that the majority of shares of listed companies on the Tehran Stock Exchange are in the hand of legal entities of organizations, and other companies and the real persons possess only a small number of the firms' stocks.

4.2. Tests of model selection

By entering the research data into the Eviews Software, we carry out the model fitting procedure. We should consider the final output probability level within these analyses to check whether the hypotheses are in/significant. If the probability level of a variable is less than 0.1, the hypothesis is significant.

First, we should select an appropriate model, integrated data, or panel data model for the model estimation for the combined data. Hence, the F-Limer and Breusch-Pagan tests

are used in this paper, the results of which are presented in Table 4.

Table 4. The F-Limer and Breusch-Pagan tests

Description	F-Limer test		Breusch-Pagan test		Result
	Statistic	Probability level	Statistic	Probability level	
Research model	0.53	0.78	1.99	0.157	Integrated model

The Breusch-Pagan Test examines the null hypothesis of integrated data against the panel with random effects. Based on the achieved statistic and probability level, the null hypothesis is not rejected, so there is no need for the Hausman test, and the final model is integrated.

Since the dependent variable's value is 0 and 1, three models are used for the model analysis. Now, we perform the model fitting procedure using the random effects panel model. The specifications of model fitting and the results of coefficients, and the significance of model variables are presented in Table 5.

Table 5. Specifications of hypotheses model

R2	F statistic	F probability statistic	Durbin-Watson statistic
0.33	11	0.00	2.11

The coefficient of determination shows that the independent variables elucidate 33% of the dependent variable's change. The significance of the model, based on the statistic and level of F test probability, indicates the significance of the research model. The Durbin-Watson statistic value is also 2.11, between 1.5 and 2.5, which shows no autocorrelation among the error residuals.

$$INW_{i,t} = \beta_0 + \beta_1 BC_{i,t} + \beta_2 INOP_{i,t} + \beta_3 REALE_{i,t} + \beta_4 ACCE_{i,t} + \beta_5 COPS_{i,t} + \beta_6 ION_{i,t} + \beta_7 FON_{i,t} + \beta_8 MON_{i,t} + \beta_9 LEV_{i,t} + \beta_{10} SIZE_{i,t} + \beta_{11} AREP_{i,t} + \beta_{12} EXP_{i,t} + \beta_{13} INDUSTRY_{i,t} + SYear + \varepsilon_{i,t}$$

Table 6. LPM Pooled

Variable	Coefficient	Standard deviation	T statistic	Sig.
Type of auditor's report	-0.04	0.01	-2.87	0.005
Accrued earnings management	-0.19	0.17	-1.08	0.285
Board compensation	-1.73	4.92	-2.78	0.015
Capital structure	-0.23	0.13	-1.68	0.095
Export	-0.07	0.02	-2.42	0.025
Family ownership	-0.10	0.04	-2.05	0.0245
Type of industry 1	-0.26	0.04	-6.01	0.005
Type of industry 2	-0.50	0.07	-6.68	0.005
Type of industry 3	-0.21	0.10	-2.14	0.035
Type of industry 4	-0.10	0.05	-2.02	0.045
Type of industry 5	-0.27	0.11	-2.43	0.025
Type of industry 6	-0.43	0.06	-6.87	0.005
Investment opportunity	-1.42	3.27	-4.34	0.005
Institutional ownership	0.00	0.00	2.23	0.035
Financial leverage	0.47	0.18	2.52	0.015
Real earnings management	-0.08	0.28	-0.28	0.775
Firm size	-0.12	0.00	-17.41	0.005
Intercept	2.55	0.16	15.49	0.005

As can be seen in Table 6, the coefficients of type of auditor's report, accrual earnings management, the board compensation, capital structure, export, family ownership, type

of industry 1-6, investment opportunity, institutional ownership, financial leverage, real earnings management, firm size, and intercept are -0.04, -0.19, -1.37,-0.23, -0.07,-0.10, -0.26, -0.050, -0.21, -0.10, -0.27, -0.43, -1.42, 0.00, 0.47, -0.08, -0.12, 2.55, respectively, the significance level of which is 0.00, 0.28, 0.01, 0.09, 0.02, 0.04, 0.00, 0.00, 0.03, 0.04, 0.02, 0.00, 0.00, 0.03, 0.01, 0.77, 0.00, and 0.00, so there is a significant relationship between type of auditor’s report, the board compensation, capital structure, export, family ownership, type of industry 1-6, investment opportunity, institutional ownership, financial leverage, firm size, and intercept and internal control weaknesses.

Table 7. LOGIT Pooled model

Variable	Coefficient	Standard deviation	T statistic	Sig.
Type of auditor’s report	-0.21	0.11	-1.84	0.005
Accrued earnings management	-0.28	0.10	-2.74	0.005
Board compensation	-4.47	2.21	-2.02	0.005
Capital structure	-0.74	0.27	-2.75	0.005
Export	-0.37	0.19	-1.89	0.015
Family ownership	-0.88	0.20	-4.43	0.005
Type of industry 1	-0.47	0.28	-1.65	0.10
Type of industry 2	-0.82	0.29	-2.83	0.005
Type of industry 3	-0.29	0.28	-1.03	0.305
Type of industry 4	-0.15	0.30	-0.49	0.625
Type of industry 5	-0.47	0.32	-1.44	0.15
Type of industry 6	-0.67	0.28	-2.32	0.025
Investment opportunity	-3.82	1.55	-2.46	0.005
Institutional ownership	0.00	0.00	0.68	0.495
Financial leverage	1.15	0.65	1.76	0.085
Real earnings management	-1.76	0.68	-2.56	0.005
Firm size	-0.22	0.05	-3.97	0.005
Intercept	3.59	0.89	4.02	0.005

As can be seen in Table 7, the coefficients of type of auditor’s report, accrual earnings management, the board compensation, capital structure, export, family ownership, type of industry 1-6, investment opportunity, institutional ownership, financial leverage, real earnings management, firm size, and intercept are -0.21, -0.28, -4.47, -0.74, -0.82, -0.29, -0.15, -0.47, -0.67, -3.82, 0.00, 1.15, -1.76, -0.22, 3-.59, respectively, the significance level of which is 0.00, 0.00, 0.00, 0.00, 0.01, 0.00, 0.10, 0.00, 0.30, 0.62, 0.15, 0.02, 0.00, 0.49, 0.08, 0.00, and 0.00, so there is a significant relationship between type of auditor’s report, accrual earnings management, the board compensation, capital structure, export, family ownership, type of industry 2-6, investment opportunity, institutional ownership, financial leverage, firm size, and intercept and internal control weaknesses.

As can be seen in Table 8, the coefficients of type of auditor’s report, accrual earnings management, the board compensation, capital structure, export, family ownership, type of industry 1-6, investment opportunity, institutional ownership, financial leverage, real earnings management, firm size, and intercept are -0.32, 0.67, -0.00, 0.42, -0.43, -0.48, -0.45, -1, 0.15, -0.01, -0.02, -0.56, -2.94, 0.00, 0.78, -1.05, -0.31, and 5.05 respectively, the significance level of which is 0.00, 0.00, 0.00, 0.00, 0.00, 0.05, 0.43, 0.08, 0.78, 0.98, 0.97, 0.33, 0.00, 0.00, 0.01, 0.00, 0.00, and 0.00, so there is a significant relationship between type of auditor’s report, accrual earnings management, the board compensation, capital structure, export, family ownership, type of industry 2, investment opportunity, institutional ownership, financial leverage, real earnings management, firm size, and intercept and internal control weaknesses.

Table 8. PROBIT Pooled model

Variable	Coefficient	Standard deviation	T statistic	Sig.
Type of auditor's report	-0.32	0.15	-2.11	0.005
Accrued earnings management	0.67	0.34	1.94	0.005
Board compensation	-0.00	0.00	-2.12	0.005
Capital structure	0.42	0.19	2.11	0.005
Export	-0.43	0.14	-2.87	0.005
Family ownership	-0.48	0.25	-1.89	0.050
Type of industry 1	-0.45	0.57	-0.79	0.435
Type of industry 2	-1.00	0.58	-1.72	0.085
Type of industry 3	0.15	0.55	0.28	0.785
Type of industry 4	-0.01	0.63	-0.02	0.985
Type of industry 5	-0.02	0.66	-0.04	0.975
Type of industry 6	-0.56	0.56	-0.98	0.335
Investment opportunity	-2.94	9.31	-3.15	0.005
Institutional ownership	0.00	0.00	3.41	0.005
Financial leverage	0.78	0.40	1.94	0.015
Real earnings management	-1.05	0.42	-2.47	0.005
Firm size	-0.31	0.12	-2.47	0.005
Intercept	5.05	1.93	2.61	0.005

5. Discussion and Conclusion

The result of the present study showed that there is a negative and significant relationship between board compensation and internal control weaknesses. The results of this study confirm with Huang et al. (2018), Gomes (2016), Andreou et al. (2014), Isidro, and Marques. (2013), and Alali (2011).

The result of this paper indicated that there is a negative and significant relationship between investment opportunities and internal control weaknesses. Such a result is in line with that of Chendra-mouli et al. (2018), Gady et al. (2018), and Sun and Al Farooque (2018).

Furthermore, there is a negative and significant relationship between real earnings management and internal control weaknesses. The result of this study is following that of Benjamin et al. (2018), Abbadi et al. (2016), Miko and Kamedin (2015).

The results of this study also revealed a negative and significant relationship between accrual earnings management and internal control weaknesses, which is in line with that of Chung and Zheng (2011), Sayari and Omeri (2017), Alhadab and Clucher (2017), and Lenard et al. (2016).

There is also a negative and significant relationship between capital structure and internal control weaknesses. Such a result is in line with that of Jiang et al. (2018), Gloria and Mantoani (2017), and kayo and Ripamonti (2016).

Also, we found a positive and significant relationship between institutional ownership and internal control weaknesses. This result is in line with Jong et al. (2018), Schmidt and Fahlenbraj (2016), Lin et al. (2014), Chung and Zheng (2011).

In the end, we conclude that there is a negative and significant relationship between family ownership and internal control weaknesses. This result is similar to that of Miguel et al. (2018), Mcconaughey et al. (2011), Block, Jaskiewicz and Miller (2011), and Jaggi et al. (2009).

References

- Abbadi, S.S. Higazi, Q.F. and Al-Rahahleh, A.S. (2016). Corporate Governance Quality and Earnings Management: Evidence from Jordan. *Australasian Accounting Business and Finance Journal*, 10(2), 54-75, <http://dx.doi.org/10.14453/aabfj.v10i2.4>
- Alali, F. (2011). Audit fees and discretionary accruals: compensation structure effect. *Managerial auditing journal*, 26(2), 90-113. <https://doi.org/10.1108/02686901111094994>
- Al-Bassam, W. (2014). Corporate governance, voluntary disclosure and financial performance: an empirical analysis of Saudi listed firms using a mixed methods research design”, Ph.D. thesis, University of Glasgow. <https://core.ac.uk/download/pdf/42373410.pdf>
- Alhadab, M., and Clacher, I. (2017). “The impact of audit quality on real and accrual earnings management around IPOs. *The British Accounting Review*, <https://doi.org/10.1016/j.bar.2017.12.003>
- Andreou, P. Louca, C. and Panayides, P. (2014). Corporate governance, financial management decisions and firm performance, evidence from the maritime industry. *Transportation Research Part E: Logistics and Transportation Review*, 63(3), 59-78. <http://dx.doi.org/10.1016/j.tre.2014.01.005>
- Ball, R. and Shivakumar, L. (2005). Earnings quality in U.K. private firms: comparative loss recognition timeliness. *Journal of Accounting and Economics*, 39(1), 83-128, <https://doi.org/10.1016/j.jacceco.2004.04.001>
- Benjamin, C. Hatfield, R.C. and Houston, R.W. (2018). The effect of real earnings management on auditor scrutiny of managements other financial reporting decisions. *The Accounting Review*, 93(5), 145-163. <http://doi.org/10.2308/accr-52032>
- Beuselinck, C. Cascino, S. Deloof, M., and Vanstraelen, A. (2014). Earnings Management within Multinational Corporations. Available at SSRN: <http://ssrn.com/abstract=1599678>. <http://dx.doi.org/10.2139/ssrn.1599678>
- Block, J.H. Jaskiewicz, P. and Miller, D. (2011). Ownership versus management effects on performance in family and founder companies: A Bayesian reconciliation. *Journal of Family Business Strategy*, 2(4), 232-245. <https://doi.org/10.1016/j.jfbs.2011.10.001>
- Chendra-mouli, V. Plesons, M. Sullivan, E. and Say, L. (2018). 38.8 million Additional modern contraceptive users: this, in fact, is "never-before opportunity to strengthen investment and action on adolescent contraception. *Reproductive Health.*, 15(1), <https://doi.org/10.1186/s12978-018-0457-z>
- Chiraz, B.A. and Lesage, C. (2012). Audit pricing and nature of controlling shareholders: Evidence from France. *China Journal of Accounting Research*, 6(1), 21–34, <https://doi.org/10.1016/j.cjar.2012.08.002>
- Chuen, D.L. Li, G. and Wang, Y. (2018). Cryptocurrency: Anew investment opportunity?. *The journal of alternative investments*, 20(3), 16-40, <https://doi.org/10.3905/jai.2018.20.3.016>
- Chung, K. and Zheng, H. (2011). Corporate governance and institutional ownership. *Journal of financial and quantitative Analysis*, 46(1), 247-273, <https://doi.org/10.1017/S0022109010000682>
- Datta, T.K. (2017). Inventory system with defective products and investment opportunity for reducing defective proportion. *Operational Research*, 17(1), 297-312. <https://link.springer.com/article/10.1007%2Fs12351-016-0227-z>
- Ding, R. Jialong, L. and Wu, Z. (2018). Government affiliation, real earnings management, and firm performance: the case of privately held firms. *Journal of business research*, 83, 138-150. <https://doi.org/10.1016/j.jbusres.2017.10.011>
- Einhorn, E. Langberg, N. and Versano, T. (2018). cross firm real Earnings management.

- Friese, A. Link, S. and Mayer, S. (2008). Corporate governance- The state of the art. *In tax and corporate governance*,. 357-425, [Doi: 10.1007/978-3-540-77276-7_25](https://doi.org/10.1007/978-3-540-77276-7_25)
- Gady, J. Li, Y. Li, T. and Zheng, S.X. (2018), Internal control weakness, investment, and firm valuation. *Finance Research Letters*, 25, 165-171, <https://doi.org/10.1016/j.frl.2017.10.018>
- Giriati. (2016). Free cash flow, dividend policy, investment opportunity set, opportunistic behavior, and firm's value. *Procedia - Social and Behavioral Sciences*, 219, 248-254, <https://doi.org/10.1016/j.sbspro.2016.05.013>
- Gloria, S. and Mantovani, G.M. (2017). On the Shareholders' Composition of the Company and the Governance Mechanisms of the Firm. Can this Contribute to the Firm Performance (Including the Capacity to Attract Capital and Bank Allowances)?, Available at SSRN: <https://ssrn.com/abstract=2907278>
- Gomes, A.P.M. (2016). Corporate Governance Characteristics as a Stimulus to Tax Management. *Revista Contabilidade & Finanças*, 27(71), 149-168. <http://dx.doi.org/10.1590/1808-057x201500750>
- Goncharov, I. and Zimmermann, J. (2012). Earnings management when incentives compete: the role of tax accounting in Russia. *Journal of International Accounting Research*, 5(1), 41-65. <https://doi.org/10.2308/jiar.2006.5.1.41>
- Hu, J. Li, A. and Zhang, F. (2014). Does Accounting Conservatism Improve the corporate information environment?. *Journal of International Accounting, auditing and Taxation*, 23(1), 32-43, <https://doi.org/10.1016/j.intaccudtax.2014.02.003>
- Huang, W. Ying, T. and Shen, Y. (2018). Executive cash compensation and tax aggressiveness of Chinese firms. *Review of Quantitative Finance and Accounting*, 1-30, [DOI: 10.1007/s11156-018-0700-2](https://doi.org/10.1007/s11156-018-0700-2)
- Ipion, E. and Parbonetti, A. (2016). Mandatory IFRS adoption: the trade-off between accrual-based and real earnings management. *Accounting and Business Research*, 47(1), 91-121. <https://doi.org/10.1080/00014788.2016.1238293>
- Isidro, H. and Marques, A. (2013). The effects of compensation and board quality on non-GAAP disclosures in Europe. *The International Journal of Accounting*, 48(3), 289-317. <https://doi.org/10.1016/j.intacc.2013.07.004>
- Jaggi, B. Leung, S. and Gul, F. (2009). Family control, board independence, and earnings management: Evidence-based on Hong Kong firms. *Journal of Accounting and Public Policy*. 28(4), 281-300. <https://doi.org/10.1016/j.jaccpubpol.2009.06.002>
- Jarvinen, T. and Myllymaki, E.R. (2016). Real earnings management before and after reporting sox 404 material weaknesses. *Accounting Horizons*, 30(1), 119-141. <https://doi.org/10.2308/acch-51310>
- Jiang, J. Dong, F. and Du, B. (2018). Analysis on the factors affecting the capital structure of small and medium-sized enterprises in china. *Business & Economics*, 8(1), 156-162. [DOI: 10.4236/ajibm.2018.81010](https://doi.org/10.4236/ajibm.2018.81010)
- Jong, L. Ho, P.L. and Elliott, C. (2018). Inside the family: the impact of family and institutional ownership on executive remuneration. *Cogent Economics & Finance*, 6(1), <https://www.tandfonline.com/doi/full/10.1080/23322039.2018.1432095>
- Kayo, E. and Ripamonti, A. (2016). Corporate governance and capital structure in Brazil: stock, bonds, and substitution. *Mackenzie management review*, 17(5), 85-109. <http://dx.doi.org/10.1590/1678-69712016>
- Kayo, E.K. Brunaldi, E.O. and Aldrighi, D.M. (2018). "Capital structure adjustment in Brazilian family firms". *Revista de Administração Contemporânea*, 22(1), <http://dx.doi.org/10.1590/1982-7849rac2018170004>
- Kim, J.B. Yeung, I. and Zhou, J. (2017). Stock price crash risk and internal control

- weakness. *Accounting and Finance*, 59(2), 1197-1233. <https://doi.org/10.1111/acfi.12273>
- Kothari, S. Leone, A.J. and Wasley, C.E. (2005). "Performance matched discretionary accrual measures", *Journal of accounting and economics*, 39(1),163-197. <https://doi.org/10.1016/j.jacceco.2004.11.002>
- Lenard, M.J. Petruska, K.A. Alam, P. and Yu, B. (2016). Internal control weaknesses and evidence of real activities manipulation. *Advances in Accounting*, 33, 47-58, <https://doi.org/10.1016/j.adiac.2016.04.008>
- Lin, L. Wu, C. M. Fang, T.Y. and Wun, G.C. (2014). The relation among accounting conservatism, institutional investors and earnings manipulation. *Economic Modeling*, 37, 164-174. DOI: [10.1016/j.econmod.2013.10.020](https://doi.org/10.1016/j.econmod.2013.10.020)
- McConaughy, D.L. Matthews, CH., and Fialko, F.A. (2011). "Founding Family Controlled Firms: Performance, Risk, and Value". *Journal of Small Business Management*, 39(1), 31-49. <http://dx.doi.org/10.1111/0447-2778.00004>
- Miguel, A. Ederer, F. Gine, M. and Schmalz, M. (2018). Common Ownership, Competition, and Top Management Incentives. *Ross School of Business*, <https://ssrn.com/abstract=2802332>
- Miko, N.U. and Kamardin, H. (2015). Impact of Audit Committee and Audit Quality on Preventing Earnings Management in the Pre - and Post- Nigerian Corporate Governance code 2011. *Procedia - Social and Behavioral Sciences*, 172(27),. 651-657. <https://doi.org/10.1016/j.sbspro.2015.01.415>
- Ramalho, J.J.S. Rita, R. and Silva, J.V. (2018). The impact of family ownership on the capital structure of firms: exploring the role of zero-leverage, size, location and the global financial crisis. *International Small Business Journal*, DOI: [10.1177/0266242617753050](https://doi.org/10.1177/0266242617753050)
- Roychowdhury, H. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics*, 42(3), 335-370, <https://doi.org/10.1016/j.jacceco.2006.01.002>
- Sayari, S. and Omri, A. (2017). Earnings management, accruals, and stock liquidity. *Journal of finance and bank management*, 5(1), 17-28, DOI: [10.15640/jfbm.v5n1a2](https://doi.org/10.15640/jfbm.v5n1a2)
- Schmidt, C. and Fahrenbrach, R. (2016). Do exogenous changes in passive institutional ownership affect corporate governance and firm value?. *Journal of financial economics*, 124(2), 285-306. <http://dx.doi.org/10.2139/ssrn.2177699>
- Stephan, ASchafer, D. and Mosquera, J. (2017). Family ownership: does it matter for funding and success of corporate innovation?. *Small business economics*, 48(4), 931-951. DOI: [10.1007/s11187-016-9813-y](https://doi.org/10.1007/s11187-016-9813-y)
- Sun, L. and Al Farooque, O. (2018). An exploratory analysis of earnings management before and after the governance and disclosure regulatory changes in Australia and New Zealand. *International Journal of Accounting & Information Management*, 26(1), 81-114, <https://doi.org/10.1108/IJAIM-09-2016-0087>
- Tadesse, A.F. and Murthy, U.S. (2018). Nonprofessional investor perceptions of the partial remediation of IT and non-IT control weaknesses: An experimental investigation. *International Journal of Accounting Information Systems*, 28(3), 14-30, <https://doi.org/10.1016/j.accinf.2017.12.001>
- Wang, J. and Hooper, K. (2017). Internal control and accommodation in Chinese organization. *Critical Perspectives on Accounting*, 49©, 18-30, DOI: [10.1016/j.cpa.2017.04.003](https://doi.org/10.1016/j.cpa.2017.04.003)