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Investigating the relationship between managers' loss-aversion characteristics and non-discretionary accruals-based earnings management in companies listed on the Tehran stocks exchange

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Abstract---The present article aimed to investigate the relationship between the managers' loss-aversion characteristics and non-discretionary accruals-based earnings management in companies listed on the Tehran Stocks Exchange. The Pen Pin Questionnaire (2008) was employed to investigate the managers' loss-aversion bias, which was introduced to the model as a virtual variable (0, 1). To measure non-discretionary accruals-based earnings management, the adjusted Jones' model was used. Variables of financial leverage, return on assets, corporate size, institutional ownership and market-to-book value entered the model as effective control variables to explain and examine the effects of the independent variable on the dependent variable. A total of 137 companies listed on the Teran Stocks Exchange (from 2018 to 2019) were selected via systematic elimination method. The research variables were also analyzed by Excel and Eviews software as well as cross-sectional data model. The findings suggested that the variable of managers' loss-aversion bias is not significantly associated with non-discretionary accruals-based earnings management, which nullifies the research hypothesis.

Keywords---loss aversion bias, non-discretionary accruals, Tehran stocks exchange.

Introduction

In behavioral finance debates, behavioral characteristics, which affect the managers' decision-making process, are investigated. These characteristics are known as "behavioral biases", the most important of which are managers' loss-aversion biases. Managers' loss-aversion biases lead them to avert losses and tend to profits (Rezazadeh & Fallah-Shams, 2013). Separation of ownership from management motivates the managers to manage the profits for their own interests. However, if the conflict of interests ensuing from the manager's representation is not regulated, it could pave the way for the control of interests. This way, managers' performance is referred to as earning management through discretionary accrual items which this type of earning management does not have a direct effect on the corporate operations and its cash flow (Asna-Ashari, 2020). Earning management through discretionary accrual items is not only controlled by revenue management operations, but is also affected by unanticipated real operations. Earning management predicts that managers increase or decrease unanticipated real operations by increasing (or decreasing) the level of revenue management-based accruals (Zheng, 2012). Accrual items are calculated from the difference of operating earnings and cash flow of operations, which include depreciation expenses, changes to the assets and current liability. Accruals management is a means which helps the manager to manage the earning only in the accounting context without affecting the cash flows and making real economic decisions.

One of the factors that cause the financial markets to fluctuate is the managers' loss-aversion biases. This kind of bias affects managers' decision-making processes in the Stocks Exchange (Subash, 2012). In today's economic market, accrual-based earning management can be regarded as a criterion for choosing an option from among determinate investment options. To achieve the best results, the best and most optimal option should be chosen. Here, the factors which help choose this option depend on the performance of the whole set in order that the investor is encouraged to this investment. The optimal allocation of capital greatly contributes to the economic development of the nations. Today, debates on earning management are one of the interesting topics in accounting researches, because investors, as major agents in their own investment decision-making process, focus on the profit rates. Past researches on earning management generally indicate that this phenomenon is more prevalent in nations where the Stocks Market is smaller and have a domestically-oriented economy. Thus, a review of variables affecting the earning management in Iran with a smaller and domestically-oriented economy can provide insights into the study of the theoretical structure of earning management (Noorvash, 2016). As stated, this research aimed to investigate the relationship between the managers' loss-aversion characteristics and non-discretionary accruals-based earnings management in companies listed on the Tehran Stocks Exchange.

Theoretical Research Basics

Behavioral Biases

Loss-aversion bias was developed in 1979 by Kahneman and Tversky as part of their Prospect Theory to answer the findings of the said theory which states that peoples' tendency to avert losses is greater than their tendency towards profits (Gujarati, 2006). The extent of loss aversion is a major factor which affects managers' behaviors and decision making in financial markets, thus engendering losses for them. The idea of managers' loss aversion bias is not a new discovery. Quoting Adam Smith, Kameher and Levinstein (2004) remarked: "We suffer more.... When the situation goes from better to worse, and when the situation changes from worse to better, we enjoy it". Kameher and Levinstein demonstrated that Smith introduced this concept as managers avert losses (Jalili et al. 2014). Over the past decades, irregularities have arisen in the financial markets which classic financial theories failed to answer. Classic financial theories posit how the investor should behave, but behavioral finance seeks to reveal the application of psychological decision-making processes in the understanding and prediction of financial markets (Rahnaamy-Poshtroudi et al. 2012). Present irregularities in the market show that investment horizons, risks and self-confidence that people have in the market greatly contribute to the managers' behaviors and decisions as this can shape their behavioral patterns (Lashkari & Mortazi, 2011). Thus, unlike classic theories, economic agents are not rational in behavioral patterns; thus, failing to act fully rationally due to their preferences or behavioral mistakes. Irrational factors such as sentiments, culture, character, religion and moods help represent the managers' behaviors under various decision-making situations.

Earnings Management

Earnings management is defined as the selection of accounting policies in order to meet some specific goals (Scotta, 2009). Earnings management is also defined as the management's artificial manipulation with the profits to meet an anticipated level of profit for some specific decisions. In fact, the main motive behind earnings management is the management of investors' perception in a trading unit (Mashayekh et al. 2013). Earnings management is established when managers use financial reporting judgement and exchange structure to mislead some of the stakeholders about the economic performance of the company by affecting contractual results which are dependent on reported accounting figures; thus, manipulating with the financial reporting (Jones et al. 2010).

Earnings Management Mechanisms

Managers may affect and direct the reported profits differently. These different techniques employed to managing profits are called earnings management mechanisms. In the following, we describe some of these types of management and relevant mechanisms.

Discretionary Expenditure Manipulation: Discretionary expenditure including research and development expenses, bonuses for managers and employees, general advertisements and public as well as administrative expenses are mostly

manipulated by managers to achieve the intended level of profitability. Earnings management of this kind has been indicated in the literature (Gunny, 2010).

Sales Manipulation: It refers to the managers' efforts to temporarily increase the sales level in a year by offering sales discounts or appealing sale conditions (Roychowdhury, 2006). In a research, Jackson and Wilcox (2000) concluded that managers change policies on sales and pricing in the four seasons of the year in order to avoid a report of losses, and profit and sales reduction (e.g., through offering discounts and reducing sales prices). As well, Roychowdhury found evidence suggesting that companies offer discounts to increase their sales.

Production Manipulation: This is a kind of real earnings manipulation which pertains to excessive production of goods. With this, the finished prices of each unit are reduced and the sales (earnings) margin increases which also incur extra production and maintenance costs and exhaust many opportunities (Roychowdhury, 2006).

Sales of Non-Current Assets: Companies begin to manage earnings through sale of non-current assets and identification of losses and gains. In the meantime, the sales and re-lease of non-current assets policies also fall under this category. Earnings management of this kind has been reported in the literature (Ebrahimi & Zakeri, 200). The rules overseeing the capital market constitute one of the major extra-organizational elements of corporate governance which can affect the quality of financial reporting and behaviors such as earnings management. Earnings management is also expected to wane following intensified legal oversights over corporate reporting and disclosures (Izadinia et al. 2015). Managers can manage reported profits by defining real operations. They can specifically change the timing and level of real operations such as production, sales, investment and financing in all accounting periods in a way they can achieve a specific income goal. For example, reported profits can increase by temporarily increasing production schedule and also by decreasing or delaying discretionary expenses at the time of sales (Zare-Behnamiri et al. 2015). The management may also remove discretionary expenses such as those arising from R &D, advertisement, travel or maintenance or increase the production. They may also offer discounts for the customers in order to increase the sales (Nagar & Sen, 2016). Because of affecting the cash flow processes, real earnings management engenders limitations and liabilities for the managers, also (Mashayekhi & Hosseinpour, 2016). Real earnings management violates normal businesses, leaving direct and negative outcomes on the current cash flows of the company.

It is very much difficult for investors to understand this type of earnings management which is less regulated by the board of directors, auditors, financial statement regulators and other stakeholders (Zare-Behnamiri et al. 2015). Real earnings management has two advantages over accrual-based earnings management: first, manipulation with the accruals directs the attention of the auditor's meticulous attention more than manipulation with the real operations. Second, mere reliance on manipulation with accrual items at the end of the period is a risk, because the extent of manipulation required to achieve the intended profits may be greater than the extent made possible through the accrual

manipulation. That said, real operations cannot be manipulated with at the end of the period (Mashayekhi & Hosseinpour, 2016).

Research Literature

Eghbal and Ali Boot (2015) investigated the relationship between self-serving overconfidence loss-aversion and reliance effects with working capital management in Pakistan, and concluded that there was a significant relationship between behavioral biases and working capital management. Zhang (2012) investigated the way managers apply accrual-based earnings and real earnings techniques alternatively, finding out that managers make decisions about the real earnings management prior to applying accrual-based earnings management. The findings also revealed that managers use accrual-based and real earnings management alternatively. Zhang also examined the variations of accrual-based and real earning management over time along with changes made to risks arising from lawsuits. The findings indicated that managers also employ accrual-based and real earnings management alternatively. It was also revealed that following lawsuits, managers tend to use real earnings management instead of accrual-based earnings management.

Zhao (2011) investigated the approaches used by managers on how to manage earnings and risks. The findings revealed that proficient managers tend to behavioral biases such as loss-aversion, overconfidence, reliance effect, etc. which can be desirable for productivity. Johnson et al. (2006) also investigated the nature of loss-aversion, suggesting that women are more loss avert than men, as more educational levels can help lower loss-aversion measures. Thomas Flavin (2006) investigated the impacts of capital fund managers' loss aversion in Ireland and showed that managers with higher loss-aversion saw their factors oscillating between 9.1 and 42.2, while those with more balanced loss aversion saw their factors ranging from 24.3 and 69.3.

Khosravi Nia et al. (2020) investigated the relationship between the investor's loss aversion and overconfidence with the return ratio of the equity holders and the stocks market price-to-book value ratio. Data were gathered from 129 companies from 2012 to 2018. The results revealed that there is a negative and significant relationship between loss aversion and return ratio of the equity holders and the stocks market price-to-book value ratio.

Raki et al. (2020) investigated the simulation results of an artificial market including two groups of fundamental and non-fundamental traders with loss aversion behavioral biases and found out that loss aversion behavioral biases can explain part of the dynamism of financial markets and play a key role in the formation of financial market prices. Also, price production process (followed by efficiency) which is indigenous in this model is more compatible with many of the financial market facts including mere stocks puzzle, price bubbles, and abnormal data distribution.

Research Method

This retrospective research is applied in terms of goals and is a descriptive-analytical study. To gather data for the first part, the researches done on the subject, books, credible articles and scientific journals as well as student theses and Internet sites were reviewed and studied. For the second part, data were collected from the official websites of the Tehran's Stocks Exchange, information banks such as Rahavard Novin, Iran Tahlil software and other credible sites. The data of this part were based on the archives. With respect to the variable of loss-aversion, the diagnostic behavioral biases questionnaire taken from the Behavioral Financial Books and Asset Management Questionnaire by Pumpin (2010) was used. Thus, the questionnaire items were in line with the Iranian capital market and corresponded to the views of the professors which enjoy good validity and reliability. The statistical population includes all the active companies listed on the Tehran's Stocks Exchange which totaled 435 companies by 2019. Because it is required to access data at the year (t-1) to calculate the variables, the companies must provide data since 2018. The companies had production activities which exclude financial institutions, capital funds and banks from entering the sample. The reason for the exclusion of these institutions is the difference of their capital structure, the type of activity and financial leverages which could help compare the results better. The fiscal year of the companies ends in March 20. The included companies were those who did not change their fiscal year; also, the companies with no more than three-month operating cessation were allowed.

Research Variables

Non-discretionary accruals: To calculate non-discretionary accruals, the adjusted Jones' model (1990) is used as follows:

$$NDA_{it} = \alpha 1 \left(\frac{1}{A_{it-1}} \right) + \alpha 2 \left(\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}} \right) + \alpha 3 \left(\frac{PPE_{it}}{A_{it-1}} \right)$$

Where

NDA: non-discretionary accruals at year t

A_{t-1} : Sum of assets at year t-1

ΔREV : Revenue at year t minus revenue at year t-1

ΔREC : Accounts receivable at year t minus revenues at year t-1

PPE: Sum of properties, machineries, and equipment at year t

Control Variables

Corporate size (SIZE): It is measured as the natural logarithm changes of the company's stock exchange market value in each year (E'temadi & Montazeri, 2013).

Financial leverage (LEV): One of the most important scales of financial leverages is the debt ratio which is calculated from dividing all the debt by the total assets. It is expected to see a direct and significant relationship between financial leverage and performance (Foster, 1986).

Return on Assets (ROA): It is defined as the pre-tax earnings and unexpected items, divided by total assets (E'temadi & Montazeri, 2013).

Institutional Ownership Percentage (INS): It represents the percentage of the stocks provided to institutional owners. Institutional investors include: banks, insurance firms, investment companies, retirement agencies, etc. Because they have a long-term horizon, these investors are considered as institutional investors (Yazdani et al. 2016).

Market-to-Book Value Ratio (MTB): It equals market-to-book value (Salehi-Nejad & Vaghfi, 2015).

Research Model

A cross-sectional linear regression model was used to analyze the results. Thus, the test model is as follows:

Model: Using this model, it is investigated whether or not the managers' loss-aversion characteristics affect discretionary accruals-based earnings management.

$$NDA_{i,t} = \beta_0 + \beta_1 \text{Loss Aersion Bias}_{i,t} + \beta_2 \text{LEV}_{i,t} + \beta_3 \text{ROA}_{i,t} + \beta_4 \text{SIZE}_{i,t} + \beta_5 \text{INS}_{i,t} + \beta_6 \text{MTB}_{i,t} + \varepsilon_{i,t}$$

According to the above models, DA is discretionary accruals; NDA is non-discretionary accruals; Loss Aversion Bias is Loss aversion bias; LEV is financial leverage, ROA is return on assets; SIZE is company size; INS is institutional ownership; MTB is market-to-book value; β is interception and coefficients of regression model and ε_{it} : regression model error.

Findings

Table (1) gives descriptive statistics of the main model variables. Positive kurtosis coefficients suggest that the data distribution is greater than the normal distribution and the data are centered on the mean. In the end, the Jarque-Bera test and its probability indicate that none of the research variables are normal, which can be explained considering the large sample size (over 30 observations) and the central limit theorem.

Table 1: Descriptive statistics of the main model variables

$NDA_{i,t} = \beta_0 + \beta_1 Loss\ Aersion\ bias_{i,t} + \beta_2 LEV_{i,t} + \beta_3 ROA_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 INS_{i,t} + \beta_6 MTB_{i,t} + \varepsilon_{i,t}$										
Variable		Dependent		Independent		Control				
Name			Non-discretionary accruals	Loss-aversion biases		Financial leverage	Return on assets	Corporate size	Institutional ownership	Market-to-book value
Short form			NDA	Loss Aversion bias		LEV	ROA	SIZE	INS	MTB
Mean			0.0601	0.4890		0.6138	0.1212	12.7795	0.4460	6.1100
Median			0.0576	0.0000		0.5707	0.1035	12.6595	0.5027	4.9023
Max.			0.1723	1.0000*		2.5490	0.5285	14.7648	0.9715	54.5786

* Out of 137 companies under study, managers of 67 companies had loss-aversion characteristics while those of 70 companies had no such characteristics.

Min.	-0.0783	0.0000	0.0604	-0.4915	11.8066	0.0000	-45.5179
SD	0.0270	0.5017	0.3458	0.1684	0.6167	0.3200	9.3739
Skewness	0.0418	0.0438	2.8479	-0.2631	1.2586	-0.0463	-0.3313
Kurtosis	11.6694	1.0019	15.780	3.8246	4.6391	1.5806	16.6715
Jarque-Bera	429.078	22.833	1117.53	5.4636	51.5079	11.5480	1069.44
Jarque-Bera probability	0.0000	0.0000	0.0000	0.0651	0.0000	0.0000	0.0000
Number of observations	137						

To calculate earnings management, the adjusted Jones' model is used. In this model, first, all accruals are calculated as follows:

$$ACC = OI - CFO$$

Where ACC is the total accruals, OI is operating profits and OCF is operating cash flow. Total accruals, having been calculated, the parameters α_1 , α_2 , α_3 are estimated from the following regression equation to measure non-discretionary accruals:

$$\frac{ACC_{it}}{A_{it-1}} = \alpha_1 \left(\frac{1}{A_{it-1}} \right) + \alpha_2 \left(\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}} \right) + \alpha_3 \left(\frac{PPE_{it}}{A_{it-1}} \right) + \varepsilon_{it}$$

Where ACC_{it} is the total accruals of the company i at the year t ; A_{t-1} is the book value of total assets of the company i at the end of the year $t-1$; ΔREV_{it} is changes of the revenue of the company i between the years t and $t-1$; ΔREC_{it} is changes of the accounts receivable of the company i between the years t and $t-1$; PPE_{it} is the gross assets, machinery and equipment of the company i at the year t ; ε is the unknown effects of random factors and α_1 , α_2 , α_3 are calculated parameters of the Jones' model. Using cross-sectional, the results of this equation are summarized in Table (2).

Table 2: Calculated Jones' model results

$\frac{ACC_{it}}{A_{it-1}} = \alpha_1 \left(\frac{1}{A_{it-1}} \right) + \alpha_2 \left(\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}} \right) + \alpha_3 \left(\frac{PPE_{it}}{A_{it-1}} \right) + \varepsilon_{it}$			
Variable	Coefficient	T statistic	Prob.
C	0.0552	3.1640	0.0019
$\frac{1}{A_{t-1}}$	8422.739	1.5394	0.1261
$\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}}$	0.0151	0.6338	0.5278
$\frac{PPE_{it}}{A_{t-1}}$	-0.0239	-1.4525	0.1487
Coefficient of determination=0.13		Adjusted coefficient of determination=0.111	
Test probability=0.003		Test statistic=10.515	

Durbin-Watson statistic=2.041

Thus, $a_1=8422.739$; $a_2=0.015$ and $a_3=-0.023$, as the following equation can be used to calculate the non-discretionary accruals (NDA):

$$NDA_{it} = \alpha_1 \left(\frac{1}{A_{it-1}} \right) + \alpha_2 \left(\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}} \right) + \alpha_3 \left(\frac{PPE_{it}}{A_{it-1}} \right)$$

Ordinary least squares (OLS) regression analysis examines the variance inflation factor (VIF) of multicollinearity intensity. In fact, this index suggests the extent to which variations of the calculated coefficients increase for the collinearity. Multicollinearity intensity can be analyzed by examining the greater VIF value. To cite an experimental rule, if the VIF value is greater than 10, the multicollinearity is higher. The results from examining this variable are given in Table (3). The results reveal no collinearity between the variables.

Table 3: Collinearity results of variables

	Hypothesis	First	Second
Variable	Short form	VIF	VIF
Loss-aversion bias	LOSS	1.011	1.011
Financial leverage	LEV	1.235	1.235
Return on assets	ROA	1.219	1.219
Corporate size	SIZE	1.218	1.218
Institutional Ownership	INS	1.203	1.203
Market-to-book value	MTB	1.046	1.046

One of the assumptions of the regression model is that the variance of the errors is constant which, despite the variance heterogeneity of the model, the variance of the dependent variable (which equals the residual variance) changes with the increase or decrease of the independent variable. Table (4) gives the results from the heterogeneity test of the research model. As noted, the probabilities of the model are calculated to be above 0.05, indicating no variance heterogeneity in the error statements of the model.

Table 4: Variance heterogeneity test results

Hypothesis	Method	Value	Prob.
Second	ARCH	2.8589	0.0932

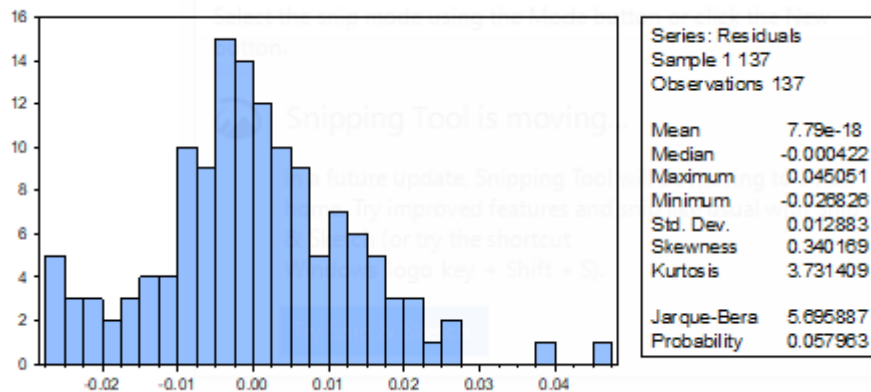


Figure 1: Normality Test of disruption statements of the research model

Since Jarque-Bera test probability is calculated at greater than 0.05, the null hypothesis, which states the error statements are normal, is conformed. Hypothesis test results using cross-sectional regression are given in Table (5):

Table 5: Calculating the second hypothesis tests results

$NDA_{i,t} = \beta_0 + \beta_1 Loss\ Aersion\ bias_{i,t} + \beta_2 LEV_{i,t} + \beta_3 ROA_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 INS_{i,t} + \beta_6 MTB_{i,t} + \varepsilon_{i,t}$				
Variable	Coefficient	Standard error	T statistic	Prob.
C	0.1787	0.0240	7.4430	0.0000
Loss Aversion Bias	-0.0020	0.0021	-0.9850	0.3246
LEV	0.0110	0.0041	2.6485	0.0091
ROA	0.0463	0.0087	5.3210	0.0000
SIZE	-0.0103	0.0019	-5.4002	0.0000
INS	0.0015	0.0035	0.4220	0.6737
MTB	0.0002	0.0001	1.8206	0.0710
Test statistic=9.531	Coefficient of determination=0.305			
Test probability=0.000	Adjusted coefficient of determination=0.273			
Durbin-Watson statistic=1.680				

As the calculations suggest, the control variables of institutional ownership (INS) and market-to-book value (MTB) are not significantly correlated with earnings management through discretionary accruals (NDA); thus, an additional variable test is initially used to examine the removal of these variables. The results of this test are given in Table (6).

Table 6: Test of additional variables

Variable	F-statistic	Prob.	Result
INS	0.187	0.665	Variable removed

MTB	3.449	0.063	Variable removed
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Because the probability rates are calculated to be greater than 0.05, these variables are removed from the model and the following results are obtained:

Table 7: Best hypothesis calculation results

$NDA_{i,t} = \beta_0 + \beta_1 Loss\ Aersion\ bias_{i,t} + \beta_2 LEV_{i,t} + \beta_3 ROA_{i,t} + \beta_3 SIZE_{i,t} + \varepsilon_{i,t}$				
Variable	Coefficient	Standard error	T statistic	Prob.
C	0.1823	0.0224	8.228	0.0000
Loss Aversion Bias	-0.0020	0.0021	-0.9420	0.3479
LEV	0.0100	0.0041	2.4040	0.0176
ROA	0.0455	0.0087	5.2222	0.0000
SIZE	-0.0104	0.0017	-5.9419	0.0000
Test statistic=13.2472	Coefficient of determination=0.286			
Test probability=0.000	Adjusted coefficient of determination= 0.264			
Durbin-Watson statistic=1.753				

The results suggest that the variable of managers' loss-aversion bias with a calculated probability of higher than 0.05 is not significantly related with non-discretionary accruals-based earnings management. Thus, the study hypothesis is rejected at a 95% probability rate. A review of the control variables also indicated that the variables of financial leverage and return on assets have a positive and significant relationship with and the variable of company size has a negative and significant relationship with non-discretionary accruals-based earnings management, respectively.

In the present model, $R^2 = 0.28$ and $\bar{R}^2 = 0.26$. In other words, explanatory variables explain 0.26% of the dependent variable changes. In the meantime, Durbin-Watson statistic is 1.75, which has no gross distance from 2, which suggests no autocorrelation but a healthy model. On the other hand, the F statistic is greater than the table value and because Prob = 0.00, the total regression can be concluded to be significant.

Conclusion

Separation of ownership from management motivates the managers to manage the earnings for their own interests. Earning management is done in two ways: the first form includes the selection of appropriate accounting techniques to achieve a desirable level of earnings (e.g., accrual items management), while the second form involves scheduling or level of operational decisions to achieve an intended level of profits (e.g., manipulation with real operations). The first form is usually revealed and discovered by the auditor, but the discovery of the second form by the outsiders may be more difficult (Healy & Wahlen, 2014). When in red, managers have a greater tendency to risk. In fact, these people are ready to take

risks to escape losses. Empirical evidence suggests that the pains of losses are twice as much pleasurable as the gains to the same extent. The present article aimed to investigate the relationship between the managers' loss-aversion characteristics and non-discretionary accruals-based earnings management in companies listed on the Tehran Stocks Exchange. The Pen Pin Questionnaire (2008) was employed to investigate the managers' loss-aversion bias, which was introduced to the model as a virtual variable (0, 1), which, if managers enjoy this type of bias, they are assigned number one, otherwise, zero. To measure non-discretionary accruals-based earnings management, the adjusted Jones' model was used. Variables of financial leverage, return on assets, corporate size, institutional ownership and market-to-book value entered the model as effective control variables to explain and examine the effects of the independent variable on the dependent variable. According to the results from the model calculation and despite the probability rates estimated to be above 0.05, no evidence on the significant relationship between the managers' loss-aversion bias and non-discretionary accrual-based earning management was found. Thus, the study hypothesis is rejected at a 95% probability rate, which can be explained by the fact that non-discretionary accrual items are more restricted by regulations, organizations and other externalities and are less manipulated by the management. Karimi and Rahnamy-Poshtroudi (2015) suggested that there is a positive and significant relationship between loss aversion bias and earning management.

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