Studying the Managers' Overconfidence Effect on the Relationship between the Firm Risk and Managers' Rewards

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Abstract: *The objective of this research is to study the managers' overconfidence effect on the relationship between the firm risk and managers' rewards of the listed firms in the Tehran Stock Exchange. In addition, the research sample had 136 members which were selected in 2012-2019 using the systematic removal sampling method by considering the research variables conditions. Furthermore, this research has 2 hypotheses. The objective of this research is applied research type and the methodology is correlational based on the content and nature. The research was conducted in the framework of deductive-inductive reasoning and panel data analysis was used to analyze the hypotheses. The obtained data showed the positive and significant relationship between the firm risk and managers' rewards. Moreover, the managers' overconfidence is effective on the relationship between the firm risk and managers' rewards.*

Keywords: *managers' overconfidence, firm risk, manages' rewards.*

I. Introduction

Evolution in Iran's economic environment in recent years has made the corporate leadership be focused on the governance mechanism more than ever particularly by increasing the privatization and transfer of state-owned companies as well as the development of the capital market. The audit committee is considered a component of the governing body of the firm and is a determining factor in the financial reporting process, which increases the credibility of the audited financial statements. On the other hand, companies and shareholders rely on the judgment of audit committee members to monitor fields more closely such as risk, avoid waste of company resources, the accuracy of financial reporting, and compliance with legal and regulatory requirements. Each member of the audit committee needs to have a correct and clear knowledge of their duties according to the charter of the committee and other legal requirements to perform its duties (Arab Salehi et al., 2015).

II. Problem statement

The growing and highly competitive environment of businesses oblige them to compete with a variety of national and international actors to survive and expand their operations through new investments. The economic agencies need financial resources to invest, but what matters is the concept of financial flexibility. In other words, the decisions of today's executives should not be in a way to jeopardize future financing or opportunities for growth and development.

Lack of attention to this concept in the financial supply decisions will create a risky situation for the business because if the firm cannot provide the necessary resources from the financial market in a time of need, it will be forced to ignore the appropriate investment opportunities (Mahmoudabadi et al., 2011). Therefore, the economic agencies usually worry about their credit from two aspects: first, lest they be unable to pay their principal and interest on their debts, and face a financial crisis; Second, the firm's credit decisions today should not jeopardize its financial flexibility tomorrow. The relevant issue to the credit condition is important not only for the economic agencies for their other beneficiaries such as stakeholders and current investors but also creditors and potential investors will not ignore the credit condition of the economic agencies (Mahmoudabadi et al., 2011). On the other hand, over self-confidence is a personality trait that can be defined as misbehavior and unrealistic (positive) beliefs for each aspect of consequences in uncertain conditions. Mangers with high self-confidence are very optimistic about their decisions and results especially in the field of investment decisions (Sajjadi et al., 2010). On the other hand, managers are strongly committed to the company's performance, because their personal wealth, reputation, and employment to a very high value are attached to it. This

description brings the basis of the over self-confidence effect on the firm's decisions (Aaboa, 2020). The main objective of this research is to know whether there is a relationship between the firm risk and overconfidence of managers or not? In addition, to know whether managers' rewards are effective on the first risk and overconfidence of managers?

III.   Research importance and necessity

Many researchers identified the important effects of over self-confidence of senior managers in recent years to manage the effects of too much confidence on the dividend, investments, combination, and acquisition (Malandier and Tate, 2005). They studied the relationship between the managerial over self-confidence and acquisitions. They believed in only two types of senior managers: senior managers with a lack of self-confidence and over self-confidence. In addition, they concluded that the senior managers with high self-confidence wrongly believe that their firm stock is valuated low by the market. This belief is made because the senior managers with over self-confidence than the firm future efficiency can get the control and leadership by themselves (Aaboa et al. 2020). Alternatively, the characteristics of the stock market have made both companies and investors consider the capital market as a suitable place to attract financial resources and investment. Thus, the stock exchange is one of the economic institutions of society in developed countries, and its operation is one of the important indexes reflecting the socio-economic situation of these countries. Therefore, they are analyzed in this regard.

On the other hand, any fluctuation in the stock market brings major economic crises. It is significantly felt essential to increase studies to inform the investor class is more and more evident by the quantitative and qualitative expansion of the capital market and the increase in the number of market participants, the need (Khosrownejad, 2011). Today, the business environment is increasingly complex and constantly changing. The survival and progress must improve the flow of innovation and regulatory mechanisms in the organization to prevent stagnation and destruction to make market value and gain a sustainable competitive advantage (Salmon, 1990, 170). An active board of directors and the presence of non-executive members in the board of directors have been considered to align the interests so that one of the main objectives of any corporate governance system is to make the organization authorities accountable (Hasasyeganeh, 2017). The results of this research can develop the theoretical foundations of past research on risk. This issue as a scientific achievement can provide useful information to capital market legislators as well as developers of accounting standards. Therefore, the managers' rewards are significantly important in the relationship between the firm risk and managers' overconfidence.

IV.   Background

Ghafurian Shagerdi et al. (2019) studied the effect of firm growth opportunity on the relationship between the CEO's overconfidence and abnormal returns in listed firms on the Tehran Stock Exchange. Their results showed a significant relationship between the CEO's overconfidence and abnormal return. Moreover, the firm's growth opportunity had a significant effect on the relationship between the CEO's overconfidence and abnormal return.

Vaez et al. (2017) investigated the effect of profit accuracy dimensions on managers' rewards in listed firms on the Tehran Stock Exchange. The results of testing the hypothesis showed that the achievement of profit thresholds plays a significant role in rewarding managers and the reward is reduced, and asymmetric adjustment of the target profit has a positive effect on rewards. However, this effect is negative and significant in firms with good and weak performance in the industry.

Shafieinigabadi et al. (2019) studied the effect of risk on the relationship between management short-sightedness and quality of financial reporting. The results showed that managers' short-sightedness has a significant and inverse effect on the quality of financial reporting. Also, risk management does not affect the relationship between managers' short-sightedness and the quality of financial reporting.

Cheung et al., 2019 (2020) studied the firm risk, managers' overconfidence, and rewards. Their results showed the positive relationships between the firm risk and CEO's rewards, and this is reinforced by increasing the over self-confidence of the CEO's motivation.

Menis et al. (2019) studied the relationship between risk and firm credit rating and concluded that risk improves firm performance and eventually increases firm profitability. This will attract the investors and creditors which finally increases the firm credit rank.

Krestina et al (2019) have examined the relationship between risk management and firm performance that the results show that there is a positive relationship between risk management and firm performance. Gomes et al (2018) examined the effect of corporate governance principles, company characteristics, and the managers' rewards of the board of directors and the CEO on tax management. The results showed that the managers' rewards of the board of directors have a direct impact on tax management and cause tax management to be done more effectively which improves the company's performance.

Vivian et al. (2018) investigated the role of the board of directors and the audit committee in the risk management of firms. Their results show that the board and especially the audit committee have a positive and significant relationship with risk management.

Glover, B., Levine (2017) in their research under the title of "special risks and managers" suggest a strong relationship between performance and managers' rewards performance and intangible assets that can be an internal risk factor in the firm.

Research objective

The general objective of this research is to investigate the managers' overconfidence effect on the relationship between the firm risk and managers' rewards.

Research questions

First question: Is there a significant relationship between firm risk and managers' rewards?
Second question: Does managers 'overconfidence influence the relationship between firm risk and managers' rewards?

Research hypothesis

First hypothesis: There is a relationship between firm risk and managers' rewards.
Second hypothesis: Managers 'overconfidence influences the relationship between firm risk and managers' rewards.
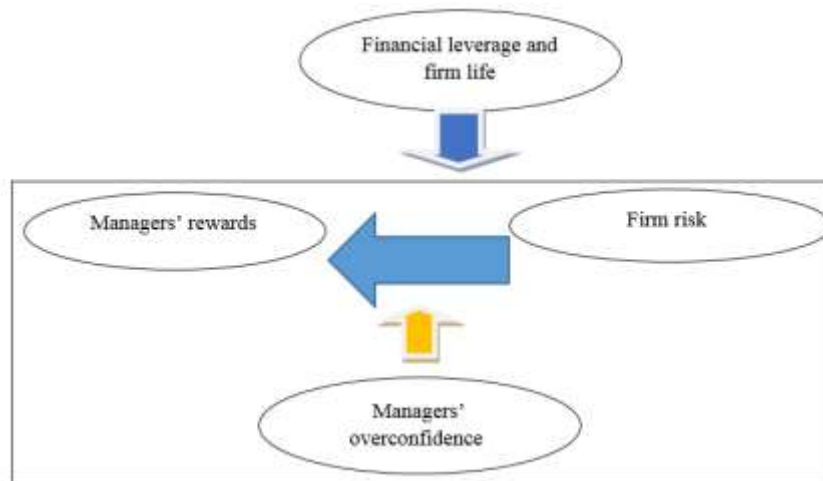
Research conceptual model

Fig 3-1: Detailed conceptual model conceptual model of Aaboa et al.'s (2020) research

According to the mentioned cases in the research variables part, the dependent variables in this model include managers' rewards, the independent variables include the first risk, the control variable includes firm size, financial leverage, and firm life, and the moderator variable includes managers' overconfidence.

V. Research statistical model

The following statistical model was used to analyze data in this research to study the hypothesis similar to Aaboa et al. (2020) research.
First model:
PPS i,t $= \beta_0 + \beta_1$ RISK i,t $+ \beta_2$ SIZE i,t $+ \beta_3$ LEV i,t $+ \beta_4$ AGE i,t $+ \varepsilon$ i,t

Second model:
PPS i,t $= \beta_0 + \beta_1$ RISK i,t $+ \beta_2$ PPS i,t$+ \beta_3$ RISK i,t* OC i,t $+$ β_4SIZE i,t $+ \beta_5$ LEV i,t $+ \beta_6$ AGE i,t $+ \varepsilon$ i,t

The elements of the mentioned model include:
OC: managers' overconfidence in firm i in year t.
RISK: firm risk of firm i in year t.
PPS: managers' rewards of firm i in year t.

Size: the firm i size in year t.
LEV: financial leverage of firm i in year t.
AGE: firm age in firm i in year t.
ε: regression equation error
β: the variables relationship value

Operational definition of research variables
The variables are such conditions that the researcher manipulates, controls, or observes. In other words, a variable is a characteristic, adjective, or factor that is common among members of society and can have quantitative values and different values.
Dependent variable: board of directors' rewards
The natural logarithm of managers' rewards us used to extract the relevant information of the paid rewards from accumulated profit (loss) account turnover, decisions of the annual general meeting of shareholders, and explanatory notes of the financial statements.

Independent variable: firm risk
As the higher standard deviation in the firm's annual return shows the more deviations and fluctuations of the firm's stock returns, and the higher fluctuations in the share return leads to higher likelihood of firm risk. Firm risk will be measured based on the standard deviation of annual stock returns based on the research of Be Lin (2019). Stock returns will be used to measure stock performance. Firm's stock returns in year t are calculated using the following formula:

$$R_{i,t} = \frac{(1+\alpha+\beta)*(P_{i,t}+DPS)-P_{i,t-1}-\alpha(1000)}{P_{i,t-1}+\alpha(1000)}$$

$R_{i,t:}$ Stocks return of firm i in year t.
$P_{i,t:}$ Stocks return of firm i in year t.
α: Percentage of capital increase from receivables and cash inflows
β: Percentage of capital increase from accumulated profits and reserves
$P_{i,t-1}$: Stock price at the beginning of firm i in year t
DPS: Cash earnings per share of firm i in year t

Control variables
Financial leverage
It is calculated by dividing the ratio of the book value of debts to the book value of the company's assets.
Firm life
It is obtained by sum of all years of firm life.
Firm size:
It is calculated by the natural logarithm of book value of total assets of firm.

Moderating variable:
Managers' overconfidence
It is measured by deviation of the future profit prediction. If managers overestimate the firm's future profit, it will get 1 (Dummy variable 1) and otherwise 0.

Research statistical population

Table 1: sampling method

Number of all listed firms in Thran Stock Exchange in 2019	522
Criterions	
Number inactive firms in 2012-2019	(185)
Number of the listed firms in stock exchange after 2019	(63)
Number of holding, investments, financial intermediation, banks or leasing firms.	(52)
Number of firms whose financial year did not end to the last day of year or changed their financial year in their time scope.	(53)
Number of firms with trading break more than 6 months	(31)
Number of firms whose time scope data is inaccessible.	-
Number of sample firms	136

138 firms remain as screened communities after considering all the mentioned criteria. All of them have been selected as examples. Therefore, observations in 2012-2019 period reach 1088 years - firm (8 years × 136 firms)

VI. Research Method

This research is in the field of positive theory, is applied according to the research objective, and is descriptive-correlational based on its nature and content. As it said, the methodology of this research is descriptive-analytical based on the nature and content which studies the correlations using the secondary extracted data from the financial statements of the listed firms in the Tehran Stock exchange. This research is conducted in the framework of deductive-inductive reasoning because the correlation method is used to discover the correlation relationships between the variables. Correlation research is a type of descriptive research. This research first tested the correlation between research variables and, if there is a correlation between research variables, a multiple regression model will be estimated. On the other hand, this is a post-event (semi-experimental) research. i.e. it is based on the analysis of past and historical data (financial statements of firms). Moreover, this is a librarian and analytical-causal research based on panel data.

VII. Data collection tools and method

Data was collected in this research using the initial information of firms. It means the required data for research was obtained by librarian method and using Rah Avarde Novin software and referring to Tehran Stock Exchange Organization as well as checking the main financial statements of the listed firms in Tehran Stock Exchange in 2011-2019. The relevant data to the financial statements from the Stock Exchange Website was used in addition to studying the main financial statements at this time.

VIII. Research area

This research is theoretically related to the management and accounting research field which seeks to examine firm risk, the overconfidence of managers, and managers' rewards. The research spatial area includes listed firms on the Tehran Stock Exchange. The studied time area in this research is an eight-year interval in 2011-2019.

Table 2: descriptive statistics of research variables

Name and number of variables			Central indexes		Elongation indexes				
Variables	Abbreviations	No.	mean	median	St.dev	skewness	kurtosis	min	max
CEO's rewards	PPS	1088	5.50	5.42	2.11	0.62	3.17	0	9.11
Firm risk	RISK	1088	0.07	0.053	0.046	1.12	3.24	0.003	0.31
Managers; overconfidence	OC	1088	0.36	0.00	0.41	0.93	1.88	0	1
Firm size	Size	1088	14.68	14.25	1.57	0.77	4.07	11.02	19.96
Financial leverage	LEV	1088	0.62	0.64	0.41	-0.39	3.57	0.04	0.98
Firm life	AGE	1088	19.12	18.79	8.68	1.29	4.67	5	52

All research models have positive skewness except financial leverage. As the skewness coefficient is positive, it can be stated that the mentioned variables distribution has right side skewness. Moreover, the kurtosis coefficient of all variables was positive. It shows their position than the normal distribution which is 3. Staying far from the mean deviation shows data is distributed and is not centralized around the mean. Median is as a central index shows a number that half of the data is higher and half is lower than it.

The high standard deviation of firm life shows that the mean distribution of these variables has a normal distribution.

The mean of managers' rewards based on logarithm is 5.51. manages' overconfidence is 0.36 which was calculated by the predicted benefit difference from each share with its real benefit. The mean firm life is 19 years and the maximum and minimum are 52 and 5 years. The firms' size is calculated based on the natural logarithm and is 14.68 with a maximum of 19.96. the mean financial leverage shows that about 64% of firms' capital is made of debts. This shows the claim of other capital supplier groups except for shareholders toward the firm assets.

Table 3: results of model estimation

Variable	Coefficient value	T-value	P-value	Result	
Risk	0.007	2.47	0.027	Positive and significant	
Size	-0.19	-3.42	0.000	Positive and significant	
LEV	0.017	1.38	0.123	insignificant	
AGE	-0.76	-0.587	0.343	insignificant	
C (constant)	1.54	6.12	0.000	Positive and significant	
F-value		23.09	F-value		0.000
Determination coefficient (R2)		0.3612	Durbin-Watson		1.71
Adjusted determination coefficient		0.3346			

IX.   How to decide to confirm or reject a hypothesis

According to the results of Table 3, the p-value for the relevant t-value to the firm risk was less than 0.05 (0.027). it means it is significant. Its slope is positive (0.0007) and the t-value is 2.47. This t-value is in the rejection range of H0. Therefore, it is concluded that there is a positive and significant relationship between the firm risk and managers' rewards.

Table 4: the estimation results of research second hypothesis model

Variable	Coefficient value	T-value	P-value	Result	
Risk	0.015	3.08	0.001	Positive and significant	
OC	0.67	2.63	0.012	Positive and significant	
OC* RISK	0.49	4.98	0.000	Positive and significant	
Size	-0.13	-4.43	0.000	Positive and significant	
LEV	0.034	1.64	0.087	insignificant	
AGE	-0.14	-0.896	0.265	insignificant	
C (constant)	0.87	12.76	0.000	Positive and significant	
F-value		14.98	F-value		0.000
Determination coefficient (R2)		0.4008	Durbin-Watson		1.82
Adjusted determination coefficient		0.3765			

According to the results of Table 4, the p-value for the relevant t-value to OC* RISK is less than 0.05 (0.000) which means significant. Its coefficient is positive (0.49) and its t-value is 4.98. this value is in the range of the H0 area. Therefore, it is concluded that managers' overconfidence is effective on the relationship between the firm risk and manages' rewards. Therefore, the second hypothesis is confirmed.

X.   Conclusion

The firms generally try to focus on the desirability of both parties and allocating the benefits and risks between them to reduce the caused agency problems by the possibility of a mismatch between managers and shareholders. Managers can be motivated by this method to use their abilities and skills along with the owners' benefits. Paying rewards to manages is as a part of their salary is one of the famous methods to motive managers and converge counselors' views to increase shareholders' wealth.

The result of the first hypothesis showed that managers' rewards increase by increasing firm risk. Therefore, the result is one of the effective factors on the risk-taking concept of reward contracts. Reward contracts have high risks. It can be actually interpreted in this way that performance-based reward makes motivation of reaching better performance in managers and consequently they take higher risk to get higher rewards. On the other hand, paying cash rewards to managers makes them look for stable cash flows to meet the caused obligations by debt contracts and take more risk. In addition, from managerial power theory's view, the CEO uses her/his position to achieve the desired goals and negotiates to get reward contracts that take into account her/his interests and thus increase managers' rewards. This result is in agreement with the obtained results from Aaboa et al. (2020) and Wallace and Hagndorf (2013). Furthermore, the results of Glover and Levin's (2017) research show a strong relationship between managers' rewards-based performance and intangible assets that can be a factor in the firm's internal risk. Gormley et al. (2013) concluded in studying CEO rewards and firm risk that the managers' rewards portfolio remains sticky for several years after increasing firm risk. In addition, Kabirzadeh (2008) studied the effective structures on the determination of the board of directors' rewards in Iran and concluded that financial risk is related to the board of directors' rewards.

The result of the second hypothesis showed that managers' overconfidence reinforces the positive relationship between firm risk and managers' rewards. In general, overconfidence makes managers overestimate their knowledge and skills, underestimate risks, and feel in control of issues and events. However, it may not

happen this way and an overly optimistic or optimistic tendency is peoples' tendency for the occurrence of positive events and lower estimation for the negative events. It can be claimed based on this result that managers are more willing to invest in high-risk projects by their overconfidence increases, and they seek more share as a reward by firm risk increase. Therefore, it can be stated that the overconfidence increases in this research, which was calculated by overestimating the company's future profit, can increase the firm risk and so managers' rewards. Furthermore, CEOs will high self-confidence overestimate the possibility of achieving reward thresholds with confidence, which can be effective in this regard. This result is in agreement with the findings of Aaboa et al. (2020). Their results showed that there is a positive relationship between firm risk and CEO's reward, and CEO's motivation is reinforced by increasing the CEO's over self-confidence.

XI. Suggestions

1- According to the positive relationship between firm risk and managers' rewards, it is suggested that firm owners consider the motivations of managers in this field to promote their personal interests, such as receiving more rewards. In addition, they should relate it to their other activities, particularly for share return promotion, because managers may take more risks to show the firm's performance improvement.

2- It is suggested to the firms' managers to build a payment system where the cash reward has a reducing role to prevent over risk-taking and uses the motives with sufficient supervision and regulations to reduce risk in their firms.

3- According to the positive effect of overconfidence on the relationship between the risk and managers' rewards, it is suggested to the firms' manages to consider managers' overconfidence in estimating project returns and real profits, especially when investing in high-risk projects or over-investing them, because it can increase their request for reward and risk-taking.

4- It is suggested to the capital market investors to mention the managers' rewards and also their overconfidence according to the indicators considered in this research while studying the financial statements of firms, because it can show an increase in firm risks in investment.

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