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The Impact of Investment Inefficiency and Cash Holding on CEO Turnover

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Abstract

The purpose of this study is to investigate the effective of investment inefficiency and cash holding on CEO turnover. This study applies logistic regression method estimator to investigate the relationship between examine the effective of investment inefficiency and cash holding on CEO turnover of 1,309 firm-year observations in Iran for the period of 2009-2019. According to positive relation between mentioned variables, the managers' opportunism increases investment inefficiency and cash holdings of the company because inappropriate managerial decisions lead to increased risk of wrong selection for investors.
In the present study, the weaknesses caused by the ambiguity of investment efficiency in market performance-based statistical models are compensated and partially covered by quantifying the relationships and implementing models. The Results will aid policy makers to evaluate disclosure rules and firms to managing their information. The study is based on the corporate accounting and financial literature and examines CEO behavioral changes that can be applied to investors, managers, standardization committees, and legislators. Unlike other research, CEO turnover has also been addressed with regard to the origin and distribution of information. This study also considers the effect of information asymmetry and market constraints by considering the cash holding to transmit firm information

1 Introduction

Top executives play a key role in business operations and value creation. The shareholders and the board of directors are responsible for identifying poorly performing managers and, if necessary, replacing them, to avoid the potential for severe losses and imposing agency costs [1]. The key issue here is how the board of directors or shareholders can consider the overall performance of senior executives, especially when the board of directors decides whether to terminate the job. The impossibility of objectively observing the activities and capabilities of managers leads to the use of performance-based contractual criteria, including accounting gains and share returns [2] to evaluate managers' performance and to describe the events that lead to change in managers [3]. In this regard, Bushman [1] stated that managers' ability to influence firm performance and uncertainty in terms of current and future cash flows. Accounting gains mainly emphasize the cash effects of managerial decisions and ignore the risk-based effects. Failure to include risk in managers' performance appraisal models can lead to deviations from estimated profit effects [5]. Agency theory states that corporate boards evolved due to the failure of owners to directly oversee their wealth in their absence [6]. The presence of problematic executives on board provides evidence of low profitability of the company, high profit

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fluctuation, and lack of timely recognition of earnings news compared to other companies [7]. Similarly, Orens and Reheul [8] showed that if firms have chief executive officers (CEOs) or managers with a history of inability to pay, the company is more likely to go bankrupt. Manufacturers with high cash reserves have more market share than competitors, which increases their profitability. As a result, companies with sufficient cash can use the resources available to fund their strategies. In this regard, Faleye [9] indicated that companies with insufficient cash can be a potential target of acquisition. In other words, cashholding increases the possibility of the CEO opportunistic behaviors in question to defend itself against being taken over by board of directors.

Many factors, including the behavior of company cashholding, affect the CEO turnover. Prior studies showed that individual situations, age, education, and knowledge of market competition determine risk preferences and help determine cash holding behavior. Amir et al. [10] show that examining board members who have been exposed to criminal cases or exposed to fraudulent behaviors leads to greater understanding of the function of corporate leadership in corporate decision-making and consequentiality performance and risk taking. Investigating and analyzing the individual characteristics of a manager as a determinant of cash holding behavior can offer a new approach to the effect of managers on the status of cash assets. In addition, by examining the cashholding and over-investment behavior, investors and creditors can be helped to control the risk of adverse selection (from the investment perspective and credit rating). In contrast to previous researches such as Khoshintat [11], which examined the change of CEO and its influencing factors, I try to identify the weaknesses of investment and the factors affecting cash holding, and identify the CEO turnover in terms of how funds are used. Research conducted by recent studies shows that the main factors of cash holdings include operating costs, asymmetric shocks, financial disruptions, information asymmetry, and agency problems. Investigating the cash holding and over-investment behavior by opportunistic managers can help clarify and complement previous studies and provide evidence that corporate governance weakness can influence investment decisions [21, 25, 35]. In this study, I examine the reflection of the attribute of cashholding and investment efficiency on CEO turnover. The study is based on the corporate accounting and financial literature and examines changes in manager behavioral that can be used for investors, managers, standardization committees, and legislators.

2 Hypothesis Development

In terms of applying opportunistic managers, due to lack of symmetrical information, increase fluctuations and investment risk [12]. In such circumstances, managers change the timing of identifying bad news, which is consistent with the managers' behavioral approach. As a result, investors face the risk of adverse selection and opportunity cost. Understanding the effects of weaknesses on the use of investment opportunities leads to information being communicated to shareholders for the purpose of determining optimal portfolio of investment and selection and helps shareholders to control the behaviors of managers. Managerial ability and reducing agency conflicts can improve a company's ability to invest and finance outside the organization. Increased capital cost as a result of ineffective managerial decisions leads to the exclusion of appropriate investment opportunities because inadequate managerial decision-making leads to stagnation of the company's internal resources in lower return opportunities and insufficient resources for optimal investment [13]. In other words, the efficiency of operational investments transmits the manager's ability to make quality decisions. In line with this, Mavis et al. [14] showed that inefficient commercial investment is the main driver of CEO turnover. The significant decrease in shareholder expected returns leads to the appointment of new senior executives

with higher management skills to focus more on enhancing company value. New managers are systematically trying to modify previous investments by divesting assets and stopping certain activities and increasing shareholder value. Firms with high investment opportunities have higher information asymmetry but are simply not able to see managerial actions [15]. The fact is that a managerial action is simply not visible leads to increased managerial control over operational investments [16] and motivates opportunistic activities for managers. Opportunistic behavior can manifest itself in the form of underinvestment and a slowdown in corporate growth due to the lack of sufficient capital and high costs of financing [17] and high agency costs are effective on investment efficiency [18]. This situation of underinvestment may increase the likelihood of CEO turnover by shareholders to reduce future risks.

Hypothesis 1: Investment inefficiency has a significant impact on CEO turnover.

The manager's decisions affect both the operating results of the company in the form of current and future cash flows and the uncertainty about the company's performance. Based on the cash flows gained, it can be stated that a capable manager plans to increase shareholder value for the benefit and reduce the risk imposed on shareholders. Finally, as managers are responsible for controlling and mitigating risk, increasing company risk signals to the market that managers' decisions are not efficient and that cash flow will not grow. The expected return of investors is a function of the risk imposed on them and represents the risk that is passed on to shareholders as a result of manager's decisions [19]. CEOs' opportunistic are believed to be due to weak oversight, in which case managers provide opportunities for surplus cash and over-investment. Deciding how to use the surplus cash leads to a potential conflict of interest between managers and shareholders. Based on the strategic perspective, managers look at the optimal use of cash from a variety of aspects, including how they are distributed to shareholders, the amount of internal expenses spent on the organization's operations, how it determines reserves, and other issues that sometimes lead to the accumulation of surplus cash [20]. In line with this, Chauhan et al. [22] stated that corporate governance is effective on cash management behavior. Monitoring managers' opportunistic behavior highlights the importance of corporate governance [22] that may lead to negative effects for shareholders [23]). The effectiveness of the board plays an important role in cash management decisions. Surplus resources can allow to managers to use the surplus cash for their own interests [24] or to obtain the profits through cash accumulation [25].

Hypothesis 2: Cash holding has a significant impact on CEO turnover.

3 Research Method and Models

This research is based on firms listed on the Tehran stock exchanges in Iran. We begin with an initial sample of 4,983 firm-year observations from 2009–2019. The Rahavard Software provides the relevant variables. A total of 1,067 firm-year observations relating to finance, investment, equity trust, and funds were excluded because of their different practices. Also, financial institutions also have different conditions for holding cash to perform operational and funding operations, so they exclude from the study. Further, we exclude all the firm-year observations when information asymmetry variables were not available.

Therefore, the final sample has 1,309 firm-year observations. Table 1 shows further details of the sample distribution across different industries.

Table 1: Sample Distribution Based on Industry

2-digit-SIC Code	Industry Name	Firm-years	%Sample
13	Mining	165	12.6
34	Automotive	297	22.7
42	Food	165	12.6
43	Pharmaceuticals and healthcare	165	12.6
44	Petrochemicals	88	6.7
49	Ceramic & Tile	99	7.5
53	Cement	110	8.4
-	Non-classifiable Establishments	220	16.9
Total		**1,309**	**100**

Drawing on prior research, I measure the CEO turnover based on Unsal and Rayfield [26] that, is binary variable and equal to one if CEO leaves the company, zero otherwise. I use the CEO turnover (CEO) as dependent variables to test both H1 and H2.

Our independent variables represent cash holding and investment inefficiency. Cash holding (CHASHHOLDING) calculated as the book value of cash and short-term investments divided by book value of total assets. Also, I use a measure of investment inefficiency (*INVEST*) to calculate the over investment proxy which is used as the independent variable to test H_2. The measure of investment inefficiency (*INVEST*) includes capital expenditure on research and development to measure the total investment and then subtract cash receipts from property sales, plant and equipment for measuring the total investment, and scale by lagged total assets. Then, I run the following regression model ssssss sssrrreiidlll $(\varepsilon_{i,t+1})$ as a firm-specific proxy to derive from the expected investment.

$$INVEST_{it} \alpha\alpha_0 \alpha\alpha_1 CFO_{it-1} \alpha\alpha_2 LEV_{it-1} \alpha\alpha_3 SIZE_{it-1} \alpha\alpha_4 LISTAGE_{it-1} + IND\&YEARFFEECT \quad \varepsilon_{it} \qquad (1)$$

Following Biddle et al. [77] I lll it th rssiaaal $(\varepsilon_{i,t+1})$ of equation (1) based on the four quartiles. The top quartile is categorized as over-investment and assigned a value of 1 and 0 otherwise.

To investigate the CEO turnover based on cash holding and investment inefficiency, the following regression is run, to examine the linear impact of cash holding and investment inefficiency on the CEO turnover.

$$CEO_{it} \quad \alpha_0 \; \alpha\alpha_1 CASHHOLDING_{it} \quad \alpha_2 INVEST_{it} \quad {}_3 INST_{it} \; TT\alpha_4 MGO_{it} \; oo_5 STDOCF_{it} \quad \alpha_6 SIZE_{it} \qquad (2)$$
$$\alpha\alpha_7 LEV_{it} + \alpha_8 BTM_{it} + \alpha_9 ROA_{it} + \alpha_{10} STDRET_{it} + \alpha_{11} LOSS_{it} + IND\&YEAREFFECT \; \varepsilon\varepsilon$$

Where: *CEO* is a measure of the CEO turnover. *CASHHOLDING* and *INVEST* are cash holding and investment inefficiency as defined earlier, respectively. *Size* is the natural logarithm of the market value of equity in millions at the end of year t. *BTM* is the ratio of the book value of equity to the market value of equity at the fiscal year end. *ROA* is the income before extraordinary items scaled by lagged total assets. *LEV* is total long-term debt plus total debt in current liabilities scaled by total assets. *LOSS* is an indicator variable equal to one for firm-years with negative income before extraordinary items. *STDRET* is the standard deviation of stock returns over the three past years. *STDOCF* is the standard deviation of operating cash flow over the three past years. *INST* is the percentage of shareholding by institutional investors and *MGO* shows the percentage of stock ownership by the management. Finally, regression analysis control for the industry and year effect. In the above regression, the coefficient to test the role of cash holding and Investment inefficiency in CEO turnover is the

correlation coefficient between them. The coefficients of the variables of cash holding and investment inefficiency show the distinct effects of these variables.

4 Results

4.1 Descriptive Analysis

Table 2 shows descriptive statistics for our sample. It summarizes the descriptive statistics for the cash holding and investment inefficiency and other control variables used in multivariate regression analyses. The average CEO turnover is 0.273, indicating the long-term tenure of managers. The mean of the cash holding variable is 0.145, which indicates the low level of cash among firms. The ownership structure of the firms consists of 71% institutional shareholders and the mean variable of managerial ownership is 66.5%. An average of 49.1% of *INVEST* indicates over-investment in the firms. The mean of leverage is 0.664, indicating that firms' resources are financed from debt and the sample firms are highly leveraged. The mean of return on assets is 0.137, which indicates are turn of 13 money unit on investment in 100 money unit assets. The *LOSS* variable indicates that 10% of companies have negative performance. The average value of 0.726 for the book-to-market ratio reflects a conservative approach in identifying assets across firms. The mean volatility of returns and cash flows are 0.336 and 0.016, respectively, indicating higher profitability changes than liquidity. By analyzing the coefficient of variation of the data, it can be stated that the independent and dependent variables have a normal distribution [28].

Table 2: Descriptive Statistics

Variable	N	Mean	Median	Min	Max	Std
CEO	1309	0.273	0.000	0.000	1.000	0.445
CASHHOLDING	1309	0.145	0.132	0.082	0.759	0.129
INVEST	1309	0.491	0.000	0.000	1.000	0.500
INST	1309	0.711	0.816	0.010	0.990	0.274
LEV	1309	0.664	0.666	0.040	1.824	0.220
LOSS	1309	0.103	0.000	0.000	1.000	0.304
MGT	1309	0.665	0.696	0.010	0.990	0.208
ROA	1309	0.137	0.062	-0.432	1.204	0.218
SIZE	1309	11.439	11.423	9.414	13.511	0.638
STDOCF	1309	0.016	0.011	0.000	0.165	0.017
STDRET	1309	0.336	0.264	0.006	0.980	0.245
BTM	1309	0.726	0.742	0.101	0.990	0.140

4.2 Correlation Analysis

Table 3 reports the correlation coefficients between CEO turnover and explanatory variables. The explanatory variables are not highly correlated, suggesting that multi co-linearity is not a concern. These correlation coefficients also have expected signs. It can be seen that the CEO turnover of firms changed to the increase in cash holding and investment inefficiency.

Table 3: Correlations

Variable	BTM	CASH HOLDING	CEO	INST	INVEST	LEV	LOSS	MGT	ROA	SIZE	STDOCF	STDRET
BTM		-0.017	0.017	0.193	0.026	-0.024	-0.026	0.096	-0.044	0.157	-0.030	-0.001
CASHHOLDING	-0.017		0.051	-0.046	0.012	0.136	-0.012	-0.090	0.051	-0.292	0.156	-0.096
CEO	0.017	0.051		0.048	0.198	0.029	0.080	0.074	-0.060	0.141	-0.020	-0.074
INST	0.193	-0.046	0.048		0.051	0.002	0.033	0.597	-0.011	0.006	-0.064	-0.034
INVEST	0.026	0.012	0.198	0.051		0.048	0.001	0.076	0.001	0.035	0.022	-0.032
LEV	-0.024	0.136	0.029	0.002	0.048		0.160	-0.017	-0.101	-0.090	-0.078	-0.059
LOSS	-0.026	-0.012	0.080	0.033	0.001	0.160		0.013	-0.315	0.035	-0.013	0.001
MGT	0.096	-0.090	0.074	0.597	0.076	-0.017	0.013		-0.001	0.054	-0.103	-0.014
ROA	-0.044	0.051	-0.060	-0.011	0.001	-0.101	-0.315	-0.001		-0.243	0.110	-0.030
SIZE	0.157	-0.292	0.141	0.006	0.035	-0.090	0.035	0.054	-0.243		-0.151	0.027
STDOCF	-0.030	0.156	-0.020	-0.064	0.022	-0.078	-0.013	-0.103	0.110	-0.151		0.009
STDRET	-0.001	-0.096	-0.074	-0.034	-0.032	-0.059	0.001	-0.014	-0.030	0.027	0.009	

This Table contains pair wise Pearson correlation coefficients among important variables.

4.3 Regression Analysis

While descriptive statistics and correlation analysis are informative, more conclusive evidence can be obtained through multivariate regression analysis that controls for many firm-specific variables [29] affecting CEO turnover. Table 4 shows the study of multivariate regression of H_1 and H_2. Column 1and 2 present the findings for $H_1$and $H_2$where CEO turnover is the dependent variable, cash holding and investment inefficiency are independent variables, respectively. I use two different measures for independent variables, *CASHHOLDING* and *INVEST*. Initially, baseline regression ran to test the impact of *CASHHOLDING* on CEO turnover. Columns 1 present the baseline regression. The results show that *CASHHOLDING* has a positive association with the measure of CEO turnover indicating that firms hold surplus cash have higher CEO turnover compared to firms which have low cumulative cash. The coefficient of *CASHHOLDING* (coefficient = 1.743, z-statistics = 3.347) shows a negative association with the CEO turnover. The results confirm the coefficients and the statistical significance of the findings at the 5% level for H_1. In columns 2, include several and firm-specific control variables and test the impact of *INVEST* on CEO turnover. Column 2 presents the findings for H_2. In other words, it presents the test of the effect of over-investment on CEO turnover and whether this association varies when there is a different level of over-investment.

The results indicate that firms which have over-investment (*INVEST*) have higher CEO turnover (coefficient = 0.872; z-statistics = 6.574) and the coefficients are statistically significant at the 5% level. Thus, H_2 is supported. In column 3, we can see the merged multivariate regression analysis. It confirm

the H_2 result (coefficient = 0.887; z-statistics = 6.667) and, H_1 is significant (coefficient = 1.756; z-statistics = 3.360) indicating that cash holding increase the CEO turnover.

Table 4: Regression Result

VARIABLES	CASHHOLDING	INVEST	ALL
CASHHOLDING	1.743*** (3.347)		1.756*** (3.360)
INVEST		0.872*** (6.574)	0.887*** (6.667)
INST	0.094 (0.312)	0.059 (0.197)	0.058 (0.179)
LEV	0.135 (0.460)	0.161 (0.543)	0.030 (0.104)
LOSS	0.492** (2.331)	0.502** (2.331)	0.506** (2.340)
MGT	0.777** (1.967)	0.622 (1.527)	0.671 (1.591)
ROA	-0.040 (-0.119)	-0.143 (-0.413)	-0.072 (-0.223)
SIZE	0.614*** (5.467)	0.478*** (4.406)	0.606*** (4.883)
STDOCF	0.101 (0.025)	-0.209 (-0.052)	-0.762 (-0.184)
STDRET	-0.682** (-2.487)	-0.692** (-2.531)	-0.643** (-2.272)
BTM	-0.211 (-0.445)	-0.212 (-0.452)	-0.264 (-0.525)
Intercept	-8.825*** (-6.297)	-7.197*** (-5.416)	-9.005*** (-5.868)
Observations	**1,309**	**1,309**	**1,309**
PseudoR-squared	0.039	0.060	0.069
LR-statistic	58.941 (0.000)	91.974 (0.000)	104.551 (0.000)
***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. (z-statistics in parentheses).			

In regards to the control variables, we find that large firms (coefficient = 0.614, 0.478 and 0.606; z-statistics = 5.467, 4.406 and 4.883), have higher CEO turnover and firms with more managerial ownership (coefficient = 0.777, 0.622 and 0.671; z-statistics = 1.967, 1.527 and 1.591) show a positive

association and book to market value (coefficient = -0.211, -0.212 and -0.264; z-statistics = -0.445, -0.452 and -0.525) show a negative association with CEO turnover. Also, *INST* shows a positive association (coefficient = 0.094, 0.059 and 0.058; z-statistics = 0.312, 0.197 and 0.179) which indicates that firms with a higher institutional ownership expect more CEO turnover. Firms with inappropriate performance (*LOSS*) also show a positive association with a CEO turnover which indicates the inappropriate performance of firms caused more CEO turnover within the firms. Most of the discussed coefficients are statistically significant at better than the 5% level. My findings are robust considering the industry and year effect. Our multivariate regression models show that the Pseudo R-square between the three approach ranges from 3.9% to 6.9%.

5 Conclusions

In this study, it examined CEO turnover based on cash holding and investment inefficiency. The first hypothesis of the study is that cash holding has a significant effect on CEO turnover. The results indicate that cash holding has led to negative changes in performance such that under surplus cash, managers capable to opportunistic use of resources and as a result, we can see CEO turnover. The results of this hypothesis are consistent with those of Bates et al. [30]. It is possible that forced turnovers are associated with an increase in cash holdings because risk-avrr ee ccceesrrr CEO' sss ir t mmtt h investment and earnings, and manage industry relative performance. In agency based models such as Jensen [32], excess cash holdings are driven by managerial risk-aversion and an entrenched manag-rr' pr.. rrccce for fddd .htt aan ee eeed t uuruu thii r ww ivvsstmttt lll icies. The results of the second hypothesis are similar to those of Xu et al. [31]. Opportunistic behavior is believed to lead to inefficient investment. This problem is due to managers' misuse of resources and over-investment in negative current value projects for personal gain [32]. Over-investment is used as a signaling factor and internal mechanism with regard to different circumstances and environments to influence manager decisions. They concluded that in order to development of inappropriate investing behaviors in companies, over-investment increase negative information transmission and increase agency costs. Proper over-investment reduce the quality of accounting information and investment decisions, change the interests of investors, and ultimately disables optimal sharing of resources in capital markets.

Investors are more likely to invest in firms that have information transparency or judge that they have information transparency. If over-investment increases, the firm's credibility decreases, and the costs of processing company-specific public information are increased, hence over-investment leads to more CEO turnover. Investors need clear and uniform information to identify optimal investment opportunities. Increased investment efficiency facilitates the analysis and identification of financial information to avoid adverse selection and avoids the imposition of surplus costs. An area or research closely related to our paper is on investment inefficiency following CEO turnovers. Weisbach [33] shows that executive suite changes prompt new CEOs to divest poorly-performing business units. Pan and Wang [37] and Pan et al. [38] also find that back-scaling tends to follow CEO replacements and that CEOs tend to disinvest early in their tenure. Their indication is consistent with the agency's view that top management is likely to take preventative action to take corrective action to reverse value-destroying investment decisions [4].

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