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The Effect of Profit Management on Capital Cost of Companies Listed in Tehran Stock Exchange (Case Study: Pharmaceutical, Petrochemical and Automotive Industries)

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A B S T R A C T

Reported earnings and earnings management are among analysts' critical financial information and variables as prominent factors in reviews and judgments. The present study has investigated the effect of earnings management on the cost of capital of companies listed on the Tehran Stock Exchange on a case-by-case basis in the pharmaceutical, petrochemical, and automotive industries from 2010 to 2016. Two optional accruals were used to measure earnings management using Jones' modified model and real earnings management. In this study, the required data were collected using library studies and modern Rahavard software. Also, multivariate regression was used to test the hypotheses, and their significance was determined using t and F statistics. The results indicate that in the three industries of pharmacy, petrochemical, and automotive, the criteria for measuring earnings management, i.e., optional accruals and real earnings management, do not affect its capital cost.

Keywords: Earnings Management, Management Of Real Profits And Optional Accruals, Cost Of Capital.

INTRODUCTION

The development of financial markets creates the conditions for further research in studying companies' activities and performance; return on stocks and so that activities and financial issues are done(Shivakumar, 2007). Profits and related concepts and financing and costs are among the critical issues in accounting and finance(Mellichamp, 2019; Otaka, 2020). Investors' attention to profit has necessitated the further study of this concept. As long as managers are concerned about improving and better showing their performance through various means such as stock price increases, they have many incentives to overestimate the current period's profit by manipulating future profits or profit management(Steinbach, Holcomb, Holmes Jr, Devers, & Cannella Jr, 2017). Reported earnings for the current period can be manipulated in two ways (earnings management). Managers can first manipulate reported profits through discretionary accruals based on generally accepted accounting principles and are permitted(Habbash & Haddad, 2019; J. B. Kim, Kim, & Lim, 2019). Earnings management through optional accruals (AEMs) usually occurs at the end of the accounting period and when

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most actual operating activities are complete(Flynn, Moretti, & Cavanagh, 2016; Ge & Kim, 2010; Kenneth V Peasnell, Pope, & Young, 2000). As long as these items directly affect accounting liabilities, they do not directly affect cash flow(Orpurt & Zang, 2009; Ken V Peasnell, Pope, & Young, 1999; Kenneth V Peasnell et al., 2000). Second, managers can manipulate reported profits by distorting actual activities(Zang, 2012). In particular, they can change the timing and amount of actual activities such as production, sales time, investment, and financing during the accounting period and other methods(Cupertino, Martinez, & Costa Jr, 2016; J.-B. Kim & Sohn, 2013). Reported profits can be temporarily increased by speeding up product production and sales schedules or reducing unspecified costs and delaying their identification time(Gao, Gao, & Wang, 2017).

In the present study, we scrutinize the new questions about real profit management (REM) items and their impact on the cost of the Company's capital and examine whether REM is a critical factor in Investors' decisions to allocate their financial resources? Our goal is to examine whether the intensity of REM increases the cost of the Company's capital or not. Theories proposed so far state that foreign investors want a high degree of return with a reasonable profit and a certain level of projected cash flows. We anticipate a positive relationship between REM and capital cost, as this raises investor expectations about the Company's profitability and cash flow.

Given that the purpose of the present study is to investigate the effect of cost leadership strategies and product differentiation on the relationship between financial leverage and firm performance, the hypotheses of the present study are classified as follows:

First hypothesis: Optional accruals (AEM) have a significant effect on the cost of capital.

Second hypothesis: Real profit management (REM) have a significant effect on capital expenditure.

Third hypothesis: The effect of profit management on capital costs in different studied industries is different.

METHODOLOGY

This research seeks to investigate the relationship between the variables of business strategies, financial leverage, company size, dividends, and performance. The study's research method is correlational and to test the relationship between these variables is multivariate regression using the stepwise method.

In this study, we have used Fama and MacBeth (1974), and Cohen, Dey, and Lys (2008), models for measuring the cost of capital (AEM of accruals) and REM or real profit management, respectively.

In this study, companies listed on the stock exchange have been selected as the statistical population. We have selected the companies that meet the following requirements from these companies, and finally, 45 companies have been selected as a sample.

The Company was accepted before 2009.

The Company has continued its activities until the end of 2016.

The end of the financial period of the Company is March 20 of each year.

The Company has no change in the fiscal year in the period under review.

The data required by the Company is available.

Banks, insurance companies, and investments are not considered.

The dependent variable of research is the cost of capital and optional profit management, and real profit management are independent variables. Two variables of financial leverage and company size are as control variables.

Dependent variable

COE_{it} cost: equal to the average cost of financing the Company

Independent variable

AEM_{it}: In this study, DAC's absolute value (optional accruals) represents voluntary earnings management. In this study, voluntary accruals are calculated in Decho et al., Known as the modified Jones model. In this method, first, all accruals are calculated in one of the following ways:

1) $TAC_{it} = EBXI_{it} - CFO_{it}$

2) $TAC_{it} = (\Delta CA_{it} - \Delta Cash_{it}) - (\Delta CL_{it} - \Delta STD_{it}) - Dep_{it}$

In these relations (1) and (2):

TAC_{it}: The sum of total accruals of firm i in year t

$EBXI_{it}$: Net profit before Company i contingent items in year t

CFO_{it}: Cash flow from Company i operations in year t

ΔCA_{it}: change in the current assets of Company i in year t

ΔCL_{it}: change in the current debt of Company i in year t

$\Delta Cash_{it}$: change in the cash equivalent of Company i in year t

ΔSTD_{it}: change in the current share of long-term debt of Company i in year t

Dep_{it}: The cost of depreciation of fixed assets and intangible assets of Company i in year t

The following model then fits all accruals against changes in sales and fixed assets cost for the period.

3) $TAC_{it}\ A_{it}\text{-}1 = \alpha_1 (1/A_{it}\text{-}1) + \alpha_2 (\Delta sales_{it}/A_{it}\text{-}1) + \alpha_3 (PPE_{it}/A_{it}\text{-}1) + €_{it}$

In this regard:

$\Delta Sales_{it}$: change in net sales (revenue) in year t

PPE_{it}: Gross Assets, Machinery and Equipment in Year t for Company i

$A_{it}\text{-}1$: Total assets at the end of the previous year for the Company i

$€_{it}$: Model error in year t

α1, α2 and: α3 Jones model coefficients (estimated factors specific to company i)

Non-Discretionary Accruals are also obtained from the following relation:

4) $NDAC_{it} = \alpha_1 (1/A_{it}\text{-}1) + \alpha_2 (\text{lessales}_{it} - \Delta REC_{it}/A_{it}\text{-}1) + \alpha_3 (PPE_{it}/A_{it}\text{-}1)$

In this regard:

ΔREC: Change in accounts receivable in year t for Company i

α1, 2α and 3α: are obtained by estimating the minimum squares in model (3).

Optional DACs are also calculated as follows:

$DAC_{it} = TAC_{it} - NDAC_{it}$

Real Profit Management (REM_{it}): In the present study, we use the average values related to abnormal cash flow, abnormal production costs, and abnormal general costs as a representative of REM or real profit management.

Real profit management (REM) is obtained from the following relationships:

$CFO_{it}\ A_{it}\text{-}1 = \alpha_1 (1/A_{it}\text{-}1) + \alpha_2 (sales_{it}\ A_{it}\text{-}1) + \alpha_3 (\Delta sales_{it}\ A_{it}\text{-}1) + €_{it}$

In this regard:

CFO_{it}/A_{it}-1: Abnormal cash flow of Company i in year t

$Prod_{it}/A_{it}\text{-}1 = \alpha_1 (1/A_{it}\text{-}1) + \alpha_2 (sales_{it}/A_{it}\text{-}1) + \alpha_3 (\Delta sales_{it}/A_{it}\text{-}1) + \alpha_4 (\Delta sales_{it}\text{-}1/A_{it}\text{-}1) + €_{it}$

In this regard:

Prodit Ait-1: Abnormal production costs of Company i in year t

$DiscE_{it}/A_{it}\text{-}1 = \alpha_1 (1/A_{it}\text{-}1) + \alpha_2 (sales_{it}\text{-}1/A_{it}\text{-}1) + €_{it}$

In this regard:

$DiscE_{it}/A_{it}\text{-}1$: Extraordinary general expenses of Company i in year t

Control variable

LVG_{it} financial leverage: is equal to the total debt divided by the total equity

Company size $LNSIZE_{it}$: The natural logarithm is the number of company assets called the formula's control variable.

The required data has been collected through observation and review of documents, including information on companies' financial statements. In this research, the library method has been used to compile the literature and research background and test the research hypotheses. The companies' financial statements, contained in the Exchange Organization website and the new Rahvard software, have been used.

This research was done on companies listed on Tehran Stock Exchange, and the period in question is from the beginning of 2010 to 2016.

The following regression model has been used to test the hypotheses:

$COE_{it} = \alpha_0 + \beta_1 RankAEM_{it} + \beta_2 RankREM_{it} + \beta_3 LNSIZE_{it} + \beta_4 LVG_{it} + €_i$

RESULTS

The first hypothesis: Optional accruals (AEMs) affect the cost of capital.

After testing the regression assumptions and ensuring that they are established, the results of fitting the above regression equation for the pharmaceutical, petrochemical, and automotive industries are presented in Table (1). The value of F (0.624) also indicates that the model is not significant in general.

Table 1. Results of fitting the regression equation

Variables		β	t	p
Constant		1.713	9.519	0.001
RankAEM	Optional profit management	-0.0004	-1.031	0.3
RankREM	Real profit management	0.003	-0.03	0.9
Ln(Size)	Size	-0.014	-1.031	0.3
LVG	Leverage	0.001	0.981	0.3
R^2		0.009		
Adj. R^2		0.005		
F		0.624		
P		0.9		
Durbin Watson		2.018		

As can be seen from Table (1), the coefficient of the independent variable indicates that there is a negative relationship between discretionary accruals as an alternative variable to profit management and capital expenditure. However, considering that these variables' significance in examining the relationship between optional accruals and capital expenditure is more than 5% (at the 95% confidence level), this relationship is not significant. Therefore, the first sub-hypothesis of the research is not accepted. Management motivation to manage profits based on optional accruals in the pharmaceutical, petrochemical, and automotive industries should not affect the Company's cost of capital. Also, the study of the significance level of t-statistic and coefficients related to control variables indicates that the Company's size and the Company's financial leverage do not have a significant relationship with the cost of capital of the Company.

The second hypothesis: Real profit management (REM) have a significant effect on capital expenditure.

As can be seen from Table (1), the coefficient of the independent variable indicates that there is a positive relationship between real profit management as an alternative variable to profit management and capital expenditure. However, considering that the value of these variables' significance in examining the relationship between real profit management and capital expenditure is more than 5% (at the 95% confidence level), this relationship is not significant. Therefore, the second sub-hypothesis of the research is not accepted. Therefore, it is expected that management motivation to manage profits based on real profit management in the pharmaceutical, petrochemical, and automotive industries will not affect the cost of capital of the Company. Also, the study of the significance level of t-statistic and coefficients related to control variables indicates that the Company's size and the Company's financial leverage do not have a significant relationship with the cost of capital of the Company.

The third hypothesis: The effect of earnings management on the cost of capital in different industries is different.

After testing the regression assumptions and ensuring their establishment, fitting the above regression equation for pharmaceutical, petrochemical, and automotive industries in Tables (2) and (3). The regression equation's results fitting by different industries studied in the present study Provided.

Table 2. Results of fitting the regression equation in the automotive industry

Variables		β	t	p
Constant		1.796	5.433	0.001
RankAEM	Optional profit management	-0.00005	-.584	0.1
RankREM	Real profit management	-0.001	-0.23	0.8
Ln(Size)	Size	-0.023	-0.908	0.3
LVG	Leverage	0.002	1.243	0.2
R^2		0.032		
Adj. R^2		0.03		
F		0.261		
P		0.9		
Durbin Watson		2.259		

As can be seen, according to Table (2), the coefficients of the independent variables indicate that there is a negative relationship between discretionary accruals and real earnings management as alternative variables of earnings management and capital expenditure. However, considering that the value of these variables' significance in examining the relationship between real profit management and capital expenditure is more than 5% (at the 95% confidence level), this relationship is not significant.

Table 3. Results of regression equation fitting in petrochemical and pharmaceutical industries

Variables		β	t	p
Constant		1.622	9.519	0.001
RankAEM	Optional profit management	-0.0003	0.769	0.4
RankREM	Real profit management	-0.003	0.564	0.5
Ln(Size)	Size	-0.01	-0.555	0.3
LVG	Leverage	0.00	0.158	0.8
R^2		0.008		
Adj. R^2		0.005		
F		0.244		
P		0.9		
Durbin Watson		1.777		

As can be seen, according to Table (3), the coefficients of the independent variables indicate that there is a negative relationship between discretionary accruals and real earnings management as alternative variables of earnings management and capital expenditure. However, considering that the value of these variables' significance in examining the relationship between real profit management and capital expenditure is more than 5% (at the 95% confidence level), this relationship is not significant. Therefore, it is expected that management motivation to manage profits based on real profit management in the petrochemical and pharmaceutical industries will not affect the Company's cost of capital.

Therefore, according to the results of Tables (2) and (3) and the study of the regression equation by different industries studied in the present study, it can be concluded that none of the variables of real profit management and voluntary profit management affect the Company's cost of capital. The different industries are not present in the present study, so the third sub-hypothesis is also rejected.

In general, according to the statistical results of testing the research's sub-hypotheses, it can be concluded that the central hypothesis of the research is not accepted. Thus, it is expected that management motivation to manage earnings based on optional earnings items and real earnings management in the pharmaceutical, petrochemical, and automotive industries will not affect the cost of capital of the Company.

CONCLUSION

Based on the first hypothesis's results, the research results indicate that in the pharmaceutical, petrochemical, and automotive industries, when there is a profit management incentive with earnings management based on the optional accrual criteria, there is no significant relationship between earnings management and company capital cost. In other words, profit management incentives and different degrees do not significantly affect the cost of capital.

Therefore, managers, investors and other people active in the capital market should be aware that the existence of a weak or strong incentive to manage profits based on the criterion of optional accruals does not have a significant impact on the cost of capital of the Company and therefore should look for other influential variables. On the cost of the Company's capital as influential variables in their decisions(Richardson, Welker, & Hutchinson, 1999).

The second hypothesis of the research indicates that in the pharmaceutical, petrochemical, and automotive industries, when there is a profit management motivation with profit management based on real profit management criteria, there is no significant relationship between profit management and company capital cost. Other profit management incentives and different degrees do not significantly affect the cost of capital. Therefore, managers, investors, and other people active in the capital market should be aware that weak or strong incentives to manage profits based on real profit management criteria do not significantly impact the cost of company capital that investors intend to invest in these industries. They need to consider this when making their investment decisions.

Finally, based on the results of the third hypothesis of the research, it is stated that between cost management of capital costs in different industries studied in the present study, namely pharmaceutical, petrochemical and automotive industries by the above three industries based on optional accruals and real profit management As the criteria for measuring earnings management in the above research, there is no significant relationship. In other words, earnings management motivation and different degrees do not significantly affect the cost of capital. Therefore, managers, investors, and other people active in the capital market should note that weak or strong incentives to manage earnings based on the criteria of optional accruals and real

earnings management do not significantly impact the cost of capital of the Company by industry. Financial statement providers, especially investors, are advised to consider this before making any decision, including investing.

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