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INVESTIGATING THE EFFECT OF DIVIDEND AND EXPENDITURE OF RESEARCH AND DEVELOPMENT ON RELEVANCE OF THE BOOK VALUE OF LOSING COMPANIES

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ABSTRACT

In this study, we investigated the effect of dividend and expenditures on relevance of book value in losing companies during the period of 1382-1391. To conduct this study, 151 listed companies in Tehran Stock Exchange were determined during that period. To test research hypothesis, the consolidated/combined regression analysis is used in EViews 6 software. The findings indicate that book value has a positive and significant effect on the value of company market among losing companies. And dividend and expenses of researches on listed companies are not effective on the relation between book value and market efficiency. Also the effect of operating profit on losing companies (as a negative number) on market value is negative and significant. Other results showed a positive and significant effect of dividends, the amount of research and development expenditure, operating income, cash holdings, the amount of nominal capital and non-current liabilities growth and also the significant and negative effect of book value and amount of nominal capital of previous period on market value of company during study period.

Keywords: Dividend, Research and Development Expenditure, Losing Company and Relevance of Book Value

INTRODUCTION

The financial statements are the primary source if required information in capital market. This information must be reasonable for users of credit (Behn *et al.*, 2007). It should be noted that company losing may lead to complexity of prediction in such companies. The question that arises here is that how can we assess such companies by market. And accounting figures such as book value, equity and profit can have a role in perceive and understand these valuations. The results of previous studies such as Bugstahler & Dichev and Collins *et al.* show that book value of equity has higher explanatory power in explaining the book value of losing companies compared with profit companies. Collins *et al.*, (1999) believe that book value is effective on the valuation of losing companies with two reasons. First, book value can be a stimulus for determine expected future normal profit of losing companies (Ohlson, 1995). Secondly, book value can be a stimulus for determining the value of losing companies which is created at the time of divestiture of company and sale of net assets. Also the results of previous results indicates low explanatory power in assessing market value of losing companies compared with profit companies. Also the relation between profit (in negative figure) and book value of losing companies is negative and this relation for profit companies is positive. The negative relation (a negative number) between profit and book value of losing companies is a puzzle and it is unjustified due to the basic concepts of economic logic (Darrough and Ye). Darrough and Ye believe that profit and book value may not be able to justify the book value of losing and helpless companies. But these two measures can not explain the book value of losing companies that continue their activity for a long time (such as young companies and losing companies due to apply more conservative). They also showed that book value, research and development expenses, non-continuous costs, the amount of sale growth and commercial basic criteria, all items are important and relevant parts in determining the market value of losing companies. In this study, first this

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issue is investigated whether is there a negative relation between profit and book value of Iran's losing companies. Secondly, it is anticipated that dividends for all companies are relevant and effective for determining the value of stock market. And dividend will be used (Rees and Valentincic). Also capital expenditures such as R&D and expenditures may effect on the market value of companies (Dedman *et al.*, 2009). Payment of dividends and R&D expenditures in losing companies can reverse the losses of company in the future and it will be effective on market value of losing companies.

Literature Research

According to the literature and based on new texts, accounting information is the basis for determining the future value. Therefore, investigating the effect of dividend and R&D expenditures on the relevance of market value of losing companies can help investors. Above analysis from two perspectives is important for investors: some concepts (such as stock assessment) is required to forecast earnings and to prediction, we should rely on reliable information. The quality of company performance (including dividend and R&D expenditures in losing companies) can be predictable and it can influence on information value and specially book value of losing companies. Increasing the data predictive power such as income and book value that cornerstone of all functional aspects is based on it. It can make investment decisions largely innocent of distortions and help them make the best prediction for the future of company. As a result, according to the above descriptions and this issue that present study investigate dividend and research and development expenses on relevance on book value of losing companies, the present study is very important for investors, analysts and capital market participants and through it, they can find book value of losing companies to determine the predictive power. So far, on relevance of book value and dividend, several studies have been conducted; but investigating the effect of dividend and R&D expenditures relates to book value of losing companies from a new perspective. In fact, it tries to show that losing companies which have dividend and R&D expenditures have a bright future than other companies. And these issues can be effective on relevance of book value of mentioned companies. The conceptual model of study is shown in figure 1.

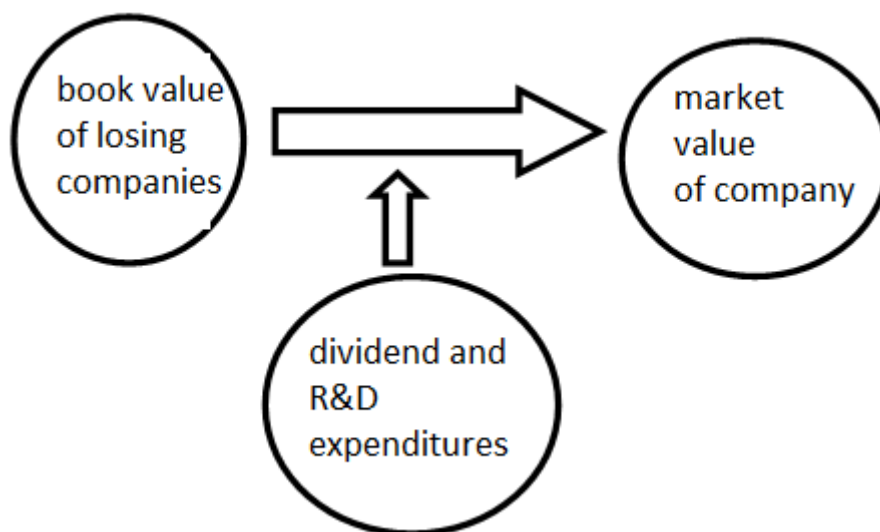


Figure 1: Research conceptual model

A number of results of domestic and foreign research that is similar to this study are as following: Berger *et al.*, (1996) based on their research in US markets concluded that book value is more important compared with profit in explaining stock price changes. Collins *et al.*, (1997) based on a model from Ohelson model (1995) concluded that during 1953 to 1993, relevance of book value and earnings is increased. Also, the relevance of earning is reduced and against relevance of book value is increased. Graham and King (2000) investigated the relation between stock prices and accounting figures in six Asian countries, Indonesia, Korea, Malaysia, Philippines, Taiwan and Thailand. They concluded that the

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explanatory power of stock price by the accounting figures in Taiwan and Malaysia countries are relatively low. While this value is so low in Philippines and Korea and also based on the results, explanatory power of book value in Korea and Philippines is high and in Taiwan in low. Lopes (2001) by conducting a research investigated the relevance of accounting figures of Brazilian stock market and concluded that earning in stock market of Sao Paulo don't have the characteristics of relevance and accounting profit will be considerably different with economic profit. Also, the results indicated that the relevance of accounting figures about companies that have activity in new industries such as telecom and telecommunication. And it is higher than relevance feature about companies with lower history (chemical and food industry and ...) and due to this issue that active companies have more intangible assets in new industries, perhaps one of the effective factors of accounting rules and principles of Brazil is that it permits to capitalization of intangible assets. El Shamy and Al-Qenae (2005) concluded that 1-book value and earnings have considerable explanatory power, separately and in combination. 2-the relevance of composition of book value and earnings have been increased during studied period, 3-relevance of earnings during studied period is increased and relevance of book value is decreased and 4-since 1990 that international standards that has been accepted in Kuwait, the relevance of profit is increased and book value is decreased. Alfaraiah and Alnaezi investigated the profit value and book value of companies listed in Kuwait stock Exchange for 1995 to 2006. Their results show that profit and book value have positive and significant relation with stock price, separately and jointly and relevance value of two variables is high. These results have been observed in developed and emerging countries.

Al-Akra & Jahangir (2012) investigated voluntary disclosure on accounting value in Jordan during 1996 to 2004. Their results show that voluntary disclosure is positively associated with firm value and also company value is associated with the industry. Jiang and Stark (2013) concluded in a study entitled "dividends, R&D expenditures and relevance of book value of British losing companies". And book value in losing companies and with a high level of dividend and R&D expenditures has less explanatory power in determining the market value of equity in compare with losing companies and low levels of dividend and R&D expenditures. Pour *et al.*, (2005) investigated the information content of accounting profit and book value of company through the relation between each share and book value of each share with the price per share of listed companies in Tehran Stock Exchange between the years 1996-2004. The results showed that first, a considerable part of variability of company value is determined by profit, secondly the explanatory power of profit and book value of company is due to profit and thirdly book value of company has not a good explanatory power compared with each share and accounted determination coefficient, especially differential coefficient of determination indicates weak explanatory power of this variable in explaining fluctuations of value in the company. By investigating 102 companies of listed companies in Tehran Stock exchange between 1994-2003 and by using combination method, Mahmood (2006) concluded that Ohlson valuation model (1995) which is well known as a dynamic model can predict the company value. The benefit of this method compared with other methods of value determination of companies is that used data are actually (not expected). Also, if the variables which are entered after operating profit in the income statement are classified into permanent and temporary variables and are placed in the Ohlson model an a strong linear relation is created between independent variables and market value. Kurdestani and Roodneshin (2006) in a study entitled the relevance of cash and obligations of components of accounting profit, investigated the value of company market. Their findings show that cash components of accounting profit is effective on company's market value and in compare with obligation components, it has greater usefulness. Saghaei and Talane (2005) investigated the role of earning, book value and mandates in evaluating the ownership rights during 1991-2004. The results of research showed that relation between price and book value is different income statement separately or jointly. So, the coefficient of profit variable in losing situation is lower than profit situations and conversely the coefficient of book value variable in losing conditions is higher than profit conditions. Saidi and Ghaderi (2005) investigated the relevance of accounting profit, book value and operating cash flow and investment in evaluation models based on price. The research findings showed that book value and accounting income are more related items and entering cash flow (operating and capital) do not create

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an explanatory power in model's explanatory. Hashemi and Behzadfar (2010) investigated the information content of accruals and financial ratios in determining market value of company. Their results showed that earning per share, the ratio of working capital to total earning, return of earning and net income to sales and currencies are relevant and effective variables in determining stock prices. Finally their findings of researchers indicate that profit per share is the most relevance accounting variable to determine company value. Khodadai *et al.*, (2010) in a study entitled earning management on the relevance of earning and book value investigated the comparison of short-term and long-term accruals. The results showed that earning per share and book value per share has a positive and significant relation with stock price.

Also, earning management through short-term discretionary accruals or long-term is lead to decrease of relevance earning per share and book value per share. And finally, the results of testing hypothesis showed that the effect of earning management through long-term discretionary accruals is higher compared with short-term discretionary accruals on the relevance of earning and book value.

Morad and Rahman (2011) investigated the auditor type on the relevance of accounting earning in Tehran Stock Exchange.

The results of study show that relevance of company value which are investigated by little auditing firms are more relevant and accounting reporting of companies which are addressed by large auditing firms are more relevant than little auditing firms which their accounting numbers are more relevant.

Research Hypothesis

- 1-the book value of losing companies has information content to determining the book value of company.
- 2-dividend influences on value and information content of book value of losing companies.
- 3-R&D expenditures influences on value load and information content of book value of losing companies.

MATERIALS AND METHODS

This study is a quasi-experimental and past event research in the field of accounting proof researches. And it will be conducted by using multivariate regression model and econometric models. This study is in the group of correlation researches from the implementation view. Research hypothesis are tested based on panel /combination data.

Statistical analysis is carried out by EViews 6 software. Statistical population for this research is composed of all listed companies in Tehran Stock Exchange during the period of 2003 to 2012 (10 years). And they must have the following conditions:

- 1-until the end of March 2002, they should be listed in Tehran Stock Exchange. And their fiscal year should be ended in March of each year.
 - 2-the companies should not change their fiscal year during desired periods.
 - 3-desired companies should have continuous activity in the research period and their shares should have been traded
 - 4-they should provide financial information for doing this research in the time period between 2003 to 2012, completely.
 - 5-they should not be a part of investment companies, banks, financial intermediation, holding and leasing.
- According to the mentioned conditions, 151 companies were selected and investigated as sample. All the necessary information for doing this research was collected from databases of Tehran Stock Exchanges, NovinRah Avarad software and exchangejournals. In this study, among available analysis methods, the method of "panel/combination data" is used.

Data Analysis

Investigating the Reliability of Variables

The results of reliability of variables are presented in Table 1. According to Unit Root Tests from the type of Levin, Lin & Chu tests, because the amount of P-Value is less than %5, all research variables were on the reliability level.

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Table 1: The reliability test (static) of variables during the study

Variable	Test type	The statistic value of Levin, Lin, Chu	The Statistic value of Levin, Lin, Chu
Market value MV		-90.67	0.0000
Book value of company BV		-10.88	0.0000
The amount of dividends DIV		-77.47	0.0000
The R&D expenditures RD		-94.97	0.0000
Virtual variable of losing company LOSS		----	----
Virtual variable of dividend DIVD		----	----
Dummy variable of R&D expenditures RDD		----	----
Operating profit OI		-16.88	0.0000
Sales growth SG		-22.96	0.0000
Dummy variable of sale growth of NEGSG		----	----
Cash holding level CASH		-22.69	0.0000
The nominal capital TC		-18.51	0.0000
Nominal amount of capital in the previous period LAGTC		-17.92	0.0000
NON-Current Liabilities growth LTDG		-35.73	0.0000

Correlations between Research Variables

Correlation between research variables in table 3 show that during study period, market value of company has a positive and significant relation with book value of company.

Table 3: Correlation between research variables

Variables	MV	BV	DIV	RD	LOSS	DIVD	RDD	OI	SG	NEGSG	CASH	TC	LAGTC	LTDG
MV	1	0.39***	0.75***	0.01	-0.22***	-0.07***	-0.12***	0.66***	0.18***	-0.17***	0.36***	0.06**	0.04	-0.004
BV		1	0.45***	0.09***	-0.37***	-0.06**	-0.17***	0.43***	0.04	-0.05**	0.18***	0.38***	0.35***	-0.11***
DIV			1	-0.05**	-0.30***	-0.06**	-0.17***	0.41***	0.18***	-0.21***	0.42***	-0.04	-0.01	-0.04
RD				1	0.04	-0.003	0.18***	-0.07***	-0.02	0.03	-0.04	-0.002	0.02	-0.04
LOSS					1	0.26***	0.36***	-0.46***	-0.23***	0.27***	-0.12***	0.13***	0.07***	0.06**
DIVD						1	0.12***	-0.10***	-0.05**	0.06**	-0.02	-0.02	-0.02	-0.01

*Significant at 90% confidence level, ** significant at 95% confidence level, *** significant at 99% confidence level

Hypothesis 1: the Book Value of losing companies has information content in determining market value of company.

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companies with higher nominal capital in the previous year and companies with higher level of book value experienced lower market value at current year. However, operating value, cash holding, the nominal capital and non-current liabilities growth in this year is lead to increasing company's market value in the current year. The results related to statistic F also shows that model is significant, generally and according to the Camera-Watson statistic does not have the autocorrelation problem. In addition, the related results to the justified determination coefficient also show that during research period, about 64.9% of changes of company's market value at the level of all companies are influenced by book value, interactive effects of book value and operating profit in losing companies and control variables especially operating profit, cash holding, nominal capital in current year and last year and growth of non-current liabilities.

The remaining regression values of that model have a Jark statistic equal to 1.07 and probability of Jark statistic equal to 0.59 which implies the normality of regression remaining. According to the significant effect of interactive effect of book value in losing companies on the company's market value, book value has information source content in determining the market value of losing companies and therefore, the first hypothesis is confirmed.

Table 4: The effect of book value of losing companies on company's market value

Variable	Statistic	Regression coefficient	The amount of statistic t		Probability of statistic t
Constant value		0.25		4.36	0.0000
BV		-0.49		-4.49	0.0000
BV×LOSS		0.57		3.36	0.0008
OI		3.59		19.75	0.0000
OI×LOSS		-3.17		-4.92	0.0000
SG		-0.07		-1.33	0.1851
NEGSG		-0.01		-0.21	0.8300
CASH		1.79		7.32	0.0000
TC		1.27		5.79	0.0000
LAGTC		-0.76		-3.60	0.0003
LTDG		0.03		2.25	0.0244
Determination coefficient	Justified determination coefficient	Remaining Jark amount	Probability of remaining jark	The probability of statistic F	The Watson-camera statistic
0.687	0.649	1.07	0.59	0.0000	1.815

Hypothesis 2: Dividend influences on time value and information content of book value of losing companies

the obtained results in table 5 show that the effect of interactive effect of dividend on book value of losing companies on company's market value is negative (-0.29) but it is not significant according to the probability of statistic t (0.6384). This indicates that among losing companies with dividend, book value dose not influence on company's market value. In other words, dividend on losing companies doesn't have information content in determining company's market value. Other results show a significance and positive effect of dividends, operating income, cash holding, growth rate of nominal capital and non-current liabilities growth on company's market and negative and significant effect of book value and the amount of nominal capitals is detectable in the previous period on market value. This indicates that companies with higher levels of nominal capital in the past year and companies with higher level of book value experience lower market value in the current year. However, the amount of dividend, operating profit, cash holding, the amount of nominal capital and non-current liabilities in current year has led to increase market value in current year. The results related to statistic F show that the model is significant, generally and due to Watson-camera statistic, it dose not have autocorrelation problem. In addition, the

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results related to the adjusted coefficient of determination show that during total period of research about 69.1% of variations of company's market value at the level of all companies affected by book value, the amount of dividends, interactive effect of profit on book value of losing companies and control variables specially cash holdings, operating profit, the amount of nominal capital in the current year and non-current liabilities growth. The amount of regression remaining of model has Jark statistic equal to 2.31 and its probability equals to 0.32 which implies the normality of regression remaining. Due to the ineffectiveness of the interactive effect of dividend on book value of losing company on company's market value and dividend on losing companies without information content in determining company's market value and hence, the second hypothesis of research is not confirmed.

Table 5: The interactive effect of dividend on book value of losing companies on company's market value

variables	Statistic	Regression coefficient	Amount of statistic T	Probability of statistic T	
Constant value		0.22	4.05	0.0000	
BV		-0.53	-5.15	0.0000	
BV×LOSS		0.63	3.97	0.0001	
DIV		3.47	14.48	0.0000	
BV×DIVD		-0.29	-0.47	0.6384	
OI		1.63	8.05	0.0000	
SG		0.01	0.14	0.8849	
NEGSG		0.01	0.38	0.7018	
CASH		1.17	5.01	0.0000	
TC		1.34	6.53	0.0000	
LAGTC		-0.69	-3.52	0.0004	
LTDG		0.03	2.67	0.0077	
Determination coefficient	Justified determination coefficient	Remaining Jark probability	The amount of remaining Jark	Probability of statistic F	Camera-Watson statistic
0.724	0.691	2.31	0.32	0.0000	1.825

Hypothesis 3: R&D expenditures on time value and information context influence on book value of losing companies.

The obtained results in table 6 indicate that the effect of interactive effect of R&D expenditures is not significant on book value of losing companies and its effect on market value is negative (-0.19) and according to statistical probability T (0.4943), it is not significant. This issue indicates that in losing companies with R&D expenditures, book value does not influence on market value. In other words, R&D expenditures in losing companies do not have information context in determining market value. Other results showed a significant and positive effect of R&D expenditures, operating profit, cash holdings, the amount of nominal capital and non-current liability growth on company's market value and significant and negative effect of book value and nominal capital in previous period on company's market value. This issue suggests that companies with high nominal capital in previous year and also companies with high level of book value experience lower market value in the current year. However, the amount of R&D expenditures, operating income, cash holdings, the amount of nominal capital, non-current liability growth in current year lead to increase of market value of company in the current year. The results about justified determination coefficient show that in all periods of research, about 64/9% from changes of company's market value on the level of all companies influenced by book value of R&D expenditures, the interactive effect of R&D expenditures at book value of losing companies and control variable specially the level of cash holding operating profit, the amount of nominal capital in the current year and previous year and non-current liability growth. The residual regression amounts of desired model has

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Jarek statistic equal to 3/46 and the probability of Jarek statistic equal to 0/18 that indicates the normality of regression residual. Due to the ineffectiveness of interactive effect of R&D expenditure in the book value of losing companies on company's market value and the amount of R&D expenditures in losing companies, without information content in determining company's market value. Hence, third research hypothesis is not confirmed.

Table 6: The effect of interactive effect of R&D expenditures on book value of losing companies on company's market value

Variable	Statistic	Regression coefficient	The amount of t statistic		Probability of t statistic	
Constant value		0.27	4.61		0.0000	
BV		-0.53	-4.84		0.0000	
BV×LOSS		0.76	3.79		0.0002	
RD		2.24	4.89		0.0000	
BV×RDD		-0.19	-0.68		0.4943	
OI		3.38	19.26		0.0000	
SG		-0.09	-1.54		0.1224	
NEGS		-0.02	-0.47		0.6389	
CASH		1.86	7.61		0.0000	
TC		1.34	6.02		0.0000	
LAGTC		-0.75	-3.55		0.0004	
LTDG		0.03	2.47		0.0136	
Determination coefficient	Adjusted determination coefficient	The amount of residual Jarkbera	The probability of residual jarkbera	of	Probability of F statistic	Watson-Camera statistic
0.686	0.649	3.46	0.18		0.0000	1.830

Conclusion and Discussion

First Hypothesis

The effect of book value of losing companies (interactive effect of book value on losing companies) is significant and positive on the company's market value. In other word, in losing companies, book value has increased information context on company's market value. Due to the significant effect of interactive effect of book value in losing companies on company's market value, book value in determining market value of losing companies has information increased context and hence, the first hypothesis of research is confirmed. The results of this hypothesis are about the positive effect of book value of losing companies on company's market value, and are in line with previous results of Collins *et al.*, (1999) and Jiang and Stark (2013).

The Second Hypothesis

The effect of operating profit in losing companies (the effect of interactive effect in losing companies) on company's market value is significant and negative. This issue indicates that in losing companies (with negative net profit), even with a negative operating profit, the company's market value has increased again. Results about the negative effect of operating profit in losing companies on company's market value is in line with previous research results of Daroghe and Yi (2007) and Jiang and Stark (2013). On one hand, results about the positive effect of book value of loss companies on company's market value indicates that in losing companies, book value has increased information context in determining company's market value. On the other hand, due to the significant and negative effect of operating profit in losing companies on company's market value, the results show that in losing companies (with negative net profit), even with a negative operating profit, the company's market value has been increased. Perhaps one reason for the recent result is presence of some miscellaneous income or dividend or R&D expenditures at capital losing companies lead to increasing demand and motivate in shareholders to

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purchase shares of such companies is leading to increase the company value. The effect of interactive effect in book value of losing companies on company's market value is negative but it is not significant. This issue indicates that among losing companies with dividend, the book value does not influence on company's market value. In other world, dividend in losing companies don't have information context in determining company's market value. The results about the ineffectiveness of interactive effect of dividend on book value of losing companies on company's market value indicates that among losing companies, dividend dose not have information context in determining company's market value. In other words, from the perspective of stock shareholders, the presence of dividend in stock losing companies is not necessary. And it could not lead to increase demand and motivate among investors to buy the stocks of losing companies and increase the market value of listed companies. Hence, in stock losing companies, dividend is not relevant in determining price and stock market value.

The Third Hypothesis

The effect of interactive effect of R&D expenditures in book value of losing companies on company's market value is negative and not significant. This issue indicates that among losing companies with R&D expenditures, book value is not effective on market value. In other word, from the stock shareholders, the presence of R&D expenditures in stock losing companies is not necessary. And we it could lead to increasing demand and motivate investors to buy the stock of losing companies and as a result, it can lead to increase to market value of listed companies. The effect of operating profit, cash holdings, the nominal stock amount and non-current liability growth on company's market value is positive and significant and effect of book value and the amount of nominal capital in the period before and after of company's market value is negative and significant. This issue suggests that companies with high levels of nominal capital in the past year and companies with higher level of book value and they experienced lower market value in current year. While the operating profit, cash holding, the nominal capital and non-current liabilities growth in this year led to increase of company's market value in the current year. The results are inconsistent with previous research results of Jiang and Stark (2013). The results of the negative effect of book value and nominal capital in the previous period on market value are inconsistent with previous research of Jiang and Stark (2013).

Suggestions

1-due to the direct effect of book value of losing companies on their market value, it seems that in losing companies, book value has increased information context in determining price and market value of stock from the view of shareholders. Therefore, it is proposed to financial management of losing companies in Tehran Stock Exchange to prevent earning presentation in order to increase the shareholders of losing companies. According to direct effect of dividend, the amount of R&D expenditures, operating profit and cash holding on company's market value, it seems that dividend, the amount of R&D expenditures, operating profit, cash holdings from shareholder's view have information content. And it is leading to increase the value of company. Therefore, it is recommended that financial managers of stock companies consider this issue and do it carefully in order to increase the company value and in line with paid dividends to shareholders, R&D expenditures and balance between cost-benefit of cash holding.

3-according to ineffectiveness of dividend and R&D expenditures on market value of losing companies, it seems that in desired companies and from the shareholders view, dividend and R&D expenditures don't have information content to determine the company's market value. Therefore, it is recommended that in order to increase the efficiency and transparency of capital market, Tehran Stock Exchange forces losing companies to make reasonable decision about the dividend and R&D expenditures.

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