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INVESTIGATION OF THE EFFECTS OF FINANCIAL LEVERAGE, Tax SHIELD, BETA, MARKET VALUE TO BOOK VALUE AND SIZE ON EARNINGS PER SHARE CHANGES, CASE STUDY ,IRAN

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ABSTRACT

Economic development of any country necessitates that its citizens invest their income surplus. Therefore, in order to gain stocks enjoying further productivity and with low risk level, every investor needs to have an access to pertinent information. One of the most crucial information subject to analysis by the relevant investors relates to EPS of company stock share and its stability. This study investigates the impacts of certain variables (Financial Leverage, Tax shield, Beta, Market value to Book value, Size, Earnings Per share changes) on the changes happen as to the income level of each stock. To this end, 78 companies registered in Tehran stock market during (1383-1388). Simple linear and multi-linear regression analyses of the data showed that, expect. There is no significant relationship between the other variables and changes in the stock income level.

Keywords: *Financial Leverage, Tax shield ,Beta ,Market value to Book value , Size , Earnings Per share changes*

INTRODUCTION

There is a direct relationship between the development of country and the number of stockers.

In USA, 80% of people are stockers and invest in Exchange. This rate has been developed in our country because of management system. investors need information to get economic decisions financial analysis is one of the most important method to choose the best option. Modiani and Miller applied it as a main principle. Don Danival , Shan Hitzman and Lee have verified the impact of financial leverage on company's taxes and individual taxes according to debts and rights of stockers.

The most famous variables used in financial analysis include: The rate of stock, sales rate ,liquidity, inflation, profit and all items applied in balance sheet ,profit and losses. Collins, Easton and Zimochi oski presented some evidences relating to the right of stockers as a basic index for expected return on equity .One of the most important indicators is the earnings per share. In this study, we will examine the relationship between several variables that include:

examining the relationship between debt and non- debt tax shield, size, systemic risk, financial leverage , the ratio of market value to book value per share of the profits .

Factors affecting the variability of these parameters is very important in making investment decisions .

Conceptual framework and literature :

Earnings per share is amenable to changes in risk factors . Because the many changes in the company's corporate profits reflect the instability of the performance, all factors affecting systemic risk impact on profits .External factors affecting the company in bankruptcy, so the size can express interest changes .Companies with more equity have less profits. Dividend profit policy and shareholders composition have a direct impact on profits.

Studies are assessed according to research conducted within and outside the country.

Studies in abroad:

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Dan ,Shine and Elioner have studied models of equity returns as a function of leverage and taxes investor. They concluded that a regression coefficient is inversely related to dividend yield, increase leverage and reduced tax rates. Song &Hong applied a database of more than1,200 Chinese companies .

Like other countries, Chinese companies are increasing leverage with increase of firm size and fixed assets . Increasing profit, non- debt tax shields, growth opportunities and shareholder director are reduced.

Di Angelo and Mazis concluded that non- debt tax shield is as a substitute for financial gain. a company with non-debt tax shield uses fewer debt.Walton has reviewed all companies listed on the New York Stock Exchange over the years .

Research shows that reducing the ratio of dividends paid divided by the correlation coefficient between two variables represents a compromise between the two variables.

Miller and Muziani showed that taxes affect the capital structure. Corporate tax rate should be greater use of debt in the capital structure .

Studies in interior :

The results showed that there was a significant relationship between the ratio P/A and the expected return to shareholders in the three industries is studied .

The research was conducted under the analytical relationship between earnings yield of shares in listed companies in Tehran Stock Exchange .Bayati revealed in a study titled Evaluation of firm size and the ratio of book value to market value of the stock ranged in Tehran Stock Exchange that market factors , firm size and the ratio of market value to book value are the three major factors in the stock market . In another study comes to the conclusion that a very small percentage changes are relative to the dividend per share of the tax rate. In short, the tax rate has little impact on the dividend profit policy .in a research on the effect of earnings forecasts by management on the stock price , the results showed that the profit per share content does not have informative content. We can conclude that Iran's market lacks efficiency and earnings per share has no informative content .

In another research as the relation of accounting earnings and stock return portfolio optimization , the result shows that there is a significant relationship between accounting earnings and stock returns on portfolios optimized and the correlation coefficient is positive.increase and decrease is not equal and other economic and political factors have an impact .

A research on corporate profit forecasts, the researchers concluded that there is a significant relationship between corporate profit forecasts by age, size, leverage, stock prices in firms.

Community research sample and data collection practices

The population of all firms that are arranged according to the number of days the stock traded in the main hall . 69 trading days has been done that these companies are part of the statistical community .The number of sample firms include 198 firms with the above conditions . All companies must submit financial statements as audited , end of period and non- consolidated .

Due to these and existing applications , 78companies were selected as samples .

Research variables :

Variables are:

Earnings per share : Earnings per common share , as compared to net income to common shareholders owned the issued number of ordinary shares during the period.

$$EPS = \frac{\text{Net Income} - \text{Preferred Stock Dividend}}{\text{Weighted average number of ordinary shares issued during the period}}$$

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Non- debt tax shield : the results of non- debt tax depreciation tax shield than personal taxes.

$$\text{NDTS} = \frac{\text{Adjustments - Accumulated depreciation of assets sold} - \text{Accumulated depreciation} + \text{Depreciation}}{\text{Total assets}}$$

Debt tax shield is an income due to interest expense purchased as interest payments and tax rate is granted to the company.

Corporate tax rate) × Long-term debt / Financial Costs = DTS

Returns: Total Income earned from investments than investing in a course that is consumed during that period.

$$R_{it} = \frac{(P_{it} - P_{it-1}) + D_{it}}{P_{it} - 1}$$

Systemic risk: the beta of a portfolio indicates that the rate of return is close to the rate of return on investment in a diversified portfolio Systematic risk is calculated with the following equations:

These variables include:

$$R_m = \sum_{t=1}^n \frac{R_{mt}}{n}$$

$$R_i = \sum_{t=1}^n \frac{R_{it}}{n}$$

$$\delta^2(R_m) = \sum_{t=1}^n \frac{(R_{mt} - R_m)^2}{n}$$

$$\beta = \frac{\text{COV}(R_i, R_m)}{\delta^2(R_m)}$$

Yields and cost efficiency indices for m in period t - R_m: Average index yields and R_{it}: return on equity for firm I in period t Leverage: the percentage change in the dependent variable is divided by the percentage change in the independent variable, the related leverage is obtained.

Financial leverage ratio is the percentage change in earnings per share divided by the percentage change in earnings before interest and taxes.(Book value of equity + total assets) divided by (Current Liabilities + Long Term Debt) = financial leverage

Research hypothesis :

This study examines the relationship between changes in earnings per share of changes . Changes include: financial leverage , systemic risk , debt and non- debt tax shield , size and the ratio of market value to book value per share.

Therefore the research hypothesis is as follows :

- 1 - Level of debt tax shield affects the change in earnings per share
- 2 – The value of non- debt tax shield affects the change in earnings per share.

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- 3 - The impact of company size on the change in earnings per share.
- 4 - Systematic risk affects the change in earnings per share.
- 5-changes in financial leverage effect on earnings per share.
- 6 - The ratio of market value to book value per share is based on earnings Changes.

Analysis of data

Two methods were used in this study include the method and path analysis models (linear regression model)-using simple linear regression model

The path analysis (linear regression model)

In this way, the relationship among the variables is tested . The conceptual model presented in this study is based on the path analysis diagram.According to the above diagram that illustrates the relationships between independent and dependent variables. relationship between each of the independent variables on the dependent variable is marked with the symbol p .Based on this model, the financial leverage has impact on earnings per share because has effect in systematic risk .

Also, the tax shield affect on the change in earnings per share and has an indirect effects on systemic risk .Changes in non- debt tax shield variable of interest is affected by the ratio of market value to book value of equity and directly.Ordinary least squares method is used to estimate bi-variate and multivariate linear regression model .

$$Y_t = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \dots + \beta_k X_{kt} + \mu_t$$

Simple linear regression :

Simple linear regression was used to analyze the effect of independent variables on the dependent variables .

In this analysis, the relationship between the variables is analyzed by setting equation is obtained in terms of the values of the dependent that the dependent variable values are achieved by values and variable coefficient or independent variables.

$$Y_t = \beta_0 + \beta_1 X_t + \mu_t$$

Data Analysis and test research hypotheses:

This section examines the relationship and impact of independent variables on the dependent variable to determine the relationship between parametersto test the research hypotheses.

The data are calculated using Excel software and are analyzed by the software spss 16.0.

Table 1 shows the descriptive statistics of the variables:

Table (1) Descriptive statistics of research variables

Average	Median	Standard deviation	Skewness	Elongation	Research Variable
25.9667	32.0000	396.97897	-.345	1.789	Earnings Per share changes
.03021	.01752	.087673	-.348	17.777	Debt tax shield
26.44780	9.25748	72.196942	5.974	42.020	Non-debt tax shield
11.87203	11.77690	.696140	.914	.879	Size
.38512	.16000	.734800	1.966	4.308	Beta
.26745	.28183	.310982	-.262	-.346	Financial Leverage
6.93265E8	1.70269E8	1.584213E9	4.093	17.465	Market value to Book value

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Average shows the average data.

Data show that 50 percent of data are less than middle number in the data set, and 50% higher than the number in the middle of data set.

proximity shows a close coincidence between the mean and median of the data.

The standard deviation shows the dispersion and, ultimately, the skewness indicate asymmetry index.

The results are as follows :

according to the research hypothesis to conclude that the variable is not significant at the 95% level .so assuming H1 is not accepted .

Regression results show that the probability or significance level is equal to 0.646 .The coefficient of determination is equal to 0.001 and the value of t forthe debt

tax shield is equal to -0.46 that the statistic is equal to zero in the non- rejection of the null hypothesis.

Table (2) Between test results and changes in debt tax shield earnings per share

according to the research hypothesis , non- debt tax shield effect on earnings per share change. Studies indicate that the variable is not significant at the 95% level .Thus, hypothesis H1 is rejected.

Regression analysis shows that the probability or significance level is equal to 0.737 .

The coefficient of determination is equal to 0.001. The amount of non- debt tax shield is equal to -0.336 t The t -statistic is zero. Also, t is equal to 1/27 . This amount is equal to zero at the 95% confidence level

Table(3) The relationship between non-debt tax shield test results and changes in earnings per shar

according to the research hypothesis , the size is effective in the earning change per share , but the degree achieved significance for this variable indicates that this variable is not significant at the 95% level .

Thus, hypothesis H1 is accepted . Regression analysis shows that the probability or significance level is equal to 0.475 .The coefficient of determination is equal to 0.001, which is very low. The t -statistic is equal to -0.716 , which is equivalent to the failure to reject the null hypothesis .

Table (4) The relationship between the size of the test results and changes in earnings per share

As stated in hypothesis , the systemic risk has impact the earning change per share.Variable is significant at 95% level. The hypothesis H1 is accepted. The results of the regression analysis shows that the probability or significance level is equal to 0.012. The coefficient of determination is equal to 0.016, ie less than 2% of thevariability. Watson camera statistic values is equal to 2, which shows the lack of residual autocorrelation regression as one of the hypotheses.

Table (2)Between test results and changes in debt tax shield earnings per share

Significance level	F value	Durbin - Watson	Adjusted coefficient of determination	Coefficient of determination	OF Correlation	Independent variable
0/646	0/212	1/695	-0/002	0/001	0/023	Debt tax shield

Table (3)The relationship between non-debt tax shield test results and changes in earnings per share

Significance level	F value	Durbin - Watson	Adjusted coefficient of determination	Coefficient of determination	OF Correlation	Independent variable
0/737	0/113	1/694	-0/002	0/000	0/017	Non-debt tax shield

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Table (4) The relationship between the size of the test results and changes in earnings per share

Significance level	F value	Durbin - Watson	Adjusted coefficient of determination	Coefficient of determination	OF Correlation	Independent variable
0/475	0/512	1/697	-0/001	0/001	0/036	Size

Table (5) Relationship between systematic risk test results and changes in earnings per share

Significance level	F value	Durbin - Watson	Adjusted coefficient of determination	Coefficient of determination	OF Correlation	Independent variable
0/012	6/347	1/753	0/014	0/016	0/127	Systemic risk

T-statistic is equal to 0.323, which is equal to zero, indicating no significant at 95% confidence level.

Relationship between systematic risk test results and changes in earnings per share Table (5)

As stated in the hypothesis, the financial leverage has impact on changes in earnings per share ,to conclude that the variable is not significant at the 95% level. The hypothesis H1 is not accepted. The results of the regression analysis shows that the probability or significance level is equal to 0.561.

The coefficient of determination equal to 0.001, ie 0.1% of the dependent variable changes is expressed by independent variable or financial leverage. T value for a financial leverage is equal to -0.58 that t value is equal to zero.

Table (6) Changes in test results between financial leverage and earnings per share

As stated in hypothesis ,the market value affect on book value .Significance of this variable indicates that the variable is significant at 95 percent level. The hypothesis H1 is accepted. The results of the regression analysis shows that the probability or significance level is equal to 0.006.

The coefficient of determination is equal to 0.002. T value for the ratio of market value to book value is equal to 2.78 and the value of t is equal to zero. The value of t is equal to zero at the 95% confidence level.

Table(7) Test the relationship between the ratio of market value to book value and earnings per share of changes.

The path analysis (linear regression model)

In this model , we analyze each of the variables in the conceptual model as an indirect effect of financial leverage , non- debt tax shields and the size on dependent variable .

Table 8 shows the significant influence of the independent variables on the dependent variable .

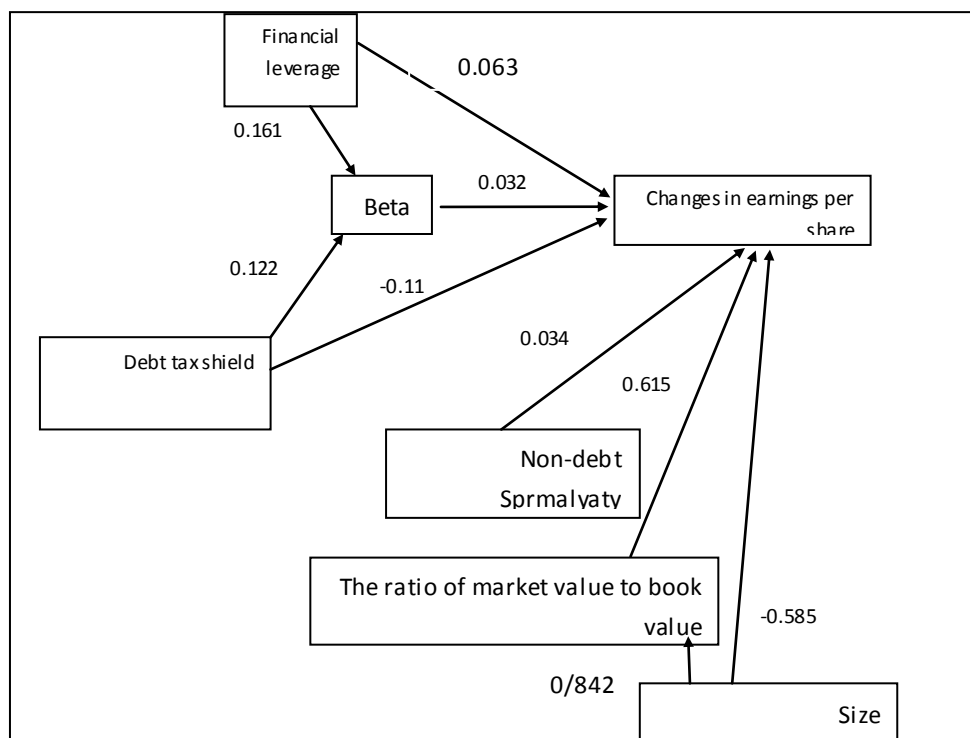
Table (6) Changes in test results between financial leverage and earnings per share

Significance level	F value	Durbin - Watson	Adjusted coefficient of determination	Coefficient of determination	OF Correlation	Independent variable
0/561	0/339	1/686	-0/002	0/001	0/030	Financial Leverage

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Table (7) Test the relationship between the ratio of market value to book value and earnings per share of changes

Significance level	F value	Durbin - Watson	Adjusted coefficient of determination	Coefficient of determination	OF Correlation	Independent variable
0/006	7/716	1/690	0/017	0/020	0/141	The ratio of market value to book value



Form No (1) Conceptual model (Numerical)

Table (8) Re views, analyzes and conclusions related variables based on path analysis is

Results	The t	The beta	The independent variables	Dependent variable
غير معنادار	-0/23	-0/11	Debt tax shield	Changes in earnings per share
غير معنادار	0/66	0/034	Non-debt Sprmalyaty	
معنادار	-6/09	-0/585	Size	
غير معنادار	0/62	0/032	Systematic risk	
غير معنادار	1/21	0/063	Financial leverage	
معنادار	6/57	0/615	The ratio of market value to book value	

Testing models and methods (fixed effects model) and (random effects model)

In this section we estimate a general model for the analysis of the paneli 19 and also to investigate the influence of fixed effects and random effects of financial leverage on profits between different variables.

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Using this method, due to the nature of the data. For the analysis of panel data are collected temporarily - until 20.

These data do not preserve the independence of observations . Because each company in different years , there are several views that are dependent on each other.

In this analysis , the data is multiplied by the number of years.

The model is as follows :

Table (9) Research hypothesis model

CONCLUSION AND RECOMMENDATIONS

The results showed that the changes in tax policy will not affect earnings per share. Declining profits changes has made tax capacity easier for companies and specifies the government's share achieved by tax revenues .

Therefore it is expected the changes have lower profits than companies that have higher variable costs in the cost structure .the productive capacity affect on the variable. If a firm has fixed assets and fails to make use of their productive capacity , thus these assets will remain unused .

However, that is depreciation expense for each year of the statement (profit and loss). Companies with depreciation expense and accumulated depreciation, fixed assets are expected to increase A company with high fixed assets , if not the use of production capacity , thus the value of these assets will remain unused .

However, we are considering the depreciation charge each year in statements(profit and loss)

The results indicate that firm size will have a positive impact on the share of profits.

The results indicate that income is affected by changes in systemic risk. Although it is expected that this change is positive, but actually has a negative impact. Companies with profits changes have less systemic risk.

According to research, companies with financial supplement through debt have not obtained higher earnings.

Constant rate of interest on loans taken from banks in the country, makes it easier to plan for repayment Increased financial leverage in the capital structure does not affect the risk of bankruptcy of companies. So according to the regression model, the change in financial leverage affect profits directly and indirectly. On the other hand, companies with a market value less than the book value, the changes are less profitable.

Company performance is one of the factors that increase the book value of the company's shares.

Since profit growth reflects the strength profitability, positive changes indicate that earnings above book value. There are many factors affecting the benefit changes . For example, when companies reduce or increase its common stock , it would have an impact on other stakeholders .

When the capital stock is changed , will alter its profits and profitability are difficult to compare different eras . Studies in Tehran Stock Exchange , the stock price declines after dividend distribution . This situation will continue for some time to come back to the original price . Shareholders thus does not vary .

The results obtained in this study, the following suggestions are offered :

Practical suggestions :

-Corporate tax rate is stepped so that companies with higher profits pay higher taxes .

So private companies are supported by lower income and tax justice is established .

- The tax is granted to stocks dividends profits so that companies distribute less profits among shareholders and the profit will be invested in the company for future opportunities .

Following offers :

1 – Review the effect of increasing the company's capital on stock profit changes

2 – Review the effect of trading volume on profit change per share .

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Table (9) Research hypothesis model

Model	Probability of F	The coefficient of determination	Housman test	Chow test	Independent variable
There is no significant model fit models	0.702	0.0003	Random effects model is appropriate null hypothesis is confirmed	The null hypothesis is rejected, the model has good effects	Debt tax shield
There is no significant model fit models	0.668	0.0004	Random effects model is appropriate null hypothesis is confirmed	The null hypothesis is rejected, the model has good effects	Non-debt Sprmalyaty
There is no significant model fit models	0.842	0.0001	Random effects model is appropriate null hypothesis is confirmed	The null hypothesis is rejected, the model has good effects	Size
-----	-----	-----	-----	The null hypothesis is confirmed by the effect of the model is not appropriate	Systematic risk
There is no significant model fit models	0.31	0.0025	Random effects model is appropriate null hypothesis is confirmed	The null hypothesis is rejected, the model has good effects	Financial leverage
There is a significant model is the appropriate model	0.015	0.015	Fixed effects model is appropriate null hypothesis is rejected	The null hypothesis is rejected, the model has good effects	The ratio of market value to book value

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