Original Article

Determinants of real stock return of pharmaceutical products and materials companies

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Abstract

Background: The present study aimed to investigate the factors that determine the actual efficiency of pharmaceutical companies.

Methods: This study was an applied and descriptive-correlation research. Using the financial information of 28 pharmaceutical materials and products companies of Tehran Stock Exchange during 2013-2016, modeling of multiple variables on the real returns of pharmaceutical companies was performed. Data entered to excel and were calculated and the relationship between independent and dependent variables was analyzed by performing multiple regression tests in Eviews software.

Results: There is a significance association between company size and real stock returns, but there was no relationship between assets and real stock returns and between equity returns and real stock returns. Between financial leverage and real stock returns, between price-to-earnings ratio and real stock returns; a significance association was observed between the ratio of book value to the market and the real stock return, and between the margin profit and the real stock return.

Conclusion: Considering the importance of the factors determining the real return of pharmaceutical products and materials companies, it is expected that the financial characteristics of pharmaceutical companies and Stock returns on the Tehran Stock Exchange should be used by planners as a guide for investors in Tehran Stock Exchange.

Keywords: Costs and Cost Analysis; Economics; Marketing; Pharmaceutical Preparations.

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Introduction

The stock exchange, as a market, provides the necessary facilities for buyers and sellers of the stocks. The stock exchange organization has financed the listed companies by selling their shares in the capital market. Investors perform extensive studies, because they turn their most liquid assets into ordinary shares. If investors invest without considering some financial factors, they may not have a suitable income in proportion to the investment made (1). Pharmaceutical companies are among the companies listed on the stock exchange. Investors need to identify the major variables that represent the real return on stocks and models for predicting the price and return of securities (2). Identifying the factors determining the return and presenting an optimal model can lead to the optimal allocation of resources

at the micro and macro levels in pharmaceutical companies. Stock valuation approaches are divided into two categories: fundamental valuation and market-based valuation or risk indicators.

The fundamental valuation approach was first expressed by Breck in examining the factors affecting the return on securities. The market-based valuation approach was first proposed by Fama & French, that the size and ratio of book value to market value as two risk indicators were significantly associated with future return on stock (3). One of the necessary conditions for an efficient market is that all available information, including accounting information with the two characteristics of relevance and reliability be available to all investors without cost and equally (4). In the Iranian capital market, thousands of people invest their money every day with the hope of gaining more wealth. Some achieve their goals and others lose their capital. Tehran Stock Exchange index from different aspects and angles can reduce the risk of investments or increase the return on investments with better prediction of the future of this market and its changes. Return on stocks is an important factor in choosing the best investment (5). Given what was stated above, the present study examined whether the characteristics of pharmaceutical companies (company size, return on assets, equity, margin profit, book value to market value, price to earnings ratio, and financial leverage) were associated with real returns on stocks in pharmaceutical companies listed on the Tehran Stock Exchange?

Methods

Conceptual model of research

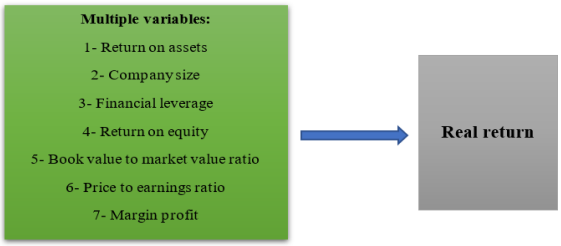

Figure 1. Conceptual model of research

Statistical population

The statistical population in this study included all pharmaceutical companies listed on the Tehran Stock Exchange from 2014 to 2019. The statistical sample was selected through the systematic elimination method from the statistical population among all pharmaceutical companies that meet the following criteria:

- The fiscal year of the company leading to the last day of the given each year
- The company that its financial year has not been changed during the study period
- The company should not be part of investment, holding, financial intermediation and insurance companies.
- Their information and data should be available.
- The company shares have been traded continuously on the Tehran Stock Exchange and no trading has been stopped for more than three months on the mentioned shares.

Considering the above conditions and limitations, a total of 28 companies were selected as the statistical sample of the research among the pharmaceutical companies accepted on the Tehran Stock Exchange.

The method of selecting the mentioned companies were included: Companies whose financial year has not changed from 2013 to 2018 [7], Companies that left the stock market during the study [3], companies that were admitted to the stock market during the study period [8], companies whose information was not enough to conduct this research [5].

In this study, regression model was used for data analysis .Regression analysis is a reliable method of identifying which variables have impact on a topic of interest. The process of performing a regression allows you to confidently determine which factors matter most, which

factors can be ignored, and how these factors influence each other.

Regression model (Formula 1)

$RE_{i,j} = \beta_0 + \beta_1$ B/M$+\beta_2$ Lev$+\beta_3$Roa$+\beta_4$ Roe$+\beta_5$Mp$+\beta_6$ P/E$+\beta_7$ Size $+\beta_8$ growth $+\beta_9$ ROS $+\beta_{10}$ ART +£

Information analysis method

The present study was applied research in terms of aim and descriptive in terms of nature and method. This research was a quasi-experimental research project in terms of design conducted using a post-hoc approach (through past information). To develop the theoretical foundations in the present study, library study was used, and then using the website of the stock exchange and also Tadbir Pardaz software, the initial data related to the companies were collected directly from the Tehran Stock Exchange and the financial statements of the companies. Multiple regression tests were used to calculate the relationship between the independent and dependent variables. The analysis of the data of this research and the testing of its hypotheses will be done in Excel and Eviews software. Then, they were transferred to Eviews software to perform the desired statistical test on them. Data analysis of variables was done by data panel method. To evaluate the stationary (reliability) of the study variables, LLC-Levin, *Lin*, and Chu and *Im, Pesaran,* and *Shin* unit root tests were used. The present study aimed to examine the characteristics of the company and the real return on stocks.

Results

Descriptive statistics of research variables

The research variables are summarized in Table 1. This Table includes indices to describe the research variables.

As seen in Table 1, the mean real return on stock is 0.307. This figure indicates that most observations are around this point. In other words, the return on stock of companies during the study period is about 30%. However, the median of variable of real return on stock is about 5% and close to zero. In other words, half of the companies had positive real return on stock during the study period that the highest return was 282.1%. Half of the companies also had a real return on stock of less than 5% that the lowest return on stock was -95.2%. The standard deviation value is 0.97, which indicates a relatively high deviation of real return on stock. The standard deviation shows the scatter rate of observations relative to the mean, so discretionary accruals have a scatter rate of 97% relative to the mean. The average size of the studied companies is 6.55. Also, the average return on assets is 9.9%. In fact,

Table 1. Descriptive statistics of research variables (number of observations: 588 years-companies)

Variable	symbol	mean	median	max	min	SD	Skewness	Kurtosis
Real return on stock (normal)	R	0.307	0.051	2.821	-0.952	0.970	1.185	3.822
Company size	SIZE	6.105	6.077	7.192	5.266	0.481	0.439	2.929
Return on assets	ROA	0.099	0.088	0.332	-0.110	0.115	0.304	2.567
Return on equity	ROE	0.252	0.239	0.717	-0.324	0.260	-0.191	2.706
Financial Leverage	LEV	0.613	0.623	0.975	0.262	0.194	0.022	2.210
Price to earnings	PE	0.769	0.437	3.364	-0.482	1.001	1.217	3.693
Book value to market value	BM	0.471	0.398	1.268	0.028	0.326	0.970	3.246
Margin profit (profitability)	MP	0.461	0.538	1.741	-1.245	0.625	-0.738	4.635
Company growth	GROWTH	0.162	0.138	0.794	-0.345	0.295	0.366	2.616
Return on sales (sales growth)	ROS	0.122	0.104	0.441	-0.237	0.166	0.008	2.807
Asset rate of turnover	ART	0.878	0.776	1.953	0.281	0.441	0.955	3.231

companies have a return or net profit of 10% of their assets. The lowest and highest returns are -11% and 33.2%, respectively.

In this regard, the mean return on equity is 25.2%. In other words, the margin profit after deducting tax on equity is about 25%. Financial leverage shows that 61.3% of companies' assets were due to debt. The highest and lowest debt ratios are 97.5% and 26.2%, respectively. The price to earnings also indicates that the ratio of profit after deducting tax to the number of ordinary shares issued is 0.769 on average. The mean of the variable of book value to the market value is 0.471 and shows that the book value of equity is almost half of its market value. Finally, among the independent variables, margin profit (ratio of net profit to net sales) is 46.1%. In other words, each company had an average of about 46% of net profit over its net sales. The average growth of companies is 16.2%. Although this growth is reasonable, these figures are not adjusted for inflation. In fact, given Iran's inflationary conditions, companies' sales growth may not only be positive, but also negative, and this growth may only be due to price increases (while production has decreased). The return on sales, which is obtained from the ratio of net profit to total sales, is 12.2%. Finally, the average asset rate of turnover is 78.8%. For this variable, the maximum and minimum asset rate of turnover is 195.3% and 28.1%. Table 2 also shows the skewness that is a measure of the asymmetry or symmetry of the distribution function. Examining the skewness of the variables in Table 2 indicates that the most skewness to the right was for the price to earnings (1.217) and the most skewness to the left was for the margin profit (-0.738).

It should be noted that for a perfectly symmetric distribution, the skewness is zero and for an asymmetric distribution with skewness towards higher values, the skewness is positive, and for an asymmetric distribution with skewness towards smaller values, the skewness value is negative. The lowest skewness is for return on sales (0.008). It should be noted that research variables are normalized before providing descriptive statistics and using in research models. Kurtosis describes the peak size of a probabilistic distribution. Examining the kurtosis of the variables shows that the most abnormal kurtosis (although all variables are within a reasonable range in terms of kurtosis) is for the margin profit. In other words, kurtosis is a measure of the sharpness of a curve at its maximum point and its value for a normal distribution is 3. As seen, all variables have kurtosis close to 3.

Correlation coefficient test of research variables

The results presented in Table 2 show that there is a positive correlation between real return on stock and company size (0.089). This correlation is significant at the 95% probability level. By examining the two-way relationship between real return on stock and company size, it can be seen that increasing company size leads to increasing real return on stock. There is also a positive and significant correlation between return on asset and real return on stock. In this regard, there is a significant negative correlation between real return on stock and financial leverage variables, price to earnings ratio and book value to market value ratio at the 95% probability level.

Degree of correlation between the independent and control variables can indicate the existence or non-existence of collinearity, so that if there is a high correlation between the two variables, it indicates the existence of collinearity. In this regard, it can be seen that the correlation of between return on sales and return on assets is at 77.6%. This correlation may affect the results of the estimated patterns. Therefore, it should be considered in estimating research models and collinearity test should be considered. Also, there is a correlation of nearly 60% between return on equity and return on assets, price to earnings ratio and return on

Table 2. Correlation coefficients of research variables

Variable / Probability	R	SIZE	ROA	ROE	LEV	PE	BM	MP	GROWTH	ROS	ART
R	1										
probability	-										
SIZE	0.089	1									
probability	0.030	-									
ROA	0.110	-0.009	1								
probability	0.008	0.826	-								
ROE	0.031	0.068	0.627	1							
probability	0.451	0.099	0.000	-							
LEV	-0.104	0.036	-0.551	-0.119	1						
probability	0.012	0.378	0.000	0.004	-						
PE	-0.089	0.065	0.614	0.595	-0.197	1					
probability	0.031	0.114	0.000	0.000	0.000	-					
BM	-0.093	0.129	-0.133	-0.292	-0.176	-0.156	1				
probability	0.024	0.002	0.001	0.000	0.000	0.000	-				
MP	0.007	0.019	0.496	0.405	-0.381	0.426	0.081	1			
probability	0.864	0.655	0.000	0.000	0.000	0.000	0.051	-			
GROWTH	0.048	0.000	0.240	0.238	-0.013	0.180	-0.164	0.064	1		
probability	0.248	0.995	0.000	0.000	0.757	0.000	0.000	0.123	-		
ROS	0.066	0.067	0.776	0.508	-0.592	0.607	0.006	0.611	0.145	1	
probability	0.111	0.107	0.000	0.000	0.000	0.000	0.877	0.000	0.000	-	
ART	0.069	-0.126	0.076	0.101	0.133	0.056	-0.162	-0.067	0.216	-0.134	1
probability	0.096	0.002	0.066	0.015	0.001	0.177	0.000	0.105	0.000	0.001	-

equity, return on sale and price to earnings ratio, and finally return on sales and margin profit. Although this correlation is not significant, it should be considered.

Investigating the stationarity of research variables

The results of stationarity test are listed in Table 3.

Table 3. Examining the stationarity of research variables

variable	symbol	Levin, *Lin*, and Chu test		*Im*, *Pesaran*, and *Shin test*	
		test statistic	probability of test statistic	test statistic	probability of test statistic
Real return on stock	R	-22.784	0.0000	-4.200	0.0000
Company size	SIZE	-18.137	0.0000	-3.581	0.0002
Return on assets	ROA	-33.195	0.0000	-4.067	0.0000
Return on equity	ROE	-28.055	0.0000	-2.728	0.0032
Financial Leverage	LEV	-15.372	0.0000	-1.414	0.0786
Price to earnings	PE	-54.345	0.0000	-5.390	0.0000
Book value to market value	BM	-1032.440	0.0000	-69.948	0.0000
Margin profit	MP	-36.754	0.0000	-4.676	0.0000
Company growth	GROWTH	-18.431	0.0000	-2.653	0.0040
Return on sales	ROS	-38.506	0.0000	-4.135	0.0000
Asset rate of turnover	ART	-13.028	0.0000	-1.809	0.0353

As seen in Table 3, based on both tests, all variables are stationary at the 95% level (except for the financial leverage, which is significant at 90% level in *Im*, *Pesaran*, and *Shin* test) based on both tests. Stationary means that the mean and variance of the study variables have been constant over time and the covariance of the variables has been constant on different years. Since all variables are stationary based on both tests, we do not need a co-integration test.

F-Limer and Hausman test

F-Limer test is first used to evaluate the selection one of the panel data or pooled data and it's probability of test statistic was 0.296**.** The probability of the F-Limer test statistic is higher than the 5% error level; the use of pooled data instead of panel data is confirmed. Given the results and confirmation of pooled data, there is no need to perform the Hausman test to determine random effects and fixed effects.

Testing of research hypotheses

To test the research hypotheses, the results of the model presented in Table 4 were used and the results of the hypothesis test were presented

As seen in Table 4, the statistic-F value is 8.274 and the F probability value (significance level) is 0.000, and since this value is less than 0.05, the null hypothesis is rejected at the 95% confidence level. The results of the coefficient of determination show that 12.6% of the changes in the dependent variable are explained by the independent and control variables of the model. Also, the adjusted coefficient of determination shows that 11% of the dependent variable changes are explained by the independent and control variables of the model. Considering the general significance of the model, it is possible to comment on the significance of each of the variables.

According to the results of the model presented in Table 4, it can be seen that the coefficient of the variable of company size is 0.312. Also, the probability of t-statistic related to the desired variable is 7.919, indicating that at the 95% confidence level; the coefficient of the company size is significant. According to the results, it can be seen that the coefficient of return on assets is 1.457. This coefficient is significant at 95% probability level based on t-statistic. It means that there is a significant relationship between return on assets and real return on stocks.

The coefficient of return on equity in this regression is negative (-0.123), but this coefficient is not significant at the 95%.

Table 4. Regression model of research hypotheses test

Ri.j =β0 +β1 B/M+β2 Lev+β3Roa+β4 Roe+β5Mp+β6 P/E+β7 Size +β8 growth +β9 ROS +β10 ART +£

variable	symbol	regression coefficients	SD	statistic t	statistic-t probability
Company size	SIZE	0.312	0.039	7.919	0.000
Return on assets	ROA	1.457	0.362	4.028	0.000
Return on equity	ROE	-0.123	0.089	-1.380	0.168
Financial Leverage	LEV	-0.295	0.151	-1.944	0.052
Price to earnings	PE	-0.259	0.012	-20.783	0.000
Book value to market value	BM	-0.372	0.080	-4.629	0.000
Margin profit	MP	0.016	0.042	0.366	0.715
Company growth	GROWTH	0.057	0.063	0.900	0.369
Return on sales	ROS	0.428	0.358	1.196	0.232
Asset rate of turnover	ART	0.222	0.090	2.475	0.014
Intercept	C	-1.488	0.280	-5.310	0.000

statistic-F	statistic-F probability	Durbin-Watson	coefficient of determination	adjusted coefficient of determination
8.274	0.000	1.920	0.126	0.110

Table 5. Summary of results of testing the research hypotheses

hypothesis	title	type of effect	significance	result
1	There is a relationship between company size and real return on stock.	positive	significant	confirmed
2	There is a relationship between return on asset and real return on stock.	positive	significant	confirmed
3	There is a relationship between return on equity and real return on stock	negative	non-significant	rejected
4	There is a relationship between financial leverage and real return on stock.	negative	significant*	confirmed
5	There is a relationship between price to earnings ratio and real return on stock	negative	significant	confirmed
6	There is a relationship between the ratio of book value to market value and the real return on stock.	negative	significant	confirmed
7	There is a relationship between margin profit and real return on stock	positive	non-significant	rejected

*Significance at 95% probability level.

probability level. The variable coefficient of financial leverage is -0.295. This coefficient has a negative and significant effect on real return on stock at the level of 90% confidence, so that with increasing the debt to asset ratio, real return on stock will decrease. Thus, the fourth hypothesis of the study that "there is a relationship between financial leverage and real return on stock" is confirmed at the 90% confidence level.

As seen, the price to earnings ratio is -0.259 and has had an effect on return on stock at the 95% confidence level. In other words, with increasing prices to profit ratio, real return on stock decreases. Therefore, the fifth hypothesis of the study is confirmed. The book value to market value coefficient is -0.372. This coefficient is also significant at the 95% probability level based on t-statistic.

As the results in Table 5 show, the margin profit coefficient is 0.016. This coefficient is not significant based on t-statistic. Therefore, it can be stated that margin profit does not affect real return on stock. However, increasing sales growth and return on sales do not have a significant effect on real return on stocks.

The hypotheses for the test in this study included the following: Company size, return on equity, financial leverage, price to earnings ratio, the ratio of book value to market value and margin profit and real return on stock Table 5.

Discussion

The results of the proposed model indicated that the coefficient of the variable of the size of pharmaceutical companies is 0.312. Also, the probability of t-statistic related to the desired variable showed that the coefficient of company size variable is significant at the 95% confidence level. In other words, it can be stated that with increasing the size of pharmaceutical companies, real return on stock will increase. In other words, pharmaceutical companies will be more efficient as they increase in size and they gain greater competitiveness. These issues ultimately lead to higher real return on stock for pharmaceutical companies. Hence, the first hypothesis of the study that states "The Role of Market Capitalization in the Relationship Between ROA, ROE and Stock Prices in Tehran Stock Exchange" was confirmed. A research project conducted by Chaharmahali et al., found that adding the company size factor to the regression between systematic risk and return on stock further explains the difference between the means of return on stock (6).

Consistent with the second hypothesis of the study, it was observed that the coefficient of return on assets is 1.457. This coefficient is significant at 95% probability

level based on t-statistic. Therefore, it can be stated that with the increase in return on assets, the return on real assets of the pharmaceutical company will also increase. Hence, the second hypothesis of the study is confirmed. It means that there is a significant relationship between the return on assets and the real return on stocks of the pharmaceutical company. Rosenberg et al., reported that there is a positive relationship between the average return on stock and the ratio of book value to market value in the US capital market (7).

The coefficient of the variable of return on equity of the pharmaceutical company in this regression was negative, but this coefficient was not significant at the 95% probability level. The reason for the lack of significance of the variable may be overlap between the return on assets and the return on equity due to high correlation. However, the collinearity test indicates lack of collinearity. Therefore, due to the lack of significance of the desired coefficient, the third hypothesis of the study was rejected. This hypothesis states that there is a relationship between the return on equity and the real return on stock of the pharmaceutical company.

The coefficient of the variable of financial leverage is -0.295. This coefficient has a negative and significant effect on the real return on stock of pharmaceutical companies at the level of 90% confidence. As the debt to asset ratio increases, real return on stock will decrease. Thus, the fourth hypothesis of the study that states "there is a relationship between financial leverage and real return on stock" is confirmed at the 90% confidence level.

The fifth hypothesis of the study states that there is a relationship between the price to earnings ratio and the real return on stock of the pharmaceutical company. As seen, the price to earnings ratio is -0.259 and has had an effect on real return on stock at the 95% confidence level. In other words, with increasing prices to profit ratio, real return on stock decreases. Thus, the fifth hypothesis of the study was confirmed. Based on the study conducted by Basu, the profit to price ratio includes the total of unknown factors related to return on stock, which can be called as risk factors. According to Basu, stocks with higher profit to price ratios are expected to generate higher expected returns. Basu, report that in addition to company size and systematic risk, the profit to price ratio is also effective in explaining the difference between returns in stock of a pharmaceutical company (8).

The book value to market value ratio coefficient is -0.372. This coefficient is also significant at the 95% probability level based on t-statistic. Thus, it can be stated that increasing the book value to the market value ratio of the pharmaceutical company leads to a decrease in the real return on stock of pharmaceutical companies. In other words, when book value approaches market value, it signals to shareholders of pharmaceutical companies that the company is facing internal problems and that investors are unwilling to buy stocks in the market and raise prices. Thus, the sixth hypothesis of the research that states "there is a relationship between the book value to market value ratio and real return on stock" is confirmed. Chan & Lakonishok, report that the book value to market value ratio can explain the difference between returns in stock in the Japanese capital market (9).

Finally, the seventh hypothesis of the research examines the role of margin profit on real return on stock. As the results showed, the margin profit coefficient is 0.016. This coefficient is not significant based on t-statistic. Therefore, it can be stated that margin profits does not affect the real return on stock of the pharmaceutical company. Therefore, the seventh hypothesis of the research that states "there is a relationship between margin profit and real return on stock of the pharmaceutical company" is rejected.

Asgarnezhad Nouri, showed that the ratios of liquidity, leverage, activity, earnings

management and company characteristics did not affect return on stock, but the positive effect of other factors, namely profitability ratios including equity rate of return, margin profit, market ratios such as return on market, cash flow ratios such as operating cash flows, risk indicators, earnings prediction indicators including earnings prediction time horizon, finally, investment in return on stock were confirmed (10). Ahmadzadeh Suraki, showed that there is a significant relationship between company size and return on stock and also between the book value to market value ratio and return on stock, but there is no relationship between the profit to price ratio and return on stock in manufacturing companies (11). Also, Foroughi & Mazaheri, showed a significant relationship between financial leverage and real return on stock (12). The studies conducted by Ahmadpour & Rahmani Firouzjaei (4) and Hashemi & Behzadfar, showed similar results (13).

The results of recent studies show that beta coefficient as a systemic risk index cannot explain the difference between the means of return on stock and in addition to systemic risk, other variables that are not within this model, have an effective role in explaining the difference between returns on stock (14).

Dehghani Ashkazari, investigated the relationship between information asymmetry and the relative gap between real returns and expected returns of companies listed on the Tehran Stock Exchange and showed a negative relationship between information symmetry and the relative gap between real returns and expected returns of the companies. It means that information asymmetry has a negative sign in relation to the value and price of the stock of company that cannot be favorable for the company and information asymmetry affects investment risk and with increasing information asymmetry, future returns of companies decrease in the Tehran Stock Exchange (15). The results of a research revealed that if the dividend is not paid initially, the return for profitable market stocks will first increase and then it will decrease by paying the dividend. Also, return on loss stock has a U-shaped relationship with dividend rate, but the return for those loss stocks for which the company did not distribute any dividend were as low as possible. The stocks of other companies, which are among the profitable and loss stocks, have had relatively similar returns, regardless of whether dividends are distributed or not (16).

In research investigated the effect of macroeconomic variables on the stock market on the Zimbabwean Stock Exchange. The results revealed that maximum return on stock in the Zimbabwean Stock Exchange are mainly affected by changes in the consumer price, money supply, exchange rate, and treasury bills (17). The results of recent studies in the last two decades indicate that in addition to systematic risk, other factors play a role in describing the mean rate of return on stock. For example, Dinarvand, report that there is a positive relationship between the mean rate of return on stock and the book value to market value ratio in the US capital market (18). Chan & Lakonishok (9) and Daniel et al. (19) reported that the book value to market value ratio can also explain the difference between return on stock in the Japanese capital market.

The results of studies by Fama & French, (3) confirm the results of the study conducted by Dinarvand (18), Basu (8) reported that in addition to company size and systematic risk, earnings to price ratio is effective in explaining the difference between returns on stock. Basu, argues that profit to price ratio includes the sum of unknown factors related to return on stock, which can be called as "risk factors". Bhandari, also reported that there is a positive relationship between the average rate of return on stock and financial

leverage. The results of these studies and other similar studies indicate that the mean rate of return on stock has a significant relationship with variables such as company size, book value to market value ratio, profit to price ratio, financial leverage, cash flow to stock price ratio, etc. (20). Since the mentioned variables are not included in the framework of the CAPM model, these variables are often referred to as "stock market exceptions".

Although empirical evidence from these exceptions is growing, their interpretation remains unclear. For example, using the results of previous studies and relying on Fama & French (3) and Rasekh et al. (21) regression, Fama & French, examined the relationship between the beta, company size, book value to market price ratio, financial leverage, and profit to price ratio variables and with expected return on stock in the US capital market (3). They concluded that the systematic risk (beta) can explain the differences between returns on stock during the study period (1963-1990). They also found that among the studied variables, the two variables of "company size" and "book value to market value ratio" better explain the difference between the mean rates of return on stock. The experimental results of Fama & French, clearly show that there is no significant relationship between beta and return on stock by controlling company size and beta, and the mean rate of return on stock can be explained by the combination of company size, book value to market value ratio, and profit to price ratio (3). The results of recent studies show that the beta coefficient, as an index of systemic risk, does not have the ability to explain the difference in average stock returns, and other than systematic risk, other variables that are not in the framework of this model play an effective role in explaining the difference in stock returns (22).

Recommendations

To conduct future studies related to this study, it is recommended to use the meta-analysis method to investigate the role of some other influential variables in the return on stock of companies such as macroeconomic variables. Also, given the importance of the mentioned indicators, it is recommended to prioritize each of the indicators based on hierarchical ranking methods. The regression relationship of this research has been estimated for all pharmaceutical companies that are members of the statistical sample together, so it is recommended to estimate this relationship separately for different companies, since the rate of real return varies in different industries. Paying attention to issues of financial and economic crisis given the Iran condition can affect the real return on stocks and the factors affecting it. Thus, it is important to consider the factors affecting the real return on stocks in times of financial and economic crisis. Finally, the application of panel regression method in identifying the factors affecting real return on stock, some other financial variables such as capital structure, financial performance, working capital management, etc. is another good recommendation for future research.

Conclusion

By identifying the factors affecting the real return on stock of pharmaceutical companies, it can be stated that return on stock is one of the most important and complex concepts influenced by important factors. Thus, the stock price behavior of pharmaceutical companies can be determined with more accuracy and better quality, and thus more effective decisions can be made in this regard. Owing to the importance of the two variables of risk and return in the decision of shareholders of pharmaceutical companies to invest in financial markets, identifying the factors affecting the return on stock of companies can help shareholders to make rational decisions and thus the conditions for development of Tehran Stock Exchange in the long term are provided. Accordingly, the effect of financial ratios on return on

stock has been quite different. In other words, the shareholders of pharmaceutical companies in their financial analysis should pay attention mainly to profitability ratios, market and cash flows, including net profit, return on assets, financial leverage, book value to market ratio, and company size.

Author's contribution

Hojjatollah Marzban and Reza Sotudeh developed the study concept and design. Habib Piri acquired the data. Hojjatollah Marzban and Reza Sotudeh analyzed and interpreted the data, and wrote the first draft of the manuscript. All authors contributed to the intellectual content, manuscript editing and read and approved the final manuscript.

Informed consent

Questionnaires were filled with the participants' satisfaction and written consent was obtained from the participants in this study.

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Conflict of interest

The authors declare that they have no conflict of interests.

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