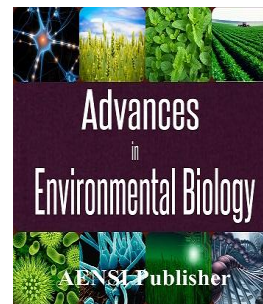




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Investigation of Impact of the Years' Month on Return, Fluctuation and Trade Volume in Tehran Stock Exchange

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ABSTRACT

The main goal of the current study is to examine the impact of the years' month on return, fluctuation and trade volume in Tehran stock exchange. The relation between the variables is examined with 46 listed companies in Tehran stock exchange using panel data during 2008 to 2011. The findings indicate that calendar anomalies is existed in Tehran stock exchange than can be essential for capital market activists, managers, investment and consulting companies and also for investors who make their decisions and strategies based on Tehran Price Index (TEPIX).

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INTRODUCTION

Till two recent decades, there has been no attention to financial and economic fields and generally believe that the aim of equity maximization was passing over rational decision-making barrier, unaware that the human is the main factor and motivation in financial marketes that limits rational and intellectual decision-making. Efficient market hypothesis proposed by Fama facilitated this thinking and propagated this perspective. Till now, Herbert Simon (1995) proposed "Bounded Rationality". He noted people don't behave based on provisions of rational decision process in their economic and non-economic decisions and it may be resulted from bounded rationality [10]. In addition to Simon hypothesis, he challenged emerging phenomena in financial market such as price bubble in stock market, over fluctuations in stock, overreaction of investors to new information, efficient market paradigm. The rationalists gradually confirmed some weaknesses which led to forming a noble mental school as "Behavioral Finance Knowledge".

During revolution of financial paradigms, a series of "Financial Dilemmas" occupied thinkers' mind which made them to more approach toward behavioral fields. Financial anomalies and empirical dilemmas indicating market deviations from rational and intellectual principals were inconsistent with efficient market [2]. This is one of complex issues of "Periodical Anomalies" which confirms determined patterns in different times of year, month, week and day. Balaban (1994) argues that "Periodical Effects" is one of predictable pattern in stock return behavior that can be used in gaining extra income and that challenges efficient market hypothesis. Some empirical examinations have indicated that using some of mentioned patterns may result in extra income. Therefore, calendar or periodical effects can be considered as one predicting factors of stock future behavior [3].

In this study, "anomalies" of capital market as "monthly effect" is searched for and argues that there is heteroscedasticity between essential variables of market, i.e. return, fluctuation and trade volume during different months of a year. In other words, there is no regular pattern of data series during different month of a year, if so, it can be possible to examine return calendar patterns, fluctuations and trade volume through utilizing some strategies. Totally, the study of monthly effect is more needed in countries with new stock exchange such as Tehran Stock Exchange. The effects can partly suitable guidance for shareholders in stock trading.

*Research methodology:**Research's hypotheses:*

- 1) Months of a year impacts on stock returns of the listed companies in Tehran stock exchange.
- 2) Months of a year impacts on stock price fluctuations of the listed companies in Tehran stock exchange.
- 3) Months of a year impacts on trade volume of the listed companies in Tehran stock exchange.

It should be noted that each research's hypotheses is composed of 12 secondary hypotheses. For each month, in fact, three variables of return, fluctuation and trade volume are examined which finally we have 36 secondary hypotheses.

Research population and statistical samples:

In this research, statistical population of the study includes all listed companies (481 firms) in Tehran stock exchange which has the following characteristics:

- They should be listed in Tehran stock exchange until the end of 2007 (48 firms were omitted).
- Their stocks should continuously trade in Tehran stock exchange during 2008 to 2011 (99 firms were omitted).
- Their fiscal year ends in 19/3/ (45 firms were omitted).
- They should not be loss firms in two consecutive periods.
- They should not be a part of banks and financial institutions (investment companies, intermediary companies, leasing, holding and banks).
- Their free float should not be less than 10%. Since trade volume is one of the research's hypothesis, the case may help to examine more accurately because if free float is more than 10%, a firm would have higher liquidity (151 firms were omitted).

After the above limitations and using Cochrane method, 46 companies were selected.

*Definition of the research's variables and way of measuring:**Months of a year (Independent variable):*

It is examined through a dummy variable which is used for each month.

Return (dependent variable):

Total profit or loss on an investment is specified during a period. Return includes income, compensation or a result from investment in a determined period which can be calculated based on monetary amount or percent of investment in beginning of a period, or difference in logarithm of beginning of a period.

Return on equity:

Rate of return calculation is important in financial management, because most judgments and decisions are made upon it, indicating changing percent of shareholders' wealth in a period.

Trading volume:

Trading volume can impact on this variable due to difference in stock price and range of stock price changes. To prevent this, number of traded shares in replace of monetary amount during the investigation.

Data analysis method:

In this research, "constant Y-intercept assumption" and "coefficients during time and space" and "difference in error term during time and for different factors" have been used which are used for each equation using f-statistics. Ordinary Least Square (OLS) is the used regression method. If we face with some problems in performing OLS such as heteroscedasticity and regression residue autocorrelation, Generalized Least Squares (GLS) is used to modify the model. This model contains all mentioned characteristics of OLS and the only difference is occurred when weighting to regression residue variance, autocorrelation is modified and regression's results are improved. Hausman test is used to select between fixed effects and random effects models.

*Research's results:**Examination of heteroscedasticity:*

Table 1: Results of LM test of the model.

Description	Statistics amount	Probability
F-statistics	1.218548	0.1432
Obs*R-squared	1.845525	0.1432

According to the table 1, the statistics of the test is not significant in 5% level, homogeneity of variance is confirmed and heteroscedasticity of error terms is rejected.

*F statistics test:***Table 2:** Results of F statistics test.

Description	Statistics	Freedom degree	Possibility
Cross-section F	1.557120	45	0.0014
Cross-section Chi square	153.210535	45	0.0021

*Hausman test:***Table 3:** Results of Hausman test.

Description	Statistics	Freedom degree	Possibility
Cross-section F	6.214585	5	0.0121

Regarding the results of both tests in tables 3 and 4 (F and Hausman), the obtained possibility were less than 5% in each tests, so fixed effects method should be used in the related regression model.

*First hypothesis test:***Table 4:** Multiple linear regression of the research's variables.

Variable	B	t	Sig.	DW	Adjusted R-squared	F	Sig.
March	21.125	5.258	*0.000	1.625	0.524	15.265	**0.000
April	-52.221	-1.265	0.085	1.855	0.158	14.588	**0.000
May	14.055	5.021	*0.000	2.058	0.415	15.299	**0.000
June	42.069	4.852	*0.002	1.658	0.333	14.058	**0.000
July	32.285	5.415	*0.000	1.529	0.209	15.047	**0.000
August	26.305	5.299	*0.000	1.614	0.311	14.755	**0.000
September	-12.104	-4.558	*0.018	1.922	0.288	14.882	**0.000
October	-31.314	-5.015	*0.000	2.325	0.412	14.921	**0.000
November	-16.185	-1.362	0.099	1.774	0.144	15.222	**0.000
December	44.218	4.917	*0.000	1.841	0.1777	14.658	**0.000
January	96.299	3.947	*0.022	2.332	0.311	16.244	**0.000
February	-28.048	-5.511	*0.000	1.719	0.232	15.633	**0.000

* 5% error level; ** 1% error level

Regarding the table 4, since Durbin-Watson statistic test value is determined among 1.5 to 2.5, lack of correlation between errors is not rejected and regression can be used. Due to F value test is significant in error level less than 0.01, it can be concluded for all months that panel research regression model which composed of independent and dependent variables is a suitable model and it can describe stock return changes.

*Second hypothesis test:***Table 5:** Multiple linear regression of the research's variables.

Variable	B	t	Sig.	DW	Adjusted R-squared	F	Sig.
March	14.259	5.695	*0.000	1.859	0.215	22.514	**0.000
April	-22.369	-4.581	*0.028	1.547	0.321	21.251	**0.000
May	42.526	1.487	0.075	1.666	0.158	18.596	**0.000
June	25.108	1.588	0.088	2.148	0.248	19.547	**0.000
July	-28.629	-5.629	*0.000	2.069	0.333	20.336	**0.000
August	-85.298	-5.487	*0.000	1.995	0.155	18.487	**0.000
September	-55.587	-5.148	*0.000	2.362	0.196	19.996	**0.000
October	62.358	5.329	*0.000	2.447	0.362	20.658	**0.000
November	34.277	4.789	*0.002	1.662	0.0348	21.447	**0.000
December	29.255	5.121	*0.000	1.954	0.309	18.326	**0.000
January	-11.45	-2.159	0.098	1.627	0.548	21.111	**0.000
February	-34.59	-6.302	*0.000	1.558	0.485	20.663	**0.000

* 5% error level; ** 1% error level

Regarding the table 5, since Durbin-Watson statistic test value is determined among 1.5 to 2.5, lack of correlation between errors is not rejected and regression can be used. Due to F value test is significant in error level less than 0.01, it can be concluded for all months that panel research regression model which composed of independent and dependent variables is a suitable model and it can describe stock return changes.

*Third hypothesis test:***Table 6:** Multiple linear regression of the research's variables.

Variable	B	t	Sig.	DW	Adjusted R-squared	F	Sig.
March	48.253	5.201	*0.000	1.994	0.214	22.152	**0.000
April	-98.088	-6.321	*0.000	2.148	0.188	19.623	**0.000
May	12.157	5.662	*0.000	2.002	0.359	21.854	**0.000
June	-38.225	-4.158	*0.015	1.625	0.523	18.489	**0.000
July	-52.148	-5.623	*0.000	1.854	0.455	21.111	**0.000
August	36.319	4.589	*0.000	1.549	0.495	21.447	**0.000

September	62.284	4.514	*0.000	2.199	0.218	18.632	**0.000
October	-55.149	-4.854	*0.021	1.623	0.399	19.655	**0.000
November	-83.332	-1.659	0.158	1.995	0.248	19.748	**0.000
December	-17.199	-4.058	*0.000	2.114	0.127	18.209	**0.000
January	68.218	5.623	*0.000	1.706	0.529	18.498	**0.000
February	77.065	5.022	*0.000	1.622	0.309	19.908	**0.000

* 5% error level; ** 1% error level

Regarding the table 6, since Durbin-Watson statistic test value is determined among 1.5 to 2.5, lack of correlation between errors is not rejected and regression can be used. Due to F value test is significant in error level less than 0.01, it can be concluded for all months that panel research regression model which composed of independent and dependent variables is a suitable model and it can describe stock return changes.

Conclusion and recommendations:

First hypothesis:

This hypothesis examines the monthly impact on stock return of the listed companies in Tehran stock exchange. The obtained results indicate that there is a significant relation in all months except April and November. Hence, it is argued that there is significant relation between two variables in some months (March, June, July, August, October, December, and January) in 95% confidence level and it may be resulted from that Iran's capital market begins at March (regarding the opening of market after Nowruz holidays and returning the shareholders' capital to the market, and also due to paying dividends and offering quarterly and fiscal year report of firms' incomes may be increased in July and August and because seasonal report of firms and pre adjustment in their fiscal year as well as returning incomes may increase dividends. As well, there is a negative association between September, October and January which may result from closing to the end of the year and, the need of shareholders to liquidity may cause to exit shareholders from capital market and paying dividends. Also, there is not found any relation between April and November.

Second hypothesis:

There is a significant relationship between monthly effect and fluctuation of stock price of the listed companies in Tehran stock exchange. The positive coefficient during months of March, October, November and December indicates the positive relation between the two variables, i.e. regarding stock return may result from price fluctuations, it is stated in stock return definition that "changes in stock price plus to other incomes during a year", therefore, during the mentioned months, the firms have higher positive fluctuation due to beginning of a year and season of assemblies as well as and their seasonal report. Also, there is a negative relation between the two variables in months of April, July, August, September and February. On the other hand, due to dividends payment at the end of the year, beginning of holidays and other factors may cause negative fluctuations of the market. As well, there is no relation between monthly impact and stock price fluctuations in months of April, July, August, September and February.

Third hypothesis:

There is a significant relation between monthly impact and trading volume of the listed companies in Tehran stock exchange. The results indicate that there is a significant relation between the two variables during eleven month of the year and positive coefficient in months March, June, August, September, January and February indicates the positive relation between them. Therefore, there is a positive significant association among the two variables in 99% confidence level. Increased trading volume in March is due to returning of investors from holidays and starting the New Year and entering into capital market. This improvement is resulted from seasonal reports and holding assemblies in months of June, August and September. This is occurred in the end of the year based on two reasons: the first one is major shareholders and the second one is salaries by which they show their performance as positive, and it may cause increased incomes of subsidiaries and themselves which finally lead to increased trading volume.

The obtained results demonstrate that trading and timing of model has essential role in investors' decisions and investment time and the time of entering and exiting from capital market is important for shareholders. Shareholders should put their invest based on months of a year, fiscal year of firms, seasonal report and prediction of firms about operations and income amount in order to maximize return and performance for their investors. The study places its emphasis on the time of entering and exiting of a stock and the importance of year's months. It is expected that investors of capital market decide with board perspective and strategies to more value on their investment time in portfolio. The following recommendations are made based on the research's results:

1. Examining the impact of real causes of return fluctuations and trading volume at the beginning and finishing days of a week.
2. Examining investment risk in special days of a week (for example, beginning days or weekends).

3. Examining the impact of a month on return fluctuations and trading volume of investment and holding companies.
4. Examining the relation between days of a week and predicting of prices and events of subsequent weeks.

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