Studying Relationship between Annual General Meeting and Stock Returns, Stock Trading Volume and Stock Return Fluctuations: Case of Cement Companies Listed on Tehran Stock Exchange

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Abstract

This study investigates the relationship between annual general meeting and stock return, stock trading volume and stock return fluctuations of cement companies listed on Tehran Stock Exchange. This paper is to examine the effect of annual general meeting on stock return, stock trading volume, and stock fluctuations by employing an integrated model including panel data approach. To do so, 29 companies are selected from the cement group companies listed on the Tehran Stock Exchange. We use an integrated research methodology including panel data and regression panel approach. Research results suggest that there is a significant and direct relationship between holding annual general meeting and stock returns and such a meeting is significantly and positively related to the volume of stock trading. However, there is no significant relationship between holding the annual general meeting and stock return fluctuations. In other words, the meeting has no effect on the stock return fluctuations of cement companies.

Keywords: annual general meeting, stock returns, stock trading volume, stock return fluctuations.
1. Introduction

Can we predict prices or obtain higher level of risk-adjusted return than that of average amount of the market by applying specific trading methods? The preceding questions are among the very primary ones comes into mind of every individual or institutional investors in the capital market. Is it possible to take advantages of market trends by recognizing them or to discover certain patterns determining stock prices changes? Every risk averse investor entering the investment market tries to maximize their return at a certain risk level. Another issue worthy of discussion and emphasis is market development. Research paves the way for development and, therefore, to provide the basis for development, it is essential to improve the required conditions for conducting proper and necessary research toward localizing theories of developed world, which needs coordinated and carefully defined strategy. On the other hand, economic development is the cornerstone of any type of development and many articles and studies have been conducted in recent years to put emphasize on strong relationship between financial development and economic development. As a result, focusing on fundamental and applied research in capital market is an undeniable need. Given what was mentioned above besides the essential need to expand the scope of financial literature, which lacks both in its depth and richness, and to acquire the most up-to-date knowledge in the present world, at least in the field of fundamental knowledge, this study examines one of the newest fields in the financial management, i.e. the knowledge of behavioral finance, which deals with the behavior of capital market and its behavioral and psychological aspects. In General, the present paper focuses on the evaluation of the relationship between annual general meeting and stock return, trading volume and fluctuation of stock return of cement companies listed on the Tehran Stock Exchange.

2. Problem statement

Although investigating the effects of corporate events on stock return includes very clear trend of researches performed on accounting and finance, the issue of annual general meeting (AGM) is still one of the most important corporate events that has attracted little attention. The impact of the AGM on dividends mainly relies on the relevance of information published on the market as well as level of financial market efficiency. This study examines the effect of the AGM on the stock return, trading volume and fluctuations of stocks in the cement companies listed on the Tehran Stock Exchange. As believed by economists, we may not use correctly the methodology taken by prior studies, on investigating the reaction of stock return to specific corporate events, to examine the efficient market. Because, in the face of the assumption taken by the methodology that suggests any delay in response of prices to an event is short-lived, the stock return must be investigated over a long period of time to be able to reach a conclusion on the market efficiency (Fama, 1998).

Several studies have attempted to evaluate the stock price reaction to a wide variety of corporate events among which meetings discussing the amount of revenue is one of the most common ones. Another widely investigated corporate event is about meetings held to declare the dividends. Other examples of corporate events receiving much attention in the literature include: stock separation (Lamoro and Poun, 1987; Ikembery et al., 1996), corporate news (Battacharaya et al., 2001; Chan, 2003; Kothari et al., 2008) and executive plans for salary and benefits (Tehranian and Waglin, 1985; Gior et al., 1992).
In addition to the events, which have been extensively investigated, stock price reaction to the change of auditors (Hung, 1992) or sudden death of CEO (Johnson et al., 1985) are examples of other corporate events, which are relatively unusual. The common point between all the above-mentioned events is the dissemination of potentially relevant information in the market. Therefore, it is a wonder that why one of the most important corporate events, i.e. the AGM has been grossly neglected in the literature. Because, during these meetings, senior corporate executives not only address shareholders but also the entire financial community and, there are certain decisions must be only made in the AGM like board elections and declaration of holding important management meetings that usually deal with viewpoints of executives about company's future and other decisions made in these meetings. Due to very small number of previous researches carried out on this topic, other empirical evidence in this field should be welcomed to be able to come to more definite conclusion on the effect of shareholders meetings on stock returns, stock trading volume, and fluctuations of stock and other possible available descriptions. Therefore, we examine behavior of stock return, trading volume and fluctuations of stock return around the date of the AGM in Tehran Stock Exchange. By doing so, we hope to arrive at a more comprehensive approach and a better understanding of the hidden reasons behind the behavior of return, volume and fluctuation of stock return during the AGM.

3. Research background

Berkeley (1985) studied the effects of AGM on stock returns regardless of trading volume and fluctuations of the stock. He performed this research on a sample randomly selected from US companies between 1978 and 1982. According to result of t-test, the abnormal stock return was significantly positive around the date of holding the general meeting of shareholders. The results showed that holding the general meeting of shareholders has no significant impact on return of stock market.

Olib (2002) examined the effect of the AGM on trading turnover and the fluctuations of its stock without considering the stock return. The subject of this investigation was the UK companies listed on the US market between 1994 and 1998. The author specifically reported high levels of fluctuations in stock return during [+10 and -10] days around the date of the AGM. However, the AGM had minimal effect on trading volume, which indicated that the US investors usually did not care much about the informational value of the annual general meetings.

Giuseppe Garcia et al (2010) studied the effect of the AGM on stock return, stock fluctuations, and trading volume in the Spanish Stock Exchange in the period from January 2002 to June 2009. The effect of the AGM on dividends was mainly dependent on the relevance of the information published on the market and the level of financial market efficiency. The results showed that the AGM, whether on exact day of its occurrence or in days approaching the meeting, had no significant impact on any of these three indicators.

Soheili (2009), in his thesis, studied the relationship between the volume of transactions and holding the AGM of companies listed on Tehran Stock Exchange between 2005 and 2007. Research population consisted of 281 companies. These researchers tried to examine the difference of trading volume before and after the AGM by using econometric and statistical tests. In general, results suggested that holding general meetings on the equity affected the volume of trading. This means that the volume of transactions after the meeting was larger.
than the trading volume before the meeting. According to this study, trading volume in July was greater than other months.

Shahverdiani et al (2013), in their study, evaluated the effects of lunar calendar on stock return and daily trading volume in Tehran stock exchange over the period from 2004 to 2011. The methodology of this research included performing analysis by employing integrated methods and, results confirmed the effect of Ramadan and Muharram months on stock returns of Tehran Stock Exchange. It means that the amount of return increased with the start of the two respective months. Nevertheless, there was no significant difference in trading volume during these two months.

Table 1. Summary of the results of previous research

<table>
<thead>
<tr>
<th>Row</th>
<th>Researcher's name</th>
<th>Research topic</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Manuchehr Soheili (2009)</td>
<td>The relationship between the volume of transactions and holding the AGM of companies listed on Tehran Stock Exchange</td>
<td>It affects the volume of trading. This means that the volume of transactions after the meeting was more than trading volume before the meeting. Trading volume in July was greater than other months.</td>
</tr>
<tr>
<td>2</td>
<td>Shadi Shahverdiani (2013)</td>
<td>the effects of lunar calendar on stock return and daily trading volume in Tehran stock exchange</td>
<td>The effect of Ramadan and Muharram months on stock return of Tehran Stock Exchange was confirmed. However, there was no significant difference in trading volume during these two months.</td>
</tr>
<tr>
<td>3</td>
<td>Berkeley (1985)</td>
<td>The effects of AGM on stock returns regardless of trading volume and fluctuations of the stock</td>
<td>The results showed that holding the general meeting of shareholders has no significant impact on return of stock market.</td>
</tr>
<tr>
<td>4</td>
<td>Olib (2002)</td>
<td>The effect of the AGM on trading turnover and the fluctuations of stock without considering the stock return</td>
<td>Author concluded that US investors are usually careless about the informational value</td>
</tr>
</tbody>
</table>

The results showed that the AGM, whether on the day of occurrence or in days approaching the meeting, had no significant impact on any of these three indicators.

4. Research hypotheses

The research hypotheses are as follows:

First hypothesis: there is a significant relationship between stock return of companies listed on Tehran Stock Exchange and holding the AGM.

Second hypothesis: there is a significant relationship between trading volume of companies listed on Tehran Stock Exchange and holding the AGM.

Third hypothesis: there is a significant relationship between stock return fluctuations of companies listed on Tehran Stock Exchange and holding the AGM.

In the first stage, the hypothesis on significant relationship between stock return and holding the AGM is examined (the first hypothesis). Then, the relationship between stock trading volume and holding the AGM will be evaluated (second hypothesis). And, in the end, with no confirmation, the positive relationship between stock return fluctuation and holding the AGM will be tested (third hypothesis).

5. Descriptive findings of research variables

Tables 1 illustrates the variables including stock return, trading volume and stock return fluctuations during 29 observations within a year as follows. Table 2 represents the companies selected as the research sample.

<table>
<thead>
<tr>
<th>Row</th>
<th>Description of variables</th>
<th>Mean</th>
<th>Mode</th>
<th>Standard deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Stock return</td>
<td>3.53</td>
<td>2.43</td>
<td>3.66</td>
<td>0.08</td>
<td>18.95</td>
</tr>
<tr>
<td>2</td>
<td>Trading volume</td>
<td>5.49</td>
<td>16.98</td>
<td>0.07</td>
<td>1.0</td>
<td>501</td>
</tr>
<tr>
<td>3</td>
<td>Stock return fluctuations</td>
<td>39.19</td>
<td>9.00</td>
<td>155.74</td>
<td>-17.00</td>
<td>466</td>
</tr>
</tbody>
</table>

This paper uses panel data analysis and panel regression methods. The variables, which are used on the ground of conceptual model, are embedded in the mathematical model in a way that can be applied to test the hypotheses. Afterwards, proper definitions of variables and methods of calculating them are provided.

So to use the panel data, various tests must be done to determine the suitable estimation method. Of the most common methods are Hausman test, to select one of the fixed effect models or random effect model, and Breauh-Pagan (LM) test, to choose a random effect
model or integrated data model. Testing process is initiated by choosing the suitable model; if the data is not selected randomly from a large set of data, the fixed effect model is employed. But, in the case of random selection of the data, both fixed effect and integrated effect models will be estimated. In the next step Hausman Test will be performed. If the statistics of this method indicates the estimation by fixed effect model, this model will be estimated. But if this statistic represents model estimation by random effect model, then Breush-Pagan (LM) test must be applied to choose one of the random effect or data integration (Baltagi, 2005).

To use panel data with a fixed effect approach, the following tests must be performed:

**5-1. Hausman Test**

Hausman (1987) has introduced a test to choose between fixed effect model and random effect model. In this test, the null hypothesis forms $X_0$, considering the lack of correlation between effects of units ($\mu_i$), which are parts of disturbance term and they are unobserved. But these two variables may be correlated. In this case, GLS estimator, i.e. $\beta_{GLS}$, is biased and inconsistent with $\beta$. While, internal conversion eliminates the $\mu_i$s and makes the fixed effects estimators, i.e. $\beta_{within}$ or $\beta_{FE}$ unbiased and consistent with $\beta$.

$$H_0 : \delta^2_\alpha = 0 \rightarrow \text{Pool}$$
$$H_1 : \delta^2_\alpha > 0 \rightarrow \text{Random Effect}$$

In these hypotheses, $\delta^2_\alpha$ indicates cross-sectional variance of model estimated through random effect. If the effect of cross-sectional variance is negligible in the random effect model, the total data combination method (integration) and ordinary least square estimation can be used to assess the relationships between variables. To calculate the statistics, the estimation error of integrated data is used as follows:

$$LM = \frac{NT}{2(T-1)} \left[ T \sum e_i^2 - \sum \sum e_{it}^2 - 1 \right] \approx X^2_i$$

In the above equation, $e_{it}$ is the estimation error of integrated data model and $\bar{e}_i$ is the error average in the first time. If the first hypothesis is supported, this statistic has $\chi^2$ distribution and degree of freedom is 1. Thus, the suitable estimation model can be chosen through various tests. After selecting the proper model, we must assure that the time series is stationary and regression is not spurious (Baltagy, 2005).

**5-2. Heteroskedasticity**

Heteroskedasticity is one of the problems may happen here. In the opinion of Baltjay (2005), it can be a limiting assumption for panel data when the cross-sectional units have different sizes such as displaying a result of different changes. In Heteroskedasticity test, $H_0 = \sigma_i^2 = \sigma^2$ and $H_A$ indicates that it is not equal for all values of $i$.

**5-3. Serial correlation**

Serial correlation refers to a situation in which residuals are correlated over the course time. Ignoring serial correlation where it exists leads to stability. But it also leads to inefficient
estimations and biased standard errors. To test the serial correlation, fixed data effects is measure by:

\[ H_0: p_0 \text{ and } H_A: |p| > 0 \]

P is a linear estimation of the relationship between the residuals in the current period and prior period (ibid, p. 10), which is fully described in the section bellow.

5-4. Multivariate regression

Determining the correlation between the criterion variable (which we are going to predict) and the combination of predictor variables, each of which is somehow correlated with this variable, is of great importance in some research. The procedure through which the predictor variables are combined is "multivariate regression". In this method, a multivariate regression equation, which summarizes result of measuring predictive values in one formula, is calculated. Coefficients of the equation for each variable are calculated and determined based on its importance in predicting the criterion variable. The coefficient represents correlation degree between predictor variables in multivariate regression equation and the criterion variable.

Multivariate regression has different methods. The difference between its various methods is about how to select the predictor variables.

We use the following equation to determine the regression in our study:

\[ Y = a + b_1x_1 + b_2x_2 + \cdots + b_nx_n + u_t \]

Y: company's performance  
\( a \): intercept  
\( x_1, x_2, \ldots, x_n \): all variables used in this study  
\( b_1, b_2, \ldots, b_n \): regression coefficient obtained for all variables in this study  
\( u_t \): error terms.

In such a model, the following basic assumptions are considered:

Xs are random variables. In addition, there is no full linear relationship between two or more independent variables. For all observations, mathematical expectation of error term is zero and the variance of its value is constant. Error terms, related to various observations, do not correlate with each other. Error term is normally distributed.

The coefficient of determination is a measure explaining the strength of the relationship between independent and dependent variables. In fact, the value of the coefficients specifies what percentage of changes in dependent variable is explained by the independent variable.

Value of \( R^2 \) is determined by the following equation (Pindik and Robinfield, 1991):

\[
R^2 = 1 - \frac{\sum (y_i - \hat{y}_i)^2}{\sum (y_i - \bar{y})^2} = 1 - \frac{SSE}{SST}
\]

Where:

SSE is changes in error term, which is not explained by the regression.

SST is all changes in the values of dependent variable.

However, it is often preferred to use another measure called adjusted coefficient of determination (R bar squared) to evaluate the Goodness of Fit for multivariate regression model. It is closely related to the coefficient of determination where SST and SSE values have
been adjusted with their degree of freedom. The following formula is used to calculate the coefficient in multivariate regression.

\[ R^2 = 1 - \left( \frac{SSE}{n - k} \right) = 1 - \left( \frac{SSR}{n - 1} \right) = 1 - \left( \frac{(n - 1)}{(n - k)} \right) (1 - R^2) \]

Where \( n \) is the number of observations and \( k \) is the number of independent variables. In fact, the objective of using \( R^2 \) is to facilitate comparing goodness of fit for several regression equations, which are different in terms of the number of explanatory independent variables. There are two or more independent variables in multiple regression analysis which their significance must be determined by performing two tests. First, significance test of regression equation and, then the significance test for each one of independent variables coefficient in the equation.

5-5. Significance test of regression equation

If there is no relationship between dependent and independent variables, in a multiple regression equation, all coefficients of independent variables must be equal to zero. Thus, we can test the significance of regression equation. To do so, we use the F-statistics by considering the following hypotheses (Abbasinezhad, 2001; Zolnur, 1995):

- \( H_0 : \beta_1 = \beta_2 = \cdots = \beta_k = 0 \) Regression equation is not significant.
- \( H_1 : \beta_i \neq 0 : i = 1,2,\ldots,k \) Regression equation is significant.

If at 95% confidence level (\( \alpha = 5\% \) error), the F-statistics, calculated from the regression equation, is less than F-value obtained from the table, \( H_0 \) cannot be rejected, otherwise, \( H_0 \) will be rejected. It is obvious that the regression equation will be significant if \( H_0 \) is rejected. After testing the significance of regression, the significance of each coefficients must be tested. The purpose of this test is to see whether the calculated alternative coefficient is zero at desired level of confidence or not? We can formulate the above hypotheses as follow (Zolnur, 1995):

- \( H_0 : \beta_i = 0 \) Coefficient of population is zero.
- \( H_1 : \beta_i \neq 0 \) Coefficient of population is not zero.

We use the t-statistics to test these hypotheses. At 95% level of confidence(\( \alpha = 5\% \) error), if the statistics obtained from the test is less that t obtained from the table with the same degree of freedom, \( H_0 \) is supported, otherwise it will be rejected. In this test, if the \( H_0 \) is not rejected, it means that the respective coefficient is insignificant and, if the \( H_0 \) is rejected, it suggests that the given coefficient is significant.

5-7. Durbin-Watson Test

Independence of errors (difference between actual and predicted values) from each other is another premise considered in the regression analysis. If this hypothesis is rejected and errors are correlated with each other, the regression analysis cannot be performed. Durbin – Watson test is used to evaluate the independence of errors form each other. If the correlation between errors is denoted by \( \rho \), then the Durbin – Watson statistics will be \( DW = 2 (1-\rho) \). The value of this statistics is between 0 and +4 and, if this statistics is in the range of 1.5 to 2.5, assumption on the lack of correlation between errors (or the independence of errors) will be supported. If the statistics of test is not at an appropriate level (autocorrelation), then we can:
Use the lag\(^1\) of variables instead of the variables themselves. Use the lag of dependent variable which in this case, we should put the log of dependent variable along with other independent variables. We should use the function of the first difference of variables (\(\Delta x_t = x_t - x_{t-1}\)).

6. Testing hypotheses and results

In this section we try to present and interpret results obtained from testing each hypothesis by taking the relevant materials of the previous discussions into account. In the first three hypotheses, we will attempt to evaluate the relationship between dependent variables and independent variable by regression equation. To do hypothesis analysis in the present study, we derive the following model from work performed by Giuseppe Garcia (2010), which is as follows:

The existing relationships in the conceptual model are presented in the following mathematical formula:

\[
\begin{align*}
\text{RET}_{it} &= \alpha_0 + \beta_1 \text{AGM1}_{i,t} + \beta_2 \text{AGM2}_{i,t} \\
\text{TRVAL}_{it} &= \alpha_0 + \beta_1 \text{AGM1}_{i,t} + \beta_2 \text{AGM2}_{i,t} \\
\text{VOLAT}_{it} &= \alpha_0 + \beta_1 \text{AGM1}_{i,t} + \beta_2 \text{AGM2}_{i,t}
\end{align*}
\]

Where,

- RET: stock return
- TRVAL: volume of stock trading
- VOLAT: stock return fluctuations
- AGM\(_1\): dummy variable related to the periods before and after the general meeting. Zero is for 5 days before the meeting and 1 for 5 days after the meeting.
- AGM\(_2\): dummy variable related to the periods before and after the general meeting. -5 to -1 are selected for 5 days before the meeting respectively and 1 to 5 for 5 days after the meeting.
- Index \((i)\) is related to the company and \(t\) for 10-day time period.

The mentioned relations are estimated in the form of a panel model by using software and, testing hypotheses is carried out by using the statistics of the test to examine the significance of the relationships between variables.

Table 3. Summary of results obtained from testing the research hypotheses

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Description of hypothesis</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>There is a significant relationship between stock return of companies listed on Tehran Stock Exchange and holding the AGM.</td>
<td>Supported (+)</td>
</tr>
<tr>
<td>Second</td>
<td>There is a significant relationship between trading volume of companies listed on Tehran Stock Exchange and holding the AGM.</td>
<td>Supported (+)</td>
</tr>
<tr>
<td>Third</td>
<td>There is a significant relationship between stock return fluctuations of companies listed on Tehran Stock Exchange and holding the AGM.</td>
<td>Not supported (-)</td>
</tr>
</tbody>
</table>

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\(^1\) Lag function is a function that puts the value of a variable in a year against the previous year.
7. Conclusion

The results of this study, which was conducted to examine the relationships between variables, reveal that:

- According to the results of testing the first hypothesis, investors, who are the shareholders of the cement companies, are suggested to keep their stock to time of scheduling the general meeting, and sell them at the very last moments before beginning of the meeting.

- According to the results of testing the second hypothesis, investors, who are interested in buying the cement companies stocks, are suggested to do so after the general meeting.

- According to the results of testing the third hypothesis, investors, who do not tend to keep their share in the cement industry any longer, are suggested to sell their stock before the beginning of the meeting.
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