A Survey on Relationship between Accounting Profit Growth Rate and Forecasted Accounting Profit and Stock Abnormal Return in Tehran Stock Exchange

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INTRODUCTION

In different accounting studies information content of accounting items on investment return has been tested. But accounting profit is a key and basic variable in investment decision by the decision makers and often has a increasing information content than other variables.

If profit and loss has explanatory role in share abnormal return, it will be included dividend information content. So this survey is going to test and explain profit explanatory ability in stock abnormal return. For this purpose, we test the relationship between accounting profit and stock abnormal return in Tehran stock exchange.

This paper is organized as follows: section 2 presents theoretical framework and designs the hypotheses. Section 3 conducts methodology and analysis the data. Finally section 4 offers conclusion and study limitations.

Theoretical and empirical literature:

Investors always seek for a return more than the expected rate of return. One of the factors that can fluctuate the stock return to the expected rate of return is the profit and loss information. If the profit news has been issued as good news can increase stock price and take a positive abnormal return, and if the profit news has been issued as a bad news, can take a negative abnormal return. The most famous research about the relationship between profit and abnormal return is the Ball & Brown 1968, that has been era and contrive for other studies and is going until now. They showed that there is a meaningful relationship between profit and abnormal return.

Suwanna (2012) investigated the reaction of stock price to profit announcement in 1397 new entrances firms from 1991 to 2004. He recognized that the reasons of undersell (abnormal return in short term) were investment risk in primary market and governmental regulations.

Lonkani & Firth (2005) examined 175 initial public offering (IPO) companies in Thailand during 1991-1996. The outcomes showed that a positive relationship between earning estimated error and cumulated abnormal return is not meaningful.

Haghighat & Alavi (2013) have survived the relationship between accounting profit transparency and abnormal return in 92 listed companies in Tehran exchange from 2005 to 2010. The outputs indicated that there is a converse meaningful relationship between transparency of accounting profit and abnormal return with or without control variables in Tehran stock exchange.

Keywords: accounting profit, accounting profit growth rate, forecasted accounting profit, abnormal return
(2011) have proved a meaningful relationship between profit forecast error and stock abnormal return, as well as profit forecast error and systematic risk in 75 accepted companies in stock exchange from 2004 to 2010. The results indicated a meaningful linear positive relationship between profit forecast error and abnormal stock return and also there is not relationship between profit forecast error and systematic risk [5].

Hypotheses:
Forecasted profit and accounting profit growth rate can give a full view of company performance and help in evaluation to investors, as it was mentioned above and also the theoretical framework we set 2 main hypotheses:
Hypothesis 1: there is a meaningful relationship between accounting profit growth rate and abnormal return.
Hypothesis 2: there is a meaningful relationship between forecasted accounting profit and abnormal return.

Type of survey, Data:
This paper is based on applied study and in methodology is descriptive correlational study. Data was collected by the firm's financial statement and Tadbipardaz software as well as by the stock exchange. The studied population is the companies that listed in Tehran stock exchange and sample has been selected by systematic ellipsis method including 110 companies, which the fiscal period ends at end of the year. These companies should not have changes in fiscal year. Data should be accessible and companies should not be listed in financial or investment industries.

Methodology:
As regards importance role of accounting profit in decision making, especially for potential investors, it is expected that there is meaningful relationship between accounting profit and abnormal return which is the investor reaction to earning announcement. Forecasted accounting and accounting profit growth rate can give a general outlook to firm performance and support evaluation, so it is expected that these variables has maximum effect on investors decision.

This model was extended Mark et al basic model (2000) as well as Fidrmuc et al adjusted model (2014) [6], thus we applied in this paper as follows:
\[
\text{CAR}_i,t = \alpha_i + \beta_1 \text{ASD index}_i,t + \beta_2 \text{EAR Dummy}_i,t + \beta_3 \text{XSize}_i,t + \beta_4 \text{Levi}_i,t + \beta_5 \text{Ri}_i,t + \epsilon_i
\]

\text{CAR}_i,t = \Sigma \text{AR}_i,t is the cumulated abnormal return.
\text{ASD index}_i,t = \text{accounting profit growth rate (independent variable)}
\text{Year Dummy}_i,t = \text{forecasted accounting profit (independent variable)}
\text{XSize}_i,t = \text{size of the firm (control variable)}
\text{Levi}_i,t = \text{financial leverage (control variable)}
\text{Ri}_i,t = \text{firm risk (control variable)}
\epsilon_i,t = \text{Residual error of firm I at t}
\alpha_i,t = \text{Regression intercept}
\beta = \text{Regression coefficient that estimate slope regression line}

And we calculate the variables as below:

Dependent variable:
\text{CAR}_i = \Sigma \text{AR}_i,t is the cumulated abnormal return.
\text{AR}_s,m = rs-rm is the abnormal return which rs is the stock return and rm is market return.
As mentioned above, to calculate abnormal return, first of all we should take expected rate of return and realized rate of return according to 3-1:

\[ rs= \frac{\text{DPS}+P1(1+\alpha+\beta)-p0}{(p0+\alpha+1000)} \]  

Which \( rs \) is stock return, \( p0 \) is the stock price at the beginning of the period, \( p1 \) is the stock price at the end of period, \( \text{DPS} \) is Dividend per share, \( \alpha \) is capital increase from cash receipt, \( \beta \) is capital increase from stockpile.

**Independent variables:**

Accounting profit growth rate: \( (\text{ASD index}_i,t)=\frac{[E_i,t-E_i,t-1]}{E_i,t-1} \cdot \text{ASD index}_i,t \)

\( E_i,t = \text{profit}/ \text{Earning company i at t} \)

\( E_i,t-1 = \text{profit}/ \text{Earning company at t-1} \)

Forecasted accounting profit (Year dummyi,t) is equal to logarithmic forecasted profit.

**Control variable:**

Company size (XSizei,t) is logarithmic book value of company fixed asset.

Firm leverage (levi,t) was calculated as below:

\[ \text{Leverage} = \frac{\text{Book value of total debt}}{\text{Book value of total assets}} \]  

(3.2)

Firm risk (Ri,t): capital asset pricing model (CAPM) states that expected rate of return is risk free rate plus risk premium that is as below:

\[ R_i,t = R_f + \beta_i (E(R_m) - R_f) + e_i,t \]

\( R_i,t = \text{Rate of return company i at t} \), \( R_f = \text{Risk free rate at t} \), \( \beta_i = \text{systematic risk index for firm I} \), \( E(R_m) = \text{market rate of return at t} \), \( e_i,t = \text{Residuals} \)

It should be noticed, systematic risk measurement is obtained from securities rate of return and market portfolio information in stock exchange. Since \( \beta \) was calculated from equation (3.10), which covariance shows and compares variation of variables with each other's and is also was computed as below:

\[ \beta_i = \frac{\text{COV}(R_i,R_m)}{\text{VAR}(R_m)} \]  

(3.3)

Descriptive statistics:

The research population and sample has been used in this paper are shown in table 3.1. Obviously far off data is eliminated by SPSS.

**Table 3.1: Descriptive statistics of variables.**

<table>
<thead>
<tr>
<th>Item</th>
<th>observations</th>
<th>( \mu )</th>
<th>( \sigma )</th>
<th>Min</th>
<th>Max</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAR</td>
<td>660</td>
<td>1.511</td>
<td>0.5357</td>
<td>0.0000</td>
<td>4.3974</td>
<td>1.621</td>
<td>5.022</td>
</tr>
<tr>
<td>ASD index</td>
<td>660</td>
<td>0.6875</td>
<td>0.5150</td>
<td>0.0013</td>
<td>3.9603</td>
<td>1.489</td>
<td>4.083</td>
</tr>
<tr>
<td>YearDummy</td>
<td>660</td>
<td>0.7079</td>
<td>0.0521</td>
<td>0.4622</td>
<td>0.8608</td>
<td>-0.136</td>
<td>1.445</td>
</tr>
<tr>
<td>Size</td>
<td>660</td>
<td>5.9028</td>
<td>0.6010</td>
<td>4.7761</td>
<td>7.9889</td>
<td>0.751</td>
<td>0.712</td>
</tr>
<tr>
<td>Leverage</td>
<td>660</td>
<td>0.2368</td>
<td>0.1621</td>
<td>0.0058</td>
<td>1.0159</td>
<td>1.702</td>
<td>4.109</td>
</tr>
<tr>
<td>Risk</td>
<td>660</td>
<td>0.9470</td>
<td>0.2832</td>
<td>0.0589</td>
<td>1.8100</td>
<td>-0.369</td>
<td>0.735</td>
</tr>
</tbody>
</table>

One of the classic assumptions is that the residuals are normal, so we should test normality of dependent variables, to satisfy this assumption. For this purpose we run Kolmogorov–Smirnov (K-S) test on dependent variables. The results are shown in table 3.2.

**Table 3.2: study dependent variable normalized test result.**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Observations</th>
<th>K-S statistic</th>
<th>Significant level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulated abnormal return</td>
<td>660</td>
<td>3.079</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Since significance level K-S test is lower than 0.05, \( \text{CAR}_i \) do not have normal distribution, which is displayed in fig 3.1.

By considering the normality importance of dependent variable, that is the first order condition for regression models, variable should be made normal. Johnson transformation function is used by Minitab 16 software for analysis and normalization.
Fig. 3.1. abnormality of CAR (Q-Q plot) and independent variable

The results of K-S test after normalization has been displayed in Table 3.3.

<table>
<thead>
<tr>
<th>variable</th>
<th>Observations</th>
<th>K-S statistic</th>
<th>Significant level</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAR</td>
<td>660</td>
<td>0.935</td>
<td>0.346</td>
</tr>
</tbody>
</table>

According to Fig. 3.1, since the significant level of K-S test after normalization dependent variable is greater than 0.05 (0.346), therefore CAR, has normal distribution.

Fig. 3.2: shows dependent variable normal distribution.

Model estimating:

The results of Chow or bounded F test and Hausman test has been shown in Table 3.4.

<table>
<thead>
<tr>
<th>Test</th>
<th>Observation</th>
<th>Statistic</th>
<th>Value statistics</th>
<th>Degree of freedom</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chow</td>
<td>660</td>
<td>F</td>
<td>3.4903</td>
<td>109.545</td>
<td>0.00000</td>
</tr>
<tr>
<td>Hausman</td>
<td>660</td>
<td>$\chi^2$</td>
<td>38.1168</td>
<td>5</td>
<td>0.00000</td>
</tr>
</tbody>
</table>

According to the above information, panel data and fixed effect method are used for model specification. In this paper, we use Jarque-Bera, Breusch-Pagan, and Durbin-Watson and Ramsey test for regression assumption investigation. Residual normality, homoscedasticity, independence residuals and error specification model (linear model). The results of the tests are represented in Table 6.4. Since significant level of Ramsey test is greater than 0.05, so we accept null hypothesis, linear model, and model does not have error specification.

As significant level of Breusch-Pagan test is less than 0.05, we reject null hypothesis, homoscedasticity, therefore our model has heteroscedasticity, and we use generalized least squares (GLS) for solving this problem.

Table 3.5: Result of hypothesis

<table>
<thead>
<tr>
<th>Ramsey Statistics</th>
<th>Durbin-Watson</th>
<th>Breusch-Pagan statistic</th>
<th>Jarque-Bera statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Value</td>
<td>F</td>
<td>D</td>
<td>P-Value</td>
</tr>
<tr>
<td>0.1880</td>
<td>1.6753</td>
<td>2.00</td>
<td>0.00000</td>
</tr>
</tbody>
</table>

Due to the Chow and Hausman test results as well as classic regression assumption test results, we estimate model by panel data method and fixed effect. The results of model are displayed in Table 7.4. Estimated model by Eviews software is as below:

$$\text{CAR}_{it} = -0.2350 + 0.0356 \text{ASDindex}_{it} + 1.0115 \text{YearDummy}_{it} - 0.0094 \text{XSize}_{it} + 0.068 \text{Lev}_{it} + 0.7237 \text{Ri}_{it} + \varepsilon_{it}$$
Table 3.6: Hypothesis test results by fixed effect method.

<table>
<thead>
<tr>
<th>Independent Variable: Cumulated abnormal return</th>
<th>Number of observation: 660</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
<td>Coefficient</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.2350</td>
</tr>
<tr>
<td>Accounting profit growth rate</td>
<td>0.0356</td>
</tr>
<tr>
<td>Forecasted accounting profit</td>
<td>1.0115</td>
</tr>
<tr>
<td>Size</td>
<td>-0.0094</td>
</tr>
<tr>
<td>Leverage</td>
<td>0.0680</td>
</tr>
<tr>
<td>risk</td>
<td>0.7237</td>
</tr>
<tr>
<td>The coefficient of determination model</td>
<td></td>
</tr>
<tr>
<td>F-statistics</td>
<td></td>
</tr>
<tr>
<td>P-Value</td>
<td></td>
</tr>
</tbody>
</table>

For meaningfulness of model, hence, F-statistics is less than 0.05 with 0.95 confidence level, model meaningfulness will be confirmed. The coefficient of determination indicates that 54.69% of CARₜ firms was explained by the variables entered into model.

Conclusion:
According to table 3.6, in review of coefficient significant, since t-statistic of coefficient of accounting profit growth rate and forecasted accounting profit is less than 0.05, so we approve the meaningful relationship between accounting profit growth rate and stock abnormal return, and also between forecasted accounting profit and stock abnormal return with 0.95 significant level. Furthermore positive sign of coefficient explain that increase in the forecasted accounting profit and accounting profit growth rate will cause increasing in stock abnormal return.

On the other side control variables, firm size and financial leverage, are not meaningful, because of significance level that is greater than 0.05, in the other hand these variables in relationship between accounting profit and stock abnormal return in stock market do not play effective role. But company risk has a meaningful and direct relationship with stock abnormal return.

Recommendations and limitations:
According to the results it is recommended that because of the positive and direct relationship between forecasted profit and accounting profit growth rate by the abnormal return, investors notice to the profit and loss information. So profit and loss is too important factor on abnormal return. Also investors should precaution at the profit and loss announcement, because market is high risk and returns are volatile.

There are two limitations about this study: first capital market inefficiency caused the company to be improperly reflected, that can affect the results and price limitation in Tehran stock exchange that cause prices do not display the inherent value of share.

REFERENCES