Relationship between the Growth Rate of the Companies and the Pricing of Accruals Using Modified Jones Model

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ABSTRACT

This research aims to study the relationship between the pricing of discretionary and non-discretionary accruals on one hand, and the growth rate of the companies in Tehran Stock Exchange during the years 2007 to 2012 on the other hand. In order to determine the discretionary and non-discretionary accruals we have used Modified Jones Model. Earning growth rate has been calculated by dividing the profit of the coming year by the profit of the present year minus one. To do this, first we calculated the needed data by cross-sectional method through multi-variable regressions and then we estimated the final model in a combinational method. In order to estimate the models, we used the financial information of 117 companies of Tehran Stock Exchange during the years 2007 to 2012 as the statistical sample of the research. The obtained results show that there is a positive linear relationship between the growth rates of the companies on one hand, and the discretionary and non-discretionary accruals on the other hand.

INTRODUCTION

The companies can be classified in two groups in terms of the investment opportunities: companies with high opportunity of investment, and companies with low opportunities of investment. In the companies with high opportunity of investment, the managers’ impulse for management of profit can be to transfer the private information of the company to the stockholders and the public. In such cases, the increase of the accruals is due to signaling the market and reduces the information asymmetries. In such a case, if the users of the information have also such an interpretation of the accruals increase, the demand for the company stock increases and this leads to the increase in the return of the companies. Thus the managers of the companies with high opportunities of growth will have the impulse to choose a method among accounting methods which improves the information values of the profit with transferring company’s private information to stockholder. This action increases the confidence of the investors and prevents their loss in one hand and on the other hand of the market discretionary accruals increase is interpreted by informative management of profit. According to these results “the market shows positive reaction to management of profit in companies with high investing opportunities” therefore in high levels of investing opportunities have higher impulses to publish good news.

Most of the researches done by Barth, Chang & Saffer, Alatar et al in the area of predicting future cash flow, show that profit is the better predictor than operational cash flow and also accounting profit has a greater role than operational cash flow in explanatory stock returns and accruals flow has more power than cash flow for predicting future cash. In addition to these, considering the subject of profit management, some state that unusual accruals lack any informational content and are only caused by management estimation error, but anyway, recent studies show that unusual accruals also can contain important information. In fact in the research done by Etemadi et al [1] this point also should be considered that according to researches audit quality also can prevent estimation errors in the accruals. Now an important question raises; Is there any significant relationship between the pricing of accruals and growth rate of the companies? And if the answer is yes, what is the level of this relationship can be?
The purpose of this study is to identify the relationship between the pricing of accruals (discretionary and non-discretionary) and companies’ growth in Tehran stock exchange. In other words, the effects of the pricing of accruals (discretionary and non-discretionary) in companies accepted in stock on companies’ growth will be studied. In the following parts of this study, at first literature review will be mentioned and according to research question the hypothesis will be established. Then data collection method and hypothesis testing will be stated, and finally research findings and conclusions will be presented.

**Literature review:**

The effect of subjectivity in measuring accounting items roots in the commitment which creates accruals in basic financial statements. And these items, has lower reliability compared to financial items. Although by establishing measuring standards accounting tries to lead accounting items to more objectivity, but accruals report with a grade of subjectivity are irreversible. The more the reliability of accruals, the more important will be their role in stability of future profits and help potential and actual investors to have a correct assessment of accruals values.

To study accounting profit in most of the researches done in accounting, it is categorized as cash and accrual, and the effect of each on the qualitative characteristics of profit, stock return, and … is studied. In a research Slon (1996) studied the effect of profit components on profit stability. The results of Slon’s study show that the stability of the accrual component of profit is less than the stability of its cash component and the reason is accruals’ subjectivity. Scott Richardson & Mark T Sleeman in a study to complete Slon’s work, decided to study the relationship between the reliability of accruals with profit stability and dividend. Therefore they provided a comprehensive definition of accruals which unlike prior researches, contained non-current accruals like assets and liabilities, and for each of the accrual components they predicted a degree of reliability and studied the effect of each on profit stability and stock prices. In their study they found that there is a significant relationship between the reliability of accruals with profit stability and stock market price. In other words the more reliable the accruals the stability and therefore the return will become higher, and vice versa.

Profit stability is one of the important qualitative characteristics of accounting profit which shows the stability of accounting profit. The profits acquired from current operations of business enterprises, are more stable than subjective items reported in financial statement. Accruals also obey the law since in recognizing and accounting them subjectivity is used to the extent that causes low stability in these items. To decide about investing their sources in business enterprises stock, actual and potential investors pay attention to accruals stability and accounting profit, because accruals help them in predicting their expected cash flows. To make an exact estimation of these, investors should consider not only the stability of cash but also the stability of profit accruals to make an exact estimation of their expected return.

Dichaw Dichoo studied the role of accruals in order to measure the companies’ performance better in a time series. For the reason that accruals need assumptions and predicting future cash flows, the quality of the accruals and profit are decreased by the increase of the amount of accruals predicting error. They finally conclude that each company’s characteristic like the absolute value of the amount of accruals, length of operating cycle, standard deviation of sales, cash flows, accruals and size of company can be used as a tool to earning quality assessment.

In their research Francis et al state that accruals are the diagnostic criteria for the ambiguity existed in the company’s future cash flow. The quality of the accruals is the diagnostic criteria for proximity of accounting profit to cash. Therefor poor quality of the accruals makes the ambiguity of the information to increase and subsequently the investment risk will be increased. The companies with poor accruals, has lower debt ratio.

Richardson et al formally offered the relationship between the reliability of accruals and the stability of accruals by providing an analytical errors-in-variables model. So that how the error in measuring accruals causes the downward bias in stability of cash flows regression coefficient and the stability of accruals regression coefficient. They concluded that lowness of accruals stability is equal to lowness of accruals reliability.

Chambers & Pane studied the quality of audit and the accruals. Their findings showed that there is no significant relationship between the quality of accruals and the quality of audit.

Hao investigated the accruals reliability, not pricing of the accruals and operating cycle among the companies. Their findings revealed a significant relationship between the accruals reliability and its pricing and also a reverse relationship with operating cycle.

So far several researches have been published about informational content of the accruals based on empirical evidence from Iran capital market. Findings from these studies show that discretionary and non-discretionary accruals cause the profit to be effective and related. On the other hand researches done by Summers & Sviini indicate that orientation of profitability can be changed due to maximizing the manager desirability which is proposed as job security. Following this definition, accessing reliable or increasing profit flow maximize the manager desirability. This approach is based on the expectation that the management can improve or maintain the levels of past profitability. But the important issue that arises is that sometimes for various impulses the managers of companies apply profit management and for doing this they use the accruals.
The accruals provided in financial statements can be manipulated by the managers and their reliability can be brought into question.

Saghafi & Hashemi did an analytical survey on the relationship between operational cash flow and the accruals and they provided a model for predicting operational cash flow. According to economic, financial and accounting theories and researches done three models are designed for predicting operational cash flow with three kinds of variables: 1) accounting profit, 2) cash component and total accruals, 3) cash component and the accrual components of the accounting profit. The findings of this research show that there is a significant relationship between operational cash flow and accounting profit and its components. Totally the findings of this study is consistent with the theory of accounting profit and its components ability in predicting operational cash flow and also with the theory of the superiority of profit ability in predicting cash flow over the cash flow.

Khajoo & Nazemi studied the relationship between the quality of earning and stock return with an emphasis on the role of the accruals in Tehran stock exchange. The purpose of this research is to determine whether the accruals have a significant role in market reaction to companies' profit information. The results show that average stock return of companies, is not influenced by the amount of accruals and its related components. In other words it can’t be accepted that there is a significant difference between average stock returns in the companies whose accruals are reported the highest and in the companies whose accruals are reported the lowest. Mashayekhi et al. researched on the role of discretionary accruals in profit management of listed companies on Tehran Stock Exchange. In this survey using Modified Jones Model they studied the relationship between discretionary accruals and the cash obtained from the operation. The results indicate that profit management has been applied in the companies studied in this survey. Actually when the cash obtained from operation has been decreased - which indicates the poor performance of the business enterprise - to make it up the management of these companies has increased the profit through increasing discretionary accruals.

Noorvash et al. studied the quality of the accruals and profit with an emphasis on the role of accruals estimation error. The findings show that there is a significant relationship between the changes in working capital (non-cash) and cash flow and the criterion used in accruals quality assessment (which are the remainders obtained from regression between changes in working capital and cash flow) has a significant positive relationship with profit stability. Also there is a significant relationship between the quality of the accruals and the absolute value of the changes in companies’ working capital and the accruals mainly means lower quality and lower profit stability.

Mohamadzadegan [4] investigated the relationship between the accruals reliability with the profit stability and stock price in listed companies on Tehran Stock Exchange. Hypothesis testing shows that investors don’t have an exact assessment about the reliability of accruals with low reliability, therefore the assessment error in these accruals is more than other accruals. Also the results of this study indicate that operational and non-operational assets which are obtained through producing current liabilities will have higher reliability and comparing to the situation in which they are obtained through producing non-current liabilities or transfer of common stock measured with low reliability, their stability factor will be higher.

Resaiyan & Hosseini [6] studied about the relationship between the quality of the accruals and the capital expenditure in Iran. The purpose of their study was to answer these questions: 1) Does the quality of the accruals have an important and significant effect on the companies’ capital expenditure? 2) Does the capital expenditure of companies with different amounts of accruals quality have significant different with each other? The results of this study show that the companies capital expenditure is not influenced by the accruals quality and its components. In other words it can’t be accepted that there is a significant difference between the capital expenditures of companies with low and poor accruals quality and of companies with good and proper accruals quality.

**Research Hypothesis:**

*Considering literature review, research hypothesis can be represented as below:*

There is a positive significant relationship between the discretionary accruals and the growth rate of the listed companies on Tehran Stock Exchange?

There is a positive significant relationship between the non-discretionary accruals and the growth rate of the listed companies on Tehran Stock Exchange?

**Research Method, Statistical population and sample selection:**

This study is a correlational research. In a correlational research the main purpose is to determine whether there is a relationship between two or more quantitative (measurable) variables or not. And considering the purpose it is applied. To collect the literature review about the research topic library methods and documentary studies were used. To access needed information for processing research hypothesis the information in Rahavard Novin Company’s software and, by referring to official site of Iran Stock Exchange the financial statements analysis of the listed companies on Tehran Stock Exchange were used.
After collecting statistical data Excel software was used for conclusions and required calculations and the results obtained, entered in SPSS statistical software package version 20 and analyzed to achieve research purpose. The method used for data analyzing was cross-sectional and year by year. In this study for hypothesis testing multi variable linear regression method was used.

Regarding the fact that this study investigates the effect of the accruals on the Growth Rate of the listed companies on Tehran Stock Exchange, statistical population of this study contains all the companies listed on Tehran Stock Exchange during the years 1386-1391. For sampling systematic deletion method was used, noting following conditions the total number of selected samples among statistical population contains 117 companies.

The criteria considered to select samples were:
Sample companies should be in the list of Tehran Stock Exchange before beginning research period (1386) and they should be active there.
Companies financial year should be unchanged during the research period.
Companies financial year should ends on 29/12 (29th of Esfand (the last month in Iranian year)) in each year.
Sample companies should not be companies, banks and financial.
And finally companies which didn’t have complete information during research period were deleted.

Definition and method of measuring research variables:
Using Jones Model) Zai divided total accruals into two categories: usual (non- discretionary) and unusual (discretionary). He explained that unusual accruals can contain intentional and unintentional deviations. Also he found that unusual accruals largely have lower stability. Zai concluded that stability of unusual accruals is largely the result of their low reliability. In the study also the very model used to estimate the accruals.
At first the sum of the accruals was calculated by using profit and loss relation as follows:
\[ TA_{i,t} = EARN_{i,t} - CFO_{i,t} \]  
(1)
Where
\[ TA_{i,t} \]: The sum of the accruals in the year t for the i company
\[ EARN_{i,t} \]: Usual profit i.e profit before the unforeseeable accruals in the year t for the i company
\[ CFO_{i,t} \]: Operational cash (cash flows due to operating activities) in the year t for the i company
Then following model (2) about the total accruals To shrinkage facts and figures and simplicity of calculations two sides of the equation was divided by beginning period assets.
\[ TA_{i,t}/A_{i,t-1} = \alpha_1(1/A_{i,t-1}) + \beta_1(\Delta REV_{i,t}/A_{i,t-1}) + \beta_2(PPE_{i,t}/A_{i,t-1}) + \epsilon_{i,t} \]  
(2)
In this model
\[ \Delta REV_{i,t} \]: Annual revenue change (the difference between the revenue at the end of a year with the revenue at the beginning of the same year) in the year T for the I company
\[ PPE_{i,t} \]: Property, machinery and equipment in the same year (each year’s fixed assets after subtracting accumulated depreciation) in the year T for the I company
\[ A_{i,t-1} \]: The sum of assets in the year T-1 for the company I
\[ \alpha_1, \beta_1 \] and \[ \beta_2 \] are model’s coefficient and \[ \epsilon_{i,t} \] is model’s error in the year T for the I company. \[ \alpha_1, \beta_1 \] and \[ \beta_2 \] are obtained through least-square estimation method.
Non- discretionary accruals are calculated as following:
\[ NDA_{i,t} = \alpha_1(1/A_{i,t-1}) + \beta_1(\Delta REV_{i,t} - \Delta REC_{i,t}/A_{i,t-1}) + \beta_2(PPE_{i,t}/A_{i,t-1}) \]  
(3)
Where \[ \Delta REC_{i,t} \] is the change in accounts receivable (the difference between accounts receivable at the end of each year with the Accounts receivable at the beginning of the same year) in the year T for the I company.
Subtracting the sum of accruals and non- discretionary accruals, discretionary accruals obtained as follows:
\[ DA_{i,t} = TA_{i,t} - NDA_{i,t} \]  
(4)
\[ TA_{i,t} \]: The sum of accruals in the year T for the I company
\[ NDA_{i,t} \]: Non- discretionary accruals in the year T for the I company
\[ DA_{i,t} \]: Discretionary accruals in the year T for the I company
And to calculate growth rate we use following relation:
\[ r_g = \frac{EARN_{i+1}}{EARN_i} \]
\[ r_g \] (Earning growth)

Research findings: P
**Chart 1:** Descriptive Statistics of tested variables.

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Average</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Skewness</th>
<th>Kurtosis</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Discretionary Accruals</td>
<td>702</td>
<td>-0.0054</td>
<td>-0.0081</td>
<td>0.096</td>
<td>-6.79</td>
<td>121.29</td>
<td>-1.64</td>
<td>0.416</td>
</tr>
<tr>
<td>Discretionary Accruals</td>
<td>702</td>
<td>-47449</td>
<td>-2007</td>
<td>976526</td>
<td>-12.18</td>
<td>261</td>
<td>-1999845</td>
<td>8381952</td>
</tr>
<tr>
<td>Growth Rate</td>
<td>702</td>
<td>0.147</td>
<td>0.127</td>
<td>0.347</td>
<td>2.69</td>
<td>21.75</td>
<td>-1</td>
<td>3.8</td>
</tr>
</tbody>
</table>

It is seen in the above table that the average of non-discretionary accruals equals to -0.0054 and its standard deviation equals to 0.096, its maximum, amount is 0.416 for Naghsh Jahan Sugar company and its minimum is -1.64 for Pars Daroo company. The average of discretionary accruals equals to -47449 and its standard deviation equals to 976526, its maximum, amount is 8381952 for Salmin company and its minimum is -1999845 for Iran Khodro company. The company’s average growth is 0.147 and its standard deviation equals to 0.347, its maximum amount is 3.8 for Pars Daroo company and its minimum is -1 for Sepanta company.

Before hypothesis testing, the normality of depended variables using Klomogroph Esmirnof was investigated. As in chart (2) significance level of Klomogroph Esmirnof test for all variables is less than 1 percent. Therefor these variables have normal distribution. Data was normalized with the help of ASINH function, so data being analyzed have normal distribution.

**Chart 2:** Klomogroph Esmirnof test for variable data normality test.

<table>
<thead>
<tr>
<th>N</th>
<th>Non-Discretionary Accruals</th>
<th>Discretionary Accruals</th>
<th>Company Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average</td>
<td>Standard Deviation</td>
<td>Absolut value Limit</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Positive Limit</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Negative Limit</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Klomogroph Esmirnof Value</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>significance level</td>
</tr>
<tr>
<td>702</td>
<td>-0.0054</td>
<td>0.096</td>
<td>0.177</td>
</tr>
<tr>
<td>702</td>
<td>-47449</td>
<td>97526</td>
<td>0.368</td>
</tr>
<tr>
<td>702</td>
<td>0.147</td>
<td>0.347</td>
<td>0.128</td>
</tr>
</tbody>
</table>

**First Hypothesis Test:**
**Alternative and null hypothesis were defined as below:**
First Hypothesis: There is no positive significant relationship between the non-discretionary accruals and the growth rate of the companies
H0: There is a positive significant relationship between the non-discretionary accruals and the growth rate of the companies

**Chart 3:** Coefficients of the variables in the First Hypothesis.

<table>
<thead>
<tr>
<th>Variables</th>
<th>B (Coefficient)</th>
<th>Standard Error</th>
<th>Beta</th>
<th>T</th>
<th>significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed value</td>
<td>0.143</td>
<td>0.010</td>
<td>13.82</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>Non-discretionary Accruals</td>
<td>1.26</td>
<td>0.118</td>
<td>0.376</td>
<td>10.71</td>
<td>0.000</td>
</tr>
</tbody>
</table>

F(Probability): 114.9 (0.000)

Correlation Amount: 0.367

Coefficient of Determination (R²): 0.141

Durbin-Watson Value: 1.91

Dependent Variable: Growth Rate

Coefficient correlation in the above chart is 0.367 which shows a direct correlation between dependent variable and independent variable. The amount of Durbin-Watson is 1.91, since this amount is between 1.5 and 2.5, the error independence hypothesis is accepted. Moreover, coefficient of determination is 0.141 so it can be said that 14.1% of changes in dependent variable is caused by changes in independent variable.

In the above chart also it is that significance level (sig) of Fisher Test is less than 1%, so a linear relation has been developed between two variables.

Meanwhile, significance level of t-Test for the non-discretionary accruals variable is less than 1%, therefore regression equation is designable and it can be said that 1 unit of change in non-discretionary accruals variable causes an increase of 1.26 units in the growth rate. Thus H0 hypothesis is rejected and H1 hypothesis is accepted and with a 99%confidence it can be concluded that there is a positive significant relationship between non-discretionary accruals and growth rate as follows:

Growth Rate = 0.143 + 1.26 (non-discretionary accruals)
Second Hypothesis Test:

Second hypothesis: there is a positive significant relationship between discretionary accruals and growth rate in listed companies on Tehran Stock Exchange.

In this hypothesis alternative and null hypothesis can be defined as follows:

H0: There is no positive significant relationship between discretionary accruals and growth rate in companies

H1: There is a positive significant relationship between discretionary accruals and growth rate in companies.

<table>
<thead>
<tr>
<th>Chart 4: Coefficients of the variables in the Second Hypothesis.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables</td>
</tr>
<tr>
<td>Fixed Value</td>
</tr>
<tr>
<td>Discretionary Accruals</td>
</tr>
</tbody>
</table>

F(Probability): 10.84 (0.001)  
Correlation Amount: 0.124

Coefficient correlation in the above chart is 0.124 which shows a direct correlation between dependent variable and independent variable. The amount of Durbin-Watson is 1.96, since this amount is between 1.5 and 2.5, the error independence hypothesis is accepted. Moreover, coefficient of determination is 0.015 so it can be said that only 1.5% of changes in dependent variable is caused by changes in independent variable. In the above chart also it is that significance level (sig) of Fisher Test is less than 1%, so a linear relation has been developed between two variables.

Significance level of t-Test for the discretionary accruals variable is less than 1%, therefore regression equation is designable and it can be said that 1 unit of change in discretionary accruals variable causes an increase of 0.003 units in the growth rate. Thus H0 hypothesis is rejected and H1 hypothesis is accepted and with a 99% confidence it can be concluded that there is a positive significant relationship between discretionary accruals and growth rate, but with the difference that the discretionary accruals have a poor ability to change growth rate.

Growth Rate = 0.138 + 0.003 (discretionary accruals)

Conclusion:

The results of the statistical analyses show that research hypothesis is confirmed by statistical models. In other words:
There is a positive significant relationship between discretionary accruals and the growth rate of listed companies on Tehran Stock Exchange

There is a positive significant relationship between non-discretionary accruals and the growth rate of listed companies on Tehran Stock Exchange

Results:

The results obtained show are in accordance with the findings of researchers such as Slon, Dichaw Dichoo, Scott Richardson, Hao. In their researches accruals can be used as a tool for earning quality assessment and the quality of accruals is the criterion for proximity of accounting profit to cash. But research findings of researchers such as Chambers & Pane are in contrary with the findings of present study. They state that there is no significant relationship between the quality of accruals and the audit quality.

Findings of the present study about national researches are also in accordance with the findings of Saghafi & Hashemi, Mashayekhi et al, Noorvash et al. The findings of this research are in contrary with the findings of Khajoo & Nazemi. They found that the companies’ average stock return is not influenced by the accruals amount and its components.

Suggestions from the Results:

Practical Suggestions:

- familiarizing managers and investors and other users of financial statement with the importance and usage of discretionary and non-discretionary accruals and the method of using them for the sake of predicting growth rate of the company

- More emphasis on and more attention to profit management as informational source to recognize predisposing factors to managers’ opportunistic behavior

Suggestions for further research:

- Using the discretionary and non-discretionary accruals in predicting stock price

- The assessment of unmanaged profit (the sum of non-discretionary accruals) ability in predicting profit
• Doing a research similar to present study with the population of companies which aren’t active in stock exchange and comparing the results with the results of present study
• In this study to calculate the accruals and its component Modified Jones Model was used. For further research applying another measuring meters and models to the accruals is suggested
• Studying the factors such as capital structure, ownership structure, corporate governance, informational risk, etc. and their influence on future profit growth

Research Limitations:
Each research has some limitations because of which research results should be stated with cautious. This research with the following limitations:

One of these limitations is the special characteristic of semi-experimental researches. In other words the influence of other variables which couldn’t be controlled by the researcher on the research results and the probability of their influence is not far-fetched. Variables like major economic indicators such as exchange rate, inflation and etc. makes the researcher to state the results with cautious.

The second limitation is about the number and collecting of research data. That is firstly so limited and secondly in the process of collecting data some companies’ data may have no information in databases. Thirdly may be data was not update and researcher for collecting data face some problems.

REFERENCES