The Relationship between Operational Cash Flows and Accruals to Predict Future Earnings

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ABSTRACT

The present study aimed to explore the relationship between operational cash flows and accruals to predict future earnings of listed companies in Tehran Stock Exchange. Jones’ adjusted model was used to assess and calculate accruals. Accordingly, accruals were divided into discretionary and non-discretionary accruals. The study was conducted in the time period of 2007 to 2012 on a sample including 123 companies listed in the Tehran Stock Exchange. Three hypotheses were developed to address the problem under study and they were tested using regression analysis technique. In this study, discretionary accruals (DA), non-discretionary accruals (NDA), and operating cash flow (OCF) were used as the independent variables and the future operating profit was manipulated as the dependent variable. The results suggested discretionary and non-discretionary accruals and operating cash flow are significantly correlated to operating earnings in future.

Keywords: Accruals, Discretionary Accruals (DA), Non-Discretionary Accruals (NDA), Operating Cash Flow (OCF), Operational Earnings

1.INTRODUCTION

Reported earnings and earnings components have always received much attention in the historical development and in financial reporting as well. Professional accountants, financial analysts and academic researchers often use the components of current earnings to predict future earnings and cash flows. Since in economic theories, the firm value is based on the present value of its future cash flows and earnings are used as a substitute for cash flows, the prediction of earnings is of vital importance. Accordingly, one of the objectives of financial reporting is to help investors and creditors to predict future earnings. In addition, the Iranian Accounting Standards Committee in the theoretical concepts of financial reporting section stated that “Economic decisions made by users of financial statements require an assessment of an entity to generate cash and the certainty of doing so. Besides, the assessment of the power to create cash is facilitated by focusing on the financial position, financial performance, and cash flows of the entity and using them to predict the expected cash flows and the assessment of financial flexibility” (Auditing Organization, 2002).

The present study explores the relationship between accruals and operating cash flows to predict future earnings. In summary, this study followed research conducted by previous researchers such as Sloan (1996) to predict future earnings and to find out whether the accuracy of accruals and operating cash flows in predicting earnings can improve the prediction of earnings and if it can explain earnings stability and the relationship between earnings, accruals, and cash flows. The use of accruals to predict future profits and present cash flows has some economic implications. The relevance of current accruals and cash flows to future earnings may indicate the extent to which management intends to demonstrate the firm economic value with honesty (Modares & Abbas Zadeh, 2008).

2.STATEMENT OF THE PROBLEM

Making good earnings and contributing to the promotion a country’s economy is one of the social and economic aspirations of any society. The suitable context to do so has been provided by establishing and
developing the Tehran Stock Exchange. However, to direct and encourage investors to make investments in this regard requires the provision of more transparent and reliable information to them. Among the most important factors that will encourage investors to invest are operating earnings. Therefore, a sound knowledge of how earnings behave using a reliable criterion is the prerequisite for making a successful investment. So, the identification of a criterion related to operational earnings is of utmost importance. Several economic and accounting criteria have been proposed in this regard including the accounting indices such as cash from operational activities and accruals. Many financial analysts and investors state that cash flow measures such as operating cash flows are highly important when assessing a firm’s financial health and prospects. Operating cash flows are very significant in the sense that they allow managers to seek opportunities that increase the firm’s stocks value. Without having cash it is impossible to develop new products, making business earnings, paying cash dividends to shareholders, and debt relief (Goldberg and Kim, 2001). Based on what was mentioned, the present study aims to find out whether accruals and operating cash flows are able to predict future earnings or not.

Dechow et al. (2004) studied the persistence and pricing of the cash components of earnings. They divided these components into three categories of cash balances, cash payments to creditors, and payment of cash dividends to shareholders. They found that more durable components of dividends i.e. payments to shareholders were significantly correlated to stock prices. Farshadi and Monemi (2013) examined the usefulness operating cash and accruals in improving earnings prediction. They came to the conclusion that components of operating cash and accruals together are more useful than earnings, operational cash, total accruals, and the sum of operating cash and accruals in predicting future operating cash flows. Barth et al. (2001) and Subramanyam and Venkatachalam (2007) showed that operating cash flows are stronger than earnings in predicting future operating cash flows. Decou et al. (1998) proposed the first theoretical models using operating cash flows and accruals to find if earnings have a higher predictive ability than operating cash flows to account for future operating cash flows. Following Barth et al (2001), Barth et al (2001) showed that operating cash flows and major accruals (i.e., changes in accounts receivable, accounts payable, prepayments, advance payments received, expenses before depreciation, and other accruals) significantly increase predictive ability of earnings compared to operating cash flows and individual earnings within the cash flows and general accruals.

Khodadadi and Janjani (2010), studied investors’ reaction to earnings prediction, cash flows, and accruals on a sample of 230 firms listed in in the Tehran Stock Exchange from 2000 to 2006. The results indicated that investors appropriately reacted to some extent to earnings prediction, of course not as much accurately as to cash flows. In addition, their reactions to cash flow predictions were to a great extent reliable. It was also noted that cash flows provide a more reliable basis for decision-making than earnings and accruals. Sadeqbyan (1998) explored the relationship between cash flow from operating activities and operating earnings and found that there is no significant relationship between cash flow from operating activities and operating earnings. Janat Rostami (1999) examined the role and potentials of earnings in predicting future earnings and future cash flow to invest in shares of the companies listed in the Tehran Stock Exchange. The results showed a significant correlation between historical earnings, future earnings and the between historical earnings and cash flows and future cash flows. Modars (2001) examined the relationship of current assets and liabilities with operating cash flows using accounting information including 1) operating cash flows, 2) accounting earnings, 3) operating cash flows and accounting earnings, and 4) historical operating cash flows and accounting earnings as well as current assets and liabilities. The results show that operating cash flow forecasting using historical operating cash flows is not possible, but it is possible by using historical operating earnings. Besides, the combined use of operating cash flows and historical operating earnings improves the prediction model. It was also found that the inclusion of components of working capital into the model will enhance its predictive power. Thaqafi and Hashemi (2004) studied the relationship between future operating cash flows and components of historical operating earnings using historical accruals and concluded that accounting earnings are able to predict future cash flows. Besides, earnings divided into cash flows and accruals are more powerful in predicting future cash flows.

3. SIGNIFICANCE OF THE STUDY

The significance of earnings, operating cash flows, and accruals to investors is clear to anyone. Earnings are among the most important indicators for measuring the performance of a business entity. Researchers have illustrated different approaches to earnings in terms of scientific findings, measured their strengths and weaknesses, and made efforts to add to the accuracy and potentials of these approaches. Investors give a special
weight to accounting earnings as a prediction tool. In addition, stock returns are lined to the expected cash flows and investors usually hold or sell shares based on their expectations of the firm’s profits and thus dividends. Dividends are the most commonly used method of distribution of returns to the firm among shareholders, but firms do not operate similarly when distributing dividends and so they take different policies. These policies may range from paying dividends to paying all the firm’s revenues. Since profit acts as a tool for the management and the net profit is a direct variable available to the management in calculating the salary and compensations, it is therefore subject to manipulation. As such, the availability of sufficient cash flow to meet the needs of management and investors is dependent on positive operating cash flows. In addition, the cash flows will increase the predictive power of earnings through operating cash flow and accruals.

4. RESEARCH HYPOTHESIS
- H1: There is a significant relationship between current discretionary accruals and future operating earnings.
- H2: There is a significant relationship between current non-discretionary accruals and future operating earnings.
- H3: There is a significant relationship between current operative cash and future operating earnings.

5. RESEARCH METHODOLOGY
The present study is an applied research as its results can be used by capital market analysts and investors in evaluating the firms’ performance. The study aims to investigate the relationships between independent and dependent variables through regression models. Therefore, it is a correlational-causal study in terms of the nature and the correlational method it employs. In fact, a correlational study deals with relationship between variables and in an ex post facto research, the researcher tries to study and identify the potential causes of the dependent variable through its effects.

6. Research Variables
The variables manipulated in this study are as follows:

7. Independent Variables
A. Accruals: Discretionary accruals (DA) were used based on the Jones’ adjusted model to divide accruals. The following steps were taken to calculate discretionary accruals:
I. The total accruals (TA) for a given firm were calculated for a given year. The Jones’ adjusted model was employed calculate accruals in this study as follows (Dechow et al. 1995):

\[ TA_{it} = E_{it} - OCF_{it} \]

Where, \( E_{it} \) is operating earnings of the firm \( i \) in year \( t \), \( OCF_{it} \) is the net operating cash flows of the firm \( i \) in year \( t \), and \( TA_{it} \) represents the total accruals in the same period.

II. Parameters \( \alpha_1, \alpha_2, \) and \( \alpha_3 \) were calculated as the firm-specific parameters using the least squares technique through Excel and SPSS software packages to estimate non-discretionary accruals (NDA) according to the following equation:

\[ \frac{TA_{it}}{A_{i(t-1)}} = \alpha_1 \left( \frac{1}{A_{i(t-1)}} \right) + \alpha_2 \left( \frac{\triangle REV_{it}}{A_{i(t-1)}} \right) + \alpha_3 \left( \frac{PPE_{it}}{A_{i(t-1)}} \right) + \epsilon_{it} \]

Where, \( TA_{it} \) represents the total accruals, \( A_{i(t-1)} \) is the total assets of firm \( i \) in year \( t-1 \), \( \triangle REV_{it} \) is the changes in the net revenues of the firm \( i \) in years \( t \) and \( t-1 \), and \( PPE_{it} \) represents properties, machineries, and equipment of firm \( i \) in year \( t \).
III. Non-discretionary accruals (NDA) were calculated using the parameters estimated in the above section as follows:

\[ NDA_{it} = \alpha_1 \left( \frac{1}{A_{i(t-1)}} \right) + \alpha_2 \left( \frac{\Box REV_{it} - \Box REC_{it}}{A_{i(t-1)}} \right) + \alpha_3 \left( \frac{PPE_{it}}{A_{i(t-1)}} \right) \]

Where, \( \Box REC \) shows changes in net accounts and trade receivables, \( A_{i(t-1)} \) stands for the total assets of firm \( i \) in year \( t-1 \), \( \Box REV \) is the changes in the net revenues of the firm \( i \) in years \( t \), \( NDA_{it} \) is non-discretionary accruals (NDA), \( t-1 \), and \( PPE_{it} \) represents properties, machineries, and equipment of firm \( i \) in year \( t \).

IV. After obtaining the non-discretionary accruals, the Jones’ adjusted model was employed to estimate discretionary accruals as follows:

\[ DA_{it} = \left( \frac{TA_{it}}{A_{i(t-1)}} \right) - NDA_{it} \]

B. Cash from Operations: Cash flow statement reporting changes in cash of the firm is one of the basic financial statements, which could represent the performance of the management. Cash from operations as the most important item in cash flow statement shows the amount of cash imported into the firm through the operational activities. It is used as an accounting index by the decision-makers to measure the management performance.

Dependent Variable
The dependent variable in this study was assessed using the Sloan Prediction Model as done in previous research.

8. The Sloan Prediction Model

\[ Earning = y_0 + y_1 Accruals_{i,t} + y_2 Cashflows_{i,t} + V_{i,t} \]

In order to estimate the model parameters for the sample of firms, the above model was divided into Modal I and Model II depending on their parameters as follows:

\[ Earning_{i,t+1} = y_0 + y_1 Earnings_{i,t} + (y_2 - y_1) Cashflows_{i,t} + V_{i,t} \] (Model I)

Where, \( Earning_{i,t+1} \) is future operating earnings for firm \( i \), \( Earnings_{i,t} \) shows operating earnings of firm \( i \) in period \( t \), \( Cashflows_{i,t} \) shows operating cash flows (cash component of operating earnings) of firm \( i \) in period \( t \), and \( V_{i,t} \) is the error term (residual of firm \( i \) in period \( t \)).

\[ Earnings_{i,t+1} = y_0 - y_1 Earnings_{i,t} + (y_2 - y_1) Accruals_{i,t} + V_{i,t} \] (Model II)

Where, \( Earning_{i,t+1} \) is operating earnings for firm \( i \) in period \( t \), \( Earnings_{i,t} \) shows the total accruals (the accrual component of operational earnings) of firm \( i \) in period \( t \), and \( V_{i,t} \) is the error term (residuals of firm \( i \) in period \( t \)).

The dependent variable in the above models was the firm’s operating profit in period \( t + 1 \) that was estimated based on total operating earnings of the firms by including cash dividends (operating cash flows) in one stage and in the other stage by including non-cash items (total accruals).

1. Earning Prediction Model Using Cash Flow

\[ Earning_{i,t+1} = \alpha_0 + \beta_1 Cashflow_{i,t} + \varepsilon_i \]

Where, \( Earning_{i,t+1} \) is future cash earnings of the form \( i \), \( Cashflow_{i,t} \) is operating cash flows of the firm \( i \) in period \( t \), and \( \varepsilon_i \) is the model error.

2. Earning Prediction Model Using Accruals
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\[ Earring_{i,t+1} = \alpha_0 + \beta_1 \text{accrual}_{i,t} + \epsilon_i \]

Where, \( Earning_{i,t+1} \) is future cash earnings of the form \( i \), \( \text{Cashflow}_{i,t} \) is operating cash flows of the firm \( i \) in period \( t \), and \( \epsilon_i \) is the model error.

9. Data Collection Procedure

Variables used in this study were operating earnings, net cash generated or used in operating activities, total accruals, and total assets.
Operating earnings were directly estimated from the firms’ income statements. Besides, net cash from operations were derived from in the statement of cash flows of the firms and total accruals were calculated as follows:
Total Accruals in Operating Activities = Net Cash Generated or Used – Operating Earnings

10. Population and Sampling

The population under study included the firms listed on the Tehran Stock Exchange in a five-year period from 2007 to 2012. The sampling was performed using elimination technique. Accordingly, the research population consisted of all firms with the following requirements:
1. Firms other than investment firms, financial intermediaries, and insurance companies.
2. Firms whose capital included common stocks not preferred stocks.
3. Firms whose financial years ended at the late March.
4. Firms whose stocks were traded from the early 2007 to the late 2012.
According to the above conditions, 125 firms were included in the research sample.

11. RESULTS

11.1. Testing the First Hypothesis

The first hypothesis states that there is a significant relationship between current discretionary accruals and future operating earnings. Statistically, this hypothesis is stated as follows:
H0: There is no significant relationship between current discretionary accruals and future operating earnings.
H1: There is a significant relationship between current discretionary accruals and future operating earnings.

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of Estimate</th>
<th>Durbin-Watson</th>
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a. Predictors: (Constant), DA
b. Dependent Variable: Earning

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>9.764</td>
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<td></td>
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<tr>
<td></td>
<td>Total</td>
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<td>6.866E12</td>
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</table>

a. Predictors: (Constant), DA
b. Dependent Variable: E
As shown in tables 1 and 2, the adjusted coefficient of determination ($R^2$) is 0.017, indicating that about 1.7% of the response variations (future operating earnings) can be explained by the independent variable that is the current discretionary accruals (DA). The probability of the null hypothesis which indicates there is no linear relationship between the independent variables and the response variable is equal to 0.002 that is smaller than 0.05. Therefore, the null hypothesis (H0) is rejected at 95% confidence level. So, there is a significant linear relationship between two variables and thus the alternative hypothesis (H1) is confirmed. The fitted model is presented as follows:

$$Earning_{t+1} = 108425.741 + 0.136DA_t + \varepsilon_0$$

12. Testing the Second Hypothesis

The second hypothesis suggests that there is a significant relationship between current non-discretionary accruals and future operating earnings. Statistically, this hypothesis is stated as follows:

H0: There is no significant relationship between current non-discretionary accruals and future operating earnings.

H1: There is a significant relationship between current non-discretionary accruals and future operating earnings.

Table 3: Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of Estimate</th>
<th>Durbin-Watson</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>.934*</td>
<td>.873</td>
<td>.873</td>
<td>139516.981</td>
<td>1.828</td>
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</table>

a. Predictors: (Constant), DA
b. Dependent Variable: Earning

Table 4: ANOVA

<table>
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<th>df</th>
<th>Mean Square</th>
<th>F</th>
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<tr>
<td></td>
<td>Total</td>
<td>8.200E13</td>
<td>535</td>
<td></td>
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</tr>
</tbody>
</table>

a. Predictors: (Constant), DA
b. Dependent Variable: E

As shown in the above tables, the adjusted coefficient of determination ($R^2$) is 0.873, showing that about 87.3% of the response variations (future operating earnings) can be explained by the current non-discretionary accruals (DA). The probability of the null hypothesis which states that there is no linear relationship between the independent variables and the response variable is equal to 0.00 that is smaller than 0.05. Therefore, the null hypothesis (H0) is rejected at 95% confidence level. So, there is a significant linear relationship between two variables and thus the alternative hypothesis (H1) is confirmed. The fitted model is presented as follows:

$$Earning_{t+1} = 107042.635 + 0.934NDA_t + \varepsilon_0$$
13. Testing the Third Hypothesis

The third hypothesis states that there is a significant relationship between current operating cash and future operating earnings. Statistically, this hypothesis is stated as follows:

H0: There is no significant relationship between current operating cash and future operating earnings.

H1: There is a significant relationship between current operating cash and future operating earnings.

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
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<th>Durbin-Watson</th>
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a. Predictors: (Constant), DA
b. Dependent Variable: Earning

<table>
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<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
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<tr>
<td></td>
<td>Total</td>
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<td>588</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), DA
b. Dependent Variable: E

As can be seen in the above tables, the adjusted coefficient of determination ($R^2$) is 0.613, showing that about 61.3% of the response variations (future operating earnings) can be explained by the current operating cash items. The probability of the null hypothesis which states that there is no linear relationship between the independent variables and the response variable is equal to 0.000 that is smaller than 0.05. Therefore, the null hypothesis (H0) is rejected at 95% confidence level. So, there is a significant linear relationship between two variables and thus the alternative hypothesis (H1) is confirmed. The fitted model is presented as follows:

$$Earning_{t+1} = 35487.157 + 0.783OCF_t + \varepsilon_0$$
14. CONCLUSION

The results of this study concerning the relationship between operating cash flow and accruals to predict future earnings indicated that current discretionary accruals, current non-discretionary accruals, and operating cash flow, and future operating cash are positively and significantly associated with future operating earnings.

15. Limitations

- The general limitation of this study was related to the market structure and how transactions are performed in it. The stocks of some firms are traded intermittently while those of other firms are traded less frequently in a year. However, variables are calculated in a way similar for both types of firms. This makes the firms’ stock performance is not shown correctly.
- The effects of other variables on the results based on the condition of the exchange market, skyrocketing stock prices, the effects of these factors on the firms’ variables, and the effects of changes in economic conditions on the findings of the study were among other shortcomings.

16. Suggestions

1. Our findings indicated that operating cash flows have more information content than other variables to predict future earnings. On the contrary, when predicting future earnings, current discretionary accruals and nondiscretionary current accruals have less information content compared to operating cash flows. Accordingly, when estimating future earnings, investors and financial analysts are recommended to take into consideration these factors in addition to their desired indexes.
2. As was mentioned earlier, accruals and cash flows contain sufficient information for predicting future earnings. Therefore, when predicting earnings, investors are recommended to pay attention to other factors such as general economic conditions, supply and demand, and relevant accounting variables. They are also required to run a comprehensive analysis when estimating future earnings and do not suffice only to the cash items and accruals of the business entity.

17. Suggestions for Future Research

1. The present study was performed on active firms in different industries listed in the Tehran Stock Exchange with the exception of investment firms and financial intermediaries. Given the differences in operations taken investment firms and the firms in the research sample, it is recommended that the relationship between accruals and cash flows be taken into account in predicting future earnings in investment firms.
2. To explore the association between accruals and cash flows in predicting future earnings, it is recommended that such relationship be analyzed in the form of a correlational time series research (by reviewing data from a period of at least ten years).
3. The relationship between accruals and cash flows in predicting future earnings may also be explored by industry.

References

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