The Information content of Accounting Variables In Companies listed in Tehran Stock Exchange (TSE)
Rezvan Hejazi¹, Mahboubeh Jafari² and Adel Karimi³

Abstract
Various researches have been made about usefulness of accounting information in decision making of financial statements users. For example, many researches have examined the relationship between accounting variables and stock returns or stock price. This study determines and compares the relative and incremental content of accounting variables, too. For this, the relationship between stock return and accounting variables is examined for production companies at Tehran Stock Exchange (TSE), in period of 2000 through 2004. Independent variables, in this study, are Net Income (NI), Operational Profit (OP) and Cash Flows from Operations (CFO) and dependent variable is annual Stock return. For omission of the effect of company’s size, we choose total asset as control variable. The results show that OP has relative information content in comparison with other variables and NI and OP have incremental content beyond each other, but CFO doesn’t have incremental content.

Key words: stock return, relative information content, incremental information content

INTRODUCTION

Stock market is a good and suitable place for both investors and public companies. Because they can exchange their moneys to securities and vice versa. Thus, study and research about this market is very significant.

When someone decides to investigate in stock, the selection of stock is the first subject that he faces up to it. If we are going to remain investors in this market, we should prepare some facilities that can be logical or informative.

Because investors have a little information about stock exchange, many studies should be done to find some criteria that help them in investing. If so, they can decide and investigate very carefully and in a speedy way.

Because of this reasons, in this study, we want to find the relative and incremental information content of accounting variables in companies listed in Tehran Stock Exchange (TSE) to realize that which of them is applied by Iranian investors in their decision making and which of them can be a preferred variable for them.

Relative versus Incremental Information content
Incremental information content comparisons assess whether one accounting measure (or set of measures) provides information content beyond that provided by another. Relative information content comparisons ask a subtly different question, which is whether one measure provides greater information content than another.

Incremental comparisons assess whether the information content of X and Y together is greater than that of one variable alone; if so, then the other variable provides incremental information content. Relative comparisons instead ask whether the information content of X alone is greater than, equal to, or less than the information content of Y alone.

We compare relative and incremental information content of X and Y in figure 1. The left column of this figure portrays the three relative information content outcome conditions that are possible for X and Y: info content (X) = info content (Y), info content (X) > info content (Y), and info content (X) < info content (Y). The right column portrays corresponding incremental information content conditions for X and Y: neither X

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nor Y incremental, both X and Y incremental, only X incremental, and only Y incremental. In relative comparisons, only the relative sizes of the circles matter. In incremental comparisons, only the areas beyond the circle intersections matter, where (holding circle sizes constant) the size of an intersection depends on the correction \( r_{xy} \) between X and Y.

**Figure 1. Relative versus incremental information content**

**Panel A**

- \( X = Y \) \iff \( X, Y \)
  - X and Y have equal relative information content
  - Neither X nor Y are incremental
  - Both X and Y are incremental

**Panel B**

- \( X > Y \) \iff \( Y \)
  - X has larger relative information content Y
  - Only X is incremental
  - Both X and Y are incremental

**Panel C**

- \( X < Y \) \iff \( X \)
  - X has smaller relative information content than Y
  - Only Y is incremental
  - Both X and Y are incremental

As shown in figure 1, the mapping between relative and incremental comparisons is not one-to-one. Each relative information content condition maps into two incremental outcome conditions. In Panel A, equal relative information content for X and Y is consistent with either incremental information content for neither X nor Y, or Y, or for both X and Y. In Panel B, larger relative information content for X than for Y maps into incremental information content only for X, or for both X and Y. In panel C, smaller relative information content for X than Y maps into incremental information content only for Y, or for both X than Y.

**Research’s main objectives and Its Hypotheses**

Stock return is widely accepted as the best measure of external value creation and the one to measure corporate performance. So, this research examines, at first the relationship between it and accounting variables. Two main objectives of this research are as follows:

1. Determination and comparison of relative information content of net income (NI), operational profit (OP) and cash flows from operations (CFO).
2. Determination and comparison of incremental information content of above variables and determination the best mix of them.

To achieve these objectives, we developed six hypotheses as followed.
Three of these hypotheses are related to the issue of relative information content of research’s variables:

- $H_1$: NI outperforms OP and CFO in explaining the stock returns in productive companies listed in Tehran Stock Exchange.
- $H_2$: OP outperforms NI and CFO in explaining the stock returns in productive companies listed in Tehran Stock Exchange.

The hypotheses related to the issue of incremental information content of research’s variables are as follows:

- $H_4$: NI provides incremental information beyond that contained in OP and CFO in productive companies listed in Tehran Stock Exchange.
- $H_5$: OP provides incremental information beyond that contained in NI and CFO in productive companies listed in Tehran Stock Exchange.
- $H_6$: CFO provides incremental information beyond that contained in NI and OP in productive companies listed in Tehran Stock Exchange.

**LITERATURE REVIEW**

Raybourn (1986), Bowen et al. (1987), Ali (1994) and Dechow (1994) evaluated the incremental information content of cash flows. They find that both cash flows and accruals provide incremental information relative to each other.

Wilson (1986) examines the incremental information of accruals over total cash flows for 1981-1982, and finds that current accruals (but not long term accruals) are significantly associated with returns, controlling for cash flows. Also, using cash flows defined as earnings before extraordinary items plus non-current accruals, Wilson (1987) finds no incremental content of cash flows over earnings, but when current accruals are added, the resulting metric shows significant additional explanatory power.

Beaver, Griffin and Landsman (1982) examine the incremental information of this same measure of cash flows relative to earnings, and find that for the years 1977 and 1978 the coefficient relating cash flows to returns is significant in the presence of earnings.

In-Mu Haw, Daqing Qi and Woody Wu (2001), by investigating the nature of information in accruals and cash flows in the emerging capital market of China find that the earnings coefficient is positive and statistically significant, during 1995-1998. The results indicate that earning has incremental information content over operating cash flows, but not vice versa.

Francis, Schipper and Vincent (2001), analyze the ability of earnings and non-earnings performance metrics to explain Stock returns for various industries. They choose the Standard & Poor’s (S&P) Industry Surveys as their source of preferred metrics. They find that earnings (EARN) dominates cash from operations (CFO) and earnings before interest, taxes, depreciation and amortization (EBITDA) in explaining security returns in industries where EARN is the preferred metric.

Furthermore, they find that neither CFO nor EBITDA dominates earnings or each other in explaining stock returns in industries where these metrics are preferred. In fact, in industries where CFO is the preferred metric, they find weak evidence that EARN dominates CFO in terms of explanatory power.

Ball and Brown (1968) and Beaver and Dukes (1972) by defining operating cash flows as earnings plus depreciation, depletion and amortization, find that earnings explains more of the variation in returns than cash flows.

Noranesh and Mashayekhi (2004) investigated Incremental Information Content of Economic Value Added (EVA) and Cash Value Added (CVA) beyond Earnings and Operating Cash Flows in Tehran Stock Exchange during 1996-2002. They find that earnings is the most important accounting index in the investing and financing decision making process of Iranian investors, and its information is dominated EVA, CVA and operating cash flows. In other words, it has incremental information content beyond the others. Furthermore, EVA and CVA are used in decision making models of investors of Iranian stock market, and they sometimes have incremental information content beyond earnings, operating cash flows and each
other. But operating cash flows neither has meaningful relationship with stock returns, nor can supply some of explanatory power of stock returns beyond earnings, EVA and CVA.

Noravesh and Heidari (2004) examined the information content of CVA against Operating Profit (OP) and Operating Cash Flow (OCF) during 1999-2003 in TSE within 110 companies. Results confirmed meaningful correlation between CVA and Stock Returns. Relative information content tests revealed Returns to more closely associated with CVA than OCF. Incremental information content tests suggested that CVA adds more explanatory power to Returns than OP and OCF.

Hejazi and Maleki Oskouei (2007) by investigating the information content of Cash Value Added (CVA) and P/E ratio in industrial companies in the Tehran Stock Exchange during 1999-2003, find that returns is more closely associated with CVA than P/E ratio. In other words, CVA has relative information content than P/E ratio. Incremental information content tests suggest that both of CVA and P/E ratio have incremental information content beyond each other.

EMPIRICAL METHODOLOGY

The objective of this research is to examine the correlation between dependent and independent variables. Assuming that equity markets are efficient, Stock returns may be used to compare the information content of performance measures in a regression based approach.

The first methodological requirement is to specify the sample selection method. In this research, population is all Iranian companies that listed in Tehran Stock Exchange (TSE) at most until 20/03/1998 (29/12/1377). So, population consists of 282 companies. Sample of this research is all above companies that have these specifications:
1. The fiscal year-end of the firm is March 20 (Esfand 29)
2. During the period of the research it doesn’t change the fiscal year
3. It’s stocks have been traded during these years
4. It is not a investment company
5. The relevant data are not missing.

Finally, 85 industrial companies listed in Tehran Stock Exchange (TSE) are selected as sample. The second methodological requirement is to specify collecting data. All data used in this research are gathered from financial statements, Tadbir Pardaz and Dena Sahm softwares and TSE archive.

We classify research’s variables into 3 groups: Independent variables, Dependent variable and control variable. NI, OP and CFO are independent variables, Stock return is used as dependent variable and total asset is control variable.

The third methodological requirement is to specify the models used to calculate the relative and incremental content of the independent variables. For this, the models that relate these variables to stock returns are used to examine the hypotheses. All equations used in this research to examine the hypotheses are shown in table 1.

Insert table 1 here

To use these models and examine the hypotheses, at first we should calculate the changes in dependent and independent variables for each year. Then, for omission of the effect of company’s size, the figure calculated divided by total assets.

EMPIRICAL RESULTS

As illustrated above, the first three hypotheses investigate the relative information content of independent variables. We use models NO. 1, 2 and 3 and adjusted coefficient of correlation to examine these hypotheses. The results are shown in table 2.

Insert table 2 here

As shown in table 2, significant level of F-Statistics for all variables is above 0.05. It indicates that none of these variables alone can explain dependent variable, annual stock returns. However, according to adjusted-R², ∆OP has more explanatory power than ∆CFO and ∆NI. In other words, it has relative information content. After ∆OP, ∆CFO has relative information content. While, in comparison with two other variables, the relationship between ∆NI and annual stock returns is the weakest. So, \( H_1 \) and \( H_3 \) are rejected and \( H_2 \) is confirmed.
To examine the second three hypotheses we use models NO. 4, 5 and 6 and adjusted coefficient of correlation. Then, by comparing these adjusted-R²'s with adjusted-R²'s of previous models we adjust about incremental information content. For example, we compare adjusted-R²'s of model 1 and model 4. If the adjusted-R² of model 4 is greater than that of model 1, OP has incremental information content over NI and so on. The results of incremental information content tests are shown in table 3.

**Insert table 3 here**

As shown in table 2, with arrival of NI in regression related OP (model NO. 4) adjusted-R² increases. In other word, adjusted-R² of new model (0.007) is greater than that of old model (0.006). So, it can be said that NI have incremental information content over OP. Therefore, attention to these variables (OP & NI) in the same time has the more information content than consideration of one of them. Furthermore, we can understand from this table that OP has incremental information content over CFO and NI but CFO doesn’t have incremental information content over two other variables and so on. Also, the combination of NI and OP is the best.

**CONCLUSIONS AND FURTHER RESEARCH**

The results indicate that the relationship between selected variables is weak. However, OP has relative information content. In other words, Iranian investors pay attention to OP in comparison with CFO and NI. As we know, OP is the most important income that can help people to assess the operational efficiency. Also, CFO has relative information content in comparison with NI. In other words, Iranian investors don’t pay attention to the figure of NI only, but they consider cash flows from operation more than it.

According to the finding authors recommend the following suggestion as future studies:

1. Because the effect of political and economical factors on various industries is different, it suggested that doing of similar research by emphasis on type of industry can be usefulness and informative.
2. With change of variables or increase them and consideration of CVA or financial ratios, it can be do a different study.

**REFERENCES**


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Noravesh Iraj and Mehdi Heidari, "The Review of Information Content of Cash Value Added (CVA) in Relation to Annual Stock Return: Comparative Analysis with Operating Profit (OP) and Operating Cash Flows (OCF), Accounting Studies, Allame Tabatabaee University, Iran, NO. 8, Winter 2005.


Table 1 - Models used to examine the hypotheses

<table>
<thead>
<tr>
<th>Model’s number</th>
<th>Model</th>
<th>Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$R_{it} = \beta_0 + \beta_1 NI_{it} + \varepsilon_{it}$</td>
<td>1,2 and 3</td>
</tr>
<tr>
<td>2</td>
<td>$R_{it} = \beta_0 + \beta_1 OP_{it} + \varepsilon_{it}$</td>
<td>1,2 and 3</td>
</tr>
<tr>
<td>3</td>
<td>$R_{it} = \beta_0 + \beta_1 CFO_{it} + \varepsilon_{it}$</td>
<td>1,2 and 3</td>
</tr>
<tr>
<td>4</td>
<td>$R_{it} = \beta_0 + \beta_1 OP + \beta_2 NI + \varepsilon_{it}$</td>
<td>4,5 and 6</td>
</tr>
<tr>
<td>5</td>
<td>$R_{it} = \beta_0 + \beta_1 CFO + \beta_2 NI + \varepsilon_{it}$</td>
<td>4,5 and 6</td>
</tr>
<tr>
<td>6</td>
<td>$R_{it} = \beta_0 + \beta_1 OP + \beta_2 CFO + \varepsilon_{it}$</td>
<td>4,5 and 6</td>
</tr>
</tbody>
</table>

Table 2 - The results of examination of the first three hypotheses

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Coefficient of determination($R^2$)</th>
<th>Adjusted-$R^2$</th>
<th>F-Statistics</th>
<th>Coefficient of regression</th>
<th>Significant level</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\Delta$CFO</td>
<td>0.001087</td>
<td>-0.011</td>
<td>0.090</td>
<td>0.00007</td>
<td>0.764</td>
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<tr>
<td>$\Delta$OP</td>
<td>0.017413</td>
<td>0.006</td>
<td>1.470</td>
<td>0.000454297</td>
<td>0.228</td>
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<tr>
<td>$\Delta$NI</td>
<td>0.017445</td>
<td>-0.012</td>
<td>0.727</td>
<td>0.000467263</td>
<td>0.485</td>
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</table>

Table 3 - The results of examination of the second three hypotheses

<table>
<thead>
<tr>
<th>Dependent</th>
<th>Independent</th>
<th>Model No.</th>
<th>Coefficient of</th>
<th>Adjusted-$R^2$</th>
<th>F-Statistics</th>
<th>Standard</th>
<th>Significant</th>
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</thead>
<tbody>
<tr>
<td>Variable</td>
<td>Variables</td>
<td>determination($R^2$)</td>
<td>coefficent of regression</td>
<td>level</td>
<td></td>
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</tr>
</tbody>
</table>
| Stock Return
| $\Delta$CFO & $\Delta$OP | 6 | 0.0261 | 0.003 | 1.1112 | 0.0722 | 66.60% |
| $\Delta$CFO & $\Delta$NI | 5 | 0.0110 | -0.013 | 0.4609 | 0.0985 | 36.77% |
| $\Delta$OP & $\Delta$CFO | 6 | 0.0261 | 0.003 | 1.1112 | -0.1297 | 66.60% |
| $\Delta$OP & $\Delta$NI | 4 | 0.0305 | 0.007 | 1.3050 | -0.2445 | 72.33% |
| $\Delta$NI & $\Delta$CFO | 5 | 0.0110 | -0.013 | 0.4609 | -0.0309 | 36.77% |
| $\Delta$NI & $\Delta$OP | 4 | 0.0305 | 0.007 | 1.3050 | 0.1386 | 72.33% |