The relationship between Cash flows from operating activities in five-section and return on investment in four-section models of statement of cash flows with the quality of disclosure

Yadollah Tariverdi¹, Amir Reza Keighobadi², Samaneh Agha Kazem Shirazi³

1. Assistant Professor, Department of Economics and Accounting, Central Tehran Branch, Islamic Azad University, Tehran, Iran.
2. Assistant Professor, Department of Accounting, Central Tehran Branch, Islamic Azad University, Tehran, Iran
3. Master of Arts (Accounting), Department of Economics and Accounting, Central Tehran Branch, Islamic Azad University, Tehran, Iran.

Corresponding Author email: shirazi.sama20@yahoo.com

ABSTRACT: This research has studied the relationship between Cash flows from operating activities in five-section model and return on investment in four-section model with the quality of disclosure. In this regard the accuracy of predicting future cash flows from operating activities through components of operating earnings has been considered as a criterion of quality of earnings which is the major index of quality of disclosure by its own.

For measuring the independent variables of this research we have used Cash flows from operating activities in five-section model and return on investment in four-section model; for evaluating the dependent variables, accuracy of predicting future cash flows from operating activities through components of operating earnings, adjusted Barth model has put in to the practice. The hypotheses of the study were tested through the panel data gathered from 100 listed companies in Tehran Stock Exchange. The result of this study has shown that Cash flows from operating activities in five-section model and return on investment in four-section model cause the increase of the quality of disclosure and in comparative situation return on investment in four-section model is more than Cash flows from operating activities in five-section model increasing the quality of disclosure.

Keywords: statement of cash flows, Cash flows from operating activities in five-section model, return on investment in four-section model, adjusted Barth model, quality of disclosure.

INTRODUCTION

The users of financial reports have different goals, the levels of knowledge, Interests and Information requirements. The issue that should be noticed in the Capital Markets is that the most people who invest are commonly that the only important available information is the reports which is published from companies. They need the information about Creation and consumption of cash flows by firms. This demand exists, a part from the character of companies’ activities and whether considering the cash flows as an output of company or not.

In this regard, cash flows from operating activities is one of the major index of evaluating this issue that the activity of company up to which level leads to provision of Sufficient cash flows in order to repayment of loans, maintenance of operating power of company and payment of dividends and new investment without using of financial resources out of company.

With regard to results of researches done in accounting literature, when quality of disclosure as an index of earnings quality increases, the more investors will take part in stocks and there is this expectation that between quality of disclosure and Information asymmetry negative relation exists, because while the quality of disclosure increases. The effort of investors for approaching to the secret information decreases, thus Information asymmetry decreases.

Therefore the aim of this research is finding the relationship between Cash flows from operating activities in five-section model and return on investment in four-section model with the quality of disclosure in order to distinguish that which of them has got closer relationship.
In the most of countries, the statement of cash flows includes three sections, Operating activities, Investing activities and Financing activities. This model have presented by FASB. Without any inductive reasoning and also in offering the deductive reasoning has been defective, because Alongside of three-section model, hasn’t provided other models that the Commenters have the Correct Choice.

This statement, has got five sections in Iran and it’s fundamental logic is article 28 of No. 2 of accounting standards in Iran, which express that offer net Cash flows from operating activities shouldn’t be under influence of company’s Capital Structure and thus payments relative to Profit and Financing fees should be shown separately and also the way of providing the statement of cash flows must be in articulation with other essential financial reports such as Income statement. Although this model has covered several defects of three-section model, it is the same complete three-section model and it’s not based on deductive logic.

In addition to these two models, four-section model of the statement of cash flows has been also presented by Tariverdi(2007) for the first time the which is based on inductive reasoning and Peyton's personality theory: In this model Type of company is not important and it's base is the activities of company which express that each company has got four kinds of activities: 1) Financing, 2) Investment, 3) Earning returns, 4) Income distribution.

The above mention three models are different in varies sectors and in this research we intend to study the sectors of Cash flows from operating activities in five-section model and return on investment in four-section model.

Literature Review
According to being a new research topic, Hitherto, there aren’t any researches about this Subject. Thus we refer the closest subject with us research.

Noravesh & hoseini(2010) investigates the relationship between earnings management and quality of disclosure. The results of their study indicate that the quality of disclosure and Timely disclosure has a negative relation with earnings management.

Etemadi & tariverdi(2007) study and test the best way to providing the statement of cash flows from the investor’ judgments. The results show that presentation method of the statement of cash flows has significant effect on professional investor’ judgments. The results of the cross-sectional design also show that five-section model on the statement of cash flows is better than two models of three-section and four-section and as such four-section model is better than three-section model.

Anvari rostami & tariverdi (2011) investigates the best way to providing the statement of cash flows from the Viewpoint of different users. The results of their study indicate that five-section model on the statement of cash flows is better than two models of three-section and four-section and as such four-section model is better than three-section model.

Tariverdi et al (2012) study and test the effect of earnings management on the quality of financial reporting. The results of their study indicate that earnings management through accruals decreased the quality of financial reporting, that is, the purpose of performing earnings management was to misstate and distort financial reports and managers performed it to opportunistically benefit themselves since earnings management decreased the accuracy of predicting future operating cash flows. However, earnings management had no effect on the persistence of accounting profit.

Francis J et al. (2005) investigates predictions outside the United States where alternative legal and financial systems could mitigate the effectiveness of such disclosures and, comprehensively, examines both disclosure incentives and disclosure consequences on cost of capital for a common set of firms. They find that firms in industries with greater external financing needs have higher voluntary disclosure levels, and that an expanded disclosure policy for these firms leads to a lower cost of both debt and equity capital. Cross-country differences in legal and financial systems affect observed disclosure levels in predicted ways. However, a surprising result in the study is that voluntary disclosure incentives appear to operate independently of country-level factors, which suggests the effectiveness of voluntary disclosure in gaining access to lower cost external financing around the world.

Demerjian et al. (2006) study and test the relationship between management’s capability and quality of financial reporting. By creating a model which measures management’s capability, and also separating management’s specific effects from entity’s specific effects, they try to identify management’s specific effects. The results of their study indicate that the quality of financial reporting has a positive relation with management’s capability. The above mentioned finding is in alignment with the general idea that competent and capable managers are more capable of estimating the accruals.

Also Lang & Lundholm(1969), Bari & Brown (1984), Merton(1987), diamond & verchia(1991), kim & verchia (1994) have shown that the most and complete disclosure decreases the Information asymmetry.
Research hypotheses

H1: Cash flows from operating activities in five-section model of statement of cash flows have got relationship with the quality of disclosure.

H2: The returns on investment in four-section model of statement of cash flows have got relationship with the quality of disclosure.

H3: The relationship return on investment in four-section model of statement of cash flows with the quality of disclosure, is more than the Cash flows from operating activities in five-section model of statement of cash flows with the quality of disclosure.

Methodology

Sample selection and data

The study covers a period of seven years (2006 to 2012) and reviews the financial statements and the accompanying notes issued during the period. However, the study period is practically limited to five years, since in testing some of the models applied in the study we need to measure the changes happening in year t in comparison with year t-1, or in some applied models, the relationship between variables in year t and year t+1 should be examined. Since accounting standards were effective in 2007, we select this year as the commencement period. The information society includes listed companies in Tehran Stock Exchange and statistical sampling includes those companies which enjoy the following criteria:

1) The company must be listed in Tehran Stock Exchange from 2006 to 2012.
2) The company should not be of investing, financial brokerage or insurance type, as in these companies earnings manipulation is rather done through sales of investments and other types of available methods than discretionary accruals.
3) There should not be any pause in the company’s transactions during the period between 2006 and 2012, and during the mentioned period, the company’s stock should be traded and active in the market. The company’s transaction interval should be equal or more than zero day and less than six months (0 day ≤ transaction interval ≤ 6 months).
4) The company’s fiscal year should end in 19th of March.
5) The company’s fiscal year should not be changed during the time period between 2006 and 2012.
6) The company’s audited financial statements and accompanying notes should be available for review.

After considering the above mentioned criteria, 100 listed companies are included in our statistical sample.

Research variables

Model applied in measuring Cash flows from operating activities and return on investment

Independent variables of this research are Cash flows from operating activities in five-section model and return on investment in four-section model.

Nowadays based on accounting standards of Iran considering statement of cash flows prepared and presented based on five-section model, then using the information in financial accounting of sample model, all of input and output operating cash flow, has been achieved. Then five-section model turns to four-section model (tariverdi,2007) according to this formula.

\[
\text{ROI}_{i,t}^{\text{Section (Financing & Operating)}} = \text{CFO}_{i,t}^{\text{Section}} + (\text{Increase})\text{Decrease DEP}_{i,t} + (\text{Increase})\text{Decrease ETB}_{i,t} + (\text{Increase})\text{Decrease IR}_{i,t} + (\text{Increase})\text{Decrease DR}_{i,t} + (\text{Increase})\text{NP of LA}_{i,t}
\]

Where ROI_{i,t} is return on investment in four-section model for i company in year t, CFO_{i,t} is Cash flows from operating activities in five-section model, DEP is Depreciation expense, ETB is End of service benefits for employees, IR is Interest received, DR is Dividends received and NP of LA Non-Operating profit of Long-term assets.

Models applied in measuring the quality of financial reporting

Barth et al. model (2001)

In this model, the accuracy of predicting expected future cash flows from operating activities from accounting profit is considered as the quality of disclosure index. For measuring the accuracy empirically, residuals of regression of predicting cash flows from operating activities through previous period’s earnings components are applied.

In this study, the attained residuals from estimating the following regression model are used as the basis for measuring the quality of financial reporting:

\[
\text{CFO}_{i,t+1} = \alpha_0 + \beta_1\text{CFO}_{i,t} + \beta_2\Delta\text{ARI}_{i,t} + \beta_3\Delta\text{INVI}_{i,t} + \beta_4\Delta\text{API}_{i,t} +
\]
\[ \beta_5 \text{DEPR}_{i,t} + \beta_6 \text{OTHER}_{i,t} + \varepsilon_{i,t} \]

Where CFO\(_{i,t}\) is the cash flows from operating activities for \(i\) company in year \(t\); \(\Delta \text{AR}_{i,t}\) is the changes in accounts receivable; \(\Delta \text{INV}_{i,t}\) is the changes in inventory; \(\Delta \text{AP}_{i,t}\) is the changes in accounts payable and deferred liabilities; DEPR\(_{i,t}\) is the depreciation expense of tangible fixed assets and amortization of intangible assets; OTHER\(_{i,t}\) is the net of other accruals which is measured as follow:

\[ \text{OP}_{i,t} = (\text{CFO}_{i,t} + \Delta \text{AR}_{i,t} + \Delta \text{INV}_{i,t} - \Delta \text{AP}_{i,t} - \text{DEPR}_{i,t}) \]

\(\text{OP}_{i,t}\) is the operating earnings; \(\varepsilon_{i,t}\) is the amount of error which is supposed to have a mean of zero (0) and a fixed variance.

All regression variables are presented as a ratio of the previous period's total assets. The absolute value of the residuals, that is, \(\text{RES} = |\varepsilon_{i,t}|\), is considered as the empirical criterion for measuring the quality of financial reporting. These residuals reflect the lack of relationship between future cash flows from operating activities and current operating earnings. The smaller the size of the residuals, the higher is the quality of financial reporting. If the amount of residuals of the relationship between future cash flows from operating activities and current operating income is equal or less than their median, the quality of disclosure will be considered as one and if it is more than their median, the quality will be considered as zero (0). The mathematical form of the index is as follow:

\[ \text{FIRQ}_{i,t} = 1 \text{ if } |\varepsilon_{i,t}| \leq |\varepsilon_{t}| \text{ median of the companies.} \]
\[ \text{FIRQ}_{i,t} = 0 \text{ if } |\varepsilon_{i,t}| > |\varepsilon_{t}| \text{ median of the companies.} \]

To measure the quality of financial reporting, Barth model is applied. The model is modified as follow. In fact, the depreciation expense is deducted from operating cash flows.

\[ \text{CFO}_{i,t+1} = \alpha + \beta_1 (\text{CFO}_{i,t} - \text{DEPR}_{i,t}) + \beta_2 \Delta \text{AR}_{i,t} + \beta_3 \Delta \text{INV}_{i,t} + \beta_4 \Delta \text{AP}_{i,t} + \beta_5 \text{DEPR} + \beta_6 \text{OTHER}_{i,t} + \varepsilon_{i,t} \]

**Control variable**

The size of company is the LN of the book value of the company's total assets. The variable is measured as follow:

\[ \text{SIZE: LN} \left( A_i,t \right) \]

**Testing the research hypotheses**

**Regression model**

**H1**: Cash flows from operating activities in five-section model of statement of cash flows have got relationship with the quality of disclosure.

If the disclosures of high quality, the quality will be equal to 1, and if it is of low quality, the quality will be equal to 0. Logistic Regression method is applied since the dependent variable is of dummy type and the independent variables are of quantitative type.

According to Table 1, the significance level for Cash flows from operating activities is 0.004 (significant and Positive) and for the constant is 0.013 (significant and negative).

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>WALD</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating cash flows</td>
<td>8.766</td>
<td>.003</td>
<td>6.998</td>
</tr>
<tr>
<td>Company size</td>
<td>.831</td>
<td>.362</td>
<td>.863</td>
</tr>
<tr>
<td>Step2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>.273</td>
<td>.601</td>
<td>1.637</td>
</tr>
<tr>
<td>Operating cash flows</td>
<td>8.257</td>
<td>.004</td>
<td>6.477</td>
</tr>
<tr>
<td>Constant</td>
<td>6.217</td>
<td>.013</td>
<td>.699</td>
</tr>
</tbody>
</table>

According to Table 1, the significance level for Cash flows from operating activities is 0.004 (significant and Positive) and for the constant is 0.013 (significant and negative).

Considering the results of testing the hypothesis 1, it can be stated with 95% assurance that Cash flows from operating activities has a significant and Positive relation with accuracy of predicting future cash flows from operating activities through components of operating earnings, that is, Cash flows from operating activities increases the quality of disclosure. However, the company size has no significant relation with accuracy of predicting future cash flows from operating activities through operating earnings (the quality of disclosure).

**H2**: The returns on investment in four-section model of statement of cash flows have got relationship with the quality of disclosure.

According to Table 2, the significance level for return on investment is 0.002 (insignificant and positive) and for the constant is 0.009 (significant and negative).
Table 2. Independent variables’ coefficients and significance levels.

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>WALD Statistic</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>return on investment</td>
<td>10.371</td>
<td>.001</td>
<td>8.316</td>
</tr>
<tr>
<td>Company size</td>
<td>1.055</td>
<td>.304</td>
<td>.846</td>
</tr>
<tr>
<td>Step2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>return on investment</td>
<td>9.742</td>
<td>.002</td>
<td>7.619</td>
</tr>
<tr>
<td>Constant</td>
<td>6.731</td>
<td>.009</td>
<td>.698</td>
</tr>
</tbody>
</table>

Considering the results of testing the hypothesis 2, it can be stated with 95% assurance that return on investment has a significant and positive relation with accuracy of predicting future cash flows from operating activities through components of operating earnings, that is, return on investment increases the quality of disclosure. However, the company size has no significant relation with accuracy of predicting future cash flows from operating activities through operating earnings (the quality of disclosure).

**H3:** The relationship return on investment in four-section model of statement of cash flows with the quality of disclosure, is more than the Cash flows from operating activities in five-section model of statement of cash flows with the quality of disclosure.

According to Table 3, the significance level for return on investment is 0.002 (insignificant and positive) and for the constant is 0.009 (significant and negative).

Table 3. Independent variables’ coefficients and significance levels.

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>WALD Statistic</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>return on investment</td>
<td>2.365</td>
<td>.124</td>
<td>35.267</td>
</tr>
<tr>
<td>Operating cash flows</td>
<td>.427</td>
<td>.514</td>
<td>.220</td>
</tr>
<tr>
<td>Company size</td>
<td>1.042</td>
<td>.307</td>
<td>.847</td>
</tr>
<tr>
<td>Constant</td>
<td>.435</td>
<td>.510</td>
<td>1.872</td>
</tr>
<tr>
<td>Step2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>return on investment</td>
<td>10.371</td>
<td>.001</td>
<td>8.316</td>
</tr>
<tr>
<td>Company size</td>
<td>1.055</td>
<td>.304</td>
<td>.846</td>
</tr>
<tr>
<td>Constant</td>
<td>.407</td>
<td>.524</td>
<td>1.833</td>
</tr>
<tr>
<td>Step3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>return on investment</td>
<td>9.742</td>
<td>.002</td>
<td>7.619</td>
</tr>
<tr>
<td>Constant</td>
<td>6.731</td>
<td>.009</td>
<td>.698</td>
</tr>
</tbody>
</table>

Considering the results of testing the hypothesis 3, it can be stated with 95% assurance that return on investment in four-section model has a significant and positive relation with accuracy of predicting future cash flows from operating activities through components of operating earnings. In the other word return on investment in four-section model more than cash flows from operating activities with five-section model of cash flows causes the increase of the quality of disclosure. But the company size has no significant relation with accuracy of predicting future cash flows from operating activities through operating earnings (the quality of Disclosure).

**Testing the normality of data distribution among two groups of high quality and low quality companies, based on the accuracy of predicting future cash flows from operating activities model.**

In order to compare the means of the samples, first, normality of the data distribution must be examined. In this study, Kolmogorov-Smirnov test is applied to test the data distribution. Null hypothesis and alternative hypothesis are as follow:

- H0: The data enjoy a normal distribution
- H1: The data do not enjoy a normal distribution

Since the significance level of $Z$ in low quality society is equal to 0.000, and this amount is smaller than 0.05, H0 is rejected, that is, the data do not enjoy a normal distribution.

Table 4. Results of testing normality of the data in two societies.

<table>
<thead>
<tr>
<th>Testing</th>
<th>Society</th>
<th>Low quality</th>
<th>High quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z Statistic</td>
<td>3.458</td>
<td>3.785</td>
<td></td>
</tr>
<tr>
<td>Sig.</td>
<td>.000</td>
<td>.000</td>
<td></td>
</tr>
</tbody>
</table>

Comparing the means of: Cash flows from operating activities in two groups of high quality and low quality companies, based on the accuracy of predicting future cash flows from operating activities model.
To compare two independent groups, test of comparison the means of two groups should be applied, that is, the mean of Cash flows from operating activities for the companies with high quality disclosures compared with the one for the companies with low quality disclosure Table 5. In this test, null hypothesis and alternative hypothesis are as follow:

- **H0**: The means of cash flows from operating activities in two groups of the companies are equal
- **H1**: The means of cash flows from operating activities in two groups of the companies are not equal

<table>
<thead>
<tr>
<th>Testing</th>
<th>Society</th>
<th>Low quality</th>
<th>High quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>216.83</td>
<td>250.90</td>
<td></td>
</tr>
</tbody>
</table>

Since the data do not enjoy a normal distribution, nonparametric tests should be applied in order to compare the means of cash flows from operating activities in two societies of high quality and low quality. In this study U Mann Whitney Test (nonparametric) is employed to compare the means of the samples.

**U Mann Whitney test**

Table 6 shows that the significance level of $z$ is 0.006 which is smaller than 0.05. Therefore, null hypothesis is rejected; that is, the means of cash flows from operating activities in two groups of high quality and low quality companies are not equal. The mean of Cash flows from operating activities in low quality companies is bigger than the one in high quality companies.

<table>
<thead>
<tr>
<th>Testing</th>
<th>Operating cash flows</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z statistic</td>
<td>-2.730</td>
</tr>
<tr>
<td>SIG</td>
<td>.006</td>
</tr>
</tbody>
</table>

Considering the results of the test, it can be stated with 95% assurance that the mean of Cash flows from operating activities in high quality companies is not equal to the one in low quality companies Table 5. The mean Cash flows from operating activities in high quality companies is bigger than the one in low quality companies, that is, Cash flows from operating activities increases the quality of disclosure.

**Comparing the means of return on investment in two groups of low quality and high quality companies, based on predicting the persistence of accounting profit model**

To compare two independent groups, test of comparison the means of two groups should be applied, that is, the mean of return on investment for the companies with high quality disclosure is compared with the one for the companies with low quality disclosure Table 7. In this test, null hypothesis and alternative hypothesis are as follow:

- **H0**: The means of return on investment in two groups of the companies are equal
- **H1**: The means of return on investment in two groups of the companies are not equal

<table>
<thead>
<tr>
<th>Testing</th>
<th>Society</th>
<th>Low quality</th>
<th>High quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>211.75</td>
<td>253.05</td>
<td></td>
</tr>
</tbody>
</table>

Since the data do not enjoy a normal distribution, nonparametric tests should be applied in order to compare the means of return on investment in two societies of high quality and low quality. In this study, U Mann Whitney Test (nonparametric) is employed to compare the means of the samples.

**U Mann Whitney test**

Table 8 shows that the significance level of $z$ is 0.001 which is smaller than 0.05. Therefore, null hypothesis is rejected; that is, the means of return on investment in two groups of high quality and low quality companies are not equal. The mean of return on investment in high quality companies is bigger than the one in low quality companies.

<table>
<thead>
<tr>
<th>Testing</th>
<th>Operating cash flows</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z statistic</td>
<td>-3.320</td>
</tr>
<tr>
<td>SIG</td>
<td>.001</td>
</tr>
</tbody>
</table>
Considering the results of the test, it can be stated with 95% assurance that the mean of Cash flows from operating activities in high quality companies is not equal to the one in low quality companies Table 5. The mean Cash flows from operating activities in high quality companies is bigger than the one in low quality companies, that is, Cash flows from operating activities increases the quality of disclosure.

**DISCUSSION & CONCLUSION**

The presence of investors in stock exchange depends on achieving benefit and attaining desirable financial results. Decisions of investors in stock exchange will form based on presented information. One of the most important presented information resources in market is financial statements prepared by accepted companies in stock exchange.

Therefore financial reporting must prepared the information for the investors, the actual and potential creditors and the other users and help them in evaluating of quantity, timing and unreliability of cash receiving; the more presented information in reports is of high quality the better effect on investor's decisions.

One of the most important financial statements is statement of cash flows which clearly shows all of input and outputs of cash flows and in different countries such as Iran pay a lot of attention to this statement. This research has studied the relationship between Cash flows from operating activities in five-section model and return on investment in four-section model with the quality of disclosure. In this regard the accuracy of predicting future cash flows from operating activities through components of operating earnings has been considered as a criterion of quality of earnings which is the major index of quality of disclosure by its own. Considering the literature review, research hypotheses tried to prove this issue that return on investment in four-section model is more than Cash flows from operating activities in five-section model increasing the quality of disclosure.

The result of this study has shown that Cash flows from operating activities in five-section model and return on investment in four-section model cause the increase of the quality of disclosure and in comparative situation return on investment in four-section model is more than Cash flows from operating activities in five-section model increasing the quality of disclosure. Likewise regarding the result of testing the research hypotheses indicate that there is no significant relationship between the size of company and the accuracy of predicting future cash flows from operating activities through components of operating earnings.

Therefore based on the results of this research, is suggested that the effect of presenting all parts of statement of cash flows according to quintuple & four-section model with considering different models of measuring and the other financial statements such as balance sheet and statement of income can be studied comparatively with quality of disclosure.

**REFERENCES**


