A Survey of the Role of Earnings Quality in Accurately Forecasting of Operational and Cash Circulation of Companies Listed on Tehran Stock Exchange

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Abstract   *Accuracy of financial prediction is one of the important goals of financial reporting as important information is provided for internal and external users. Accounting profit and its components are the information considered during decision making by people. The present study aimed to evaluate the relations and role of earnings quality on accuracy of prediction of operating cash flow of companies listed on TSE. To achieve study purpose, 25 active industries during 5 years (2009-2013) are selected. Then, by Cochran's formula, a sample of 50 companies is selected. Based on the results of study, we can say by increase of earnings quality, accuracy of cash flow and operations forecast can be increased. Thus, earnings quality is a reliable criterion for accuracy of financial forecast of business units.*

Key words   Earnings quality, working capital, prediction of financial variables, operating activities, financial reporting

1. Introduction

Shareholders and other stakeholders are interested in prediction of financial variables including cash flow forecast in short and long-term. Accounting experts attempt to present suitable methods and accounting procedures and some models for accuracy of these variables as these models can help the capital market in prediction of financial variables of companies and present to investors in investment decisions. Experts have applied various criteria for accuracy of financial variables prediction. The recognition of predictability of each of criteria, models and methods and accounting procedures can help the identification of best models for prediction to users. The significance of accuracy of financial variables including specific operating earnings in managerial decision making and investment obliged the researcher to perform an empirical research in TSE and evaluated earnings quality for accuracy of working capital, voluntarily accruals, operating activities of companies listed on TSE.

2. Statement of problem

2.1. Earnings quality

In various papers in definition of concepts of earnings quality, two features are referred to determine earnings quality: One is Benefit decision concept and another is the relationship between this concept and economic earnings, In other words, according to Hicks, earnings quality is honest statement of earnings. Honest expression is the consistency between description and what it is claimed (conceptual statement No.2 of paragraph 63). IN other words, high earnings quality indicates usefulness of earnings information for decision making of users and its consistency with economic profit of Hicks. People use information in different decisions; it is not possible to present a complete definition of earnings. Some financial analysts consider earnings quality as common and continuous, repeatable profit creating cash flow from operations. They believe that earnings quality is a figure between reported net profit and cash flows from operations

minus non-repetitious figures. According to Rosayn *et al.*, (1999) the stable earnings has high quality. Body (2002) defines earnings quality as the size we expect the reported earnings level is stable.

MickHall believes that the high quality earnings is the one predicting future operating cash flows of the enterprise. "Hakins", accounting professor of Harvard University describes earnings quality as follows (Zariffard, 1999).

In evaluation of earnings per share quality, six factors are presented: 1. Effects of economic environment (e.g. inflation rate and exchange rate change), 2. Abnormal events (sale of administrative building), 3. Capital structure (financial leverage), 4. Tax methods, 5. Accounting methods, 6-normal and repeatable activities and their relationship and earnings change of per share.

In financial and accounting studies, some features of business enterprise are identified and they increase earnings quality. If a company has the following criteria, its earnings quality is high:

1. Stable accounting conservative methods;
2. Income flow before tax from operation and repeatable activities;
3. Achieving net profit and growth rate independent from tax considerations (e.g. reduction of tax rate leading to tax exemption);
4. Having suitable level of debt;
5. Having suitable capital structure;
6. Earnings of company are not based on inflation.

2.2 Research approaches regarding benefit of accruals in prediction of accuracy of future cash flows

Three research approaches are used for empirical evaluation of benefit of accruals regarding future cash flows. These approaches include Value Relevance Method, Information Content Method, Predictive Ability Method and each of them is explained separately in the following.

1. Value Relevance Method

This approach emphasizes on value relevance of accruals by their relationship with securities values simultaneously. Some researchers as Dechow (1994) and Wilson (1986) have found that there was a correlation between various components of accruals and stock return. In this branch of studies, the information of profit and their components is used.

2. Information content method

The researches in this method emphasize on the evaluation of benefit of accruals regarding the relationship between accruals, cash flows and future earnings. Dechow *et al.*, (1998), Barth *et al.,* (2001) and Kim and Kross (2005) predicted the relationship between accruals of present period and next period cash flows by cash flow regression in t+1 period on cash flow and accruals of period t. The results of study showed the explanation power of regression.

3. Predictive ability method

The researches in this method evaluate the benefit of accruals based on their excess predictability to cash flow and earnings. Many studies have evaluated the relationship between earnings components and future profitability criteria. Some studies evaluated excess profit forecast to cash flows. Bowen et al., (1986) didn't find any evidences regarding the fact that profit before extraordinary items was a better predictor of future operating cash flows compared to random walks of cash flows. Dechow *et al.,* (1998) study showed that profit before unexpected items and stopped operation had better prediction of cash flows based on random walk model. Finger (1994) applied time series techniques and didn't find evidences regarding the fact that previous profits more than past cashes flows predicted future cash flows. Greenberg *et al.*, (1986) found that in most of sample companies, total profits to current cash flows showed high relationship with future cash flows. By prediction models interpreting the claim of board of financial accounting standards as directly, they provided evidences supporting the claim of this board. This study didn't perform any correct test of models in prediction of future cash flows. Bowen (1986) reported the results didn't supporting the claim that profits had high relationship with future cash flows compared to different criteria of current cash flow. Other studies in this approach are Lorek (1993), Lorek and Willinger (1996) and Yoder (2007).

3. Literature review

Many studies have found that prediction accuracy was a performance of analyst internal ability, special experiences of company, general experiences, prediction direction and previous accuracy.

The relationship between value of earnings and prediction of future cash flows (Kim et al., 2005).

Kim *et al*., (2005) theoretically showed that coefficient of determination of cash flow forecast regression was associated with 1) relative error in future cash flows, 2) Relative error in covariance between future cash flows and current profit.

Although they stated that the above elements as the results of Kim and cross (2005) increased earnings ability in prediction of cash flows in recent decades, the evidences showed that reduction of relationship between values of earnings by other elements. The significance coefficient of error (97%) in cash flows and in covariance (87%) show that cash flows forecast test is a little substitute for testing the relationship with the income value and other accounting items with the same amount. They found that conceptual statement of board of financial accounting standards considering future cash flows as a proper tool for discount of total future cash flows without any error is not suitable. Cash flows are good source of information and can be information complementation as extracted from profits.

Persistence of cash flows components in prediction of future cash flows (Cheng and Hollie, 2007).

Cheng and Hollie (2007) in a study evaluated the accuracy of cash flow components in prediction of future cash flows. The study period was 1988-2002 for 15 years. The companies with sale of less than 1million $ and stock price less than one dollar were excluded from the study. In the above study, 6 components of cash flows are evaluated as cash flows of sale, sold goods cost, operating costs, interest, tax and other components. They found that cash flow components of various operations had different persist. Also, cash flows of sales, sold goods cost, operating costs and interest in prediction of cash flows had high persistence. Cash flow of other components had low persistence and cash flow of tax had no persistence. They participated accruals in their regression model and found that persistence of cash flow components was more than that of accruals. In addition, they compared two cash models with two accrual models applied by Barth et al., (2001) and stated that accrual components increased model efficiency.

Incremental predictive abiity of future cash flows by accrual models (Yoder, 2007).

Yoder (2007) performed a study regarding incremental predictability of future cash flows. This paper also provides accrual model developed by Barth *et al*., (2001) to include cash flow implications of growth in sales. In this study, prediction accuracy was compared outside of the sample of regressions models and an accrual-based cash flow prediction model based on a random walking cash flows adjusted for the reversal of current payables and receivables is presented. Results indicate that this simple accrual model predicts future cash flows better than models based on current cash flows alone. Initial evidence showed that extended model in this study had no incremental predictive ability compared to reversal model of accruals or cash flow-based models. The results of study showed that the model in which short-term accruals were used had better performance to the models using only current operating cash flows for prediction. The supporting analyzes by a prediction process considering the prior three years observations were better than two models of cash flows and reversal model of accruals. In addition, in this study, the impact of some features of company (variability to goods inventory at the end of period to next year sale, variability of sale and profit and firm size) on predictive ability of these models was investigated. The results of study showed that predictive ability of these models was reduced with the variability of goods inventory at the end of period to next year sale, variability of sale and profits and increased based on firm size.

Accruals and prediction of future cash flows (Brochet et al., 2008).

This study evaluated the role of cash flow and accruals of accounting profit in prediction of future cash flows. Out-of sample prediction, prediction of specific regression of each company and various levels of collecting dependent variables with value of stock market as a representative for all future cash flows are estimated. The study period is 1987-2006. In the study sample, the companies with at least market value of 50 million dollars are considered. By adjusted three-month data for each season, they found that absolute prediction error of future cash flows as mean is smaller when accruals are added as predictive component compared to when only cash flows from current operation is used. Also, they found that firm-specific

prediction showed high accuracy compared to cross section prediction. Their study supported the claim of Financial

Accounting Standards Board as the accrual accounting is useful in prediction of cash flows.

4. Study hypotheses

To achieve the study purposes, the following hypotheses are formulated as:

1. There is no relationship between earnings quality and working capital and discretionary accruals of working capital (H0), 2. There is no relationship between earnings quality and operational activities (H0).

5. Methodology of research

Study method is applied in terms of study purpose and is descriptive-correlation in terms of nature and method. The collection of required data is based on stock market from Rahavard Novin, Tadbirpardaz software and referring to financial statements, explanatory notes and common general assembly reports.

In case of incomplete existing data in this database, we referred to the existing archives in library of stock market and internet site of research management, development and Islamic studies, stock market organization (http://rdis.ir). For data analysis and extraction of descriptive statistics, SPSS software is used. For results of inferential statistics, Eviews software is used. By data collection, the study is ex post factor. For data analysis, descriptive, inferential, multi-variate regression methods are used. The study hypothesis is tested based on pooled data and the effect and role of earnings quality on prediction of future cash flows from funding are tested. To predict the mentioned item, Pearson correlation coefficient and regression analysis with pooled data are used. The place scope of study is companies listed on TSE. The time scope is 2009-2013 (5 years).

6. Study sample and population

As mentioned in place scope of study, the study population is all companies listed on TSE.

Thus, to select the sample, two stratified and systematic random samplings are used. In stratified method, the study population is divided into homogenous groups and then the number of samples to each group is defined. By systematic random sampling, the number of required elements of each homogenous group is selected (Azar and Momeni, 2000). In systematic random sampling method, the number of required samples (n) is selected of total study population (N). At first, sampling distance (K) is calculated as followings:

$$K = \frac{Number\ of\ population\ members}{Number\ of\ study\ members},$$

then we select values 1-K randomly and then companies, units or next people are selected with K distance from the mentioned value. In this study, at first companies listed on TSE are classified under various industries by which 25 active industries during 5 years (2009-2013) are selected. Then, by Cochran's formula:

$$n = \frac{Nz^2 p(1-p)}{d^2(N-1)+z^2 p(1-p)}$$

and systematic random sampling, a sample of 50 companies is selected.

To test study hypotheses, regression analysis based on statistical model is used:

Working capital and discretionary accruals of working capital

1) $WC_{i,t} = \beta + \beta_E EARN_{i,t} + \beta_{AR}\Delta AR_{i,t} + \beta_{INV}\Delta INV_{i,t} + \beta_{AP}\Delta AP_{i,t} + u_{i,t}$ (1)

Where:
WC = working capital.

Operational activities

2) $OA_{,t} = \beta + \beta_E EARN_{i,t} + \beta_D DEPR_{i,t} + u_{i,t}$ (2)

Where: OA = operational activities.

All variables are homogenized based on the mean total assets.

7. Study variables

In this study, working capital, discretionary accruals of working capital and operations are dependent variables and earnings quality as independent variable in companies with high quality and companies with low quality. Among accruals (change in accounts received, change in accounts paid, change in inventory and depreciation), three first cases are short-term accruals but depreciation is long-term accruals.

In a study done by (Ben-Hsien and Bao, 2004) in "Income Smoothing, Earning Quality and Firm Valuation" applied three following indices to determine companies with high earnings quality:

1. Cash content of earnings (cash flow from operations per share to earnings per share) is more than the mean of this ratio in total sample.
2. Cash flow of each share from operations is positive.
3. Earnings per share is positive (earnings per share before unexpected items)

If a company has three mentioned features, it is the one with high quality income and if a company doesn't meet one of the above conditions, its income has low quality.

8. Descriptive statistics

Table 1 shows descriptive statistics including mean, median, standard deviation and Skewness of study variables. Earnings mean, cash flow operations and accruals is 0.158, 0.107, 0.051 (Here accruals are based on deduction of operating cash flows from profit). Thus, cash component is twice more than its accrual. Standard deviation of operating cash flows (0.170) is higher than standard deviation of accruals (0.122) and it means that operating cash flows is more volatile than accruals.

Table 1. Descriptive statistics of study

Skewness	SD	Variance	Mean	Variable
1.935-	0.475	0.226	0.292	Cash flow
1.185	0.06	0.0036	0.04	Earnings quality
1.123	0.618	0.382	5.746	Firm size
1.448	938.22	880261.03	795.42	Earnings per share
1.926	0.608	0.370	0.640	Book value to market value ratio
2.654	0.222	0.049	0.669	Debt ratio
1.232	0.159	0.025	0.158	$EARN_t$

Another accrual calculation method is using balance sheet method (considering accruals components). The values of this method are shown in Table 2. As shown, the mean changes of accounts received, changes of inventory, changes of accounts paid, depreciation cost and other accruals are 0.032, 0.026, 0.016, 0.024 and 0.033, respectively. The results show that majority of accruals in balance sheet method is regarding other accruals and lowest value is regarding changes of accounts paid.

Table 2. Continuance of descriptive statistics of study variables

Median	SD	Variance	Mean	Variable
0.125	0.159	0.025	0.158	$EARN_t$
0.077	0.170	0.029	0.107	CFO_t
0.033	0.122	0.014	0.051	$ACCRUALS_t$
0.029	0.173	0.029	0.032	$AR_t\Delta$
0.028	0.169	0.028	0.026	$INV_t\Delta$
0.008	0.108	0.011	0.016	$AP_t\Delta$
0.020	0.019	0.036	0.024	$DEPR_t$
0.006	0.240	0.057	0.033	$OTHER_t$

9. Results of model estimation

First hypothesis: There is no relationship between earnings quality and working capital and discretionary accruals of working capital.

The results of estimation of model 1 are shown in Table 3 and intercept of model (0.022) and coefficient of changes of received accounts (-0.124) is significant at level 5%. Earnings coefficient (0.517) at level 1% and coefficient of changes of accounts paid (-1.141) are significant at the level 10%. The coefficient of inventory changes (0.005) is not significant. The adjusted coefficient of determination is 25.2%.

Table 3. The results of estimation of Model 1

Significance	T statistics	Coefficient	Variable
0.020	2.321	0.022	Constant
0.000	8.034	0.517	$EARN_t$
0.021	2.308-	0.124-	ΔAR_t
0.921	0.089	0.005	ΔINV_t
0.083	1.736-	0.141-	ΔAP_t
0.252	Adjusted R^2		
1.885	Durbin-Watson statistics		
36.581	F statistics		
0.000	Significance level		

Second hypothesis: There is no relationship between earnings quality and operations.

The results of estimation of model 2 in Table 4 show that intercept (-0.013) is not significant and earnings coefficient (0.481) and depreciation cost coefficient (1.395) are significant at the level 1%, 10%. The adjusted coefficient of determination of model is 20.4%.

Table 4. Results of estimation of model 2

Significance	T statistics	Coefficient	Variable
0.465	0.732-	0.013-	Constant
0.000	8.022	0.481	$EARN_t$
0.055	1.925	1.395	$DEPR_t$
0.204	Adjusted R^2		
1.912	Durbin-Watson statistics		
73.007	F statistics		
0.000	Significance level		

The comparison of the estimation of models based on hypotheses shows that increasing short-term accruals compared to adding long-term accruals to earnings model can increase explanatory power of earnings quality. This means the rejection of study hypotheses. The results of study hypothesis test, Fisher and t-student show that there is a significant relationship between dependent and independent variable. The function has no auto-correlation. Durbin-Watson statistics is close to 2.

10. Discussion and conclusions

The reported financial accounting is used for users outside the company. As earning is an initial source of such information, the present profitability level is used as an important criterion in prediction of financial variables of business units. Although prediction of financial variables is justified based on present profitability, due to existing shortcomings in earnings measurement (subjective estimations and financial predictions of issues based on accrual accounting and choice of managers in determining accounting methods in trade scheduling), the difference between accuracy of financial variables and reported profit is possible. Under such conditions, predictability of variables is reduced and suitable use of this element in prediction models is problematic. To solve this problem, earnings quality is raised. Earnings quality can be effective on decisions and results of financial statement users.

Lobo (2012) found that financial analysts' measurements are available for investors and in important cases like reduction of earnings quality. This is real that managers have motivations for manipulation of earnings. This method can lead to earnings with low quality and it is considered as opportunistic behavior of managers. Using increase of profit can be for misleading users. Various studies have been regarding the relationship between features of various profits and prediction of financial variables. This study presents the expectations in which high quality of earnings (providing useful information for analysts) can enable the analysts to present correct predictions. The earnings quality studies show that earnings with low quality can be associated with correct predictions. The results of study show that managers trust on earnings with low quality in analyst prediction can lead to low difference of predictions and reported earnings. Thus, the purpose of this study is evaluation of the relationship between earnings quality on accuracy of prediction of operating cash flows in companies listed on TSE to help the financial analysts and users.

The results of estimation of model 1 show that there is a significant association between earnings quality and working capital and discretionary accruals of working capital and adjusted coefficient of determination is 25.2%. The results of estimation of model 2 show that there is a significant association between earnings quality and operations and adjusted coefficient of determination of this model is 20.4%. The results of this hypothesis are consistent with the study of Barth *et al.,* (2001) and Allattar and Hossein (2004) but are not consistent with the study of Wing Yan (2005).

11. Recommendations

1. Based on incremental power of accruals in prediction of future cash flows compared to cash models, it is recommended that investors and financial analysts mostly consider accruals. Also, it is recommended to financial statement users, market analysts and investors to consider cash flow statement more. Most of the required information to predict future cash flows is hidden in cash flow statement and comparative statement of operating cash flows. Using cash flow prediction models and considering financial statements namely cash flow statement can lead to logical decisions of users.

2. It is recommended to investors in stock market to invest in companies with high quality earnings.

3. Investors should consider that earnings quality of companies is effective on prediction of financial variables namely future cash flows from funding.

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