The Effect of Accounting Conservation on Return on Investment

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Abstract: Conservation is a covenant which can assure settling the principal amounts of loans and the accrued interests and realizing long-term return and applicability of managers' programs, through proper and conservative measurement of the results of enterprises' activities. In the present research we study the effect of accounting conservation on return on investment (return on assets and return on owners' equity) of the companies admitted in Stock Exchange. For the purpose of this research, the financial data of 87 companies from 2004 through 2009 were gathered, and research hypotheses were tested using correlation coefficient analysis and regression model. The results of research indicate a reverse significant relationship between return on assets and return on owners' equity (as two indices of return on investment) and accounting conservation. It should be noted that this relationship is not linear.

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1) Introduction

Companies must provide financial statements at the end of each fiscal year. The categorized financial information available in every financial statement can be highly effective in financial analysis and financial decision making because these statements should present information to various groups, particularly to the investors as the most important entities. Investors have always needed information to enable them assess their strategic decisions [2].

In fact the concept of conservation inspires the need for precaution in reporting and allows the users know where ambiguities and hazards exist [4].

Many researches are seeking to identify the variables that could be effective in decision making of a wise investor. Return on investment is among the variables that could affect the judgments and decision making by users and managers.

In this research we aim to study the impact of conservation on return on assets and return on owners' equity.

2) Theoretical Fundamentals and Literature

2-1) Definition of Conservation

Givoly and Hayn (2000) define conservation as choosing an accounting strategy under uncertainty conditions which will finally lead to minimal statement of assets and earnings, and will leave minimal positive impact on the owners' equity [10]. Kim and Zhang (2000) believe that conservation means identifying all potential losses and not detecting the probable incomes [11]. Velk et al. (2001) define conservation as the tendency of accountants toward identifying and deferring incomes and understating the assets [15]. According to Ahmad et al. (2002), conservation is continuous understatement of book value of net assets compared to their market value [6].

2-2) A Review of Literature and Previous Studies

Givoly&Hayn (2000) studied time series of changes in revenues, cash flows and accruals and found that revenues, cash flows and accruals have a steady pattern and hence concluded that accounting conservation has increased during the period under study (a 30-year period) from 1967 to 1997 [10].

Feltham&Ohlson (1995) stated that accounting conservation has an important role in companies' valuation. They anticipated that if operational assets are not fully identified, a positive relationship will be created between accounting conservation and multiple or varied valuation of operating assets [9].

Basu (1997) dealt with the study of the principle of conservation and timely statement of accounting revenues. He discovered that shifts in negative revenues are less stable than positive revenues [8].

In an article in 2003, Watts studied the literature on accounting conservation research. Through this article, three general criteria were presented to measure conservation: measurement of net assets, revenues and accruals and the ratio of revenues to stock return. He introduced four interpretations for accounting conservations: contractual interpretation,

legal interpretation, tax interpretation and legitimate interpretation [13&14].

Bayti et al. (2003) examined the importance of accounting changes in debt contracts and analysis of changes in compulsory and optional accounting. Following the studies they concluded that many of loan contracts did not allow the loanee to change the method of accounting. The main reason was that loaners believed that it would be likely that loanees would overstate the accounting income and higher distribution of stock cash dividend by choosing a variety of accounting methods, which would increase the risk of non-collection of the principal amount of granted loans and the interest accrued to them [7].

Zhang (2004) analyzed the actual and predictable advantages of conservation for loaners and loanees. The first issue was that one of the advantages of conservation for the loaners was timely alarm signaling against the risk of non-observation of provisions of loan contracts by loanees. The second issue was that one of the main advantages of observing accounting conservation for loanee is reduction in the interest rate of received loans [11].

Penman and Zhang (2002) studied and examined the relationship of conservation, income quality and stock market. Their findings showed that conservative procedures would create high quality incomes. Conservation reduces income although conservative incomes are of higher qualities. Therefore, once conservative accounting is accompanied by growth in investment, it would reduce accounting return rate and income [12].

Banimahd (2006) determined the effective factors of accounting conservation based on the information gained from the companies admitted to Tehran Stock Exchange in an 11-year period (1994-2004) and proposed a model to measure it [3]. Mashayekhi et al. (2009) studied the impact of conservation on income stability. They came to the conclusion that increasingconservation will cause reduction in distribution of dividend. Also based on the results obtained in this research, the author has not provided any opinion on rejecting or accepting this hypothesis that income stability will reduce if accounting conservation increases [5]. Etemadi et al. (2009) studied the relationship between conservation and the components of financing expenses in the companies admitted to Tehran Stock Exchange to present a model for prediction of the amount of observation of accounting conservation by companies. The results of this research showed a correlation between some components of financing expenses and accounting conservation to provide a model for measurement of accounting conservation [1].

Research Hypotheses:

First hypothesis: there is a significant relationship between accounting conservation and return on assets (ROA).

Second hypothesis: there is a significant relationship between accounting conservation and return on equity of owners (ROE).

3) Research Method:

3-1) Statistical Population and Sample

The statistical population of this research comprises all companies admitted to Tehran Stock Exchange during 2004 - 2009. The statistical population of research includes the companies which have the following conditions:

a) They are not among investment companies.
b) Their fiscal year ends on March 20 every year.
c) Companies which do not stop transactions for more than six months during the said interval.
d) The company has not changed its business or fiscal year during 2004-2009.

Taking into account the said limitations and having studied the collected data and eliminated irrelevant observations, finally the sample consisted of 87 companies in each year. The data of this research has been extracted from Stock Exchange Internet Database. The collected data has been analyzed through SPSS software.

3-2) Measuring the Amount of Conservation

Conservation is a criterion for choosing the accounting principles and procedures under all conditions of ambiguity and uncertainty. In face of uncertainty, methods should be selected and applied that will finally lead to the minimum possible amount of accumulated profit. In fact under conditions of uncertainty and dilemmas, earnings and assets must be identified later while costs and debts must be identified earlier [10].

Givoly and Hayn Model was used to calculate accounting conservation index for the purpose of this research. According to Givoly and Hayn, accounting conservation will lead to increase of accruals in due course. Therefore, in a long-term period, the mean of accruals can display the company's conservation trend. In another words accounting conservation results from using obligation assumption, which mostly affects the accruals.

Based on Givoly&Hayn Model (2000), conservation index is calculated as follows:

$$\mathrm{ACC_{it}} = \mathrm{NI_{it}} + \mathrm{DEP_{it}} - CFO_{it}$$

$$\mathrm{OACC_{it}} = \Delta\mathrm{AR_{it}} + \Delta\mathrm{I_{it}} - \Delta PE_{it} - \Delta AP_{it} - \Delta TP_{it}$$

$$NOACC_{\mathrm{it}} = \mathrm{ACC_{it}} - OACC_{it}$$

Where:

ACC: Total accruals

DEP: depreciation cost

OACC: operating accruals
ΔPE: shift in advance payments
ΔTP: shift in payable taxes
ΔAR shift in receivable accounts
NI: net profit before extraordinary items
CFO: operating cash flow
ΔI: shift in goods inventory
ΔAP: shift in payable accounts
NOACC: non-operating accruals

To calculate accounting conservation index, the accruals are calculated directly based on the information taken from the companies' balance sheet and are then divided by the total assets in the beginning period of each company in each year.

conservation index = $\frac{accruals}{totalassetsinthebeginningperiod} \times (-1)$

4) Testing Research Hypotheses

First hypothesis:

"There is a significant relationship between accounting conservation and return on assets (ROA)".

Table 4-1) Correlation Coefficient between Accounting Conservation and Return on Asset (General Observations in all Years)

		Accounting conservation
Return on Assets	Correlation coefficient	-0.216
	Statistic t (level of significance)	-5.45 0.00

After making studies and calculations, the above table indicates that the correlation calculated between return on assets and accounting conservation is -.0216, which is a reverse correlation. Since the level of significance is 0.00 and less than 0.05 (p <0.05), we can conclude with 0.95 confidence that there is a significant relationship between the variables under study. According to the gathered information and with due regard to the significance of null hypothesis we come to the conclusion that the author's assumption, i.e. "there is a significant relationship between return on assets and accounting conservation" is confirmed.

Second hypothesis:

"There is a significant relationship between accounting conservation and return on owners' equity (ROE)".

Once this hypothesis is studied:

Table 4-2) Correlation Coefficient between Accounting Conservation and Return on Owners' Equity (Observations of All Years)

		Accounting conservation
Return on owners' equity (ROE)	Correlation coefficient	-0.171
	Statistic t (level of significance)	-4.27 0.00

The results of the above table indicate that the correlation between return on owners' equity and accounting conservation has been calculated -0.171. Taking into account that the significance level is 0.00 and less than 0.05 (p <0.05), we may conclude with 0.95 probability that there is a significant relationship between the variables under study. Taking into account the collected information and regarding the significance of null hypothesis, it is concluded that the author's claim "There is significant relationship between return on owners' equity and accounting conservation" is confirmed.

Whereas the study of appropriateness of model for simple linear regression model showed that the normality assumption of remainders in this model is not established; therefore, other models were presented for fitting observations. The best models that we gained for each hypothesis are:

We used the following model to study the return on assets' regression on conservation index:

$$\text{SQRT}\,|y| = \beta_{\circ} + \beta_1 x_1 + \varepsilon$$

Y= the company's return on assets x= accounting conservation index

The results of this fitting are provided in tables 4-3 to 4-5.

Table 4-3) Summary of Linear Regression Model (Converted Data) for Return on Company's Assets v. Accounting Conservation Index

Correlation coefficient	Coefficient of determination	Durbin-Watson statistic
0.192	0.037	1.667

In table 4-3, the coefficient of determination is 0.037, indicating that 3.7% of the shifts in the company's return on assets relates to independent variable, namely accounting conservation index. Since in variance analysis table, the level of significance is less than 0.05, we can be confident at level 0.95 that the fitting model is appropriate.

Table 4-4) Variance Analysis for Return on Assets of Company against Accounting Conservation Index

	Sum of squares	Degree of freedom	Sum of squares' mean	F-statistic	p-value significance level
Regression	0.529	1	0.529	23.235	0.00
Error	13.808	607	0.023		
Total	14.337	608			

Based on the results of table 4-5 and estimation of regression coefficient, the fitted model is as follows:

Table 4-5) Estimation of Regression Model Parameters for Company's Return on Assets v. Accounting Conservation Index

	Regression estimation	Coefficients standard deviation	T-statistic	P-value significance level
Constant coefficient	0.375	0.006	58.508	0.00
Conservation index	-0.163	0.034	-4.82	0.00

Fitting and presenting regression model is almost half of regression analysis task. The other part of this analysis may involve study of infrastructural postulates of regression.
Study of appropriateness of model after appropriate conversion:
Study of remainders' normality

Table 4-6) Kolmogorov-Smirnov Test for remainders in regression model after changing the observations

0.00	Mean	Normal parameters
0.1507	Standard deviation	
0.032	Dn absolute value	The smallest majorant
0.0.32	D_n^+	
-0.017	D_n^-	
0.787	Kolmogorov-Smirnov test Z statistic	
0.565	p-value	

Table 4-6 assesses these hypotheses:
H0: The remainders have normal distribution.
H1: The remainders do not have normal distribution.
Regarding that the level of significance in Kolmogorov-Smirnov Test is higher than 0.05, the null hypothesis is not rejected and normality of remainders in regression model fitting is confirmed.

- ✓ Durbin-Watson statistic in this fitting is 1.667 (See table 4-12). This shows that the remainders are almost independent.
- ✓ In order to study the variance stability in the appropriateness study of the model, the variance of dependent variable is constant for all values of independent variable because the remainders diagram does not follow a specific pattern against data fitting.

We have to change the observations in order to study the way of relationship between accounting conservation index and return on owners' equity, like the previous data fitting regression. After study of several different fittings, the best model with the highest coefficient of determination and infrastructural postulates of regression models is presented as follows:

$$\ln|y| = \beta_\circ + \beta_1 x_1 + \varepsilon$$

Y= return on owners' equity
X= accounting conservation index

Table 4-7) Summary of linear regression model (converted data) for return on owners' equity versus accounting conservation index

Correlation coefficient	Coefficient of determination	Durbin-Watson statistic
0.222	0.049	1.699

In table 4-7 the coefficient of determination is 0.049, which indicates that 4.9% of shifts in return on owners' equity could be attributed to dependent variable, i.e. accounting conservation index. Since the level of significance is less than 0.05 in the following variance analysis table, we can be sure at confidence level 0.95 that the fitting model is appropriate.

Table 4-8) Variance analysis for return on owners' equity versus accounting conservation index

	Sum of squares	Degree of freedom	Sum of squares' mean	F-statistic	p-value significance level
Regression	22.273	1	22.273	31.331	0.00
Error	430.802	607	0.711		
Total	453.075	608			

Based on the results of table 4-9 and estimation of regression coefficients, the fitting model is presented as:

Table 4-9) Estimation of regression model parameters for return on owners' equity versus accounting conservation index

	Regression estimation	Coefficients standard deviation	T-statistic	p-value significance level
Constant coefficient	-1.065	0.036	-29.693	0.00
Conservation index	-1.06	0.189	-5.597	0.00

Study of the appropriateness of regression model after changing observation (return on owners' equity):

- ✓ We used Kolmogorov-Smirnov Test to study normality of remainders. As you see, the level of significance is less than 0.05. Therefore null hypothesis is not rejected for normality of observations, at confidence level of 0.95.
- ✓ Durbin-Watson statistic in this fitting is 1.669. This confirms the hypothesis of lack of autocorrelation.

Table 4-10) Kolmogorov-SmirnovTestfor Remainders in Regression Model after Changing the Observations

0.00	Mean	Normal parameters
0.8424	Standard deviation	
0.063	Dn absolute value	The smallest majorant
0.060	D_n^+	
-0.063	D_n^-	
0.94	Kolmogorov-Smirnov Test Z-statistic	
0.173	p-value	

- ✓ To Study the variance stability when studying appropriateness of model, since the remainders diagram do not follow a special pattern versus fit values, then the dependent variable variance is stable for all values of independent variable.

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