The Survey of the Conservative Relationship between the Intangible Assets and Management Performance Ratio

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ABSTRACT: In this study, we investigate the relationship between the management performance and conservatism according to two conservatism scales, namely the profit time- asymmetry scale and the market to book value ratio. The objective of the current study is to survey the conservative relationship between intangible assets and management performance ratios. To achieve this goal, two hypotheses are being posed. To test the study hypothesis, the data from 108 companies, accepted in the Tehran's stock exchange market between the years from 2005 to 2011, was used by taking advantage of targeted systematic sampling method. The company's management performance is related to two factors, intangible assets and conservatism and in fact intangible assets and conservatism are regarded as two independent variables in the present study which have an influence on the management performance. In the present study, the Basu model has been used to measure the conservativeness from the profit and loss perspective and the book to market value ratio has been taken advantage of as well, which is a balance sheet model. The current study methodology is functional from the objective point of view and it is correlation-descriptive from the type perspective. The results obtained are indicative of the direct and significant relationship between the intangible assets and the conservativeness in the intangible assets with management performance.

KEYWORDS: Conservatism, Company Performance, Dupont Ratio, Intangible Assets, Operating Income, Efficiency Analysis.

1 INTRODUCTION

One of the objectives of the financial statements analysis is the company valuation calculation. Many researchers including Feltham and Ohelson [1] believe that the company value is a function of the company expected future growth and its profitability. To analyze the financial statement, analysts usually use the current company growth and profitability as a starting point to forecast the future growth and profitability. Articles and books related to the financial statement analysis deal with the presentation of a simple method to analyze the current state of the company. This simple method and the full capture of the company current state lead to the enhancement of the future profitability forecasting power. One common tool to meet this goal is the use of the financial statements, the basis of which is the use of the figures and the current knowledge extracted from financial statements in order to assess the company's current state. Books and the academic and professional sources and references introduce various, though simple, financial statements to analyze the current profitability, one of the most common of which is assets return. Conservatism is one of the fundamental concepts in accounting which is always paid attention to by compilers in the offering of financial information. In accounting literature, two important features of conservatism have been surveyed.

First the existence of biases in the less than real representation of stock book value to market value ratio which has been proposed by Feltham and Ohelson [1]. Second, tendency to accelerate the identification of loss and to postpone the profit identification which both have been proposed by Basu. Basu defines conservatism as 'the accountants' tendencies to need a higher degree of verifiability in order to identify good news in profit relative to bad news' (e.g. [2]).

Considering the strategic objectives of a company for choosing a collection of appropriate methods for performance evaluation is a necessity for certain companies. The most important aspect which is in the center of investors' attention is that has their investing value and the management performance results increased?

In other words, is there any value created for them? Some of the economical entities, in the current decades, have used various techniques based on the various approaches to assess the performance but a few numbers of them are satisfied with their organizations processes effectiveness. In practice, there are various approaches to evaluate the performance and in these scales, various indexes and proportions are being used in the calculation of which, the accounting and economical information and a combination of them is used. Accounting conservatism is a disputable issue. Because the costs such as advertising costs (risks resulting from ignoring the future interests stemming from these kinds of costs leads to the accounting information distortion and the study of such investing measures is very difficult due to the intangible values and investments. We concentrate on how the management performance, conservative accounting of intangible assets influence the decisions to allocate managerial resources and the analysis of the conservatism consequences in management performance are dealt with in the current study.

According to competition among public stocks companies and also the relative stagnation occurred, most of the potential investors, managers and other users of financial information, always are searching for the criteria and logical relations and Other indicators of corporations performance. Despite failures in profit measuring, it is possible to be a different between actual earnings and reported profit. If it is assumed that the aim of corporation managers is increasing the wealth of shareholders, therefore their different financial decisions should be taken in accord to fulfillment of this goal Conservation, as one limited accounting principle, are used by accouters for many years and despite of high critiques on it, maintained its status between other accounting principles, such a way that survival of conservatism in contrary with critiques on it in many years, can be an evidence to base principals of this principle. The conservativeness is being measured based on asymmetric timeliness of earning which is criterion of profit and loss, and also it is based on the value of market to the value of share book which is criterion of balance sheet.

2 REVIEW OF LITERATURE AND RESEARCH BACKGROUND

Yoshie Saito [3] in a study with the title of 'management efficiency and intangible conservatism' dealt with the relationship between management efficiency and intangible conservatism in a company. He used a new method in Dupont ratio measurement to measure management efficiency. The results of the study are indicative of the direct relationship between management efficiency and intangible conservatism.

Amir and colleagues [4] found out that operating profit ratio plays a greater role in market response. In the next stage, operating profit ratio was divided into two components which include unspecific profit ratios and other profits ratios. The results showed that non-interactive stability of the gross profit ratio is more than other profits, but no difference was found between interactive stability of these two components. Also, operating assets net flow was divided into two parts: capital in turn flow and fixed assets flow. And they found that interactive and non-interactive stability of the fixed assets results from interactive and non-interactive stability of more flowing of the capital in turn. The other results from this study show that the high (low) operating profit ratio has a positive (negative) relationship with the future surplus return, and this relationship has nothing to do with the flow level of the operating assets net flow. But, in case that the operating profit is lower, the increase in the operating assets net flow does not lead to the surplus return increase and this is indicative of the superiority of the operating profit for surveying the market response.

Soliman [5] in his study, first, dealt with the survey of the efficiency and the reliability of the previous studies and showed that similar to previous researches, the segregation of the net return changes of the operating assets into its element changes plays a role in the analysis and the reaction of the market activists. From among Dupont components, the changes in operating assets net flow lends itself better to future profitability changes forecast. The new aspect of the study was the survey of the reaction and the amount of the use of this ratio and its components to correct (change) short-term and long-term decisions. He showed that in both of the states (short- and long-term) the users pay more attention to the separation of the operating assets net return, and from among them, changes of the operating assets turn play a greater role in the revision (change) of the market activists decision-making. Amir and colleagues [4] dealt with the survey of the financial data users reactions at the time of seasonal announcement of the assets return ratio (not operating assets net return) and its

components. They paid attention to the survey of the components level of the assets return ratio. In the current study it is proved that the market activists react immediately after the announcement of the abnormal assets return, abnormal assets turn and abnormal operating profits ratio (more than expected). Also, abnormal assets return and its components can't afford to account for the abnormal stock return. In the following part, the results lead to the abnormal positive return of the operating profit ratio. Their study shows that the high (low) level and the extant relationship between assets turn level have no relationship. On the other hand, when the operating profit ratio and assets turn are in a low level, increase in the assets turn doesn't lead to the abnormal increase in the stock return.

Wang [6] studied the changes in the performance of the companies accepted in the China's bourse on the preliminary shares offerings and dealt with the effect of the proprietorship on the performance changes at the time of the first shares offerings. The study population was the 747 Chinese companies after the public shares offerings in the time period from 1994 to 1999. Also, the performance was measured by means of assets return, operating income to assets (OI/A) ratio and sales to assets (S/A) ratio. The results of the study of the proprietorship role by different kinds of shareholders and the ownership concentration on the company's performance after the first shares offers, with controlling variables such as company size, financial level and economical activities showed that government proprietorship and ownership concentration have nothing to do with the performance changes but the statutory ownership, non-government ownership have a non-linear relationship with performance changes. That means that the low and high levels of statutory proprietorship (non-governmental ownership concentration) leads to a positive relationship and middle levels of company proprietorship lead to the separation of the control and proprietorship of the company and interest contradictions. Therefore, after the first shares offerings, we will have a low performance relative to the pre-shares offerings.

Shahira shahid [7] in a study, which was performed on 90 companies ,in Egypt in Kario Alexandrio, showed that there is no significant relationship between the ownership type and P / BV, P / E indices but the relationship between the ownership type and companies accounting performances is significant.

He found out that when the managers and the state sector are the major companies' shareholders they influence ROE negatively and, in contrast, holdings companies and private sector influence the ROE positively. Fearfield and Youhen [8] Soliman [9] dealt with the study of the relationship of Dupont ratio and its elements with other financial and accounting variables. Fear field and Youhen [8], at first, dealt with the survey of the next years predictability potential of the profitability changes through segregating operating assets net return ratio to its elements (operating assets net turn and operating profit ratio) and they found out that segregating Dupont ratio to its elements doesn't increase the potential of the future profitability changes predictability. In the next stage, the changes of the operating assets net return ratio and its elements are studied and they found out that the changes in every elements of assets net return ratio is more useful for forecasting the future profitability changes and from among them, operating assets net turn changes have a better predictability potential in comparison with the operating profit ratio changes.

3 RESEARCH HYPOTHESIS

According to the theoretical literature and the study background the following hypotheses were introduced.

H1: There is a significant relationship between intangible assets and management performance.

H2: There is a significant relationship between conservatism in intangible assets and management performance.

4 RESEARCH METHODOLOGY

In the current study, the correlation analysis was utilized to the hypotheses.

The study population includes all the companies in Tehran's securities market during the year from 2005 to 2011 and the total number of them reaches to 468.

Now, with the following assumptions, some of these companies are discarded, perforce:

- The company's fiscal year should end in December.
- The company should not have changed its fiscal year during 2005-2011.
- The company should have been accepted up to the end of 2004 fiscal year in Tehran's securities market.
- The company shouldn't be one of the financial intermediary companies (investing and financial companies).

Sampling was done based on the elimination method by exerting the above conditions and samples of 108 companies were chosen.

4.1   RESEARCH VARIABLES

4.1.1   DEPENDENT VARIABLES

Management performance: Yoshie Saito calculated the Dupont Ratio in 2012 by making use of a new method and introduced it to the financial science field. It was obtained in a very simple way by dividing assets by net profit before tax. But, in the presented study we will act upon the method that Yushi Saito calculated and used Dupont Ratio.

$$ROA_{it} = \frac{INCOME_{it}}{ASSET_{it-1}} = \frac{INCOME_{it}}{SALE_{it}} \frac{SALE_{it}}{ASSET_{it-1}} \tag{1}$$

Dupont ratio has been comprised of assets turn and the operating profit ratio.

ROA_{it} = Dupont ratio

$INCOME_{it}$ = net profit before the taxation of the company i in the year t.

$SALE_{it}$ = the company i sales in the year t.

$ASSET_{it-1}$ = company i assets in the previous year

But, in the new method, Dupont Ratio can be calculated as follows:

$$ROA_{it} = \left(1 - \frac{EXP_{it}}{SALE_{it}}\right) \frac{SALE_{it}}{ASSET_{it-1}} \tag{2}$$

In the above proportion which is a combination of the company's income and expenditures:

EXP_{it} = all of the company's expenditure

We can calculate this relation in the form of relation 3 by developing and promoting this proportion:

$$ROA_{it} = \frac{SALE_{it}}{ASSET_{it-1}} - \frac{EXP_{it}}{ASSET_{it-1}} \tag{3}$$

In the current study, Dupont Ratio will be calculated in the form of the relations (2) and (3). And then in the next stage, the Dupont Ratio, which is the management performance, will be measured as relation (4):

$$PERM_{it} = \frac{ROA_{it>0}}{ROA_{it=0}} \tag{4}$$

When the obtained figure is equal to one, the company is in its best management performance and when this figure is equal to zero, the company is in its worst management performance and when this figure is between zero and one the company is in its favorable state.

4.1.2   INDEPENDENT VARIABLES

Conservatism: one of the greatest factors which can affect the management performance proportions is the accounting conservatism and profit management as well, and in the end by making use of the model one we will deal with the conservatism in the intangible assets:

$$BTM_{it} = \alpha_i + \alpha_t + \sum_{j=0}^{j=3} \beta_j R_{t-j.i} + e_{it} \qquad \text{Model (1)}$$

BTM is the book to market value of the company's assets.

R is the past three years return lag.

Intangible assets: the amount of the intangible assets for company i in the year t from the company balance sheet which can be measured in the asset part.

4.1.3   CONTROL VARIABLE

The company's total sales: company i sales in the year t which is calculated from the profit and loss account.

Total sales to total expenditures: total sales to total expenditures of company i in the year t which can be calculated from the profit and loss account (in case of having profit, we use the sales and in case of suffering a loss we use the company's total expenditure).

Cost of goods sold: the cost of goods sold for company i in the year t can be calculated from the profit and loss account.

Salary and reward paid to the board of directors: because this amount is not disclosed in Iran and it cannot be calculated, the alternative variable was used, which the maximum amount of money is paid to the board of directors in the business code.

The amount of assets applied in the company: the amount of assets applied in the company i in the year t can be calculated from the right side of the balance sheet. By this amount we mean all of the assets including current assets and non-current assets and intangible assets.

To test the study assets, we use the regression models (2) and (3):

$$ROA_{it} = b_0 + b_1 SALE_{it} + b_2 SAEXP_{it} + b_3 COGS_{it} + b_4 INTG_{it} + b_5 CCOMP_{it} \\ + b_6 EQCOMP_{it} + v_{it} - u_{it}$$

(2)

$$ROA_{it} = b_0 + b_1 SALE_{it} + b_2 SAEXP_{it} + b_3 COGS_{it} + b_4 BTM_{it} + b_5 CCOMP_{it} \\ + b_6 EQCOMP_{it} + v_{it} - u_{it}$$

(3)

ROA= management performance (dependent variable)

BTM= conservatism (independent variable)

LINTG= intangible assets (independent variable)

LSALE= the companies' total sale

SAEXP= total sales to total expenditures (control variable)

COGS= cost of goods sold (control variable)

CCOMP= the salary and rewards paid to the board of directors (control variable)

LEQCOMP= the amount of the assets applied in the company (control variable)

4.2 DATA COLLECTION METHOD

The data required for the study has been collected via referring to the audited financial statements of the companies accepted in Tehran's securities market (existing in Tehran's securities bourse organization library) and Rahavard Novin company software, as well. The tools used to collect the data include statistical tests observations, statistical tests, information bank, SPSS software and Excel software. The information related to the theoretical and subjective principles has also been collected by taking advantage of the libraries and the books, Persian and English articles.

5 RESEARCH FINDINGS

5.1 THE HYPOTHESES TEST AND ANALYSIS

In the present study to analyze the data and test the hypothesis, the multivariate linear regression has been used and to study the overall model significance F-value and to survey the significance of the independent variables coefficient in every model t-value has been used and the decision to reject or accept the hypotheses has been made over 95% of the confidence level. Also, to survey and determine the experimental data homogeneity with statistical distribution and to survey the errors independence from each other the Kolmogrov-Smearnov test and Durbin-Watson t-value were used, respectively.

5.2   THE RESULTS OF THE HYPOTHESES TEST

To test the study hypotheses, first, we should calculate the conservatism in intangible assets. The calculations related to the conservatism in intangible assets are presented below:

5.2.1   THE CONSERVATISM REGRESSION CALCULATIONS IN INTANGIBLE ASSETS

To test the conservatism in intangible assets, first, we should calculate the conservatism in intangible assets by estimating the coefficients and then we incorporate the conservatism in intangible assets in the regression model in order to be able to evaluate the model and statistically test it. To do so, we use model (1), and the results of the coefficients estimation to calculate the conservatism in intangible assets are as follows:

Table 1 shows the results obtained from the coefficients estimation.

Table 1.   Correlation coefficient, determination coefficient and Durbin-Watson test between dependent and independent variables

Durbin-Watson value	The estimation standard error	The offset determination coefficient	determination coefficient	Correlation coefficient	model
1.642	0.68894	0.301	0.315	.523[a]	1

In table 1, correlation coefficient, determination coefficient, and the offsetting determination coefficient and the conservatism estimation model in intangible assets are presented.

Durbin-Watson value is equal to 1.642, which is in the return range of 1.5-2.5. The non-autocorrelation assumption between errors is not rejected and, therefore, the conservatism model regression in intangible assets can be used.

Table 2 includes regression variance analysis to survey the concrete existence of the linear relationship between the dependent and independent variables in the conservative model in intangible assets.

Table 2.   Variance analysis

model		Total squares	Degree of freedom	Squares mean	F-value	Significance level
1	Regression	5.437	1	5.437	11.455	.001[a]
	Residuals	355.508	749	.475		
	total	360.946	750			

The results obtained from the conservative model in the intangible assets, which is presented in table 2, is indicative of the significance of the conservative model in intangible assets, and the Fischer distribution statistics and the obtained significance level confirms this matter.

Table 3.   Regression model coefficients of the dependent and independent variables

model	abbreviations	No standardized coefficients		Standardized coefficients	t-value	Significance Level	Co linearity statistics	
		B	The column coefficient standard error B	Beta			Tolerance	Variance inflation factor
1	Constant	.675	.027		25.206	.000		
	LAGRjt2	.089	.026	.123	3.385	.001	1.000	1.000

According to table 3, t-value is in the confidence level of 95% for independent variables and p-value amount obtained in the related column is indicative of this claim.

Regression equation is in the following form:

$$BTM_{it} = .675 + .089 * R_{t-j.i} \tag{4}$$

Now, according to the obtained coefficients in the regression equation 4, we can calculate the conservatism in the company's intangible assets. Now, we use the obtained figure to test the model regression related to the study hypotheses.

The results of first hypothesis: First hypothesis: there is a significant relationship between intangible assets and management performance.

$$\begin{cases} H_0 : \rho = 0 \\ H_1 : \rho \neq 0 \end{cases}$$

Table 4. Correlation coefficient, determination coefficient, and Durbin-Watson test between intangible assets and management performance

Durbin-Watson value	The estimation standard error	The offset determination coefficient	determination coefficient	Correlation coefficient	model
1.878	0.15844	0.353	0.369	.412[a]	1

Based on the table 4, Pierson correlation coefficient between the two variables of intangible assets and management performance is 0.412. This table in the 5% error level shows a significant relationship between the two variables of intangible assets and management performance.

According to table 4, the amount of Durbin-Watson value is 1.878 and this figure shows that there is no autocorrelation between errors.

Table 5. Regression variance analysis for the intangible assets and management performance.

model		Total squares	Degree of freedom	Squares mean	F-value	Significance level
1	**Regression**	3.753	6	0.625	24.916	.000[a]
	Residuals	18.401	733	0.025		
	total	22.154	739			

Table 5 is indicative of the variance analysis between the management performance variable as the dependent variable and intangible assets as the independent variable. Since, significance level is less than 5%, the linearity assumption between the two variables is confirmed.

Table 6. Regression equation coefficients for control and independent variable

Model	abbreviations	Non standardized coefficients		Standardized coefficients	t-value	Significance level	Co linearity statistics	
		B	The column coefficient standard error B	Beta			Tolerance	Variance inflation factor
1	(Constant)	0.143	0.006		22.338	0		
	SALE	1.61E-07	0.0001	0.19	11.928	0	0.003	1.685
	SAEXP	2.57E-05	0.0001	0.014	0.413	0.68	0.987	1.013
	COGS	-1.81E-07	0.0001	-0.808	-11.492	0	0.003	3.754
	INTG	7.434	0.546	0.272	13.615	0	0.355	2.816
	CCOMP	6.65E-07	0.0001	0.038	1.135	0.257	1	1
	EQCOMP	-8.99E-09	0.0001	-0.452	-3.12	0.002	0.054	1.545

In the table 6, the output and in column B, the constant amount and the independent variable coefficient are presented respectively, and this equation takes the following form:

$$ROA_{it} = .143 + 1.61E - 07SALE_{it} - 1.81E - 07COGS_{it} + 7.434INTG_{it} - 8.99E - 09EQCOMP_{it} \qquad (5)$$

The second hypothesis results Second hypothesis: there is a significant relationship between conservatism in intangible assets and management performance:

$$\begin{cases} H_0 : \ \rho = 0 \\ H_1 : \ \rho \neq 0 \end{cases}$$

Table 7. Correlation coefficient, determination coefficient and Durbin-Watson conservatism in intangible assets and management performance

Durbin-Watson value	The estimation standard error	The offset determination coefficient	determination coefficient	Correlation coefficient	model
1.63	0.13081	0.428	0.433	.658[a]	1

According to table 7, Pierson correlation coefficient between the two conservatism variables in intangible assets and management performance is equal to 0.658. This figure in the error level of 5% shows a significant relationship between the above two. Based on table7, the amount of Durbin-Watson value is 1.63, and this figure shows that the errors are independent from each other.

Table 8. Regression variance analysis for conservatism in the intangible assets and management performance:

Model		Total squares	Degree of freedom	Squares mean	F-value	Significance level
1	Regression	9.686	6	1.614	94.343	.000[a]
	Residuals	12.68	741	0.017		
	total	22.366	747			

Table 8 is suggestive of the variance analysis between management performance and conservatism in intangible assets, because significance level is below 5%, the linearity assumption between the two variables is confirmed.

Table 9. Regression equation coefficient for independent and control variables

Model	Abbreviations	Non-standardized coefficients		Standardized coefficients	t-value	Significance level	Co linearity statistics	
		B	The column coefficient standard error B	Beta			tolerance	Variance inflation factor
1	(Constant)	-0.204	0.019		-10.574	0		
	SALE	1.20E-07	0	5.318	10.658	0	0.003	3.482
	SAEXP	2.15E-05	0	0.012	0.419	0.675	0.988	1.013
	COGS	-1.31E-07	0	-4.924	-10.075	0	0.003	3.232
	CCOMP	3.05E-07	0	0.017	0.631	0.528	0.998	1.002
	EQCOMP	-8.05E-09	0	-0.404	-3.5	0	0.058	1.386
	BTM	0.398	0.021	0.527	18.62	0	0.955	1.048

In table 9 and in column B the constant value and independent variable coefficient are presented in regression model and this equation changes to the following form:

$$ROA_{it} = -.204 + 1.20E - 07SALE_{it} - 1.31E - 07COGS_{it} + 0.398\,BTM_{it} - 8.05E - 09EQCOMP_{it} \qquad (6)$$

6 DISCUSSIONS AND CONCLUSIONS

In the first hypothesis test and according to the analyses which have been performed through regression and correlation models, we came to this conclusion that there is a positive correlation coefficient between independent variable (intangible assets) and dependent variable(management performance) in the companies accepted in Iran's capital market and there is a significant relationship between intangible assets and management performance in the companies accepted in Tehran's securities market.

According to the results obtained , there is a significant relationship between intangible assets and management performance in the companies accepted in Tehran's securities market, that means with an increase in intangible assets, the management performance increases and vice versa.

The results of this hypothesis are similar to the results obtained from Yoshie-Saito [3], who expresses that there is a significant relationship between management effectiveness and intangible conservatism and also the results obtained from Soliman study [5] is similar to the other researches results. He dealt with the survey of the companies' efficiency and the operating assets.

In the second hypothesis test, according to the analysis performed by the regression and correlation method we came to this conclusion that there is a positive correlation coefficient between independent variable (conservatism in intangible assets) and dependent variable (management performance) in the companies accepted in Iran's capital market and there is a significant relationship between conservatism in intangible assets and management performance in the companies accepted in Tehran's securities market.

According to the results obtained, there is a direct relationship between conservatism in intangible assets and management performance in the companies accepted in Tehran's securities market, that means with an increase in conservatism in intangible assets, management performance increases and vice versa.

The results obtained from this hypothesis is corresponding to the results of Yoshie-Saito [3] who expresses that there is a significant relationship between management efficiency and intangible conservatism and Soliman's study [5] as well, who dealt with the companies' efficiency and operating assets.

REFERENCES

[1] G. Feltham, J. Ohlson, "Valuation and Clean Surplus Accounting for Operating and Financial Activities," *Contemporary Accounting Research*, pp. 689-731, 1995.
[2] S. Basu, "The conservatism principle and the asymmetric timeliness of earnings," *Journal of Accounting and Economics*, No. 24, pp. 337, 1997.
[3] Yoshie Saito, "Informational and Managerial Inefficiency and Conservatism for Intangible-Intensive Firms," *Department of Accounting, Whitney Bunting School of Business Georgia College & State University*, 2012.
[4] Amir, E., I. Kama and J. Livnat, "Conditional versus unconditional persistence of RNOA components: Implications for valuation," *Review of Accounting Studies,* vol. 16, no. 2, pp. 302-327, 2011.
[5] T. M. Soliman, "The use of dupont analysis by market participants," *The accounting Review*, Vol. 83, No. 3, pp. 823-853, 2008.
[6] Wang, Changyu, "Ownership and operating performance of Chinese IPOs," *Journal of Banking & Finance*, Vol. 29, pp. 1835-1856, 2005.
[7] Shahira Abdel Shahid, "Does Ownership Structure Affect Firm Value? Evidence from the Egyptian Stock Market," *Cairo and Alexandria Stock Exchange*, January 2003.
[8] M. P. Fairfield, T. L. Yohn, "Using asset turnover and profit margin to forecast changes in profitability, " *Review of accounting Studies*, Vol. 6, no. 4, pp. 371-385, 2001.
[9] Soliman, M. T., "Using industry-adjusted dupont analysis to predict future profitability," *Stanford Graduate School of Business*, Working Paper, 2004. DOI:10.2139/ssrn.456700