EARNINGS QUALITY: A REVISED MODEL FOR

DETERMINATION OF THE QUALITY OF EARNINGS

Nell S. Gullett
Professor of Finance
Department of Accounting, Economics, Finance and Political Science
College of Business and Global Affairs
University of Tennessee at Martin
Martin, TN   38238

Ronald W. Kilgore
Professor of Accounting
Department of Accounting, Economics, Finance and Political Science
College of Business and Global Affairs
University of Tennessee at Martin
Martin, TN   38238

Abstract

We propose the EQ Score, a simple model derived from the Q Test developed by Putman et al. (2005) to measure earnings quality and detect earnings management in financial statements. It is comprised of five financial ratios, and the data needed to compute the EQ Score is readily available to any reader of financial statements. The EQ Score averages for the firms that have been on the receiving end of S.E.C. enforcement actions for financial reporting are significantly lower than the EQ Scores for the socially responsible, admired firms. However, the proposed EQ Score of 5.00 is not a reliable benchmark for classifying reported financial statements as either high earnings quality or low earnings quality.

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INTRODUCTION

Earnings quality is the degree to which reported earnings reflect true earnings. Judgment, estimates, and discretion are involved in the preparation of reported financial statements. The preparer would generally prefer to report more favorable results and may use this flexibility to improve reported earnings, but earnings quality will suffer in the process.

Edward Altman developed the Z Score in the 1960s, a reliable and user-friendly financial model which is used to predict corporate bankruptcy within the next 2 years. Five financial ratios are used to compute the Z Score, and all variables except for the market value of equity are found on the firm's accounting statements. The development of a reliable earnings quality measure similar to the Z Score would be valuable to all readers of financial statements. Currently, there is no widely accepted direct means of measuring earnings quality. Since financial ratios have proven effective in predicting financial failure, perhaps they may also be used to measure earnings quality and detect earnings management.

Putman, Griffin, and Kilgore (2005) propose the Q Test, a simple model to test earnings quality using the financial statements of a sample of publicly-held companies. We revise two variables from the original model to compute the Earnings Quality Score, or EQ Score, and test it on the financial statements for a sample of ten companies. Five are assumed to have financial statements of high earnings quality and five are assumed to have financial statements of low earnings quality. Consistent with Putman, Griffin, and Kilgore (2005), we hypothesize the EQ Scores for the financial statements with above average earnings quality will be equal to or greater than 5.00, and the EQ Scores for the financial statements of low earnings quality will be less than 5.00.

LITERATURE REVIEW

Financial statements are said to have high earnings quality if they report truthful, useful, and relevant information (Beisland, 2013). According to Kamp (2002), three elements encompass aspects of quality earnings: (1) clear indication of ongoing costs and revenues, (2) clear indication of performance of the company's core business, and (3) a direct correlation of cash flow with earnings. A "high quality" Earnings per Share would be a relatively true representation of what the company actually earned (i.e., cash generated) (Wayman, 2003). Amernic and Robb (2003) observe quality earnings converge with reported profits of publicly-held companies.

McClure (2004) asserts "quality earnings" are earnings that are repeatable, are controllable, and are efficient cash generators. "Quality" growth in earnings occurs through repeatable sales revenue increases and repeatable decreases in costs rather than one-time actions or events. "Quality" earnings growth is the result of factors within the

control of the firm's managers rather than the result of macroeconomic variables. For example, earnings growth for an oil company could be the result of factors beyond the control of the company such as an increase in commodity oil prices. Finally, quality earnings should generate cash efficiently. A firm could increase sales revenue and reported earnings through a relaxation of its credit policies; but the new, riskier credit accounts are less likely to result in cash inflows.

Gibson (1998) states that firms with conservative accounting policies will report earnings of high quality. Further, quality accounting information should provide applicable information to forecast the firm's expected future earnings and cash flows, and to explain stock returns (Dechow and Schrand, 2004).

Several measures of earnings quality are proposed in the literature. Dechow, Ge, and Schrand (2010) report three categories of measures: (1) earnings properties such as persistence and predictability, (2) reaction of common stock prices to earnings news, and (3) external announcements of earnings misstatements. Schilit and Perler (2010) argue that deviations from normal profit margins are indicative of accounting manipulation. Amir, Einhorn, and Kama (2012) propose a measure of sustainable earnings based on deviations from normal profit margins. Lower deviation is associated with higher earnings quality. Ewert and Wagenhofer (2015) use reported earnings as a benchmark and find the earnings response coefficient and persistence are closely related to earnings quality.

The analysis of the relationship between leverage and earnings management has yielded mixed results. Abed, Al-Attar, and Suwaidan (2012) and Charfeddine, Riahi, and Omri (2013) find no significant relationship between leverage and earnings management; but Kim and Yoon (2008) find indebtedness has a significant negative influence on earnings management. Gonzalez and Garcia-Meca (2013), Leventis and Dimitropoulos (2012), Bekiris and Doukakis (2011), and Nelson and Devi (2010) observe leverage has a significant and positive effect on earnings management. Charitou, Lambertides, and Trigeorgis (2011) find financially distressed firms tend to manage earnings toward a positive result more frequently than healthy firms.

Marquardt and Wiedman (2004) find firms that engage in earnings management behavior which results in increased earnings also have high levels of receivables. A Days Sales in Receivables Index and Leverage Index are among the variables included in the model developed by Dikmen and Kucukkocaoglu (2010) for detecting earnings management by 126 Turkish manufacturing firms. Lee and Choi (2016) study the use of the allowance for doubtful accounts to manage earnings in non-financial Korean firms.

Chan and Walter (1996) investigate the profitability, liquidity, and leverage characteristics of publicly-traded Singapore firms receiving qualified audit reports. Firms are significantly less profitable and liquid and have significantly more debt in the year of the qualified report. Additionally, profitability and liquidity decrease and debt levels increase in the four years prior to the qualified report.

Dechow, Ge, Larson, and Sloan (2011) propose the F Score as a predictor of accounting misstatements. Firm characteristics include accrual quality, financial performance, nonfinancial performance, off-balance-sheet activities, and market-related variables. Their results show at the time of misstatements, accrual quality is low, return on assets is deteriorating, and the number of employees is declining significantly.

Putman et al. (2005) propose the Q Test, a model to measure earnings quality using variables from the reported financial statements of a sample of publicly-held companies. The financial statements for 20 companies are examined over each company's three most recent years of operation, and the Q Test Scores for each company are compared to its stock price changes. They conclude the companies among their sample with Q Test scores less than 5.00 should be examined further for earnings management misbehavior. Scores between 5.00 and 9.99 are associated with financial statements of greater than average earnings quality, and scores of 10.00 or higher are indicative of superior earnings quality.

EMPIRICAL MODELS AND DATA

The Q Test is the sum of five financial ratios which are computed using variables from the three major financial statements required as part of the10-K filing with the Securities and Exchange Commission. The variables are: Cash Flow from Operating Activities, Sales Revenue for the accounting period and the previous period, Accounts Receivable for the accounting period and the previous period, Earnings before Interest and Taxes, Income from Continuing Operations, Net Income, and Total Liabilities.

Each component of the Q Test has an equal weight (.20) in the model. Therefore, no one ratio of the five has a greater or lesser impact on the final result. For each ratio, a value equal to or greater than one is associated with higher earnings quality; and a value less than one is associated with earnings management. Equation 1 is the original earnings quality measure or Q Test proposed by Putman et al. (2005).

$$Q \text{ Test} = (CFO_t/S_t)10 + CFO_t/EBIT_t + COI_t/NI_t + (CFO_t/TL_t)10$$

$$+ (S_t - S_{t-1})/(AR_t - AR_{t-1}) \tag{1}$$

where,

$(CFO_t/S_t)10$ = (Cash Flow from Operations in year t/Sales in year t)*10 = Cash Flow
    Margin

$CFO_t/EBIT_t$ = Cash Flow from Operations in year t/Earnings before Interest and Taxes in
    year t = Operating Cash Ratio

COI_t/NI_t = Income from Continuing Operations in year t/Net Income for year t =
    Repeatable Earnings Ratio

$(CFO_t/TL_t)10$ = (Cash Flow from Operations in year t/Total Liabilitiesin year t)*10 =
     Leverage Ratio, and

$(S_t - S_{t-1})/(AR_t - AR_{t-1})$ = (Sales in year t – Sales in year t-1)/(Receivables in year t
    – Receivables in year t-1) = Receivables Accruals Ratio.

Three of the ratios include Cash Flow from Operating Activities (CFO) from the statement of cash flows. The cash flow margin, or CFO divided by Sales, measures the efficiency of cash collections from sales. Violations of G.A.A.P. with regard to sales revenue recognition are a dominant reason for material misstatements (Stallworth and Digregorio, 2004). Putman et al. (2005) assume a ratio of .10 or ten percent for the cash flow margin is a sound result; and the ratio is multiplied by ten to achieve a value of 1.00. Firms with cash flow margins less than 10% will have results less than 1.00 for this ratio.

CFO is divided by earnings before interest and taxes to compare the convergence of cash provided by operations to reported operating earnings (Amernic and Robb, 2003). Prior research emphasizes the importance of the relationship between earnings and cash flow (Kamp, 2002; McClure, 2004). The operating cash ratio evaluates the firm's ability to generate cash from its business operations.

Finally, greater indebtedness will increase incentives for managers to manipulate earnings (Chan and Walter, 1996; Charitou, 2011); therefore, a leverage ratio is included in the model. In the original equation, a multiplier of 10 is used for the CFO to total liabilities ratio. Putman et al. (2005) assume a company that is able to pay all of its liabilities from its cash flow in a ten-year span is financially sound.

Net income from continuing operations represents repeatable earnings which McCLure (2004) associates with earnings quality. It is compared to the bottom line net income tax figure. Repeatable earnings ratios less than 1.00 measure the degree to which discontinued operations and other extraordinary items reduce the predictability and persistence of reported earnings.

The ratio of the change in sales to change in receivables is used to capture the reliance on credit sales versus cash sales. Receivables accruals are found to be negatively related to earnings quality in prior studies (Marquardt and Wiedmen, 2004; Dikmen and Kucukkocaoglu, 2010; Dechow et al., 2011). Equal dollar changes in sales and receivables will result in a value of 1.00 for the receivables accruals ratio. A larger dollar increase in receivables than in sales signals a reduction in earnings quality, and the ratio is less than 1.00. Interpretation problems exist, however, when the sales and receivables change in opposite directions from one year to the next. The result will be negative if sales decrease and receivables increase, a weakening in the firm's financial position. The calculation also results in a negative ratio if sales increase and receivables decrease from one period to the next, but this change is generally associated with a strengthening in the firm's financial position.

Two ratios from the original Q Test are altered to compute the revised EQ Score which is presented in Equation 2.

$$\text{EQ Score} = 10[CFO_t/S_t] + CFO_t/EBIT_t + COI_t/NI_t + 5\,[CFO_t/TL_t]$$

$$+ [(S_t/AR_t - S_{t-1}/AR_{t-1}) + 1] \tag{2}$$

where,

$$(S_t/AR_t - S_{t-1}/AR_{t-1}) + 1 = [(\text{Sales in year t/Receivables in year t}) -$$
$$(\text{Sales in year t-1/Receivables in year t-1}) + 1] = \text{Receivables Accruals Ratio.}$$

First, a multiplier of 5 instead of 10 is used with the leverage ratio (CFO/Total Liabilities) because the average maturity of corporate long-term debt is five years (Badoer and James, 2016). Firms with leverage ratios less than 1.00 will require more than 5 years to repay all liabilities, and earnings quality will deteriorate.

Second, because of the interpretation issue when the original receivables accruals ratio is negative, this ratio is modified. The revised model, EQ Score, computes the difference between the ratio of sales to receivables for the current period and the ratio of sales to receivables for the previous period. If the ratio is unchanged from one period to the next, the value is zero; therefore, in order to maintain the equal weight of each variable in the formula, 1.00 is added to the ratio. If the ratio increases from one period to the next, this indicates a favorable change as the multiple of sales to accounts receivable has increased; and the result will be greater than 1.00. A decrease in the ratio from one period to the next is an unfavorable change as the multiple of sales to accounts receivable has decrease, and the value will be less than 1.00.

Financial data is taken from original 10-K filings for each year from 2007 through 2015 for the ten U.S. publicly-traded companies in order to calculate the EQ Model variables for 2008 through 2015. The time period encompasses the most recent financial crisis and recovery period, but this is not a focus of the study. Five of the companies are assumed to have high earnings quality, and five are assumed to have low earnings quality. Firms that do not engage in earnings management are expected to consistently have EQ Scores equal to or greater than 5.00, and the firms suspected to have low earnings quality are expected to consistently have EQ Scores less than 5.00.

The names and ticker symbols for the five companies assumed to have high earnings quality are Microsoft (MSFT), Alphabet (GOOG), Disney (DIS), Apple (AAPL), and Colgate-Palmolive (CL). These five companies were the top U.S. companies from Forbes 2015 list of ten companies with best reputations for corporate social responsibility. Four of the companies are also in the top 20 of Fortune's 2015 list of most admired companies in the world. Apple is ranked #1, Alphabet is ranked #2, Disney is ranked #6, and Microsoft is ranked #20. Colgate-Palmolive does not appear on this list. Cao and Omer (2011) report a firm's concern for its reputation will impact the quality of its financial reporting. Our selection process is consistent with the Kim, Park, and Wier (2012) study which finds socially responsible firms are also "responsible" in their financial reporting.

The names and ticker symbols for the five companies assumed to have low earnings quality are Computer Sciences Corporation (CSC); Polycom, Inc.(PLCM); Diamond Foods (DMND); CVS Caremark (CVS); and Great Lakes Dredge and Dock Corporation (GLDD). The five companies have at least one financial reporting related

enforcement action against them reported in the Accounting and Auditing Enforcement Releases (AAER) on the S.E.C. web site during the time period of the study. The companies have 10-K filings for 2007 through 2015. As of 12/31/15, the stock price for each company is greater than $4.00, consistent with the NASDAQ listing requirement. The use of official accounting enforcement actions to identify "bad actors" is consistent with Dechow et al. (2011) and Strohmenger (2014). It is assumed the tendency to manage earnings impacts reported financial statements for all time periods in the study and not just the period for which the enforcement action is taken.

RESULTS BY COMPANY

Each ratio in the model is expected to have a value of 1.00 or more for companies with high earnings quality and a value less than 1.00 for companies with low earnings quality. Companies with high earnings quality are expected to have composite EQ Scores equal to or greater than 5.00, and EQ Scores are expected to be less than 5.00 for companies with low earnings quality.

Table 1 presents the EQ Score results for the five companies presumed to have low earnings quality. No firm from this group had EQ Scores of less than 5.00 for every year from 2008 through 2015. Of the 40 total EQ Scores reported for this group, 22 are less than the benchmark of 5.00, as predicted, and 28 are less than 6.00. Four of the Scores are negative, 2013 for Polycom, Inc., 2010 and 2013 for Diamond Foods, and 2013 for CVS. From 2008 to 2015, eleven sets of financial results resulted in S.E.C. enforcement actions. EQ Scores for only five of the eleven sets of financial statements are less than 5.00. Generally, the EQ Scores do not offer strong support for the benchmark of 5.00 to separate the good guys from the bad guys.

Each of the five ratios is expected to be less than 1.00 for the firms with low earnings quality in their financial reporting. An examination of the five ratios that comprise the EQ Score show the Cash Flow Margin average ratio and the Leverage Ratio are less than 1.00 for four of five companies. Both ratio averages are greater than 1.00 for Polycom, Inc.

The EQ Score results for the companies presumed to have high earnings quality in their financial reporting are given in Table 2. All but two of the EQ Scores reported are greater than 5.00, and there are no negative EQ Scores for this group. For 2012, Apple has an EQ Score of 4.72; and for 2010, Disney has an EQ Score of 4.94. The results are generally consistent with what was expected.

Each of the five ratios is expected to be ≥ 1.00 for the firms with high earnings quality. The cash flow margin ratios are greater than 1.00 for every year for all five companies. The repeatable earnings ratio and the leverage ratio are greater than 1.00 for all but two of the 40 observations. The operating cash ratio is less than expected for 18 of 40 observations, and the receivables accruals ratio is less than 1.00 for 19 out of 40 observations.

The highest EQ Scores are for Alphabet, ranging from 9.76 to 18.49, and averaging 12.65 over the 8-year period. Apple has the next highest EQ Score average, 9.54; and Microsoft's EQ Score average is 9.37. The EQ Score averages for Colgate-Palmolive and Disney are 5.78 and 6.65, less than the highest average EQ Score from the low earnings quality group (Polycom, Inc.). The Cash Flow Margin ratio generally contributes the most to the EQ Scores for high earnings quality firms. The Operating Cash Ratio and Receivables Accruals Ratio tend to contribute the least to the EQ Scores of the high earnings quality firms.

A review of the 40 EQ Scores for each group suggest significant differences for some firms. From the low earnings quality group, EQ Scores range from -5.14 to 30.34 for Polycom, Inc. and -4.73 to 10.86 for Diamond Foods. From the high earnings quality group, the EQ Scores for Apple range from 4.72 to 19.62 and the range for Alphabet is 9.76 to 18.49. The Levene Statistic is computed to test for a difference in variability among the EQ Scores between the two groups, but the result is insignificant at .581 with a probability of .448 and supports the assumption of homogeneity of variances. The variability in EQ Scores between the two groups is not statistically different.

Finally, one-tail t tests are run to determine if the mean of the 40 EQ Scores for the low earnings quality group is significantly lower than the mean of the 40 EQ Scores for the high earnings quality group. Also, the means of the five ratios that comprise the EQ Score for each group are examined to determine if the low earnings quality ratio means are significantly lower than those for the high earnings quality group. The null hypotheses are the EQ Score means of the two groups are equal and the means of each ratio for the two groups are equal. The results are reported in Table 3.

The t statistic for the difference in the means of the EQ Scores is significant at 1 percent; therefore, the null hypothesis is rejected. There is a difference in the EQ Score averages for the two groups, and the five bad actors among our ten firm have lower Scores as expected. An analysis of variance test confirms the t test results of the EQ Scores with an F Score of 11.882 and a probability of .001.

The t tests of the difference in the means of the leverage ratios and the cash flow margin ratios are significant at 1 percent. The repeatable earnings means are also significantly different, but at a 10 percent level. For the firms in the two groups, there is no evidence that the receivables accruals ratios and the operating cash flow ratios are significantly different between the two groups. These two ratios are not useful in detecting variation in earnings quality between the two groups of firms in this study.

CONCLUSIONS

We propose the EQ Score, a simple model derived from the Q Test developed by Putman et al. (2005) to measure earnings quality and detect earnings management in financial statements. The data needed to compute the EQ Score is readily available to any reader of financial statements.

The EQ Score averages for the firms that have been on the receiving end of S.E.C. enforcement actions for financial reporting are significantly lower than the EQ Scores for the socially responsible, admired firms. However, the proposed EQ Score of 5.00 is not a reliable benchmark for classifying reported financial statements as either high earnings quality or low earnings quality. Perhaps, like the Altman Z Score, scores which fall within a certain range are not sufficiently sensitive to flag a firm's financial statements as either high or low earnings quality; but EQ Scores above that range and below that range are useful in identifying high and low earnings quality. Additionally, the firms in this group may not have engaged in questionable earnings management activities for all years in the study.

The leverage ratios, the cash flow margin ratios, and, to a lesser degree, the repeatable earnings ratios have the strongest positive associations with the assumed degree of earnings quality. The receivables accruals ratios and operating cash flow to operating earnings ratios contributed the least to the differences in the overall EQ Scores between the two groups of firms, and t tests showed no significant difference in the means for these ratios between the two groups. The samples are small, and it could be that the selected firms with presumed managed earnings are not manipulating their earnings through receivables accruals or operating earnings in the years of this study. The methods of earnings management are not identical for all "bad actors," and those same ratios may provide more information for a different group of firms.

Several options exist for expanding this research in the future. First, the pool of companies included in the two samples of this study should be expanded for further testing of the model. Second, the receivables accruals ratio and operating cash ratio should be analyzed to determine if they belong in the model as currently defined. Third, EQ Scores from original reported financial statements and for restated financial statements could be compared to determine if restatements produce improved Scores. Original financial statement results are used in this study.

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Table 1: EQ Scores for Low Earnings Quality Firms

CSC	2008	2009	2010	2011	2012	2013	2014	2015	AVG
(CFO/S)*10	0.81	1.19	1.02	0.97	0.74	0.75	1.20	1.18	0.98
CFO/EBIT	1.14	1.64	1.32	1.45	6.61	1.28	1.37	4.45	2.41
COI/NI	1.00	1.00	1.00	0.98	1.00	0.54	0.92	-4.50	0.24
(CFO/TL)*5	0.65	0.98	0.83	0.91	0.70	0.69	1.05	0.99	0.85
Δ(S/AR)+1	1.15	1.72	0.77	1.12	1.56	0.81	1.02	1.43	1.20
EQ Score	**4.76**	**6.53**	**4.93**	**5.44**	**10.61**	**4.07**	**5.57**	**3.54**	**5.68**

PLCM	2008	2009	2010	2011	2012	2013	2014	2015	AVG
(CFO/S)*10	1.56	1.81	1.18	2.00	1.34	1.23	1.53	0.94	1.45
CFO/EBIT	1.76	2.60	1.59	2.01	29.37	-9.80	4.42	1.36	4.16
COI/NI	1.00	1.00	1.00	1.00	-3.65	1.03	1.00	1.00	0.42
(CFO/TL)*5	2.70	2.72	1.93	3.16	1.93	1.09	1.27	0.82	1.95
Δ(S/AR)+1	2.72	0.05	1.38	-0.07	1.34	1.31	1.48	-0.20	1.00
EQ Score	**9.74**	**8.18**	**7.07**	**8.10**	**30.34**	**-5.14**	**9.70**	**3.93**	**8.99**

DMND	2008	2009	2010	2011	2012	2013	2014	2015	AVG
(CFO/S)*10	0.89	0.93	-0.02	0.68	-0.47	0.51	-1.18	0.56	0.24
CFO/EBIT	1.97	1.16	-0.03	0.71	0.91	-0.37	3.74	0.63	1.09
COI/NI	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(CFO/TL)*5	1.85	1.20	-0.01	0.39	-0.24	0.22	-0.56	0.27	0.39
Δ(S/AR)+1	2.18	6.56	-5.67	0.46	2.71	-1.65	1.17	1.04	0.85
EQ Score	**7.88**	**10.86**	**-4.73**	**3.24**	**3.91**	**-0.29**	**4.17**	**3.49**	**3.57**

CVS	2008	2009	2010	2011	2012	2013	2014	2015	AVG
(CFO/S)*10	0.45	0.41	0.50	0.55	0.54	0.46	0.66	0.55	0.51
CFO/EBIT	0.65	0.63	0.78	0.93	0.92	0.72	0.93	0.89	0.81
COI/NI	1.04	1.00	1.00	1.01	1.00	1.00	1.00	1.00	1.01
(CFO/TL)*5	0.75	0.78	0.98	1.11	1.18	0.86	1.26	0.75	0.96
Δ(S/AR)+1	0.58	2.85	2.48	-0.86	2.31	-3.50	0.87	-0.49	0.53
EQ Score	**3.47**	**5.66**	**5.74**	**2.72**	**5.96**	**-0.46**	**4.71**	**2.69**	**3.81**

GLDD	2008	2009	2010	2011	2012	2013	2014	2015	AVG
(CFO/S)*10	0.25	0.87	1.80	0.39	-0.03	1.02	0.60	0.34	0.66
CFO/EBIT	0.57	1.28	1.81	0.45	-0.12	1.46	2.05	1.27	1.09
COI/NI	1.00	1.00	1.00	1.00	1.00	-0.57	2.01	1.00	0.93
(CFO/TL)*5	0.17	0.64	1.48	0.25	-0.02	0.61	0.38	0.22	0.47
Δ(S/AR)+1	1.41	0.18	4.15	-0.97	0.39	3.97	0.55	0.42	1.26
EQ Score	**3.40**	**3.96**	**10.23**	**1.12**	**1.23**	**6.49**	**5.60**	**3.26**	**4.41**

S.E.C. Enforcement Action Year

Table 2: EQ Scores for High Earnings Quality Firms

GOOGL	2008	2009	2010	2011	2012	2013	2014	2015	AVG
(CFO/S)*10	3.60	3.94	3.78	3.84	3.31	3.12	3.39	3.47	3.56
CFO/EBIT	1.18	1.12	1.07	1.24	1.30	1.34	1.36	1.34	1.24
COI/NI	1.00	1.00	1.00	1.00	1.00	0.95	0.96	1.00	0.99
(CFO/TL)*5	11.13	10.37	4.77	5.05	3.76	3.95	4.20	4.80	6.00
Δ(S/AR)+1	1.58	0.19	0.45	1.09	0.38	1.37	1.30	0.46	0.85
EQ Score	**18.49**	**16.62**	**11.07**	**12.22**	**9.76**	**10.72**	**11.21**	**11.07**	**12.65**

AAPL	2008	2009	2010	2011	2012	2013	2014	2015	AVG
(CFO/S)*10	2.95	2.78	2.85	3.47	3.25	3.14	3.27	3.48	3.15
CFO/EBIT	1.53	1.33	2.55	1.11	0.92	1.10	1.14	1.14	1.35
COI/NI	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(CFO/TL)*5	2.59	1.95	3.39	4.72	4.40	3.22	2.48	2.37	3.14
Δ(S/AR)+1	-0.25	-1.54	1.97	9.32	-4.84	-0.27	-1.58	4.40	0.90
EQ Score	**7.82**	**5.52**	**11.76**	**19.62**	**4.72**	**8.18**	**6.31**	**12.39**	**9.54**

DIS	2008	2009	2010	2011	2012	2013	2014	2015	AVG
(CFO/S)*10	1.44	1.40	1.73	1.71	1.88	2.10	2.00	2.08	1.79
CFO/EBIT	0.74	0.89	0.98	0.90	0.90	1.00	0.85	0.82	0.88
COI/NI	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(CFO/TL)*5	0.90	0.86	1.10	1.07	1.21	1.43	1.36	1.38	1.16
Δ(S/AR)+1	0.99	1.40	0.13	1.03	0.85	1.00	0.78	1.30	0.94
EQ Score	**5.06**	**5.56**	**4.94**	**5.71**	**5.84**	**6.53**	**5.98**	**6.59**	**5.78**

MSFT	2008	2009	2010	2011	2012	2013	2014	2015	AVG
(CFO/S)*10	3.58	3.26	3.85	3.86	4.29	3.70	3.71	3.11	3.67
CFO/EBIT	0.96	0.93	1.00	0.99	1.45	1.08	1.16	1.60	1.15
COI/NI	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(CFO/TL)*5	2.96	2.48	3.01	2.61	2.88	2.27	1.95	1.51	2.46
Δ(S/AR)+1	0.94	1.78	0.58	0.87	1.01	0.78	0.99	1.78	1.09
EQ Score	**9.44**	**9.45**	**9.45**	**9.33**	**10.63**	**8.83**	**8.81**	**9.00**	**9.37**

CL	2008	2009	2010	2011	2012	2013	2014	2015	AVG
(CFO/S)*10	1.46	2.14	2.06	1.73	1.87	1.84	1.91	1.84	1.86
CFO/EBIT	0.74	0.91	0.92	0.75	0.82	0.90	0.93	1.06	0.88
COI/NI	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
(CFO/TL)*5	1.39	2.08	1.92	1.42	1.45	1.41	1.37	1.23	1.53
Δ(S/AR)+1	2.43	0.80	1.24	1.32	1.25	1.41	1.48	1.10	1.38
EQ Score	**7.02**	**6.92**	**7.15**	**6.23**	**6.40**	**6.56**	**6.69**	**6.23**	**6.65**

Table 3: T-Test Results for EQ Model Means of Low Earnings Quality Firms versus High Earnings Quality Firms

Variable	T Statistic	Probability
EQ Score	- 3.45	.0005***
(CFO/S)*10	-12.14	5.98E-20***
CFO/EBIT	+ 1.03	.1531
COI/NI	- 1.51	.0671*
(CFO/TL)*5	- 5.24	6.7E-07***
Δ(S/AR) + 1	- 0.15	.4415

n = 40

*Significant at 10%
**Significant at 5%
***Significant at 1%