Advances in Business Research
2013, Vol. 4, No. 1, 49-53

Earnings Quality As Measured By Predictability of Reported Earnings

Paul Holt, Texas A&M University, Kingsville

The study selected a single normative criterion related to earnings quality, that current and prior years' earnings per share (eps) should be reasonable predictors of future eps. Correlations between one year's eps and the following year's eps were sometimes much higher than expected. A surprise was that the second prior year's eps was a slightly better predictor of the current year's eps than the immediate prior year. Performing multivariate regressions with an additional prior year dependent variable provides an improvement in the residual sum of squares (two independent variables predict better than three, etc). But with the addition of each additional prior year the percentage improvement in the residual sum of squares declines. Further, starting with the sixth prior year, adding an additional dependent variable makes no noticeable impact on prediction.

The quality of earnings is a concept that has received much attention in recent years by accountants and users of financial statements. It is clearly an important concept, yet there is no precise definition of the term. More precisely, there are many definitions, but none that is universally accepted.

Earnings quality can be reduced by errors and by management manipulation. Aside from honest errors, reported earnings can be manipulated by recording revenues too early or too late, a violation of the recognition principle, and by recording expenses too early or too late, a violation of the matching principle. Failing to record liabilities or receivables, or recording them in the wrong accounting period reduces earnings quality.

Purpose of the Study

This study tests the ability of reported earnings to predict future reported earnings. The results are intended to increase our understanding of the extent to which present accounting methods result in quality earnings.

LITERATURE REVIEW

Earnings quality must reflect the hierarchy of qualitative characteristics of financial information (FASB, 2010), the overriding objective of which is decision usefulness. To achieve this, quality earnings must possess the fundamental characteristics of relevance and faithful representation. One of the components of relevance is predictive value, which is also a component of the present study. Quality earnings can be defined as the ability of the earnings to predict future earnings and cash flows (Financial Education, 2008).

Earnings quality refers to the reasonableness of reported earnings (Knechel et al., 2007). Among the characteristics of earnings listed by McClure (2008) is that the earnings be repeatable. The term used by Revsine et al. (2005) is "sustainable."

Income statement elements such as sales, cost of goods sold, and various operating expenses are repeatable (sustainable); they are highly likely to reoccur in the normal course of operations from period to period. Other events, such as gains or losses from the sale of fixed asset and investments generally do not reoccur regularly from period to period, and are therefore not sustainable. Extraordinary items clearly are not sustainable.

Income smoothing is highly relevant to earnings quality. It reduces earnings quality because it makes it more difficult, even impossible, for analysts to determine the permanent earnings of a company. But most managers prefer to see a reasonable, steady increase in sales and earnings from period to period, eliminating major increases and declines to the extent possible.

The literature relating to income smoothing extends over at least half a century. The measurement of income smoothing is a challenge for researchers as, by its very nature, income smoothing is hidden by

managers.

That income smoothing does occur, and to a significant degree, is demonstrated by a number of articles, representative of which are Fonseca and Gonzalez (2008), Kanagaretnam and Lobo (2003), and Lim and Lustgarten (2002).

Zohreh (2012) found that managers could not produce value by engaging in income smoothing. Sulistiyawati (2013) found that the value of the company, its dividend policy, and the reputation of the company's auditors do not have any effect on income smoothing.

Chang et al. (2013) provided evidence that income smoothing reduces firm-specific exchange rate exposure. Wang's (2013) empirical study shows that investors' perceptions of persistent earnings are inversely related to the level of income smoothing. Further, investors can, through careful research, distinguish between persistent earnings and earnings that have been smoothed.

Methodology

Eighty US companies were selected at random for the test sample, forty from the Fortune 1,000 list and forty with sales under $100 million. To be eligible, a company needed financial statements for the years 2003 through 2012, to be a corporation, and to have a fiscal year ending on December 31.

Correlation coefficients (r) and coefficients of determination (r^2) were calculated for eight regressions, as follows: $Y_i = a + bx_{(i-1)}$ where Y is the eps of the eighty companies for year i, and $x_{(i-1)}$ is the eps for the previous year. The correlation coefficients and coefficients of determination represented measures of the predictability of one year's eps by the previous year's eps, and allowed a comparison of the measure from year to year over nine year-pairs.

The regression was repeated using the forty Fortune 1,000 companies and for the forty smaller companies to provide a measure of the difference in results between large companies and small companies.

This set of regressions was repeated with one year lag, as follows: $Y_i = a + bx_{(i-2)}$ which resulted in seven regression year-pairs. The resulting correlation coefficients provided a measure of predictability of eps two years in the future.

Multivariate regression was done using two prior years, as follows: $Y_1 = a + b_1x_{(i-1)} + b_2x_{(i=2)}$ to determine if two prior years predicted as well as one.

Additional multivariate regressions and residual sums of squares were calculated to determine if three prior years predict better than two, if four predict better than three, etc., with the final multivariate regression being the 2012 eps as the dependent variable and nine prior years as independent variables.

Results and Conclusions

The regressions described in the methodology above resulted in the following set of tables:

Table I: Correlation of One Year's Earnings per Share With the Prior Year's Earnings per Share. Eighty Companies

Dependent Variable	Independent Variable	r	r^2
2012 eps	2011 eps	.2396	.0574
2011 eps	2010 eps	.8465	.7165
2010 eps	2009 eps	.7608	.5788
2009 eps	2008 eps	.7188	.5167
2008 eps	2007 eps	.9455	.8940
2007 eps	2006 eps	.8182	.6695
2006 eps	2005 eps	.9769	.9543
2005 eps	2004 eps	.9607	.9230
2004 eps	2003 eps	.9777	.9559
Averages		.8050	.6962

This first table demonstrates a variety of results from year to year, with no noticeable pattern. A surprise to the author is that the r numbers are generally quite high, over .9 in four of the year-pairs. An

untestable theory for explanation is that income smoothing has been employed by management in order to achieve precisely the effects observed.

Table II: Correlation of One Year's Earnings per Share With the Prior Year's Earnings per Share. Forty Large Companies

Dependent Variable	Independent Variable	r	r^2
2012 eps	2011 eps	.8686	.7545
2011 eps	2010 eps	.9058	.8205
2010 eps	2009 eps	.1702	.0290
2009 eps	2008 eps	-.7464	.5570
2008 eps	2007 eps	.8443	.7129
2007 eps	2006 eps	.3168	.1004
2006 eps	2005 eps	.8680	.7535
2005 eps	2004 eps	.7372	.5435
2004 eps	2003 eps	.7696	.5923
Averages		.5260	.5404

This second table, focusing on forty large companies, also reveals a variety of results with no clear pattern. The interesting high negative r for the 2009/2008 pair indicates a strong negative relationship between the two years' eps.

Table III: Correlation of One Year's Earnings per Share With the Prior Year's Earnings per Share. Forty Small Companies

Dependent Variable	Independent Variable	r	r^2
2012 eps	2011 eps	.0308	.0010
2011 eps	2010 eps	.1955	.0382
2010 eps	2009 eps	.3800	.1444
2009 eps	2008 eps	.9907	.9816
2008 eps	2007 eps	.9698	.9405
2007 eps	2006 eps	-.0806	.0065
2006 eps	2005 eps	.2247	.0505
2005 eps	2004 eps	.9765	.9536
2004 eps	2003 eps	.9772	.9548
Averages		.5183	.4523

Both Table II (large companies) and Table III (small companies) reveal a lack of pattern and some surprisingly high r numbers (four year-pairs with r numbers over .9 in Table III). The averages for Tables II and III are similar, and the null hypothesis that the means of the two populations of averages are about the same cannot be rejected. The null hypothesis that the variances of the two populations are about the same also cannot be rejected.

Table IV shows the correlation of the eps of all eighty companies, but with one year additional lag (regressing the current year's earnings against the company's second prior year):

Table IV: Correlation of One Year's Earnings per Share With the Second Prior Year's Earnings per Share. Eighty Companies

Dependent Variable	Independent Variable	R	r^2
2012 eps	2010 eps	.6752	.4560
2011 eps	2009 eps	.9540	.9101
2010 eps	2008 eps	.7294	.5321
2009 eps	2007 eps	.6484	.4205
2008 eps	2006 eps	.8696	.7562
2007 eps	2005 eps	.8780	.7709
2006 eps	2004 eps	.9794	.9592
2005 eps	2003 eps	.9192	.8450
*	*		
Averages		.8317	.7063

A comparison of Table I and Table IV produces the surprise that the second prior year's eps is a

significant statistical difference between the two means or variances.

Table V lags an additional year: The current year's eps is regressed against the third prior year:

Table V: Correlation of One Year's Earnings per Share With the Third Prior Year's Earnings per Share. Eighty Companies

Dependent Variable	Independent Variable	r	r^2
2012 eps	2009 eps	.1241	.0154
2011 eps	2008 eps	.8460	.7157
2010 eps	2007 eps	.7164	.5132
2009 eps	2006 eps	.9185	.8436
2008 eps	2005 eps	.9098	.8277
2007 eps	2004 eps	.7674	.5889
2006 eps	2003 eps	.9360	.8761
*	*	*	*
*	*	*	*
Averages		.7455	.6258

Table V suggests that the third prior year's eps has less effect on the current year's eps than either the second prior year or the immediate prior year, but the statistical differences are slight.

Table VI suggests an answer to the question of how many prior years, in multivariate regression, are useful in predicting the current year's eps.

Table VI: Multivariate Regressions Results With Eps 2012 As the Dependent Variable Eighty Companies

Dependent Variable	Independent Variables	RSS	Percent Improvement In RSS
2012 eps	2010 and 2011	311.59	83.54% (over 2011 as the only dependent variable)
2012 eps	2009 through 2011	296.24	4.93%
2012 eps	2008 through 2011	265.97	10.22%
2012 eps	2007 through 2011	246.10	7.47%
2012 eps	2006 through 2011	244.42	.68%
2012 eps	2005 through 2011	242.75	.68%
2012 eps	2004 through 2011	242.64	.05%
2012 eps	2003 through 2011	242.33	.13%

RSS = residual sum of squares. Performing the multivariate regression with an additional prior year dependent variable always provides an improvement in the RSS. But with the additional of each new prior year (with the exception of adding 2008 and, trivially, the addition of 2003) the percentage improvement in RSS declines. Further, starting with the sixth prior year (2006), adding an additional dependent variable makes no noticeable impact on the prediction of the 2012 eps.

Limitations and Suggestions for Future Research

Although this study attempts to suggest how well prior years' eps can be used to predict a future year's eps, it does not suggest what accounting methods management might employ to improve this predictability, and thus the quality of earnings. Nor does the study suggest any changes in accounting standards that might result in higher earnings quality. Numerous factors, especially non-accounting factors such as macroeconomic differences across the ten years used, were disregarded. The study intentionally focused on only one financial statement element, eps, and statistically tested the normative criterion that current and previous earnings should be reasonable predictors of future earnings. Other normative criteria were not tested, such as the predictability of future cash flows and the relationship between reported earnings and firm valuation.

The study does not fully answer the question of how well accounting standards and managements' use of those standards result in earnings quality based on eps predictability. The study can only provide a benchmark against which future studies may make comparisons. Such future studies may test whether

alternative accounting choices and changes in standards may affect earnings quality. Future studies may determine if there are major differences in predictability of eps across individual companies and across industries. Finally, this study uses eps based on net income. Because net income is impacted by non-reoccurring events, it may be that the use of eps based on operating income may have generated better predictive models. This question is left for future research.

REFERENCES

Chang, F., Chin-Wen, H., and Shin-Rong, S. 2013. A re-examination of exposure to exchange rate risk: the impact of earnings management and currency derivative usage. **Journal of Banking and Finance,** March 26, 2013.

Financial Accounting Standards Board. 2010. **Conceptual framework for financial reporting: chapter 3, qualitative characteristics of useful financial information. Statement of financial accounting concepts no. 8**. Norwalk, CT: FASB.

Financial Education. **What is earnings quality?** http://financial-education.com/2007/02/22/what-is-earnings-quality. Retrieved June 29, 2008.

Fonseca, A. & Gonzalez, F. 2008. Cross-country determinants of bank income smoothing by managing loan-loss provisions. **Journal of Banking and Finance,** 32: 217-228.

Kanagaretnam, K., & Lobo, G. 2003. Managerial incentives for income smoothing through bank loan-loss provisions. **Review of Quantitative Finance and Accounting,** 20(1): 63-80.

Knechel, W., Salterio, S., & Ballou, B. 2007. **Auditing: Assurance and Risk.** Mason OH: Thompson South-Western.

Lim, S., & Lustgarten, S. 2002. Testing for income smoothing using the backing out method: A review of specification issues. **Review of Quantitative Finance and Accounting,** 19(3): 273-290.

McClure, B. 2008. **Earnings: Quality Means Everything.** http://financial-education.com/2007/02/22/what-is-earnings-quality. Retrieved June 29, 2008.

Revsine, L., Collins, D., & Johnson, B. 2005. **Financial Reporting and Analysis,** Upper Saddle River, NJ: Pearson-Prentice Hall.

Sulistiyawati, S. 2013. The effect of firm value, dividend policy and the auditor's reputation on income smoothing. **Accounting Analysis Journal**, North America, http://journal.unnes.ac.id/sju/index.php/aaj/ article/view/1175/1153. Retrieved October 24, 2013.

Wang, Z. 2013. Measuring investors' assessment of earnings persistence: Do investors see through smoothed earnings? **Review of Quantitative Finance and Accounting,** Forthcoming.

Zohreh, H., & Maher, L. 2012. The investigation of intangible value created by companies in income smoothing and non-income smoothing firms. **Financial Accounting and Auditing Records,** Winter: 113-136.

Paul Holt is a professor of accounting at Texas A&M University, Kingsville. He received his Ph.D. in accounting from Oklahoma State University. His current research includes foreign currency translation and earnings quality. He has published in Advances in Business Research, American Journal of Economics and Business Administration, Journal of Theoretical Accounting Research, Southwest Business and Economics Journal, Accounting Forum, and Journal of Accounting and Finance Research.