The Prediction of Earnings Movements Using Accounting Data: Based on XBRL

Amos Baranes
Rimona Palas
College of Law and Business
The Accounting Department, Ramat Gan, Israel

Key words
Accounting information, earnings prediction, XBRL

Abstract

The usefulness of accounting information as a basis for a profitable investment strategy is an important issue. Ou and Penman (1989) were the first to focus on the usefulness of accounting information to predict the direction of movement of earnings.

The objective of this study is to repeat the original Ou & Penman study over a more recent time period using, not the original COMPUSAT database (which reliability is questioned), but the XBRL database. The study analyzes XBRL quarterly data, from the first quarter of 2011 to the fourth quarter of 2015, using a two-step Logit regression model. In the first step a chi-squared test was used in order to exclude those variables which did not have a strong relationship with the dependent variable (i.e. increase or decrease in earnings). Then a stepwise regression was used to determine the variables to be included in the final model. A different model was developed for each of the four quarters of 2015. The model was then used to arrive at the probability of the directional movement of earnings between the current quarter and the subsequent quarter.

The results classified the companies with a probability 0.6 as one that would realize an increase in earnings or a company with a probability below 0.4 as one that would realize a decrease in earnings.
The results of the final models' indicated a significant ability to predict subsequent earnings changes. The predictions appear to be correct on average about 73% of the time.

These results suggest that there is merit for a model based on XBRL accounting information as a means for forecasting movements in earnings

I. Introduction

The ability of earnings to indicate future earnings has been recognized as a measure of earnings quality (Penman & Zhang, 2002) and while Ball & Shivakumar (2008) conclude that earnings announcements provide only a modest amount of new information to the share market, Bloomfield, Libby & Nelson (2003) show that investors over rely on old earnings performance when predicting future earnings performance.
These studies highlight the necessity to develop a tool to better predict future earnings and help develop various investment strategies.

Many research papers have concentrated on the importance of earnings announcements and forecasts in the determination of investment decisions. While earlier research has only been able to show relatively low informativeness of earnings (Ball & Brown, 1968; Beaver, 1968; Foster, Olsen & Shevlin, 1984; and Bernard & Thomas, 1990) later studies were able to show the incremental information content of specific components of the financial statements. For

example, Finger (1994) shows that earnings provide information for future earnings and cash flows. Ou (1990) and Ou & Penman (1989)predict sign changes in the earnings per share using forecasting models developed from various income statement and balance sheet components. Shroff (1999) assesses the predictive ability of a "composite" model, which forecasts as a function of current earnings and current security prices, against three univariate benchmarks: a random walk model, a random walk with drift model, and a first order autoregressive/moving average (ARIMA) model. The findings indicate that the composite model obtains significantly lower forecast errors relative to the benchmark models. Roychowdhury & Sletten (2012) find that earnings informativeness is higher in bad-news periods than in good-new periods. Alam & Brown (2006) were able to show that disaggregated earnings data were better able to predict next period's earnings in the banking industry.

Ou and Penman (1989) (hereafter O&P) were the first researchers to focus on the usefulness of accounting information to predict the direction of movement of earnings relative to trend adjusted current earnings. The study is important because it evaluates whether accounting information can consequently be used as the basis for profitable investment strategy. Given investors' reliance on earnings this could be a valuable tool for a profitable investment strategy. The authors found that financial statement analysis can provide a measure that is an indicator of future earnings which in turn is used as a successful investment strategy. However, the evidence from subsequent studies (Holthausen & Larker, 1992; Bernard et al. 1997; Stober, 1992; Setiono & Strong, 1998; and Bird, Gerlach & Hall, 2001) has been mixed.

One objective of this study is to repeat the original O&P study over a more recent time period and provide a viable tool for investment decisions. However, the main objective is to examine the methodology using, not the original COMPUSAT database, but the XBRL database. XBRL (eXtensible Business Reporting Language) is a freely available and global standard for exchanging business information. XBRL allows the expression of semantic meaning commonly required in business reporting. One use of XBRL is to define and exchange financial information, such as a financial statement.

The SEC has created the XBRL U.S. GAAP Financial Reporting Taxonomy. This taxonomy is a collection of accounting data concepts and rules that enables companies to present their financial reports electronically. The SEC's deployment was launched in 2008 in phases, and all public U.S. GAAP companies were required to file their financial reports using the XBRL reporting technology starting from June 15, 2011.

While COMPUSTAT is a popular source of financial information for both academics and practitioners, it has been questioned how reliable the data are. Prior studies have shown that COMPUSTAT data may differ from the original corporate financial data (San Miguel, 1977; Kinney & Swanson, 1993; Tallapally, Luehlfing & Motha, 2011,2012) and data found in other accounting databases (Rosenberg & Houglet, 1974; Yang, Vasarhelyi & Liu, 2003).

On the other hand, while there is still not enough research regarding the reliability of XBRL data, studies up to date seems positive: Boritz & No (2013) find that when examining the quality of interactive data XBRL tagged information it is the most complete and most accurate source of company data compared with COMPUSTAT, Yahoo Finance and Google Finance; Chychyla & Kogan (2015), although did not attmept to compare COMPUSTAT and XBRL 10-K reports, found that COPUSTAT significantly alters numbers reported on the 10-K filings; and Heselmann, Ditter & Scherr (2015) suggest that XBRL analysis is a useful tool in assessing irregularities in accounting data. The important advantage of the XBRL data, is that it allows easy and quick and access and provides up to date information for to users.

The paper is organized as follows, Section II reviews academic literature evaluating O&P and subsequent studies and examining research conducted on the validity of XBRL as a means

for data. Section III outlines the method employed and the data used. Section IV presents and discusses the results for the model developed to forecast future movements in earnings, in terms of accuracy and as the basis for profitable investment strategy. The last section concludes the paper.

II. Academic Reseach

In this section will be presented a review of relevant literature on three issues: evaluation of the O&P study, an evaluation of subsequent studies, and an examination of the validity of XBRL as a means for data comparison. The three issues will be examined separately.

Evaluation of the O&P and Consequent Studies

Ou & Penman (1989)

O&P is considered a foundation paper in accounting research literature (cited 124 times according to PROQUEST) because they were the first to focus on the usefulness of accounting information to predict the direction of the movement of earnings relative to trend adjusted current earnings.

Using an extensive financial statement analysis (68 accounting variables) the study modeled the direction of movements (increase/ decrease) in earnings per share (EPS) one year out. The sample was obtained from the 1984 COMPUSTAT annual report files and the study was conducted in several stages. In the first stage a chi-squared test was applied to a univariate LOGIT estimation and conducted for 68 accounting variables using annual report data over the period 1965-1972 and then again over the period 1973-1977. In both periods 34 (50%) of the coefficients estimated had p-values less than 0.10. In the second stage a multivariate model was used, on the variables found in the first stage, using a step-wise procedure, deleting descriptors not significant at the 0.10 level with all other descriptors included. In this stage, stage two, additional descriptors were dropped resulting in a model with 16 explanatory variables (for the 1965-1972 period) and 18 variables (for the 1973-1977 period). The results of both time periods were then used to forecast the probability of a company's EPS lying above its trend-adjusted EPS in each of the years from 1973-1983. The companies were classified with a probability above 0.5 (the test was then repeated with $p>0.6$) as one that would realize an increase in EPS or a company with a probability below 0.5 (the test was then repeated with $p<0.4$) as one that would realize a decrease in EPS.

Although the two models only had 6 descriptors which appear in both time periods, many of the descriptors captured similar operating characteristics. For example, inventories, sales and deflated earnings appear in more than one descriptor. An estimation of the correlation of the prediction ability for both time periods, provided a mean for the 11 years of 0.62, the two models classified the firms consistently 78.7% of the time (for a classification of above or below 0.5).

The results of the final models' indicated a significant ability of the descriptors to jointly describe subsequent earnings changes. The χ_1^2 values from the 2X2 contingency table are highly significant and the predictions appear to be correct about 60% of the time for a probability cutoff of (0.5, 0.5) and 66% of the time for a (0.6,0.4) cutoff.

Replication of O&P

There have been many replications of the O&P study over different time periods, different countries, different industries, in comparison with analysts' predictions, and with additional methodologies, with mixed results.

Holthausen & Larker (1992) reexamined O&P using a different time period (1978-1988), including Over-the-Counter firms, and using only 60 of the original 68 ratios. The study estimated four different logit model (two exchanges: NYSE/AMEX and OTC, and two time periods: 1973-1977 and 1978-1982) which retained 15 ratios (the original O&P study had 18 ratios). The correlation in the probability scores between the 1973-1977 model and the 1978-1982 model for NYSE/AMEX (OTC) firms was 0.70 (0.58). The predictive ability of their models were qualitatively similar (to O&P), using a cut-off of 0.5 the overall accuracy is 60.1% (compared to 60%) and using cut-offs of 0.4 and 0.6 had an overall predictive accuracy of 65.0% (compared to 67%). However, the profitability of the trading strategy realized little value added over the period of their study; that is the O&P strategy worked well in the 1978-1982 period (a common period for both studies) regardless of exchange with an excess return varying from 6.9% to 10.3% (8.0% to 11.4% on OTC firms). However, the strategy performed poorly in the 1983-1988 period, where returns were negative (ranging from -4% to -5%) regardless of the exchange.

Bernard et. al (1997) replicated the O&P study using the same logit model to make predictions for the same years (1973-1977 and 1978-1983) and re-estimate logit model (using their approach over a previous estimation period) to produce probabilities for earnings increase for the 1984-1988 and 1989-1992 periods. The mean profitability of their investment strategies produced excess return of 4.74% in the first year and 1.24% in the second year.

Stober (1992) compared the O&P model prediction ability to that of analysts' forecasts of earnings. Using the same time period as O&P they found that the model accurately predicts the signs of one-year-ahead EPS 46% of the time, analysts' forecasts are correct about 54% of the time but a combined model correctly predicted the sign 78% of the time.

Setiono & Strong (1998) examined the O&P model using a UK sample over a period from 1980 to 1988 and found that a portfolio based on the forecasted probabilities realized abnormal returns.

Bird, Geriach & Hall (2001) extended the O&P model by covering a later time period (the years 1983-1997) and by encompassing the UK and Australian markets in addition to the US market. Their results found 12 variables (compared to O&P's 18) and using a cut-off of 0.5 showed an accuracy of 57.5%- 62% (compared to 60%) and using cut-offs of 0.4 and 0.6 had an average predictive accuracy of 60.5%-66.5% (compared to 67%) depending on the country examined.

In examining specific industries Jordan et.al (2016) applied simple regression analysis to each of 25 of the variables used by O&Pin order to explain variations in the E/P ratios of publicly traded oil and gas firms during the years 2005-2006. Their results showed that three independent variables were significant in relation to the E/P ratio when examined individually and remain statistically significant when combined in a multiple regression model. The model was able to explain almost 62% of the variation in firms' E/P ratios.

Alam & Brown (2006) examined the ability of disaggregated earnings to predict ROE in the banking industry. The results show that the mean adjusted R-square significantly increased from 0.576 to 0.623 with the progressive disaggregation of earnings during the years 1979-1996 . The results also demonstrate that disaggregated components are better able to predict next period earnings than aggregated earnings.

Validity of XBRL

Extensible Business Reporting Language (XBRL) is a business and financial reporting technology that is being implemented to enhance internal and external reporting, electronic filing, and sharing of information.

Beginning in 2009 the SEC requires that all publicly traded companies must submit financial reports in a standardized structure using XBRL to the Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system under a three-year phase-in schedule. In the first phase, as of June 15, 2009 large accelerated filers that have a worldwide public common equity float above $5 billion as of the end of the second fiscal quarter of the most recently completed fiscal year, and who prepare their financial statements according to U.S. GAAP (Generally Accepted Accounting Principles), are subject to XBRL quarterly filings. In the second phase, as of June 15, 2010 all other large accelerated filers are required to comply. In the last phase, which started on June 15, 2011, all remaining filers, including smaller reporting companies, are required to file XBRL quarterly reports as an exhibit to the traditional filings (SEC 2009).

The novelty of the XBRL structured financial reports is that the reporting content is marked up with standardized elements (XBRL tags) from a publicized list of pre-defined items (XBRL taxonomy). For example, the 2013 U.S. GAAP taxonomy contain approximately 19,000 XBRL tags that allow the user to easily extract the desired information for analysis purposes.

Literature suggests that there are several advantages of using SEC XBRL filings both for the adopting companies as well as the capital markets and research:

The XBRL structure enables unique identification and reliable extraction of accounting numbers from the financial reports – additional information comes tagged and there are no distortions due to the use of different display formats (Henselmann et. al, 2015).

There is no deviation from the expected digit distribution due to differences between varying database providers (Henselmann et. al, 2015).

XBRL has the potential to streamline internal accounting practices leading to cost savings and improved efficiency and effectiveness in the accounting and finance function as well as enhanced internal control leading to cost savings and improved efficiency (Amrhein et.al, 2010).

The aim of the SEC XBRL mandate is to decrease information asymmetry by improving the information processing capability of regulatory filings (SEC 2009). XBRL-structured SEC filings are expected to improve data gathering and analyses by reducing manual data entries, and bringing all filings to a "common ground". Although early research has found inconsistencies, errors, or unnecessary extensions in the XBRL filings (Debreceny, Farewell, Piechocki, Felden, and Gräning 2010; Debreceny et al. 2011; Du, Vasarhelyi, and Zheng 2013) more recent studies found XBRL data to be not only with less errors than other forms of data, but to also provide higher quality information.

Boritz & No (2013) compared XBRL data filed with the SEC with the data provided by three data aggregators: COMPUSTAT, Google Finance, and Yahoo Finance. Their results find a significant rate of omission of more than 50% in the financial statement items provided by the aggregators compared with the interactive SEC XBRL data. For items that are not omitted they find between 5-8% mismatches, with approximately 56% differences being greater than conventional materiality. The implications of their study is that XBRL information is the most complete and most accurate source of company data.

Chychyla & Kogan (2015) found that the values reported in COMPUSTAT significantly differ from the values reported in XBRL SEC filings. Although they do not attempt to compare COMPUSTAT and XBRL SEC filings they find that COMPUSTAT significantly alters numbers reported, specifically 17 (out of 30) variables reported by COMPUSTAT are differ from values

reported by XBRL SEC filings. They are able to demonstrate how XBRL data can be utilized in an automated large-scale fashion to extract and process commonly used accounting numbers.
Liu & O'Farrel (2013) examine the ability of XBRL data in terms of improving transparency and quality of financial accounting information as proxied by forecast accuracy. Their results found a significant improvement in analyst forecast accuracy since XBRL mandates.

Henselmann et. al (2015) state that the XBRL data may provide the SEC and investors a simple measure to flag financial reports carrying higher probability of human interaction. Their study, which was based on XBRL 10-K filings submitted to the SEC between July 2009 and March 2013, measured a firm-year-level of abnormal digit frequency and explored its association with earnings quality. Their findings are consistent with the underlying assumption that higher manipulation of earnings is reflected in higher irregularities in the frequency of digits in accounting numbers reported in the financial reports, which may indicate lower earnings quality.
All of these studies suggest that XBRL data is a useful and accurate tool for financial statement analysis and may be used to predict the direction of future movement in earnings.

III. DATA AND METHOD

Data

Quarterly financial data was obtained using XBRL Analyst; an Excel plugin that allows users to access the company's XBRL tagged data from its XBRL SEC filing via the XBRL US database. The sample is of U.S. companies included in the S&P 500 who filed with the SEC financial statements in XBRL format. These firms were all part of the phase 1 adoption (see validity of XBRL), which ensured the longest time frame possible. The quarterly data used is from 1st quarter of 2011 to 1st quarter of 2016. In the attempt to duplicate the O&P study as closely as possible 58 variables were used from the original 68 variables. The only variables not included in the study were those who were not available for a large number of companies.

Method

Similar to the O&P method, a two-step approach was used to develop the model. In the first step a logistic regression univariate model was used to evaluate the significance of each explanatory variable. Only variables which were found to be associated significantly (at a 10% level) with the direction of earnings per share, were maintained.

In the second step, a stepwise logistic regression model was then used to determine the variables to be included in the final model. A two-ways (backward and forward) process of adding and removing variables to minimize the Akaike Information Criterion (AIC) measure of goodness of fit was used and implemented with the R software version 3.2.2. As discussed in (Burnham & Anderson, 2004) the AIC measure has several advantages over the Bayesian Information Criterion (BIC). The first part of the process (backwards) involved a cycle of including all the remaining variables in a single regression, and then progressively removing those that did not prove significant based on the AIC measure of goodness. The same process was repeated (forward) by starting with one variable, measuring the AIC and then adding another variable. A variable was considered insignificant if the total AIC score of the model decreased by adding another variable.

A different model was developed for each of the quarters for which a forecast was made, using quarterly data from all previous four years of observations – the forecast period being quarters 2, 2015 through 1, 2016. This approach deviated from the method used by O&P, who also developed a model but used the same model to arrive at a probability of the directional movement in EPS for all subsequent periods. The method adopted the method used by Bird,

Gerlach & Hall (2001), who developed a different model for each of the periods the forecasts were made.

IV. Models

Table 1: Results of the logistic regressions for predicting Q2 2015 through Q1 2016

Variables	Q2/2015	Q3/2015	Q4/2015	Q1/2016
ROA	-12.784	-10.532	-11.858	-11.366
% Change in EBITDA/Sales	-0.051	-1.052	-0.928	-1.325
% Change in Current Ratio	-0.319	-0.289		
Days sales in Accounting Receivable	0.000	-0.544		
% Change in Total Revenue	-1.585		-1.162	-2.262
% Change in Sales/Total Assets	1.332		0.732	1.537
% Change in Total Assets	0.573			0.842
Gross Profit Margin		0.457	0.459	0.482
% Change in Total Debt To Equity		-0.016		
% Change in Research & Development Expense				0.624
% Change in Equity/Fixed assets				-0.213
Accuracy	0.759	0.690	0.622	0.828

A list of the variables found significant in each model is presented in Table 1. The number of variables found significant in the different models were between 5 to 8 for each model, an average of 6.5 variables per model. The total number of variables found significant for all models is 11, O&P found between 16-18 variables and Bird, Gerlach & Hall (2001) found between 12-18. Two of the variables were common for all the models (ROA and % Change in EBITDA/Sales) and three variables were specific to only one model (% Change in Total Debt To Equity, % Change in Research & Development Expense, % Change in Equity/Fixed assets).

The two variables which appear on all models (ROA and % Change in EBITDA/Sales) are the same as the two variables which appear most in the models of Bird, Gerlach & Hall (2001). ROA appears in 22 out of 22 models and % Change in EBITDA/Sales appears in 17 of 22 models. Both these variables are found significant in the O&P model.

The Model Forecasts

The logistic models, describe in the previous section are than used to provide a forecast of the probability for each company of it EPS for the next quarter being above its current EPS. Based on these probabilities the stock can be classified. A company stock is assigned to a 'long' position (EPS are expected to increase) if the probability is greater than 0.6, and to a 'short' position (EPS are expected to decrease) if the probability is less 0.4.

The accuracy of the forecasts are judged on the basis of the percentage of companies classified as 'long' that actually experienced an increase in EPS and those classified as 'short' that actually experience a decrease in EPS. The accuracy of the models (presented in Table 1) ranges between 62% - 83%, with an average of 72.4%. These results are better than those presented by O&P which averaged 67% and those of Bird, Gerlach & Hall (2001) which ranged between 60-67%.

V. Conclusion

The focus of this study has been on developing models to forecast the direction of movement in EPS (replicating the Ou & Penman,1989 study and the Bird, Gerlach & Hall, 2001 study), using the newly mandated accounting data format of XBRL. The use of XBRL allows not only easier access to the data but also the ability to adjust the models almost immediately as the new information is posted, thus providing a much more relevant tool for investors.

The findings of the study suggest that XBRL data can be used in financial statement analysis and in research as viable data source. The models developed not only provided a higher accuracy rate than that of previous studies but also present a methodology which may be adjusted across time to be used as a basis for a profitable investment strategy.

The main limitation of the study is the relatively short time period (from 2009) of the SEC XBRL mandate. The short time periods not only limits the amount of data available but may also cause other problems such as inconsistencies, errors, or unnecessary extensions in the XBRL filings (Debreceny et al. 2011; Du et al. 2013). However, given that there are indications that XBRL quality increases over time (Du et al. 2013), the methodology may be tested again in the future.

One extension of this study would be to use the forecasts from the models as the basis for developing a profitable investment strategy. The probabilities generated by the models can be used to separate stocks into those to be included in long and in short portfolios. Another extension of this study is to use additional prediction algorithms to improve the accuracy of predictions.

Bibliography

Alam, P. & Brown, C.A. 2006, "Disaggregated earnings and the prediction of ROE and stock prices: a case of the banking industry", Review of Accounting & Finance,vol. 5, no. 4, pp. 443-463.

Amrhein, D.G., Farewell, S. & Pinsker, R. 2009, "REA and XBRL GL: Synergies for the 21st Century Business Reporting System", International Journal of Digital Accounting Research, vol. 9, pp. 127-152.

Ball, R. & Brown, P 1968, "An Empirical Evaluation of Accounting Income Numbers", Journal of Accounting Research, 6, 2, pp. 159-178

BALL, R. & SHIVAKUMAR, L. 2008, "How Much New Information Is There in Earnings?", Journal of Accounting Research, vol. 46, no. 5, pp. 975-1016.

BEAVER, WH 1968, 'The Information Content of Annual Earnings Announcements', Journal Of Accounting Research, 6, 3, pp. 67-92.

Bernard, V.L. & Thomas, J.K. 1990, "Evidence That Stock Prices Do Not Fully Reflect the Implications of Current Earnings for Future Earnings", Journal of Accounting & Economics, vol. 13, no. 4, pp. 305.

Bernard, V., Jacob, T. & Wahlen, J. 1997, "Accounting-based stock price anomalies: Separating market inefficiencies from risk", Contemporary Accounting Research, vol. 14, no. 2, pp. 89-136.

Bloomfield, R.J., Libby, R. & Nelson, M.W. 2003, "Do investors overrely on old elements of the earnings time series?", Contemporary Accounting Research, vol. 20, no. 1, pp. 1-31.

Boritz, J.E. & No, W.G. 2008, "The SEC's XBRL Voluntary Filing Program on EDGAR: A Case for Quality Assurance", Current Issues in Auditing, vol. 2, no. 2, pp. A36-A50.

Boritz, J. E. & No, W.G. 2013, "The Quality of Interactive Data: XBRL Versus COMPUSTAT, Yahoo Finance, and Google Finance". Available at SSRN: http://ssrn.com/abstract=2253638 or http://dx.doi.org/10.2139/ssrn.2253638

Burnham, K.P. & Anderson, D.R. 2004, "Multimodel inference: Understanding AIC and BIC in model selection", Sociological Methods and Research, vol. 33, no. 2, pp. 261-304.

Debreceny, R.S., Farewell, S.M., Piechocki, M., Felden, C., Gräning, A. & d'Eri, A. 2011, "Flex or Break? Extensions in XBRL Disclosures to the SEC", Accounting Horizons, vol. 25, no. 4, pp. 631-657.

Du, H., Vasarhelyi, M.A. & Zheng, X. 2013, "XBRL Mandate: Thousands of Filing Errors and So What?", Journal of Information Systems, vol. 27, no. 1, pp. 61.

Finger, C.A. 1994, "The ability of earnings to predict future earnings and cash flow",*Journal of Accounting Research,* vol. 32, no. 2, pp. 210.

Foster, G., Olsen, C. & Shevlin, T. 1984, "Earnings Releases, Anomalies, and the Behavior of Security Returns", *The Accounting Review,* vol. 59, no. 4, pp. 574.

Henselmann, K., Ditter, D. & Scherr, E. 2015, "Irregularities in Accounting Numbers and Earnings Management - A Novel Approach Based on SEC XBRL Filings",*Journal of Emerging Technologies in Accounting,* vol. 12, no. 1, pp. 117.

Holthausen, R.W. & Larcker, D.F. 1992, "The Prediction of Stock Returns Using Financial Statement Information", *Journal of Accounting & Economics,* vol. 15, no. 2, pp. 373.

Jordan, C.E., Clark, S.J. & Donald, M. 2009, "USING FINANCIAL STATEMENT ANALYSIS TO EXPLAIN THE VARIATION IN FIRMS' EARNINGS-PRICE RATIOS",*Academy of Accounting and Financial Studies Journal,* vol. 13, no. 1, pp. 91-101.

Liu, C. & O'Farrell, G. 2013, "The role of accounting values in the relation between XBRL and forecast accuracy", *International Journal of Accounting and Information Management,* vol. 21, no. 4, pp. 297-313.

Ou, J.A. 1990, "The Information Content of Nonearnings Accounting Numbers as Earnings Predictors", *Journal of Accounting Research,* vol. 28, no. 1, pp. 144.

Ou, J.A., Penman, S.H. & Larcker, D.F. 1989, "Accounting Measurement, Price-Earnings Ratio, and the Information Content of Security Prices; Discussion",*Journal of Accounting Research,* vol. 27, pp. 111.

Penman, S.H. 1992, "Return to Fundamentals", *Journal of Accounting, Auditing & Finance,* vol. 7, no. 4, pp. 465.

Penman, S.H. & Xiao-Jun, Z. 2002, "Accounting conservatism, the quality of earnings, and stock returns", *The Accounting Review,* vol. 77, no. 2, pp. 237-264.

Roychowdhury, S. & Sletten, E. 2012, "Voluntary Disclosure Incentives and Earnings Informativeness", *The Accounting Review,* vol. 87, no. 5, pp. 1679-1708.

Securities and Exchange Commission (SEC). 2009. Interactive Data to Improve Financial Reporting. Release Nos. 33-9002, 34-59324; 39-2461; IC-28609. Washington, DC: SEC.

Securities and Exchange Commission (SEC). 2011. Response of the Division of Corporation Finance; Response of the Office of the Chief Accountant. Division of Corporation Finance No-Action Letter.

Setiono, B. & Strong, N. 1998, "Predicting stock returns using financial statement information", *Journal of Business Finance & Accounting,* vol. 25, no. 5, pp. 631-657.

Shroff, P.K. 1999, "The variability of earnings and non-earnings information and earnings prediction", *Journal of Business Finance & Accounting,* vol. 26, no. 7, pp. 863-882.

Stober, T.L. 1992, "Summary Financial Statement Measures and Analysts' Forecasts of Earnings", *Journal of Accounting & Economics,* vol. 15, no. 2, pp. 347.

Wahlen, J.M. & Wieland, M.M. 2011, "Can financial statement analysis beat consensus analysts' recommendations?", *Review of Accounting Studies,* vol. 16, no. 1, pp. 89-115.