

Earnings Volatility, Accounting Conservatism, and Earnings Persistence: A Consideration of Unsystematic Earnings and Systematic Earnings Components

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Abstract

Unlike previous studies investigating earnings persistence through cash flows and accrual components, this study separates earnings into unsystematic and systematic earnings so that we can differentiate between the earnings persistence of both components where the earnings persistence of the former is higher than that of the latter. In addition, the information properties of both earnings components are different. The earnings persistence of unsystematic earnings is affected by accounting conservatism, and the earnings persistence of systematic earnings is affected by earnings volatility.

Keywords: earnings persistence, unsystematic earnings and systematic earnings, earnings volatility, accounting conservatism.

I. Introduction

The assessment of a company's earnings persistence is very important. It can transmit messages regarding the future operating performance of the company, which will be used by analysts and investors for reference when conducting financial analysis and making investment decisions. Many studies based on financial statements divided earnings into various accruals and cash flow components to investigate earnings persistence (Sloan 1996; Xie 2001; Richardson et al. 2005). However, earnings persistence should reflect the operating characteristics and the overall economic environment of an individual company (Baginski et al. 1999). Nowadays, corporate operations are affected by both internal and external environments, resulting in changes to earnings figures; therefore the decomposition of earnings is different from previous studies. This study divides earnings into the earnings derived from the operating characteristics of individual companies, as well as the earnings derived by the general economic environment to investigate the information properties of both earnings components.

Bali et al. (2008) divided the earnings of individual companies into unsystematic and systematic earnings. The former reflects corporate operating characteristics and cannot be explained by the aggregated earnings of the market, and the latter are affected by changes in the general economic environment and can be explained by the aggregated earnings. The empirical results show that unsystematic earnings are an important factor when explaining the future stock returns of a company. According to the earnings decomposition method proposed by Bali et al. (2008), this study conducts an investigation into the earnings derived from the operating characteristics of individual companies and the earnings that are affected by the general economic environment, i.e., assessment of the earnings persistence of unsystematic and systematic earnings.

To present a complete picture of the earnings persistence effects of unsystematic and systematic earnings, the main aims of this study are as follows: first, to examine whether there is a difference between both earnings components with the earnings persistence. Second, to discuss the factors those affect the earnings persistent of both earnings components. According to Dichev and Tang (2009), earnings volatility and earnings persistence are negatively correlated, i.e., the greater the rate of earnings volatility, the more difficult it is to predict earnings. This implies that the conservatism of corporate accounting policies may reduce a company's profitability. Cheng et al. (2011) pointed out that when the earnings figures of a company are extremely conservative, it will reduce the level of persistent earnings. Based on these theories, this study speculates that earnings volatility and accounting conservatism are the possible factors that may affect the earnings persistence of systematic and unsystematic earnings. Therefore, this study extends the researches of Dichev and Tang (2009) and Cheng et al. (2011), and it examines whether different degrees of earnings volatility and accounting conservatism have different effects on the persistence of unsystematic and systematic earnings, hoping to understand which earnings component is affected to a larger extent by earnings volatility and accounting conservatism, thereby affecting the persistence of its earnings.

Using U.S. listed companies as the samples for our study from 2000 to 2013, the empirical results show that there is a significant difference between the persistence of unsystematic and systematic earnings. As unsystematic earnings are an important aspect when assessing the future performance of a company, they are intentionally higher than systematic earnings. In addition, the factors that affect the earnings persistence of both earnings components are different. The persistence of unsystematic earnings is influenced to a higher degree by accounting conservatism, whereas the persistence of systematic earnings is affected to a greater extent by earnings volatility.

The contribution of this study is that it provides an alternative outlook that divides different earnings components by corporate operations. Considering that the earnings of a company are affected not only by its business strategy and the management characteristics of regulatory authorities but also by the general economic conditions, this study has divided earnings components into systematic and unsystematic earnings components to more accurately assess the earnings persistence. This study has also investigated how earnings volatility and financial accounting characteristics affect systematic and unsystematic earnings.

II. Literature Review

A. Relevant literature regarding earnings component models

To investigate the earnings persistence of an earnings component model, Sloan (1996) first assessed whether the accruals and cash flow components of current earnings have different effects on the information content regarding future earnings. The empirical results show that the earnings persistence for the cash flow component is higher than that of the accruals component, however not all share prices can reflect such information. Xie (2001) extended

the research of Sloan (1996) and decomposed the accruals into discretionary and nondiscretionary accruals. He proposed that since the discretionary accruals component is the source of mixed information in earnings, the level of sustained earnings is relatively low. After Xie (2001), many studies decomposed earnings into different components when conducting research into the persistence of earnings. For example, Richardson et al. (2005) decomposed accruals into noncurrent operating accruals, working capital accruals, and financing accruals. The empirical results show that with the increase in the reliability of the accrual components, earnings persistence will be enhanced. Thus, it is supported by the relevant literature that there is a difference between the earnings persistence of the accruals component and the cash flow component, and because the meaning of the information reflected by the accruals is more complex, different accrual components have a greater negative effect on earnings persistence.

The existing literature tends to divide earnings component models into accruals component earnings and cash flow component earnings to investigate the earnings persistence of different components. Note that earnings persistence can reflect the changes in the operating characteristics of individual companies and the overall economic environment. For example, large companies possess more financial resources to decentralize operational risks, so the volatility of their revenue growth rates is lower than smaller companies, thus their earnings persistence is higher (Scherer 1973). To offer another example, companies that enter into industries with high barriers to entry may have a higher level of earnings persistence due to the reduced level of competition (Stigler 1963). Lipe (1990) pointed out that corporate earnings are greatly affected by changes in the overall economic environment, and the greater the volatility in the overall economic environment, the more unfavorable it is to predict earnings as the earnings volatility of the company is increased. In summary, this study attempts to decompose earnings components by corporate operations. According to the approach of Bali et al. (2008), the study divides earnings into systematic and unsystematic earnings to assess the earnings persistence. We expect the operating characteristics of individual companies and the overall economic environment to be reflected in the earnings persistence, thereby providing more accurate future earnings information for analysts, investors, and other interested parties.

B. Relevant literature regarding factors that affect earnings persistence

Dichev and Tang (2009) examined the correlation between earnings volatility and earnings predictability. The empirical results show that when earnings volatility increases, earnings persistence decreases, and when the earnings of the accruals components increase, earnings persistence decreases. Therefore, if analysts do not consider the factors related to earnings volatility when conducting an assessment of expected earnings, it will produce a systemic bias in the earnings prediction.

The preparation of financial statements is deeply affected by conservatism. Givoly and Hayn (2000) and Dichev and Tang (2008) pointed out that for nearly 40 years, due to the poor

compatibility between revenue and expenses of earnings information, earnings volatility has been high and is not suitable for predicting earnings. Cheng et al. (2011) went one step further and pointed out that the higher the earnings conservatism of a company, the lower the earnings persistence and the faster the speed of earnings recovery. Therefore, earnings conservatism is an important assessment factor during the process of financial analysis and business evaluation.

In conclusion, earnings volatility and accounting conservatism are important factors that affect earnings persistence. This study links the two factors to systematic and unsystematic earnings to examine whether the earnings persistence of both earnings components is affected by earnings volatility and accounting conservatism. Specifically, this study provides the earnings persistence of unsystematic and systematic earnings to make up for the current lack of relevant literature. Moreover, by verifying the effects of earnings volatility and accounting conservatism on the earnings persistence of systematic and unsystematic earnings, this study provides a more complete method to assess earnings persistence.

III. Sample and Methodology

A. Sample selection

The sample is obtained from the COMPUSTAT Annual Industrial file. The sample period is from 2000 to 2013. Firms with negative book value of equity, total assets less than \$1 million, financial firms (SIC between 6,000 and 6,999) and utilities (SIC between 4,900 and 4,999) are excluded from the sample. We require five-year-lead for earning volatility and one-year-lag variables for computing accrual variables. Thus, the final sample period for the test is the 8-year period from 2005 to 2012. The constant sample includes a total of 12,112 firm-year observations for 1,514 firms.

B. Empirical models

Measure of accounting conservatism

This study adopts the indexes of Givoly and Hayn (2000) to measure corporate accounting conservatism, which is to be measured by accumulated nonoperating accruals. The reasons are as follows: first, when company chooses a conservative accounting policy because of the income losses of the company being faster than the accounted for expenses, it causes a minimization effect of the earnings; therefore the accruals become negative. Second, accruals can be divided into operating and nonoperating accruals. The latter are usually in the preparation of entrusted managerial financial statements given to regulatory authorities using generally accepted accounting standards. When a company chooses a more conservative approach to accounting standards, it will have a greater degree of negative cumulative nonoperating accruals. Therefore, this study calculates the conservatism index of Givoly and Hayn (2000), as shown in equation (1), and names it the CON_GH index. When the CON_GH value is higher, it shows that the company takes a more conservative approach to financial reporting.

$$CON_GH_{it} = \left[\sum_{t=t-1}^{t=t+1} \frac{NonACC_{it}}{TA_{it}} \right] \times (-1) \quad (1)$$

where CON_GH is the negative of the ratio of nonoperating accruals(NonACC) to total assets(TA) cumulated over the previous three years. Nonoperating accruals are defined as earnings before extraordinary items plus depreciation minus cash flow from operations minus change in accounts receivable minus change in inventories minus change in prepaid expenses plus change in accounts payable plus change in tax payable.

Decompose earnings into unsystematic earnings and systematic earnings model

According to the approach of Bali et al. (2008), we established equation (2) and divided earnings into unsystematic and systematic earnings. We used equation (2) to perform the fixed effects model to decompose the two earnings components. The systematic earnings affected by the changes in the overall economic environment are explained by the aggregated earnings of the market, which are shown as $\gamma \left(\frac{e_{it}^{SEE}}{TA_{it-1}^{SEE}} \right)$ in equation (2) and referred to as SE.

The unsystematic earnings that reflect the operating characteristics of individual companies and cannot be explained by the aggregated earnings are and are referred to as USE.

$$\frac{e_{it}}{TA_{it-1}} = \alpha_1 + \gamma \left(\frac{e_{it}^{SEE}}{TA_{it-1}^{SEE}} \right) + \varepsilon_{it} \quad (2)$$

Where, i and t denote company and year, respectively, e represents the continuing operating income after tax, e^{SEE} is the total continuing operating income after tax for all of the sample companies, TA is a deflating variable measured by total assets, and TA^{SEE} is the sum of the total assets for all of the sample companies.

Earnings persistence models

The earnings persistence model established in previous studies took the earnings of the lag period as explanatory variables, for example using equation (3), of which α_1 represents earnings persistence. To decompose earnings into unsystematic and systematic earnings to verify whether there is a difference between the earnings persistent of the two components, this study extends equation (3) to equation (4), of which β_1 is the earnings persistence of unsystematic earning, and β_2 is the earnings persistence of systematic earnings.

$$E_{it} = \alpha_0 + \alpha_1 E_{it-1} + \varepsilon_{it} \quad (3)$$

$$E_{it} = \beta_0 + \beta_1 USE_{it-1} + \beta_2 SE_{it-1} + \varepsilon_{it} \quad (4)$$

where i and t denote company and year, respectively, E is the continuing operating income after tax, which is obtained by deflating the total assets at the beginning of the period, SE is systematic earnings, and USE is unsystematic earnings.

Changes of earnings persistent under different earnings volatility and accounting conservatism

First, inspect the earnings persistence of unsystematic and systematic earnings and compare whether there is a significant difference between the earnings persistent of α_1 , β_1 , and β_2 . Second, observe the different effects of the earnings persistence of unsystematic and systematic earnings under different earnings volatility. We sort earnings volatility from high to low and divide them into five groups to observe companies that have low earnings volatility to high earnings volatility, whether there is a decreasing trend of earnings persistence in the two earnings components, and whether there is a significant difference between the earnings persistence of the lowest and the highest groups. Finally, similar to the above approach, we sort accounting conservatism indexes from high to low and divide them into five groups to observe the trends relating to earnings persistence and whether there is a difference between the earnings persistence of the lowest and the highest groups.

IV. Results

A. Data description

The descriptive statistics in Table I show that the average measurement of earnings (E) is 0.0353. After separating USE and SE, the average earnings are 0.0067 and 0.0286, respectively, and the systematic earnings are higher than the unsystematic earnings, which imply that corporate earnings are mainly composed of systematic earnings. Observing this phenomenon using standard deviation, we can clearly understand the relationships between earnings, i.e., unsystematic and systematic earnings. The standard deviations of unsystematic and systematic earnings are 0.1341 and 0.0159, respectively, showing that the volatility of unsystematic earnings is higher than that of systematic earnings. The aforementioned average unsystematic earnings are lower than the average systematic earnings, this may be due to the volatility of unsystematic earnings being greater, which therefore offsets the difference between the high and low values of the variables, resulting in a lower average value being shown. The average accounting conservatism index (CON_GH) is greater than 0, with a value of 0.0133, indicating that the sample companies have conservative accounting policies. The descriptive statistics of earnings components and earnings volatility, as well as the subsequent grouping by earnings volatility or accounting conservatism is beneficial to the study. Conducting regression analysis by groups can not only retain the properties of the original data but also enable us to obtain accurate empirical results, as grouped data may have similar characteristics.

B. Estimation results in earnings persistence models

The empirical results of Table II show that in the full sample, the earnings persistence before decomposition is 0.7053. After decomposing earnings into unsystematic and systematic earnings, the earnings persistence of the former (0.7081) is higher than the latter (0.5146), showing that there is a difference between the earnings persistence of the two earnings components. As systematic earnings may interfere with the earnings persistence of earnings components, it was meaningful for this study to decompose earnings components by corporate operations.

In addition, this study inspected the different effects of earnings persistence at different levels of earnings volatility. The estimation results of equation (3) are listed in Panel A of Table II. We divided companies into five levels according to earnings volatility, i.e., level 1 has the lowest level of earnings volatility and level 5 has the highest. Consider level 1 for example, the earnings persistence of the lowest earnings volatility is 0.9812. Along with the increase in earnings volatility, the earnings persistence decreases; when it reaches the highest value in level 5, the earnings persistence is 0.5598. Comparing the differences between the levels of persistent earnings from level 1 to 5 (Diff (5–1)), the value is 0.4213, which has reached a significant level, indicating that there is a negative relationship between earnings persistence and earnings volatility. This outcome supports the empirical results of Dichev and Tang (2009).

The estimation results of equation (4) are listed in Panel B of Table II. After we divide earnings into unsystematic and systematic earnings, the earnings persistence of unsystematic earnings for the level 1 earnings volatility is 0.9812, and the earnings persistence of the systematic earnings is 0.9805. Along with the increase in earnings volatility, the earnings persistence of the two components decreases. In the level 5 group of earnings volatility, the earnings persistence of unsystematic earnings is 0.5708, and the earnings persistence of systematic earnings is -0.2759 , which has not reached a significant level. Furthermore, comparing the different effects of earnings persistence regarding the two earnings components in levels 1 and 5 (Diff (5–1)), the empirical results show that the difference in the earnings persistent of unsystematic earnings is 0.4103, which has reached a significant level. The difference between the earnings persistent with systematic earnings is 1.2563, which has reached a significant level, indicating that the earnings persistence of different earnings components is also affected by earnings volatility. Only systematic earnings components are greatly affected by earnings volatility; when earnings volatility is high, the decrease in the earnings persistent of such components is greater than the unsystematic earnings components.

This study examined the different effects that various levels of conservative accounting have on earnings persistence. We grouped the accounting conservatism indexes (CON_GH) into five levels from high to low. Level 1 displays a low CON_GH value. Companies in level 1 have a low level of accounting conservatism, whereas, the higher level 5 CON_GH value shows that companies in level 5 adopt a high degree of conservatism as part of their accounting practices. Among the five levels of accounting conservatism, the average value of accounting conservatism for levels 1 and 2 are less than 0, indicating that the accounting practices adopted by companies in these levels are not conservative. The average value of accounting conservatism in level 3 is 0.0090, which is close to 0, and therefore indicates that companies in level 3 may adopt neutral accounting practices. The average value of accounting conservatism in levels 4 and 5 are 0.0289 and 0.0939, respectively, indicating that companies in these levels adopt highly conservative accounting policies, and the accounting policies adopted by companies in level 5 are even more conservative than those in level 4.

The estimation results of equation (3) and equation (4) for each group are listed in Panel A and Panel B, respectively, in Table III. The empirical results before the decomposition of earnings in Panel A show that the earnings persistence of level 1 is 0.5554, level 2 is 0.6896, level 3 is 0.7298, and level 4 is 0.7291, indicating that an increase in accounting conservatism can increase earnings persistence. Such a trend has a turning point in level 4, i.e., companies that adopt even more conservative accounting practices in level 4 will not result in a benefit to their earnings persistence; hence, the earnings persistence in level 5 has decreased to 0.6588. Furthermore, when we compare the earnings persistence values between levels 1 and 4, the difference is 0.1736, which has reached a significant level. The difference of earnings persistence between levels 4 and 5 is -0.0702 , which has also reached a significant level. The above empirical results show that accounting conservatism and earnings persistence have a nonlinear relationship that first increases and then decreases, indicating that overly conservative or overly aggressive accounting practices have a negative effect on earnings persistence. Only by carefully adopting conservatism can a company faithfully convey its operational situation and obtain the best earnings information. The results are similar with the empirical results of Cheng et al. (2011).

After dividing earnings into unsystematic and systematic earnings, the study examined whether different degrees of accounting conservatism affected the earnings persistence of the two earnings components. The empirical results contained in Panel B in Table III show that when accounting conservatism is low (level 1), the earnings persistence of unsystematic earnings is 0.5538. Conversely, with an increase in accounting conservatism, the earnings persistence continues to increase and has an accounting conservatism value of 0.7317 at level 4. However, when the level of accounting conservatism reaches its highest level (level 5), the earnings persistence develops a reverse phenomenon with a value of only 0.6703. Furthermore, when comparing the difference between the earnings persistence of unsystematic earnings for levels 1 and 4, the difference in the earnings persistence has a discrepancy of 0.1780. This difference is significantly positive, while the difference between the earnings persistence of unsystematic earnings in levels 4 and 5 is significantly negative (-0.0614). This result is similar to Panel A, and therefore after dividing the different earnings components, the nonlinear relationship between accounting conservatism and earnings persistence is also supported.

In addition, we observed the earnings persistence of systematic earnings under different degrees of accounting conservatism and found that level 1 is 0.7093, level 2 is 0.7958, level 3 is 0.7107, level 4 is 0.5831, and level 5 is -0.4056 . The results are different to the aforementioned empirical results of unsystematic earnings. We compared the difference between the earnings persistence of systematic earnings in levels 1 and 4 (-0.1262), and found that it did not reach a significant level. Only the difference between the earnings persistence of systematic earnings in levels 4 and 5 is significantly negative (-0.9887). The result may indicate that accounting conservatism and earnings persistence of systematic earnings are unrelated, and only by adopting extremely conservative accounting policies will

a company possibly experience a negative impact on its systematic earnings.

V. Conclusions

During the process of financial analysis and business valuation, earnings persistence is often used by analysts and investors to facilitate the estimation of a company's expected future earnings. The present study differentiates earnings components affected by the overall economic environment to examine the earnings persistence of unsystematic and systematic earnings. The empirical results show that there is a significant difference between the earnings persistence of the two components, and that unsystematic earnings are an important component when assessing a company's future performance. In addition, the study examined the trends regarding the earnings persistence of unsystematic and systematic earnings under different levels of earnings volatility and accounting conservatism. The empirical results show that when a company has a high degree of earnings volatility, and reduces the earnings persistence of unsystematic and systematic earnings, only the systematic earnings component will receive the greatest effect. As for the relationship between the earnings persistence of accounting conservatism and different earnings components, the empirical results show that there is a nonlinear relationship between earnings persistence of unsystematic earnings and accounting conservatism, however there may not be a particular relationship between the earnings persistence of systematic earnings and accounting conservatism.

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Table I: Descriptive statistics

Variable	Mean	Std. dev.	25%	Median	75%
E_{it}	0.0353	0.1351	0.0076	0.0532	0.0996
USE_{it}	0.0067	0.1341	-0.0224	0.0240	0.0708
SE_{it}	0.0286	0.0159	0.0132	0.0289	0.0437
$VOLE_{it}$	0.0627	0.0612	0.0211	0.0414	0.0835
CON_GH_{it}	0.0133	0.0571	-0.0134	0.0089	0.0349

Notes: E, USE, and SE denote total earnings, unsystematic component of earnings, and systematic component of earnings, respectively. VOLE denote the firm-specific volatility of earnings, which is calculated as the standard deviation of E over the most recent 5 years. CON_GH is accounting conservatism index, denote the negative of the ratio of nonoperating accruals to total assets cumulated over the preceding three years.

Table II: Earnings persistence regression results by quintiles of earnings volatility

Panel A Earnings persistence							
Quintile of earnings volatility	Full sample	Q1	Q2	Q3	Q4	Q5	Diff(5-1)
E_{it}	0.7053 *** (111.05)	0.9812 *** (239.32)	0.9004 *** (110.49)	0.8173 *** (70.22)	0.7587 *** (59.59)	0.5598 *** (33.65)	0.4213 *** (11.65)
Adj R ²	0.5045	0.9594	0.8345	0.6706	0.5946	0.3184	
N	12,112	2,422	2,422	2,423	2,422	2,423	
Panel B Unsystematic earnings persistence and systematic earnings persistence							
Quintile of earnings volatility	Full sample	Q1	Q2	Q3	Q4	Q5	Diff(5-1)
USE_{it}	0.7081 *** (110.78)	0.9812 *** (239.27)	0.9005 *** (110.40)	0.8190 *** (69.65)	0.7599 *** (59.23)	0.5708 *** (33.91)	0.4103 *** (11.36)
SE_{it}	0.5146 *** (9.88)	0.9805 *** (49.95)	0.8957 *** (24.68)	0.7563 *** (12.35)	0.6813 *** (6.80)	-0.2759 (-1.26)	1.2563 *** (5.58)
Adj R ²	0.5050	0.9594	0.8344	0.6706	0.5945	0.3222	
N	12,112	2,422	2,422	2,423	2,422	2,423	

Note: persistence coefficients are *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. The p-value for the difference in persistence coefficients across quintiles is derived from a t-test. All variables are defined in Table 1.

Table III: Earnings persistence regression results by quintiles of conservatism level

Panel A		Earnings persistence						
Quintile of accounting conservatism	Q1	Q2	Q3	Q4	Q5	Diff(4–1)	Diff(5–4)	Diff(4–3)
E_{it}	0.5554 *** (34.28)	0.6896 *** (48.51)	0.7298 *** (50.69)	0.7291 *** (53.73)	0.6588 *** (43.12)	0.1736 *** (8.08)	-0.0702 *** (-2.63)	-0.0007 (-0.03)
Adj R ²	0.3266	0.4928	0.5147	0.5438	0.4341			
CON_GH Mean	-0.0571	-0.0085	0.0090	0.0289	0.0939			
N	2,422	2,422	2,423	2,422	2,423			
Panel B		Unsystematic earnings persistence and systematic earnings persistence						
Quintile of accounting conservatism	Q1	Q2	Q3	Q4	Q5	Diff(4–1)	Diff(5–4)	Diff(4–3)
USE _{it}	0.5538 *** (34.07)	0.6882 *** (48.31)	0.7302 *** (50.41)	0.7317 *** (53.64)	0.6703 *** (43.81)	0.1780 *** (8.25)	-0.0614 ** (-2.30)	0.0015 (0.07)
SE _{it}	0.7093 *** (5.99)	0.7958 *** (10.75)	0.7107 *** (10.25)	0.5831 *** (7.13)	-0.4056 ** (-2.22)	-0.1262 (-0.89)	-0.9887 *** (-4.91)	-0.1276 (-1.19)
Adj R ²	0.3268	0.4930	0.5145	0.5442	0.4418			
CON_GH Mean	-0.0571	-0.0085	0.0090	0.0289	0.0939			
N	2,422	2,422	2,423	2,422	2,423			

Note: persistence coefficients are *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. The p-value for the difference in persistence coefficients across quintiles is derived from a t-test. All variables are defined in Table 1.

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