# Accounting Conservatism, Earnings Persistence and Pricing Multiples on Earnings

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First Version: May 2006
Current Version: February 2007

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**Abstract**:

In this paper, we examine the effect of accounting conservatism on earnings persistence and the stock market's valuation of earnings. This issue is of particular interest to regulators as to whether and to what extent conservatism is desirable. In general, mismatching between revenues and expenses are more serious under more conservative accounting than under less conservative accounting, and such mismatching is likely to reduce earnings persistence. Thus, we hypothesize that more conservative earnings are less persistent than less conservative earnings. Moreover, Ohlson (1995) indicates that less persistent earnings obtain smaller pricing multiples than more persistent earnings do. Based upon these arguments, we further hypothesize that the pricing multiple on more conservative earnings is smaller than that on less conservative earnings. Empirical findings from U.S. Compustat companies during the period of 1984-2003 support our hypotheses. Our evidence raises the concerns about the reduced earnings predictability associated with conservatism.

# Accounting Conservatism, Earnings Persistence and Pricing Multiples on Earnings

## 1. Introduction

This paper investigates the effect of accounting conservatism on earnings persistence and subsequent equity valuation. When a company makes conservative accounting choices in a year, current-period revenues are at least partly matched with future-period expenses. Assuming that current-period revenues are best matched with the same period expenses, such conservative matching introduces more noises into earnings, causing earnings to be less persistent (Dechow 1994). Thus, we hypothesize that earnings are less persistent under more conservative accounting choices than under less conservative accounting choices. Moreover, Ohlson (1995) expresses price as a linear combination of equity book value and earnings weighted by earnings persistence. Under Ohlson's (1995) framework, more persistent earnings obtain larger pricing multiples than less persistent earnings. To the extent that more conservative earnings are less persistent, we also hypothesize that the pricing multiples on more conservative earnings should be smaller than those on less conservative earnings.

The issue is important to the regulators on whether and to what extent the conservatism is desirable. Financial market standard setters, capital market investors and creditors, and academics have paid close attention to conservatism due to its significant influence on accounting practice (Watts 2003a). Watts (2003a, 2003b) has offered four explanations for the widespread conservatism in financial reporting: contracting, investor litigation, income tax and accounting regulation. Watts (2003a, 2003b) focuses more on the beneficial effect of conservatism, although, he admits that the understatement of earnings in one period could result in overstatement of

earnings in the following period. In our paper, we further explore the cost of conservatism. Consistent with Penman and Zhang (2002), we assume transitory earnings have poor quality. Under this view, we argue that accounting conservatism leads to more transitory earnings, which reduces its valuation quality.

We test our hypotheses based on U.S. Compustat firms over the period of 1984-2003. Since there is no consensus on a measure of conservatism in the literature, we measure conservatism in four different ways. The first measure is the differential timeliness of recognizing bad news in earnings than good news in earnings as in Basu (1997). Basu (1997) finds that accounting losses are more contemporaneously associated with current stock returns than accounting gains due to the conservative accounting. Following Basu (1997), many other studies (e.g. Ball et al. 2000; Holthausen and Watts 2001; Pae et al. 2005) use this measure to proxy for the degree of conservatism. However, Basu's (1997) measure is affected by factors other than accounting conservatism, such as the uniformity of earnings content, the types of economic news and even firm disclosure policies (e.g. Givoly et al. 2007). Hence, we also employ three other measures of accounting conservatism. The second measure is the cumulative negative accruals by Givoly and Hayn (2000). The third measure is the response coefficient of differential reversal of positive vs. negative earnings change in Basu (1997) as modified in Ruddock et al. (2006). Lastly, we employ our fourth measure as the response coefficient of differential correlation between accruals and positive vs. negative cash flow from operation in Ball and Shivakumar (2005) as modified in Ruddock et al. (2006).

We consistently find evidence that more conservative earnings are less persistent than less conservative earnings. Moreover, the pricing multiples on earnings are smaller for more conservative earnings than for less conservative earnings. Our results still hold when we employ either R&D expenses or depreciation expenses as the measures of accounting conservatism. Our conclusions and inferences are partially consistent when we employ continuous conservatism measures. Furthermore, our results are generally consistent across portfolios partitioned on growth.

Our results contribute to the current literature in the following four ways. First, although the relation between accounting conservatism and earnings persistence is intuitively appealing, no existing empirical literature has explicitly examined the effects of conservatism on earnings persistence. We show that accounting conservatism reduces earnings persistence.

Second, previous studies have documented the existence of accounting conservatism (e.g. Basu 1997; Givoly and Hayn 2000; Pae et al. 2005) and they have showed that conservatism affects the usefulness of accounting numbers (Penman and Zhang 2002). Our paper extends those prior studies by providing a more complete picture of how market participants evaluate accounting conservatism through the effect of earnings persistence under Ohlson's (1995) framework. We find that investors put less weight on those less persistent earnings, associated with conservatism, despite the positive effects by conservatism in contracting, litigation and income taxes. Our finding has particular implication for market valuation.

Third, our results deepen our understanding of recent policy debate on whether conservatism is beneficial. FASB and other financial reporting regulators try to find ways to improve the quality of information reported in financial statements. Following the issuance of

SFAS No. 141, and No. 142, regulators were strongly criticized for not being conservative in providing reliable information (Watts 2003a). Our findings suggest that accounting conservatism is accomplished with the costs of generating transitory (less persistent) earnings. This is especially important for financial statement users and analysts who try to forecast future earnings from current earnings. We thus suggest that regulators should weight both the costs and benefits of conservatism carefully.

Lastly but most importantly, our paper adds to earnings conservatism literature. Prior literature (e.g. Ball et al. 2000; Ball and Shivakumar 2005) argues that conservative earnings lead to the timely loss recognition. On the other hand, we document that conservative accounting produces less persistent earnings, which reduces the ability of current earnings to predict future earnings. From this perspective, accounting conservatism may not be desirable.

The remainder of the paper is organized as follows. Section 2 reviews the literature and develops the hypotheses. Section 3 discusses research design and section 4 describes sample selection and descriptive statistics. In sections 5 and 6, we report empirical findings and sensitivity analyses. And the last section concludes the paper.

## 2. Previous studies and hypotheses development

### 2.1. Literature review

Under current GAAP, conservatism applies to measurement of assets and recognition of revenues and expenses: it tends to lead accountants to choose accounting methods in favor of slower recognition of income and lower valuation of net assets (Wolk et al. 2001, 144). Conservatism has been characterized as biased accounting which causes market value to exceed book value (Feltham and Ohlson 1995; Zhang 2000) or as accounting choices that relatively lower

the book value of net assets (Penman and Zhang 2002). Recent academic literature starting with Basu (1997) defines conservatism as "accountant's tendency to require a higher degree of verification to recognize good news as gains than to recognize bad news as losses" (Basu 1997, 7; Watts 2003a; Pae et al. 2005). In our paper, we adopt Basu's (1997) conservatism definition of "differential verification". Typical examples of conservatism include lower-of-cost-or-market valuation for inventories, recognition of impairment losses on assets such as investments and property, plant and equipment, expensing certain intangible expenditures including R&D or advertising.

Prior literature has documented various evidences of conservatism. Basu (1997) shows that contemporaneous sensitivity of earnings to negative stock returns is significantly stronger than that of earnings to positive stock returns. This is due to the differential timeliness of earnings recognizing bad news and good news under conservative accounting. Basu (1997) and the following literature (e.g. Givoly and Hayn 2000; 2002) also document increasing accounting conservatism over time. Watts (2003a, 2003b), summarizes the various explanations for time-series and cross-sectional evidences of conservatism, including efficient debt and compensation contracting, increased litigation risk, income taxes purpose, and accounting regulation consideration.

Moreover, more recent literature (e.g. Ball and Shivakumar 2005; Beaver and Ryan 2005) argue that there are two types of conservatism: "unconditional conservatism" and "conditional conservatism". [1] Building upon these concepts, Pae et al. (2005) empirically document that the

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[1] Unconditional conservatism is not induced by any underlying economic news. A typical example is immediately expensing R&D costs. By contrast, conditional conservatism is induced by current economic news. A typical example is the lower-of-cost-or-market (LCM) rule. Under the LCM rule, accountants write down the inventory when inventory

degree of conditional conservatism, as measured by the differential timeliness recognition of bad news in earnings than that of good news, is less in firms with higher level of unconditional conservatism, as measured by beginning price-to-book ratios.

Lastly and more importantly, prior literature also examines the effect of accounting conservatism on various outcomes, which is more relevant to our study. First, Penman and Zhang (2002) argue that conservative accounting, coupled with changes in the amount of investments, explains future stock return and the differences in future return on net operating assets relative to current return on net operating assets. Moreover, Francis et al. (2004) investigate the impact of earnings attributes including accounting conservatism on cost of equity but fail to find any relation between accounting conservatism and cost of equity.

In sum, prior research suggests strong evidence of accounting conservatism over time and across the firms. Prior studies also show that conservatism affects usefulness of accounting information, but not cost of equity. However, prior research has not directly established the relation between accounting conservatism and earnings persistence, although, Basu (1997) finds that negative earnings are less persistent than positive ones.[2] Moreover, there is a lack of evidence regarding how accounting conservatism affects equity valuation. In this study, we investigate how conservatism affects equity valuation through the bridge of earnings persistence. The effect of accounting conservatism on earnings persistence and equity valuation is particularly relevant for financial statement users who try to estimate future earnings and stock price from current earnings.

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costs are above current market prices (bad news), but do not write up the inventory when inventory costs are below market prices (good news).

*2.2. Hypotheses development*

The practice of conservatism is originated from emphasizing more on reliability than relevance. Although, these skewed treatments under conservatism have been historically accepted as valid in protecting investors and creditors for efficient contracting purposes, it is also true that financial statement information based on conservatism induces some unintended negative consequences for valuation purposes. To develop the hypotheses, let us use an example of accounting for R&D to illustrate the relation between conservatism and earnings persistence. To simplify the case, we assume that two firms A and B are identical except for their accounting treatments of $100 R&D expenditures that will generate revenues for the next ten years. Firm A chooses to expense all R&D expenditures incurred in year t. By contrast, firm B selects to capitalize R&D expenditures as an intangible asset and then amortize it equally within the next ten years (10% per year).[3] Note that firm B matches between current-period revenue and current-period expense while firm A matches between current-period revenue and current-period and future-period expenses. This different treatment causes firm A's earnings in year t (t+1 and on) to be lower (higher) than firm B's earnings. Assuming that matching between contemporaneous revenues and expenses is best, the mismatching between current-period revenues and future-period expenses under conservative accounting introduces more noise into earnings (Dechow 1994). Consequently earnings with more noise should become less persistent. Defining earnings persistence as the first autocorrelation of earnings between two consecutive years, we conclude that firm A's (more

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[2] Negative earnings do not necessarily mean more conservative earnings, just as positive earnings do not necessarily represent less conservative earnings.

conservative) earnings are less persistent than firm B's (less conservative or neutral) earnings.[4] Our

first hypothesis is:

H$_1$: The persistence of more conservative earnings is less than that of less conservative
earnings.

Next, we examine the effect of conservatism on pricing multiple of earnings. The Ohlson

(1995) model expresses price as a linear combination of equity book value and earnings as follows:

$$P_t = b_0 + b_1 B_t + b_2 E_t + u_t \tag{1}$$

where $P_t$ is stock price at the end of March in year t+1, $B_t$ is equity book value per share at the end

of year t, and $E_t$ is earnings before extraordinary items per share for year t.[5] Defining $\omega_1$ as the

earnings persistence, we get the equation $b_2 = (1+r)\omega_1/(1+r-\omega_1)$ in Ohlson (1995). This implies that

the pricing multiple on earnings ($b_2$) increases with $\omega_1$. To the extent that the persistence of more

conservative earnings is less than that of less conservative earnings, the pricing multiple on more

conservative earnings is smaller than the pricing multiple on less conservative earnings.

Accordingly, our second hypothesis is:

H$_2$: The pricing multiple on more conservative earnings is smaller than that on less
conservative earnings.

## 3. Research methods

To test our hypotheses, we first define our measures of accounting conservatism. There is

no agreed-upon measure of conservatism in the literature on the operational level, as pointed out by

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[3] Firm A's R&D expenses for years t and t+1 are $100 and $0, respectively, while firm B's R&D expenses for years t
and t+1 are $10 and $10, respectively.
[4] A more rigorous analysis on the effect of conservatism on earnings persistence is shown in Appendix A.
[5] We put an intercept and an error term to suppress information other than earnings that is unobservable and has nonzero
mean (Myers 1999).

Givoly et al. (2007). As a result, we operationalize accounting conservatism in several ways. First, we employ the response coefficient of earnings on negative vs. positive stock returns as used in Basu (1997). Basu (1997) runs the reverse regression of earnings on contemporaneous annual stock returns. Conservatism means that bad news (negative stock returns) is recognized in a more timely basis than good news (positive stock returns) and, thus, a stronger association between earnings and negative stock returns is expected than between earnings and positive stock returns. This news-based measure is widely used by prior literature (e.g. Ball et al. 2000; Pae et al. 2005: Ruddock et al. 2006).

Following Basu (1997), we estimate the first conservatism measure from the following firm-specific time-series regression:

$$EP_t = c_{0t} + c_{1t}\, NEGRET_t + c_{2t}\, RET_t + CON_{1t}\, NEGRET_t{\cdot}RET_t + e_t \tag{2}$$

where $CON_{1t}$ is the first conservatism measure for year t, $EP_t$ is earnings for year t, scaled by stock price at the beginning of year t, $RET_t$ is annual stock returns cumulated over April in year t to March in year t+1, and $NEGRET_t$ is 1 if $RET_t$ is negative, and 0 otherwise.[7] To estimate the firm-specific $CON_{1t}$, we adopt a rolling-forward estimation procedure for each year from its past 20 years of data.[8] A higher $CON_{1t}$ implies a higher sensitivity of earnings to negative returns than to positive returns and, thus, more conservative accounting.

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[7] As discussed in the sample section, our sample only consists of firms with December 31 fiscal year end.
[8] Our estimate starts from year 1965 to ensure that year 1984 observations could have 20 years of data. For example, we compute a firm's conservatism measure for 1984 from estimates using data over 1965-1984 and we put a time subscript to this conservatism measure. We delete the companies with less than 6 observations in each regression. We also try 7 or 8 observations as the cutoff and we get similar results.

However, Basu's (1997) measure suffers from some measurement errors. Gigler and Hemmer (2001) develop a model in which accounting conservatism negatively affects managers' incentive to make timely voluntary disclosure. As a result, earnings reflect the economic news in a more timely manner for firms with less conservative accounting than for firms with more conservative accounting. Moreover, Givoly et al. (2007) find that the differential timeliness measure in Basu (1997) is sensitive to factors unrelated to accounting conservatism such as the degree of uniformity in the contents of economic news, the nature of economic events and firm disclosure policies. Givoly et al. (2007) conclude that Basu's (1997) measure should be used in conjunction with other measures to detect earnings conservatism.

Therefore, we employ three other different measures for the extent of accounting conservatism. Our second measure is cumulative nonoperating accruals as in Givoly and Hayn (2000). Givoly and Hayn (2000) conclude that widespread and significant accumulation of negative nonoperating accruals over time is consistent with increase in reporting conservatism. Following Givoly and Hayn (2000), we define nonoperating accruals as the difference between total accruals and operating accruals. Total accruals and operating accruals are:

Total accruals = (Net Income + Depreciation) − Cash Flow from Operations $\quad\quad$ (3)

Operating accruals = ΔAccounts Receivable + Δ Inventories + Δ Prepaid Expenses −
ΔAccounts Payable − ΔTaxes Payable $\quad\quad$ (4)

Hence, compared with operating accruals, nonoperating accruals are more related to discretionary items, such as bad debt provision, the accrual and capitalization of expenses, asset write-off, restructuring charges, changes in estimate, gains and losses on the sale of assets, and deferred revenues (Givoly and Hayn 2000). We then cumulate the nonoperating accruals over the

past five years and deflate cumulative nonoperating accruals by beginning market value of equity.[9] We also take the negative of cumulative nonoperating accruals to make the measure increase with accounting conservatism and facilitate the interpretation of the results.

Our third measure is the negative of the response coefficient of change in operating income on negative versus positive change in lag operating income as developed by Basu (1997) and amended by Ball and Shivakumar (2005) and Ruddock et al. (2006). To employ this third measure, we run the following regression:

$$\Delta OI_t = d_{0t} + d_{1t} DOI_{t-1} + d_{2t} \Delta OI_{t-1} + (-CON_{3t}) DOI_{t-1} \cdot \Delta OI_{t-1} + e_t \qquad (5)$$

where $CON_{3t}$ is our third conservatism measure, $\Delta OI_t$ is change in operating income in year t deflated by beginning market value of equity, $\Delta OI_{t-1}$ is change in operating income in year t $-1$ deflated by beginning market value of equity, and $DOI_{t-1}$ is 1 if $\Delta OI_{t-1}$ is negative, and 0 otherwise. We also adopt a rolling-forward estimation procedure for each year from its past 20 years of data to get the firm-specific $CON_{3t}$.

As in Basu (1997), Ball and Shivakumar (2005) and Ruddock et al. (2006), positive income change is more likely to repeat for several periods than negative income change, since good news is more likely to take several periods to recognize. Thus, a negative response coefficient on the interaction between $DOI_{t-1}$ and $\Delta OI_{t-1}$ is consistent with reporting conservatism. We multiple the response coefficient by negative one to ensure that the measure increases with accounting conservatism.

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[9]When we cumulate nonoperating accruals over the past 10 years rather than 5 years, our results remain unchanged.

The third conservatism measure may also contain some measurement error, since negative earnings change is related to other non-conservative factors such as "big bath" earnings managements (Hanna and Desai 2003). Hence, we use a fourth measure as the response coefficient of accruals on negative versus positive cash flow in Ball and Shivakumar (2005) as modified in Ruddock et al. (2006). Formally, we estimate the following model for each firm using the rolling-forward technique over the 20-year window:

$$ACC_t = e_{0t} + e_{1t} DCFO_t + e_{2t} CFO_t + CON_{4t} DCFO_t \cdot CFO_t + e_t \tag{6}$$

where $CON_{4t}$ is the fourth conservatism measure, $ACC_t$ is the difference between operating income and cash flow from operations in year t deflated by beginning total assets, $CFO_t$ is the cash flow from operations in year t deflated by beginning total assets, and $DCFO_t$ is 1 if $CFO_t$ is negative, and 0 otherwise. Ball and Shivakumar (2005) and Ruddock et al. (2006) extend the negative relation between accruals and cash flows as in Dechow et al. (1998) to incorporate the asymmetrical recognition of bad news vs. good news. If economic losses are recognized on a more timely basis (which usually results in accruals) than economic gains (which usually results in cash charges), the negative accruals-cash flow relation is mitigated by the presence of negative cash flow ($CON_{4t}$ is expected to be positive). The higher $CON_{4t}$, the higher the accounting conservatism.

All four measures are defined in such a way that the greater the magnitude of the measure is, the more conservative earnings are. To mitigate measurement error in those conservatism measures, we create a dummy variable $Hi\_CON_{jt}$ that equals 1 if a jth conservatism measure is greater than the yearly median and 0 otherwise.

We test the first hypothesis by estimating the following pooled cross-sectional and temporal regression:

$$E_{t+1} = a_0 + \sum a_k\, YR_{kt} + \sum a_k\, IND_{kt} + a_1\, E_t + a_2\, Hi\_CON_{jt} \cdot E_t + e_{t+1} \qquad (7)$$

where $E_t$ is the earnings before extraordinary items per share for year t, $YR_k$ is 1 if a firm-year is in year k and 0 otherwise, $IND_i$ is 1 if a firm is in 2-digit SIC industry k and 0 otherwise, $Hi\_CON_{jt}$ is 1 if a firm's jth conservatism measure ($CON_{jt}$) is greater than the yearly median and 0 otherwise, and $E_{t+1}$ is earnings before extraordinary items per share for year t+1. We include year intercepts and industry intercepts to control for intertemporal differences in the residual error (Barth et al. 1998). Based on $H_1$, we predict that the sign of $a_2$, the coefficient estimating the incremental persistence on more conservative earnings, is negative. We predict a positive sign for $a_1$, since current year earnings persist into the future period.

To test the second hypothesis, we estimate the following pooled cross-sectional and temporal regression:

$$P_t = b_0 + \sum b_k\, YR_{kt} + \sum b_k\, IND_{kt} + b_1\, B_t + b_2\, Hi\_CON_{jt} \cdot B_t + b_3\, E_t + b_4\, Hi\_CON_{jt} \cdot E_t + b_5\, NEGE_t + u_t \qquad (8)$$

where $P_t$ is stock price at the end of March in year t+1, $E_t$ is the earnings before extraordinary items per share for year t, $YR_k$ is 1 if a firm-year is in year k and 0 otherwise, $IND_i$ is 1 if a firm is in 2-digit SIC industry k and 0 otherwise, $Hi\_CON_{jt}$ is 1 if a firm's jth conservatism measure ($CON_{jt}$) is greater than the yearly median and 0 otherwise, and $NEGE_t$ is $E_t$ if $E_t$ is negative, and 0 otherwise. According to $H_2$, our variable of interest $b_4$, the coefficient for the incremental pricing effect of conservative earnings, is expected to be negative. As in equation (7), separate year and industry

intercepts are included to control for intertemporal differences in residual error. Moreover, consistent with Collins et al. (1999), we predict $b_1$ and $b_3$ to be positive. We control for the pricing multiple on book value, but do not predict any sign on $b_2$. Finally, we include negative earnings ($NEGE_t$) to control for the different effects of negative earnings (e.g. Hayn 1995; Collins et al. 1999). Consistent with Hayn (1995), a negative sign is predicted on $b_5$.

## 4. Sample selection and descriptive statistics

### 4.1. Sample selection

Our initial sample consists of 431,194 firm-year observations from Compustat annual PST, Full Coverage and Industrial Research files during the period of 1984-2003. We include the Industrial Research file to mitigate the survivorship.[10] Panel A of Table 1 describes the sample selection process for the earnings persistence model, our equation (7). Panel B of Table 1 summarizes the sample selection process for the pricing multiple model, our equation (8). Consistent with Beaver et al. (1980) and Gaver and Gaver (1993), we delete 287,490 firm-year observations with non-December fiscal year end to minimize the effects of different economic conditions associated with non-December firms. We also exclude financial service and utility companies (45,881 firm-year observations) due to their unique institutional and regulatory natures (Givoly and Hayn 2000).[11] The financial data are obtained from Compustat annual file and price and return data are from Compustat PDE file. After deleting the missing observations for each model, we obtain 30,227, 14,022, 25,145 and 31,735 firm-year observations in the earnings

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[10] Restricting our samples to surviving firms does not change our statistical inferences.
[11] Consistent with Asthana and Balsam (2001), we classify SIC codes 6000-6999 as financial service companies, and SIC codes 4800-4829 and 4900-4999 as utilities companies.

persistence models for each of the four conservatism measures, and 29,153, 13,605, 24,000 and 28,717 firm-year observations in the pricing multiple models for each of the four conservatism measures. To minimize the effect of outliers, we winsorize observations that are in the extreme top and bottom one percentile for each continuous variable.[12]

*[Insert Table 1Here]*

*4.2. Descriptive statistics*

Descriptive statistics for variables used in our analyses are presented in Table 2. The means (medians) of P and B are \$19.635 (\$13.250) and \$10.584 (\$7.532), respectively. The mean (median) of E is \$0.855 (\$0.566), with the 99% and 1% of \$8.329 and −5.330, respectively.

Turning to the conservatism measures, the response coefficient in Basu's (1997) measure, is positive in terms of mean (0.095) and median (0.028). The mean of the response coefficient of earnings on positive stock returns ($c_{2t}$ in equation 2) is 0.032 (not reported in Table 2). This suggests that the response coefficient of earnings on negative stock returns is more than three times as large as that on positive counterpart.[13] Moreover, the second conservatism measure, the negative of the cumulative nonoperating accruals ($CON_{2t}$), has a mean of 0.181 and a median of 0.070. This supports Givoly and Hayn's (2000) findings of prevalent cumulative negative nonoperating accruals over time. Furthermore, the positive $CON_{3t}$ and $CON_{4t}$ in terms of mean and median are consistent with prior literature (e.g. Basu 1997; Ball and Shivakumar 2005; Ruddock et al. 2006).

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[12] We also delete the top and bottom one percent of continuous variables rather than winsorizing them, and get similar results.

[13] Our results are comparable to Basu (1997). Basu (1997) reports that the concurrent sensitivity of earnings to negative returns is two to six times as large as that on positive returns.

Mean PE and ROE are 13.971 and −0.083 while median PE and ROE are 11.616 and 0.080, respectively.

*[Insert Table 2 Here]*

## 5. Empirical findings

### 5.1. Conservatism and earnings persistence

The first hypothesis predicts that more conservative earnings are less persistent than less conservative earnings. To test this hypothesis, we estimate equation (7). If $Hi\_CON_{jt}$ is successful in capturing the effect of conservatism on earnings, the coefficient on interaction terms between conservatism metrics and earnings (i.e., $Hi\_CON_{jt} \cdot E_t$) should be negative to support our hypothesis.

Table 3 presents regression results for earnings persistence models between years t and t+1. The associated p-values are based on one-tailed tests when the signs are predicted and on two-tailed tests when the signs are not predicted. The number of observations ranges from 14,022 to 31,735, depending upon which conservatism measure we employ. We report the OLS coefficient estimates and White (1980) heteroscedasticity-correlated consistent t statistics if we detect a heteroscedasticity problem.[14] The results are consistent with our expectation. First, the coefficient on year t's earnings ($E_t$) is positive (0.597, 0.609, 0.590, and 0.713, respectively) and significant (t-value = 45.40, 34.59, 37.16, 11.33, respectively) for all four models. Moreover, the magnitude of each coefficient is smaller than one, implying that some but not all of current earnings persist into the next period.

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[14] We use white t-test to test for the presence of heteroscedasticity. We find that heteroscedasticity exists when we use the first three conservative measures but not the fourth conservative measure.

Second, our variables of interest, the interaction between our four conservatism metrics and earnings $Hi\_CON_{jt} \cdot E_t$ are negatively and significantly associated with earnings in year t+1 (the coefficients are −0.050, −0.102, −0.036, and −0.113, respectively and t−values are −2.90, −4.36, −1.67, and −7.53, respectively). This is consistent with our first hypothesis that more conservative earnings are less likely to persist into the future period than less conservative earnings, no matter which conservatism measure we employ.

The adjusted $R^2$s for the earnings persistence models range from 35.53% to 43.25%. The model F-values are all above 90. Generally, our earnings models support our $H_1$ that more conservative earnings are less persistent than less conservative earnings.

*[Insert Table 3 Here]*

*5.2. Conservatism and pricing multiples on earnings*

The second hypothesis predicts that pricing multiples on more conservative earnings are smaller than those on less conservative earnings. To test the second hypothesis, we estimate the equation (8) and report the regression results in Table 4. Again, the associated P-values are based on one-tailed tests when the signs are predicted and on two-tailed tests when the signs are not predicted. The numbers of observations are 29,153, 13,605, 24,000 and 28,717, respectively. We report the OLS coefficient estimates and White (1980) heteroscedasticity-correlated consistent t statistics if we detect a heteroscedasticity problem.[15]

*[Insert Table 4 Here]*

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[15] We use white t-test to test for the presence of heteroscedasticity. We find that heteroscedasticity exists for all four measures.

Table 4 shows that, consistent with expectation, both earnings and book value have positive and significant coefficients. In addition, as predicted, the coefficients on the interaction between earnings and conservatism dummies ($Hi\_CON_{jt} \cdot E_t$) are consistently negative and significant for each of the four conservatism measures (P-value $< 0.05$, $< 0.01$, $<0.01$, and $<0.01$, respectively). Turning to other independent variables, consistent with numerous equity valuation studies (e.g. Burgstahler and Dichev 1997; Collins et al. 1999), we find positive and significant coefficients for equity book value and earnings across various conservatism measures. Moreover, the coefficients on the interaction between book value and conservatism dummies $Hi\_CON_{jt} \cdot B_t$ is negatively significant when the first and fourth conservatism measures are used, negative but not significant when the third conservatism measure is used, and positively significant when the second conservatism measure is used. Finally, as expected, negative earnings has a smaller coefficient than positive earnings (p-value for $NEGE_t < 0.01$ for all models).

The adjusted $R^2$s are above 60% and the F-values are higher than 200. In sum, the evidence supports our second hypothesis that more conservative earnings, which are less persistent as shown in Table 3, have smaller pricing multiples than less conservative earnings. The results presented in Table 4, combined with the results of less persistent earnings for more conservative earnings in Table 3, suggest that market participants evaluate less persistent earnings unfavorably.

## 6. Sensitivity analysis

### 6.1. Continuous measure of accounting conservatism

In our primary results, we employ the dummy variable for accounting conservatism to mitigate measurement errors and facilitate the interpretation of the coefficients. To examine

whether our results are sensitive to the inclusion of the dummy variable, we also replicate our models using continuous measures for accounting conservatism. Our untabulated results show that for earnings persistence models, the coefficients on the interaction between continuous conservatism measures and earnings are negatively significant for all except the third conservatism measure. This is consistent with our first hypothesis that more conservative earnings are less persistent than less conservative earnings. Moreover, our pricing multiple models indicate a negative and significant coefficient when we employ the first and fourth continuous conservatism measures, but not so when we employ the second and third measures. As a result, $H_2$ is partially supported.

*6.2. Additional conservatism measures*

So far, all the conservatism measures that we have adopted are on the aggregate level. Givoly et al. (2007) argue that the conservatism measured from the aggregate level may not be able to capture the conservative accounting for individual items. As a result, we supplement the aggregate level of conservatism measures with individual firm level measures. We examine the conservative behavior with regard to R&D expenses and depreciation expenses.

Our fifth conservatism measure is defined as the level of R&D expenses, deflated by beginning market value of equity. Current R&D rule under U.S. GAAP requires companies to expense all R&D costs in the period incurred, despite of the future benefit those R&D activities may bring. In this case, companies anticipate all possible losses, but anticipate no possible gains. Thus, R&D treatment is clearly a form of conservative accounting. The higher the amount of R&D

expenses, the higher the level of differential verification for gains and losses, the higher the degree of accounting conservatism.

Our sixth conservatism measure is the level of depreciation expenses, deflated by beginning market value of equity. Firms choosing accelerated depreciation method rather than straight-line method increase the level of depreciation expenses. Hence, higher level of depreciation expenses is consistent with accounting conservatism. Table 5 reports the results of earnings persistence model and pricing multiple model using these two alternative measures.

Panel A shows the results for earnings persistence model. Both estimates yield a negative and significant coefficient for $Hi\_CON_{jt} \cdot E_t$, with t-values equal to $-3.49$ and $-22.83$ for the fifth and sixth conservatism measures, respectively. Turning to the pricing multiple model in Panel B, we also find that the coefficient on $Hi\_CON_{jt} \cdot E_t$ is negative and significant for each model (t-values = $-6.24$ and $-17.66$, respectively). The results on other variables are consistent with the main results.[16] Overall, the findings here, confirm that more conservative earnings are less persistent and have a smaller pricing multiple than less conservative earnings.

*[Insert Table 5 Here]*

*6.3. Partitioning sample based on growth in net operating assets*

Penman and Zhang (2002) show that when a firm employs conservative accounting practice, growth in net operating assets can affect earnings sustainability. They argue that growth in net operating assets leads to lower reported earnings under conservative accounting and creates reserve for the company. In other words, the effect of conservative accounting may be stronger for fast

growing companies. To determine whether our results are driven by high growth companies only, we partition the sample into four groups based on their growth in net operating assets and rerun the earnings persistence model and pricing multiple model based on these four groups.[17] Our results show that in the earnings persistence model, the coefficients on $Hi\_CON_{jt} \cdot E_t$ are not systematically higher or lower for higher growth companies and these coefficients are negative and significant at the five percent level for ten out of sixteen regressions based on four growth groups and four conservatism measures. Similarly, in the pricing multiple model, the results conditioning on each growth group do not exhibit any pattern for $Hi\_CON_{jt} \cdot E_t$ from $1^{st}$ to 4th quartile of growth in operating assets. The coefficients on $Hi\_CON_{jt} \cdot E_t$ remain negative and significant for thirteen out of sixteen regressions.

## 7. Conclusion, limitations, and future research

In this study, we investigate the effect of accounting conservatism on earnings persistence and subsequent equity valuation. One of the most obvious factors, among those that cause accounting earnings to reverse over time, is accounting conservatism. By making more conservative accounting choices, a company faces mismatching between current-period revenues and future-period expenses so that earnings have more temporary components and become less persistent. This implies that earnings are less persistent under more conservative accounting choices than under less conservative accounting choices. Moreover, according to the Ohlson (1995) model, where price is

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[16] We also employ continuous measures of conservatism rather than the dummy variables for conservatism, our results are quantitatively and qualitatively similar.

[17] Following Penman and Zhang (2002), we compute net operating assets in terms of Compustat item numbers as Common Equity (Data60 + Data227 − Data242) + Financial Obligations (Data34 + Data9 + Data130 − Data227 + Data242) −Financial Assets (Data1 + Data32)−Minority Interest (Data38).

expressed as a linear combination of equity book value and earnings, the more (less) persistent earnings obtain larger (smaller) pricing multiples. Thus, we hypothesize that (i) the persistence of more conservative earnings is smaller than that of less conservative earnings, and (ii) that the pricing multiple on more conservative earnings is smaller than that on less conservative earnings.

Our sample consists of 13,605 to 31,735 firm-year observations over the past two decades. Our empirical findings are generally consistent with our hypotheses that: (i) more conservative earnings are less persistent than less conservative earnings and (ii) the pricing multiples on earnings are smaller for more conservative earnings than for less conservative earnings.

Our study contributes to the literature by showing that conservative earnings reduce earnings predictability and may not be desirable. However, since there is no agreed upon measures of accounting conservatism, it is possible that the proxies adopted in this study represent economic phenomenon other than accounting conservatism. Although, we try to identify as many measures for conservatism as possible in our paper to remedy measurement error, future research could still explore a more refined construct of this measure.

Further value-relevance research could also fruitfully build upon our results by incorporating accounting conservatism into Ohlson's (1995) valuation model. For example, Givoly and Hayn (2000), among others, find the increasing conservatism over time without employing valuation models. On the other hand, prior time-series value-relevance research (e.g. Collins et al. 1997; Francis and Schipper 1999) finds mixed evidence on the trend of usefulness of book value and earnings information without including conservatism. It is possible that the negative effect of conservatism on equity valuation mitigates the mixed results of value-relevance over time.

Also, our paper has its own limitations. First, our paper is based on the cost side of conservatism, i.e, it causes earnings to be more transitory. As argued in Watts (2003a), the practice of conservatism results in efficient contracts and lower tax, litigation and regulatory costs, which investors may view positively. Our current research does not control for these added benefits. Thus, future research can develop a more comprehensive model of how accounting conservatism affects equity valuation after considering all possible pros and cons involved. Second, we focus on the conservative accounting only. Although the application of aggressive accounting may generate similar implication, our objective is to examine the effect of conservative accounting on earnings persistence and pricing multiple. Moreover, it is hard to come up with the appropriate measures for aggressive accountings. Nevertheless, it will be interesting for future research to examine the causes and consequences of aggressive accountings.

**Appendix A**

In this appendix, we discuss the relation between earnings conservatism and earnings persistence. Under conservative accounting, expenses are recognized faster than normal so that there's a mismatch between revenues and expenses. Consider the following case.

We assume that under neutral accounting, revenue $(R_t)$ is matched with current-period expense $(X_t)$ while under conservative accounting, revenue $(R_t)$ is matched partly with current-period expense and partly with next-period expense $((1-p)X_t+pX_{t+1}, 0<p<1)$. Note that when p=0, accounting is assumed to be neutral. When p gets larger, accounting is assumed to be conservative. Also, we assume that revenue follows a first-autoregressive process $(R_{t+1}=\varphi R_t+e_{t+1})$ with $|\varphi|<1$, $\sigma^2(e)=\sigma^2$ and $cov(e_t, e_{t-\tau})=0$ and that expense is proportional to revenue $(X_t=xR_t, 0<x<1)$. Then, the first-order autocorrelation of earnings $(E_{t+1} = a_0 + a_1 E_t + e_{t+1}$ or $R_{t+1}-X_{t+1} = a_0 + a_1 (R_t-X_t) + e_{t+1})$ for each type of accounting is given as

(1) Neutral accounting (contemporaneous recognition of expenses)

- $E_{t+1} = a_{N0} + a_{N1} E_t + e_{t+1}$ or $R_{t+1}-X_{t+1} = a_{N0} + a_{N1} (R_t-X_t) + e_{t+1}$
- *Numerator of $a_{N1}$*
  $$= \sigma(R_{t+1}-X_{t+1}, R_t-X_t) = \sigma(R_{t+1}-xR_{t+1}, R_t-xR_t)$$

  $$= \sigma(R_{t+1}, R_t)-\sigma(R_{t+1}, xR_t)-\sigma(xR_{t+1}, R_t)+\sigma(xR_{t+1}, xR_t)$$

  $$= (\varphi-2x\varphi+x^2\varphi)\sigma^2/(1-\varphi^2)$$

- *Denominator of $a_{N1}$*
  $$= \sigma^2(R_t-X_t) = \sigma^2(R_t-xR_t) = (1-2x+x^2)\sigma^2/(1-\varphi^2)$$

(2) Conservative accounting (accelerated recognition of expenses)

- $E_{t+1} = a_{C0} + a_{C1} E_t + e_{t+1}$ or $R_{t+1}-(1-p)X_{t+1}-pX_{t+2} = a_{C0} + a_{C1} [R_t-(1-p)X_t-pX_{t+1})] + e_{t+1}$
- *Numerator of $a_{C1}$*
  $$= \sigma[R_{t+1}-(1-p)X_{t+1}-pX_{t+2}, R_t-(1-p)X_t-pX_{t+1})]$$

$$= \sigma[R_{t+1}-X_{t+1}+pX_{t+1}-pX_{t+2}, R_t-X_t+pX_t-pX_{t+1})]$$

$$= \sigma(R_{t+1}, R_t)-\sigma[R_{t+1}, xR_t]+\sigma[R_{t+1}, pxR_t]-\sigma[R_{t+1}, pxR_{t+1}]-\sigma[xR_{t+1}, R_t]+\sigma[xR_{t+1}, xR_t]$$

$$-\sigma[xR_{t+1}, pxR_t]+\sigma[xR_{t+1}, pxR_{t+1}]+\sigma[pxR_{t+1}, R_t]-\sigma[pxR_{t+1}, xR_t]+\sigma[pxR_{t+1}, pxR_t]$$

$$-\sigma[pxR_{t+1}, pxR_{t+1}]-\sigma[pxR_{t+2}, R_t]+\sigma[pxR_{t+2}, xR_t]-\sigma[pxR_{t+2}, pxR_t]+\sigma[pxR_{t+2}, pxR_{t+1}]$$

$$= \{\varphi-x\varphi+px\varphi-px-x\varphi+x^2\varphi-px^2\varphi+px^2+px\varphi-px^2\varphi+p^2x^2\varphi-p^2x^2-px\varphi^2+px^2\varphi^2-p^2x^2\varphi^2+p^2x^2\varphi\}\sigma^2/(1-\varphi^2)$$

$$= \{(\varphi-2x\varphi+x^2\varphi)-px(1-\varphi)+px^2(1-\varphi)+ px\varphi(1-\varphi)(1-x)-p^2x^2(1-\varphi)^2\}\sigma^2/(1-\varphi^2)$$

$$= \{(\varphi-2x\varphi+x^2\varphi)-px(1-\varphi)^2(1-x+px)\}\sigma^2/(1-\varphi^2)$$

- *Denominator of $a_{C1}$*
$$= \sigma^2[R_t-(1-p)X_t-pX_{t+1}] = \sigma^2[R_t-xR_t+pxR_t-pxR_{t+1}]$$

$$= \{1+ x^2+2p^2x^2-2x+2px-2px\varphi-2px^2+2px^2\varphi-2p^2x^2\varphi\}\sigma^2/(1-\varphi^2)$$

$$= \{(1-2x+x^2)+2p^2x^2+2px-2px\varphi-2px^2+2px^2\varphi-2p^2x^2\varphi\}\sigma^2/(1-\varphi^2)$$

$$= \{(1-2x+x^2)+2px(1-\varphi)(1-x+px)\}\sigma^2/(1-\varphi^2)$$

(3) Comparison

- *Numerator of $a_{N1}$-Numerator of $a_{C1}$*
$$= px(1-\varphi)\sigma^2/(1-\varphi^2)-px\varphi(1-\varphi)\sigma^2/(1-\varphi^2)-px^2(1-\varphi)^2(1-p)\sigma^2/(1-\varphi^2)$$

$$= px(1-\varphi)^2(1-x+px)\sigma^2/(1-\varphi^2)>0$$

- *Denominator of $a_{N1}$-Denominator of $a_{C1}$*
$$= -2px(1-\varphi)(1-x+px)\sigma^2/(1-\varphi^2)<0$$

Since the numerator of the first-order autocorrelation of neutral earnings is greater than that of conservative earnings and the denominator of the first-order autocorrelation of neutral earnings is smaller than that of conservative earnings, the first-order autocorrelation of neutral earnings, i.e., earnings persistence is greater than that of conservative earnings.

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Table 1
Sample selection

| Panel A: Sample selection for earnings persistence models | Number of Firm-Years |
|---|---|
| Sample Selection Criteria | |
| 1. All firm-year observations from Compustat during the period 1984-2003 | 431,194 |
| 2. Less: non-December firms | (287,490) |
| 3. Less: Financial service and utility companies | (45,881) |
| 4. Less: missing value to compute earnings for year t and year t+1 | (29,797) |
| 5. Firm-year observations common for four conservatism measures | 68,026 |
| | |
| 6a. Less: missing value to compute the first conservatism measure | (37,799) |
| 7a. Firm-year observations for the first conservatism model | 30,227 |
| 6b. Less: missing value to compute the second conservatism measure | (54,004) |
| 7b. Firm-year observations for the second conservatism model | 14,022 |
| 6c. Less: missing value to compute the third conservatism measure | (42,881) |
| 7c. Firm-year observations for the third conservatism model | 25,145 |
| 6d. Less: missing value to compute the fourth conservatism measure | (36,291) |
| 7d. Firm-year observations for the fourth conservatism model | 31,735 |

| Panel B: Sample selection for pricing multiples models | Number of Firm-Years |
|---|---|
| Sample Selection Criteria | |
| 1. All firm-year observations from Compustat during the period 1984-2003 | 431,194 |
| 2. Less: non-December firms | (287,490) |
| 3. Less: Financial service and utility companies | (45,881) |
| 4. Less: missing value for earnings per share for year t | (23,942) |
| 5. Less: missing value for book value per share for year t | (9,549) |
| 6. Less: missing value for price for year t | (7,525) |
| 7. Firm-year observations common for four conservatism measures | 56,807 |
| | |
| 8a. Less: missing value to compute the first conservatism measure | (27,654) |
| 9a. Firm-year observations for the first conservatism model | 29,153 |
| 8b. Less: missing value to compute the second conservatism measure | (43,202) |
| 9b. Firm-year observations for the second conservatism model | 13,605 |
| 8c. Less: missing value to compute the third conservatism measure | (32,807) |
| 9c. Firm-year observations for the third conservatism model | 24,000 |
| 8d. Less: missing value to compute the fourth conservatism measure | (28,090) |
| 9d. Firm-year observations for the fourth conservatism model | 28,717 |

Table 2
Descriptive statistics for selected variables

| Variable | N | Mean | Std Dev. | 1% | Median | 99% |
|---|---|---|---|---|---|---|
| $P_t$ | 29,153 | 19.635 | 20.151 | 0.125 | 13.250 | 101.375 |
| $B_t$ | 29,153 | 10.584 | 10.868 | 0.043 | 7.532 | 58.033 |
| $E_t$ | 29,153 | 0.855 | 1.952 | −5.330 | 0.566 | 8.329 |
| $CON_{1t}$ | 29,153 | 0.095 | 0.724 | −2.616 | 0.028 | 3.175 |
| $CON_{2t}$ | 13,605 | 0.181 | 0.795 | −2.534 | 0.070 | 4.938 |
| $CON_{3t}$ | 24,000 | 0.668 | 2.372 | −8.151 | 0.449 | 11.564 |
| $CON_{4t}$ | 28,717 | 20.022 | 20.878 | 0.140 | 13.250 | 105.820 |
| $PE_t$ | 29,153 | 13.971 | 51.699 | −162.879 | 11.616 | 341.809 |
| $ROE_t$ | 29,153 | −0.083 | 0.708 | −5.002 | 0.080 | 0.778 |

This table presents the descriptive statistics for selected variables. Observations are based on the maximum number of observations for each variable. Variable definitions: $P_t$ is stock price at the end of March in year t+1; $B_t$ is equity book value per share at the end of year t; $E_t$ is earnings before extraordinary items per share for year t; $CON_{1t}$ is the first conservatism measure for year t, computed as the response coefficient of earnings on negative versus positive stock returns as used in Basu (1997) from the following firm-specific time-series: $EP_t = c_{0t} + c_{1t} NEGRET_t + c_{2t} RET_t + CON_{1t} NEGRET_t \cdot RET_t + e_t$, where $EP_t$ is earnings scaled by stock price at the beginning of year t, $RET_t$ is annual stock returns from April in year t to March in year t+1, and $NEGRET_t$ is 1 if $RET_t$ is negative, and 0 otherwise; $CON_{2t}$ is the second conservatism measure for year t, defined as the negative of cumulative nonoperating accruals over the past five years deflated by beginning market value of equity, where nonoperating accruals is the difference between total accruals and operating accruals as in Givoly and Hayn (2000): Total accruals = (Net Income + Depreciation) − Cash Flow from Operations and Operating accruals = ΔAccounts Receivable + Δ Inventories + Δ Prepaid Expenses − ΔAccounts Payable − ΔTaxes Payable; $CON_{3t}$ is the third conservatism measure for year t, computed as the negative of the response coefficient of change in operating income on negative versus positive change in lag operating income in Basu (1997) as modified in Ruddock et al. (2006) from the following firm-specific time-series: $\Delta OI_t = d_{0t} + d_{1t} DOI_{t-1} + d_{2t} \Delta OI_{t-1} + (-CON_{3t}) DOI_{t-1} \cdot \Delta OI_{t-1} + e_t$, where $\Delta OI_t$ is change in operating income in year t deflated by its beginning market value of equity, $\Delta OI_{t-1}$ is change in operating income in year t −1 deflated by its beginning market value of equity, and $DOI_{t-1}$ is 1 if $\Delta OI_{t-1}$ is negative, and 0 otherwise; $CON_{4t}$ is the fourth conservatism measure for year t, computed as the response coefficient of accruals on negative versus positive cash flow in Ball and Shivakumar (2005) as modified in Ruddock et al. (2006) from the following firm-specific time-series: $ACC_t = e_{0t} + e_{1t} DCFO_t + e_{2t} CFO_t + CON_{4t} DCFO_t \cdot CFO_t + e_t$, where $ACC_t$ is the difference between operating income and cash flow from operations in year t deflated by beginning total assets, $CFO_t$ is the cash flow from operations in year t deflated by beginning total assets, and $DCFO_t$ is 1 if $CFO_t$ is negative, and 0 otherwise; $PE_t$ is $P_t$ divided by $E_t$; and $ROE_t$ is return on equity for year t, computed as $E_t$ divided by $B_t$.

Table 3
Regression analysis of accounting conservatism on earnings persistence

$$E_{t+1} = a_0 + \sum a_k\, YR_{kt} + \sum a_k\, IND_{kt} + a_1\, E_t + a_2\, Hi\_CON_{jt}{\cdot}E_t + e_{t+1} \tag{7}$$

| Variable | Predicted Sign | J = 1 Coefficient (T-statistics) | J = 2 Coefficient (T-statistics) | J = 3 Coefficient (T-statistics) | J = 4 Coefficient (T-statistics) |
|---|---|---|---|---|---|
| $E_t$ | + | 0.597 | 0.609 | 0.590 | 0.713 |
| | | (45.40)*** | (34.59)*** | (37.16)*** | (11.33)*** |
| $Hi\_CON_{jt}{\cdot}E_t$ | – | −0.050 | −0.102 | −0.036 | −0.113 |
| | | (−2.90)*** | (−4.36)*** | (−1.67)** | (−7.53)*** |
| F-Value | | 219.34 | 98.83 | 177.98 | 307.20 |
| Adjusted $R^2$ | | 36.33% | 35.53% | 35.73% | 43.25% |
| N | | 30,227 | 14,022 | 25,145 | 31,735 |

*, **, and *** denote statistical significance at the 0.10, 0.05, and 0.01 level, respectively. Variable definitions: $E_{t+1}$ is earnings before extraordinary items per share for year $t + 1$; $E_t$ is earnings before extraordinary items per share for year t; $CON_{1t}$ is computed as the response coefficient of earnings on negative versus positive stock returns as used in Basu (1997) from the following firm-specific time-series: $EP_t = c_{0t} + c_{1t}\, NEGRET_t + c_{2t}\, RET_t + CON_{1t}\, NEGRET_t{\cdot}RET_t + e_t$; $CON_{2t}$ is defined as the negative of cumulative nonoperating accruals over the past five years deflated by beginning market value of equity, where nonoperating accruals is the difference between total accruals and operating accruals as in Givoly and Hayn (2000); $CON_{3t}$ is computed as the negative of the response coefficient of change in operating income on negative versus positive change in lag operating income in Basu (1997) as modified in Ruddock et al. (2006) from the following firm-specific time-series: $\Delta OI_t = d_{0t} + d_{1t}\, DOI_{t-1} + d_{2t}\, \Delta OI_{t-1} + (−CON_{3t})\, DOI_{t-1}{\cdot}\Delta OI_{t-1} + e_t$; $CON_{4t}$ is computed as the response coefficient of accruals on negative versus positive cash flow in Ball and Shivakumar (2005) as modified in Ruddock et al. (2006) from the following firm-specific time-series: $ACC_t = e_{0t} + e_{1t}\, DCFO_t + e_{2t}\, CFO_t + CON_{4t}\, DCFO_t{\cdot}CFO_t + e_t$; $Hi\_CON_{jt}$ (J = 1 to 4) is an indicator variable that equals 1 if $CON_{jt}$ is greater than the yearly median and 0 otherwise; $YR_{kt}$ is an indicator variable that equals 1 if a firm-year is in year k, and 0 otherwise; and $IND_{kt}$ is an indicator variable that equals 1 if a firm is in 2-digit SIC industry k, and 0 otherwise. The t-statistics (in parentheses) for each model is based on white (1980) heteroscedasticity-corrected covariance matrix, if the heteroscedasticity exists. Year-specific intercepts and industry-specific intercepts are not presented for brevity.

Table 4

Regression analysis of accounting conservatism on pricing multiples on earnings

$$P_t = b_0 + \sum b_k\, YR_{kt} + \sum b_k\, IND_{kt} + b_1\, B_t + b_2\, Hi\_CON_{jt} \cdot B_t + b_3\, E_t + b_4\, Hi\_CON_{jt} \cdot E_t + b_5\, NEGE_t + u_t \tag{8}$$

| Variable | Predicted Sign | J = 1 Coefficient (t-statistics) | J = 2 Coefficient (t-statistics) | J = 3 Coefficient (t-statistics) | J = 4 Coefficient (t-statistics) |
|---|---|---|---|---|---|
| $B_t$ | + | 0.766 | 0.826 | 0.767 | 0.801 |
| | | (44.42)*** | (29.99)*** | (38.87)*** | (48.22)*** |
| $Hi\_CON_{jt} \cdot B_t$ | ? | −0.038 | 0.057 | −0.0001 | −0.130 |
| | | (−2.12)** | (2.00)** | (−0.004) | (−4.20)*** |
| $E_t$ | + | 6.163 | 7.064 | 6.306 | 6.316 |
| | | (45.70)*** | (31.79)*** | (41.26)*** | (49.36)*** |
| $Hi\_CON_{jt} \cdot E_t$ | − | −0.325 | −1.250 | −0.462 | −1.167 |
| | | (−2.28)** | (−5.59)*** | (−2.86)*** | (−5.26)*** |
| $NEGE_t$ | − | −6.496 | −6.716 | −6.624 | −6.512 |
| | | (−26.87)*** | (−24.43)*** | (−33.35)*** | (−35.59)*** |
| F-Value | | 637.62 | 276.65 | 540.30 | 633.40 |
| Adjusted $R^2$ | | 64.72% | 62.43% | 65.37% | 64.91% |
| N | | 29,153 | 13,605 | 24,000 | 28,717 |

*, **, and *** denote statistical significance at the 0.10, 0.05, and 0.01 level, respectively. Variable definitions: $P_t$ is stock price at the end of March in year t+1; $B_t$ is equity book value per share at the end of year t; $E_t$ is earnings before extraordinary items per share for year t; $NEGE_t$ is $E_t$ if $E_t$ is negative, and 0 otherwise; $CON_{1t}$ is computed as the response coefficient of earnings on negative versus positive stock returns as used in Basu (1997) from the following firm-specific time-series: $EP_t = c_{0t} + c_{1t}\, NEGRET_t + c_{2t}\, RET_t + CON_{1t}\, NEGRET_t \cdot RET_t + e_t$; $CON_{2t}$ is defined as the negative of cumulative nonoperating accruals over the past five years deflated by beginning market value of equity, where nonoperating accruals is the difference between total accruals and operating accruals as in Givoly and Hayn (2000); $CON_{3t}$ is computed as the negative of the response coefficient of change in operating income on negative versus positive change in lag operating income in Basu (1997) as modified in Ruddock et al. (2006) from the following firm-specific time-series: $\Delta OI_t = d_{0t} + d_{1t}\, DOI_{t-1} + d_{2t}\, \Delta OI_{t-1} + (-CON_{3t})\, DOI_{t-1} \cdot \Delta OI_{t-1} + e_t$; $CON_{4t}$ is computed as the response coefficient of accruals on negative versus positive cash flow in Ball and Shivakumar (2005) as modified in Ruddock et al. (2006) from the following firm-specific time-series: $ACC_t = e_{0t} + e_{1t}\, DCFO_t + e_{2t}\, CFO_t + CON_{4t}\, DCFO_t \cdot CFO_t + e_t$; $Hi\_CON_{jt}$ (J = 1 to 4) is an indicator variable that equals 1 if $CON_{jt}$ is greater than the yearly median and 0 otherwise; $YR_{kt}$ is an indicator variable that equals 1 if a firm-year is in year k, and 0 otherwise; and $IND_{kt}$ is an indicator variable that equals 1 if a firm is in 2-digit SIC industry k, and 0 otherwise. The t-statistics (in parentheses) for each model is based on white (1980) heteroscedasticity-corrected covariance matrix, if the heteroscedasticity exists. Year-specific intercepts and industry-specific intercepts are not presented for brevity.

Table 5
Alternative measures for accounting conservatism

*Panel A: Conservatism and earnings persistence*

$$E_{t+1} = a_0 + \sum a_k YR_{kt} + \sum a_k IND_{kt} + a_1 E_t + a_2 Hi\_CON_{jt} \cdot E_t + e_{t+1} \qquad (7)$$

| Variable | Predicted Sign | J = 5 Coefficient (T-statistics) | J = 6 Coefficient (T-statistics) |
|---|---|---|---|
| $E_t$ | + | 0.635 (52.33)*** | 0.656 (70.02)*** |
| $Hi\_CON_{jt} \cdot E_t$ | − | −0.060 (−3.49)*** | −0.300 (−22.83)*** |
| F-Value | | 274.31 | 407.87 |
| Adjusted $R^2$ | | 42.03% | 38.41% |
| N | | 29,022 | 51,537 |

*Panel B: Conservatism and pricing multiple on earnings*

$$P_t = b_0 + \sum b_k YR_{kt} + \sum b_k IND_{kt} + b_1 B_t + b_2 Hi\_CON_{jt} \cdot B_t + b_3 E_t + b_4 Hi\_CON_{jt} \cdot E_t + b_5 NEGE_t + u_t \qquad (8)$$

| Variable | Predicted Sign | J = 5 Coefficient (t-statistics) | J = 6 Coefficient (t-statistics) |
|---|---|---|---|
| Bt | + | 0.790 (35.54)*** | 1.008 (50.28)*** |
| $Hi\_CON_{jt} \cdot B_t$ | ? | 0.009 (0.38) | −0.225 (−12.17)*** |
| $E_t$ | + | 7.461 (44.27)*** | 7.107 (54.18)*** |
| $Hi\_CON_{jt} \cdot E_t$ | − | −0.946 (−6.24)*** | −2.133 (−17.66)*** |
| $NEGE_t$ | − | −6.940 (−34.21)*** | −5.670 (−41.23)*** |
| F-Value | | 570.02 | 1079.16 |
| Adjusted $R^2$ | | 61.97% | 64.40% |
| N | | 28,284 | 50,063 |

*, **, and *** denote statistical significance at the 0.10, 0.05, and 0.01 level, respectively. Variable definitions: $E_{t+1}$ is earnings before extraordinary items per share for year t + 1; $E_t$ is earnings before extraordinary items per share for year t; $P_t$ is stock price at the end of March in year t+1; $B_t$ is equity book value per share at the end of year t; $NEGE_t$ is $E_t$ if $E_t$ is negative, and 0 otherwise; $CON_{5t}$ is the fifth conservatism measure for year t, computed as the level of R&D expense, deflated by beginning market value of equity; $CON_{6t}$ is the sixth conservatism measure for year t, computed as the level of depreciation expense, deflated by beginning market value of equity; $Hi\_CON_{jt}$ (J = 5 to

Table 5 *(Continued)*
6) is an indicator variable that equals 1 if $CON_{jt}$ is greater than the yearly median and 0 otherwise; $YR_{kt}$ is an indicator variable that equals 1 if a firm-year is in year k, and 0 otherwise; and $IND_{kt}$ is an indicator variable that equals 1 if a firm is in 2-digit SIC industry k, and 0 otherwise. The t-statistics (in parentheses) for each model is based on white (1980) heteroscedasticity-corrected covariance matrix, if the heteroscedasticity exists. Year-specific intercepts and industry-specific intercepts are not presented for brevity.