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The conservatism principle and the asymmetric timeliness of earnings¹

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Abstract

I interpret conservatism as resulting in earnings reflecting 'bad news' more quickly than 'good news'. This interpretation implies systematic differences between bad news and good news periods in the timeliness and persistence of earnings. Using firms' stock returns to measure news, the contemporaneous sensitivity of earnings to negative returns is two to six times that of earnings to positive returns. I also predict and find that negative earnings changes are less persistent than positive earnings changes. Earnings response coefficients (ERCs) are higher for positive earnings changes than for negative earnings changes, consistent with this asymmetric persistence. © 1997 Elsevier Science B.V. All rights reserved.

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1. Introduction

This paper re-examines the conservatism principle. I interpret conservatism as capturing accountants' tendency to require a higher degree of verification for recognizing good news than bad news in financial statements. Under my interpretation of conservatism, earnings reflects bad news more quickly than good news. For instance, unrealized losses are typically recognized earlier than unrealized gains. This asymmetry in recognition leads to systematic differences between bad news and good news periods in the timeliness and persistence of earnings.

Fig. 1 illustrates the predictions tested in this paper. Consider a firm receiving news that changes its estimate of the productive life of a fixed asset. Panel A depicts the effects of the news on the reported book value of the asset, and Panel B depicts the associated effect on the firm's earnings. If the new estimated life is longer, the firm is economically better off, but under historical cost accounting no gain is recorded currently. Instead, the depreciation charges that

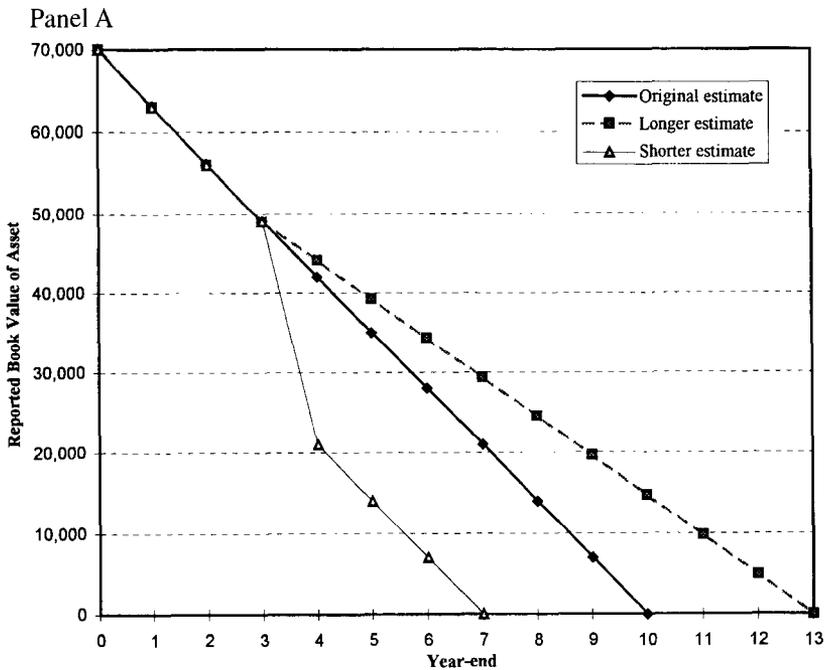


Fig. 1. Panel A: Example of book values of a fixed asset under conservative accounting when estimates of remaining useful life change.

Straight line depreciation with zero salvage over ten years originally. At the end of the fourth year, the expected life is increased or decreased by three years. Write-off assumed to be three years' depreciation.

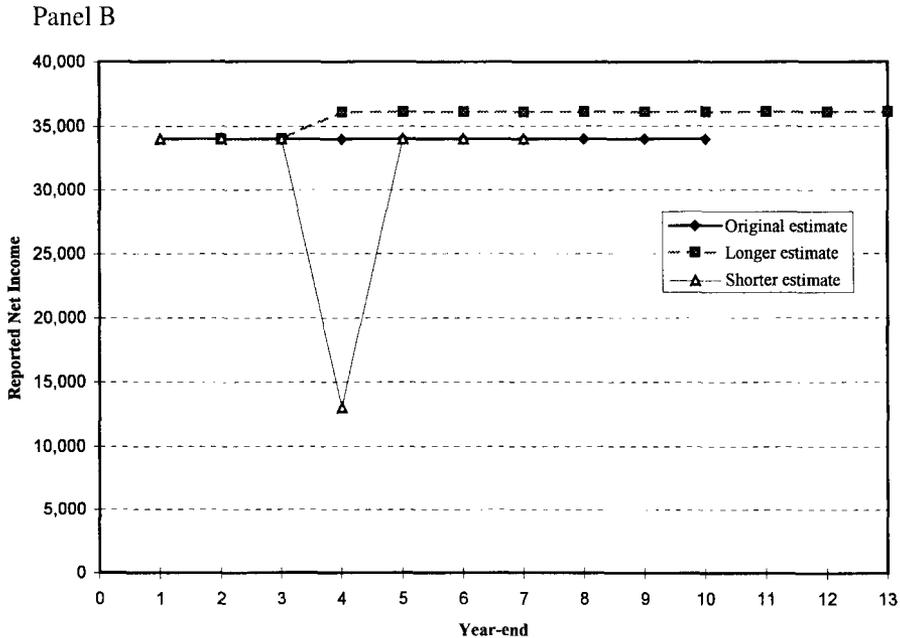


Fig. 1. Panel B: Example of reported net income under conservative accounting when estimates of remaining useful life of a fixed asset change.

Straight line depreciation with zero salvage over ten years originally. At the end of the fourth year, the expected life is increased or decreased by three years. Write-off assumed to be three years' depreciation. Revenues and other expenses assumed to be \$41,000 in each year of the fixed asset's life.

would have been taken in the current and future periods are spread out over the new remaining life, resulting in lower depreciation charges in Panel A, and higher income in Panel B, each year.² If the expected life decreases, a symmetric treatment would increase depreciation charges over the entire shorter remaining life. In practice, however, the accountant records an asset impairment (Panel A), which results in (often sharply) reduced current income, but no effect on future income in Panel B.

In short, reported earnings responds more completely or quickly to bad news than good news. My first prediction is that earnings is more timely or concurrently sensitive in reflecting publicly available 'bad news' than 'good news'. To test this prediction of asymmetric timeliness, I use negative and positive

² Even though income is lower by the new depreciation charge in the last years of the new estimated life, net income is higher because the fixed asset contributes revenues in these years.

unexpected annual stock returns to proxy for ‘bad news’ and ‘good news’, respectively.

My second prediction is that the concurrent earnings–return association is relatively stronger than the concurrent cash flow–return association for publicly available ‘bad news’ compared to ‘good news’. In the example above, news about the expected life of the fixed asset has little or no effect on current cash flows, but ‘bad news’ is reflected in current earnings. Therefore, current cash flows are weakly associated with current returns for both bad and good news, whereas accruals are more likely to recognize current ‘bad news’ and incorporate it in current earnings.

Asymmetric timeliness in news recognition is expected to manifest itself also as asymmetric persistence in earnings. Since accountants typically report the capitalized value of bad news as losses, bad news earnings is more timely but less persistent. In contrast, good news is reflected in earnings on a less timely basis, but good news earnings tends to be more persistent. Good news earnings is less timely because accountants require more verifiable information before they recognize good news. But good news earnings is more persistent than bad news earnings because the capitalized value of the good news is only partially reflected in current earnings, and after verification, is also reflected in subsequent earnings.

My third prediction is that unexpected earnings increases are more likely to be persistent while unexpected earnings declines are more likely to be temporary. This asymmetric persistence prediction can also be seen from the earnings time-series. Continuing with the fixed asset example in Panel B of Fig. 1, after good news, the firm’s earnings increases currently, because of the reduced depreciation, and remains at this higher level in future periods. Good news has a persistent effect on earnings. In contrast, after bad news, the firm’s current earnings is lower due to the impairment charge, but this decrease reverses in the next period, and future years’ earnings are unaffected. Hence, bad news has a temporary impact on the earnings time-series.

My final prediction is that the abnormal return per dollar of unexpected earnings (the short window earnings response coefficient or ERC) is smaller for ‘bad earnings news’ than ‘good earnings news’. In the fixed asset example, if the firm does not disclose that it has revised its estimate of the asset’s life until it announces earnings, the new depreciation numbers will surprise the market. The stock market’s reaction to the earnings release reflects the ‘earnings news’ about both current and future earnings. Hence, the market reaction per unit of unexpected earnings is greater for more persistent news. In the example, ‘bad earnings news’ has no impact on future earnings, but ‘good earnings news’ is more persistent.

Empirical tests support all four predictions. The paper extends research on the timeliness of earnings by showing that the timeliness is asymmetrically greater for ‘bad news’ than for ‘good news’. The paper also extends Dechow (1994)

by showing that earnings is more timely than cash flow primarily in reflecting ‘bad news’. I argue that negative earnings changes are asymmetrically less persistent than positive earnings changes because of conservatism. Finally, I argue that ERCs are asymmetrically lower for negative earnings changes than positive earnings changes because the stock market adjusts rationally for the effects of conservatism on reported accounting earnings.

I also examine the temporal variation in the degree of conservatism and its implication for the earnings–return relation. Earnings’ sensitivity to current negative returns has increased relative to earnings’ sensitivity to current positive returns over the period 1963–1990, consistent with accounting conservatism increasing over time. Increases in conservatism coincided with increases in auditors’ exposure to legal liability.

While prior researchers have individually anticipated some of these empirical results, I provide a consistent accounting theory-based explanation that ties them together. Brooks and Buckmaster (1976) report that extreme negative earnings display a greater mean-reverting tendency than extreme positive earnings, while Elgers and Lo (1994) show that negative changes in earnings reverse more in the next period than do positive earnings changes. Hayn (1995) shows that firms with positive earnings have larger short window and long window ERCs than firms with negative earnings.

Section 2 describes the conservatism principle and its history. The remainder of this paper is organized as follows: Section 3 describes the data; Section 4 develops testable predictions and reports the main empirical results; Section 5 discusses additional tests; Section 6 examines alternative explanations from prior research for some of the results; and Section 7 concludes.

2. The conservatism principle

2.1. *Alternative definitions of conservatism and the differences between them*

Accountants traditionally expressed conservatism by the rule “anticipate no profits but anticipate all losses” (e.g. Bliss, 1924). I interpret this rule as denoting accountants’ tendency to require a higher degree of verification to recognize good news as gains than to recognize bad news as losses. For instance, Statement of Financial Accounting Concepts (SFAC) 2 (FASB, 1980), para. 95 states: “... if two estimates of amounts to be received or paid in the future are about equally likely, conservatism dictates using the less optimistic estimate”.³

Lower of cost or market accounting for inventories [Accounting Research Bulletin (ARB) 43, Committee on Accounting Procedures (CAP, 1953)] is one

³ Interpretation 14 (FASB, 1976) is an apparent exception to this rule.

example of conservatism. Other examples are the immediate recognition of changes in cost estimates if they result in future expected losses on long-term contracts, but not if they result in increased future profits (ARB 45, CAP, 1955); the asymmetric recognition of the expected future results of discontinued operations [Accounting Principles Board (APB) Opinion 30, APB (1973)]; and the writing down of physical assets to reflect obsolescence or impairments, but not revaluing them upwards (APB Opinion 6, APB, 1965). Thus, conservatism results in a greater probability of timely accounting recognition of bad news than good news.

In contrast, some interpret conservatism more broadly as accountants' preference for accounting methods that lead to lower reported values for shareholders' equity. For example, Belkaoui (1985), (p. 239) claims that conservatism "implies that preferably the lowest values of assets and revenues and the highest values of liabilities and expenses should be reported". At a conceptual level, FASB (SFAC2, 1980, para. 95) rejects this alternative view, stating: "Conservatism no longer requires deferring recognition of income beyond the time that adequate evidence of its existence becomes available or justifies recognizing losses before there is adequate evidence that they have been incurred". This view of conservatism also appears inconsistent with accounting practice. For example, most U.S. firms use straight-line rather than accelerated depreciation (Accounting Trends and Techniques, 1996). Prior research has examined variation in accounting methods across firms to capture variation in conservatism (see Watts and Zimmerman, 1990; Christie, 1990; Lev, 1989).

Financial accounting since the mid-1930s has emphasized the income statement, with a corresponding emphasis on conservatism in the income statement. CAP (1939), (ARB 2) states, "conservatism in the balance sheet is of dubious value if attained at the expense of conservatism in the income statement, which is far more significant". Hence, I conduct tests on earnings, rather than on balance sheet values.⁴

2.2. Historical developments, and theories of the role of conservatism

Conservatism has influenced accounting practice and theory for centuries. Historical records from early 15th century trading partnerships show that accounting in medieval Europe was conservative (Penndorf, 1930). Savary (1712) contains an early textbook discussion of the lower-of-cost-or-market

⁴Stober (1994) and others test for conservatism using the difference between (the ratio of) the book and market values of equity. They assume that the difference between book and market values arises solely from assets like goodwill or R&D that are unrecorded because of conservatism. But they could also differ because assets are recorded on a historical cost basis, and hence do not reflect inflation; or because market values reflect future growth opportunities that the firm has not yet exercised.

principle. Since these practices predate income and property taxes, shareholder litigation, and accounting regulation, they cannot explain the origins of accounting conservatism.

Several costly contracting explanations have been advanced for the existence and pervasive influence of conservatism (see Watts and Zimmerman, 1986; Ball, 1989; Basu, 1995; for expanded versions of the following arguments). In a world of uncertainty regarding future profits, managers often possess valuable private knowledge about firm operations and asset values. If managerial compensation is linked to reported earnings, then managers have incentives to withhold from reported earnings any information that would adversely affect their compensation. Rational claimholders would reduce managerial compensation by the expected effect of such malfeasance. The emergence of the conservatism principle and the preparation of audited financial statements can be ascribed to managerial attempts to bond against exploiting their asymmetrically informed position relative to other claimholders. Debtholders and other creditors also demand timely information about 'bad news' because the option value of their claims (Smith, 1979) is more sensitive to a decline than an increase in firm value.⁵

Conservatism is thus argued to play an *ex ante* efficient role in contracting between the parties constituting the firm. Phrased differently, if accounting were not regulated, contracting parties would voluntarily agree that the accounting numbers used to partition cash flows amongst them should be determined conservatively. Consistent with this argument, Leftwich (1983) reports that all departures from GAAP specified in private debt covenants are conservative.

FASB (1984), (SFAC 5, para. 81) expresses similar views to those above, saying, "In assessing the prospect that as yet uncompleted transactions will be concluded successfully, a degree of skepticism is often warranted. Moreover, as a reaction to uncertainty, more stringent requirements historically have been imposed for recognizing revenues and gains than for recognizing expenses and losses, and those conservative reactions influence the guidance for applying the recognition criteria to components of earnings".

While contracting considerations appear to explain the origins of conservatism, tax, litigation, political process and regulatory forces have also influenced the degree of conservatism in GAAP, particularly during this century (Watts and Zimmerman, 1986; Basu, 1995). In the last ten years, the Financial Accounting Standards Board (FASB) has mandated the recognition of formerly off-balance sheet liabilities such as pensions, post-retirement health benefit obligations and environmental liabilities, along with their associated expenses.

⁵ The inference that financial statements respond to debtholders' informational needs is consistent with SFAC 1 (FASB, 1978, para. 34), which says, "Financial reporting should provide information that is useful to present and potential investors and creditors and other users in making rational investment, credit and other decisions".

The FASB also issued standards for asset impairment recognition. These standards have arguably increased U.S. accounting conservatism in recent years. Both the costly contracting and regulatory rationales can explain the continuing importance of conservatism in GAAP. Later in the paper, I explore whether recent increases in accounting conservatism were caused by increases in auditor legal liability exposure.⁶

3. Data

The samples used for the tests consist of all firm-year observations from 1963 to 1990 with returns data on the CRSP NYSE/AMEX Monthly files, and with the necessary accounting data on the COMPUSTAT Annual Industrial and Research files. The use of the Research file reduces survivor bias. The requirement of data from both COMPUSTAT and CRSP causes a selection bias towards large firms, limiting the generalizability of the results. Observations are grouped by fiscal year-end.

All accounting variables, measured per share, are deflated by the opening stock price to control for heteroskedasticity (Christie, 1987). Since the test results are sensitive to low stock prices, all tests are replicated using opening book value of assets or equity as the deflator, with qualitatively similar results (reported in Basu, 1995). As a further control for heteroskedasticity, I use White (1980) *t*-statistics. Observations falling in the top or bottom 1% of opening price-deflated earnings, X_{it}/P_{it-1} , opening book value of assets deflated earnings, X_{it}/A_{it-1} , or returns, R_{it} , in each calendar year are excluded to reduce the effects of outliers on the regression results. Including outliers in the regressions typically resulted in higher (biased) slope coefficients and lower R^2 s, but unchanged qualitative conclusions.

Buy-and-hold annual returns are calculated to end three months after the fiscal year-end to ensure that the market response to the previous year's earnings is excluded (Givoly and Palmon, 1982; Easton and Harris, 1991). The minimum data required for each firm-year observation are the current year's earnings, the previous fiscal year-end stock price and book values of assets and equity, and returns data. Additional data requirements for some tests, which reduce sample sizes, are described before discussing the results. Sample statistics for the different data sets are reported in Basu (1995). Bold typeface indicates the statistics in each table that test hypotheses.

⁶ St. Pierre and Anderson (1984) examine 334 alleged errors brought by plaintiffs in 129 cases filed against public accountants between 1960 and 1980, and find that none of the suits concerned errors in undervaluing assets, recognizing inadequate revenue or excessive expenses.

4. The asymmetric effect of conservatism on the properties of earnings

In this section, I develop and test each of my four principal hypotheses on the asymmetric impact of conservatism in good and bad news periods. The first two hypotheses consider how conservatism affects the timeliness of earnings, and in particular its accrual component. The following two hypotheses consider the impact of conservatism on the persistence of earnings, and the related effect on ERCs.

4.1. Conservatism and the sensitivity of earnings to returns

Because stock prices reflect information received from sources other than current earnings, stock prices lead accounting earnings, by up to four years (Ball and Brown, 1968; Beaver et al., 1980; Kothari and Sloan, 1992; and others). Since accountants anticipate future losses but not future profits, conservatism results in earnings being more timely and more sensitive concurrently to publicly available ‘bad news’ than ‘good news’. In the fixed asset example in Fig. 1, a longer estimated life (good news) results in a small concurrent depreciation reduction, while a shorter estimated life (bad news) results in a relatively large concurrent write down. Earnings is predicted to be more strongly associated with concurrent negative unexpected returns, proxying for ‘bad news’, than positive unexpected returns, which proxy for ‘good news’.

I test my hypotheses in a Beaver et al. (1980) ‘reverse’ regression, with earnings as the dependent variable, because OLS standard errors and test statistics are better specified when the leading variable is specified as independent and the lagging variable as dependent. I regress annual earnings on current annual returns. Earnings, the dependent variable, contains more timely information for ‘bad news’ firms, resulting in a higher predicted R^2 for this sample. The slope coefficient, β , is predicted to be greater for the ‘bad news’ sample because earnings is predicted to be more sensitive to contemporaneous unexpected returns.⁷

Hypothesis 1: The slope coefficient and R^2 from a regression of annual earnings on annual unexpected returns are higher for negative unexpected returns than for positive unexpected returns.

⁷ In my simple ‘reverse’ regression, the slope coefficient and R^2 are functionally related: $\beta^2 = R^2 \times [\text{var}(\text{Earnings})/\text{var}(\text{Returns})]$. The variance ratio is predicted to be higher in more timely samples. More timeliness implies that earnings reflects more of the variance in returns contemporaneously rather than spreading it out over current and future periods (in effect, smoothing earnings over time). Since both the R^2 and the variance ratio are predicted to be higher for the (more timely) bad news sample, I predict that their product, the slope coefficient, is higher for the bad news sample. In the standard regression of returns on earnings, the R^2 and the variance ratio effects offset each other, leading to an ambiguous slope coefficient prediction.

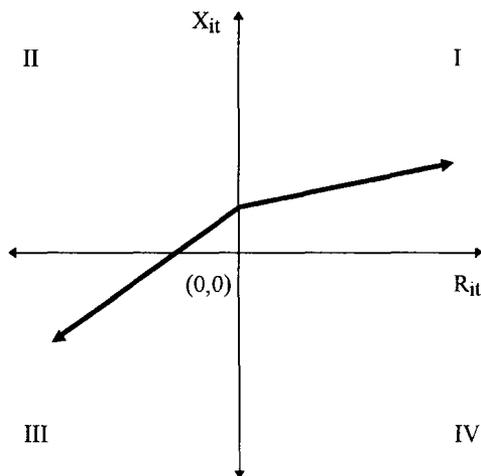


Fig. 2. Hypothesized association between earnings and returns under conservatism.

X_{it} and R_{it} are earnings and stock returns, respectively, for firm i in year t . Quadrant I contains observations with positive returns and positive earnings. Quadrant II contains observations with negative returns and positive earnings. Quadrant III contains observations with negative returns and negative earnings. Quadrant IV contains observations with positive returns and negative earnings.

Fig. 2 displays the predicted relation between contemporaneous earnings and unexpected returns. The slope coefficient for negative returns (in the second and third quadrants) is predicted to be higher than the slope coefficient for positive returns (in the first quadrant). This is because unrealized losses (bad news) are more likely to be recognized immediately under conservative accounting than unrealized gains (good news). Some current unrealized gains will be recognized in future periods when they are realized. Because news, by definition, is uncorrelated through time, these current unrealized gains will be *uncorrelated* with the recognition period news and returns. I predict that these realized gains reflecting previous good news will result in a positive intercept in the 'reverse' regression. In contrast, since most unrealized losses are captured immediately, little bad news is postponed to future periods.

The alternative interpretation of conservatism noted in Section 2.1 leads to different predictions. If conservatism only adds a constant downward bias to earnings (or more generally, a varying downward bias uncorrelated with current news), it will result in a negative intercept, and equal slope coefficients and R^2 s for the two samples.

Panel A of Table 1 presents pooled cross-sectional regression results for price deflated earnings on inter-announcement period returns. For the full sample, the adjusted R^2 is 7.99%, which is consistent with prior studies (Lev, 1989). The slope coefficient on returns is 0.113. The second regression in Panel A divides

firm year observations into ‘good news’ and ‘bad news’ samples based on whether the return was greater than or less than zero. Dummy variables capture the intercept and slope effects for the negative return sample. The interactive slope coefficient, β_1 , which measures the difference in sensitivity of earnings to negative and positive returns is significant, and implies that earnings is about four and a half times ($4.66 = [0.216 + 0.059]/0.059$) as sensitive to negative returns as it is to positive returns. Adjusted R^2 s from separate regressions on the two samples indicate that the explanatory power of negative returns (6.64%; 17,790 firm years) is greater than positive returns (2.09%; 25,531 firm years). These results are consistent with earnings being more timely or concurrently sensitive in reporting publicly available ‘bad news’ than ‘good news’. The

Table 1

Coefficients and adjusted R^2 s (%) from pooled cross-sectional regressions, excluding outliers, of beginning-of-period price deflated earnings on contemporaneous annual returns^a

$$X_{it}/P_{it-1} = \alpha_0 + \alpha_1 DR_{it} + \beta_0 R_{it} + \beta_1 R_{it} * DR_{it}$$

(+)

Panel A: Inter-announcement period returns^b

α_0	α_1	β_0	β_1	Adj. R^2
0.064 (75.44)*		0.113 (47.40)*		7.99
0.090 (68.03)*	0.002 (0.86)	0.059 (18.34)*	0.216 (20.66)*	10.09
Adjusted R^2 (%)		Positive returns sample 2.09	Negative returns sample 6.64	
No. of observations		25,531	17,790	

Panel B: Market-adjusted inter-announcement period return and earnings^c

α_0	α_1	β_0	β_1	Adj. R^2
0.003 (4.37)*		0.140 (48.43)*		9.37
0.030 (22.62)*	0.014 (6.07)*	0.047 (11.03)*	0.256 (27.14)*	12.48
Adjusted R^2 (%)		Positive returns sample 1.07	Negative returns sample 10.00	
No. of observations		18,491	24,830	

Table 1 (continued)

Panel C: Fiscal year returns^d

α_0	α_1	β_0	β_1	Adj. R^2
0.062 (72.94)*		0.123 (49.99)*		10.04
0.086 (64.11)*	-0.005 (1.96)	0.075 (21.34)*	0.166 (16.47)*	11.53
		Positive returns sample	Negative returns sample	
Adjusted R^2 (%)		3.55	5.59	
No. of observations		25,665	17,453	

^aAll firms listed on Compustat Merged Expanded Annual Industrial with OTC file or Compustat Merged Research Annual Industrial with OTC file and CRSP NYSE/AMEX Monthly Returns and Master file. Observations are grouped by the calendar year of the fiscal year-end. Observations falling in the top or bottom 1% of either price or asset deflated earnings or returns in each year are excluded. White (1980) heteroskedasticity-consistent t -statistics in parentheses.

^b X_{it} is the earnings per share for firm i in fiscal year t , P_{it-1} is the price per share at the beginning of the fiscal year, R_{it} is the return on firm i from 9 months before fiscal year-end t to three months after fiscal year-end t , DR_{it} is a dummy variable: = 1 if $R_{it} < 0$, = 0 otherwise. 43,321 firm-year observations from 1963 to 1990.

^c R_{it} in this panel is the stock return for the firm less the corresponding CRSP equal-weighted market return, X_{it}/P_{it-1} is the EP ratio adjusted by the average EP ratio for sample firms in fiscal year t . The dummy variable is redefined to correspond to the new definition of R_{it} . The sample is identical to that in Panel A.

^d R_{it} in this panel is the stock return for the firm cumulated over its fiscal year, from fiscal year-end $t-1$ to fiscal year-end t , X_{it} and P_{it-1} are the same as in Panel A. The dummy variable is redefined to correspond to the new definition of R_{it} . 43,118 firm-year observations from 1963 to 1990.

*Significant at the two-tailed 1% confidence level.

Statistics that test hypotheses are indicated in bold typeface, predicted signs are indicated in parentheses below the regression.

intercepts for both samples are positive and significant, consistent with the current recognition of unrealized gains from previous periods that are uncorrelated with current news.

Panel B of Table 1 presents results using market-adjusted variables to control for time-series non-stationarity in the earnings and return processes that could affect the pooled cross-sectional standard errors. Returns are adjusted by the CRSP equal-weighted index, and earnings-price ratios are adjusted by an equal-weighted index of the sample EP ratios for that calendar year. The adjusted R^2 for both regressions are higher than in Panel A, which uses an identical sample, indicating a better fit. The slope coefficient on negative

market-adjusted returns is about six and a half times ($6.45 = [0.256 + 0.047]/0.047$) that on positive market-adjusted returns. The explanatory power of negative market-adjusted returns, 10.00%, exceeds that of positive market-adjusted returns, 1.07%. Both intercepts are significantly positive.

Panel C of Table 1 presents results using fiscal year returns, which exclude the market reaction to the current year's earnings announcement. I use this specification to isolate the impact of publicly available 'news' received from other sources before earnings is announced. Buy-and-hold annual returns are cumulated to end at the fiscal year-end, in contrast to Panel A, which cumulated annual returns to end three months later. The results are quite similar to those in Panels A and B.

A number of other specifications were also tested with similar results to those reported in Table 1. These replications include: (a) portfolio-level regressions as in Beaver et al. (1980), where 30 portfolios were formed in each of the 28 years by ranking on returns; (b) annual cross-sectional regressions as in Easton and Harris (1991); (c) regressions using market-model abnormal returns or risk premia as the measure of unexpected returns; (d) time-series regressions on a sample of 264 firms with continuous data from 1960 to 1980; (e) regressions with earnings deflated by opening book value of assets or equity; (f) regressions with up to four previous years' returns included as independent variables; and (g) regressions including outliers.

Overall, Table 1 is consistent with my predictions under conservatism. Earnings is more timely in reporting publicly available 'bad news' than 'good news', as measured by the difference in either the adjusted R^2 s or slope coefficients. The intercepts are reliably positive, as expected if the recognition of unrealized gains, but not unrealized losses, is postponed to future periods. The results are inconsistent with the alternative interpretation of conservatism in Section 2.1, which predicts equal slope coefficients and R^2 s for good and bad news, and a negative intercept.

4.2. Comparisons of earnings and cash flow to isolate the impact of conservatism

An analysis of conservatism provides insights into the nature of accounting accruals. Receipts and disbursements of cash are typically considered objective evidence, absent fraud, that the underlying transactions have been consummated, and cash transfers are usually recorded as they occur. If there is substantial evidence of contractual performance before cash has been exchanged, accruals are recorded, but some discretion exists in estimating the appropriate amounts. This results in earnings being more timely than cash flow measures (Dechow, 1994).

The effects of conservatism on earnings and cash flow can be analyzed similarly. Accruals enable accountants to recognize bad news about future cash flow on an asymmetrically timely basis. Unrealized losses reduce current

earnings but do not impact current cash flow, while unrealized gains affect neither current earnings nor current cash flow. Since earnings is the sum of cash flow and accruals, if unrealized losses but not unrealized gains are recognized, then earnings is more conservative than cash flow. I predict that the difference in the sensitivities of earnings and cash flow to current publicly available 'bad news' is greater than the difference in their sensitivities to current publicly available 'good news'.

Note that earnings recognizes some 'good news' and 'bad news' about assets equally quickly. For example, both increases and decreases in gross accounts receivable are reflected quickly in earnings. Such accruals should dampen the predicted effect, but not negate it.

Hypothesis 2: The increase in the timeliness of earnings over cash flow is greater for negative unexpected returns than positive unexpected returns.⁸

Accruals incorporating writeoffs and writedowns are more likely to reflect conservatism than others. Asset writeoffs are frequently recorded as extraordinary losses or other losses. I examine whether excluding extraordinary items and other items from earnings reduces the measured conservatism.

Hypothesis 2 is tested on a sample of 34,266 firm-year observations after outlier deletion from 1963 to 1990 for earnings before extraordinary items and discontinued operations (XE), cash flow from operations (CFO), and cash flow from operating and investing activities (CFOI). The first two measures replicate Rayburn (1986), and the third is calculated by subtracting the gross change in long-term assets (change in non-current assets plus depreciation and amortization expense, a crude measure of investing cash flows) from CFO.⁹ To control for the possibility that extraordinary items and discontinued operations were the sole cause for the results in Table 1, they are excluded from earnings in Table 2.

Panel A of Table 2 presents the results from regressions of XE, CFO and CFOI on returns and dummies for negative returns to compare the asymmetry in their timeliness to news. The first three regressions show that CFOI, CFO, and XE have successively stronger associations with returns as measured by the adjusted R^2 s (0.73%, 4.55% and 9.31% respectively), consistent with Dechow (1994). This suggests that the accruals that are successively added to CFOI to

⁸ Dechow (1994) shows that accruals and cash flow are negatively correlated contemporaneously, which could complicate direct tests on accruals. This explains the incremental form of Hypothesis 2.

⁹ The sign on accounting accruals is reversed from that in Rayburn (1986) to facilitate understanding. The underlying accounting identity being assumed is earnings = cash flows + accrual adjustments.

construct earnings either increase the timeliness and/or reduce the noise in accounting numbers (Collins et al., 1994). The last three regressions show that while all three measures have similar slopes on positive returns, the difference in the slope dummies and the adjusted R^2 s from the regressions increase monotonically. This result is consistent with accruals making earnings more timely in reporting 'bad news' but not 'good news'. The relative size of the coefficients on negative and positive returns, $(\beta_1 + \beta_0)/\beta_0$, increases as we move from CFOI to CFO to XE (1.65, 2.60 and 3.64). Panel B reports adjusted R^2 s from separate regressions on the two samples. Results for CFOI show that the adjusted R^2 is

Table 2

Results from pooled cross-sectional regressions, excluding outliers, of beginning-of-period price deflated earnings and cash flow measures on contemporaneous inter-announcement period returns.

$$Y = \alpha_0 + \alpha_1 DR_{it} + \beta_0 R_{it} + \beta_1 R_{it} * DR_{it}$$

(+)

Panel A: Regression coefficients and adjusted R^2 s (%)^a

Y	α_0	α_1	β_0	β_1	Adj. R^2
CFOI _{it}	-0.010 (-6.43)**		0.059 (12.94)**		0.73
CFO _{it}	0.158 (127.48)**		0.124 (31.29)**		4.55
XE _{it}	0.073 (87.02)**		0.110 (48.27)**		9.31
CFOI _{it}	-0.004 (-1.33)	-0.003 (-0.69)	0.048 (6.27)**	0.031 (1.98)**	0.75
CFO _{it}	0.182 (69.67)**	-0.014 (-3.48)**	0.078 (11.78)	0.125 (9.79)**	5.02
XE _{it}	0.097 (72.27)**	-0.006 (-2.30)*	0.061 (19.20)**	0.161 (16.56)**	10.93

Panel B: Adjusted R^2 (%) from separate regressions on two samples

	Positive returns sample	Negative returns sample
CFOI	0.31	0.24
CFO	1.17	2.58
XE	2.64	5.58

Table 2 (continued)

Panel C: Multivariate *F*-statistics^b

Null hypotheses	Coefficients tested		
	α_1	β_0	β_1
<i>Restricted regressions</i> ($\alpha_1 = \beta_1 = 0$):			
XE = CFO = CFOI = 0		1336.42	[0.0001]
XE = CFOI		151.41	[0.0001]
XE = CFO		<u>21.77</u>	[0.0001]
CFO = CFOI		348.97	[0.0001]
<i>Unrestricted regressions:</i>			
XE = CFO = CFOI = 0	4.74	[0.0026]	157.74 [0.0001]
XE = CFOI		4.29	[0.0384] 60.64 [0.0001]
XE = CFO		<u>13.14</u>	[0.0003] 8.86 [0.0029]
CFO = CFOI		31.78	[0.0001] 43.98 [0.0001]

Notes: All firms listed on Compustat Merged Expanded Annual Industrial with OTC file or Compustat Merged Research Annual Industrial with OTC file and CRSP NYSE/AMEX Monthly Returns and Master file. Observations are grouped by the calendar year of the fiscal year-end. Observations falling in the top or bottom 1% of either price deflated earnings or cash flow measures or returns in each year are excluded. 34,266 firm-year observations from 1963 to 1990.

XE_{it} , CFO_{it} , and $CFOI_{it}$ are the per share earnings before extraordinary items and discontinued operations, cash flow from operations, and cash flow from operating and investing activities for firm i in fiscal year t , deflated by price per share at the beginning of the fiscal year. P_{it-1} ; R_{it} is the return on firm i from 9 months before fiscal year-end t to three months after fiscal year-end t .

DR_{it} is a dummy variable; = 1 if $R_{it} < 0$ (14,346 observations), = 0 otherwise (19,920 observations).

^aWhite (1980) heteroskedasticity-consistent t -statistics in parentheses.

^bExact F -statistics (two-tailed p -values) from individual cross-equation multivariate tests on regression coefficients. The restricted regressions impose equality on the intercepts and slope coefficients for positive and negative returns, while the unrestricted regressions relax this constraint. The multivariate F -statistics test cross-equation restrictions on the regression coefficients.

*Significant at the two-tailed 5% confidence level.

**Significant at the two-tailed 1% confidence level.

Statistics that test hypotheses are indicated in bold typeface, predicted signs are indicated in parentheses. Figures underlined indicate statistics contrary to priors, which are indicated in parentheses below the regression.

similar for 'good news' (0.31%) and 'bad news' (0.24%). However, for CFO and XE, the adjusted R^2 s are higher for 'bad news' (2.58% and 5.58%) than 'good news' (1.17% and 2.64%), and the increases in explanatory power as we move from CFOI to XE are greater for 'bad news' than 'good news'. These results are consistent with conservatism being reflected in accruals and not in cash flow.

Panel C reports the results of multivariate F-tests on equality of coefficients across regressions, which are appropriate when different dependent variables are regressed on common independent variables (Mardia et al., 1979).¹⁰ The tests on the slope coefficient for the difference in sensitivity to negative and positive returns, β_1 , indicate that the coefficient in the regression for CFOI is significantly smaller than that for CFO, which in turn is significantly smaller than that for XE. The coefficient on positive returns is significantly smaller for XE than CFO, suggesting that accrual adjustments make earnings less sensitive than CFO to 'good news'. These results suggest that the greater timeliness of accruals for 'bad news' than 'good news' makes a large contribution to the increased timeliness of earnings relative to cash flow.

Comparing Panel A of Table 1 with the XE regression in Panel A of Table 2, we see that excluding extraordinary items reduces the conservatism in earnings, but does not eliminate it. A replication after also excluding (pre-tax) 'special items' from earnings before extraordinary items resulted in a smaller but statistically significant difference in the slope coefficients (0.139), but almost identical R^2 s.¹¹

The increased timeliness of earnings over cash flows for 'bad news' but not 'good news' is consistent with accounting conservatism being reflected in accruals. I examine next how conservative accruals result in different time-series properties for earnings and cash flow.

4.3. Conservatism and the persistence of accounting measures conditional on news

Conservatism results in the lower persistence of earnings in bad news periods relative to good news periods. The underlying argument is that timeliness and persistence are different ways of viewing the same phenomenon. More timeliness means that more current value relevant news is recognized contemporaneously in earnings, leaving less current value relevant news to be recognized in future earnings. More persistence means that less current value relevant news is reported in current earnings, and more of it will be reported in future earnings. For example, a permanent earnings change implies that current earnings reflects a small fraction of the value relevant information in current returns (present value of current and future earnings changes). In contrast, a transitory or one-time earnings change implies that earnings concurrently reflects all the

¹⁰ These tests are an alternative to the Vuong likelihood test used in Dechow (1994), and provide a direct comparison of the timeliness of cash flow and earnings. Since SAS can provide these statistics as part of its output, future researchers might prefer this 'reverse' regression specification.

¹¹ This result is consistent with COMPUSTAT designated 'special items' being small in magnitude or number, possibly because many firms do not report write-offs as separate line items. Das and Lev (1994) also report that they find evidence of non-linearity even when they exclude extraordinary and 'special' items from earnings.

value-relevant information in returns. In this latter case, earnings is more timely.¹² Since earnings is predicted to be more timely for bad news, it is also predicted to be less persistent for bad news.

The prediction on asymmetric persistence can also be derived by examining the effect of conservatism on firms' earnings time-series. Conservatism implies that earnings anticipates future losses by concurrently reporting an estimate of the expected future cash flow consequences of current bad news. Future periods' reported earnings are protected from current bad news, so that next period's earnings will be close to what it would have been if no bad news were received currently. From a time-series viewpoint, the bad news reflected in current earnings will appear as a transitory shock or a one-time dip in the earnings process. In contrast, the effects of a current positive shock will be spread over several future periods' earnings as anticipated gains are realized. Thus, good news events are likely to appear as persistent shocks to the earnings stream.

In the fixed asset example in Fig. 1, good news affects depreciation and income over several periods. The current increase in earnings is not followed by any more changes. In contrast, bad news reduces current earnings through the write-off, but next year's earnings is higher than current earnings by the amount of the write-off. In other words, the current earnings decrease reverses in the next period.

Hypothesis 3: Negative earnings changes have a greater tendency to reverse in the following period than positive earnings changes.¹³

Evidence consistent with Hypothesis 3 has been documented in prior research. Brooks and Buckmaster (1976) show that extreme negative earnings levels show a greater mean-reverting tendency than extreme positive earnings. Elgers and Lo (1994) find that changes in both actual earnings and analysts' earnings forecasts have a greater tendency, on average, to reverse for firms with poor prior-year performance than for firms with good prior-year performance.

The hypothesis is tested cross-sectionally, as in Ball and Watts (1972) and Elgers and Lo (1994). A sample of 36,394 firm-year observations from 1964 to

¹² In the extreme, consider earnings being determined by marking-to-market all assets and liabilities. Earnings would be very timely in reflecting changes in the firm's market value. If the firm's risk did not change, then price-deflated expected earnings would be constant. In this case, current unexpected earnings would have no implication for future expected earnings, i.e. earnings would be transitory.

¹³ The choice between the levels and changes specifications for empirical tests depends upon the stationarity and cointegration of the earnings and return time-series. Finger (1994) indicates that the earnings changes specification is the preferred specification in time-series for three-quarters of her sample based on the Dickey–Fuller test. Hence, the changes specification is used in this paper. Basu (1995) reports results for the levels specification, which are consistent with those reported here.

1990 is used. Panel A of Table 3 reports that in cross-section, the price-deflated change in earnings tends to reverse in the next period, with a significant slope coefficient of -0.273 .

When intercept and slope dummies for negative prior earnings changes are included in Panel B, a significant and large difference in the reversion tendency for the two samples in the predicted direction is observed, and the adjusted R^2 doubles. The slope coefficient on positive prior earnings changes, -0.040 , is not statistically significant, consistent with good news in earnings being permanent. The slope on negative prior earnings changes, ($-0.692 = [-0.040 + -0.652]$), is significantly different from zero, but not significantly different from -1 , the theoretical limiting coefficient if negative earnings changes contain only bad news that reverse completely in the next period. Finally, the adjusted R^2 from a regression on negative prior earnings changes (24.19%, 15,413 observations) is much larger than that on positive prior earnings changes (0.68%, 20,981 observations). These results are consistent with bad news earnings changes having a greater tendency to reverse in the next period than good news earnings changes.¹⁴ Earnings level-based (Panel C) and return-based (Panel D) partitions produce weaker but qualitatively similar results.

To confirm that conservatism is reflected in accrual adjustments, the tests were replicated for XE, CFO, and CFOI, respectively on a sample of 28,376 firm-year observations from 1964 to 1990 (reported in Basu, 1995). Excluding extraordinary items, which are unusual and infrequent by definition and thus unlikely to recur, should make earnings changes reverse less. As expected, the slope coefficients on changes in XE were all more positive than their counterparts in Table 3. Consistent with conservatism being reflected in accruals, bad news cash flow changes reverse less than good news cash flow changes, although this difference is not statistically significant.

4.4. *Conservatism and the information content of earnings releases*

The final hypothesis examines how conservatism affects the capital markets' reaction to 'earnings news', the information that the markets learn when earnings is announced. The information content of earnings releases is usually measured by the short window earnings response coefficient (ERC), which is the abnormal return per unit of unexpected earnings at the earnings announcement.

¹⁴ Despite inclusion of Research file observations, the results reported for the persistence of earnings are potentially sensitive to the exclusion of failing firms because of data availability criteria (Hayn, 1995). This would lead to a greater likelihood of omitting permanent negative earnings changes and temporary positive earnings changes relative to other earnings changes, biasing the results in favor of Hypothesis 3. Maddala (1991) suggests correcting for this by using a truncated regression model.

Conditioning on a random walk model for earnings expectations (Ball and Watts, 1972), earnings changes proxy for unexpected earnings or ‘earnings news’. As seen in Table 3 (Panel B), positive earnings changes are more persistent than negative earnings changes. More persistent earnings surprises result in higher ERCs (Miller and Rock, 1985; Kormendi and Lipe, 1987; Collins and Kothari, 1989). Thus, firms with positive earnings changes are predicted to have higher ERCs than firms with negative changes. For example, one dollar of positive unexpected earnings is more likely to persist in future earnings than one dollar of negative unexpected earnings. Thus, when earnings is announced, the market will capitalize the one dollar positive unexpected earnings at a higher value than the one dollar negative unexpected earnings.

A short window abnormal return around the earnings announcement is used to isolate the market reaction to news conveyed by the earnings announcement. Since the abnormal return captures the market’s response to the ‘earnings news’, I specify the abnormal return as the dependent variable and the change in earnings as the independent variable for the regression test.

Hypothesis 4: In a regression of announcement period abnormal returns on earnings changes, the slope on positive earnings changes is higher than on negative earnings changes.

Hypothesis 4 predicts a stronger association between positive earnings changes (‘good earnings news’) and *announcement period* abnormal returns in contrast to Hypothesis 1 which predicts a stronger association between earnings and negative unexpected *annual* returns (‘bad news’). Hypothesis 1 examines how conservatism affects the accounting recognition of news that the capital markets learn from other sources *before* earnings is announced, e.g. government GDP or industry sales statistics. Hypothesis 4 examines how conservatism affects the capital markets’ reaction to managers’ privately observed information, e.g., sales margins, that first appears in earnings, and is incorporated in stock prices *when* earnings is announced. One major difference between the two tests is in the length of the return window: Hypothesis 1 uses a long window (association study) while Hypothesis 4 uses a short window (information content or event study). Another major difference is in the partitioning variables: Hypothesis 1 uses the sign of unexpected annual returns, while Hypothesis 4 uses the sign of unexpected earnings, because these variables measure the news in each test.

The slope predictions from the two hypotheses are consistent because Hypothesis 1 uses a ‘reverse’ regression while Hypothesis 4 uses the conventional specification. Both hypotheses assume that earnings is more sensitive concurrently to bad news. The slope coefficient in Hypothesis 1 is earnings variation per dollar of unexpected return (higher for bad news), while the slope coefficient in Hypothesis 4 is abnormal return variation per dollar of unexpected earnings (lower for bad news).

A sample of 28,923 firm-year observations from 1963 to 1990 is used to test Hypothesis 4. The sample is smaller than in the previous tests, primarily because monthly returns for the previous five fiscal years are used to estimate market model parameters and abnormal returns. Since most firms announce earnings in the two months after the fiscal year-end (e.g. Givoly and Palmon, 1982), abnormal returns for these two months, individually and together are calculated. Since annual earnings announcement dates are not reported on the annual COMPUSTAT tape, and because the quarterly COMPUSTAT tape has announcement dates only since 1980, I use monthly announcement period returns to test Hypothesis 4.

The first three regressions in Table 4 show that the announcement period abnormal returns are weakly associated with earnings changes. Intercept and slope dummy variables for the *positive* earnings change sample are included in the last three regressions. The slope coefficient of announcement period abnormal returns on positive earnings changes is significantly greater than the slope coefficient on negative earnings changes. This result is consistent with the market recognizing that ‘good earnings news’ is more persistent than ‘bad earnings news’ as a result of conservatism. The slope on ‘bad earnings news’, β_0 , is negative, but small and statistically insignificant, ranging from -0.000 to -0.014 .¹⁵ Separate regressions, not reported, on the two samples for the three return intervals reveal that the adjusted R^2 s are higher for ‘good earnings news’ (0.93%, 0.57%, and 0.34%; 18,567 observations) than ‘bad earnings news’ (0.00%, 0.02%, and -0.01% ; 10,336 observations). Overall, the results are consistent with the ‘good earnings news’ contributing most of the explanatory power in the full sample.

A potential alternative explanation for the lower ERCs and R^2 s for ‘bad earnings news’ in Table 4 is that earnings changes are worse proxies for ‘bad earnings news’ than ‘good earnings news’. Replications with each year’s cross-sectional median or mean change in earnings per share to partition good and bad ‘earnings news’ resulted in similar slope coefficients but higher adjusted R^2 s than those reported here. Because analysts’ earnings forecasts are not available for the 1960s and early 1970s, I do not use them to proxy for expected earnings. Hwang et al. (1996) show that IBES analysts’ consensus annual earnings forecasts one month before the earnings release are about ten times more biased and inaccurate for loss firms than profit firms. These results are robust to firm size and prior performance controls. Since analysts also forecast ‘bad earnings news’ poorly, it appears unlikely that the mismeasurement of ‘earnings news’ by earnings changes could explain the results in Table 4.

¹⁵ Freeman and Tse (1992) suggest that ERCs can be negative at the tails of the earnings distribution because the expected persistence goes to zero. It is possible that the negative earnings change results are dominated by the left tail since only a third of the observations (10,336) fall in the ‘bad earnings news’ sample.

Table 4

Coefficients and adjusted R^2 s (%) from pooled cross-sectional regressions, excluding outliers, of announcement period abnormal returns on beginning-of-period price-deflated change in earnings.

$$u = \alpha_0 + \alpha_1 DX_{it} + \beta_0 \Delta X_{it}/P_{it-1} + \beta_1 \Delta X_{it}/P_{it-1} * DX_{it}$$

(+)

u	α_0	α_1	β_0	β_1	Adj. R^2
$u_{i(t+1,t+2)}$	-0.009 (-12.96)*		-0.055 (8.69)*		0.36
u_{it+1}	-0.008 (-14.80)*		0.019 (3.81)*		0.07
u_{it+2}	-0.001 (-1.15)		0.036 (8.08)*		0.32
$u_{i(t+1,t+2)}$	-0.014 (-9.66)*	0.001 (0.53)	<u>-0.012</u> [-1.08]	0.114 (7.67)*	0.64
u_{it+1}	-0.007 (-6.47)*	-0.006 (-3.18)*	<u>-0.014</u> [-1.51]	0.075 (6.39)*	0.38
u_{it+2}	-0.006 (-5.89)*	0.006 (5.21)*	<u>-0.000</u> [-0.01]	0.043 (4.17)*	0.46

Note: White (1980) heteroskedasticity-consistent t -statistics in parentheses.

All firms listed on Compustat Merged Expanded Annual Industrial with OTC file or Compustat Merged Research Annual Industrial with OTC file and CRSP NYSE/AMEX Monthly Returns and Master file. Observations falling in the top or bottom 1% of the earnings change or abnormal return variables in any year have been excluded. 28,923 firm-year observations from 1963 to 1990.

X_{it} is the earnings for firm i in fiscal year t , ΔX_{it} is the change in earnings for firm i in fiscal year t over fiscal year $t-1$, P_{it-1} is the price per share at the beginning of the fiscal year, $u_{i(t+1,t+2)}$ is the abnormal return on firm i over the first two months after the fiscal year-end, u_{it+1} and u_{it+2} are the abnormal return for the first and second months after the fiscal year-end (proxies for the earnings announcement month), DX_{it} is a dummy variable, = 1 if $\Delta X_{it}/P_{it-1} > 0$, = 0 otherwise.

*Significant at the two-tailed 1% confidence level.

Statistics that test hypotheses are indicated in bold typeface; figures underlined indicate statistics contrary to predictions, which are indicated in parentheses below the regression.

5. Additional tests

I conduct some additional tests to increase confidence in my inferences. First, I test an implication of my argument that earnings is more timely in reflecting 'bad news' than 'good news'. Second, I examine whether changes in auditor legal liability exposure explain recent changes in conservatism.

5.1. Length of the measurement interval

Under 'clean surplus' accounting, over the life of a firm, all the news in returns is also reported in accounting earnings. Easton et al. (1992) argue that lengthening the aggregation interval reduces the relative lack of timeliness in earnings, thus improving the measured association with returns. Lev (1989), Easton et al. (1992), Kothari and Sloan (1992), Dechow (1994) and others show that the association between earnings and returns is stronger as the aggregation interval is lengthened. This suggests that the longer the aggregation period, the higher the explanatory power of publicly available 'good news' for earnings relative to 'bad news', and the less the difference in their slopes and R^2 s.

Table 5 presents results for a sample of 20,748 market-adjusted observations with variables cumulated over four year intervals. The adjusted R^2 s for both regressions are higher than in Panel B of Table 1, and the slope coefficient for the full sample is about one and a half times that in Panel B of Table 1, consistent with prior research. The difference between the slope coefficients for the 'good news' and 'bad news' samples, 0.215, is less than in Panel B of Table 1, which was 0.256. Moreover, the difference in the relative size of the slope coefficients drops from 6.45 to 2.57. Results from separate regressions on the two samples show that the adjusted R^2 for the 'bad news' sample (17.47%, 12,372 observations) remains greater than that for the 'good news' sample (10.88%, 8,375 observations), but that the relative and absolute difference have decreased. The results in Table 5 are consistent with a reduction in the effect of accounting conservatism on earnings as the aggregation interval increases.¹⁶

5.2. Variation in auditor legal liability exposure and conservatism over time

The legal liability exposure of auditors and managers for tardy disclosure of 'bad news' has increased significantly over the last three decades (Kothari et al., 1989; Skinner, 1994). Conservatism reduces auditors' liability exposure, and auditors are thus expected to have increased the asymmetric timeliness of earnings in response to exogenous increases in their legal liability exposure. Alternatively, it is possible that the courts enforce increased conservatism *because* contracting parties have increased their demand for conservatism (Ball, 1989).

¹⁶ Because overlapping four-year observations are used for the regressions, observations for any firm have an embedded MA(3) process, so that the standard errors estimated are inconsistent. Easton et al. (1992) report that limiting themselves to non-overlapping observations or only one (first, last or randomly chosen) observation per firm does not change their results or conclusions. The smoothing of earnings and returns by the MA(3) process should reduce the problem of time-series non-stationarity, and could explain why an unadjusted specification (reported in Basu, 1995), provides stronger results than the market-adjusted one reported here.

Table 5

Coefficients and adjusted R^2 s (%) from a pooled regression of market-adjusted beginning-of-period price deflated four year earnings on contemporaneous market-adjusted four year announcement period returns

$$\Sigma X_{it}/P_{it-4} = \alpha_0 + \alpha_1 DR_{mt} + \beta_0 IIR_{it} + \beta_1 IIR_{it} * DR_{mt}$$

(+) (+) (+)

α_0	α_1	β_0	β_1	Adj. R^2
(0.012 (4.31)*		0.217 (49.71)*		26.50
0.113 (18.10)*	- 0.024 (- 2.84)*	0.137 (20.35)*	0.215 (19.39)*	29.29
	Positive returns sample		Negative returns sample	
Adjusted R^2 (%)	10.88		17.47	
No. of observations	8,375		12,373	

Notes: White (1980) heteroskedasticity-consistent t -statistics in parentheses.

All firms listed on Compustat Merged Expanded Annual Industrial with OTC file or Compustat Merged Research Annual Industrial with OTC file and CRSP NYSE/AMEX Monthly Returns and Master file. Observations falling in the top or bottom 1% of either opening price or assets deflated earnings or returns have been excluded. 20,748 firm-four year observations, with the last of the four years ranging from 1966 to 1990.

ΣX_{it} is the earnings for firm i cumulated over fiscal years $t - 3$ through t , P_{it-4} is the price per share at the close of fiscal year $t - 4$, IIR_{it} is the buy-and-hold return on firm i from 9 months before the fiscal year-end $t - 3$ to three months after the fiscal year-end t . $\Sigma X_{it}/P_{it-4}$ is adjusted by its sample average for that year, IIR_{it} is adjusted by the CRSP equal weighted index.

DR_{mt} is a dummy variable, = 1 if $IIR_{it} < 0$ (12,373 observations), = 0 otherwise (8,375 observations).

*Significant at the two-tailed 1% confidence level.

Statistics that test hypotheses are indicated in bold typeface. Predicted signs are shown in parentheses below the regression.

Changes in auditors' liability exposure in recent decades are documented by Kothari et al. (1989). They describe the changes in auditors' effective liability since the early 1930s, and categorize this era into four distinct liability regimes: (1) a period before 1966 of low expected damages, (2) 1966–1975, a period of increased auditors' damages, (3) 1975–1982, a period of auditor liability lower than that in the preceding 10 years, and finally, (4) 1983–1986 and beyond, when auditors' liability expanded again. I compare the timing of changes in auditor liability exposure to the timing of changes in conservatism as a descriptive exercise.

Table 6 replicates the regression in Table 1 Panel B with interactive dummies for the different subperiods. Market-adjusted variables are used to control for

Table 6

Coefficients from pooled cross-sectional regressions, excluding outliers of beginning-of-period price deflated earnings on contemporaneous inter-announcement period returns with dummies for different auditor liability regimes. Both variables are market-adjusted.

$$X_{it}/P_{it-1}^m = \alpha_0 + \alpha_1 DR_{mt} + \beta_0 R_{it}^m + \beta_1 DR_{mt} * R_{it}^m$$

Liability regime	Dummy variable	α_0	α_1	β_0	β_1	Adj. R^2
Low (1963–66)		0.002 (1.12)	0.000 (0.01)	0.034 (4.74)**	0.009 (0.93)	
High (1967–75)	$D_{1967-90}^1$	0.015 (5.10)**	0.020 (4.26)	0.038 (3.54)**	0.178 (8.92)**	
Low (1976–82)	$D_{1976-90}^1$	0.019 (5.24)**	-0.027 (-4.69)**	-0.039 (-3.70)**	0.002 (0.08)	
High (1983–90)	$D_{1983-90}^1$	0.005 (1.38)	0.032 (5.62)**	0.001 (0.12)	0.214 (9.60)**	13.48

Notes: White (1980) heteroskedasticity-consistent t -statistics in parentheses.

All firms listed on Compustat Merged Expanded Annual Industrial with OTC file or Compustat Merged Research Annual Industrial with OTC file and CRSP NYSE/AMEX Monthly Returns and Master file. Observations are grouped by the calendar year of the fiscal year-end. Observations falling in the top or bottom 1% of either price or asset deflated earnings or returns in each year are excluded. 43,321 firm-year observations from 1963 to 1990.

X_{it} is the earnings per share for firm i in fiscal year t , P_{it-1} is the price per share at the beginning of the fiscal year, R_{it}^m is the buy-and-hold return on firm i from 9 months before fiscal year-end t to three months after fiscal year-end t adjusted by the corresponding market return, X_{it}/P_{it-1}^m is the EP ratio adjusted by the average EP ratio for sample firms in fiscal year t , DR_{mt} is a dummy variable; = 1 if $R_{it}^m < 0$, = 0 otherwise.

^aThe coefficients on the rows corresponding to $D_{1967-90}^1$, $D_{1976-90}^1$, and $D_{1983-90}^1$ are the coefficients on the product of the dummy variable on that row and the variable at the top of the column. The reported coefficients in the four rows correspond to the subperiods 1963–66, 1967–75, 1976–82 and 1983–90 respectively. Each reported coefficient under α_0 and β_0 measures the difference in that coefficient between the current and immediately previous subperiods. Each reported coefficient under α_1 (β_1) measures the difference between the α_1 (β_1) coefficient for the current subperiod and the sum of the reported α_1 (β_1)s in the current and all previous subperiods.

*Significant at the two-tailed 5% confidence level.

**Significant at the two-tailed 1% confidence level.

Statistics that test hypotheses are indicated in bold typeface.

time-series non-stationarity. During the initial low auditor liability regime of 1963–66, the coefficient on market-adjusted returns is small, and the difference in the slope coefficients for ‘good’ and ‘bad’ news, 0.009, is insignificant. During the increased auditor liability regime of 1967–75, the slope

coefficient on 'good news' doubles to 0.072 ($= 0.034 + 0.038$), while the coefficient on 'bad news' increases six-fold from 0.043 ($= 0.034 + 0.09$) to 0.259 ($= 0.034 + 0.009 + 0.038 + 0.178$). The increase in the difference in sensitivity to 'good' and 'bad' news, 0.178, is statistically significant. The low auditor liability regime in 1976–82 coincides with a drop in the sensitivity of earnings to both 'good news', 0.033, and 'bad news', 0.222. The final high auditor liability regime of 1983–90 sees no increase in sensitivity to 'good news', but a large and significant increase in the sensitivity to 'bad news', of 0.214. The slope coefficient of 0.437 on 'bad news' for 1983–90 is nearly thirteen times that on 'good news', 0.034. The high asymmetric timeliness of earnings after 1983 is consistent with a rational response by auditors to being exposed greater legal liability after 1983.

Elliott and Shaw (1988) report increasing write-offs after 1983, which is consistent with a correlation between legal liability increases and writeoffs. Hayn (1995) reports that the percentage of firms reporting losses has grown over the last three decades, which is consistent with conservatism increasing over this time period. Stober (1994) provides mixed evidence that the degree of conservatism in accounting has increased over the period 1974–92, using annual cross-sectional regressions based on the Feltham and Ohlson (1995) model. However, none of these papers examines fluctuations in the degree of conservatism over time, nor their causes.

Annual cross-sectional regressions for each year (reported in Basu, 1995) corroborate the results in Table 6. The annual slope coefficients on 'good' and 'bad' news are plotted in Fig. 3. From 1963 to 1966, a period of low auditor liability, the coefficient on 'bad news' does not differ much from that on 'good news'. Over the next 24 years, the coefficient on 'bad news' is greater than that on 'good news' in every year, and significantly greater at the 1% level in 20 out of 24. The difference in the coefficients grows during the high auditor liability period 1966–75, and then drops down to a lower level during the low auditor liability period 1976–82. From 1983 onwards, a high auditor liability period, the coefficient on 'bad news' is always at least five times as large as that on 'good news', and fifteen times larger in 1989. Over these last eight years, the coefficient on 'good news' is significant in only four years, whereas that on the dummy for 'bad news' is always significant, and the absolute difference in the coefficients ranges from 0.33 to 0.51. Fig. 3 indicates that the results in Table 6 did not reflect unusual circumstances or outliers in a few years.

The evidence indicates a correlation between changes in auditor legal liability exposure and changes in accounting conservatism. However, since the changes in the slope coefficients in Fig. 3 do not align exactly with the liability regimes, the results should be interpreted cautiously. I also emphasize that the apparent auditor response to increased liability exposure was not to make earnings more biased, but to make it more timely in recognizing 'bad news'.

Since the evidence is also consistent with changes in other variables causing changes in both auditors' liability exposure and accounting conservatism,

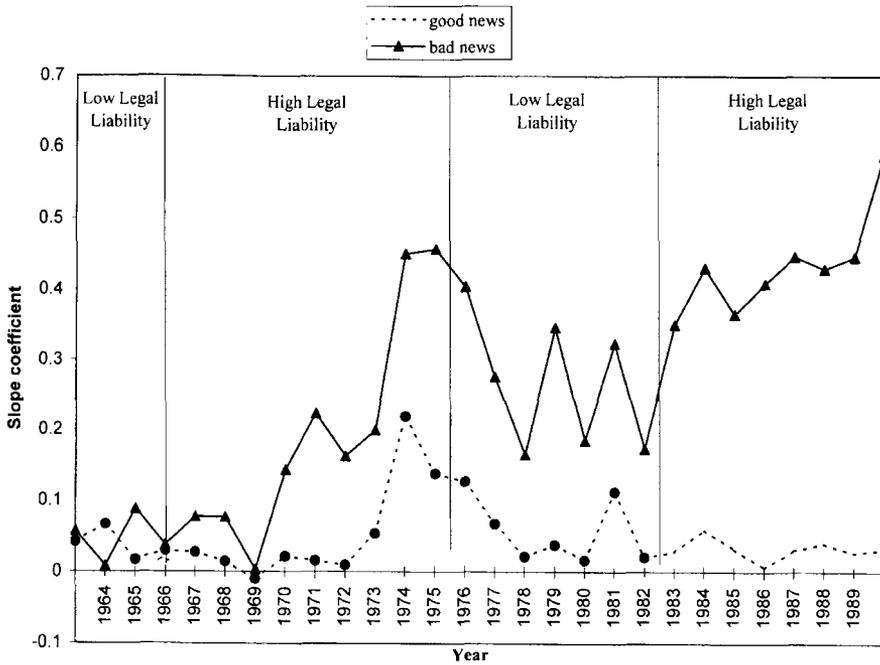


Fig. 3. Slope coefficients of market-adjusted earnings on positive and negative market-adjusted returns (1963–90).

causality is not inferred. Recent recognition requirements for previously off-balance sheet liabilities such as pensions, post-retirement health benefit obligations and environmental liabilities, along with their associated expenses, potentially explain the increase in the measured degree of conservatism in earnings. More rapid technological change might result in greater volatility in asset values, and under U.S. GAAP, more writeoffs of assets, but no writeups, which would increase the measured degree of conservatism. Changes in contractual forms and tax regulations are some other potential alternative explanations for the findings in this subsection.¹⁷

¹⁷ A number of contractual forms have emerged or grown significantly over the last few decades, including franchising, derivative contracts and leasing. To the extent that these new contracts contain debt-like features and do not replace traditional debt, they increase the demand for conservatism, because debtholders have an asymmetric loss function that induces demand for more timely information about 'bad news'. Changes in tax and other regulations affecting corporations have also probably affected the degree of conservatism, through attempts to avoid or mitigate their costs. The new contracts and regulations have likely arisen due to exogenous cost declines in contracting and information processing technology (supply side shocks) and/or as a response to new contracting needs due to exogenous changes in the competitive environment (demand side shocks).

The next section examines some alternative explanations for the results I ascribe to conservatism.

6. Alternative explanations

6.1. Shareholders' liquidation or abandonment option

Hayn (1995) argues that shareholders would prefer to liquidate a firm rather than bear predictable losses, i.e., they have a put option on the firm. Hence, observed losses are those that were expected to be temporary. This implies that reported losses should be less persistent than reported profits, and Hayn (1995) predicts and shows that in a regression of annual returns on annual earnings, the slope coefficient and R^2 are higher for profit firms (firms currently reporting profits) than loss firms (firms currently reporting losses). This prediction is displayed in Fig. 4. A comparison of Fig. 4 with Fig. 2 shows that they are reflections of each other along the 45° line, because their axes are reversed. In other words, the slope coefficient prediction from the abandonment option is the same as that under conservatism. However, conservatism predicts a higher

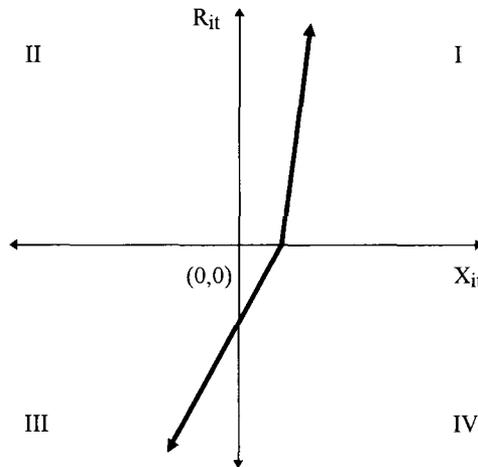


Fig. 4. Hypothesized association between returns and earnings under liquidation option.

X_{it} and R_{it} are earnings and stock returns, respectively, for firm i in year t . Quadrant I contains observations with positive earnings and positive returns. Quadrant II contains observations with negative earnings and positive returns. Quadrant III contains observations with negative earnings and negative returns. Quadrant IV contains observations with positive earnings and negative returns.

R^2 for bad news or negative return firms, while the abandonment option theory predicts a higher R^2 for good news or profit firms.

I replicated the test by Hayn (1995) using the sample in Table 1 (Panel A) and found that the earnings–return R^2 was greater for profit firms than for the full sample. These results are consistent with hers. However, when I used the market-adjusted sample in Panel B of Table 1, the R^2 was greater for the full sample than for profit firms only, contrary to the prediction by Hayn (1995). Chambers (1996) reports that when sample firms are size-matched, loss firms have a higher R^2 than profit firms. Thus, Hayn's annual R^2 results (Hayn, 1995) appear sensitive to risk-adjustment, while the conservatism prediction is not rejected under many different specifications. Also, conservatism predicts the positive regression intercepts in Table 1, while the abandonment option theory has no prediction on the intercepts.

Hayn (1995) also predicts that profit firms should have a higher ERC and R^2 when returns are measured over short windows around the earnings announcement. This is similar to Hypothesis 4 which predicts that firms with 'good earnings news' should have a higher ERC and R^2 . Table 4 uses earnings changes as a measure of news, while Hayn (1994) uses earnings levels, with similar results.

The abandonment option theory neither predicts the systematic impact of accruals on the asymmetric timeliness of earnings in Section 4.2, nor the systematic differences in the time-series properties of earnings and cash flow in Section 4.3. The time-series variation in the earnings–return relation in Section 5.2 is consistent with changes in conservatism related to changes in auditor liability exposure. The abandonment option theory does not predict this time-series variation in the earnings–return relation. In sum, the abandonment option theory does not explain all the conservatism results, although some predictions and results are similar.¹⁸

6.2. *Delayed disclosure of bad news by opportunistic managers*

McNichols (1988) argues that opportunistic managers have incentives to leak upcoming good news before earnings is disclosed, and earnings announcements will thus reveal relatively more 'bad earnings news' to the market. This argument is consistent with viewing conservatism as a mechanism for managers to bond against exploiting their asymmetrically informed position relative to other stakeholders, so that the earnings report via auditing and conservatism often conveys the first tidings of bad news. McNichols' predicts and finds that returns

¹⁸ Basu (1995) and many others show that the scaled distribution of earnings is significantly left-skewed, which is consistent with conservatism, but inconsistent with the abandonment option theory.

are negatively skewed at earnings announcements relative to the rest of the year. Although this theory implies that firms with ‘bad earnings news’ will have bigger market reactions on average at the earnings announcement, it does not make a prediction about per unit reactions (ERCs).

6.3. Managers’ incentives to disclose bad news early

Skinner (1994) argues that managers release bad news early before earnings are announced to reduce their investor litigation exposure. This parallels my argument that U.S. accounting has become more conservative as a response to increased auditor liability exposure. Skinner (1994) finds that large negative earnings surprises are preempted by voluntary corporate disclosures more often than other earnings releases. Such early disclosures of bad news could lead to a lower ERC for negative earnings changes when earnings are announced because the bad news was preempted.

Managers may also disclose bad news early to deter entry or competition in their firms’ product markets (Darrrough and Stoughton, 1990; Wagenhofer, 1990) or to signal their ‘quality’ (Teoh and Hwang, 1991). These incentives potentially reinforce those arising from their legal liability exposure.

6.4. Effect of mandated accounting changes

The large one-time transition effects that firms recognized when they adopted new accounting standards for liabilities such as pensions and healthcare benefits could potentially confound my results on conservatism. However, Balsam et al. (1995) show that firms adopting new FASB standards tend to report income-increasing effects for prior years in the income statement (after extraordinary items); and income-decreasing effects directly in retained earnings, thus shielding net income. This evidence suggests that new mandated accounting standards do not account for the greater sensitivity of earnings to bad news than good news.

7. Conclusion

I investigate the effects of the conservatism principle on reported financial statements. I characterize conservatism in accounting as the more timely recognition in earnings of bad news regarding future cash flows than good news. In efficient markets, stock returns symmetrically and quickly reflect all publicly available ‘news’. I thus use returns to measure ‘news’.

The greater timeliness of earnings for bad news implies that earnings is contemporaneously more sensitive to negative unexpected returns than positive

unexpected returns, as measured by the slope coefficient and R^2 from a 'reverse' regression of earnings on returns. I show that the concurrent sensitivity of earnings to negative returns is two to six times as large as the concurrent sensitivity of earnings to positive returns. The results are robust across several specifications. The conclusion is that earnings is more timely in reporting publicly available 'bad news' about future cash flows than 'good news'.

Further, I hypothesize that conservatism acts through accruals, leading to predictable differences in the properties of cash flow and earnings. I show that the greater timeliness of earnings relative to cash flow (Dechow, 1994) is due primarily to more timely recognition of 'bad news' through accruals. Accruals do not improve the timeliness with which 'good news' is reported in earnings relative to cash flow.

Since conservatism results in losses being anticipated in earnings but gains being postponed pending realization, I argue that negative earnings changes reverse more than positive earnings changes. I find that positive earnings changes tend to persist whereas negative earnings changes show a marked tendency to reverse, consistent with Brooks and Buckmaster (1976) and Elgers and Lo (1994). This difference in persistence implies that positive earnings changes have higher ERCs than negative earnings changes in a conventional regression of abnormal returns on earnings changes. Tests support this hypothesis, and are consistent with similar findings reported by Hayn (1995).

Tests reveal that the sensitivity of earnings to concurrent negative returns has increased relative to the sensitivity of earnings to concurrent positive returns over the last three decades, suggesting that conservatism has increased over time. Increases in conservatism coincide with increases in auditors' legal liability exposure.

References

- Accounting Principles Board (APB), 1965. Accounting Principles Board Opinion No. 6, Status of Accounting Research Bulletins. American Institute of Certified Public Accountants (AICPA), New York.
- Accounting Principles Board (APB), 1973. Accounting Principles Board Opinion No. 30, Reporting the results of operations. American Institute of Certified Public Accountants (AICPA), New York.
- Ball, R., 1989. The firm as a specialist contracting intermediary: Application to accounting and auditing. Working Paper, University of Rochester.
- Ball, R., Brown, P., 1968. An empirical evaluation of accounting income numbers. *Journal of Accounting Research* 6, 159–178.
- Ball, R., Watts, R., 1972. Some time series properties of accounting income. *Journal of Finance* 27, 663–682.
- Balsam, S., Haw, I., Lilien, S.B., 1995. Mandated accounting changes and managerial discretion. *Journal of Accounting and Economics* 20, 3–29.

- Basu, S., 1995. Conservatism and the asymmetric timeliness of earnings, Ph.D. thesis, University of Rochester, Rochester, New York.
- Beaver, W.H., Lambert, R., Morse, D., 1980. The information content of security prices. *Journal of Accounting and Economics* 2, 3–28.
- Belkaoui, A., 1985. *Accounting theory*. 2nd edition., Harcourt Brace Jovanovich, Orlando, Florida.
- Bliss, J.H., 1924. *Management through accounts*. The Ronald Press Co., New York.
- Brooks, L., Buckmaster, D., 1976. Further evidence of the time series properties of accounting income. *Journal of Finance* 31, 1359–1373.
- Chambers, D.J., 1996. The usefulness of accounting information: The case of firms reporting negative earnings (Work-in-progress), University of Texas at Austin.
- Christie, A.A., 1987. On cross-sectional analysis in accounting research. *Journal of Accounting and Economics* 9, 231–258.
- Christie, A.A., 1990. Aggregation of test statistics: An evaluation of the evidence on Contracting and Size Hypotheses. *Journal of Accounting and Economics* 12, 15–36.
- Collins, D.W., Kothari, S.P., 1989. An analysis of intertemporal and cross-sectional determinants of earnings response coefficients. *Journal of Accounting and Economics* 11, 143–182.
- Collins, D.W., Kothari, S.P., Shanken, J., Sloan, R.G., 1994. Lack of timeliness versus noise as explanations for low contemporaneous returns-earnings associations. *Journal of Accounting and Economics* 18, 289–324.
- Committee on Accounting Procedures (CAP), 1939. Accounting Research Bulletin No. 2, Unamortized discount and redemption premium on bonds refunded. American Institute of Certified Public Accountants (AICPA).
- Committee on Accounting Procedures (CAP), 1953. Accounting Research Bulletin No. 43, Restatement and revision of Accounting Research Bulletins Nos. 1–42, and Accounting Terminology Bulletin No. 1. American Institute of Certified Public Accountants (AICPA).
- Committee on Accounting Procedures (CAP), 1955. Accounting Research Bulletin No. 45, Long-term construction-type contracts. American Institute of Certified Public Accountants (AICPA).
- Darrough, M.N., Stoughton, N.M., 1990. Financial policy in an entry game. *Journal of Accounting and Economics* 12, 219–243.
- Das, S., Lev, B., 1994. Nonlinearity in the returns-earnings relation: tests of alternative specifications and explanations. *Contemporary Accounting Research* 11, 353–379.
- Dechow, P.M., 1994. Accounting earnings and cash flows as measures of firm performance: The role of accounting accruals. *Journal of Accounting and Economics* 18, 3–42.
- Easton, P., Harris, T., 1991. Earnings as an explanatory variable for returns. *Journal of Accounting Research* 29, 19–36.
- Easton, P., Harris, T., Ohlson, J., 1992. Aggregate accounting earnings can explain most of security returns: The case of long return intervals. *Journal of Accounting and Economics* 15, 119–142.
- Elgers, P.T., Lo, M.H., 1994. Reduction in analysts' annual earnings forecast errors using information in prior earnings and security returns. *Journal of Accounting Research* 32, 290–303.
- Elliott, J.A., Shaw, W.H., 1988. Write-offs as accounting procedures to manage perceptions. *Journal of Accounting Research* 26 (Supplement), 91–119.
- Feltham, G., Ohlson, J.A., 1995. Valuation and clean surplus accounting for operating and financial activities. *Contemporary Accounting Research* 11, 689–731.
- Financial Accounting Standards Board (FASB), 1976. Interpretation No. 14, Reasonable estimation of the amount of a loss: an interpretation of FASB Statement No. 5, Norwalk, CT.
- Financial Accounting Standards Board (FASB), 1978. Statement of Financial Accounting Concepts No. 1. Objectives of financial reporting by business enterprises. Norwalk, CT.

- Financial Accounting Standards Board (FASB), 1980. Statement of Financial Accounting Concepts No. 2. Qualitative characteristics of accounting information, Norwalk, CT.
- Financial Accounting Standards Board (FASB), 1984. Statement of Financial Accounting Concepts No. 5, Recognition and measurement in financial statements of business enterprises. Norwalk, CT.
- Finger, C.A., 1994. The ability of earnings to predict future earnings and cash flow. *Journal of Accounting Research* 32, 210–223.
- Freeman, R.N., Tse, S.Y., 1992. A nonlinear model of security price responses to unexpected earnings. *Journal of Accounting Research* 30, 185–209.
- Givoly, D., Palmon, D., 1982. Timeliness of annual earnings announcements: Some empirical evidence. *The Accounting Review* 57, 486–508.
- Hayn, C., 1995. The information content of losses. *Journal of Accounting and Economics* 20, 123–153.
- Hwang, L., Jan, C., Basu, S., 1996. Loss firms and analysts' earnings forecast errors. *Journal of Financial Statement Analysis* 1 (2), 18–30.
- Kormendi, R., Lipe, R., 1987. Earnings innovations, earnings persistence and stock returns. *Journal of Business* 60, 323–345.
- Kothari, S.P., Lys, T., Smith, C.W., Watts, R.L., 1989. Auditor liability and information disclosure. *Journal of Accounting, Auditing and Finance* 4, 307–339.
- Kothari, S.P., Sloan, R., 1992. Information in prices about future earnings: Implications for earnings response coefficients. *Journal of Accounting and Economics* 15, 143–172.
- Leftwich, R., 1983. Accounting information in private markets: Evidence from private lending agreements. *The Accounting Review* 58, 23–42.
- Lev, B., 1989. On the usefulness of earnings: Lessons and directions from two decades of empirical research. *Journal of Accounting Research* 27 (Supplement), 153–192.
- Maddala, G.S., 1991. A perspective on the use of limited-dependent variables and qualitative variables in accounting research. *The Accounting Review* 66, 788–807.
- Mardia, K.V., Kent, J.T., Bibby, J.M., 1979. *Multivariate Analysis*. Academic Press, London.
- McNichols, M., 1988. A comparison of the skewness of stock return distributions at earnings and non-earnings announcement dates. *Journal of Accounting and Economics* 10, 239–273.
- Miller, M.H., Rock, K., 1985. Dividend policy under asymmetric information. *Journal of Finance* 40, 1031–1051.
- Penndorf, B., 1930. The relation of taxation to the history of the Balance Sheet. *The Accounting Review* 5, 243–251.
- Rayburn, J., 1986. The association of operating cashflow and accruals with security returns. *Journal of Accounting Research* 24 (Supplement), 112–133.
- St. Pierre, K., Anderson, J.A., 1984. An analysis of the factors associated with lawsuits against Public Accountants. *The Accounting Review* 59, 242–263.
- Savary, J., 1712. *Le parfait negociant*, 6th edition.
- Skinner, D.J., 1994. Why firms voluntarily disclose bad news. *Journal of Accounting Research* 32, 38–60.
- Smith, C.J., 1979. Applications of options pricing analysis. In: Bicksler, J.L. (Ed.), *Handbook of Financial Economics*. North-Holland, Amsterdam, pp. 79–121.
- Stober, T.L., 1994. Do prices behave as if accounting is 'conservative'? Cross-sectional evidence from the Feltham–Ohlson valuation model, Work-in-progress. Indiana University, Bloomington, September.
- Teoh, S.H., Hwang, C.Y., 1991. Nondisclosure and adverse selection as signals of firm value. *Review of Financial Studies* 4, 283–313.
- Wagenhofer, A., 1990. Voluntary disclosure with a strategic opponent. *Journal of Accounting and Economics* 12, 341–363.

- Watts, R.L., Zimmerman, J.L., 1986. *Positive accounting theory*. Prentice Hall, Englewood Cliffs, NJ.
- Watts, R.L., Zimmerman, J.L., 1990. Positive accounting theory: A ten year perspective. *The Accounting Review* 66, 131–156.
- White, H., 1980. Heteroskedasticity consistent covariance matrix estimator and a direct test of heteroskedasticity. *Econometrica* 48, 817–838.