The Pricing of Conservative Accounting and the Measurement of Conservatism at the Firm-Year Level

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January 5, 2006

Abstract

This paper analyzes the pricing of conservative accounting and introduces a new measure of conservatism. We contribute to the conservatism literature in two main ways. First, we analyze the nonlinear pricing of conservatism using the model of Vuolteenaho (2002) and investigate the pricing implications of special items which are one of the main accrual items through which conservatism is facilitated. Our conceptual analysis implies – and our empirical results show - that the asymmetric properties of conservative accounting generate a nonlinear relation between the unexpected revision in equity returns and earnings news. Earnings news is the conceptually correct measure of an earnings surprise and is defined as the shock to the discounted sum of expected current and future earnings over the lifetime of the firm. In addition, the analysis implies that the GAAP treatment of special items generates a nonlinear and discontinuous relation between unexpected revisions in equity returns and special items. Second, based on this model, we construct a conservatism ratio (CR) at the *firm-year* level that unlike previous measures of conservatism is a function of *contemporaneous* good or bad news. CR is defined as the ratio of the current earnings surprise to total earnings news and measures how much of the total shock to expected current and future earnings is incorporated into current year earnings. We show empirically that CR incorporates bad news faster than good news at the firm and year level, consistent with conservative accounting.

Acknowledgments

We have benefited from comments by Gus De Franco, Peter Easton, Hai Lu, Stephen Ryan, and workshop participants at the Hebrew University, University of Notre Dame Tel-Aviv University and the University of Toronto. Hope gratefully acknowledges the financial support of the Deloitte & Touche Junior Professorship.

1. Introduction

This paper analyzes the pricing of conservative accounting and introduces a new measure of conservatism at the *firm-year* level. We contribute to the conservatism literature in two main ways. First, we analyze the nonlinear pricing of conservatism using the return decomposition model of Vuolteenaho (2002) and investigate the pricing implications of special items, one of the major accrual items through which conservatism is facilitated. Our conceptual analysis implies – and our empirical results show - that the asymmetric properties of conservative accounting generate a nonlinear relation between the unexpected revision in equity returns and earnings news. Earnings news is the conceptually correct measure of an earnings surprise and is defined as the shock to the discounted sum of expected current and future earnings over the lifetime of the firm. In addition, the analysis implies that the GAAP treatment of special items generates a nonlinear and discontinuous relation between unexpected revisions in equity returns and special items. Second, based on the Vuolteenaho (2002) model, we construct a conservatism ratio (CR) at the firm-year level defined as the asymmetry between gain and loss recognition timeliness. Specifically, CR is computed as the ratio of the current earnings surprise to earnings news. Hence, CR shows how much of the total shock to expected current and future earnings (cash flows) is incorporated into current year earnings. By this criterion, firm A is more conservative than firm B at time t if A's conservatism ratio is greater (less) than B's conservatism ratio for a given negative (positive) earnings shock measured at time t.

This paper analyzes the properties of the Vuolteenaho (2002) model in the presence of conservative accounting by reference to Basu's (1997) framework. Basu and subsequent research assume that positive (excess) returns are "good" news and negative returns are "bad" news. Regressing earnings on positive and negative returns, Basu and subsequent studies find that the coefficient on negative returns (bad news) is greater than the coefficient on positive returns (good news) indicating that bad news is reflected faster in earnings than is good news.

Using the Vuolteenaho (2002) model to investigate conservatism is appealing for the following reasons. First, good and bad news in the model are defined in terms of *shocks* (revisions) to returns and not return levels.[1] To see why the shocks definition is important, suppose that returns are expected to be 15% and, because of a new information shock, returns expectations are revised downwards to 5%. This is surely bad news despite the fact that returns are positive. Second, the model shows that shocks to returns are not merely a function of the conventionally measured earnings surprise but rather are a function inter alia of earnings news.[2] Specifically, unless shocks to current earnings are completely transitory, they affect expectations of future earnings as well. Therefore, the impact of good and bad news on current earnings, or even on the conventional earnings surprise, is a biased measure of the shock to future cash flows, and therefore an insufficient metric of conservative accounting. Third, the model explicitly accounts for shocks to time-varying expected discount rates (expected return news). This issue is potentially important because, as shown by Campbell, Lo, and MacKinlay (1997, p. 265), among others, small changes in expected discount rates can have a large impact on security returns, especially when expected returns are persistent. Fourth, the model provides the inputs to our conservatism ratio measured at the *firm-year* level.

This study starts with a conceptual analysis which illustrates the pricing properties of conservatism, namely that negative shocks to current and future earnings (cash flows) are impounded faster into equity prices than are positive shocks. In general, conservatism is implemented through accounting accruals. One of the primary functions of accruals is to allow for the timely recognition of gains and losses due to unanticipated revisions of expected future cash flows.[3] For example, asset write-downs are accrual expenses that

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[1] Positive (negative) raw returns are neither necessary nor sufficient conditions for good (bad) news. Basu (1997), in a sensitivity analysis, subtracts total market returns from firm returns. However, this measure of unexpected returns is potentially misspecified because it fails to account for systematic risk. Some recent papers recognize the importance of using unexpected returns (e.g., Ball and Shivakumar 2005b).

[2] The conventional view of the earnings-return paradigm is that the current level of earnings provides information about expected future cash flows and, this in turn determines the current level of security returns. We do not contest this. However, the standard Basu-type analysis of conservative accounting focuses correctly on the asymmetry between "good" news and "bad" news events on equity valuation. Good news and bad news refer to revisions or equivalently to shocks, not levels. Thus, it is more useful to analyze conservative accounting with a revisions approach rather than a levels approach. Specifically, the perspective of this study is that revisions to current earnings provide information about revisions to expected future cash flows which, in turn, determines revisions to equity returns.

[3] The other primary function of accruals is to construct an earnings variable that is less noisy than cash flows from operations by matching expenses with the revenues generated by those expenses. The resulting earnings measure is then a better predictor of future net cash flows than current cash from operations. Indeed, the Financial Accounting Standards Board (Statement of Financial Accounting Concepts No. 1, FASB 1978) has taken the position that earnings measured by accrual accounting provide a better

reflect unexpected negative shocks to future cash flows generated from the asset. Because of the conservative nature of Generally Accepted Accounting Principles (GAAP), positive and negative shocks to future cash flows are treated asymmetrically. Losses are recognized (accrued) immediately while gains are normally deferred until the shocks to cash flows are realized. As a consequence, accrual losses provide more timely recognition of shocks to future cash flows than gains.[4] Recent research recognizes the role of accruals when examining the properties of conservatism (e.g., Ball and Shivakumar 2005a; 2005b). Still, not all accruals are equally timely nor are they all equally informative. For example, asset write-downs are likely to provide more timely information to the capital markets about shocks to future cash flows than depreciation expense. Indeed, Givoly, Hayn, and Natarajan (2004) suggest analyzing conservatism focusing on disaggregated earnings measures. We therefore analyze the properties of conservatism via special items because write-offs (of inventory, property, plant, and equipment, and other assets) and other one-time expenses, such as restructuring charges, generally are classified as special items. There is also evidence in the literature that special items are predominately negative, consistent with special items being an accrual through which conservatism is implemented.

Although special items are one of the main accounts through which conservatism is achieved, we show conceptually and empirically that special items are an imperfect measure of conservatism relative to earnings news.[5] Briefly, consider negative shocks to future cash flows. In an ideal world in which book depreciation equals economic depreciation, firms have a 100 percent dividend payout ratio, and special items are properly defined, earnings news and special items are perfectly positively correlated. However, in practice, because of (i) the gap between economic and book depreciation, (ii) the less than 100 percent dividend payout ratio, and (iii) the definition of asset impairments under GAAP, special items are a noisy and discontinuous measure of negative earnings news. As a consequence, special items and earnings news are less than

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indication of firm performance and future cash flows than do current cash flows. See also Dechow (1994), Guay, Kothari, and Watts (1996), and Dechow, Kothari, and Watts (1998).

[4] See Basu (1997), Ball, Robin, Wu (2000, 2003), Ball, Kothari, Robin (2000), and Ball and Shivakumar (2005a, 2005b).

[5] Ceteris paribus, a measure of conservatism is of higher quality compared to another measure when its correlation with revision (negative and positive) in returns is higher.

perfectly positively correlated. The situation of positive shocks to future cash flows fares no better. In general, in a world of conservative accounting, positive earnings news and special items are uncorrelated because positive special items are unrecorded and, therefore, do not provide a signal of positive earnings news. However, under current GAAP, positive special items are sometimes recorded and provide a noisy measure of positive earnings news. Hence, positive special items and positive earnings news are weakly positively correlated.

Overall, the conceptual analysis shows that the asymmetric recognition of revisions in current and expected future earnings because of conservatism generates a nonlinear increasing (concave) relation between the unexpected revision in equity returns and earnings news. Specifically, the revision in equity returns is more positively associated with negative shocks than with positive shocks. In addition, the analysis shows that the asymmetry property of conservatism generates a nonlinear discontinuous relation (quasi-concave) between the unexpected revision in equity returns and special items. Moreover, given the superiority of earnings news over special items in explaining revisions in unexpected returns, the conceptual analysis shows that the association between the unexpected revision in equity returns and earnings news is a priori stronger than the association between the unexpected revision in equity returns and special items.

The empirical results are consistent with the implications of the conceptual analysis. In particular, we find that the hypothesized nonlinear relation between the revision in equity returns and earnings news is highly significant and increasing concave as predicted. We further find that the (positive) association between negative earnings news and special items is significant and larger than the (positive) association between positive earnings news and special items. We also find that the nonlinear relation between the revision in equity returns and special items is increasing concave.

Finally, we establish the properties of the conservatism ratio. We show empirically that CR incorporates bad news faster than good news at the firm-year level. More specifically, we demonstrate that when there is a negative shock to future cash flows, a greater proportion of the shock is incorporated into current period earnings than when there is a positive shock. This finding is consistent with the asymmetric timeliness of conservative accounting.

In what follows, Section 2 briefly reviews the literature on conservatism and special items, and Section 3 presents the conceptual analysis. Section 4 describes the return decomposition model and the measure of earnings news. Section 5 describes the data and Section 6 provides the empirical results. Section 7 concludes.

2. Literature Review

2.1 Conservatism[6]

Basu (1997) interprets conservatism as capturing accountants' tendency to require a higher degree of verification for recognizing good news than bad news in financial statements (Basu 1997, p.4). Under this interpretation, earnings reflect bad news (e.g., unrealized losses) more quickly than good news (e.g., unrealized gains). Based on this interpretation, Basu (1997) predicts and finds strong evidence that reported earnings are timely in reflecting publicly available bad news compared to good news.[7] The subsequent literature refers to the Basu measure of conservatism as "differential timeliness."[8]

A number of papers examine why conservatism is so ubiquitous. Watts (2003a) reviews several possible explanations. According to Watts (2003a), the main explanation for conservatism is contracting.[9] Watts (2003a) argues that accounting conservatism efficiently constrains managers' tendency for opportunistic behavior; managers with limited tenure have incentives to inflate reported income to increase their bonuses and the value of their stock options. However, accounting conservatism facilitates the use of earnings as a performance measure by deferring the recognition of gains until they are

[6] Our review is limited to those papers that have direct bearing on our empirical modeling. In particular, we do not review papers on conservatism that are clearly of interest but not directly related to our approach such as Beaver and Ryan (2005) and Bagnoli and Watts (2005). Bagnoli and Watts (2005) develop a model in which conservative accounting choices potentially have pricing implications

[7] Specifically, Basu (1997) uses a reverse regression of price-deflated earnings on an indicator variable for negative stock returns (D), stock returns (R), and stock returns interacted with the indicator variable (subscripts omitted): $EARN = a_0 + a_1D + ß_0R + ß_1R*D$. He then tests for and finds the coefficient $ß_1$ to be significantly positive.

[8] Some studies refer to differential timeliness as "earnings conservatism" or "conditional conservatism" as compared to "balance sheet conservatism" or "unconditional conservatism" (as reflected in the market-to-book ratio) (e.g., Beaver and Ryan 2005; Pae et al. 2005).

[9] In addition, shareholder litigation, the link between taxation and financial reporting, and the incentives of standard setters and regulators may all contribute to conservatism (Watts 2003a).

verifiable (Barclay, Gode, and Kothari 2003).[10] Conservatism is also valuable in debt contracts. Lenders want to protect themselves against excessive dividend payments and additional borrowing. Conservative accounting directly constrains dividend payouts based on earnings (and retained earnings). Conservatism further triggers write-offs of impaired assets and recognition of unrecorded liabilities, pushing the debt/equity ratio closer to its maximum limit and tightening the constraints on additional borrowing, offsetting managers' incentives to overstate earnings, overstate assets, and understate liabilities (Pae, Thornton, and Welker 2005; Vasvari 2005). To sum up, timely incorporation of economic losses in financial statements increases the effectiveness of corporate governance, compensation systems, and debt agreements in motivating and monitoring managers (Ball 2001, p. 141).[11]

A number of studies have examined whether Basu's measure of differential timeliness varies across countries with legal and other institutional factors (e.g., Pope and Walker 1999; Giner and Rees 2001). For example, Ball, Kothari, and Robin (2000) compare timeliness in common law and code law countries. They argue that because shareholders, lenders and others are assumed, under common law, to be at arm's length from the firm (as contrasted with the stakeholder model in code law countries), information asymmetry generally is ameliorated by timely public disclosure (Ball et al. 2000). Consistent with their arguments, they find that earnings are significantly more timely in incorporating bad news (i.e., earnings are more conservative) in common law countries than in code law countries.[12]

It is also documented that U.S. accounting practice appears to have become more conservative over recent decades (Basu 1997; Givoly and Hayn 2000; Pae et al. 2005;

[10] Managers also prefer an accounting system that incorporates losses in a timely fashion because it allows them to bond themselves ex ante to act in the interests of shareholders and, thus, make their employment contracts more valuable (Ball 2001).

[11] Notwithstanding the desirable aspects of conservatism discussed, not all accountants have a favorable view of conservatism. Most of this criticism relates to the fact that conservatism in the current period may lead to aggressive reporting in future periods. Penman (2003, p.87) points out that consistent application of conservative accounting results in higher book rates of return and earnings growth without any economic justification. In discussing the evidence of increasing conservatism over time, Watts (2003b, p.292) concludes that U.S. firms' earnings (and the earnings of firms in other common law countries) are timely in reflecting bad news, but are not timely at all in reflecting good news (which might be related to overly conservative accounting).

[12] Ball and Shivakumar (2005a) examine differential timeliness for U.K. private versus public firms. In fact, they describe firms with high differential timeliness as having "higher quality" earnings. They find that privately held firms exhibit significantly less differential timeliness.

Ball and Shivakumar 2005b). Basu (1997) observes that increases in conservatism coincide with increases in auditors' exposure to legal liability. Pae et al. (2005) posit that the explanation lies in increased SEC enforcement of accounting standards over time. Givoly and Hayn (2000) ascribe the increase in conservatism to numerous FASB standards that yield earlier accruals of expenses and losses and deferrals of revenue recognition, and also to the increasingly litigious environment faced by corporate managers.

Notwithstanding the large number of studies employing differential timeliness as their measure of conservatism, recently researchers have argued that the use of this measure should be more selective and qualified. Givoly et al. (2004) demonstrate that the use of differential timeliness leads to anomalous results. The authors show that the measure fails to detect conservatism in instances where it is most likely to exist. In addition, although one might expect the degree of conservatism to be a relatively long-term characteristic of the firm's reporting system, Givoly et al. (2004) document that differential timeliness is highly volatile over time. They attribute the results to the use of aggregated measures of earnings and returns as well as the nature of events occurring during the period and firms' disclosure policies (see also Gigler and Hemmer 2001). They conclude that differential timeliness suffers from serious measurement errors and that care should be taken when employing the measure in empirical studies.[13,14]

Ball and Shivakumar (2005a; 2005b) discuss the role of accruals and accounting conservatism in the context of earnings management measurement. In addition to the role accruals play in mitigating noise in cash flows (e.g., Dechow 1994), they argue that a major role of accruals is to recognize gains and losses in a timely fashion, particularly losses. They argue that timely gain and loss recognition through accruals improve the timeliness of earnings and thus improve the usefulness of financial statements generally. Ball and Shivakumar (2005b) demonstrate the role of accruals in the asymmetry between

[13] Price (2005) documents that not only are earnings more sensitive to current bad news, they are also more sensitive to lagged bad news and that as much as 65% of bad news is incorporated in stock price before it is incorporated in earnings. This finding is not consistent with the implicit assumption of the Basu model in which bad news is always concurrently reflected in earnings and returns. Price (2005) also provides support for some of the findings in Givoly et al. (2004) that other factors besides conservatism can induce asymmetric timeliness of earnings.

[14] Dietrich, Muller, and Riedl (2005) argue that many of the empirical results in the conservatism literature are attributable to the estimation procedure rather than to conservatism.

gain and loss recognition timeliness. That is, economic losses are more likely to be recognized on a timely basis, as accrued charges against income, whereas the recognition of economic gains is more likely to be deferred until realized in cash. Ball and Shivakumar (2005b) improve on the Basu (1997) specification by using abnormal returns rather than raw returns and by relating conservatism to accruals. Nevertheless, the various accrual models employed in Ball and Shivakumar (2005b) are ad hoc although they have been used extensively in prior research. In a related study, Pae et al. (2005) find that the accrual component of earnings, but not the cash flow component of earnings, is more conservative for firms with low balance sheet conservatism (defined as a low market-to-book ratio) than for firms with high balance sheet conservatism. This finding is consistent with accruals being used to effect earnings conservatism.

In this paper, we focus on a direct measure of conservatism, namely, earnings news, and relate this measure to special items, another metric of conservatism. Thus, our paper is related to Ball and Shivakumar (2005a; 2005b) in that we study how special item accruals are used for effective timely recognition of economic losses. The focus on special items is also consistent with Givoly et al.'s (2004) suggestion of using disaggregated earnings measures when measuring accounting conservatism.

2.2 Special Items

According to GAAP, special (or unusual) items are material items that are considered unusual in nature or occur infrequently. Such items can have a very large impact on earnings and book value of assets and equity. For example, in their review of empirical studies of asset write-downs, Alciatore et al. (1998) identify a mean write-down ranging from 4% to over 19% of total assets, with maximum write-downs reaching 90%. In addition, Riedl and Srinivasan (2005) document a large increase in both the frequency and magnitude of reported special items throughout the period 1993 – 2002. Although gains also occur, such as gains from sales of assets, the majority of special items are losses. The preponderance of special or unusual losses reflect the conservative bias of accrual accounting that requires early recognition of declines in asset values but tends to delay recognition of most gains until realized. In addition, the magnitude of special items suggests that they represent an economically significant proxy for how conservatism is achieved by firms.

The literature on special items focuses primarily on earnings and the earnings response coefficient (ERCs). Fairfield, Sweeney, and Yohn (1996) analyze accuracy improvements in out-of-sample one-year-ahead forecasts of the return on equity to examine the predictive content of earnings disaggregations. They document that disaggregating earnings into operating earnings, non-operating earnings, and special items improves forecasts. Their results suggest that, although special items can result either from proper application of GAAP (e.g., a write-down of impaired assets) or from earnings management (e.g., big bath accounting that artificially improves future reported profitability), separate disclosure of these items may improve the usefulness of financial reports.[15,16]

Elliott and Hanna (1996) investigate the information content of earnings in the presence of large nonrecurring or unusual charges. Consistent with anecdotal evidence that the frequent reporting of write-offs can impair investors' ability to assess firm performance, Elliott and Hanna (1996) find that the valuation weight on earnings before special items declines significantly in quarters following the recognition of large special items. ERCs decline even further if subsequent special items are reported. They also document that the ERC on special items is lower than the ERC on earnings before special items (consistent with the notion that special items are more transitory than other components of earnings) and that the ERC on special items declines with the frequency of reported special items.

[15] In a valuation context, special items are theorized to be of minimal relevance since they are transitory in nature. However, Black, Carnes, and Richardson (2000) find that special items are value relevant. This finding holds both for firms that report single and for firms that report multiple occurrences of such items over a rolling six year period. Value relevance is consistent with special items reflecting a persistent negative shock to future earnings and cash flows.

[16] Dechow and Ge (2005) find that low accrual firms with large negative special items consistently earn higher positive returns than other low accrual firms. This finding is robust to including proxies for investor sentiment, bankruptcy risk, and investor recognition. According to the authors, special items reflect underlying economics and are indicative of firms that have over-invested in (ex post) poor strategies. Dechow and Ge (2005) argue that special items are indicative of management taking action to turn the firm around, but that investors overweight the probability that the firm will be unsuccessful. They show empirically that special item–low accrual firms end up "turning themselves around" at higher rates than expected by investors and, as a consequence, show improved stock price performance.

Burgstahler, Jiambalvo, and Shevlin (2002) examine the association of the post-announcement earnings drift with earnings components, including special items. They document that, consistent with previous research, special items are more transient than other earnings components. However, they also find significant differences between positive and negative special items. Positive special items are less than completely transitory in that they are followed by a smaller but still positive amount of earnings in subsequent quarters. Negative special items, on the other hand, are followed by positive earnings in subsequent quarters.

Francis, Hanna, and Vincent (1996) examine whether managerial manipulation or economic impairment drives write-off decisions and whether the market reacts differently in the two cases. They find that proxies for both manipulation and impairment are significantly related to the write-off decision,[17] and on average, investors react negatively to write-offs. However, they document significant positive reactions to restructuring charges.[18]

Frankel and Roychowdhury (2004) find that the timeliness of IBES earnings is less asymmetric than that of GAAP earnings. Since IBES earnings are purged of many "special items," this finding can be interpreted as special items being an important means of implementing accounting conservatism. Consistent with this notion, Shroff, Venkataraman, and Zhang (2004) find that negative special items have a higher relation with concurrent stock returns than positive special items.[19]

In conclusion, researchers have shown considerable interest both in conservative accounting in general and in special items. However, there is limited empirical evidence

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[17] Incentives are not significantly related to inventory and fixed assets write-offs, but are strongly significantly associated with restructuring charges and goodwill write-offs.

[18] Two recent papers by Riedl (2004) and Segal (2003) are directly related to Francis et al. (1996). Riedl (2004) examines long-lived asset impairments. In particular, he investigates whether SFAS 121 leads to improvements in the reporting of impairment charges. Contrary to the intentions of FASB, he finds that economic factors have a lower explanatory power for write-offs after SFAS 121. He also finds that big bath behavior explains more of the variation in write-offs after the new standard takes effect (and that these big baths likely reflect opportunistic behavior rather than the provision of managers' private information). In a similar study, Segal (2003) contrasts goodwill write-downs before and after SFAS 142. SFAS 142 was intended to reduce managerial discretion and enhance the reporting for goodwill impairments. However, Segal (2003) does not find any significant differences in the reporting incentives before and after SFAS 142. Similarly, he does not find any difference in the market reaction to write-downs following the implementation of the new standard. Segal (2003) concludes that goodwill write-downs continue to be significantly associated with managers' reporting incentives.

[19] In contrast, Riedl and Srinivasan (2005) do not find a significant difference in response coefficients across positive and negative special items.

on how market participants price conservative accounting in general and special items in particular. Our study aims to provide more evidence regarding these issues using the theoretical framework of Vuolteenaho (2002).

3. The Conceptual Analysis

This section provides a conceptual analysis of the relations among earnings news, special items, and (unexpected) returns. We illustrate these relations using a relatively simple but nevertheless rich example. For simplicity, shocks to earnings are assumed to be completely transitory and expected returns (discount rates) are assumed to be intertemporally constant. Furthermore, we do not incorporate the conservatism ratio in this section. Instead, Appendix A develops and examines the conservatism ratio under more general conditions.

The asymmetry that characterizes conservative accounting has fundamental implications for the pricing of earnings news and special items. To illustrate, suppose that management (and/or the auditors) suddenly anticipate a negative shock to the firm's expected future cash flows, for example in the form of a decrease in the market value of a long-lived asset. In an "ideal" conservative accounting system, the negative shock will be accrued in earnings in a timely fashion (relative to actual cash flow realizations), in the form of a special item (asset write-down). Provided that the asset is carried on the books at its market value prior to the shock, meaning that accumulated book depreciation equals accumulated economic depreciation, and provided the firm has a 100 percent dividend payout ratio policy, the asset write-down will be negative *and* exactly equal to earnings news. Rational investors should correctly interpret the special item as conveying new information of an impending negative shock to future cash flows, driving down equity returns by the amount of the asset write-down in a timely fashion. Thus, negative earnings news and special items are perfectly positively correlated and both will be perfectly positively correlated with the revision in equity returns.

The conservative accounting system defined by GAAP, however, does not provide an ideal setting. Although negative earnings news and the revision in equity returns are still positively correlated, GAAP and firm financing/investment policies create a wedge between earnings news and special items. There are three main reasons why special items are a less than perfect measure of negative earnings news and, hence, a less than perfect measure of the revision in equity returns. First, book depreciation rarely equals economic depreciation. If accumulated book depreciation is greater than accumulated economic depreciation then the asset write-down to bring the asset's book value to market value will be less than earnings news. Conversely, if accumulated book depreciation is less than accumulated economic depreciation then the asset write-down to bring book value to market value will necessarily be greater than earnings news. Second, under GAAP, if the sum of the future undiscounted cash flows from the asset is greater than the carrying value of the asset, no special item is recognized even though there is a negative shock to the asset's future cash flows. Third, if the firm's policy is to reinvest free cash flows from the asset, the reduction in free cash flows arising from the negative shock to the asset's future cash flows will also drive a wedge between special items (that do not recognize this opportunity cost) and negative earnings news. Thus, under GAAP, when earnings news is negative, the correlation between special items and earnings news will be positive but less than perfect. Consequently, special items will be positively correlated with the (negative) revision in equity returns but not perfectly so.

What is the relation among earnings news, special items, and revisions to equity returns when management anticipates a positive shock to expected future cash flows, that is, when earnings news is positive? In an ideal conservative accounting system, positive earnings news will not be reflected in the accounts until the future cash flows are realized. Since there are no special items, there is no correlation between positive earnings news and special items, nor are equity returns affected in the absence of information leakage. However, under GAAP, special items that provide timely information about positive cash flows are sometimes recognized, albeit fairly infrequently (e.g., if the firm recognizes a gain on sale of an asset, or the firm reverses (a portion of) a restructuring charge anticipated to be larger). Thus, under GAAP, special items are non-negatively correlated (i.e., either uncorrelated or positively correlated) with positive earnings news and, in turn, non-negatively correlated with revisions in equity returns.

In short, the asymmetry inherent in conservative accounting under GAAP leads to an asymmetric response by equity markets to positive earnings news (special items) relative to negative earnings news (special items). As a result, revisions to equity returns are more highly correlated with negative earnings news (special items) than with positive earnings news (special items). Furthermore, under GAAP, special items, positive or negative, provide an imperfect measure of the impact of new information on equity returns relative to earnings news. An example will help explicate these ideas.

Consider a new all equity firm that invests $30,000 in a depreciable plant at t=0. The firm's cost of capital is an intertemporally constant 15%. The plant earns expected cash returns of $13,139 (end of year) for each of three periods and then the firm costlessly liquidates. Cash returns from plant activity are invested in marketable securities that earn the firm's cost of capital.[20] The firm depreciates the asset using the straight line method. There are no taxes. Given these data, the present value of the plant and its market value at t=0 is $30,000. An investor would earn an IRR of 15% on the investment. Each period the financial report shows a depreciation expense accrual of $10,000. The stock price goes up by 15% a year. See the BENCHMARK SCENARIO in the tables below for end of period book value of equity (BV), market value of equity (MV), cash flows from operations (CF), earnings (NI), book value of property, plant, and equipment (PPE-BV), market value of property, plant, and equipment (PPE-MV), holding period stock return (RET), marketable securities (MS), and revision in expected returns (r_t-$E_{t-1}(r_t)$).[21,22]

Scenario 1 is similar to the benchmark scenario with one major difference. Just prior to publication of the financial report at t=2, management discovers that cash flows for the period are 10% lower than expected, $11,825 instead of $13,139, and consequently also revises downwards its estimates of expected future plant cash flows from $13,139 to $9,854 at t=3, a reduction of 25% from the benchmark scenario. The carrying value of PPE at t=2 prior to the change in estimate is $10,000 whereas the

[20] The assumption that free cash flows remain invested in the firm and are not paid out as dividends adds additional illustrative complexity to the analysis.
[21] Net income (NI) equals cash flow (CF) minus depreciation expense plus investment income, computed as beginning-of-period balance of marketable securities (MS) multiplied by the cost of capital (COC). PPE-MV is computed as the present value of future cash flows. Finally, market value (MV) is computed as the sum of PPE-MV and MS.
[22] In the example upon which the scenarios are built, constant discount rates (zero expected return news) are assumed for simplicity. In the empirical analysis below, we specifically control for expected return news.

(revised) undiscounted future cash flows from the asset are \$9,854. Since the carrying value of PPE is less than the undiscounted future cash flows, an impairment is recognized under current GAAP and a special accrual of -\$1,431 = (9,854/(1.15)-10,000) is recorded in order to bring PPE down to its market value of \$8,569. In contrast, earnings news (N_E), the reduction in the value of the firm over its remaining lifetime due to the revision of expected future cash flows, is -\$4,266, closely corresponding to the (unexpected) change in market value (DEL(MV)) of -\$4,170 (=35,505-39,675).[23] The reduction in market value translates into a reduction in value of -12% relative to the benchmark scenario. Note that the change in the market value of the firm is comprised of a reduction in the (market) value of PPE of -\$2,856 (=8,569-11,425) and of a reduction in the end of year balance of marketable securities of -\$1,314 (=26,396-28,250). Of course, whether this negative earnings shock is fully reflected in equity returns in the current period depends upon whether shareholders learn of the downward revision of expected cash flows. Absent information leakage, the primary source of information regarding the downward revision in cash flows is the recorded special item. However, there is a measurement issue here. The recorded special item is only -\$1,431 whereas the reduction in equity value is the earnings news of -\$4,170, a difference of -\$2,739. This difference has two sources: (1) the difference between the carrying value of the asset and its market value of -\$1,425 = (10,000-11,425), caused by a (straight line) depreciation policy that differs from economic depreciation; and (2) the reduction in the investment in marketable securities due to the reduced operational cash flows of -\$1,314, caused by the less than one hundred percent dividend payout ratio and the fact that the GAAP definition of special items does not include their opportunity cost. These results are summarized in the table below denoted SCENARIO 1.

The comparison of Scenario 1 with the benchmark scenario is illustrative. First, the conventional earnings surprise is an incomplete measure of the news event, because the change in market value is determined both by revisions to expected current cash flows

[23] Since expected return news is zero by assumption in our example, the change in market value of the firm has to be equal to earnings news - see equation (1). The small difference found here is due to the fact that earnings news is computed here somewhat inexactly but more simply as the sum of the changes in ROE multiplied by the beginning of period book value of equity over the life of the firm. What makes this exercise interesting is that this computation of earnings news depends solely on financial reporting data without reference to market data. Thus, financial reporting data can be used to approximate closely the change in market value.

(the conventional earnings surprise) in period 2 *and* to expected future cash flows in period 3. Earnings news captures both of these effects. Second, bad news is defined by the revision to period 2 returns of -12% (=3%-15%) and not by the period 2 return of 3%. Therefore, an analysis using raw returns would potentially be misspecified. Third, the special items accrual significantly understates earnings news and the revision to equity returns.[24] This scenario indicates that while earnings news and the revision in equity returns are perfectly positively correlated, special items are less than perfectly positively correlated with either earnings news or the revision in equity returns, despite the fact that special items signal the negative earnings news event to shareholders.

Scenario 2 is also a negative earnings event. Specifically, Scenario 2 is similar to Scenario 1 except that expected future plant cash flows at t=3 are identical to the cash flows at t=2 of $11,825. However, unlike Scenario 1, the reduction in plant value is not recognized as an impairment under GAAP because the carrying value of the asset ($10,000) is less than the undiscounted value of the expected future cash flows ($11,825). In the absence of a special item to signal the reduction in future cash flows beyond t=2, equity values fall only by 4% at t=2 and with the remaining reduction of 3% at t=3. Earnings news is -$1,314 in period 2 and -$1,258 in period 3 as compared to the unexpected changes in market value of -$1,314 in both periods.[25] By comparison to Scenario 1, zero special items are a rather poor measure of negative earnings news and the consequent reduction in the equity value of the firm. Note that there is negative market reaction in both periods 2 and 3 (-4% and -3%, respectively) because there is no special item to signal the reduction in asset value. This example shows that the gap between earnings news and special items is affected by the GAAP definition of an impairment event, in addition to the two other reasons illustrated in Scenario 1. In particular, scenario 2 is characterized by no association between earnings news and special items and a positive association between earnings news and the unexpected

[24] Of course, if the firm adopts a depreciation policy such that book depreciation is less than economic depreciation, the special item could potentially overstate earnings news and the revision in equity values, although this is unlikely. It is even more unlikely if free cash flows are not paid out as dividends. More often than not, the historical cost basis of asset value understates market value, so that special items are likely to understate earnings news and the revision to equity values.

[25] Note that in this scenario the shocks to cash flows are assumed to be completely transitory and, hence, the earnings news in period 2 only captures the shock to ROE in period 2.

revision to equity returns. These results are summarized in the table below denoted SCENARIO 2.

Scenario 3 is a positive earnings news event. Instead of expecting cash flows to decrease, management expects cash flows to increase 10% relative to the benchmark at t=2, from $13,139 to $14,453, and 25% relative to the benchmark at t=3, from $13,139 to $16,424. Thus, Scenario 3 is completely symmetric to Scenario 1 but with positive instead of negative earnings news. However, absent accrual information on gains because of conservatism, shareholders do not learn about the new situation until the cash flows are realized (i.e., no positive special items are recognized). In this scenario, earnings news (unexpected change in market value) is $1,314 ($1,314) in period 2 and $3,229 ($3,285) in period 3, resulting in unexpected returns of 4% and 8%, respectively. Thus, under this scenario, there is no association between special items and earnings news and between special items and the revision in equity returns. The revision in equity returns is positively associated with earnings news. The results of this scenario are summarized in the table below denoted SCENARIO 3.[26]

BENCHMARK SCENARIO				
	t=0	t=1	t=2	t=3
CF	-30,000	13,139	13,139	13,139
NI	---	3,139	5,110	7,377
MS	---	13,139	28,250	45,626
PPE-BV	30,000	20,000	10,000	0
PPE-MV	30,000	21,361	11,425	0
BV	30,000	33,139	38,250	45,626
MV	30,000	34,500	39,675	45,626
COC	---	15%	15%	15%
RET	---	15%	15%	15%

[26] Scenario 3 assumes that no positive special items are recorded. However, as noted above, under GAAP, positive special items are sometimes recognized when earnings news is positive so that empirically one should expect a weak correlation between special items and positive earnings news and special items and the revision in returns.

SCENARIO 1				
	t=0	t=1	t=2	t=3
CF	-30,000	13,139	11,825	9,854
NI	---	3,139	2,365	5,326
MS	---	13,139	26,936	40,830
PPE-BV	30,000	20,000	8,569	0
PPE-MV	30,000	21,361	8,569	0
BV	30,000	33,139	35,505	40,830
MV	30,000	34,500	35,505	40,830
$N_E = \Delta E(ROE)*BV_{t-1}$	---	0	-4,266	0
DEL(MV)	---	0	-4,170	0
SI	---	0	-1,431	0
COC	---	15%	15%	15%
RET	---	15%	3%	15%
$r_t - E_{t-1}(r_t)$	---	0%	-12%	0%

SCENARIO 2				
	t=0	t=1	t=2	t=3
CF	-30,000	13,139	11,825	11,825
NI	---	3,139	3,796	5,866
MS	---	13,139	26,936	42,801
PPE-BV	30,000	20,000	10,000	0
PPE-MV	30,000	21,361	11,425	0
BV	30,000	33,139	36,936	42,801
MV	30,000	34,500	38,361	42,801
$N_E = \Delta E(ROE)*BV_{t-1}$	---	0	-1,314	-1,258
DEL_MV	---		-1,314	-1,314
SI	---	0	0	0
COC	---	15%	15%	15%
RET	---	15%	11%	12%
$r_t - E_{t-1}(r_t)$	---	0%	-4%	-3%

SCENARIO 3				
	t=0	t=1	t=2	t=3
CF	-30,000	13,139	14,453	16,424
NI	---	3,139	6,424	10,859
MS	---	13,139	29,563	50,422
PPE-BV	30,000	20,000	10,000	0
PPE-MV	30,000	21,361	14,282	0
BV	30,000	33,139	39,563	50,422
MV	30,000	34,500	43,845	50,422
N_E=ΔE(ROE)*BV_{t-1}	---	0	1,314	3,229
DEL_MV	---		1,314	3,285
SI	---	0	0	0
COC	---	15%	15%	15%
RET	---	15%	19%	23%
r_t-$E_{t-1}(r_t)$	---	0%	4%	8%

The above conceptual analysis provides the framework for empirically investigating the following issues. First, we examine the association between earnings news and special items, and, in particular, we compare the association between negative earnings news and special items and positive earnings news and special items. Second, we analyze whether unexpected revisions in equity returns are more positively associated with negative earnings news (special items) than with positive earnings news (special items). Third, we test whether the relation between the unexpected revision in returns and earnings news is greater/stronger than the relation between the unexpected revision in returns and special items.

4. The Vuolteenaho (2002) Return Decomposition Model

Extending prior work by Campbell (1991) and Campbell and Ammer (1993), Vuolteenaho (2002) employs the Clean Surplus Relation to show that revisions in stock returns can be expressed as a function of earnings news and expected return (discount rate) news. Formally,

$$r_t - E_{t-1}(r_t) = \Delta E_t \sum_{j=0}^{\infty} \rho^j (roe_{t+j} - i_{t+j}) - \Delta E_t \sum_{j=1}^{\infty} \rho^j r_{t+j} \qquad (1)$$

where

Δ denotes the first differencing operator

E_t is the expectations operator and $\Delta E_t = E_t(\cdot) - E_{t-1}(\cdot)$

r_t = log equity return (cum dividend) in excess of the risk free rate in period t

ρ is a constant error approximation term

i_t = log of one plus the risk free rate in period t

roe = log of one plus return on equity (i.e., earnings divided by beginning of period book value of equity)

Defining the unexpected stock return components as expected-return news (Nr) and earnings news (Ne), equation (1) can be expressed as:[27]

$$r_t - E_{t-1}(r_t) = Ne - Nr \qquad (2)$$

where

$$Ne = \Delta E_t \sum_{j=0}^{\infty} \rho^j (roe_{t+j} - i_{t+j}) = \text{Earnings News} \qquad (3)$$

$$Nr = \Delta E_t \sum_{j=1}^{\infty} \rho^j r_{t+j} = \text{Expected Return News} \qquad (4)$$

Equation (2) shows that the unexpected revision in current equity returns increases with earnings news and decreases with expected return news. An unanticipated increase in the firm's earnings conveys positive information about the firm's prospects and hence translates into higher returns. Conversely, an unexpected increase in future expected returns (discount rates) due to higher risk, for example, translates into negative unexpected current returns, similar to the effect of an increase in the yield rate on bond prices.

In order to empirically examine the associations between earnings news, special items, and unexpected returns, and to construct the conservatism ratio, we need estimates

[27] As a sensitivity analysis we estimate earnings news as the sum of accruals news and cash flow news (see Callen and Segal 2004). The idea behind this alternative estimation is that the breakdown of earnings into cash flows and accruals may provide a better prediction of future cash flows than earnings alone. No inferences are affected if we use this alternative approach. However, breaking down earnings to accruals and cash flows precludes us from computing our conservatism ratio.

of earnings news and expected return news. The return decomposition [Equation (2)] provides the basis. However, in order to implement the return decomposition, estimates of expected future returns and expected future earnings are required. Following Campbell (1991), Campbell and Ammer (1993), Vuolteenaho (2002), Callen and Segal (2004), and Callen, Hope, and Segal (2005), we implement the return decomposition using a parsimonious log-linear vector autoregressive (VAR) model with state variables consisting of log stock returns, log of one plus ROE (earnings scaled by initial book value of equity), and the log book to market ratio. Appendix B describes the estimation procedure in detail.

To facilitate the analysis, we generate firm-year estimates of earnings news by estimating the firm-year variance-covariance matrix and assuming that within-industry observations have the same VAR coefficient matrix. For example, earnings news [Equation (B6) in Appendix B] is a function of the VAR coefficient matrix [A] and the residuals from the VAR regressions [Equations (B2a) through (B2c)]. Thus, earnings news can be estimated at the firm-year level using the VAR coefficient matrix and the vector of residuals $\Sigma_{it}=[e_{1it}, e_{2it}, e_{3it}]$, where e_j is the estimated residual from equation j and i (t) is the firm (time) index. The variance-covariance matrix Ω_{it} is computed as $[\Sigma_{it}' \Sigma_{it}]$ where $'$ denotes the transpose. We then estimate the conservatism ratio as the residual from the earnings equation [Equation (B2b)] divided by earnings news.

5. Sample and Descriptive Statistics

The data are obtained from annual COMPUSTAT and monthly CRSP files for the years 1962 to 2004. Return on equity is computed as income before extraordinary items (DATA18) scaled by the beginning of the period stockholders' equity (DATA60). The risk-free rate is the annualized three month T-Bill rate. Annual stock returns are computed from monthly CRSP data adjusted for dividends. Returns are computed over a period starting nine months before and ending three months after the fiscal year end.

We impose the following restrictions on the data. First, we remove firms in the financial industry (SIC 6000-6999). Second, we require non-missing values of contemporaneous and one lag each of ROE, annual returns, and the book to market ratio. In addition, we require non-missing values of special items (DATA17). These restrictions yield a sample size of 114,061 firm-years. Eliminating firms with market value of equity less than \$10M reduces the sample size to 94,540. Finally, in order to mitigate data errors and scaling problems, we delete the top and bottom one percent of all the variables included in the VAR system. These restrictions reduce the sample to 86,600 (10,292) firm-years (firms).

Table 1 shows the distribution of the major variables of interest. The sample firms exhibit large variation in market capitalization; the mean and median market values of equity are \$1,220 million and \$119 million, respectively. Median cum dividend equity market returns and accounting returns on book value of equity are ten and twelve percent, respectively. The median book-to-market ratio is 0.65. To be consistent with the computation of earnings news, we compute special items (SI) as DATA17 scaled by beginning of the period book value of equity.[28] Since SI is non-zero for only 28,789 firm-years, the 25th percentile, median and 75th percentile of SI are zero.[29] Finally, the mean (median) CR is 0.525 (0.407), indicating that on average the current period shock to earnings equals approximately 50% of the total economic shock to current and future cash flows.

6. Empirical Results

In this section we present the empirical results. We first provide descriptive statistics of the VAR estimation results and the news items. We then show the analysis of the relation between earnings news and special items, and present the results of the analysis of the association of earnings news and special items with unexpected returns. Finally, we introduce the conservatism ratio, its empirical properties, and association with economic shocks.

6.1 VAR Estimation

We estimate the VAR equations by industry using the Fama and French (1997) industry classification. Table 2, Panel A shows the mean estimated parameters across

[28] As sensitivity tests, we repeat the analysis scaling special items by beginning of the period total assets or market value of equity. The results are similar to those reported.
[29] Untabulated results show that if we restrict the sample to observations with non-zero SI, then the mean and median SI are -0.039 and -0.015, respectively.

industries and their standard errors.[30] The standard errors are computed using the Fama-Macbeth (1973) method. The significant parameter estimates imply that returns are negatively associated with past returns and positively associated with past earnings and the past book-to-market ratio. Earnings are positively associated with past returns and past earnings and negatively associated with the past book-to-market ratio. The book-to-market ratio is positively related to past returns, past earnings, and the past book-to-market.

Table 2, Panel B provides descriptive statistics of expected return news (Nr), earnings news (Ne), and revisions in equity returns ($r_t - E_{t-1}(r_t)$).[31] To eliminate potential outliers we delete the top and bottom one percent of the news items and the revisions in returns, resulting in a sample of 82,398 observations. The mean and median of earnings news (0.011 and 0.033, respectively) are significantly positive, indicating that on average the earnings news is "good." The mean and median return news are also significantly positive (0.003 and 0.005, respectively) and, similar to the findings of Vuolteenaho (2002), Callen and Segal (2004), and Callen, Hope, and Segal (2005), significantly smaller than earnings news, indicating that earnings news is the main driver of unexpected returns at the firm level. The mean and median unexpected returns (0.002 and 0.009, respectively) are also positive, consistent with the positive mean and median earnings news.

Table 2, Panel C shows the Pearson and Spearman correlations among the variables of Equation (2). Ne (Nr) is positively (negatively) and significantly correlated with the revision in returns ($r_t - E_{t-1}(r_t)$), and Ne and Nr are negatively and significantly correlated with each other. These correlations are consistent with the predictions of the model (Equation (2)). Specifically, the model predicts that the association of the revision in unexpected returns with earnings news (discount rate news) is positive (negative).

Table 2, Panel D presents the means for earnings news, return news, and revisions in unexpected returns ranked by earnings news quintile portfolios. Quintile 1 is the most negative and quintile 5 is the most positive earnings news quintile. This panel shows that

[30] Reported results are based on a parsimonious VAR using one lag. Untabulated results show that our inferences are robust to including two lags in the VAR estimation.
[31] The revision in equity returns is computed as the residual from the VAR return equation. See equation (B2a) in Appendix B.

revisions in unexpected returns increase monotonically with the earnings news quintiles. Specifically, revisions in unexpected returns increase from -36%, in the lowest quintile, to 37% in the highest quintile. The return news (Nr) column shows that, excluding the first quintile, the mean of return news decreases monotonically with earnings news. This result indicates that earnings news is inversely related to expected return news, suggesting that positive earnings news is associated with risk reduction and a concomitant decrease in the discount rate.[32]

6.2 Earnings News and Special Items

Table 3 analyzes the relation between earnings news and special items. Panel A lists mean earnings news and mean special items ranked by earnings news quintile portfolios. Quintile 1 is the most negative and quintile 5 is the most positive earnings news quintile. The results in this panel are generally consistent with our expectations. Specifically, when earnings news is negative (quintiles 1 and 2), so are special items. With the exception of quintile 3, when earnings news is positive (quintiles 4 and 5) special items are non-negative. This panel also shows that the means of special items increase monotonically from quintile 1 to quintile 5. For example, the mean of special items in quintile 1 is -0.049 and increases monotonically to 0.005 in quintile 5.[33] Overall, these results indicate that there is a positive relation between earnings news and special items.

Panel B of Table 3 shows the results of regressing special items on earnings news, a dummy variable (D) equal to one if earnings news is negative and zero otherwise, and an interaction variable between earnings news and the dummy variable (D_Ne). The regression results show that the coefficient of earnings news is positive and significant. In addition, the interaction variable is positive and significant, indicating that the association between special items and negative earnings news is stronger than the association between special items and positive earnings news. These results are consistent with special items being an account through which conservatism is manifested. Specifically,

[32] We are not making a causality statement here but rather document an association.

[33] As a sensitivity analysis we examine the frequencies of positive and negative special items by earnings news portfolio quintiles. Going from the most negative earnings news (quintile 1) to the most positive earnings news (quintile 5), the proportion of firms with negative (positive) special items decreases (increases) monotonically with earnings news.

when special items are negative (e.g., a write-off of a capital asset), it is an indication of a negative shock to future cash flows (earnings news). When special items are non-negative, the association with future cash flows is positive but weaker, consistent with the notion that good news generally is not recognized until the cash flows are realized.

6.3 Earnings News, Special Items, and Revisions in Unexpected Returns

Table 4, Panel A shows the results of estimating the Vuolteenaho (2002) equation in reverse regression form in the spirit of Basu (1997).[34] More formally, based on equation (2), we regress earnings news on revisions in equity returns and expected return news:

$$Ne_t = \alpha_0 + \alpha_1(r_t - E_{t-1}(r_t)) + \alpha_2 Nr_t + \varepsilon_t \qquad (5)$$

where the α_j are parameters and ε_t is a white noise innovation term. Consistent with the valuation model, we expect $\alpha_1>0$ and $\alpha_2>0$.[35] The results of the regression are presented in the Ne column in Panel A.[36] The signs of the estimated coefficients are as conjectured – positive and highly significant at the 1% level.

We argue above that special items are an imperfect substitute for earnings news so that special items should be non-negatively associated with revisions in equity returns. To examine this conjecture, we re-estimate the regression with special items as the dependent variable. The results of the regression are shown in the SI column of Panel A. Similar to the earnings news regression, the signs of the estimated coefficients are positive and significant at the 1% level, indicating a positive relation between special items and unexpected returns. Nonetheless, the coefficient on the revision in returns in the special item regression is significantly smaller (at less than the 1% level) than the

[34] In equation (2), the revisions in returns are tautologically determined by Ne and Nr so that there are no parameters to estimate. However, we test equation (2) using *ex post* revisions in returns so that the relation has an error structure.
[35] Note that $\alpha_2>0$ because Nr is on the other side of the equation in a reverse regression.
[36] Although Nr_t and $(r_t - E_{t-1}(r_t))$ are highly correlated - see Table 2, Panel C - the maximum Variance Inflation Factor of 2.18 and Condition Index of 2.56 are not indicative of multicollinearity.

coefficient on the revisions in returns in the earnings news regression (α_1), consistent with special items being a noisy measure of earnings news.[37]

These regressions, however, abstract from the potential nonlinearity induced by conservative accounting as discussed in the conceptual analysis. To test for nonlinearity, we regress earnings news and special items on unexpected revision in returns, a dummy variable (D) that takes a value of one if unexpected revisions in returns are negative and zero otherwise, an interaction term between the dummy variable and revisions in unexpected returns, and return news:[38]

$$Ne_t\ [SI_t] = \beta_0 + \beta_1 D_t + \beta_2\ (r_t - E_{t-1}(r_t)) + \beta_3\ D_t*(r_t - E_{t-1}(r_t)) + \beta_4\, Nr_t + \varepsilon_t \qquad (6)$$

Panel B shows the regression results of equation (6) for both earnings news and special items.[39] In both regressions, the coefficient estimate on the revisions in returns, the interaction coefficient, and the return news coefficient are all positive and significant at the 1% significance level. In the earnings news regression, the coefficient on negative revisions in unexpected returns (i.e., the sum of the coefficients on the unexpected revisions in returns and the interaction variable) is 0.79, whereas the coefficient on positive unexpected return is 0.72. Similarly, the coefficients on positive and negative unexpected returns in the SI regressions are 0.059 and 0.085, respectively. For both regressions the difference between the coefficients for positive and negative unexpected returns is significant, consistent with the nonlinearity analysis of Section 3. These results indicate that while there is a positive association between unexpected returns and earnings news and special items, the association of these variables with negative unexpected returns is significantly greater, consistent with the conservative nature of

[37] We test whether the coefficients are equal by estimating both equations as a system, thereby allowing us to test cross-equation restrictions. The relatively low adjusted R^2 (and F-statistic) when special items replaces earnings news as the dependent variable is also indicative of the noisiness of special items as compared to earnings news.

[38] It could be argued that conservative accounting (i.e., differential timeliness) should be incorporated into the VAR equations directly. However, there is no obvious correspondence between conservatism and the VAR dynamics because differential timeliness applies to the relation between contemporaneous earnings and returns, whereas in a VAR each state variable is regressed on the lagged state variables.

[39] The maximum Variance Inflation Factor of 6.58 and Condition Index of 6.74 are not indicative of multicollinearity. As a sensitivity test, we repeat the analysis after demeaning the variables and obtain similar results.

accounting, in which negative shocks to future cash flows are impounded faster in the financial statements.

Following Basu (1997) we compute the ratio of β_3 to the sum of $(\beta_2 + \beta_3)$ to gauge the extent to which earnings news and special items capture differential timeliness. For the earnings news and special item regressions the ratio is 0.08 and 0.30, respectively, and the difference is significantly different from zero. These results are consistent with earnings (and consequently earnings news) capturing differential timeliness less than SI because earnings incorporate other accounts that do not necessarily reflect conservatism. Nevertheless, as discussed above, earnings news is superior to SI by its association with positive and negative revisions in unexpected returns.

6.4 The Conservatism Ratio

The conservatism ratio (CR) is computed as the earnings surprise divided by earnings news where the earnings surprise is the residual from the earnings equation (see Equation A2b) and earnings news is calculated according to Equation B6. Since a negative CR raises interpretation issues (see below), we initially delete the negative CR observations (11,009) from the analysis. In addition, we eliminate the top and bottom one percentile of CR (1,427 observations), resulting in a sample of 69,962 observations. We investigate the properties of CR by examining the association of CR with good and bad news using both univariate and multivariate analyses. Consistent with the conservative nature of accounting, we expect CR to be negatively associated with unexpected returns (a proxy for news) and to be more highly negatively associated with bad news events than with good news events. This follows because in a conservative environment more of the earnings shock should be recognized in current period earnings for bad news and less of the earnings shock should be recognized in current period earnings for good news.

Table 5, Panel A presents a univariate analysis of the mean and median CR conditioned on the sign of unexpected returns. The mean (median) of CR for positive unexpected returns is 0.466 (0.388) as compared to 0.593 (0.439) for negative unexpected returns, and the differences in the means and medians are significant at less than the 1% level.

Panel B presents the multivariate analysis. In column (1), CR is regressed on unexpected returns, a dummy variable equal to one if unexpected returns are negative and zero otherwise, and the interaction of the dummy variable and unexpected returns. As expected the coefficient on unexpected returns is negative and significant, and the coefficient on the interaction variable is positive and significant. Consistent with the univariate analysis, a greater proportion of the shock to cash flows is recognized in the current period when the shock is negative than when the shock is positive. Column (2) replicates the regression with earnings news as the measure for good/bad news. Given the mechanical relation between CR and earnings news, it is hardly surprising that the coefficient on earnings news is negative. However, there is no mechanical explanation for the positive association between CR and negative earnings news. The findings in columns (1) and (2) are therefore consistent with the conservative nature of accounting where bad news is incorporated faster into earnings than good news. Column (3) reports the regression results when we incorporate both proxies for good/bad news. As before, we find that the coefficients on earnings news and unexpected returns are negative and significant, and the coefficients on the interaction variables are both positive and significant. Finally, in column (4) we replicate the regression in column (3) after adding the following control variables: ROE, size (log market value of equity), LOSS (a dummy variable equal to one if earnings are negative and zero otherwise), and DSI (a dummy variable equal to one if the firm reports negative special items and zero otherwise).[40] The coefficients on both LOSS and DSI are positive and significant consistent with conservatism being more pronounced for loss firms and for firm-years with negative special items. The coefficient on SIZE is negative and significant suggesting the large

[40] We repeat the analysis using a continuous specification of special items and obtain similar results.

firms are less conservative holding other factors constant. More importantly, our previously documented results for the interaction terms remain positive and significant.[41]

A negative CR raises interpretation issues. Specifically, the cases where earnings news is negative and the earnings surprise is positive may represent overly aggressive financial reporting because the firm has a positive earnings surprise even though it will experience an overall negative shock to future cash flows. Similarly, cases where earnings news is positive and the earnings surprise is negative may represent overly conservative financial reporting. The data are consistent with this conjecture. The correlation between the earnings surprise and unexpected returns for negative CR observations is -0.68 in contrast to a correlation of 0.35 for observations where the earnings surprise and earnings news are of the same sign.[42] We leave it for future research to investigate the negative CR cases more thoroughly.

7. Conclusion

This paper first analyzes the nonlinear pricing of conservatism using the return decomposition model of Vuolteenaho (2002) and investigates the pricing implications of special items, one of the major accrual items through which conservatism is facilitated. Consistent with implications of accounting conservatism for revisions in security returns, this study shows empirically that there is a significant increasing nonlinear (concave) relation between revisions in equity returns and revisions in expected current and future cash flows (earnings news). In particular, revisions in equity returns are more highly associated with negative earnings news than with positive earnings news. Our analysis of conservative accounting also implies that revisions in equity returns are a nonlinear (quasi-concave) function of special items such that revisions in equity returns are either more highly positively correlated with negative special items than with positive special items or revisions in equity returns are uncorrelated with special items. The empirical results confirm this conjecture as well. Our results imply that special items are an

[41] Untabulated results also show that CR has been increasing over time.

[42] Appendix A shows that earnings news is a weighted average of the contemporaneous earnings surprise and unexpected returns. Hence, the earnings surprise and earnings news may be of opposite sign if the earnings surprise and unexpected returns are also of opposite sign.

imperfect and noisy measure of unexpected revisions in expected future cash flows by comparison to earnings news, consistent with our conceptual analysis.

Future research should try to control for a number of potential measurement issues that may be affecting these results. First, reporting special items as a separate line item, especially prior to the mid 1990's, may have involved extensive self-selection by managers. Riedl (2004) reports on a survey by the FEI from 1991 which shows that 52% of write-offs were not included as special items (see also Riedl and Srinivasan 2005). This suggests that firms "self select" into reporting special items (within GAAP enforcement constraints). Hence, we expect and observe that most special items will be negative to encourage investors to view them as one-time or "non-recurring" items. This self-selection process suggests that it may prove interesting and fruitful to examine (extreme) discretionary accruals in place of special items as an alternative measure of special items. Of course, discretionary accruals, like special items, can also be used as an earnings management tool. Second, the literature review reveals that not all special items are homogeneous and that, subject to data limitations, it may be useful to split special items into their component parts.

This paper also develops a new direct metric of conservatism at the firm-year level based on the Vuolteenaho (2002) model. This conservatism ratio (CR) is computed as the ratio of the current earnings surprise to earnings news. Hence, CR shows how much of the total shock to expected current and future earnings (cash flows) over the lifetime of the firm is incorporated into current year earnings. Focusing on positive CR's, we find that a greater proportion of the shock to cash flows is recognized in the current period when the shock is negative than when the shock is positive, consistent with conservative accounting. Negative CR's are likely to reflect either overly aggressive accounting or overly conservative accounting depending upon whether earnings news is negative (positive) and the earnings surprise is positive (negative). The correlations between the earnings surprise and unexpected returns for negative versus positive CR observations are consistent with our interpretation of negative CR's. We leave it for future research to investigate the negative CR cases more thoroughly.

Appendix A: The Conservatism Ratio (CR)

The conservatism ratio can best be understood by reference to the time series properties of the earnings news measure [Equation (3)]. Perhaps the simplest example is to assume that the firm's earnings, as measured by roe_t, follow a stationary AR(1) process with drift and that the firm's expected rate of return (cost of capital) is intertemporally constant:

$$roe_t = \alpha + \beta roe_{t-1} + \varepsilon_t \qquad \text{(A1)}$$

where the persistence parameter β is assumed to lie between 0 and 1 and $\varepsilon_t \sim (0, \sigma^2)$ is a zero mean error term. It is fairly straightforward to show that in this case[43]

$$CRt \approx 1 - \beta$$

In other words, the conservatism ratio (approximately) equals one minus the persistence of roe_t so that the more persistent are earnings the smaller the conservatism ratio, that is, the less that the earnings shock is recognized in current earnings relative to future earnings. This accords with intuition since a shock to an AR(1) firm will have the same impact on earnings each and every period over the lifetime of the firm. Moreover, the impact of the shock on earnings over the lifetime of the firm increases directly with the firm's earnings persistence. As a result, the more persistent are earnings the less of the shock that will be recognized in any period's earnings.

In the simple AR(1) example, CR varies by firm but is intertemporally constant. The analysis in the text allows for far more complex (and realistic) time series patterns in earnings and discount rates by assuming a VAR system. In the case of a VAR, the CR varies generally both by firm and over time. To see this consider the simple stationary VAR example with only two variables r_t and roe_t:

$$r_t = \alpha_1 r_{t-1} + \alpha_2 roe_{t-1} + \eta_{1t} \qquad \text{(A2a)}$$

$$roe_t = \beta_1 r_{t-1} + \beta_2 roe_{t-1} + \eta_{2t} \qquad \text{(A2b)}$$

It can be shown that the conservatism ratio in this case is:[44]

[43] The proof is based on the definition of earnings news ($Ne_t = \Delta E_t \sum_{j=0}^{\infty} \rho^j roe_{t+j}$). Substituting the AR(1) dynamic of roe_t into the latter relation and noting that $\Delta E_t roe_{t+j} = (\rho\beta)^j \varepsilon_t$ for $j \geq 0$ yields $Ne_t = \varepsilon_t / (1-\rho\beta)$. By definition $CR_t = \varepsilon_t / Ne_t = (1-\rho\beta)$. Since ρ is very close to 1 (0.967), the result follows immediately.

$$CR_t = \frac{(1-\alpha_1)(1-\beta_2) - \alpha_2 * \beta_1}{\beta_1(\frac{\eta_{1t}}{\eta_{2t}}) + (1-\alpha_1)} \tag{A3}$$

Clearly, in the case of a VAR system, the conservatism ratio is generally dependent upon all of the parameters of the dynamics. Also, unless (i) the shocks to earnings and returns are always equal or (ii) the shocks to returns are always zero, or (iii) $\beta_1 = 0$, the conservatism ratio is dependent upon the relative shocks (η_{1t}/η_{2t}). In particular, the greater the shock of earnings relative to the shock to expected returns, the greater the conservatism ratio. Moreover, since the shocks are time dependent so is CR. Straightforward observation shows that the conservatism ratio is a decreasing function of the earnings persistence parameter β_2 and the earnings parameter α_2. The relation between the other parameters and the conservatism ratio is ambiguous.

Appendix B: Estimation of the Vuolteenaho Model

In general, the VAR estimation is facilitated by assuming that the dynamics of the data are well described by a (stationary) time-series model. Specifically, define z_{it} to be a vector of firm-specific state variables that follows the vector autoregressive process:

$$z_{i,t} = \mathbf{A} z_{i,t-1} + \eta_{i,t} \tag{B1}$$

Consistent with Vuolteenaho (2002), Callen and Segal (2004), and Callen, Hope, and Segal (2005), the VAR coefficient matrix **A** is assumed to be constant over time and over firms. The error term vectors $\eta_{i,t}$ are vectors of shocks and are assumed to have a variance-covariance matrix Ω and to be independent of all variables known at t-1.

We estimate a parsimonious VAR where the state variables consist of log stock returns (r_t), log of one plus ROE (earnings scaled by book value of equity), and the log

[44] Note that if past returns have no impact on roe so that $\beta_1 = 0$ then roe_t is AR(1) as before and the conservatism ratio equals one minus the persistence of earnings (1- β_2) as before.

book to market ratio (bm_t).[45] The VAR model can then be described as a system of (mean-adjusted) equations:

$$r_t = \alpha_1 r_{t-1} + \alpha_2 roe_{t-1} + \alpha_3 bm_{t-1} + \eta_{1t} \quad \text{(B2a)}$$

$$roe_t = \beta_1 r_{t-1} + \beta_2 roe_{t-1} + \beta_3 bm_{t-1} + \eta_{2t} \quad \text{(B2b)}$$

$$bm_t = \delta_1 r_{t-1} + \delta_2 roe_{t-1} + \delta_3 bm_{t-1} + \eta_{4t} \quad \text{(B2c)}$$

We estimate the regressions separately by industry[46] (using the Fama and French (1997) classifications) using weighted least squares with one pooled regression per state variable. Each annual cross-section is weighted equally by deflating the data for each firm-year by the number of firms in that year.[47] Consistent robust standard errors are obtained using the Shao-Rao (1993) jackknife method.

As shown by Campbell (1991), the variance decomposition of these valuation models can be implemented empirically by combining the residuals from the VAR estimation with the unexpected current return valuation equation [equation (1)]. Formally, let ei′ = (0, ..., 1, ..., 0), where the 1 is in the i'th position. The unexpected change in returns is computed as:

$$r_t - E_{t-1}(r_t) = e1'\eta_{1t} \quad \text{(B3)}$$

Equation (A1) implies that forecasts of the state vector $z_{i,t}$ can be computed as:

$$E_t[z_{i,t+1+j}] = A^{j+1} z_{i,t} \quad \text{(B4)}$$

Using equation (A4), the revision in expected future returns (expected return news) is computed as:

$$\begin{aligned} \Delta E_t \sum_{j=1}^{\infty} \rho^j r_{t+j} &= E_t \sum_{j=1}^{\infty} \rho^j r_{t+j} - E_{t-1} \sum_{j=1}^{\infty} \rho^j r_{t+j} \\ &= e1`\rho(I - \rho A)^{-1} \eta_{i,t} = \lambda_1 \eta_{i,t} \end{aligned} \quad \text{(B5)}$$

---

[45] The book to market ratio is included in the parsimonious VAR because our model is generated from this ratio. Vuolteenaho (2002) similarly includes the book to market ratio in his VAR specifications. It also controls for the firm's growth prospects.

[46] Industry subscripts are suppressed in above equations.

[47] Using OLS gives similar results.

Similarly, the revision in expected current and future earnings (earnings news) is computed as:[48]

$$\Delta E_t \sum_{j=0}^{\infty} \rho^j (roe_{t+j} - i_t) \equiv E_t \sum_{j=0}^{\infty} \rho^j (roe_{t+j} - i_t) - E_{t-1} \sum_{j=0}^{\infty} \rho^j (roe_{t+j} - i_t)$$
$$= e2`(I - \rho A)^{-1} \eta_{i,t} = \lambda_2 \eta_{i,t} \qquad \text{(B6)}$$

[48] Following Vuolteenaho (2002), Callen and Segal (2004), and Callen, Hope and Segal (2005), we assume that ρ=0.967. The results are not sensitive to this assumption.

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Table 1: Descriptive Statistics

	Mean	Std. dev.	Q1	Median	Q3
MV	1,220	7,603	36	119	520
ROE	0.102	0.171	0.045	0.122	0.188
BM	0.846	0.920	0.391	0.645	1.017
RET	0.191	0.527	-0.144	0.104	0.405
SI	-0.013	0.082	0.000	0.000	0.000
CR	0.525	0.553	0.269	0.407	0.573

Notes to Table 1:

Table 1 shows the sample distribution for selected variables where Std. Dev. is the standard deviation and Qi denotes the i'th quartile. **MV** is market value of equity in millions of dollars. **ROE** is the book return on equity computed as earnings before extraordinary items (DATA 18) divided by beginning of period book value of equity (DATA 60). **BM** is the book-to-market ratio. **RET** is the annual cum dividend return computed from monthly returns. **SI** is special items (DATA17) scaled by lagged book value of equity. **CR** is the conservatism measure computed as the earnings surprise divided by earnings news. The number of firm-year observations is 86,600 (CR is based on 69,962 observations).

Table 2: VAR Estimation and News Summary Statistics

Panel A: VAR Coefficient Matrix

	RET_{t-1}	ROE_{t-1}	BM_{t-1}
RET_t	-0.020* (0.01)	0.098*** (0.017)	0.097*** (0.007)
ROEt	0.064*** (0.004)	0.486*** (0.021)	-0.021*** (0.003)
BM_t	0.112*** (0.01)	0.196*** (0.024)	0.837*** (0.008)

Panel B: Descriptive Statistics of News Items

	Mean	Std. dev.	Q1	Median	Q3
Nr	0.003	0.162	-0.090	0.005	0.101
Ne	0.011	0.251	-0.087	0.033	0.146
$r_t - E_{t-1}(r_t)$	0.002	0.376	-0.229	0.009	0.239

Panel C: Sample Correlations

	Ne	Nr	$r_t - E_{t-1}(r_t)$
Ne	1	-0.304***	0.690***
Nr	-0.114***	1	-0.765***
$r_t - E_{t-1}(r_t)$	0.611***	-0.765***	1

Table 2 (continued):

Panel D: Means of Expected Return News and Revision in Returns Ranked by Earnings News Quintile Portfolios

Quintile	N_e	N_r	$r_t - E_{t-1}(r_t)$
1	-0.35	0.05	-0.36
2	-0.06	0.06	-0.16
3	0.03	0.01	0.01
4	0.12	-0.03	0.16
5	0.31	-0.07	0.37

Notes to Table 2:

Panel A of Table 2 lists the parameter estimates of the parsimonious VAR. We estimate the VAR equations by industry (Fama-French (1997) industry classification). Panel A shows the mean estimated parameters across industries and their standard errors in parentheses. The standard errors are computed using the Fama-Macbeth (1973) method. The model variables include the mean-adjusted cum dividend annual excess log return, r_t (the first element of the state vector z); the mean-adjusted log of earnings normalized by prior period book values, roe_t (the second element); and the mean-adjusted log book-to-market value ratio, bm_t (the third element). The sample size for the VAR estimation is 86,600 firm-year observations.

The parameters in the table correspond to the following system:

$$z_{i,t} = \Gamma z_{i,t-1} + \eta_{i,t}, \qquad \Omega = E(\eta_{i,t}, \eta'_{i,t})$$

Panel B of Table 2 lists summary statistics of the news items as defined in Appendix B:
Nr = Expected Return News = $e1`\rho\Gamma(I - \rho\Gamma)^{-1}\eta_{i,t} = \lambda_1`\eta_{i,t}$
Ne = Earnings News = $e2`(I - \rho\Gamma)^{-1}\eta_{i,t} = \lambda_2`\eta_{i,t}$
$ei`$ = (0, ..., 1, ..., 0), where the 1 is in the i'th position. We eliminate the top and bottom one percentile of the news items and the revisions in unexpected returns, $r_t - E_{t-1}(r_t)$. Thus, the panel and all subsequent tables are based on 82,398 observations.

Panel C of Table 2 shows the correlations between Ne, Nr, and $r_t - E_{t-1}(r_t)$. The revision in returns is defined in Appendix B as $r_t - E_{t-1}(r_t) = e1`\eta_{1t}$. Pearson (Spearman) correlations are reported below (above) the diagonal.

Panel D of Table 2 lists the means of Ne, Nr, and $r_t - E_{t-1}(r_t)$, all ranked by Ne portfolio quintiles.

*, *** indicate significance level of 10% and 1%, respectively.

Table 3: The Relation between Earnings News and Special Items

Panel A: Means of Special Items and Earnings News (Ne) by Earnings News Quintiles

Quintile	N	Ne	SI
1	16,480	-0.350	-0.049
2	16,480	-0.060	-0.008
3	16,479	0.033	-0.003
4	16,480	0.121	0.000
5	16,479	0.311	0.005

Panel B: Regression Results of Special Items on Positive and Negative Earnings News

Intercept	-0.005*** (0.000)
D	0.007*** (0.001)
Ne	0.036*** (0.002)
D_Ne	0.112*** (0.003)
F-Value	4,189***
Adj. R^2	0.13

Notes to Table 3:

Panel A of Table 4 lists mean earnings news and special items ranked by earnings news quintiles. Quintile 1 is the most negative earnings news quintile and quintile 5 is the most positive earnings news quintile. Panel B presents the coefficient estimates (standard errors) of the regression of special items on earnings news (Ne), D and D_Ne. D is equal to 1 when earnings news is negative and zero otherwise. D_Ne is the interaction of D with earnings news. Earnings news is defined in the notes to Tables 2.

*** indicates significance level of 1% level (two-sided).

Table 4: The Relation between Earnings News and Special Items and Revisions in Equity Returns

Panel A: Regressions of Earnings News and Special Items on Revisions in Equity Returns

	Ne	SI
Intercept	0.006*** (0.001)	-0.012*** (0.000)
$r_t - E_{t-1}(r_t)$	0.767*** (0.002)	0.073*** (0.001)
Nr	1.134*** (0.005)	0.179*** (0.002)
F-Value	66,625***	3,800***
Adj. R^2	0.62	0.07

Panel B: Regressions of Earnings News and Special Items on Revisions in Equity Returns: Nonlinear Analysis

	Ne	SI
Intercept	0.019*** (0.001)	-0.008*** (0.001)
D	-0.008*** (0.002)	-0.000 (0.001)
$r_t - E_{t-1}(r_t)$	0.724*** (0.004)	0.059*** (0.002)
$D^*(r_t - E_{t-1}(r_t))$	0.066*** (0.005)	0.026*** (0.002)
Nr	1.130*** (0.005)	0.177*** (0.002)
F-Value	33,459***	1,944***
Adj. R^2	0.62	0.07

Notes to Table 4:

Panel A of Table 4 shows the coefficient estimates (standard errors) of the regressions of earnings news (Ne) and special items (SI) on revisions in equity returns ($r_t - E_{t-1}(r_t)$) and expected return news (Nr). Earnings news, revisions in returns, and expected return news are defined in the notes to Table 2. Special items are computed as COMPUSTAT special items (DATA17) divided by lagged book value of equity. Panel B repeats the analysis allowing for a nonlinear relation between earnings news (special items) and revisions in unexpected returns. D is equal to 1 when unexpected returns [$r_t - E_{t-1}(r_t)$] are negative and zero otherwise.

*** indicates significance level of 1% level (two-sided).

Table 5: The Relation between the Conservatism Ratio and Unexpected Revisions in Equity Returns

Panel A: Mean (Median) Conservatism Ratio for Positive and Negative Unexpected Returns

	N	CR	$r_t - E_{t-1}(r_t)$
$r_t - E_{t-1}(r_t)>0$	37,722	0.466 (0.388)	0.288 (0.23)
$r_t - E_{t-1}(r_t)<0$	32,240	0.593 (0.439)	-0.289 (-0.22)
DIFFERENCE		0.127*** (0.051)***	

Panel B: Regressions of Conservatism Ratio (CR) on Proxies for Positive and Negative News

	Predicted Sign	(1)	(2)	(3)	(4)
Constant	?	0.584*** (0.005)	0.788*** (0.005)	0.731*** (0.005)	0.764*** (0.014)
DER	?	0.163*** (0.007)		0.199*** (0.007)	0.202*** (0.007)
ER	-	-0.409*** (0.013)		-0.141*** (0.015)	-0.140*** (0.015)
DUM_ER	+	0.945*** (0.020)		0.460*** (0.022)	0.439*** (0.022)
DNE			-0.215*** (0.007)	-0.249*** (0.007)	-0.263*** (0.007)
NE	-		-1.351*** (0.021)	-1.052*** (0.025)	-1.039*** (0.026)
DUM_NE	+		1.768*** (0.028)	1.351*** (0.032)	1.499*** (0.033)
ROE	?				0.013 (0.027)
SIZE	?				-0.010*** (0.003)
LOSS	+				0.143*** (0.010)
DSI	+				0.040*** (0.006)
Adj. R^2		0.05	0.07	0.09	0.09

Notes to Table 5:

Panel B of Table 5 shows the coefficient estimates (standard errors) of the regressions of CR on proxies for good and bad news (and control variables).

CR is defined as the ratio of the current earnings surprise to total earnings news. ER is unexpected returns. DER is an indicator variable equal to one if unexpected returns are negative (zero otherwise). DUM_ER is the product of ER and DER. NE is earnings news. DNE is an indicator variable equal to one if earnings news is negative (zero otherwise). DUM_NE is the product of NE and DNE. ROE is earnings before extraordinary items scaled by beginning of period book value of equity. SIZE is the log of market value of equity. LOSS is an indicator variable equal to one if earnings are negative (zero otherwise). DSI is an indicator variable equal to one if the firm reports negative special items (zero otherwise).

*** indicates significance level of 1% level (two-sided).