The Nonlinear Pricing of Conservative Accounting and Special Items

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July 26, 2005

Abstract

This paper analyzes the pricing of conservative accounting and the role of special items in the pricing relation. Despite important work by Basu (1997) and others on the implications of conservative accounting, the relation between equity returns and accounting conservatism remains unresolved. There are four fundamental problems with the Basu (1997) analysis. First, positive (negative) returns are neither necessary nor sufficient conditions for good (bad) news. Second, informational shocks do not necessarily impact on current earnings only; they affect expectations of future earnings as well. If so, the impact of good and bad news shocks on current earnings, measured typically by the conventional earnings surprise, is an insufficient metric of conservative accounting. Third, the Basu analysis does not account for time-varying (expected) discount rates. Fourth, the empirical studies by Basu and others are based primarily on intuition and/or ad hoc accrual models rather than on equilibrium pricing models. This study investigates the impact of conservative accounting on equity returns using the asset pricing model of Callen and Segal (2004). Our conceptual analysis implies that the asymmetric properties of conservative accounting generate a nonlinear increasing concave 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 quasi-concave and discontinuous relation between unexpected revisions in equity returns and special items. Consistent with our hypothesis, we show that there is a significant increasing concave relation between unexpected revisions in security returns and earnings news. In particular, revisions in equity returns are more positively correlated with negative earnings news than with positive earnings news. We also show that revisions in equity returns are a quasi-concave function of special items and that, as predicted, this relation is far noisier than the relation between revisions in equity returns and earnings news.

1. Introduction

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.[1] For example, asset write-downs are accrual expenses that 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.[2] The timeliness of accruals relative to cash flows implies that breaking down the net income time series into its accrual and cash flow components yields better predictions of expected future cash flows than either the net income or cash flow series alone. 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.

Despite important work by Basu (1997) and others on the pricing implications of conservative accounting, it is our contention that the nature of the relation between equity returns and accounting conservatism remains unresolved. Basu (1997) assumes that positive (excess) returns are "good" news and negative returns are "bad" news. Regressing earnings on positive and negative returns, he finds 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.

There are four fundamental problems with the Basu (1997) analysis. First, positive (negative) returns are neither necessary nor sufficient conditions for good (bad)

[1] 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 indication of firm performance and future cash flows than do current cash flows. See also Dechow (1994), Guay et al. (1996) and Dechow et al. (1998).

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

news. Good news and bad news should be defined in terms of shocks (revisions) to returns and not return levels. For example, 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. Thus, by focusing on earnings levels, the Basu regression is potentially mis-specified.

Second, unless shocks to current earnings are completely transitory, current period shocks affect 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. What is required is a measure of the impact of good news and bad news on current *and* expected future earnings (cash flows). Following Vuolteenaho (2002), Callen and Segal (2004), and Callen, Hope and Segal (2005), we define earnings news as the revision (shock) to the discounted sum, over the lifetime of the firm, of expected current and future earnings as a result of an earnings shock.[3] Earnings news is conceptually similar to the notion of an earnings surprise but is defined more broadly and more accurately to include the shock to all expected future earnings and not just the shock to current earnings. Beyond intuition, theory described further below 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. Thus, the Basu regression potentially suffers from measurement error.[4]

Third, the Basu analysis does not account for time-varying (expected) discount rates resulting in a correlated omitted variables problem. 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.

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[3] See equations (3) through (6) below for a rigorous definition of earnings news.

[4] 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 Basu 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.

Fourth, the empirical studies by Basu and others on the pricing implications of conservative accounting are based primarily on intuition and/or on ad hoc accrual models rather than equilibrium pricing models. As a result, their empirical findings may be driven by the specific structure of the ad hoc model.

On the whole, the Basu analysis provides important intuitive insights into the nature of conservative accounting. However, in the absence of a coherent theoretical framework, Basu's empirical analysis suffers from an inadequate empirical specification for testing the pricing implications of conservative accounting, raising the specter of potential variable misspecification, error in variables, and correlated omitted variables.

This study starts with a conceptual analysis which illustrates inter alia the asymmetric properties of conservatism, namely that negative shocks to current and future cash flows are impounded faster into equity prices than are positive shocks. We focus the analysis on special items as possibly the main accrual account through which the conservative nature of financial statements is reflected. This is because write-offs (of inventory 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. This is in accordance with the definition of conservatism - where losses are more likely to be recorded than gains.

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 first. 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, negative 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 negative earnings news are less than perfectly positively correlated. The situation of positive shocks to future cash

[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.

flows fares no better. In an ideal world of conservative accounting, positive earnings news and special items are uncorrelated; positive special items are unrecorded and, therefore, do not provide a signal of positive earnings news. However, because of GAAP requirements, positive special items are sometimes recorded and provide a very 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 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 correlated with negative shocks than with positive shocks. In addition, the conceptual analysis shows that the asymmetry property of conservatism generates a nonlinear discontinuous quasi-concave relation between the unexpected revision in equity returns and special items. Moreover, given the superiority of earnings news over special items as a measure of conservatism, the 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.

We implement the analysis of earnings news and special items using the asset pricing model of Callen and Segal (2004), which is an extension of Vuolteenaho (2002). Their asset pricing model not only yields the theoretically correct equity pricing relation in a conservative accounting environment but also provides a crucial input for testing this theoretical pricing relation, namely, the otherwise unobservable earnings news variable. Furthermore, in contrast to Vuolteenaho (2002), the Callen-Segal (2004) model exploits the information contained in the accruals-cash flow breakdown. In particular, we follow Callen and Segal (2004) by computing earnings news as the sum of cash flow and accruals news components. The other advantages of their model include the incorporation of an explicit expectations model for earnings, accruals and cash flows to guide the empirical tests and, in contrast to alternative empirically-oriented accounting valuation models, the incorporation of time-varying discount rates.

The empirical results are consistent with the implications of the model. Specifically, we find that the hypothesized nonlinear relation between the revision in

equity returns and earnings news is highly significant and increasing concave as predicted. This relation is derived from theory rather than from an ad hoc relation between returns and conventional earnings posited by Basu (1997). We further find that the (positive) correlation between negative earnings news and special items is significant and large compared with the (positive) correlation 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 and statistically weaker than the nonlinear relation between the revision in equity returns and earnings news.

In what follows, Section 2 briefly reviews the literature on conservatism and on special items. Section 3 develops the hypotheses. Section 4 describes the Callen-Segal (2004) asset pricing model and their measure of earnings news. Section 5 describes the data and Section 6 provides the major 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

[6] Our review is limited to those papers that have direct bearing on our empirical modeling. In particular, we do not review theoretical 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 with "balance sheet conservatism" or "unconditional conservatism" (as reflected in the market-to-book ratio) (e.g., Beaver and Ryan 2005, Pae et al. 2005).

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 verifiable (Barclay et al. 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 et al. 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, p.150). Consistent with their arguments, they find that earnings are significantly

[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).

[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).

more timely in incorporating bad news (i.e., earnings are much 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; Ball and Shivakumar). 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, Hayn and Natarajan (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 would 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]

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

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

[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.

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 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 instigating earnings conservatism.

Although there has been extensive research on conservatism, few studies have employed a direct measure of conservatism, i.e., most extant research uses indirect measures such as the Basu (1997) measure of asymmetric timeliness. In this paper, we focus on a direct measure of conservatism based on asset pricing theory, namely, earnings news, and relate this measure to a specific form of conservatism as reflected in special items (which is described in the following section). 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%. Although gains can 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 the impact of special items on the properties of earnings and the earnings response coefficient. Fairfield et al. (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),[14] 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

[14] Incoming executives are known to often record large write-offs and special items the year of the management change (e.g., Pourciau 1993).

[15] In a valuation context, special items are theorized to be of minimal relevance since they are transitory in nature. However, Black et al. (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.

items. Earning response coefficients (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.

Burgstahler et al. (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 et al. (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.

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[17] Incentives are not significantly related to inventory and PP&E 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 ("Accounting for the impairment of long-lived assets", FASB 1995), 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 (FASB 2001). 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.

In conclusion, researchers have shown considerable interest both in conservative accounting in general and in special items. However, there is limited empirical evidence on how market participants price conservative accounting in general and special items in particular. Our study aims to fill this void.

3. Hypotheses Development

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 the 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 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 (negative) 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 wins a court action unexpectedly or if the firm sells assets infrequently and recognizes a gain on sale unanticipated by the capital markets 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 and the hypotheses stated below.

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.[19] 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 15.0% 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 $(r_t - E_{t-1}(r_t))$.[20]

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 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 (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, the reduction in the value of the firm over its remaining lifetime due to the revision of

[19] 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.

[20] 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.

expected future cash flows, is -$4,170 (=35,505-39,675) or a reduction in value of -12% relative to the benchmark scenario. Note that earnings news (N_E) 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 potential 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, assuming that earnings news is impounded in equity returns, firm value at t=2 is determined not only by the revision to period 2 returns induced by the conventional earnings surprise of -$2,745 (=2,365-5,110) but also by the revision to period 2 returns induced by the surprise to expected future period 3 earnings of -$2,051 (=5,326-7,377). It is not sufficient to look at the conventional earnings surprise only. 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%. For Basu (1997), Scenario 1 would be defined as a good news event, because of the positive 3% return, when clearly it is a bad news event based on the return revision. Third, the special items accrual significantly understates earnings news and the revision to equity returns. Of course, if the firm adopts a depreciation policy so 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.[21]

[21] 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. 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 is identical to the cash flow 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 only fall by 4% at t=2 and with the remaining reduction of 3% at t=3. By comparison to Scenario 1, zero special items are a rather poor measure of negative earnings news (=-$2,456 or -7% in percentage terms) and the consequent reduction in the equity value of the firm. Note that earnings news of -7% is not perfectly correlated with the reduction in equity returns of 4% at t=2 since a further reduction in equity returns of 3% occurs at t=3. This example shows that the gap between earnings news and special items is also 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 a zero correlation between earnings news and special items and a less than perfect positive correlation between earnings news and the 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. In this scenario, earnings news, the unanticipated gain in future expected

cash flows, at t=2 is $4,170 and there are no special items. Holding period returns are about 19% instead of 15% relative to the benchmark t=2. At t=3, the cash flow increase is noted by the market and the third period returns increase to 23%. Thus, under this scenario, there is zero correlation between special items and earnings news and between special items and the revision in equity returns. The revision in equity returns is less than perfectly positively correlated with earnings news. The results of this scenario are summarized in the table below denoted SCENARIO 3.

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.

Finally, consider scenario 4, a case that is similar to scenario 3 except that because of information leakage from substitute sources of information, shareholders learn at t=2 of management's expectations of future cash flow increases. Again, under conservative accounting, the accounts are unaffected by the change in expectations about future cash flow increases and there are no special items. But, because of information leakage, equity prices adjust fully at t=2 to the positive earnings news. Returns in period 2 jump from 15% to 27%, to reflect expected cash flow changes in both periods 2 and 3. Again, special items and earnings news are uncorrelated as are special items and revisions in equity returns. Earnings news and revisions in equity returns ($4,170) are again perfectly positively correlated. These results are summarized in the table below denoted SCENARIO 4.

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%

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	-	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	-	0	-2,456	0
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	-	0	4,170	0
SI	-	0	0	0
COC	-	15%	15%	15%
RET	-	15%	19%	23%
r_t-$E_{t-1}(r_t)$	-	0%	4%	8%

SCENARIO 4				
	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	-	0	4,170	0
SI	-	0	0	0
COC	-	15%	15%	15%
RET	-	15%	27%	15%
r_t-$E_{t-1}(r_t)$	-	0%	12%	0%

Extrapolating from these five scenarios yields Figures 1 and 2. Figure 1 shows the nonlinear increasing concave pricing relation between revisions in returns ($r_t - E_{t-1}(r_t)$) and earnings news (N_E) for the period in which management changes its assessment of future cash flows (t=2).[22] More specifically, revisions in returns and earnings news are positively correlated both when earnings news is negative and when earnings news is positive. When earnings news is negative as in Scenario 1, the revision in returns is negative and when earnings news is positive as in Scenario 3, the revision in returns is positive. However, revisions in returns (-12%) are greater for negative earnings news than for positive earnings news (4%) in absolute value, despite the fact that the earnings news is identical in absolute value in both scenarios. Only when there is a complete leakage of information, obviating the need for positive accruals as an information source, is the revision in returns identical for negative and positive earnings news in absolute value as per Scenarios 1 and 4.

Figure 2 shows the discontinuous quasi-concave nonlinear pricing relation between revisions in returns ($r_t - E_{t-1}(r_t)$) and special items for t=2. Point A in figure 2 is

[22] The figures have earnings news on the vertical axis and revisions in returns on the horizontal axis so that the relation looks convex when in fact revisions in returns are a concave function of earnings news.

defined to be the point at which the undiscounted value of the sum of future cash flows is equal to the carrying value of the asset. Extrapolating from Scenarios 1 and 2, Figure 1 shows that when the undiscounted value of cash flows is below the carrying value of the asset (to the left of A), special items are negative and the revision in returns is negative. Moreover, special items are imperfectly positively correlated with earnings news and the revision in returns as in Scenario 1. When the undiscounted value of the sum of future cash flows is greater than the carrying value of the asset, but the present value of cash flows is less than the carrying value (between A and the origin), special items are zero, although earnings news and the revision in returns are negative as in Scenario 2. When earnings news is positive as in Scenarios 3 and 4, special items are again zero in theory because of accounting conservatism. In theory, special items and equity returns should be uncorrelated whenever earnings news is non-negative. However, as pointed out above, under GAAP, special items that are positively correlated with positive earnings news and with the revision in equity values are sometimes recognized. This positive correlation is incorporated in figure 2.

The above analysis yields the following testable hypotheses stated in the alternative:[23]

HYPOTHESIS 1a: Revisions in equity returns are positively correlated with earning news.

HYPOTHESIS 1b: Revision in equity returns are non-negatively correlated with special items.[24]

[23] In the example upon which the scenarios are built, constant discount rates (zero expected return news) are assumed for simplicity. The empirical analysis below specifically controls for expected return news.

[24] To the extent that "big bath" behavior is common, noise is added to the analysis. In particular, if a new CEO employs negative special items in his first year on the job in order to start with a clean slate, there would be no correlation between the special accrual and earnings news. Assuming that investors are rational, equity markets would be unlikely to react to special items when a new CEO takes over, since "big bath" behavior is rationally anticipated. As a result, the correlation between revisions in equity returns and cash flow news and revisions in equity returns and special items would be attenuated in the year of a CEO takeover. In short, to the extent that "big bath" behavior is a common phenomenon, the power of our tests is weakened but not biased. One way to strengthen the tests would be to control for CEO takeover. It is worth noting, however, that if the empirical analysis does not reject these hypotheses, then controlling for CEO takeover is not crucial.

HYPOTHESIS 2: When earnings news is negative (positive) special items are non-positive (non-negative).

HYPOTHESIS 3: The correlation between earnings news and special items conditioned on earnings news being negative (positive) is greater (smaller) than the overall correlation between earnings news and special items. All three correlations are non-negative.

HYPOTHESIS 4: Revisions in equity returns are an increasing concave function of earnings news such that revisions in equity returns are more positively correlated with negative earnings news than with positive earnings news.

HYPOTHESIS 5: Revisions in equity returns are a non-decreasing quasi-concave function of special items such that revisions in equity returns are more positively correlated with negative special items than with positive special items.

HYPOTHESIS 6: The relation between the revision in equity returns and special items is statistically weaker than the relation between the revision in equity returns and earnings news.

4. The Callen-Segal Valuation Model of Accruals and Cash Flows

Extending prior work by Campbell (1991), Campbell and Ammer (1993), and Vuolteenaho (2002), Callen and Segal (2004) show that revisions in stock returns can be expressed as a function of revisions in accruals news, revisions in cash flow news and revisions in expected return (discount rate) news. Formally,

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

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

BV_t = book value of equity at time t

ACC_t = accrual earnings in period t normalized by BV_{t-1}

CF_t = cash flow from operations in period t normalized by BV_{t-1}

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

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

where

$$Ne = Ncf + Nacc = \text{Earnings News} \quad (3)$$

$$Ncf = \Delta E_t \sum_{j=0}^{\infty} \rho^j (CF_{t+j} - i_{t+j}) = \text{Cash flow News} \quad (4)$$

$$Nacc = \Delta E_t \sum_{j=0}^{\infty} \rho^j ACC_{t+j} = \text{Accrual News} \quad (5)$$

$$Nr = \Delta E_t \sum_{j=1}^{\infty} \rho^j r_{t+j} = \text{Expected Return News} \quad (6)$$

As emphasized in the introduction to this study, the breakdown of net income into cash flows and accruals provides a better prediction of future cash flows than net income alone. Therfore, earnings news in this model is formulated as the sum of accruals news and cash flow news. Furthermore, note that it is the *sum* of these two news items that measure the shock to the firm's current and expected future cash flows rather than the cash flow news item alone.

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 cash flows or accruals 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 test the hypotheses developed in the previous section, we need estimates 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, expected future cash flows and expected future accruals 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, cash flows from operations scaled by initial book value of equity, accrual earnings scaled by initial book value of equity, and the log book to market ratio. The appendix describes the estimation procedure in detail.

5. The Sample

The data for this study are obtained from annual COMPUSTAT and CRSP files for the years 1962 to 2002. We restrict the sample to firms that have positive total assets (DATA6) and non-missing income before extraordinary items (DATA18). We further remove firms in the financial industry (SIC 6000-6999).

We use the following data items to construct the variables used in this study: cash and cash equivalents (DATA1), current assets (DATA4), current liabilities (DATA5), depreciation and amortization (DATA14), special items (DATA17), debt in current liabilities (DATA34), and stockholders' equity (DATA60). The risk-free rate is the annualized three month T-Bill rate. We compute accruals earnings as [(DATA4-lagged DATA4)-(DATA1-lagged DATA1)] - [(DATA5-lagged DATA5)-(DATA34-lagged DATA34)] -DATA14.[25] We require non-missing values of each of the data items used to compute accrual earnings. Cash flow earnings are computed as DATA18 minus accrual earnings. To facilitate the VAR estimation we require two lags of book values, and one lag of total accruals and cash earnings.

[25] Given the evidence in Collins and Hribar (2002) that computing accruals based on changes in the balance sheet can be problematic, we have re-run tests using data from the statement of cash flows. No inferences are affected with this alternative specification.

We compute annual stock returns 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 require a valid stock return during the last month of the fiscal year in order to ensure that the return predictability is not spuriously induced by stale prices. We restrict the sample to companies with at least one lag of returns and market value of equity.

After imposing the above data requirements, merging CRSP and COMPUSTAT, and eliminating small firms with market values less than $10 million, we have a sample of 89,141 firm-year observations. In order to mitigate data errors and scaling problems, we eliminate firms with return on equity (ROE) less than -1. We further delete the top and bottom one percent of all the variables included in the VAR system. These restrictions reduce the sample to 78,457 (9,424) firm-years (firms) from 1964 to 2002.

6. Empirical Results

6.1 Summary Statistics

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 $1,140 million and $113 million, respectively. Median cum dividend equity market returns and accounting returns on book value of equity are nine and twelve percent, respectively. Mean and median book-to-market ratios are less than one. The mean cash flow (accrual) earnings scaled by book value of equity are 0.17 (-0.07). We compute special items (SI) as DATA17 scaled by beginning of the period total assets.[26] Since SI is non-zero for only 24,223 firm-years, the 25th percentile, median and 75th percentile of SI are zero.[27]

Panel A of Table 2 shows the estimated parameters of the parsimonious VAR and the standard errors. The significant (two-tailed) parameter estimates imply that expected returns are high when past one-year cash flows and past one-year book-to-market ratios are high. Cash flows and accruals are high when past returns, past cash flows and past

[26] As sensitivity tests, we repeat the analysis scaling special items by beginning of the period market value of equity and book value of equity. The results are similar to those reported.

[27] Untabulated results show that if we restrict the sample to observations with non-zero SI then the mean and median SI is -0.021 and -0.007, respectively.

accruals are high. Accruals are also high when past book-to-market ratios are low. The book-to-market ratio is high when all four lagged variables are high.[28]

Panel B of Table 2 provides descriptive statistics of the expected return news (Nr), cash flow news (Ncf), accrual news (Nacc), earnings news (Ne) and the revision in equity returns ($r_t - E_{t-1}(r_t)$).[29] Earning news is computed as the sum of cash flow news and accrual news (as in Callen and Segal 2004). The mean and median news items are positive, indicating that on average the news is "good." The mean accrual news (0.004) is greater than the mean cash flow news (0.001) but the median is smaller (0.003 vs. 0.012). In addition, the standard deviation of cash flow news is greater than the standard deviation of accrual news. The mean and median earnings news are greater than the mean and median of expected return news; the mean (median) earnings news is 0.005 (0.031) whereas the mean (median) expected return news is 0.002 (0.007). These findings indicate that earnings news is the main driver of unexpected returns at the firm level, consistent with the findings of Vuolteenaho (2002), Callen and Segal (2004) and Callen, Hope and Segal (2005).

Panel C of Table 2 shows the Pearson and Spearman correlations among the variables of Equation (2). Consistent with the Callen-Segal model, 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.

Panel D of Table 2 presents the means for earnings news, expected return news, and revisions in excess log returns ranked by earnings news quintile portfolios. Consistent with the Callen-Segal valuation model, Panel D shows that revisions in returns increase monotonically with the earnings news quintile. Specifically, revisions in returns increase from -37%, in the lowest quintile, to 37% in the highest quintile. The expected return news (Nr) column shows that, excluding the first quintile, the mean of expected return news decreases monotonically with earnings news. The mean of Nr in quintile 2 is 0.05 whereas the mean of Nr in quintile 5 is -0.04. This result indicates that earnings

[28] Using the terminology of Granger causality, this panel shows that cash flows and book-to-market ratios are directly value relevant in that they Granger cause returns. Past returns and accruals are indirectly value relevant in that they Granger cause cash flows and the book-to-market ratio, and the latter Granger cause returns.

[29] The revision in equity returns is computed as the residual of the VAR return equation. See equation (A2a) in the appendix.

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.[30]

6.2 Hypotheses Tests

The tables that follow test the hypotheses developed in the paper regarding the pricing of conservative accounting and special items. Hypothesis 1A is essentially a weak form of the Callen-Segal (2004) model. Hypothesis H1A conjectures that revisions in equity returns are positively correlated with earnings news. In contrast, the Callen-Segal model implies that revisions in equity returns are not only positively correlated with earnings news but also negatively correlated with expected return news (See equation (2)). Therefore, we elect to test H1A by estimating the Callen-Segal model. Since the Callen-Segal model is estimated here without accounting for asymmetric timeliness, this approach also provides the baseline result against which the impact of conservative accounting is evaluated.

We estimate the Callen-Segal model in *reverse regression* form, in the spirit of Basu (1997).[31] More formally, based on equation (2), we regress earnings news on revisions in equity returns and expected return news:

$$Ne_t = \alpha_0 + \alpha_1(r_t - E_{t-1}(r_t)) + \alpha_2 Nr_t + \varepsilon_t \qquad (7)$$

where the α_j are parameters and ε_t is a white noise innovation term. Consistent with the model, we expect $\alpha_1>0$ and $\alpha_2>0$.[32] The results of the regression are presented in the Ne column in Table 3.[33] The signs of the estimated coefficients are as conjectured; highly significant and positive at the 1% (two-tailed) significance level. These results not only confirm hypothesis H1A but also provide strong support for the Callen-Segal model.

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

[31] 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.

[32] Note that $\alpha_2>0$ because Nr is on the other side of the equation in a reverse regression.

[33] 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 1.96 and Condition Index of 2.38 are not indicative of multi-collinearity. As a sensitivity test, we also measured the revision in equity returns by $(r_t - r_{t-1})$ and obtained qualitatively similar results.

We also conjecture in H1B that special items are an imperfect substitute for earnings news so that special items should be non-negatively correlated with revisions in equity returns. To test this hypothesis, we regress special items on revisions in equity returns and expected return news:

$$SI_t = \beta_0 + \beta_1(r_t - E_{t-1}(r_t)) + \beta_2 Nr_t + \varepsilon_t \quad (8)$$

Similar to the coefficients of equation (7), we expect the coefficients $\beta_1>0$ and $\beta_2>0$.[34] In addition, we expect $\beta_1<\alpha_1$ since special items is a noisy measure of the revision to expected future cash flows by comparison to earnings news. The results of the regression are consistent with H1B and are shown in the SI column of Table 3. As expected, the signs of the estimated coefficients, β_1 and β_2, are positive and significant at the 1% (two-tailed) significance level. However, the regression equation for special items is far less significant than the regression for earnings news: the adjusted R^2 (F-Value) is 0.10 (3,973) compared with an adjusted R^2 (F-Value) for the Ne regression of 0.70 (89,357). In addition, the coefficient on the revision in returns in the special item regression (β_1) is significantly smaller (F-value=170,000, p-value=0.0000) than the coefficient on the revisions in returns in the earnings news regression (α_1), consistent with special items being a noisy measure of earnings news.[35] Thus, Table 3 shows that earnings news and special items are positively and significantly correlated with revisions in unexpected returns, although the association of the revisions in unexpected returns with earnings news is far greater than the association of the revisions in unexpected returns with special items.

Table 4 shows further analysis of the relation between earnings news and special items. Panel A of Table 4 lists mean earnings news and mean special items ranked by earnings news quintile portfolios. Quintile 1 is the most negative earnings news quintile and quintile 5 is the most positive earnings news quintile. The results in this panel, with the exception of quintile 3, are consistent with Hypotheses H2 and H3. Specifically, when earnings news is negative (quintiles 1 and 2), so are special items. Except for quintile 3,

[34] This is a stronger version of H1B since H1B places no sign restriction on the Nr coefficient.
[35] We test whether the coefficients are equal by estimating both equations as a system, thereby allowing us to test cross-equation restrictions.

when earnings news is positive (quintile 4 and 5) special items are positive. In quintile 3 earnings news is positive but special items are 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 -0.025 and increases monotonically to 0.325 in quintile 5.[36] Overall, these results indicate that there is a direct relation between earnings news and special items.

Panel B of Table 4 provides a direct test of H2 based on the mean of special items. For positive (negative) earnings news, the table shows that the mean of special items is 0.0002 (-0.014) and significantly different from zero. The mean of special items for positive earnings news is significantly smaller than the mean special items for negative earnings news (in absolute value). Thus, the results in Panel B confirm H2: when earnings news is positive (negative), special items are positive (negative) and significant.

Panel C of Table 4 presents the Pearson and Spearman correlation coefficients of earnings news with special items for earnings news in general and for positive and negative earnings news. The Pearson correlation between earnings news and special items is, as expected, positive (0.346) and significant. The correlation is still positive and significant for the positive earnings news group, albeit much smaller (0.092). We document a positive and significant correlation (0.373) for negative earnings news. Spearman correlations show similar patterns. Hence, the findings support H3; the correlation between negative (positive) earnings news and special items is greater (smaller) than the unconditional correlation between earnings news and special items.

Panel D of Table 4 shows the results of regressing special items on earnings news, a dummy variable (DUMMY) equal to one if earnings news is negative and zero otherwise, and an interaction variable between earnings news and the dummy variable (DUMMY_Ne). Consistent with H3, we find that the coefficient of 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

[36] In untabulated tests we report a frequency table for positive and negative special items and for positive and negative revisions in returns ranked 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 increases (decreases) monotonically. A similar pattern holds for revisions in returns.

earnings news in general. These results are consistent with special items being an account through which conservatism is manifested. Specifically, 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 is generally not recognized until realized.

The baseline regressions in Table 3 of the Callen-Segal model abstract from the potential non-linearity induced by conservative accounting as posited in Hypotheses 4 and 5. To test H4, we use a modified form of the Callen-Segal model that allows for nonlinearities. Specifically, we regress earnings news on revision in returns, a dummy variable (D) that takes a value of 1 when revisions in returns are negative and 0 otherwise, an interaction term between the dummy variable and ex-post revision in returns, and expected return news:

$$Ne_t = c_0 + c_1 D_t + c_2 (r_t - E_{t-1}(r_t)) + c_3 D_t*(r_t - E_{t-1}(r_t)) + c_4 Nr_t + \varepsilon_t \qquad (9)$$

We cannot reject H4 if $c_2>0$, and $c_3>0$. Furthermore, the Callen-Segal model implies that $c_4>0$ and the conceptual analysis above (as encapsulated in Figure 1) implies that $c_0=0$ and $c_1=0$. The OLS regression results of equation (9), presented in the Ne column in Table 5, strongly support H4 and the Callen-Segal model.[37] The coefficient estimate on the revisions in returns c_2, the interaction coefficient c_3, and the expected return news coefficient c_4 are all positive and significant at the 1% (two-tailed) significance level. The coefficient on negative revisions (the sum of the coefficients on the revisions in returns and the interaction variable) in returns of 0.80 is significantly greater than the coefficient on positive revisions in returns of 0.74, consistent with the nonlinearity analysis of Section 3. Although the intercept (c_0), the stand-alone dummy variable coefficient (c_1) and their sum (c_0+c_1) are statistically significant, the sum of 0.003 is not economically significant. Therefore, except for the intercept term of 0.014, a

[37] The maximum Variance Inflation Factor of 6.21 and Condition Index of 6.46 are not indicative of multi-collinearity. Again, as a sensitivity test, we also measured the revision in equity returns by $(r_t - r_{t-1})$ and obtained qualitatively similar results.

plot of this regression (not shown) would be almost identical to the theoretical relation depicted in Figure 1.

It is worth noting that although this regression is superficially similar in structure to the reverse regression of Basu (1997), it is in fact quite different on many important dimensions. First, the dependent variable in Basu's regression is earnings whereas the dependent variable in our regression is earnings news. Second, the independent variables in the Basu regression are positive and negative return levels, whereas the independent variables in our regression are the positive and negative *revisions* in returns. Third, our regression controls for revisions to future expected discount rates, whereas the Basu regression has no such control. Finally, and perhaps most importantly, unlike the Basu model, our regression analysis is derived from an underlying theoretical model.

The coefficient c_3 measures the impact of conservative accounting on equity returns. The larger is the coefficient, the greater is the wedge between the impact of negative earnings news on security returns and the impact of positive earnings news on security returns. If the literature is correct that conservatism has been increasing secularly, this coefficient should be increasing over time. Indeed, Figure 3 shows an upward trend in the coefficient over time. A linear time trend regression of c_3 (not tabulated) yields a positive trend coefficient that is significant at the two-tailed 5% significance level.

The SI column of Table 5 replicates the regression analysis of equation (9) except that now the dependent variable is special items:

$$SI_t = d_0 + d_1 D_t + d_2 (r_t - E_{t-1}(r_t)) + d_3 D_t^*(r_t - E_{t-1}(r_t)) + d_4 Nr_t + \varepsilon_t \qquad (10)$$

Similar to the earnings news regression, we cannot reject H5 if $d_2>0$ and $d_3\geq 0$. Furthermore, the Callen-Segal model and the conceptual analysis above (as encapsulated in Figure 1) imply that $d_0=0$, $d_1=0$, and $d_4>0$. Consistent with H5, the coefficient estimates of d_2, d_3, and d_4 are positive and significant at the 1% (two-tailed) significance level. The stand-alone dummy variable is not significant as conjectured. Although the intercept is statistically significantly negative, it does not appear to be economically significant. The coefficient on negative revisions (the sum of the coefficients on the

revisions in returns and the interaction variable) in returns is 0.014 and the coefficient on positive revisions in returns is 0.003, consistent with the nonlinearity analysis of Section 3. Although statistically significant, the correlation in the case of positive revisions in returns appears not to be economically significant. Overall, we cannot reject H5: there is a nonlinear increasing concave association between special items and revisions to returns.

Hypothesis 6 posits that the statistical relation between the revision in returns and earnings news is greater than the association between the revision in returns and special items. To address H6, we compare the coefficients of the special item regression with the coefficients of the earnings news regression. We find that c_2 is significantly greater than d_2 (F-value = 29,657, p-value=0.0000) and c_3 is significantly greater than d_3 (F-value = 125, p-value=0.0000). In addition, the sum of c_2 and c_3 is significantly greater than the sum of d_2 and d_3 (F-value = 52,365, p-value=0.0000). Hence, the statistical association between the positive and negative revisions in returns and earnings news is significantly greater than the statistical association between positive and negative revisions in returns and special items. These findings are consistent with special items being a noisier measure of conservatism than earnings news.

7. Conclusion

Consistent with implications of accounting conservatism for revisions in security returns, this study shows empirically that there is a significant increasing concave relation between revisions in equity returns and revisions in expected future cash flows (earnings news). In particular, revisions in equity returns are more highly correlated with negative earnings news than with positive earnings news. Our analysis of conservative accounting also implies that revisions in equity returns are a 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. Empirical results confirm these hypotheses. Our results imply that special items are an imperfect and noisy measure of unexpected revisions in expected future cash flows by comparison to earnings news.

Future research should try to control for a number of potential measurement issues that may be affecting the results of this study. 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. 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.

Appendix: Estimation of the Callen-Segal 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:

$$z_{i,t} = \mathbf{A}z_{i,t-1} + \eta_{i,t} \quad \text{(A1)}$$

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), cash flows from operations scaled by book value of equity (CF_t), accrual earnings scaled by book value of equity (ACC_t), and the log book to market ratio (bm_t).[38] The VAR model can then be described as a system of (mean-adjusted) equations:

$$r_t = \alpha_1 r_{t-1} + \alpha_2 CF_{t-1} + \alpha_3 ACC_{t-1} + \alpha_4 bm_{t-1} + \eta_{1t} \quad \text{(A2a)}$$

$$CF_t = \beta_1 r_{t-1} + \beta_2 CF_{t-1} + \beta_3 ACC_{t-1} + \beta_4 bm_{t-1} + \eta_{2t} \quad \text{(A2b)}$$

$$ACC_t = \varphi_1 r_{t-1} + \varphi_2 CF_{t-1} + \varphi_3 ACC_{t-1} + \varphi_4 bm_{t-1} + \eta_{3t} \quad \text{(A2c)}$$

$$bm_t = \delta_1 r_{t-1} + \delta_2 CF_{t-1} + \delta_3 ACC_{t-1} + \delta_4 bm_{t-1} + \eta_{4t} \quad \text{(A2d)}$$

We estimate the regressions separately 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.[39] 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:

$$r_t - E_{t-1}(r_t) = e1`\eta_{1t} \quad \text{(A3)}$$

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

[38] 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.

[39] Using OLS gives similar results.

$$E_t[z_{i,t+1+j}] = A^{j+1} z_{i,t} \tag{A4}$$

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

$$\begin{aligned} \Delta E_t \sum_{j=1}^{\infty} \rho^j r_{t+j} &= E_t \sum_{j=1}^{\infty} \rho^j r_{t+j} - E_{t-1} \sum_{j=1}^{\infty} \rho^j r_{t+j} \\ &= e1` \rho (I - \rho A)^{-1} \eta_{i,t} = \lambda_1 \eta_{i,t} \end{aligned} \tag{A5}$$

Similarly, the revision in expected cash flow earnings, cash flows news, is computed as:[40]

$$\begin{aligned} \Delta E_t \sum_{j=0}^{\infty} \rho^j (CF_{t+j} - i_t) &\equiv E_t \sum_{j=0}^{\infty} \rho^j (CF_{t+j} - i_t) - E_{t-1} \sum_{j=0}^{\infty} \rho^j (CF_{t+j} - i_t) \\ &= e2` (I - \rho A)^{-1} \eta_{i,t} = \lambda_2 \eta_{i,t} \end{aligned} \tag{A6}$$

From equations (1), (A3), (A5), and (A6) we compute the revision in accrual earnings (residually) as:

$$\begin{aligned} &\Delta E_t \sum_{j=0}^{\infty} \rho^j (ACC_{t+j}) \equiv r_t - E_{t-1} r_t - \Delta E_t \sum_{j=0}^{\infty} \rho^j (CF_{t+j} - i_t) + \Delta E_t \sum_{j=1}^{\infty} \rho^j r_{t+j} = \\ &(e1` - e2`)(I - \rho A)^{-1} \eta_{i,t} = \lambda_3 \eta_{i,t} \end{aligned} \tag{A7}$$

To appreciate the intuition behind the news measure, assume that the coefficient matrix of equations (A2a,b,c,d) is diagonal (all off-diagonal entries are zero) and that ρ=1. The persistence parameters of returns, cash earnings, accrual earnings and the book-to-market ratio are the diagonal entries of the coefficient matrix. From equation (A6) we compute $\lambda_2 = 1/(1 - \beta_2)$ so that the cash flow news equals the cash flow surprise capitalized by one minus the persistence of cash flows. Similarly, we compute accruals news as $\lambda_3 = 1/(1 - \beta_3)$. Holding all else constant, a one percent shock to highly persistent cash flows or accruals will have greater impact on earnings news and, hence, on unexpected equity returns than a one percent shock to less persistent accruals or cash flows.

[40] 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	Q1	MEDIAN	Q3
MV ($M)	1,140	6,752	35	113	486
RETC	0.17	0.50	-0.15	0.09	0.38
ROE	0.10	0.18	0.05	0.12	0.19
BM	0.84	0.84	0.39	0.65	1.03
RET_CSH	0.17	0.23	0.06	0.18	0.29
RET_ACC	-0.07	0.20	-0.16	-0.07	0.02
SI	-0.007	0.041	0.00	0.00	0.00

Notes to Table 1

Table 1 shows the sample distribution for selected variables where STD is the standard deviation and Qi denotes the i'th quartile. **MV** is market value of equity in millions of dollars. **RETC** is the annual cum dividend return computed from monthly returns. **BM** is the book-to-market ratio. **ROE** is the book return on equity. **RET_CSH** is cash earnings scaled by lagged book value. **RET_ACC** is accrual earnings scaled by lagged book value. **SI** is special items (DATA17) scaled by lagged total assets. The number of firm-year observations is 78,457.

Table 2: VAR Estimation and News Summary Statistics

Panel A: VAR Coefficient Matrix

	r_{t-1}	CF_{t-1}	ACC_{t-1}	bm_{t-1}
r_t	-0.017 (0.019)	0.179*** (0.054)	0.023 (0.019)	0.086*** (0.014)
CF_t	0.029*** (0.006)	0.469*** (0.014)	0.164*** (0.013)	-0.001 (0.019)
ACC_t	0.051*** (0.005)	0.073*** (0.011)	0.303*** (0.013)	-0.014*** (0.003)
bm_t	0.128*** (0.018)	0.165*** (0.052)	0.311*** (0.054)	0.854*** (0.013)

Panel B: Descriptive Statistics of News Items

	MEAN	STD	Q1	MEDIAN	Q3
Nr	0.002	0.166	-0.092	0.007	0.103
Ne	0.005	0.26	-0.106	0.031	0.149
Ncf	0.001	0.32	-0.159	0.012	0.167
Nacc	0.004	0.236	-0.112	0.003	0.117
$r_t - E_{t-1}(r_t)$	0.002	0.390	-0.224	0.012	0.237

Panel C: Sample Correlations

	Ne	Nr	$r_t - E_{t-1}(r_t)$
Ne		-0.173***	0.663***
Nr	-0.047***		-0.718***
$r_t - E_{t-1}(r_t)$	0.630***	-0.700***	

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	-0.38	0.01	-0.37
2	-0.07	0.05	-0.15
3	0.03	0.02	0.00
4	0.12	-0.02	0.15
5	0.33	-0.04	0.37

Notes to Table 2

Panel A of Table 2 lists the parameter estimates of the parsimonious VAR. 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 cash flow earnings normalized by prior period book values CF_t (the second element); the mean adjusted accrual earnings normalized by prior period book values ACC_t (the third element); and the mean adjusted log book-to-market value ratio bm_t (the fourth element). The parameters in the table correspond to the following system:

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

Two numbers are reported for each parameter. The first number is a weighted least squares point estimate of the parameter, where observations are weighted such that each cross-section receives an equal weight. The second number in parentheses is a robust jackknife standard error. The sample size for the VAR estimation is 78,457 firm-year observations.

Panel B of Table 2 lists summary statistics of the news items as defined in the appendix:
Nr = Expected Return News = $e1`\rho\Gamma(I - \rho\Gamma)^{-1}\eta_{i,t} = \lambda_1`\eta_{i,t}$
Ncf = Cash Flow News = $e2`(I - \rho\Gamma)^{-1}\eta_{i,t} = \lambda_2`\eta_{i,t}$
Nacc =Accruals News = $e3`(I - \rho\Gamma)^{-1}\eta_{i,t} = \lambda_3`\eta_{i,t}$
Ne = Earnings News = Ncf + Nacc.

Panel C of Table 2 shows the correlations between earnings news (Ne), expected return news (Nr), and revisions in cum dividend annual excess log returns ($r_t - E_{t-1}(r_t)$). The revision in returns is defined in the appendix 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 earnings news (Ne), expected return news (Nr), cum dividend annual excess log returns (r_t) and the revision in cum dividend annual excess log returns ($r_t - E_{t-1}(r_t)$), all ranked by earnings news portfolio quintiles.

*, **, *** indicate significance level of 10%, 5%, 1%, respectively.

Table 3: Regressions of Cash Flow News and Special Items on Revisions in Equity Returns and Expected Return News

$$Ne = a_0 + a_1 (r_t - E_{t-1}(r_t)) + a_2 Nr + \varepsilon_t \quad (\textbf{Test of Callen-Segal Model and H1A})$$

$$SI = b_0 + b_1 (r_t - E_{t-1}(r_t)) + b_2 Nr + \varepsilon_t \quad (\textbf{Test of H1B})$$

	Ne	SI
Intercept	0.001	-0.006***
	(0.000)	(0.000)
$r_t - E_{t-1}(r_t)$	0.778***	0.030***
	(0.002)	(0.000)
Nr	1.213***	0.078***
	(0.004)	(0.001)
F-Value	89,357***	3,973***
Adj. R^2	0.70	0.10

Notes to Table 3

Table 3 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 defined as special items (DATA17) divided by lagged total assets.

*, **, *** indicate significance level of 10%, 5%, 1%, respectively.

Table 4: 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	15,143	-0.380	-0.025
2	15,143	-0.075	-0.004
3	15,143	0.031	-0.002
4	15,143	0.124	0.000
5	15,143	0.325	0.002

Panel B: Mean Analysis (Test of H2)

	N	Ne	SI
Ne≥0	43,128	0.169***	0.0002**
Ne<0	32,587	-0.212***	-0.014***

Panel C: Correlation Analysis of Earnings News with Special Items

	N	Pearson	Spearman
Ne	75,715	0.346***	0.239***
Ne≥0	43,128	0.092***	0.049***
Ne<0	32,587	0.373***	0.271***

Table 4, continued

Panel D: Regression Results of Special Items on Positive and Negative Earnings News (Test of H3)

Intercept	-0.002***
	(0.000)
DUMMY	0.004***
	(0.000)
Ne	0.012***
	(0.001)
DUMMY_Ne	0.058***
	(0.001)
F-Value	4,246***
Adj. R^2	0.14

Notes to Table 4

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 of Table 4 provides analysis of mean special items conditioned on the sign of earnings news. Panel C provides Pearson and Spearman correlations between earnings news and special items. Panel D presents the coefficient estimates (standard errors) of the regression of special items on earnings news (Ne), DUMMY and DUMMY_Ne. DUMMY is equal to 1 when earnings news is negative and zero otherwise. DUMMY_Ne is the interaction of DUMMY with earnings news. Earnings news is defined in the notes to Tables 2 and 3.

*, **, *** indicate significance level of 10%, 5%, 1%, respectively.

Table 5: Regressions of Cash Flow News and Special Items on Revisions in Equity Returns and Expected Return News: Nonlinear Analysis

$$Ne = c_0 + c_1 D + c_2 (r_t - E_{t-1}(r_t)) + c_3 D^*(r_t - E_{t-1}(r_t)) + c_4 Nr + \varepsilon_t \quad (\textbf{Test of H4})$$

$$SI = d_0 + d_1 D + d_2 (r_t - E_{t-1}(r_t)) + d_3 D^*(r_t - E_{t-1}(r_t)) + d_4 Nr + \varepsilon_t \quad (\textbf{Test of H5})$$

	Ne	SI
Intercept	0.014***	-0.004***
	(0.001)	(0.000)
D	-0.011***	-0.000
	(0.002)	(0.000)
$r_t - E_{t-1}(r_t)$	0.741***	0.003***
	(0.003)	(0.001)
$D^*(r_t - E_{t-1}(r_t))$	0.056***	0.011***
	(0.004)	(0.001)
Nr	1.209***	0.077***
	(0.004)	(0.001)
F-Value	44,874***	2,031***
Adj. R^2	0.70	0.10

Notes to Table 5

Table 5 shows the estimated coefficients (standard errors) of the regressions of earnings news (Ne Column) and special items (SI Columns) on revisions in equity returns and expected return news (Nr) allowing for nonlinearity in the revisions in equity returns. Earnings news and expected return news are defined in the notes to Tables 2 and 3. D is a dummy variable that takes a value of 1 when revisions in returns are negative and 0 otherwise.

*, **, *** indicate significance level of 10%, 5%, 1%, respectively.

Figure 1- The Nonlinear Relation between Cash Flow News and Revision in Returns

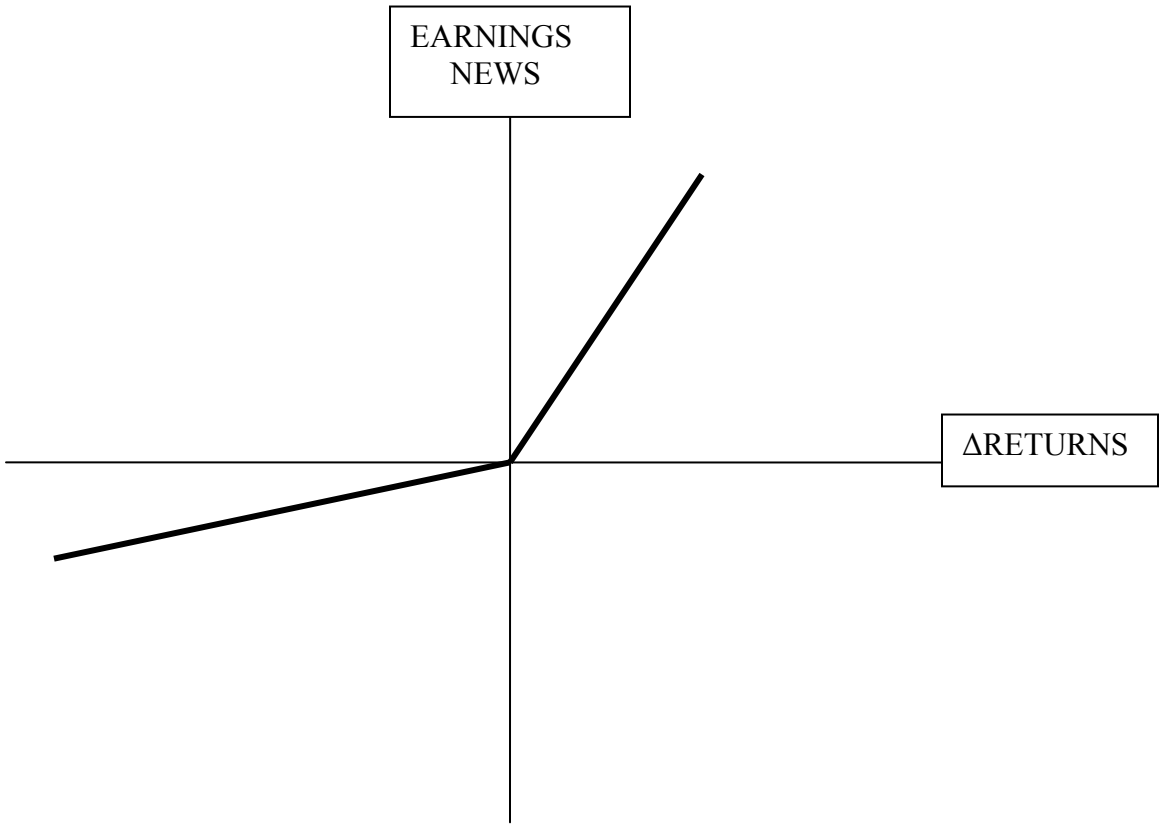


Figure 2- The Nonlinear Relation between Special Accruals and Revision in Returns

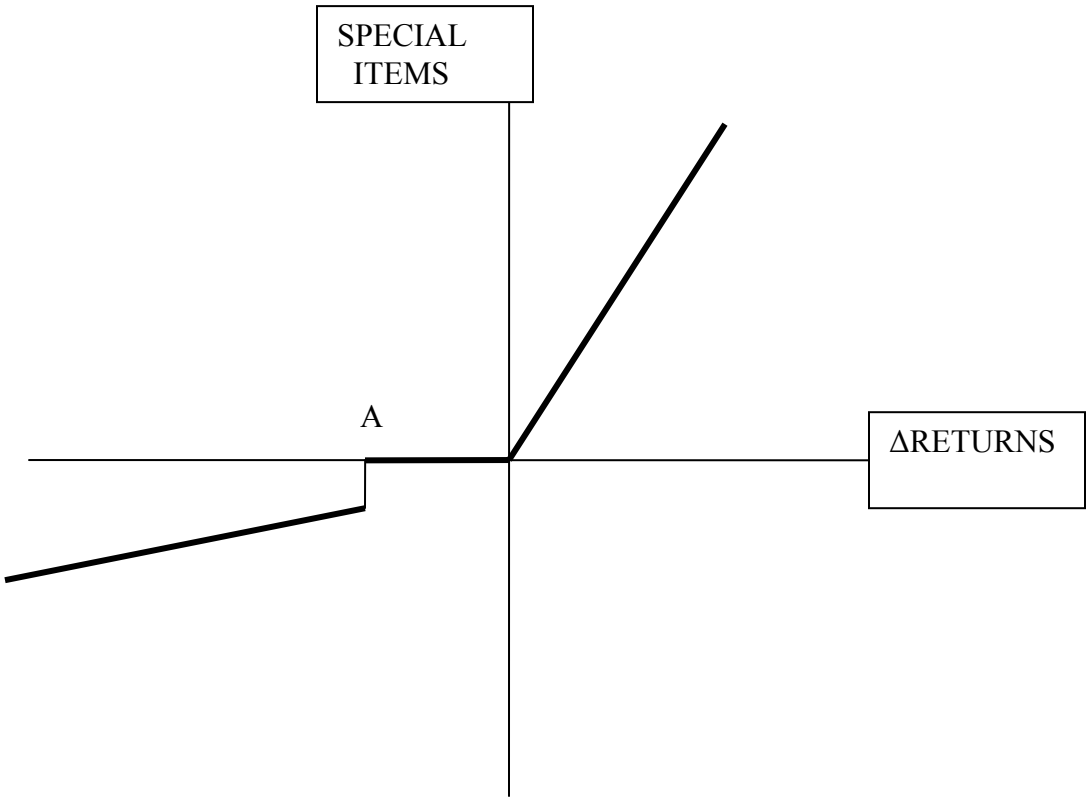
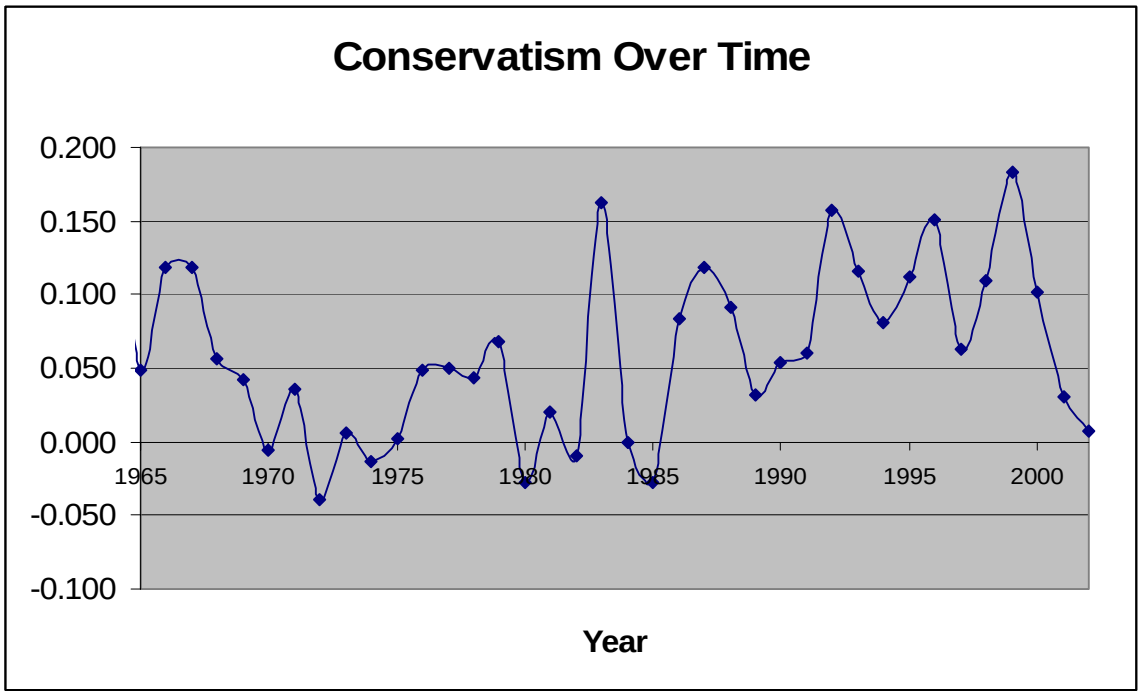


Figure 3 – Analysis of Conservatism over Time



Note to Figure 3:

The figure shows the estimated coefficient of negative revisions in returns (c_3) from regression (9) for the years 1964 to 2002.