Asymmetric timeliness of earnings, market-to-book and conservatism in financial reporting

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Abstract

In a regression of earnings on returns, the coefficient on returns is higher when returns are negative. This is referred to as asymmetric timeliness of earnings, and has recently been used extensively as a measure of conservatism in financial reporting. The ratio of market value of equity to book value of equity, or market-to-book, is another commonly used proxy for conservatism. We use the theory of accounting conservatism to explain why and how the book value of equity differs from its market value. Further, our analysis provides insights into the relation between the two proxies for conservatism, asymmetric timeliness and the market-to-book ratio. We hypothesize and find that the sign and magnitude of the correlation between the two measures depends on (a) the horizon over which asymmetric timeliness is measured and (b) the timing of the measurement horizon relative to market-to-book.

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Comments welcome

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1. Introduction

Basu (1997) defines conservatism as the accountant’s tendency to require a higher degree of verification for recognizing good news in earnings than for bad news. Since annual unexpected returns capture news arrival during the year, this definition has implications for the earnings-return relation. In a regression of annual earnings on returns, Basu (1997) predicts and finds that earnings respond more to negative returns (bad news) than positive returns (good news). He calls this differential response the asymmetric timeliness of earnings and uses it as a measure of conservatism.

Since Basu (1997), a significant number of studies use his asymmetric timeliness of earnings conservatism measure. Many of those studies use this Basu measure exclusively, rather than using a variety of conservatism measures.\(^1\) Prominent examples are Ball, Kothari and Robin (2000), Ball Robin and Wu (2003) and Pope and Walker (1999), all of which study differences in conservatism across countries. Other studies use a variety of conservatism measures. For example, Givoly and Hayn (2000) use the Basu and other measures to draw conclusions on trends in conservatism through time. Studies using multiple measures tend to generate consistent results across measures (see Watts, 2003b).

Recently, some studies question whether the Basu measure is a reliable empirical measure of conservatism. For example, Givoly, Hayn and Natarajan (2003) (GHN) analyze the Basu measure and conclude that (a) it captures only one possible source of conservatism and (b) it has a number of limitations even as a gauge of asymmetric timeliness. GHN further point out that the Basu measure is negatively correlated with

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\(^1\) See Watts (2003b) for a survey of the other conservatism measures and the evidence they provide on conservatism.
other conservatism measures, in particular, the ratio of market value of equity to book value of equity, or market-to-book. They view this as a potential shortcoming of the Basu measure.

The negative correlation between market-to-book (MTB) and asymmetric timeliness has been documented by other studies, for example, Francis, LaFond, Olsson and Schipper (2003). Richardson and Tinaikar (2004) distinguish between what they term *ex ante* conservatism, such as the unconditional expensing of R&D and advertising expenses that leads to higher MTB, and *ex post* conservatism, that is, asymmetric response of earnings to bad news as opposed to good news. Beaver and Ryan (2004), in a recent working paper, refer to the same concepts as unconditional conservatism and conditional conservatism respectively. They point out that non-capitalization of assets also eliminates the need for asset write-offs on arrival of bad news about the projected benefits of the assets. Thus, they predict a negative correlation between unconditional conservatism and conditional conservatism.² Pae, Thornton and Welker (2004) argue that the negative correlation is a result of managerial attempts to substitute balance sheet conservatism with earnings conservatism.

This study’s first objective is to predict and explain the empirical relation between the two popular conservatism measures, asymmetric timeliness and market-to-book (MTB). In the process of achieving that objective, we assess the extent to which the two measures reflect conservatism. That assessment requires at least a definition of conservatism and preferably a theory of conservatism. We use the definition and theory

² We agree with Beaver and Ryan’s (2004) argument for a negative correlation between MTB and asymmetric timeliness. The theoretical analysis in our paper leads to insights and predictions distinct from those in Beaver and Ryan (2003).
of conservatism given in Watts (2003a). Our assessment suggests that most measures employ a biased and noisy benchmark for conservatism – the market value of the firm’s equity or some transformation thereof. To predict the relation between the measures, we break the market value of equity into components and investigate which components the various measures incorporate. The empirical predictions from this exercise are empirically tested and confirmed using market-to-book and Basu measures. The theoretical and empirical investigations provide new insights into the nature of conservatism, the characteristics captured by the two measures and the relations between the measures.

In particular, we predict and find that the sign and strength of the correlation between MTB and Basu’s measure depends on the horizon over which the Basu measure is estimated, and the timing of the estimation relative to MTB. Further, this paper provides insights into the relation between conservatism, MTB and the earnings response to good news. It is not our objective to develop better measures of conservatism, but our results suggest that the Basu measure is better at capturing total conservatism in net assets when it is estimated over longer horizons.

The rest of this paper is organized as follows. Section 2 describes the nature of conservatism as described in Watts (2003a), breaks the market value of equity into components and uses those components to predict and explain the relation between the various conservatism measures. In addition, the theory is used to predict conservatism’s variation with firm characteristics. In Section 3, we describe our data and report our empirical tests of the predicted relations among conservation measures and between firm
characteristics and conservatism measures. Section 4 summarizes the main findings, discusses implications for existing and future research and concludes.

2. Conservatism and conservatism measures

We begin this section with a discussion of the nature of conservatism that leads to the conclusion that conservatism is the understatement of the market value of net assets. Many conservatism measures use the market value of equity as the benchmark for understatement, so to compare the measures, the second subsection breaks equity value into components to facilitate a comparison of those measures. Those components are then used to predict the relations between the asymmetric timeliness measure and market-to-book (MTB).

2.1 The nature of conservatism

The Basu measure of conservatism is an empirical measure generated from the more extreme traditional adage “anticipate no profit, but anticipate all losses (Bliss, 1924). However, conservatism is not necessarily intended to maximize this asymmetry in the recognition of losses and gains in annual earnings. Conservatism’s objective varies with its economic determinants.

Watts (2003a) argues that conservatism in financial reporting arises for a number of economic reasons. In particular, conservatism is generated by:

1. Its role as part of efficient technologies employed in firm governance (e.g. management compensation) and firm contracts with external parties (e.g. debt contracts);
2. Increases in litigation costs;
3. Regulators’ asymmetric loss functions; and
4. Links between reported income and income taxes.

The common attribute in these economic determinants is that there is an asymmetric loss function involved. For example, shareholders have an asymmetric loss function due to their limited liability and so have incentives to transfer wealth from debtholders by overstating earnings and net assets. Similarly, managers have limited liability and have incentives to overstate financial performance and transfer wealth from shareholders. Litigation costs are asymmetric. Managers, auditors and firms are much more likely to be sued for overstatements of earnings and net assets than for understatements (e.g., Kellogg, 1984). Similarly, accounting regulators bear larger costs for earnings and net asset overstatements (see Watts, 2003a, p. 217). The links between reported earnings and taxes (see Shackelford and Shevlin, 2000) provide an incentive to defer the recognition of revenues and accelerate the recognition of expenses and losses in order to reduce the present value of taxes.

In all the economic determinants, conservatism is used to reduce the costs of overstatement of cumulative earnings and net assets. To understand which facets of conservatism the different empirical measures capture, we require a framework to understand the purpose and functioning of accounting and accounting conservatism. In the next section, we present a framework that begins with market value of equity (MVE) and breaks it down into its components. The framework makes some simplifying assumptions. Nevertheless, it provides insights into the relations between different
measures of conservatism and yields empirical predictions not yet documented by the literature.

2.2 Components of equity market value

Figure 1 presents a simplified model of the components of the market value of equity. The box labeled “Components of value” incorporates various components of equity market value. The line at the top of the box is the market value of equity (MVE). The line at the bottom of the box is zero. For purposes of exposition we assume that the MVE is fixed and accounting method changes do not affect it. In between MVE and zero are three lines representing three alternative measures of equity value: the value of separable net assets (VSNA); the book value of net assets (BVNA); and the historical cost of net assets modified by the lower of cost or market rule (HCLCM). These three measures plus MVE define four components of firm value in a classification scheme whose objective is the explanation of the relation between conservatism measures. The components are labeled rents, unverifiable increases in value of separable net assets, verifiable increases in the value of separable net assets and HCLCM. The four measures, HCLCM, BVNA, VSNA and MVE, are increasingly inclusive of the four components.

HCLCM is the net assets measure that would be generated by historical cost accounting in combination with the lower of cost or market rule. It will vary with the choice of HCLCM methods. For example, the component will vary with the choice of accelerated versus straight-line depreciation. In a growing firm straight-line depreciation will cause this component to be larger. BVNA has two components: (a) HCLCM, and (b)
increases in asset values over cost that can be verified, e.g., increases in the value of securities traded in liquid markets. **VSNA** is the market value of all separable net assets assuming one could obtain a market value for all such assets. It differs from BVNA by the increases in market value (over cost or lower of cost or market) that are unverifiable. Such assets include the value of patents and licenses that are separable but not verifiable because of illiquid markets. VSNA is the amount shareholders would receive from an orderly liquidation of the firm. As such it is the opportunity cost of staying in business and is important in abandonment decisions. **Rents** represent above-competitive returns on the firm’s current and future investments. As such they represent the returns to some monopoly power.

In our framework, accounting records increases in equity value when they are verifiable or realized in cash. Thus, increases in equity value are reported as increases in book value with a time lag. As a result, at any point in time, accounting does not report the contemporaneous value of firm equity. Instead, it is more concerned with the valuation and distribution of the firm’s resources and consequently, recognition of verifiable increases in those resources (Holthausen and Watts, 2001, and Watts, 2003a). For example, consider debt contracting. Watts (2003a, p. 212) argues that conservative accounting evolved in part to provide a verifiable minimum estimate for the net assets that could be used to constrain dividends in debt contracts. To avoid the costs of re-contracting and re-estimating that lower bound each year conservative earnings evolved to serve as a cost-effective means to update the lower bound on net assets. The critical number for dividends is net assets rather than the change in net assets (earnings minus dividends). If all separable asset values were verifiable, **VSNA** is the number that would
be reported in the financial statements under our framework. Since some increases in VSNA (over cost or lower of cost or market) are unverifiable accounting instead reports BVNA as the value of net assets.

We assume that rents are not included in BVNA, because they represent joint benefits, and not separable assets. To illustrate that rents cannot be meaningfully separated into non-separable intangible assets, we use the following example. Assume a 100% equity-financed firm has one investment project only and that project lasts one period. At the beginning of the period (time zero), the firm spends cash on research and development, a plant, advertising, wages etc. and at the end of the period (time 1) receives cash revenues. At time zero, shareholders invest just enough to cover the expenditures. The value of the firm at time 0 (after the shareholders’ investment and the firm’s investment expenditures) is the present value of the future revenues. If the firm’s product market is perfectly competitive (zero rents) and its management maximizes value, at time zero the net present value of the investment is zero. The present value of future revenues just equals the sum of the expenditures so the value of the firm can be split into “assets”: expenditures on plant, advertising, research & development, human capital (wages) etc.

If the firm earns a competitive rate of return greater than the market rate (earns rents), at time 0 the net present value of the investment is positive and the present value of the future revenues is greater than the sum of the expenditures. If the above-competitive rate of return is not due to a patent or license (a separable asset) there is no meaningful way to allocate the value of the firm to individual expenditures or assets. In that case the rents are due to the firm being more efficient. The rents come from the
efficient combination of the expenditures. No single type of expenditure generates those rents. Advertising could not generate the rents absent research and development expenditures of a particular scale, for example. There is a joint benefit from the combination of expenditures.

Some FASB standards allow the recognition of joint benefits. For example, FAS 142 requires that joint benefits be reported as goodwill, to the extent that they are paid for in an acquisition. We ignore the effect of such standards, though it is our intention to discuss their implications in a later version. Indeed, our assumptions probably reflect the intended function of accounting in the absence of regulation. Prior to the Securities Acts, acquired goodwill, including non-separable intangible assets, was routinely written off on acquisition [see Chandra, Wasley and Waymire (2004)].

2.3 Conservatism measures

2.3.1 Market-to-book

In our framework, accounting reports the value of separable net assets that can independently liquidated, not the contemporaneous market value of equity. As can be seen from Figure 1, the difference between the two is the firm’s rents. Contracts written on accounting information require that information to be timely and verifiable. The asymmetric nature of the payoffs to various contracting parties introduces asymmetric verification standards for gains versus losses i.e., conservatism, with the objective of obtaining a verifiable lower bound on the value of separable net assets. This causes some unverifiable increases in the value of separable assets not to be recorded. In Figure 1, this is labeled “unverifiable increases in the value of separable net assets.” The consequent
value of net assets reported is the book value of net assets (see Figure 1) and the amount of conservatism in Figure 1 is \( \text{UNA}_c \). Conceptually, \( \text{UNA}_c \) is the appropriate measure of conservatism in our framework, given our assumptions.

Empiricists have tended to define conservatism as the understatement of the market value of equity (MVE), or changes therein. This is a common feature of almost all empirical measures of conservatism, including the Basu measure. Market value of equity incorporates not just separable net asset values, but also rents on current projects and future growth opportunities. The use of MVE is possibly due to a belief that accountants can supply verifiable or reliable estimates of equity market value that are better than the observed market value in liquid markets, and possibly due to a lack of a framework for conservatism. It could also be partly due to the unavailability of the appropriate benchmark in our framework, the sum of the verifiable estimates of market value for all separable net assets. Alternative non-equity market-value-based conservatism measures have been used occasionally. For example, Basu (1997) uses earnings reversals and Givoly and Hayn (2000) use the sign and magnitude of accumulated accruals. In future versions of this paper we may also investigate these non-equity value conservatism measures, but in this version we concentrate on equity-value-based measures. In particular, we focus on the market-to-book ratio and asymmetric timeliness of earnings.

Figure 1 illustrates the different aspects of conservatism that the various measures represent. Market-to-book (MTB) measures the extent to which the book value of net assets understates the market value of equity (\( \text{UNA}_M \)). If MTB is above one, the book value of net assets (BVNA) understates the market value of equity; if it is below one, BVNA overstates equity market value. To represent this, the arrows for \( \text{UNA}_M \) and MTB
cover the same components of value in Figure 1. Note that MTB includes both rents and unverified increases in the value of net separable assets, that is, UNA_C. Hence MTB measures UNA_C with error. Additional error will be introduced to the extent that GAAP allows firms to exclude, or prevents firms from including, verifiable increases in separable net assets value. The book value of net assets given in Figure 1 is the book value of net assets that would exist under our framework, not the actual book value.

2.3.2 The Basu asymmetric timeliness measure

Basu investigates the extent to which a given period’s news about a firm is incorporated in the firm’s earnings, conditional on the news being “good” or “bad.” Basu (1997) uses stock returns as a proxy for news. Stock prices reflect information the market receives from a variety of sources other than current earnings and hence stock price changes are a measure of news arrival during the period. Basu expects asymmetric standards for the verification of losses and gains to cause bad news (negative stock returns) to be reflected in current earnings more than good news (positive stock returns). He tests his hypothesis with the following regression:

\[
E_t/P_{t-1} = \alpha + \beta*R_t + \eta*DR_t + \gamma*R_t*DR_t + \epsilon_t
\]

(1)

\(E_t\) is annual earnings, \(P_{t-1}\) is market capitalization at the beginning of the year, \(R_t\) is contemporaneous annual returns and \(DR_t\) is an indicator variable that is set equal to one if \(R_t\) is negative and is set equal to zero otherwise. In the above regression, \(\beta\) measures the response of earnings to returns when returns are positive and \((\beta + \gamma)\) measures the response when returns are negative. Conservatism implies \(\beta + \gamma > \beta\), that is, \(\gamma > 0\). Basu (1997) calls \(\gamma\) the asymmetric timeliness coefficient and finds it is significantly different from zero in a pooled time-series cross-sectional regression.
Regression (1) is typically estimated across time and firms. Therefore, the asymmetric timeliness coefficient (the Basu measure) reflects that average asymmetry in the recognition of losses versus gains across the periods and firms used in the estimation. Two features of the Basu measure are worth noting. First, it uses the change in market value of equity as the benchmark and is thus affected by changes in rents. Second, it does not measure aggregate conservatism – the total understatement of net assets. Instead it estimates conservatism’s differential treatment of gains versus losses in net assets over the period for which the measure is estimated.

2.4 The relation between the asymmetric timeliness and market-to-book

Our study focuses on the relation between MTB and asymmetric timeliness. There are conservatism measures other than MTB and asymmetric timeliness discussed in the literature. Examples include Penman and Zhang’s (2002) measure of hidden reserves and Easton and Pae’s (2003) measures to capture rents and the understate of the value of separable net assets, with some error. Our paper does not analyze these measures. By construction, they tend to measure attributes similar to MTB, and should be correlated positively with MTB. In fact, GHN document a positive correlation between MTB and the other measures of conservatism mentioned above (excluding asymmetric timeliness). They report that the correlations between the Basu measure and the other measures, including MTB, are uniformly negative. Understanding the relation between MTB and the Basu measure provides useful insights how the other measures are inter-related as well.
On average, high MTB firms will have (a) high unrecognized rents and/or (b) high unrecognized (and unverifiable) increases in the value of net separable assets. Under the simplifying assumptions of the framework discussed in the above section, accounting does not tend to recognize changes in the value of rents regardless of sign. Therefore, accounting earnings will correlate less with equity returns that reflect changes in rents, than returns driven by changes in the value of assets-in-place. Thus, the estimates of both $\beta$ and $\gamma$ are biased towards zero in the presence of rents and changes thereof. This effect will be more pronounced for firms whose market value of equity comprises current and future rents to a greater degree, that is, high MTB firms.

Increases in the value of separable assets-in-place are reported in accounting earnings only when they are verifiable. Unverifiable increases in the value of separable net assets are not recognized. Negative equity returns due to the decreases in previously unrecognized increases in separable asset values will not trigger asset write-offs and hence, will not affect earnings asymmetrically in times of bad news. Compared to low MTB firms, high MTB firms are more likely to experience negative returns that reflect bad news about unrecognized past increases in separable net assets.

Thus, the effect of rents predicts a negative correlation between MTB and both $\beta$ and $\gamma$. The effect of unrecognized increases in separable asset values further strengthens the negative correlation between MTB and $\gamma$.

**Hypothesis 1a:** The covariance between earnings and positive returns will be lower for firms with high MTB at the beginning of the estimation period.
**Hypothesis 1b:** Asymmetric timeliness of annual earnings with respect to negative returns is negatively correlated with MTB at the beginning of the estimation period.

The lack of earnings response to changes in the value of previously unrecognized rents and asset values has been referred to in other studies.\(^3\) However, while this theory explains the negative relation between asymmetric timeliness and MTB, it is important to test for empirical regularities predicted by this theory that are not yet documented by the literature.

Firms that have high MTB are more likely to have deferred good news in the past to a greater extent than firms with low MTB. Thus earnings response to good news in the past will be lower for high MTB firms, resulting in unrecognized assets. Note that the partial effect of this is a higher historical asymmetric timeliness of firms with high MTB. However, since MTB is a persistent characteristic, high MTB firms are also likely to have exhibited lower earnings response to bad news in the past than low MTB firms (the effect behind Hypothesis 1b). The partial effect of this is to lower historical asymmetric timeliness of high MTB firms.

When measuring future asymmetric timeliness with respect to MTB, the less timely good news recognition by high MTB firms is essentially swamped by the effect of more timely bad news recognition by low MTB firms. Importantly, the difference between earnings response to bad news across low MTB and high MTB firms should be much smaller in magnitude when measured historically, than when measured in the future. A useful way to understand this is to recognize that in good years, firms lay down layers between market value of equity and book value – neither increases in rents nor the

\(^3\) Richard and Tinaikar (2004) and Beaver and Ryan (2004) also make similar arguments.
full amount of unverifiable increases in asset values are recognized. In bad years, market value of equity (MVE) declines, erasing layers between MVE and book value. The extent to which the layers are retained will be determined by the extent to which book values are written down in response to the decline in MVE. A firm that experiences a decline in MVE due to a decrease in the value of rents (Firm A) does not experience a book value decline, since rents are not recognized in the first place. Thus, the market-to-book for Firm A will unequivocally decline. On the other hand, a firm that experiences an MVE decline due to decline in the value of assets-in-place (Firm B), will experience asset write-offs and a decrease in book value. If Firm A and Firm B had similar initial MTB ratios, a given decline in MVE will lead to a lower end-of-period MTB for Firm A than for Firm B, as well as lower asymmetric timeliness.

Low MTB firms with past negative returns will include firms that have been historically assets-in-place and have experienced larger asset write-offs on experiencing negative returns. However, they will also include some type A firms as described in the preceding paragraph. Within the low-MTB type-A category, firms have low MTBs because they experienced market declines on the evaporation of unrecognized rents, with no corresponding write-offs and declines in book values. Similarly, high MTB firms with past negative returns will include some type B firms, that is, firms that have high MTB because their book values declined more than proportionately than their market values, that is, they reported large write-offs in response to negative returns. Thus, the difference between earnings response to bad news between low MTB firms and high MTB firms is expected to be lower when measured historically than when measured in the future.
As one lengthens the horizon over which earnings responses are measured, the negative difference in good news response between high MTB firms and low MTB firms is expected to increase in magnitude. At the same time, the negative difference in bad news response between high MTB firms and low MTB firms is expected to decline in magnitude. Thus, the correlation between historical asymmetric timeliness and MTB should become increasingly positive as one increases the horizon over which asymmetric timeliness is measured.

**Hypothesis 2a:** The historical covariance between earnings and positive returns will be lower for firms with higher MTB at the end of the estimation period.

**Hypothesis 2b:** The correlation between historical asymmetric timeliness and MTB at the end of the estimation period should be more positive the longer the estimation period.

### 3. Data

We begin with the intersection of all firm-years in COMPUSTAT and CRSP with sufficient data to calculate income before extraordinary items (IBEI), market value of equity (MVE), book values and fiscal-year equity returns. Fiscal-year returns are 12-month buy-and-hold returns beginning the fourth month of the fiscal year, consistent with Hayn (1995) and Basu (1997). Long-horizon earnings are computed by adding annual earnings over the appropriate horizon. Similarly, long-horizon returns are calculated by compounding annual fiscal-year returns. For every firm-year with market-to-book available at the end of year \( t \), we require availability of returns and earnings from time \( t-4 \) to time \( t+3 \). To reduce the effects of outliers, observations in the top or bottom 0.5% of
price-deflated annual and long-horizon earnings, as well as annual and long-horizon returns are truncated. Firms with negative book values are excluded from the sample. The final sample consists of 45,664 firm-years over the period 1972-1999.

Table 1 presents the descriptive statistics for the earnings and returns data in our sample over different horizons, along with statistics on the market value of equity and market-to-book ratio (MTB). $R_{t+1,t+k}$ and $E_{t+1,t+k}$ represent returns and earnings respectively, cumulated forward for every firm over the period $t+I$ to $t+k$, with $k$ varying from 1 to 3. $R_{t-j,t}$ and $E_{t-j,t}$ represent returns and earnings respectively, cumulated backward for every firm over the period over the period $t-j$ to $t$, with $j$ varying from 0 to 4. Mean returns and earnings are increasing in horizon, as expected, as are their standard deviations. The descriptive statistics for returns are very similar over matching horizons, irrespective of the direction in which they are cumulated. The same is true for earnings. Minor differences arise mechanically because the cumulative returns at the beginning and at the end of the time series differ depending on whether the returns lag or lead with respect to time $t$. The mean market capitalization in our sample is $1.2$ billion, though the median size is much smaller at $119$ million. The mean MTB is 2.26, while median MTB is 1.52.

4. Methodology and Results

4.1 Asymmetric timeliness over different horizons

Tables 2 and 3 present the results of estimating the basic Basu regression [regression (1)] over varying horizons. The regression is estimated in the cross-section every year. Tables 2 and 3 reports the time-series means along with the associated t-
statistics. In Table 2, for every year $t$, earnings and returns are cumulated for every firm over the period $t+1$ to $t+k$, with $k$ varying from 1 to 3. Thus, in Table 2, earnings and returns are cumulated forward.

In Table 3, for every year $t$, earnings and returns are cumulated for every firm over the period $t-j$ to $t$, with $j$ varying from 0 to 4. Thus, in Table 3, earnings and returns are cumulated backward. In every column of both Tables, the coefficient representing earnings response to good news ($\beta$) and the asymmetric timeliness with respect to bad news ($\gamma$) are positive and significant. Both Tables also demonstrate that increasing the horizon over which the Basu regression is estimated leads to increasing magnitudes of $\beta$ and $\gamma$.

A possible reason for $\beta$ and $\gamma$ increasing with the horizon arises from the time-lag between economic events and their reflection in accounting statements. As already discussed, accounting reports increases in equity value (good news) when they are verifiable or realized in cash. Consider a simple example. Assume in the first year of a firm’s life, a firm experiences a favorable economic event that results in a positive equity return in time $t=1$. This positive return is reported in earnings in time $t=2$, once it is verifiable. At the annual level, earnings would not appear timely with respect to contemporaneous firm returns. However, if returns and earnings were cumulated every two years, earnings would appear timelier. Thus, increasing the horizon increases the covariance of earnings with good news. A similar effect also exists for economic events conveying bad news. The verification standards imposed for the recognition of bad news in earnings are less strict than for good news. Nevertheless, the recognition of bad news in earnings is also probably less-than-immediate at the annual level. Negative annual
returns are captured not only in contemporaneous write-offs in the income statement, but write-offs in subsequent years as well. Thus, as returns and earnings are cumulated over longer horizons, the time-lags between economic events – conveying both good news and bad - and their incorporation into earnings are progressively eliminated.

Focusing on Table 3, $\beta_0$ increases monotonically from 0.01582 to 0.3617 as the period over which earnings and returns are cumulated increases from one to five (i.e., $j$ varies from 0 to 4). Table 3 also demonstrates that the response to bad news, $\beta_0 + \gamma_0$, increases by more than the response to good news, $\beta_0$. The asymmetric timeliness coefficient, $\gamma_0$, is increasing in horizon, though the increase ceases to be statistically significant after $j=3$. On the other hand, the increase in $\beta_0$ is still significant at $j=4$. This is consistent with earnings responding to bad news with a smaller time lag than to good news.

4.2 Asymmetric timeliness and market-to-book

To investigate the association between market-to-book and asymmetric timeliness in the future, we estimate the following regression:

$$E_{t+1,t+k} / P_t = \alpha_0 + \alpha_1 * MTB\_RANK_t +$$

$$\eta_0 * DR_{t+1,t+k} + \eta_1 * MTB\_RANK_t * DR_{t+1,t+k} +$$

$$\beta_0 * R_{t+1,t+k} + \beta_1 * MTB\_RANK_t * R_{t+1,t+k} +$$

$$\gamma_0 * R_{t+1,t+k} * DR_{t+1,t+k} + \gamma_1 * MTB\_RANK_t * R_{t+1,t+k} * DR_{t+1,t+k} + \varepsilon_t \quad (2)$$

$E_{t+1,t+k}$ is cumulative income before extraordinary items during the years $t+1$ to $t+k$, where $k$ varies from 1 to 3. The special case of $k=1$ represents earnings for year $t+1$.

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4 Beaver and Ryan (2004) also acknowledge this possibility.
with no cumulation. $R_{t+1,t+k}$ represents buy-and hold returns, beginning the fourth month of fiscal year $t+1$ and ending four months after fiscal year $t+k$. $P_t$ is market capitalization at the end of year $t$. $DR_{t+1,t+k}$ is a zero/one indicator variable set equal to one if $R_{t+1,t+k}$ is negative. $MTB_t$ is the market-to-book ratio at the end of year $t$. Every year, firms are ranked into deciles based on their market-to-book ratio. $MTB_{RANK_t}$ is the decile rank of the firm in year $t$ based on $MTB_t$. The rank of market-to-book is used instead of MTB itself, to allow for potential non-linearity in the relationship between MTB and asymmetric timeliness.

The coefficient $\beta_1$ represents the association between market-to-book (MTB) and earnings response to good news. The coefficient $\gamma_1$ measures the association between asymmetric timeliness of earnings and MTB. The regression is estimated in the cross-section every year. The time series of coefficients is used to calculate the mean coefficient and associated t-statistics, which are reported in Table 4. In the first column of Table 4, $\beta_1$ is negative (-0.0102) and significant ($t-stat=-6.10$), indicating earnings response is negatively correlated with market-to-book at the beginning of the year. $\gamma_1$ is negative (-0.0441) and significant ($t-stat=-6.23$), indicating that annual asymmetric timeliness is negatively correlated with market-to-book at the beginning of the year. As earnings responses are measured over longer horizons in the future with respect to MTB, $\beta_1$ and $\gamma_1$ stay negative and significant. They increase slightly in magnitude as the horizon is lengthened, though the increase is not statistically significant beyond the second year of cumulation, that is beyond $k=2$. The results in Table 4 provide evidence in support of Hypotheses 1A and 1B. Firms whose value at any point in time consists mainly of
unrecorded rents have lower earnings response to good news and lower asymmetric
timeliness in the future.

The relation between historical asymmetric timeliness and market-to-book is
examined with the following regression:

\[
\frac{E_{t-j,t}}{P_{t-j-1}} = \alpha_0 + \alpha_1 \times MTB_{RANK} + \\
\eta_0 \times DR_{t-j,t} + \eta_1 \times MTB_{RANK} \times DR_{t-j,t} + \\
\beta_0 \times R_{t-j,t} + \beta_1 \times MTB_{RANK} \times R_{t-j,t} + \\
\gamma_0 \times R_{t-j,t} \times DR_{t-j,t} + \gamma_1 \times MTB_{RANK} \times R_{t-j,t} \times DR_{t-j,t} + \epsilon_t
\]  \hspace{1cm} (3)

Table 5 presents the results of estimating the above regression using the
Fama_Macbeth procedure. In the above regression, \( E_{t-j,t} \) represents cumulative earnings
over \( t-j \) to \( t \), with \( j \) varying from 0 to 2. \( j=0 \) represents \( E_t \). \( R_{t-j,t} \) represents buy-and hold
returns, beginning the fourth month of fiscal year \( t-j \) and ending four months after fiscal
year \( t \).

The first column of Table 5 indicates that the association between asymmetric
timeliness in a given year and MTB at year-end is negative. This is probably because the
first column still reflects the effect behind Hypothesis 1B (referred to as the non-
recognition effect), since \( MTB_t \) is positively correlated with \( MTB_{t-1} \). However, it is
apparent that even in the first column of Table 5, the non-recognition effect is diluted. \( \gamma_1 \)
with \( j=0 \) is much smaller in magnitude and significance (\( \gamma_1=-0.0121, t-stat=-2.94 \)) than in
any column of Table 4.

More importantly, once the horizon of historical asymmetric timeliness is
increased to two years, the association between asymmetric timeliness and MTB changes
sign. \( \gamma_1 \) is positive (0.0008), though small and statistically insignificant. The positive
association becomes more pronounced ($\gamma_1 = 0.0161, \ t-stat=3.78$) when historical asymmetric timeliness is measured over the previous three years, that is, $j=2$. This evidence is consistent with Hypothesis 2b. The increase is statistically significant as the period over which earnings and returns are cumulated increase from one year to two years and then to three. Thereafter, the increase in $\gamma_1$ ceases to be statistically significant, though the point estimate keeps increasing marginally.

The results also demonstrate that earnings response to good news is decreasing in MTB, across all horizons. $\beta_1$ is uniformly negative and significant in every column of Table 5. Interestingly, there exists strong evidence of $\beta_1$ increasing in magnitude as the horizon lengthens. $\beta_1$ is -0.0068 for $j=0$ and increases monotonically in magnitude to -0.0427 for $j=4$. Firms that recognize good news in a more timely manner have low MTB at the end of the estimation period, while firms that defer good news to a greater extent have high MTB. This negative correlation between MTB and earnings response to good news strengthens as one increases the horizon, and contributes to asymmetric timeliness increasing in the estimation horizon.

5. Conclusion

Our paper examines the link between asymmetric timeliness of earnings (the Basu measure) and other measures of conservatism, in particular, the market-to-book ratio (MTB). It demonstrates that the association between MTB at a point in time and asymmetric timeliness is dependent on the horizon over which asymmetric timeliness is measured with respect to MTB. The association between MTB and future asymmetric timeliness is negative. This is driven by firms experiencing negative returns. Low MTB
firms that experience negative returns are more likely to record asset write-offs than high MTB firms. However, it would be erroneous to infer from this correlation that firms with high MTB have lower asymmetric verification standards. High MTB firms have deferred more gains in the past than low MTB firms. Further, while high MTB firms have been less timely in recognizing bad news, the difference in timeliness of bad news recognition between high MTB and low firms is not enough to offset the difference in good news recognition. Thus, high MTB firms exhibit higher asymmetric timeliness in the past.

Our findings have important implications for research in conservatism. First, many studies have argued that MTB and the asymmetric timeliness capture different aspects of conservatism – *ex ante* versus *ex post*, conditional versus unconditional etc.. In our framework, there are two key factors: (a) the non-recognition of changes in rents and (b) the asymmetric recognition of changes in the value of separable assets. These factors affect both MTB and asymmetric timeliness, with the direction of the effect on asymmetric timeliness dependent on the estimation horizon. Relying only on the correlation between MTB and future asymmetric timeliness to draw inferences on the differences between the two measures is potentially misleading, as it ignores differences in past asymmetric timeliness.

Second, following Basu (1997), a lot of studies have used the asymmetric timeliness of earnings as a measure of total conservatism. This study highlights that variation in the investment opportunity set, which affects the value of available rents, is an important factor determining variation in future asymmetric timeliness. Thus, any study of international variation in conservatism using the Basu measure [for example,
Ball, Kothari and Robin (2000) should probably control for differences in the investment opportunity set across countries.

Third, asymmetric timeliness captures variation in the total understatement of market value of equity if it is cumulated over several periods leading up to the measurement of market value. Additionally, historical asymmetric timeliness (AT) cumulated over more than one period is also probably a better measure of the understatement of net assets compared to MTB, as changes in rents biases the AT measure towards zero. However, further work is required to support this assertion. We hope that the discussion and evidence in this paper contribute to a better understanding of conservatism and the asymmetric timeliness of earnings.
References


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Easton, P. and J. Pae, 2003, Accounting conservatism and the relation between returns and accounting data, working paper, Ohio State University


Kellogg, R.L., 1984, Accounting activities, securities prices and class action lawsuits, Journal of Accounting & Economics 6, 185-204.

Pae, J., D. Thornton and M. Welker, 2004, The link between earnings conservatism and balance sheet conservatism, working paper, Queen’s University


Table 1: Summary Statistics
This table reports pooled cross-sectional, time-series summary statistics for our sample of 45,664 firm-years, over the period 1972 to 1999. Historical and future earnings and returns are with respect to the end of year $t$.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>25th %</th>
<th>50th %</th>
<th>75th %</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>$P_t$ (S million)</td>
<td>1,228.25</td>
<td>33.56</td>
<td>119.07</td>
<td>514.01</td>
<td>6,720.00</td>
</tr>
<tr>
<td>MTB$_t$</td>
<td>2.26</td>
<td>0.96</td>
<td>1.52</td>
<td>2.55</td>
<td>2.47</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Returns – cumulated forward</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$R_{t+1,t+1}$</td>
<td>0.1744</td>
<td>-0.0937</td>
<td>0.1143</td>
<td>0.3631</td>
<td>0.4234</td>
</tr>
<tr>
<td>$R_{t+1,t+2}$</td>
<td>0.3734</td>
<td>-0.0681</td>
<td>0.2485</td>
<td>0.6533</td>
<td>0.6589</td>
</tr>
<tr>
<td>$R_{t+1,t+3}$</td>
<td>0.6111</td>
<td>-0.0280</td>
<td>0.3881</td>
<td>0.9587</td>
<td>1.0095</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Earnings- cumulated forward</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$E_{t+1,t+1}/P_t$</td>
<td>0.0859</td>
<td>0.0489</td>
<td>0.0852</td>
<td>0.1368</td>
<td>0.1358</td>
</tr>
<tr>
<td>$E_{t+1,t+2}/P_t$</td>
<td>0.1883</td>
<td>0.0967</td>
<td>0.1754</td>
<td>0.2895</td>
<td>0.2494</td>
</tr>
<tr>
<td>$E_{t+1,t+3}/P_t$</td>
<td>0.3216</td>
<td>0.1419</td>
<td>0.2697</td>
<td>0.4581</td>
<td>0.8015</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Returns – cumulated backward</th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$R_{t,t}$</td>
<td>0.1745</td>
<td>-0.0883</td>
<td>0.1189</td>
<td>0.3636</td>
<td>0.4106</td>
</tr>
<tr>
<td>$R_{t-1,t}$</td>
<td>0.3853</td>
<td>-0.0494</td>
<td>0.2609</td>
<td>0.6640</td>
<td>0.6756</td>
</tr>
<tr>
<td>$R_{t-2,t}$</td>
<td>0.6177</td>
<td>-0.0179</td>
<td>0.4000</td>
<td>0.9771</td>
<td>0.9917</td>
</tr>
<tr>
<td>$R_{t-3,t}$</td>
<td>0.8808</td>
<td>0.0182</td>
<td>0.5547</td>
<td>1.3264</td>
<td>1.3563</td>
</tr>
<tr>
<td>$R_{t-4,t}$</td>
<td>1.1822</td>
<td>0.0525</td>
<td>0.7132</td>
<td>1.6951</td>
<td>1.8115</td>
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</table>

<table>
<thead>
<tr>
<th>Earnings – cumulated backward</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$E_{t,t}/P_{t-1}$</td>
<td>0.0906</td>
<td>0.0504</td>
<td>0.0871</td>
<td>0.1389</td>
<td>0.1101</td>
</tr>
<tr>
<td>$E_{t-1,t}/P_{t-2}$</td>
<td>0.2033</td>
<td>0.1022</td>
<td>0.1843</td>
<td>0.3005</td>
<td>0.2191</td>
</tr>
<tr>
<td>$E_{t-2,t}/P_{t-3}$</td>
<td>0.3360</td>
<td>0.1557</td>
<td>0.2875</td>
<td>0.4845</td>
<td>0.3506</td>
</tr>
<tr>
<td>$E_{t-3,t}/P_{t-4}$</td>
<td>0.4885</td>
<td>0.2106</td>
<td>0.3981</td>
<td>0.6890</td>
<td>0.5124</td>
</tr>
<tr>
<td>$E_{t-4,t}/P_{t-5}$</td>
<td>0.6769</td>
<td>0.2515</td>
<td>0.5101</td>
<td>0.9157</td>
<td>0.8183</td>
</tr>
</tbody>
</table>

Variable descriptions

$P_t$: Market value of equity at the end of year $t$

MTB$_t$: Ratio of market value of equity to book value of equity (COMPUSTAT data#60), evaluated at the end of year $t$.

Returns and Earnings – cumulated forward
$R_{t+1,t+k}$: Buy-and hold returns, beginning the fourth month of fiscal year $t$ and ending four months after the end of year $t+k$.

$E_{t+1,t+k}/P_t$: Cumulative income before extraordinary items (COMPUSTAT data#18) during the years $t+1$ to $t+k$, where $k$ varies from 1 to 3. The special case of $k=1$ represents earnings for year $t+1$, with no cumulation.

Returns and Earnings – cumulated backward
$R_{t-j,t}$: Buy-and hold returns, beginning the fourth month of fiscal year $t-j$ and ending four months after the end of year $t$.

$E_{t-j,t}/P_{t-j}$: Cumulative income before extraordinary items (COMPUSTAT data#18) during the years $t-j$ to $t$, where $j$ varies from 0 to 2. The special case of $j=0$ represents earnings for year $t$, with no cumulation.
Table 2: Asymmetric timeliness of earnings cumulated forward

This table reports the results of Fama-Macbeth regressions, over a period of 28 years from 1972 to 1999. The sample includes 45,664 observations. The number of firms increases from 925 in 1972 to 1,622 in 1999. The regression being estimated is

\[ E_{t+1,t+k}/P_t = \alpha_0 + \eta_0*DR_{t+1,t+k} + \beta_0*R_{t+1,t+k} + \gamma_0*R_{t+1,t+k}*DR_{t+1,t+k} + \epsilon_t \]

T-statistics are reported in parentheses.

<table>
<thead>
<tr>
<th></th>
<th>(k=1)</th>
<th>(k=2)</th>
<th>(k=3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\alpha_0)</td>
<td><strong>0.0942</strong></td>
<td><strong>0.1851</strong></td>
<td><strong>0.2942</strong></td>
</tr>
<tr>
<td></td>
<td>(12.96)</td>
<td>(12.77)</td>
<td>(12.72)</td>
</tr>
<tr>
<td>(\eta_0) (DR)</td>
<td>*-0.0029</td>
<td>*-0.0128</td>
<td><strong>-0.0292</strong></td>
</tr>
<tr>
<td></td>
<td>(-0.53)</td>
<td>(-1.85)</td>
<td>(-2.11)</td>
</tr>
<tr>
<td>(\beta_0) (R)</td>
<td><strong>0.0551</strong></td>
<td><strong>0.0981</strong></td>
<td><strong>0.1246</strong></td>
</tr>
<tr>
<td></td>
<td>(6.04)</td>
<td>(8.55)</td>
<td>(9.20)</td>
</tr>
<tr>
<td>(\gamma_0) (R*DR)</td>
<td><strong>0.2386</strong></td>
<td><strong>0.3783</strong></td>
<td><strong>0.4714</strong></td>
</tr>
<tr>
<td></td>
<td>(8.37)</td>
<td>(9.30)</td>
<td>(10.99)</td>
</tr>
</tbody>
</table>

\[
\text{Difference in } \beta_0 \text{ from previous column}
\]

<table>
<thead>
<tr>
<th></th>
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<th>(k=3)</th>
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<tbody>
<tr>
<td></td>
<td><strong>0.0430</strong></td>
<td><strong>0.0265</strong></td>
<td><strong>0.0265</strong></td>
</tr>
<tr>
<td></td>
<td>(5.43)</td>
<td>(2.98)</td>
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</tr>
</tbody>
</table>

\[
\text{Difference in } \gamma_0 \text{ from previous column}
\]

<table>
<thead>
<tr>
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<th>(k=2)</th>
<th>(k=3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>0.1397</strong></td>
<td><strong>0.0931</strong></td>
<td><strong>0.0931</strong></td>
</tr>
<tr>
<td></td>
<td>(4.37)</td>
<td>(2.81)</td>
<td></td>
</tr>
</tbody>
</table>

**significant at the 5% level

* significant at the 10% level

Variable descriptions

\(E_{t+1,t+k}\): Cumulative income before extraordinary items (COMPUSTAT data#18) during the years \(t+1\) to \(t+k\), where \(k\) varies from 1 to 3. The special case of \(k=1\) represents earnings for year \(t+1\), with no cumulation.

\(P_t\): Market value of equity at the end of year \(t\)

\(R_{t+1,t+k}\): Buy-and hold returns, beginning the fourth month of fiscal year \(t\) and ending four months after the end of year \(t+k\).

\(DR_{t+1,t+k}\): A zero/one indicator variable set equal to 1 if \(R_{t+1,t+k}<0\)
Table 3: Asymmetric timeliness of earnings - cumulated backward

This table reports the results of Fama-Macbeth regressions, over a period of 28 years from 1972 to 1999. The sample includes 45,664 observations. The number of firms increases from 925 in 1972 to 1,622 in 1999. The regression being estimated is

\[ E_{t-j,t} / P_{t-j-1} = \alpha_0 + \eta_0 * DR_{t-j,t} + \beta_0 * R_{t-j,t} + \gamma_0 * R_{t-j,t} * DR_{t-j,t} + \epsilon_t \]

T-statistics are reported in parentheses.

<table>
<thead>
<tr>
<th></th>
<th>(j=0)</th>
<th>(j=1)</th>
<th>(j=2)</th>
<th>(j=3)</th>
<th>(j=4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\alpha_0)</td>
<td>**0.0970</td>
<td>**0.1924</td>
<td>**0.2942</td>
<td>**0.4008</td>
<td>**0.5287</td>
</tr>
<tr>
<td>(\eta_0) (DR)</td>
<td>**-0.0106</td>
<td>**-0.0326</td>
<td>**-0.0632</td>
<td>**-0.1091</td>
<td>**-0.1668</td>
</tr>
<tr>
<td></td>
<td>(-2.23)</td>
<td>(-4.70)</td>
<td>(-5.78)</td>
<td>(-5.70)</td>
<td>(-5.39)</td>
</tr>
<tr>
<td>(\beta_0) (R)</td>
<td>**0.0462</td>
<td>**0.0900</td>
<td>**0.1183</td>
<td>**0.1477</td>
<td>**0.1696</td>
</tr>
<tr>
<td></td>
<td>(7.58)</td>
<td>(10.91)</td>
<td>(11.06)</td>
<td>(12.85)</td>
<td>(16.47)</td>
</tr>
<tr>
<td>(\gamma_0) (R*DR)</td>
<td>**0.1582</td>
<td>**0.2177</td>
<td>**0.2890</td>
<td>**0.3320</td>
<td>**0.3617</td>
</tr>
<tr>
<td></td>
<td>(10.75)</td>
<td>(10.48)</td>
<td>(12.02)</td>
<td>(11.70)</td>
<td>(12.33)</td>
</tr>
</tbody>
</table>

**Difference in \(\beta_0\) from previous column | **0.0438 | **0.0283 | **0.0294 | **0.0219 | **0.0219 |
|                                                | (8.43)   | (4.24)   | (4.45)   | (2.71)   |

**Difference in \(\gamma_0\) from previous column | **0.0595 | **0.0713 | **0.0430 | 0.0297 | 0.0297 |
|                                                | (3.77)   | (3.66)   | (2.11)   | (1.35)   |

**significant at the 5% level * significant at the 10% level

Variable descriptions

\(E_{t-j,t}\): Cumulative income before extraordinary items (COMPUSTAT data#18) during the years \(t-j\) to \(t\), where \(j\) varies from 0 to 2. The special case of \(j=0\) represents earnings for year \(t\), with no cumulation.

\(P_{t-j-1}\): Market value of equity at the end of year \(t-j-1\).

\(R_{t-j,t}\): Buy-and hold returns, beginning the fourth month of fiscal year \(t-j\) and ending four months after the end of year \(t\).

\(DR_{t-j,t}\): A zero/one indicator variable set equal to 1 if \(R_{t-j,t}<0\)
Table 4: Market-to-book and future asymmetric timeliness

This table reports the results of Fama-Macbeth regressions, over a period of 28 years from 1970 to 1998. The sample includes 45,664 observations. The number of firms increases from 925 in 1972 to 1,622 in 1999. The regression being estimated is

$$E_{t+1,t+k}/P_t = \alpha_0 + \alpha_1 \cdot \text{MTB_RANK}_t + \eta_0 \cdot \text{DR}_{t+1,t+k} + \eta_1 \cdot \text{MTB_RANK}_t \cdot \text{DR}_{t+1,t+k} + \beta_0 \cdot R_{t+1,t+k} + \beta_1 \cdot \text{MTB_RANK}_t \cdot R_{t+1,t+k} + \gamma_0 \cdot \text{R}_t \cdot \text{DR}_{t+1,t+k} + \gamma_1 \cdot \text{MTB_RANK}_t \cdot \text{R}_t \cdot \text{DR}_{t+1,t+k} + \epsilon_t$$

T-statistics are reported in parentheses.

<table>
<thead>
<tr>
<th>Variable description</th>
<th>Market-to-book and asymmetric timeliness in the future</th>
</tr>
</thead>
<tbody>
<tr>
<td>$E_{t+1,t+k}/P_t$</td>
<td>$\alpha_0$</td>
</tr>
<tr>
<td></td>
<td>$k=1$</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------</td>
</tr>
<tr>
<td>$\alpha_0$</td>
<td><strong>0.1093</strong></td>
</tr>
<tr>
<td>$\alpha_1 (\text{MTB_RANK})$</td>
<td><strong>-0.0033</strong></td>
</tr>
<tr>
<td>$\eta_0 (\text{DR})$</td>
<td>-0.0105</td>
</tr>
<tr>
<td>$\eta_1 (\text{MTB_RANK} \cdot \text{DR})$</td>
<td>0.0018</td>
</tr>
<tr>
<td>$\beta_0 (\text{R})$</td>
<td><strong>0.0948</strong></td>
</tr>
<tr>
<td>$\beta_1 (\text{MTB_RANK} \cdot \text{R})$</td>
<td><strong>-0.0102</strong></td>
</tr>
<tr>
<td>$\gamma_0 (\text{R} \cdot \text{DR})$</td>
<td><strong>0.4797</strong></td>
</tr>
<tr>
<td>$\gamma_1 (\text{MTB_RANK} \cdot \text{R} \cdot \text{DR})$</td>
<td><strong>-0.0441</strong></td>
</tr>
</tbody>
</table>

| Difference in $\beta_1$ from previous column | **-0.0027** | -0.0005 | (-1.86) | (-0.18) |
| Difference in $\gamma_1$ from previous column | **-0.0241** | -0.0056 | (-2.18) | (-0.40) |

** significant at the 5% level
* significant at the 10% level

Variable descriptions:

$E_{t+1,t+k}$: Cumulative income before extraordinary items (COMPUSTAT data#18) during the years $t+l$ to $t+k$, where $k$ varies from 1 to 3. The special case of $k=1$ represents earnings for year $t+l$, with no cumulation.

$P_t$: Market value of equity at the end of year $t$-1

$R_{t+1,t+k}$: Buy-and-hold returns, beginning the fourth month of fiscal year $t$ and ending four months after the end of year $t+k$.

$DR_{t+1,t+k}$: A zero/one indicator variable set equal to 1 if $R_{t+1,t+k}<0$

$MTB$: Ratio of market value of equity to book value of equity (COMPUSTAT data#60), evaluated at the end of year $t$.

$MTB_{\text{RANK}}$: The decile rank of a firm’s market-to-book ratio at the end of year $t$. 

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Table 5: Historical asymmetric timeliness and market-to-book

This table reports the results of Fama-Macbeth regressions, over a period of 28 years from 1972 to 1999. The sample includes 45,664 observations. The number of firms increases from 925 in 1972 to 1,622 in 1999. The regression being estimated is

\[
\frac{E_{t-j,t}}{P_{t-j-1}} = \alpha_0 + \alpha_1 \cdot MTB_{RANK} + \\
\eta_0 \cdot DR_{t-j,t} + \eta_1 \cdot MTB_{RANK} \cdot DR_{t-j,t} + \\
\beta_0 \cdot R_{t-j,t} + \beta_1 \cdot MTB_{RANK} \cdot R_{t-j,t} + \\
\gamma_0 \cdot R_{t-j,t} \cdot DR_{t-j,t} + \gamma_1 \cdot MTB_{RANK} \cdot R_{t-j,t} \cdot DR_{t-j,t} + \epsilon_t
\]

T-statistics are reported in parentheses.

<table>
<thead>
<tr>
<th>(j)</th>
<th>(\alpha_0)</th>
<th>(\alpha_1)</th>
<th>(\eta_0)</th>
<th>(\eta_1)</th>
<th>(\beta_0)</th>
<th>(\beta_1)</th>
<th>(\gamma_0)</th>
<th>(\gamma_1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(j=0)</td>
<td><strong>0.1138</strong></td>
<td><strong>-0.0043</strong></td>
<td><strong>-0.0159</strong></td>
<td>0.0016</td>
<td><strong>0.0960</strong></td>
<td><strong>-0.0068</strong></td>
<td><strong>0.1828</strong></td>
<td><strong>-0.0121</strong></td>
</tr>
<tr>
<td>(j=1)</td>
<td>0.2147</td>
<td><strong>-0.0082</strong></td>
<td><strong>-0.0290</strong></td>
<td>0.0016</td>
<td><strong>0.2155</strong></td>
<td><strong>-0.0162</strong></td>
<td><strong>0.1524</strong></td>
<td>0.0008</td>
</tr>
<tr>
<td>(j=2)</td>
<td>0.3271</td>
<td><strong>-0.0145</strong></td>
<td><strong>-0.0514</strong></td>
<td>0.0028</td>
<td><strong>0.3108</strong></td>
<td><strong>-0.0237</strong></td>
<td><strong>0.1385</strong></td>
<td><strong>0.0161</strong></td>
</tr>
<tr>
<td>(j=3)</td>
<td>0.4264</td>
<td><strong>-0.0197</strong></td>
<td><strong>-0.0625</strong></td>
<td>-0.0008</td>
<td><strong>0.4178</strong></td>
<td><strong>-0.0330</strong></td>
<td><strong>0.1211</strong></td>
<td><strong>0.0203</strong></td>
</tr>
<tr>
<td>(j=4)</td>
<td>0.5124</td>
<td><strong>-0.0196</strong></td>
<td>-0.0522</td>
<td>-0.0078</td>
<td><strong>0.5171</strong></td>
<td><strong>-0.0427</strong></td>
<td><strong>0.0943</strong></td>
<td><strong>0.0277</strong></td>
</tr>
</tbody>
</table>

**Difference in \(\beta_1\) from previous column** | **-0.0094** | **-0.0075** | **-0.0093** | **-0.0097** |
| **Difference in \(\gamma_1\) from previous column** | **0.0129** | **0.0153** | 0.0041 | 0.0074 |

**significant at the 5% level**

* significant at the 10% level

Variable descriptions

\(E_{t-j,t}\): Cumulative income before extraordinary items (COMPUSTAT data#18) during the years \(t-j\) to \(t\), where \(j\) varies from 0 to 2. The special case of \(j=0\) represents earnings for year \(t\), with no cumulation.

\(P_{t-j-1}\): Market value of equity at the end of year \(t-j-1\).

\(R_{t-j,t}\): Buy-and hold returns, beginning the fourth month of fiscal year \(t-j\) and ending four months after the end of year \(t\).

\(DR_{t-j,t}\): A zero/one indicator variable set equal to 1 if \(R_{t-j,t}<0\)

\(MTB\): Ratio of market value of equity to book value of equity (COMPUSTAT data#60), evaluated at the end of year \(t\).

\(MTB\_RANK\): The decile rank of a firm’s market-to-book ratio at the end of year \(t\).
Figure 1: Net Asset Understatement & Market-to-Book

Layers of value

Market value of equity (MVE)

Value of separable net assets

Book value of net assets

Historical cost of net assets (including LCM)

Zero

UNA_C represents conservatism under our framework - the understatement of net assets

UNA_M represents conservatism when the benchmark is market value of equity