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Dissecting Earnings Recognition Timeliness

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Dissecting Earnings Recognition Timeliness

Abstract

We dissect the portion of stock price change of the fiscal year that is recognized in reported accounting earnings of the year. We call this portion earnings recognition timeliness (ERT). The emphasis in our analysis is on the empirical identification of two fundamental precepts of financial accounting: (1) the matching principle, which is manifested in the recognition of expenses in the same period as the related benefits (i.e., sales revenue) accrue; and, (2) recognition of expenses in the current period due to changes in expectations regarding earnings in future periods. The distinction is important because the accounting for these elements (and the associated ERT) differs considerably and it follows that the mapping from returns to these elements, which is the empirical manifestation of ERT, may also differ. The elements of expenses that are matched to sales of the current period and those that are related to expectations of future periods are identified via regressions of annual sales and annual expenses on contemporaneous returns within the fiscal year. The change in the expenses/return coefficient over the year captures the element of expenses that is related to sales of the current year and the end-of-year coefficient captures the expenses that are related to changes in expectations of future sales and future related expenses.

1. Introduction

We dissect the portion of stock price change of the fiscal year that is recognized in reported accounting earnings of the fiscal year. We call this portion earnings recognition timeliness (ERT). Our emphasis is on the identification of elements of ERT that are the empirical manifestation of two fundamental precepts of financial accounting: (1) the matching principle, which leads to recognition of expenses in the same period as the related benefits (i.e., sales revenue) accrue; and, (2) recognition of expenses in the current period due to changes in expectations regarding earnings of future periods. We refer to these two elements of expenses as the *current sales* element and the *expectations* element. Although the vast literature on ERT describes these two elements, we are unaware of any study that identifies them empirically. This identification is important because the accounting for these elements (and the associated ERT) differs considerably and it follows that the mapping from returns to these elements, which is the empirical manifestation of ERT, may also differ.

Our analyses are based on regressions of annual earnings (and components of annual earnings) on contemporaneous returns within the fiscal year; this enables examination of variation in the earnings/return association during the year. The key to our empirical dissection of ERT is the observation that news at the beginning of the fiscal year reflects expectations for both the current year and future years, while news arriving at the end of the year reflects expectations about future years only. It follows that the *current sales* element may be estimated via the change in the earnings/return association over the fiscal year, while the association at the end of the fiscal year provides an estimate of the *expectations* element. Consistent with our prediction, we find a statistically significant decline in the earnings/return coefficient over the fiscal year.

We decompose annual earnings into sales revenue and expenses (i.e., net income minus sales revenue) components in order to identify their separate contributions to ERT.[1] We predict and find that the sales revenue/return coefficient declines from a statistically significant positive value at the beginning of the fiscal year to a value that is not significantly different from zero at the end of the year. The basis of our prediction is the fact that news in returns at the beginning of the year has the entire year to be captured in sales of that year while news in returns at the end of the year has no time to affect sales of the year.

We predict and find that the expenses/return coefficient increases (i.e., becomes less negative) from the beginning of the year to the end, reflecting the *current sales* element of expenses (i.e., the portion of expenses that are matched to sales). The *expectations* element of expenses, captured in the end of period expenses/return coefficient, reflects expenses that are recognized in the current period because of changes in expectations about earnings in future periods. These expenses may reflect management's attempts to affect future earnings (e.g., research and development and advertising), the accounting for the associated expenditures, and generally accepted accounting principles that require recognition of expenses as a result of changes in the value of the recognized assets of the firm (e.g., restructuring charges and write-downs).[2]

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[1] That is, expenses have a negative sign in our regressions.

[2] As an illustration of the relation between value change and the two elements of expenses, consider the effect of the terrorist attacks on the World Trade Center on 9/11/2001 on United Airlines. United's stock price fell from $30.82 on 9/10/2001 to $17.10 when the market re-opened on 9/17/2001. Expenses matched to sales for the remainder of the third quarter and for the fourth quarter decreased because sales decreased while (non-matched) expenses related to sales of the future increased dramatically (e.g., there was a $1.3 billion charge to earnings associated with the write-off of airplanes and other restructuring charges). Our point is that, if the attack on the World Trade Center had occurred at the beginning of the fiscal year rather than just 113 calendar days before the end of the year, the effect on the matched portion of expenses for 2001 would have been much greater. On the other hand, since the effect of the attack on United Airlines in particular, and the travel industry in general, was expected to have such long-lasting effects, non-matched portion most likely would have been very similar whether the attack had occurred on 1/1/2001 or 9/11/2001.

Empirical identification of the *expectations* element may provide additional insights in studies that examine differences in ERT across various scenarios (the best known example being the difference between positive and negative annual return sub-samples). The distinction between the *current sales* element and the *expectations* element of expenses may serve to bring a clearer empirical focus on the expenses that are at the heart of arguments that asymmetric loss recognition leads to more efficient contracting (i.e., bringing forward expenses associated with bad news regarding the future, such as write downs, but capitalizing expenditures, such as purchase of property, plant and equipment, related to expansion to cope with increased expected future sales).[3] Our separate identification of the *current sales* element and *expectations* element of expenses permits us to provide evidence that the *expectations* element of expenses is not significantly different from zero for the sub-sample of observations with positive annual returns and it is significantly positive for the sub-sample of observations with negative annual returns.

The notion of asymmetric timely loss recognition rests on features of accounting that lead to more immediate recognition of downward changes in value relative to recognition of upward changes in value. Downward revisions in expectations about earnings of future years (associated with negative returns) may, for example, result in immediate recognition of expenses related to the impairment of recognized assets. In contrast, upward revisions in expectations of earnings of future years (associated with positive returns) typically do not result in an increase in the book value of recognized assets (under U.S. GAAP).[4] This implies that asymmetric timely loss recognition will be manifested in the *expectations* element of ERT because it reflects the portion

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[3] See, for example, Basu [1997], Ball [2001], Basu [2005], and Ball and Shivakumar [2006].

[4] As an illustration of this point, United Airlines wrote-off $1.3million as a result of dramatic downward revisions in expectations of future earnings. On the other hand, expenses of InVision Technologies, which was the company that manufactured the explosive detection devices seen in most airports at the time, increased as sales increased for the remainder of the year; but, costs of expansion to cope with expected future sales were capitalized and did not affect expenses for 2001 and the implicit increase in the value of the assets of InVision did not affect reported earnings for 2001 (i.e., the non-matched expenses were virtually non-existent).

of value change, related to changes in expectations about future earnings, recognized in contemporaneous earnings. The concept of asymmetric timely loss recognition does not, however, predict that the *current sales* element of ERT will differ across positive and negative annual return sub-samples. Our method permits identification of the *expectations* element and hence it permits a focus on the element at the heart of arguments regarding asymmetric loss recognition.

We conduct further analyses to gain additional insights into the elements of ERT and to ensure the robustness of our main results. First, we note that the earnings/return coefficient may change around the days of the announcements of earnings of the prior year and the announcements of the three quarterly earnings within the fiscal year (i.e., the announcements of earnings of the first three quarters). On these days the market may be learning about past earnings as well as hearing news about earnings for the rest of the year and for future years. We find that the earnings/return coefficient increases significantly on the earnings announcement dates suggesting that news on earnings announcement days tends to have a more transitory effect than on non-earnings announcement days. Importantly, however, including these earnings announcement effects does not significantly change the beginning and end of period coefficient estimates, which highlights the robustness of our main results.

Second, in order to further examine the idea that news arriving at the beginning of the year will have the remainder of the year to be incorporated in earnings of the year, while news arriving at the end of the year will not be incorporated in earnings of the year, we repeat our analyses, changing the dependent variables to earnings (and components of earnings) for the current fiscal year t plus the earnings (and components of earnings) for the next year $t+1$ (the independent variables continue to be returns of the fiscal year t).

As expected the estimates of the two-year sales revenue/return coefficients are significantly higher than the estimates of the one-year sales revenue/return coefficients at both the beginning of the current fiscal year and at the end of the current fiscal year because sales revenue in the next year is related to returns of all days of the current fiscal year; this result is observed for both the positive and negative annual returns sub-samples. The estimates of the two-year expenses/return coefficients are also significantly more negative than the estimates of the one-year expenses/return coefficients at both the beginning of the current fiscal year and at the end of the current fiscal year; this result is observed for both the positive and negative annual returns sub-samples.

Third, in order to ensure that returns are most likely to reflect the news that has become available on each day, we have analyzed a sub-sample of larger firms. This selection of the sample of larger firms is motivated by the early work of Atiase [1985, 1987], Freeman [1987], and Collins et al. [1987], which shows that returns capture information relevant to earnings of the fiscal period in a much more timely fashion for large firms than for small firms. The results in Freeman [1987] are particularly pertinent; he shows that for large firms most of the information in earnings is captured in returns by the end of the fiscal year but for small firms information in earnings of the year is related to security returns well beyond the year end.

We compare our main results for the sample of larger firms with the results from analysis of a set of smaller firms. We observe a higher beginning of year sales revenue/return coefficient and a significantly positive end of year sales revenue/return coefficient for the sample of smaller firms; these results (particularly the significantly positive end of period coefficient) suggest that, for smaller firms, some of the information about sales tends to be reflected in returns after the sales have occurred. In other words, we find evidence consistent with Freeman [1987]; sales revenue tends to be recognized earlier than it is reflected in returns. Similarly, for this sub-sample of observations we find that the estimate of the coefficient relating expenses to returns is more negative at both the beginning of the year and at the end of the year.

Finally, our empirical analyses are based on the assumption of a linear change in the earnings coefficient over the year. We examine the validity of this assumption by regressing sales revenue (and expenses) on each of the twelve monthly returns of the year. The line joining our estimate of the beginning of year coefficient and our estimate of our end of year coefficient is within the 95 percent confidence interval for each of the monthly coefficient estimates, confirming the validity of our linearity assumption.

The remainder of the paper proceeds as follows. In section 2, we elaborate on the motivation for our paper and we outline the research design. We discuss the dissection of ERT in terms of the mappings from components of returns to components of earnings. Section 3 briefly describes the sample selection criteria and the sources of data. We present and discuss the results of our analyses in section 4. We conclude in section 5.

2. Motivation and Research Design

A large body of literature, beginning with Ball and Brown [1968], has examined the properties and economic implications of ERT. Early studies focused on the association between the news component of earnings and abnormal returns (e.g., Beaver et al. [1979]; Hagerman et al. [1984]), while later studies changed the focus to the association between earnings and raw returns (e.g., Beaver et al. [1980], Easton and Harris [1991], Easton et al. [1992], Warfield and Wild [1992], Collins et al. [1994]). With the exception of Beaver et al. [1980], these studies were motivated by an interest in whether or not the earnings metric and the return metric summarized the same underlying information. The mapping between these two variables was of little interest.[5]

Beaver et al. [1987] and Basu [1997] shifted the focus of this literature to an examination of the extent to which earnings capture information that has affected firm value in the same fiscal period (i.e., ERT). In these studies, ERT is estimated as the slope coefficient in the following regression of annual earnings on contemporaneous annual stock returns:

$$EARN_{jt} = \alpha + \beta^{ANN} \cdot RET_{jt} + \varepsilon_{jt} \tag{1}$$

where the dependent variable, $EARN_{jt}$, is annual earnings for firm j for the fiscal year ending at t deflated by the beginning of fiscal-year market capitalization. The explanatory variable, RET_{jt}, is the stock return of firm j for fiscal year t.[6] α is the regression intercept and ε_{jt} is the regression disturbance term. The coefficient β^{ANN} reflects the portion of the value change in year t that is recognized in period t earnings (i.e., ERT).[7]

We argue that there are two distinct accounting concepts, which have fundamentally different effects on ERT, and we estimate these elements of ERT. The first element, which we call the *current sales* element, is a manifestation of the matching principle of accounting in which expenses are recognized in the same period as the related benefits (i.e., sales revenue).

[5] A related literature, which examined the market response to news in earnings, was very focused on the mapping from the information in earnings to the market reaction to this information. In this literature the natural dependent variable is the returns metric. This literature referred to this mapping as the earnings response coefficient (see, Easton and Zmijewski [1989]; Collins and Kothari [1989]; Kothari and Sloan [1992]; and Kothari and Zimmerman [1995]). This literature, however, sheds light on a very different question; what is the market response to earnings news? The ERT literature inverts this question and asks: how much of the news that has affected prices is also captured in contemporaneous earnings? The natural dependent variable in this literature is the earnings metric.

[6] Basu [1997] partitions the regression into observations with negative returns and those with positive returns. The reverse form of this regression, which also restricts the earnings/return coefficient to be the same for all intervals within the fiscal period, was the basis of Beaver et al. [1980], Easton and Harris [1991], and Easton et al. [1992].

[7] The fundamental question addressed in this research design is, what portion of the change in market value is captured in earnings (i.e., change in book value) in the same fiscal period? It follows that earnings appropriately is the dependent variable in this context (see Ball et al. [2011] for an elaboration of this argument).

The second element, which we call the *expectations* element, reflects changes in expectations about future earnings; these changes in expectations will lead to price changes and recognition of expenses in earnings in the current period.

Expectations reflected in returns observed at beginning of the fiscal year will have an entire year to be recognized in sales and matched expenses within the year (i.e., the *current sales* element of expenses). In contrast, expectations reflected in returns observed at the end of the fiscal year will have no time remaining to be recognized as sales and matched expenses within the year. Therefore, the *current sales* element of ERT will manifest in an association between annual earnings and contemporaneous returns that is positive at the beginning of the fiscal year and declines to zero at the end of the year. Thus, any association between returns on the last day of the fiscal year and earnings of the year will reflect the *expectations* element of expenses in ERT.

We develop a research design that utilizes information about the timing of stock returns within the fiscal year in order to facilitate the separate empirical identification of the *current sales* and *expectations* elements of ERT. Specifically, we examine the intra-year dynamics of the earnings/return coefficient via the following regression model:

$$\begin{aligned} &EARN_{jt} = \alpha + \sum\nolimits_{\tau=0}^{251} \beta_\tau \cdot ret_{jt\tau} + controls + \varepsilon_{jt} \\ &\text{subject to: } \beta_\tau = \beta^{beg} + \frac{1}{251} \cdot \left(\beta^{end} - \beta^{beg}\right) \cdot \tau, \end{aligned} \tag{2}$$

which reflects three modifications with respect to regression (1). First, the key explanatory variables in this specification are each of the daily stock returns within fiscal year *t*, as opposed to the annual stock return. Specifically, $ret_{jt\tau}$ is the daily stock return of firm *j* on trading day τ within the fiscal year *t*, where τ is the number of trading days relative to the first day of fiscal year t.[8] Including the stock return of all trading days as separate explanatory variables allows the earnings/return coefficient, β_τ, to vary within the fiscal year. Variation in the coefficient allows us to quantify and test for changes in the coefficient (i.e., the *current sales* element) and estimate and test the coefficient at the end of the fiscal year (i.e., the *expectations* element).

Second, we constrain the earnings/return coefficient, β_τ, to follow a linear function of time, τ, within the fiscal year. We select a linear constraint because it requires the estimation of exactly two parameters, β^{beg} and β^{end}, which allows us to identify the two elements of ERT (the *current sales* and *expectations* elements). Specifically, β^{beg} (β^{end}) represents the earnings/return coefficient at the beginning (end) of the fiscal year and reflects the portion of the stock returns at the beginning (end) of the year that is recognized in current period earnings.[9]

The difference between these parameter estimates (i.e., $\beta^{end}-\beta^{beg}$) reflects the change in the earnings/return coefficient over the entire fiscal year. This change captures the *current sales* element of ERT; it changes because news at the beginning of the year has the entire year to be incorporated in sales and related expenses of the current year, while news toward the end of the

[8] We use the following daily timing convention: τ = 251 is the last trading day of the fiscal year; and τ = 0 is within two days of the first trading day of the fiscal year. This ensures that all years have 252 days. Daily returns are calculated as the daily price change plus the daily dividend payments divided by the beginning-of-year price, so that the sum of these daily returns is a meaningful construct (i.e., an annual return, which is equal to the annual return metric used in equation (1) above). We obtain similar results when we use the log of daily returns as the independent variables.

[9] Regression (2) is estimated as follows: $EARN_{jt}=\alpha+\beta^{beg}\cdot\sum_{\tau=0}^{251} ret_{jt\tau}+\left(\beta^{end}-\beta^{beg}\right)\cdot\sum_{\tau=0}^{251}\left(ret_{jt\tau}\cdot\frac{\tau}{251}\right)+controls+\varepsilon_{jt}$, where: $\sum_{\tau=0}^{251} ret_{jt\tau}$, which is the sum of all daily returns, or the annual return, and $\sum_{\tau=0}^{251}\left(ret_{jt\tau}\cdot\frac{\tau}{251}\right)$, which is time-weighted average daily return. To see that this form of the regression captures the constraint, $\beta_\tau=\beta^{beg}+\frac{1}{251}\cdot\left(\beta^{end}-\beta^{beg}\right)\cdot\tau$, first, expand the summation term to show 252 separate explanatory variables: $EARN_{jt}=\alpha+\beta_0\cdot ret_{jt0}+\beta_1\cdot ret_{jt1}+\ldots+\beta_{251}\cdot ret_{jt251}+\varepsilon_{jt}$. Then, for each of the 252 beta coefficients (i.e., $\beta_0, \beta_1, \ldots, \beta_{251}$), substitute the expression from the coefficient constraint: $EARN_{jt}=\alpha+\left[\beta^{beg}+\frac{1}{251}\cdot\left(\beta^{end}-\beta^{beg}\right)\cdot 0\right]\cdot ret_{jt0}+\left[\beta^{beg}+\frac{1}{251}\cdot\left(\beta^{end}-\beta^{beg}\right)\cdot 1\right]\cdot ret_{jt1}+\ldots+\left[\beta^{beg}+\frac{1}{251}\cdot\left(\beta^{end}-\beta^{beg}\right)\cdot 0\right]\cdot ret_{jt251}+\varepsilon_{jt}$. Next, rearrange and group similar terms: $EARN_{jt}=\alpha+\beta^{beg}\cdot\left(ret_{jt0}+ret_{jt1}+\ldots+ret_{jt250}+ret_{jt251}\right)+\left(\beta^{end}-\beta^{beg}\right)\cdot\left(ret_{jt0}\cdot\frac{0}{251}+ret_{jt1}\cdot\frac{1}{251}+\ldots+ret_{jt251}\cdot\frac{251}{251}\right)+\varepsilon_{jt}$. Finally, rewrite using summation notation: $EARN_{jt}=\alpha+\beta^{beg}\cdot\sum_{\tau=0}^{251} ret_{jt\tau}+\left(\beta^{end}-\beta^{beg}\right)\cdot\sum_{\tau=0}^{251}\left(ret_{jt\tau}\cdot\frac{\tau}{251}\right)+\varepsilon_{jt}$.

fiscal year has relatively less time (i.e., only a few remaining days) to be recognized as current period sales and matched expenses. The average of the earnings/return coefficient throughout the fiscal year is our estimate of the portion of value change for the fiscal year that is reflected in earnings of the year (i.e., ERT). Expressing the average earnings/return coefficient as $\beta^{end} + ½ \times \left(\beta^{beg} - \beta^{end}\right)$ highlights the separate roles of the *current sales* element, $½ \times \left(\beta^{beg} - \beta^{end}\right)$, and the *expectations* element, β^{end}, of ERT.

Finally, we include a number of additional variables in regression (2) to control for the expected component of earnings and returns because our fundamental research question focuses on the mapping from the news component of returns to recognition, in earnings, of unexpected sales and matched expenses and recognition of expenses in the current accounting period that are related to changes in expectations about sales and expenses of future periods. Ball et al. [2011] note that most extant studies, following Basu [1997], that relate earnings (as the dependent variable) to raw returns (as the independent variable) include returns as a proxy for news, but do not control for expectations, which is important conceptually. They also provide evidence that removing the expected component of earnings and returns in these regressions avoids the possibility of biased estimates of ERT raised by Patatoukas and Thomas [2011].

We control for the expected portion of earnings (and components of earnings) by adding lagged sales revenue and lagged net income as additional explanatory variables in regression (2). We control for the expected portion of returns by adding several variables that have been frequently used as proxies for risk (and therefore proxies for expected returns): log of beginning of year market capitalization, log of beginning of year share price, beginning of year book to market ratio, and beginning of year debt to equity ratio. In addition, we include year fixed effects and industry fixed effects based on industry classifications defined in Barth et al. [1998].

We decompose annual earnings into sales revenue and expense components in order to identify their separate contributions to ERT. Specifically, we estimate regression (2) after replacing the earnings dependent variable with sales revenue and with expenses. Analogous to the estimates of the earnings/return coefficients, the average estimate of the sales revenue/return coefficient measures the portion of annual returns that is reflected in sales of the year (i.e., the component of ERT that is due to the sales revenue component of earnings). When annual sales revenue is the dependent variable, we predict that β^{end} will be equal to zero because news arriving at the end of the year will reflect changes in expectations of future sales rather than sales of the current year.

The expenses component of earnings will reflect expenses that are matched to sales of the current period (i.e., the *current sales* element of the expenses component of ERT) as well as expenses related to changes in expectations of earnings of future periods (i.e., the *expectations* element of the expenses component of ERT) such as an impairment of a recognized asset due to a decline in value. The portion of expenses related to the *current sales* element will result in an expenses/return coefficient that increases from a negative value at the beginning of the fiscal year to a value of zero at the end of the year. Thus, the *current sales* element of expenses will result in a negative association, on average, between expenses and daily returns. We expect to observe this negative association for both the positive annual return and negative annual return sub-samples.

The portion of expenses related to the *expectations* element is expected to differ according to whether the annual returns are positive or negative (Basu [1997]). When returns are negative, indicating a possible decline in asset values, financial reporting rules tend to accelerate the recognition of expenses (e.g., asset impairments) associated with changes in expectations of sales of future periods, which leads to a positive association between expenses and returns (i.e., the more negative the return, the greater the expenses associated with changed expectations about future earnings). Conversely, financial reporting rules typically do not permit the accelerated recognition of good news related to earnings of future periods. This implies that the *expectations* element of expenses leads to an association between expenses and returns that is not significantly different from zero when annual returns are positive.

We replace earnings with expenses as the dependent variable in regression (2) and predict that, for both the positive and negative annual return sub-samples, the expenses/return coefficient will increase significantly over the fiscal year reflecting the *current sales* element of expenses (analogous to the estimates of the earnings/return coefficients, the estimate of the *current sales* element of the expenses component of ERT is $½ \times \left(\beta^{beg} - \beta^{end}\right)$). In addition, we predict that the estimate of the expenses/return coefficient at the end of the period, β^{end}, which reflects the *expectations* element of the expenses component of ERT, will differ across the positive and negative annual return sub-samples. Specifically, we expect the expenses/return coefficient at the end of the fiscal year to be positive when annual returns are negative (i.e., worse news leads to higher expenses) and not significantly different from zero when annual returns are positive.

Thus far we have focused on the components of earnings and the way they are reflected in ERT. Next we consider the components of returns. An extensive literature, dating back to Campbell [1991] and Campbell and Shiller [1991], identifies three components of returns: expected returns, cash flow news, and discount rate news. ERT reflects the mapping from each of these components of returns to each of the components of earnings. Since our focus is on the news component of returns and the way this is reflected in earnings, we have removed the expected components of earnings and returns from regression (2) by adding controls for expected earnings and expected returns. Thus, our estimate of the ERT includes mappings from two components of returns (cash flow news and discount rate news) to three components of earnings (sales revenue, expenses matched to sales revenue, and expenses of the current period due to changes in expectations about earnings of future period). We briefly discuss each of these mappings; although we do not attempt to empirically identify cash flow news and discount rate news, the discussion of the components helps focus our predictions.[10]

The magnitude of the mapping from cash flow news to sales revenue and to matched expenses (i.e., the *current sales* element of expenses) will decline over the year because cash flow news at the beginning of the year has the whole year to be incorporated in sales and matched expenses of the current year while cash flow news at the end of the year has little time to be incorporated. On the other hand, the mapping from news about cash flows of future years to expenses of the current year (i.e., the *expectations* element of expenses) will not vary with time because this element of expenses relates to news about the entire future of the firm beyond the end of the current year. We do not expect discount rate news to have a significant effect on either sales revenue of the current period or on the expenses that are matched to sales of the current period. But, discount rate news may lead to an unexpected *expectations* element of expenses (e.g., an impairment loss). It follows that: (1) the average of coefficient relating unexpected returns to sales revenue captures the mapping from cash flow news to sales revenue;[11] (2) the change in the coefficient relating the *current sales* element of expenses to returns and the estimate of this coefficient at the end of the year, which captures the *expectations*

[10] As a practical empirical matter estimating cash flow news and discount rate news is a very difficult task; estimates include overwhelming measurement error (see, for example, Easton and Monahan [2005] for a discussion of this measurement error).

[11] We cannot think of a reason why there would be a portion of the mapping from cash flow news to sales revenue that does not change with time. Nevertheless, we allow for this possibility in our empirical analyses and we show no evidence of such an element.

element of expenses, capture the mapping from cash flow news and discount rate news to expenses of the year.

Although, ultimately, our focus is on the empirical results of our analyses, we have some predictions regarding the differences across good and bad news samples in the mappings from unexpected returns (cash flow news and discount rate news) to each of the components of unexpected earnings. For a large heterogeneous sample such as ours, we predict that the mapping from (price change due to) cash flow news to unexpected sales and (price change due to) cash flow news to expenses matched to current sales will be similar if news is good or bad. The key difference across the samples will be in the mapping from cash flow news to the *expectations* element of expenses. We predict that this mapping will be mimimal when news is good because of the nature of conservative accounting which tends to recognize good news about future cash flows only when the future sales and related expenses occur. On the other hand, when the news is bad, the mapping will be significant; the worse the news the greater the expenses (e.g., write-offs) recorded in the current period associated with changes in expectations about future periods. Similarly we expect a difference between the mapping from discount rate news to the *expectations* element of expenses. We predict that this mapping will be minimal when news is good because of the nature of conservative accounting which does not permit upward re-valuation of assets, but requires impairment of assets when book value exceeds market value -- when the news is bad, the mapping will be positive; the worse the news the greater the impairment recorded in the current period.[12]

[12] We include discount rate news in our discussion because it has been identified as a component of returns in much of the literature which dissects returns into component parts. We note, however, that the link between discount rate news and earnings of the current period is likely to be quite tenuous. There is a possible link between impairments and discount rate news but accounting rules during much of our sample period determined impairment based on undiscounted cash flows and even if discounted cash flow is used as the basis for impairment testing and subsequent write-downs, the difficulty of (and discretion in) estimating discount rates as a practical matter suggests that discount rate news is likely to have, at most, a second order effect. It will be dominated by cash flow news.

3. Data and Sample Selection

To construct our sample, we begin with all firm-year observations from 1973 to 2010 in the Compustat Fundamentals Annual File with observations of net income before extraordinary items (Compustat *IB*) and sales revenue (Compustat *SALE*) in the current year and in the preceding year, as well as book value of common equity (Compustat *CEQ*), book value of debt (Compustat *DLTT* plus *DLC*), price per share (Compustat *PRCC_F*) and number of shares outstanding (Compustat *CSHO*) at the end of the preceding year. We remove observations with insufficient data on the daily CRSP files to compute daily stock returns on each of the 252 trading days within the current fiscal year and data required to calculate the market value of equity at the beginning of the fiscal year. We also exclude utility (4900 ≤ sic code ≤ 4999) and financial (6000 ≤ sic code ≤ 6999) firms and we exclude observations with a share price less than $1 at the beginning of the fiscal year. In order to reduce the influence of outliers on the regression results, each year we remove observations falling in the top or bottom percentile of net income, sales revenue, expenses, and annual return.

Our final sample includes 101,598 firm-year observations over the 38 years from 1973 to 2010. In order to ensure that returns are most likely to reflect the news that has become available on each day (see Freeman [1987]), most of our analyses are based on the sub-sample of 50,799 observations that have a market value of equity greater than the median market value of equity for the year. Key characteristics of our sample are shown in Table 1. We conduct some analyses with the sample of observations of smaller firms and we compare this sample with our main sample at that time.

4. Results

4.1. The Relation between Earnings and Returns

Table 2, presents the earnings/return coefficients estimated via regression (2).[13] For the entire sample (reported in the first column), the estimate of the coefficient at the beginning of the fiscal year, β^{beg} , is 0.099 (t-statistic of 9.36) and the estimate of the coefficient at the end of the fiscal year, β^{end} , is 0.038 (t-statistic of 3.36); the latter is the estimate of the *expectations* element of ERT. The estimate of the *current sales* element of ERT, $½ \times \left(\beta^{beg} - \beta^{end}\right)$, is 0.030 (t-statistic of 4.53). The estimate (0.069) of the total ERT (i.e., $½ \times \left(\beta^{beg} + \beta^{end}\right)$), which is the sum of the *current sales* element and the *expectations* element, is statistically significantly positive (t-statistic of 7.83). The estimate of the ERT of 0.069 indicates that 6.9 percent of the unexpected value change for the fiscal year is, on average, recognized in contemporaneous earnings. More precisely, on average, 6.9 percent of the unexpected change in market value is captured in change in book value in the fiscal period in which the change in market value occurs.

The second column of Table 2 presents the earnings/return coefficients estimated from regression (2) for the sub-sample of observations with positive annual returns. For this sub-sample, the coefficient at the beginning of the fiscal year is 0.057 (t-statistic of 5.07) and the coefficient at the end of the fiscal year is 0.011 (t-statistic of 1.40), which is the *expectations* element. The *current sales* element of ERT for this sample is 0.023 (t-statistic of 3.93). The sum of these elements (i.e., the contribution to ERT) is 0.034 (t-statistic of 4.31).

[13] In all regression specifications in this paper, we include year fixed effects and industry fixed effects based on industry classifications defined in Barth et al. [1998]. These industry fixed effects mitigate the effects of systematic differences in the dependent variable (e.g., in the earnings/return regressions, the dependent variable is the ratio of net income to beginning of year market capitalization, which is essentially an EP ratio). The dependent variable is likely much more homogenous at the industry level; our industry fixed-effects variables are included to mitigate the cross-sectional heterogeneity.

The third column presents similar coefficient estimates for a sub-sample of observations with negative annual returns. For this sub-sample, the coefficient at the beginning of the fiscal year is 0.182 (t-statistic of 16.92) and the coefficient at the end of the fiscal year, which is the estimate of the *expectations* element of ERT, is 0.166 (t-statistic of 15.01). The estimate of the *current sales* element of ERT for this sample is 0.008 (t-statistic of 1.45). That is, the *expectations* element dominates ERT when annual returns are negative.

Finally, the fourth column of Table 2 presents the differences between estimates for the negative annual return sub-sample relative to those for the positive annual return sub-sample. Consistent with prior studies (e.g., Basu [1997]), we find that the difference in ERT for the negative annual return sub-sample relative to the positive annual return sub-sample is significant (0.125 with a t-statistic of 10.47) reflecting the overall asymmetry of ERT. As we predicted, this difference is primarily driven by the *expectations* element (difference of 0.155, with a t-statistic of 16.25). However, we also find a significant difference in the *current sales* element (-0.015, with a t-statistic of -3.08). That is, the well-documented asymmetry in ERT across positive and negative annual return sub-samples is primarily, but not completely, driven by the *expectations* element of net income. This evidence provides an initial illustration of the importance of separately identifying the asymmetry in ERT due to an asymmetry in the *expectations* element of expenses, which is implicitly the element of interest in many studies examining asymmetric timely loss recognition in the spirit of Basu [1997]. In order to understand the *expectations* element of earnings, we (in the next section) break earnings into two components: (1) sales revenue, which has no *expectations* element; and (2) expenses.

4.2. The Relation between Sales Revenue and Returns and Expenses and Returns

In this section we dissect each of the parts of the earnings/return coefficient into a contribution from the sales revenue/return coefficient and a contribution from the expenses/return coefficients obtained by replacing earnings with sales revenue and with expenses in regression (2). Since earnings is equal to sales revenue minus expenses, the estimates of the coefficients in the related earnings/return regressions may be obtained by adding the estimates of the coefficients when sales revenue is the dependent variable and the corresponding estimates of the regression coefficients when expenses is the dependent variable (note that expenses enter the regressions with a negative sign).

Table 3 presents the results from estimation of sales revenue/return coefficients and the expenses/return coefficients estimated via regression (2) with sales revenue (and expenses) replacing earnings as the dependent variable.[14] The changes in the estimates of the sales revenue/return coefficients over the year are similar for the sub-sample of observations with positive annual returns and for the sub-sample with negative annual returns. For the sub-sample with positive (negative) annual returns (reported in the first (third) column), the estimate of the sales revenue/return coefficient is 0.248 (0.262) with a t-statistic of 5.06 (6.32) at the beginning of the fiscal year and declines by 0.220 (0.223) to 0.028 (0.039) with a t-statistic of 1.48 (1.08) at the end of the fiscal year.

The expenses/return coefficients estimated via regression (2) with expenses replacing earnings as the dependent variable are also reported in Table 3 (in columns 2 and 4). The intra-year patterns of these coefficients differ markedly across the positive and negative annual returns

[14] Again, we include year and industry fixed effects based on industry classifications defined Barth et al. [1998]. These industry fixed effects are particularly important in the regressions based on components of earnings. For example, sales revenue as a promotion of market capitalization likely varies systematically across the sample (retail firms having higher sales than manufacturing firms). The industry fixed effects likely mitigate the effects of these differences.

sub-samples; this difference explains the marked difference seen in the earnings/return coefficients in Table 2. For the sub-sample of observations with positive annual returns (reported in the second column of Table 3), the expenses/return coefficient is -0.191 (t-statistic of -4.77) at the beginning of the fiscal year and increases by 0.174 to -0.017 (t-statistic of -1.32) at the end of the fiscal year. The insignificant expenses/return coefficient at the end of the year suggests that none of the unexpected value change related to changes in expectations about future sales is recognized in contemporaneous expenses.

When annual returns are negative, we observe a different pattern in the expenses/return coefficient. For this sub-sample (reported in the fourth column of Table 3), the expenses/return coefficient is -0.080 (t-statistic of -1.67) at the beginning of the fiscal year and increases by 0.207 to 0.127 (t-statistic of 2.76) at the end of the fiscal year. The statistically significant increase in the expenses/return coefficient for this sub-sample reflects a positive association (i.e., the higher (less negative) the returns, the higher the expense) between expenses and returns driven by the *current sales* element, which is 0.087 (t-statistic of 3.27).[15] However, the estimate of the *expectations* element is statistically significantly negative (-0.127, with a t-statistic of -2.76). In other words, more negative news will, *ceteris paribus*, imply lower future sales and/or higher future expenses, leading to increased recognition in current earnings of expenses associated with asset impairments and/or restructuring charges. This result is consistent with the concept of asymmetric timely loss recognition, and underscores the main point of Basu [1997]; financial accounting generally requires immediate recognition of asset impairments and restructuring charges when expectations about the future change in such a way that asset values

[15] We change the sign of these statistics from those in the table because expenses enter the regression with a negative sign.

decline, but increases in asset value are generally not, under U.S. GAAP, recognized in the current period.

When the two elements of expenses are combined into the average expenses/return coefficient, the positive association of the *current sales* element and returns is netted against a negative association of the *expectations* element and returns; when returns are negative, the average expenses/return coefficient is 0.024 and is not statistically significant (t-statistic of 0.82). Observed in isolation, this result would suggest that expenses are not recorded in a timely manner, which is inconsistent with the Basu [1997] concept of asymmetric timely loss recognition stemming from the *expectations* element. However, an examination of the dynamics of the expenses/return coefficient reveals the countervailing influence of the *current sales* element, which potentially masks the *expectations* element of interest. In addition, this result reinforces the importance of considering how the earnings/return coefficient changes throughout the fiscal year when formulating and testing hypotheses specifically related to the *current sales* element and/or the *expectations* element.

4.3. Changes in Earnings/Return Coefficients at Quarterly Earnings Announcements

On earnings announcement days, value change primarily reflects the announcement of quarterly earnings. Since this value change is likely more closely related to earnings of the current period, rather than earnings of future periods, we may expect a different earnings/return coefficient on the days surrounding the earnings announcement dates. Further, it is possible that an observed change in the earnings/return coefficient over the fiscal year may be driven by a much higher coefficient mapping from returns to earnings on earnings announcement dates that occur early in the year relative to those later in the fiscal year. Alternatively, our results may be muted by higher earnings/return coefficients on earnings announcement days later in the fiscal year.

In fact, we expect the change in the earnings/return coefficient on the first earnings announcement of the current fiscal year to be smaller than the change on other earnings announcement days because we have included lagged earnings and lagged sales revenue in our regression specification and the first earnings announcement is primarily an announcement of this earnings and sales revenue information. Also, we expect the change in the earnings/return coefficient around the day of the announcement of earnings for the first quarter to be greater than that around the second quarter's announcement because there remains more of the year for the news in this announcement to affect earnings of the year. Similarly, we expect the change in the earnings/return coefficient around the day of the announcement of earnings for the second quarter to be greater than that around the third quarter's earnings announcement.

In order to examine the effect of earnings announcements on our results and inferences, we modify regression (2) to allow the earnings/return coefficient to change within 3-day windows centered on each of the four quarterly earnings announcement dates within the current fiscal year. Specifically, we modify the regression (3) as follows:

$$EARN_{jt} = \alpha + \sum_{\tau=0}^{251} \beta_\tau \cdot ret_{jt\tau} + \beta^{lag_{q4}} \cdot ret_{jt-1}^{q4} + \beta^{q1} \cdot ret_{jt}^{q1} + \beta^{q2} \cdot ret_{jt}^{q2} + \beta^{q3} \cdot ret_{jt}^{q3} + controls + \varepsilon_{jt}$$

$$\text{subject to: } \beta_\tau = \beta^{beg} + \frac{1}{251} \cdot \left(\beta^{end} - \beta^{beg}\right) \cdot \tau, \qquad (3)$$

where ret_{jt-1}^{q4} is firm *j*'s stock return during the 3-day window centered on the announcement date of fourth quarter earnings of fiscal year *t-1*; ret_{jt}^{q1}, ret_{jt}^{q2} and ret_{jt}^{q3} are firm *j*'s stock returns during the 3-day window centered on the first, second, and third quarter earnings announcement dates, respectively, of the current fiscal year *t*. The estimated parameters, $\beta^{lag-q4}, \beta^{q1}, \beta^{q2}$ and β^{q3}, reflect the incremental change in the earnings/return coefficient during each of the four quarterly earnings announcements within the fiscal year.

Requiring four earnings announcement dates reduces our sample size to 41,819 observations. We re-run regression (2) for this sub-sample and find results that are very similar to those for the larger sample reported in Table 2; inferences are unchanged. Also, after adding controls for the earnings announcement effects, the coefficient estimates are still very similar to those in Table 2 and inferences remain unchanged.

The estimates of the parameters $\beta^{lag-q4}, \beta^{q1}, \beta^{q2}$ and β^{q3}, which capture the incremental change in the earnings/daily return coefficient on earnings announcement days relative to non-earnings announcement days, are positive and statistically significant at conventional levels. For example, the estimate of β^{lag-q4}, which captures the incremental shift in the earnings/return coefficient on the of the first earnings announcement date within the current fiscal year is 0.032 (t-statistic of 2.86) for the sample of positive return observations. These higher earnings/return coefficients on the earnings announcement days imply that the value changes on quarterly earnings announcement dates (potentially a direct result of the revelation of part of earnings for the current period, *per se*) have a less persistent effect on earnings compared to the portion of value change on non-earnings announcement days.[16]

For the sub-sample of observations with positive returns, the estimate of the coefficient β^{q1} of 0.083 (t-statistic of 5.66) is greater than the estimate of the coefficient β^{q2} of 0.055 (t-statistic of 6.47), which, in turn is greater than β^{q3} (0.022, with a t-statistic of 2.82). These

[16] If the price change is due to an entirely transitory shock to the earnings of the firm, the earnings/return coefficient will be equal to one; as the earnings/return coefficient tends closer to zero, the shock is more persistent. The observed higher earnings/return coefficient on the earnings announcement days, suggests that this information reflects more transitory (less persistent) impacts on earnings; in other words, the news tends to be more about the current period and less about future periods.

declining coefficients are expected; the announcement of the first quarter earnings informs investors about the earnings of the quarter that has passed and the earnings for the remainder of the year; similar information is provided in the announcement of the second and third quarter earnings but the magnitude of the earnings/daily return coefficients are expected to be less because there is less time remaining for the earnings news to be realized. Similar conclusions can be reached for the sub-sample of observations with negative annual returns.

4.4. Observations where Firm-specific Events Affect Earnings before their Effects are Incorporated in Stock Prices; the Sample of Smaller Firms

Our analyses thus far have been based on a sample of larger firms. We focused on this sample because, *a priori*, we expected the pricing of stocks of these firms to be efficient in the sense that they incorporate information that affects the firm in a timely manner (i.e., factors that affect sales revenue and expenses become known to the market and affect prices at approximately the same time as they affect sales and expenses). If price change is due to news, which is about future (rather than past) sales, we will observe no relation between returns (news) at the end of the year and sales revenue. This is, indeed, our finding; the end of year sales revenue/return coefficient is not significantly different from zero for both the sub-sample of observations with positive annual returns and for the sub-sample of observations with negative annual returns. Also, since, under U.S. GAAP, expenses in the current period that are related to expectations of future sales are likely to be small for most firms that have experienced net good news for the year (i.e., for our sub-sample of larger firms with positive annual returns), the finding that the end of year expenses/return coefficient is not significantly different from zero for this sub-sample again supports the notion that, for larger firms, factors that affect expenses become known to the market and affect expenses at the same time.

For firms where the market learns about the factors that affect earnings after the effect is recognized in sales and related expenses, the end of period sales revenue/return and expenses/return coefficient will be non-zero because return is reflecting sales revenue and related expenses of the past as well as sales and related expenses of the future.

In order to gain more insight into the extent to which events may, for some stocks, affect earnings (i.e., sales revenue and expenses) before their effects are incorporated in stock prices, we compare our results based on the sample of firms with market capitalization above the yearly median with those for a sample of observations with market capitalization below the median. These stocks are quite different. In addition to being much smaller (median market capitalization of $25.317 million compared to $475.6 million), they have lower earnings/price ratios (median of 0.041 compared to 0.062), higher sales revenue/price ratios (median of 1.958 compared to 1.420), higher (more negative) expenses/price ratio (median of -1.958 compared to -1.187), lower annual returns (median of 1.3 percent compared to 7 percent), lower price per share (median of $5.875 compared to $23.50), higher book to market ratios (median of 0.736 compared to 0.484) and lower leverage (median of 0.247 compared to 0.211).

The results for the analyses of the sample of smaller firms are reported in Table 5. The estimates of all of the sales revenue/return coefficients are higher for this sample than for the sample of larger firms. Similarly, the estimates of the expenses/return coefficients are lower (more negative). The key difference between the coefficient estimates for this sample of smaller firms compared to the sample of larger firms (see Table 3) is that the end of year sales revenue/return coefficient is significantly positive for both the positive annual return and for the negative annual return sub-samples (0.118 and 0.222 with t-statistics of 2.95 and 3.69). This suggests that, for smaller firms, sales revenue changes precede the incorporation of the effects of factors that affect sales revenue changes in stock returns. The important point is that this does not appear to be so for the larger firms which we analyze throughout the paper; for this sample sales revenue changes are contemporaneous events with the incorporation of the effects of factors that affect sales revenue changes in stock returns.

These results have profound implications for studies that examine the difference between the earnings/return relation across samples of larger and smaller firms. All extant studies, of which we are aware, compare the earnings/return coefficients across various samples but the length (and timing) of the return interval is the same for all samples. Our results suggest that, if: (1) the question is: “to what extent are factors that have affected the firm incorporated in earnings of the period, and how does this incorporation differ between observations with positive returns and negative returns?” and if; (2) the question involves a comparison of smaller and larger firms; then, (3) the analysis and the comparison should be based on a longer time period for smaller firms than for larger firms. This observation is also apparent from the results in Freeman [1987] who shows that, for larger firms, there is no significant relation between earnings and returns after the end of the fiscal year but, for smaller firms, this relation continues for several months after the fiscal year end.

4.5. Inclusion of Next-Year Earnings and Components of Earnings in the Dependent Variable

In order to further examine the idea that value change at the beginning of the year will have the remainder of the year to be incorporated in earnings of the year while value change at the end of the year will not be incorporated in earnings of the year, we repeat our analyses, changing the dependent variables to sales revenue and expenses for the current fiscal year *t* plus sales revenue and expenses for the next year *t+1* (the independent variables continue to be returns of the fiscal year *t* and controls measured at the beginning of year *t*).

The results of these analyses are summarized in Table 6. Because requiring two years of sales and expense data change the composition of our sample, we also include (as Panel B) a replication of the analyses in Table 3 for this smaller sample. The inferences based on the relation between one-year earnings (and components of earnings) and returns are unchanged for this smaller sample. As expected (see Panel A) the estimates of the two-year sales revenue/return coefficients are significantly higher than the estimates of the one-year sales revenue/return coefficients (see Panel B) at both the beginning of the current fiscal year and at the end of the current fiscal year. Similarly, the estimates of the two-year expenses/return coefficients are significantly lower (more negative) than the estimates of the one-year expenses/ return coefficients at both the beginning of the current fiscal year and at the end of the current fiscal year. These results reflect the fact that news at the beginning of the year in this analysis has two years rather than one year to be recognized in sales revenue and expenses and news at the end of the year still has one year to be recognized. It is also noteworthy that the end of year coefficients in this regression with two-year sales revenue (expenses) as the dependent variable are similar to the beginning of year coefficients with one-year sales revenue (expenses) as the dependent variable because in both cases there remains one year for the news in returns to be recognized in sales revenue (expenses).

4.6. The Veracity of the Assumption that the Earnings/Return Coefficient Changes Linearly Over the Year

Although the assumption of a linear change in the earnings/return coefficient over the year is intuitively appealing – news at the first day of the year has 251 days to be incorporated in earnings, news on the second day has 250 days,…, etc. – we examine the validity of this assumption in this section. We regress earnings on each of the twelve monthly returns of the year. The estimates of each of these coefficients and the corresponding 95 percent confidence intervals around these coefficients are shown in Figure 1 for the sample of observations with positive annual returns and in Figure 2 for the sample of observations with negative annual returns. We also show the line joining our estimate of the earnings/returns coefficient at the beginning of the year and at the end of the year. Our assumption of linearity appears to be empirically valid: this line is always within the bounds of the confidence intervals around the monthly coefficient estimates.

5. Summary

We call the portion of the change in stock price that is recognized in earnings of the period, earnings recognition timeliness (ERT); this is estimated as the average earnings/return coefficient. We dissect ERT into two elements – the *current sales* element and the *expectations* element -- which reflect the effects of two quite different fundamental precepts of financial accounting. The *current sales* element is a manifestation of the matching principle of accounting in which expenses are recognized in the same period as the related benefits (i.e., sales) are recognized. The *expectations* element reflects changes in expectations about future earnings and the associated recognition of expenses in earnings in the current period. The change in the earnings/return coefficient over the fiscal year is a manifestation of the *current sales* element of ERT. The estimate of this coefficient at the end of the fiscal year is the *expectations* element of ERT.

The main contribution of our paper is the empirical identification of the effects of the accounting for the *current sales* element and the *expectations* element of expenses on the mapping from returns to earnings (i.e., ERT). We show, via an example, that empirical identification of these elements provides additional insights in studies that examine the difference in ERT across various scenarios.

The example we examine is the comparison of positive annual return and negative annual return sub-samples, which is, following Basu [1997], the most widely studied analysis of ERT. We argue that asymmetric timely loss recognition will be manifested in the *expectations* element of ERT because it reflects the portion of value change recognized in contemporaneous earnings related to changes in expectations about future earnings. The concept of asymmetric timely loss recognition does not, however, predict that the *current sales* element of ERT will differ across sub-samples of positive annual returns and negative annual returns. Our method permits separation of the *expectations* element and hence a focus on the element at the heart of arguments regarding asymmetric loss recognition.

We find that the *current sales* element of ERT is statistically significantly positive for the sub-sample of observations with positive annual returns but it is not statistically significantly different from zero for both sub-samples of observations. The *expectations* element of ERT is statistically significant for the negative annual return sub-sample but it is not significantly different from zero for the sub-sample of observations with positive annual returns. In short, the asymmetry in the ERT is due both the *current sales* element and the *expectations* element of expenses (although most of the asymmetry is due to the *expectations* element).

Since our interest is in identifying and understanding the *current sales* and *expectations* elements of expenses, we dissect annual earnings into two components; sales revenue and expenses (i.e., net income minus sales revenue). By so doing, we identify the separate contributions of recognition of sales revenue and expenses to ERT. We show that the sales revenue/return coefficient declines from significantly positive at the beginning of the year to not significantly different from zero at the end of the year.

We show that the expenses/return coefficient increases (i.e., becomes less negative) from the beginning of the year to the end, reflecting the *current sales* element of expenses (i.e., the portion of expenses that are matched to sales). We document a statistically significant difference between the average expenses/return coefficients for the positive annual returns sub-sample relative to the negative annual returns sub-sample. This asymmetry is the combined effect of a positive and statistically significant coefficient for the positive annual returns sub-sample and a relatively small and not statistically significant coefficient for the negative annual returns sub-sample. In other words, the observed asymmetry in ERT reflects the fact that expenses are correlated with returns **only when news is good**. At first glance, this result appears inconsistent with the Basu [1997] notion of asymmetric timely loss recognition. The apparent inconsistency is due to the fact that the *expectations* element of the expense component of ERT is statistically significantly negative while the *current sales* element of the expense component of ERT is statistically significantly positive. The net effect from both elements results in an estimate of the expenses/return coefficient that is, on average, not significantly different from zero for the negative annual returns sub-sample.

In summary, we present a method, which permits identification of the effects of two fundamental aspects of accounting on earnings recognition timeliness, and we provide an example of analyses where the separation of these effects provides new insights.

There is much room for further analyses. Some examples include: (1) consideration of lagged returns (returns of the prior period) and leading returns (returns of the subsequent period) as additional independent variables; (2) comparison of, say, the fourth quarter with the other quarters of the year; and, (3) a more detailed analysis of earnings announcement effects. We consider our paper to be the necessary first step to other analyses of components of earnings.

This is due to our focus on the fundamental precepts of accounting and our empirical identification of two elements of ERT, which reflect the effects of these fundamental precepts.

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Table 1
Descriptive Statistics

Variable	Mean	Std. Dev.	Q1	Median	Q3
$EARN_{jt}$	0.053	0.122	0.028	0.062	0.100
$SALES_{jt}$	2.003	2.462	0.588	1.240	2.467
EXP_{jt}	-1.950	2.439	-2.398	-1.187	-0.553
RET_{jt}	0.116	0.484	-0.179	0.070	0.335
PRC_{jt-1}	28.6	29.4	15.0	23.5	35.5
$SIZE_{jt-1}$	2,900.2	13,804.8	166.6	475.6	1,417.9
BTM_{jt-1}	0.600	0.520	0.290	0.484	0.779
$LEVERAGE_{jt-1}$	0.469	0.986	0.045	0.211	0.533

Descriptive statistics are presented for a sample of 50,799 firm-year observations with a market value of equity above the median in a given year between 1973 and 2010. The mean, standard deviation (Std. Dev.), first quartile (Q1), median and third quartile (Q3) are reported. $EARN_{jt}$ is firm *j*'s annual earnings in fiscal year *t* scaled by stock price at the beginning of fiscal year *t*. $SALES_{jt}$ is firm *j*'s annual sales revenue in fiscal year *t* scaled by stock price at the beginning of fiscal year *t*. EXP_{jt} is firm *j*'s annual expenses in fiscal year *t*, which is equal to $EARN_{jt}$ less $SALES_{jt}$. RET_{jt} is the annual stock return of firm *j* during fiscal year *t*. PRC_{jt-1} is firm *j*'s stock price per share on the last day of fiscal year *t-1*. $SIZE_{jt-1}$ is firm *j*'s market value of equity (in millions) on the last day of fiscal year *t-1*. BTM_{jt-1} is firm *j*'s book value of equity at the end of fiscal year *t-1* divided by the market value of equity on the last day of fiscal year *t-1*. $LEVERAGE_{jt-1}$ is firm *j*'s book value of current and long-term debt at the end of fiscal year *t-1* divided by the market value of equity on the last day of fiscal year *t-1*.

Table 2
Dissection of the Earnings/Return Coefficient

	Full Sample	Sign of Annual Return: Positive	Sign of Annual Return: Negative	Difference
β^{beg}	**0.099** (9.36)	**0.057** (5.07)	**0.182** (16.92)	**0.125** (10.47)
β^{end}	**0.038** (3.36)	**0.011** (1.40)	**0.166** (15.01)	**0.155** (16.25)
$\frac{1}{2}(\beta^{beg}-\beta^{end})$	**0.030** (4.53)	**0.023** (3.93)	**0.008** (1.45)	**-0.015** (-3.08)
$\frac{1}{2}(\beta^{beg}+\beta^{end})$	**0.069** (7.83)	**0.034** (4.31)	**0.174** (18.15)	**0.140** (14.23)

This table presents the parameter estimates (t-statistic) from the following regression model estimated for firm-year observations between 1973 and 2010:

$$EARN_{jt} = \alpha + \sum_{\tau=0}^{251} \beta_\tau \cdot ret_{jt\tau} + controls + \varepsilon_{jt}$$
$$\text{subject to: } \beta_\tau = \beta^{beg} + \frac{1}{251} \cdot \left(\beta^{end} - \beta^{beg}\right) \cdot \tau$$

The dependent variable, $EARN_{jt}$, is firm j's annual earnings in fiscal year t scaled by stock price at the beginning of fiscal year t. $ret_{jt\tau}$ is the stock return of firm j on day τ, which is computed as the change in stock price plus dividends on day τ scaled by stock price at the beginning of fiscal year t, where τ is the number of trading days relative to the first day of fiscal year t. $\beta^{beg}(\beta^{end})$ is the estimated earnings/return coefficient beginning (end) the fiscal year t and α is the regression intercept (not reported). Additional *controls* (not reported) include: (1) annual earnings and annual sales revenue in the prior fiscal year scaled by stock price at the beginning of the current fiscal year, (2) the natural logarithm of price per share, the natural logarithm of market value of equity, the ratio of the book value of equity to market value of equity, and the ratio of book value of current and long-term debt to market value of equity measured at the end of the previous fiscal year, and (3) year fixed effect and industry fixed effect parameters, based on classifications defined in Barth et al. [1998]. The first column summarizes parameter estimates for the full sample of 50,799 firm-year observations with a market value of equity above the median for all firms in a given year. The second column presents model parameters estimated for the sub-sample of 29,305 observations with a positive annual stock return in fiscal year t ($RET_{jt} \geq 0$). The third column presents model parameters estimated for the sub-sample 21,494 observations with a negative annual stock return in fiscal year t ($RET_{jt} < 0$). The fourth column presents the difference between parameter estimates in the second and third columns. Standard errors are clustered by firm and year (Petersen [2009], Gow et al. [2010]).

Table 3

Dissection of the Sales Revenue/Return and Expenses/Return Coefficients

	Positive Annual Return		Negative Annual Return	
	SALES	*EXP*	*SALES*	*EXP*
β^{beg}	**0.248**	**-0.191**	**0.262**	**-0.080**
	(5.06)	(-4.77)	(6.32)	(-1.67)
β^{end}	**0.028**	**-0.017**	**0.039**	**0.127**
	(1.42)	(-1.32)	(1.08)	(2.76)
$\frac{1}{2}(\beta^{beg}-\beta^{end})$	**0.110**	**-0.087**	**0.111**	**-0.103**
	(3.63)	(-3.27)	(3.72)	(-3.79)
$\frac{1}{2}(\beta^{beg}+\beta^{end})$	**0.138**	**-0.104**	**0.150**	**0.024**
	(5.53)	(-5.71)	(4.74)	(0.82)

This table presents the parameter estimates (t-statistic) from the following regression model estimated for firm-year observations between 1973 and 2010:

$$SALES_{jt} \text{ or } EXP_{jt} = \alpha + \sum_{\tau=0}^{251} \beta_\tau \cdot ret_{jt\tau} + controls + \varepsilon_{jt}$$
$$\text{subject to: } \beta_\tau = \beta^{beg} + \frac{1}{251} \cdot \left(\beta^{end} - \beta^{beg}\right) \cdot \tau$$

The dependent variable is either $SALES_{jt}$ (columns 1 and 3) or EXP_{jt} (columns 2 and 4). $SALES_{jt}$ is firm *j*'s annual sales revenue in fiscal year *t* scaled by stock price at the beginning of fiscal year *t*. EXP_{jt} is firm *j*'s annual expenses (equal to earnings less sales revenue) in fiscal year *t* scaled by stock price at the beginning of fiscal year *t*. $ret_{jt\tau}$ is the stock return of firm *j* on day τ, which is computed as the change in stock price plus dividends on day τ scaled by stock price at the beginning of fiscal year *t*, where τ is the number of trading days relative to the first day of fiscal year *t*. $\beta^{beg}(\beta^{end})$ is the estimated sales/return or expenses/return coefficient at the beginning (end) fiscal year *t* and α is the regression intercept (not reported). Additional *controls* (not reported) include: (1) annual earnings and annual sales revenue in the prior fiscal year scaled by stock price at the beginning of the current fiscal year, (2) the natural logarithm of price per share, the natural logarithm of market value of equity, the ratio of the book value of equity to market value of equity, and the ratio of book value of current and long-term debt to market value of equity measured at the end of the previous fiscal year, and (3) year fixed effect and industry fixed effect parameters, based on classifications defined in Barth et al. [1998]. The first and second columns present model parameters estimated for the sub-sample of 29,305 observations with a positive annual stock return in fiscal year t $(RET_{jt} \geq 0)$. The third and fourth columns present model parameters estimated for the sub-sample 21,494 observations with a negative annual stock return in fiscal year t $(RET_{jt} < 0)$. Standard errors are clustered by firm and year (Petersen [2009], Gow et al. [2010]).

Table 4

Dissection of the Earnings/Return Coefficient Controlling for Earnings Announcement Effects

	Positive Annual Return	Negative Annual Return	Positive Annual Return	Negative Annual Return
β^{beg}	**0.051**	**0.179**	**0.043**	**0.171**
	(4.11)	(15.55)	(3.67)	(14.76)
β^{end}	**0.008**	**0.164**	**0.006**	**0.161**
	(0.80)	(11.93)	(0.59)	(10.72)
B^{lag_q4}			**0.032**	**0.038**
			(2.86)	(1.74)
β^{q1}			**0.083**	**0.067**
			(5.66)	(3.65)
β^{q2}			**0.055**	**0.054**
			(6.47)	(3.91)
β^{q3}			**0.022**	**0.023**
			(2.82)	(1.34)
$\frac{1}{2}(\beta^{beg}-\beta^{end})$	**0.021**	**0.007**	**0.019**	**0.005**
	(2.74)	(1.26)	(2.40)	(1.28)
$\frac{1}{2}(\beta^{beg}+\beta^{end})$	**0.029**	**0.171**	**0.024**	**0.166**
	(3.67)	(15.23)	(2.94)	(13.87)

This table presents the parameter estimates (t-statistic) from the following regression model estimated for firm-year observations between 1973 and 2010:

$$EARN_{jt} = \alpha + \sum_{\tau=0}^{251} \beta_\tau \cdot ret_{jt\tau} + \beta^{lag_{q4}} \cdot ret_{jt-1}^{q4} + \beta^{q1} \cdot ret_{jt}^{q1} + \beta^{q2} \cdot ret_{jt}^{q2} + \beta^{q3} \cdot ret_{jt}^{q3} + \beta^{q4} \cdot ret_{jt}^{q4} + controls + \varepsilon_{jt}$$

$$\text{subject to: } \beta_\tau = \beta^{beg} + \frac{1}{251} \cdot \left(\beta^{end} - \beta^{beg}\right) \cdot \tau$$

The dependent variable, $EARN_{jt}$, is firm *j*'s annual earnings in fiscal year *t* scaled by stock price at the beginning of fiscal year *t*. $ret_{jt\tau}$ is the stock return of firm *j* on day τ, which is computed as the change in stock price plus dividends on day τ scaled by stock price at the beginning of fiscal year *t*, where τ is the number of trading days relative to the first day of fiscal year *t*. ret_{jt-1}^{q4} is firm *j*'s stock return during the 3-day window centered on the announcement date of fourth quarter earnings of fiscal year *t-1*. ret_{jt}^{q1}, ret_{jt}^{q2}, ret_{jt}^{q3}, and ret_{jt}^{q4} are firm *j*'s stock returns during the 3-day window centered on the first, second, third, and fourth quarter earnings announcement dates, respectively, of fiscal year *t*. ret_{jt}^{post} is firm *j*'s stock return from the first day of fiscal year *t+1* to the day after the announcement date of fourth quarter earnings of fiscal year *t*. $\beta^{beg}(\beta^{end})$ is the estimated earnings/return coefficient beginning (end) the fiscal year *t* and α is the regression intercept (not reported). Additional *controls* (not reported) include: (1) annual earnings and annual sales revenue in the prior fiscal year scaled by stock price at the beginning of the current fiscal year, (2) the natural logarithm of price per share, the natural logarithm of market value of equity, the ratio of the book value of equity to market value of equity, and the ratio of book value of current and long-term debt to market value of equity measured at the end of the previous fiscal year, and (3) year fixed effect and industry fixed effect parameters, based on classifications defined in Barth et al. [1998]. The first and third columns present model parameters estimated for the sub-sample of 24,129 observations with a positive annual stock return in fiscal year *t* ($RET_{jt} \geq 0$). The second and fourth columns present model parameters estimated for the sub-sample 17,690 observations with a negative annual stock return in fiscal year *t* ($RET_{jt} < 0$). Standard errors are clustered by firm and year (Petersen [2009], Gow et al. [2010]).

Table 5

Dissection of the Sales Revenue/Return and Expenses/Return Coefficients for Small Firms

	Positive Annual Return		Negative Annual Return	
	SALES	*EXP*	*SALES*	*EXP*
β^{beg}	**0.357**	**-0.294**	**0.511**	**-0.272**
	(6.91)	(-7.12)	(8.03)	(-4.40)
β^{end}	**0.118**	**-0.080**	**0.222**	**0.051**
	(2.95)	(-2.54)	(3.69)	(0.99)
$½(\beta^{beg}-\beta^{end})$	**0.120**	**-0.107**	**0.144**	**-0.162**
	(3.80)	(-4.09)	(3.61)	(-5.15)
$½(\beta^{beg}+\beta^{end})$	**0.238**	**-0.187**	**0.367**	**-0.111**
	(7.03)	(-7.30)	(7.74)	(-2.33)

This table presents the parameter estimates (t-statistic) from the following regression model estimated for firm-year observations between 1973 and 2010:

$$SALES_{jt} \text{ or } EXP_{jt} = \alpha + \sum_{\tau=0}^{251} \beta_\tau \cdot ret_{jt\tau} + controls + \varepsilon_{jt}$$

$$\text{subject to: } \beta_\tau = \beta^{beg} + \frac{1}{251}\cdot\left(\beta^{end} - \beta^{beg}\right)\cdot\tau$$

The dependent variable is either $SALES_{jt}$ (columns 1 and 3) or EXP_{jt} (columns 2 and 4). $SALES_{jt}$ is firm *j*'s annual sales revenue in fiscal year *t* scaled by stock price at the beginning of fiscal year *t*. EXP_{jt} is firms *j*'s annual expenses (equal to earnings less sales revenue) in fiscal year *t* scaled by stock price at the beginning of fiscal year *t*. $ret_{jt\tau}$ is the stock return of firm *j* on day τ, which is computed as the change in stock price plus dividends on day τ scaled by stock price at the beginning of fiscal year *t*, where τ is the number of trading days relative to the first day of fiscal year *t*. $\beta^{beg}(\beta^{end})$ is the estimated earnings/return coefficient beginning (end) the fiscal year *t* and α is the regression intercept (not reported). Additional *controls* (not reported) include: (1) annual earnings and annual sales revenue in the prior fiscal year scaled by stock price at the beginning of the current fiscal year, (2) the natural logarithm of price per share, the natural logarithm of market value of equity, the ratio of the book value of equity to market value of equity, and the ratio of book value of current and long-term debt to market value of equity measured at the end of the previous fiscal year, and (3) year fixed effect and industry fixed effect parameters, based on classifications defined in Barth et al. [1998]. The first and second columns present model parameters estimated for the sub-sample of 26,067 observations with a positive annual stock return in fiscal year *t* ($RET_{jt} \geq 0$). The third and fourth columns present model parameters estimated for the sub-sample 24,712 observations with a negative annual stock return in fiscal year *t* ($RET_{jt} < 0$). Standard errors are clustered by firm and year (Petersen [2009], Gow et al. [2010]).

Table 6

Dissection of the 2-year Sales Revenue/Return and 2-year Expenses/Return Coefficients

	Positive Annual Return		Negative Annual Return	
	SALES	*EXP*	*SALES*	*EXP*
Panel A: 1-year Sales/Return and 1-year Expense/Return Coefficients				
β^{beg}	**0.263**	**-0.205**	**0.287**	**-0.085**
	(5.23)	(-4.87)	(5.84)	(-1.74)
β^{end}	**0.025**	**-0.017**	**0.037**	**0.133**
	(1.23)	(-0.74)	(0.90)	(2.66)
$½(\beta^{beg}-\beta^{end})$	**0.119**	**-0.094**	**0.125**	**-0.109**
	(3.70)	(-3.43)	(3.59)	(-3.27)
$½(\beta^{beg}+\beta^{end})$	**0.144**	**-0.111**	**0.162**	**0.024**
	(5.43)	(-5.29)	(4.14)	(0.44)
Panel B: 2-year Sales/Return and 2-year Expense/Return Coefficients				
β^{beg}	**0.666**	**-0.561**	**0.747**	**-0.462**
	(5.72)	(-5.81)	(7.47)	(-4.80)
β^{end}	**0.281**	**-0.196**	**0.376**	**-0.036**
	(3.17)	(-2.78)	(2.95)	(-0.29)
$½(\beta^{beg}-\beta^{end})$	**0.192**	**-0.183**	**0.186**	**-0.213**
	(2.72)	(-3.01)	(2.60)	(-3.13)
$½(\beta^{beg}+\beta^{end})$	**0.473**	**-0.379**	**0.562**	**-0.249**
	(6.26)	(-6.44)	(6.28)	(-2.84)

This table presents the parameter estimates (t-statistic) from the following regression model estimated for firm-year observations between 1973 and 2010:

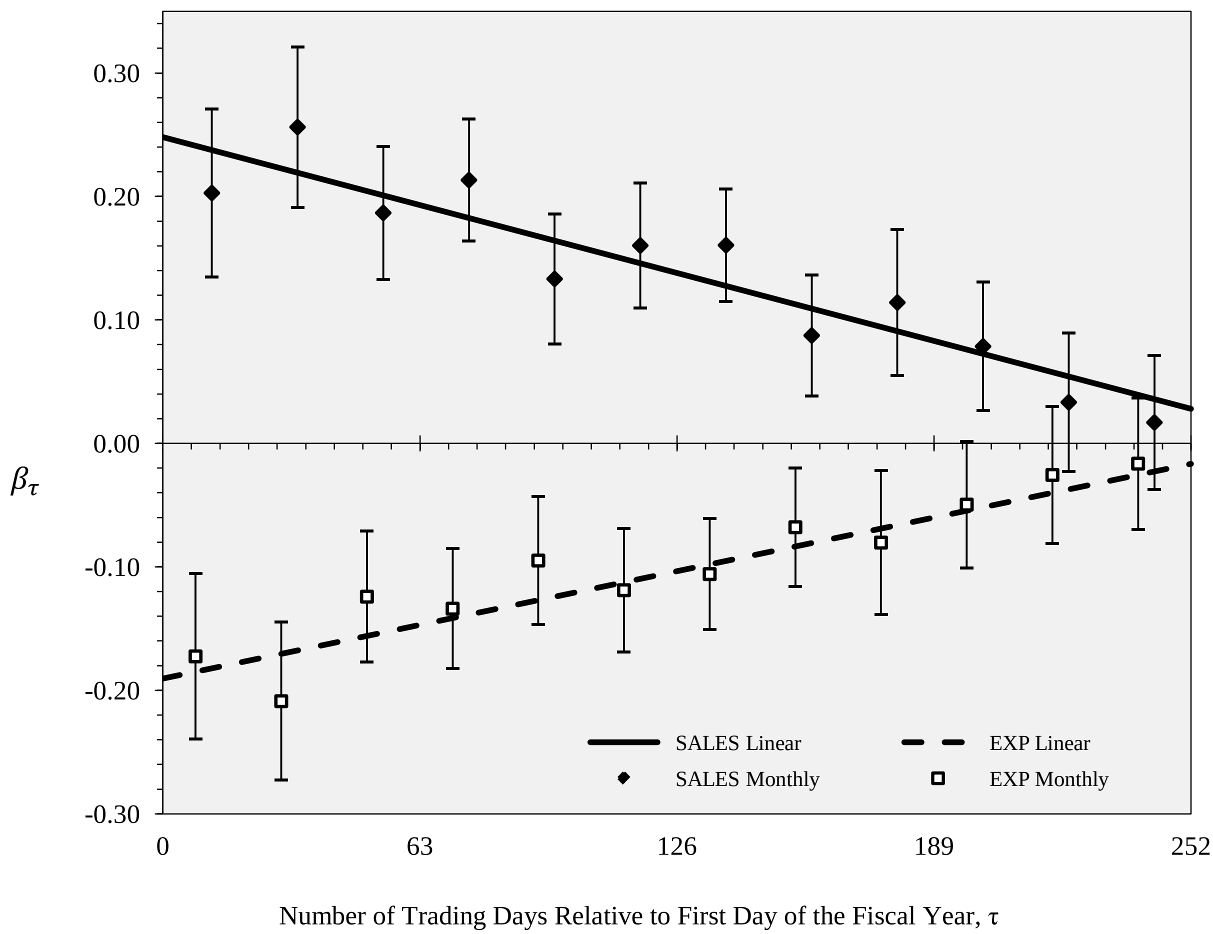
$$SALES_{jt}^{2yr} \text{ or } EXP_{jt}^{2yr} = \alpha + \sum_{\tau=0}^{251} \beta_\tau \cdot ret_{jt\tau} + controls + \varepsilon_{jt}$$

$$\text{subject to: } \beta_\tau = \beta^{beg} + \frac{1}{251}\cdot\left(\beta^{end} - \beta^{beg}\right)\cdot\tau$$

The dependent variable is either $SALES_{jt}^{2yr}$ (columns 1 and 3) or EXP_{jt}^{2yr} (columns 2 and 4). $SALES_{jt}^{2yr}$ is the sum of firm *j*'s annual sales revenue in fiscal year *t* and *t+1* scaled by stock price at the beginning of fiscal year *t*. EXP_{jt}^{2yr} is the sum of firms *j*'s annual expenses (equal to earnings less sales revenue) in fiscal year *t* and *t+1* scaled by stock price at the beginning of fiscal year *t*. $ret_{jt\tau}$ is the stock return of firm *j* on day τ, which is computed as the change in stock price plus dividends on day τ scaled by stock price at the beginning of fiscal year *t*, where τ is the number of trading days relative to the first day of fiscal year *t*. $\beta^{beg}(\beta^{end})$ is the estimated earnings/return coefficient beginning (end) the fiscal year *t* and α is the regression intercept (not reported). Additional *controls* (not reported) include: (1) annual earnings and annual sales revenue in the prior fiscal year scaled by stock price at the beginning of the current fiscal year, (2) the natural logarithm of price per share, the natural logarithm of market value of equity, the ratio of the book value of equity to market value of equity, and the ratio of book value of current and long-term debt to market value of equity measured at the end of the previous fiscal year, and (3) year fixed effect and industry fixed effect parameters, based on classifications defined in Barth et al. [1998]. The first and second columns present model parameters estimated for the sub-sample of 26,726 observations with a positive annual stock return in fiscal year t ($RET_{jt} \geq 0$). The third and fourth columns present model parameters estimated for the sub-sample 19,203 observations with a negative annual stock return in fiscal year t ($RET_{jt} < 0$). Standard errors are clustered by firm and year (Petersen [2009], Gow et al. [2010]).

Figure 1

Dissection of the Sales Revenue/Return and Expenses/Return Coefficients for Small Firms for a Sub-sample Observations with Positive Annual Returns



The solid and dashed lines on the figure plot the sales/return and expenses/return coefficient estimates, β_τ, as a function of the number of trading days relative to the first day of the current fiscal year, τ. Linear coefficients are estimated using the following regression model:

$$SALES_{jt} \text{ or } EXP_{jt} = \alpha + \sum_{\tau=0}^{251} \beta_\tau \cdot ret_{jt\tau} + controls + \varepsilon_{jt}$$
$$\text{subject to: } \beta_\tau = \beta^{beg} + \frac{1}{251} \cdot \left(\beta^{end} - \beta^{beg}\right) \cdot \tau$$

The dependent variable is either $SALES_{jt}$ or EXP_{jt}. $SALES_{jt}$ is firm *j*'s annual sales revenue in fiscal year *t* scaled by stock price at the beginning of fiscal year *t*. EXP_{jt} is firm *j*'s annual expenses (equal to earnings less sales revenue) in fiscal year *t* scaled by stock price at the beginning of fiscal year *t*. $ret_{jt\tau}$ is the daily stock return of firm *j* on day τ, computed as the change in stock price plus dividends on day τ scaled by stock price at the beginning of fiscal year *t*, where τ is the number of trading days relative to the first day of fiscal year *t*. $\beta^{beg}(\beta^{end})$ is the estimated sales/return or expenses/return coefficient at the beginning (end) fiscal year *t* and α is the regression intercept (not reported). Additional *controls* (not reported) include: (1) annual earnings and annual sales revenue in the prior fiscal year scaled by stock price at the beginning of the current fiscal year, (2) the natural logarithm of price per share, the natural logarithm of market value of equity, the ratio of the book value of equity to market value of equity, and the ratio of book value of current and long-term debt to market value of equity measured at the end of the previous fiscal year, and (3) year fixed effect and industry fixed effect parameters, based on classifications defined in Barth et al. [1998].

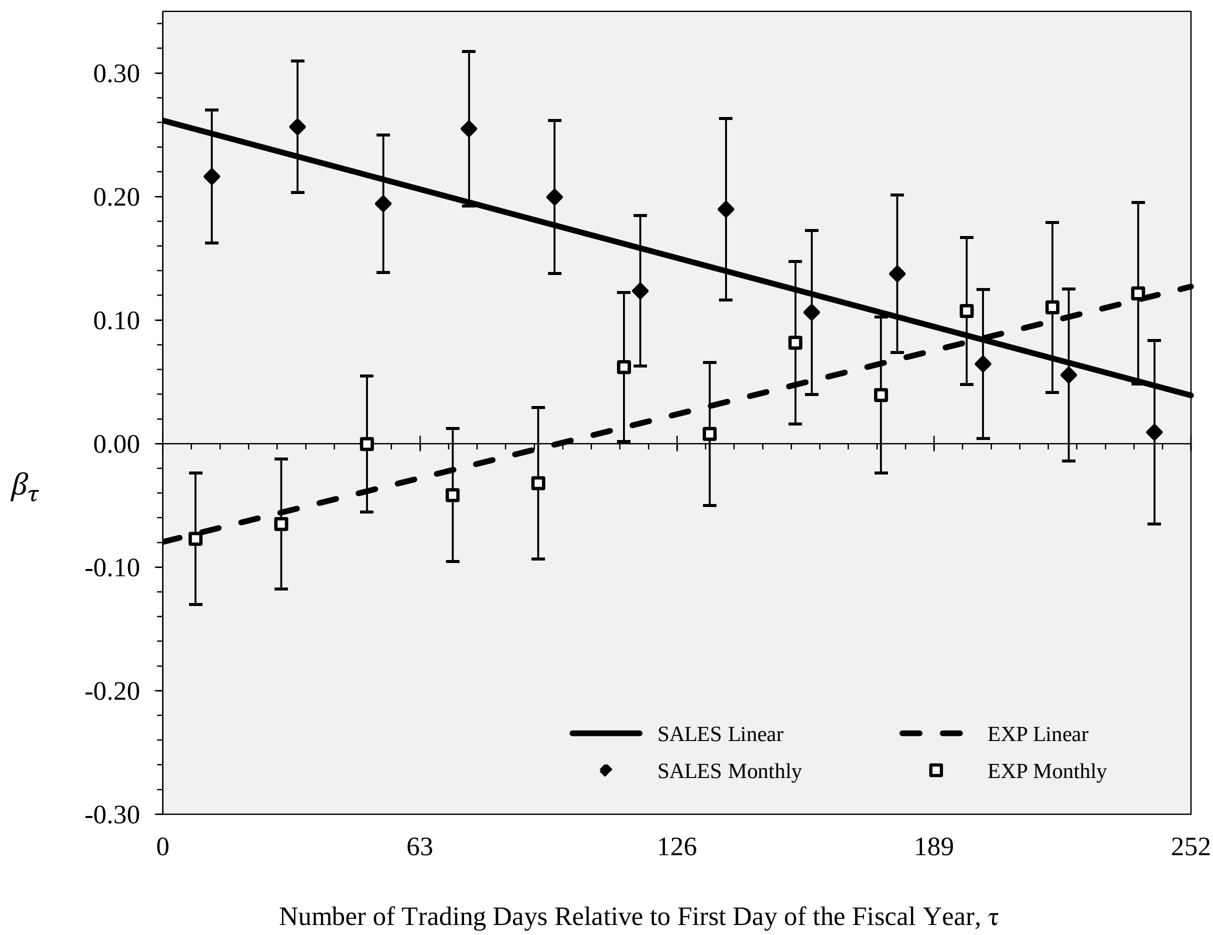
The vertical bars plot the estimates of the monthly coefficients from the following regression model:

$$SALES_{jt} \text{ or } EXP_{jt} = \alpha + \sum_{m=1}^{12} \beta_m \cdot ret_{jtm} + controls + \varepsilon_{jt}$$

ret_{jtm} is the stock return of firm *j* for month *m*, where *m* = 1 (*m* = 12) is the first (last) month of fiscal year *t*. β_m is the estimated sales/return or expenses/return coefficient in month *m* of fiscal year *t* and is shown with a plus/minus two standard error confidence interval. Both models are separately estimated for a sub-sample of 29,305 observations with a positive annual stock return in fiscal year *t*.

Figure 2

Dissection of the Sales Revenue/Return and Expenses/Return Coefficients for Small Firms for a Sub-sample Observations with Negative Annual Returns



The solid and dashed lines on the figure plot the sales/return and expenses/return coefficient estimates, β_τ, as a function of the number of trading days relative to the first day of the current fiscal year, τ. Linear coefficients are estimated using the following regression model:

$$SALES_{jt} \text{ or } EXP_{jt} = \alpha + \sum_{\tau=0}^{251} \beta_\tau \cdot ret_{jt\tau} + controls + \varepsilon_{jt}$$

$$\text{subject to: } \beta_\tau = \beta^{beg} + \frac{1}{251} \cdot \left(\beta^{end} - \beta^{beg}\right) \cdot \tau$$

The dependent variable is either $SALES_{jt}$ or EXP_{jt}. $SALES_{jt}$ is firms j's annual sales revenue in fiscal year t scaled by stock price at the beginning of fiscal year t. EXP_{jt} is firm j's annual expenses (equal to earnings less sales revenue) in fiscal year t scaled by stock price at the beginning of fiscal year t. $ret_{jt\tau}$ is the daily stock return of firm j on day τ, computed as the change in stock price plus dividends on day τ scaled by stock price at the beginning of fiscal year t, where τ is the number of trading days relative to the first day of fiscal year t. $\beta^{beg}(\beta^{end})$ is the estimated sales/return or expenses/return coefficient at the beginning (end) fiscal year t and α is the regression intercept (not reported). Additional *controls* (not reported) include: (1) annual earnings and annual sales revenue in the prior fiscal year scaled by stock price at the beginning of the current fiscal year, (2) the natural logarithm of price per share, the natural logarithm of market value of equity, the ratio of the book value of equity to market value of equity, and the ratio of book value of current and long-term debt to market value of equity measured at the end of the previous fiscal year, and (3) year fixed effect and industry fixed effect parameters, based on classifications defined in Barth et al. [1998].

The vertical bars plot the estimates of the monthly coefficients from the following regression model:

$$SALES_{jt} \text{ or } EXP_{jt} = \alpha + \sum_{m=1}^{12} \beta_m \cdot ret_{jtm} + controls + \varepsilon_{jt}$$

ret_{jtm} is the stock return of firm j for month m, where m = 1 (m = 12) is the first (last) month of fiscal year t. β_m is the estimated sales/return or expenses/return coefficient in month m of fiscal year t and is shown with a plus/minus two standard error confidence interval. Both models are separately estimated for a sub-sample of 29,305 observations with a positive annual stock return in fiscal year t.