

# **Earnings as Lagging Economic Indicators of Expected Market Return**

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### **Abstract**

In contrast to the extensive body of literature addressing the relation between earnings and individual security returns comparatively little is known about the relation between earnings and aggregate market return. This paper addresses this deficiency by examining the relation between market return and earnings surprise at the daily level in the time period surrounding the release of earnings. We find, in stark contrast to commonly encountered assertions by financial commentators in the popular press, that market returns are lower in the days surrounding positive surprise earnings announcements than in days surrounding negative surprise earnings announcements. We further find that this difference in return reaches an absolute maximum in the immediate pre-announcement time period and that it persists even after controlling for prior market returns. These findings support the notion that earnings surprises impact market return as lagging economic indicators of fundamental macro-economic variables in the fiscal time period to which earnings pertain.

## **Earnings as Lagging Economic Indicators of Expected Market Return**

### **1. Introduction**

One of the more commonplace assertions of equity market commentators/analysts is the attribution of market movement, or lack thereof, to just released or pending firm earnings data. Indeed, time periods where calendar fiscal year firms tend to release preliminary quarterly earnings information (i.e., the months of April, July, October, and mid-January to mid-February) are passionately identified as “earnings seasons” because of their supposed importance to determining the direction of the market as a whole. Since earning announcements, by construction, pertain to economic activity in a prior fiscal period (i.e., the fiscal quarter that income is reported for) such an informational role raises the possibility that at the aggregate level earnings are an informative lagging economic indicator. That is, they provide information pertinent to market participants in updating their beliefs about economic fundamentals in the quarter to which earnings pertain. When such economic fundamentals also have implications for expected market return in future time periods then disclosure period earnings surprises should impact market return. In this analysis we evaluate this potential informational role of earnings importance empirically.

While we find no evidence whatsoever of any sort of positive relation between market movements and firm earnings surprises along the lines commonly encountered in the financial press, we do find some evidence consistent with earnings announcements informing market return. Specifically, we find strong evidence of a general negative

relation between random walk earnings surprises and market returns in the days preceding the earnings announcement. Interestingly, this relation appears to get stronger rather than weaker as the earnings announcement date approaches. Moreover, once the announcement date passes this temporal relation reverses with the negative relation gradually weakening over the days following the announcement.

The literature on earnings informativeness about firm-specific prospects is long established and extensive beginning with the seminal works by Ball and Brown (1968) and Beaver (1968). However, from the standpoint of an investor holding the classic well-diversified portfolio the importance of such firm-specific information is unclear.<sup>1</sup> Specifically, to the extent that earnings surprises reflect idiosyncratic firm outcomes then their effects are diversified away over the entire portfolio holding. Such investors are vastly more concerned with the direction the market is taking as a whole than with the performance of the individual securities that comprise their portfolio. Arguably, the only sense in which firm specific information such as earnings is useful to these investors is in its capacity to signal future expected market return. Specifically, one might expect such individuals to consume more or invest in financial instruments other than stocks if expected market return declines and to invest more in their equity stock portfolios when expected market return rises. Hence, developing an understanding of how accounting information may impact the decisions made by such investors is a question of fundamental importance and interest. This study represents one of the initial attempts to develop such an understanding.

Our analysis is closely related to work by Kothari, Lewellen, and Warner (2006)

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<sup>1</sup> Even if the diversification is partial, as a general rule the informational relevance of idiosyncratic relative to market return information declines precipitously with the degree of diversification.

who document that the relation between seasonal change in aggregate earnings and market returns is negative where returns are measured over the quarter in which earnings are released. They attribute this relation, in part, to correlations between random walk earnings surprises and macro-factors such as unexpected inflation rates and/or interest rate changes. We, however, focus on short window time periods (i.e., days) surrounding the release of the earnings information. Hence, in much the same way that Beaver (1968) can be distinguished from Ball and Brown (1968), this analysis is much more clearly targeted at examining the market's response to the surprise content of the earnings announcement rather than documenting longer window co-movements between earnings and market returns.

## **2. Perspectives on the Relation between Market Return and Firm Earnings.**

While there is an extensive literature on how earnings surprises impact firm value (beginning with Beaver (1968) and Ball and Brown (1968)), little attention has been given to the role of earnings may play in informing the market about aggregate expected return. Indeed, the limited work in this area (e.g., Campbell (1991)) generally attributes aggregate market movements to economy wide macro factors with firm-level effects such as earnings shocks viewed as random. However, the ability of a systematic rather than random pattern of firm-specific shocks to reveal aggregate market phenomenon remains a distinct possibility. That is, if ten out of ten earnings announcements on a given day are positive then the market might reasonably infer that prospects for most firms are better than current expectations. Indeed, it is precisely this sort of logic that underlies the popular press and financial commentator attributions of market wide movements to the

earnings surprises of given firms or the general performance of earnings.

## 2.1 Earnings as Market Movers

A widely encountered notion in the popular press is that corporate earnings numbers moves the market. That is, that earnings in general and earnings surprises in particular drive market returns. Recent **Wall Street Journal (WSJ)** columns, for instance, are illustrative of the broad nature of this belief. One states that “Disappointing earnings from **Amazon.com** and **Electronic Arts** could rattle the technology sector and add to broad pressure following yesterday stock-market skid.” (**WSJ**, 2/3/2006) Another states “stock prices slid late last week, partly because investors and analysts started worrying that the string of better-than-expected earnings reports might be over.” (McDonald, 1/17/2006) Moreover, this belief in short term earnings surprises as a determinant of market is not limited to members of the financial press. Ample anecdotal evidence exists that investment professionals share this belief. A **Reuters** article (Davies, 4/6/2005) quotes Hugh Johnson, chief investment officer of Johnson Illington Advisors: “The reports we’ve had from Alcoa and Dell are very upbeat and should help the stock market.” An **Associated Press** article reports Brian Belski, a market strategist as stating “The market looks like it wants to rally into earnings and throughout the earnings season.” (Martinez, 3/27/2004)

Nor is this belief limited to earnings being a determinant of upside market performance. Similar anecdotal support exists for notion that earnings drive poor market performance as well. The **Associated Press** quotes Keith Keenan, vice president of institutional trading at Wall Street Access, “Short-term, the market does appear to be

somewhat oversold, so there's probably not too much more to expect on the downside, unless earnings are disappointing." (Martinez, 3/27/2004) And, "In the next few weeks, many big companies will report third-quarter financial results, and investors will be watching closely to see how much oil, interest rates and hurricane damage are eating into profits. So far this year, profits have outdistanced analysts' forecasts. At some point, expectations will rise enough that companies will have trouble surpassing the forecasts, and at that point, stocks will fall." (Browning, 10/3/05)

The casual perception of market investment professionals and media of a direct relation between earnings surprises and market performance is also consistent with empirical findings in the realm of "intra-industry earnings information transfers." Foster (1981) finds strong evidence that prices of non-announcing firms within an announcing firm's industry move in the same direction as the returns of the announcing firms. Baginski (1987) finds a similar relation using management forecasts relative to analyst forecasts as in determining direction of the forecast news. Simply broadening the set of firms whose future prospects is affected by a given firm's earning disclosure from within-industry to within-market leads to the macro-level expectation of a positive relation between firm earnings surprises and market return.

Empirically this notion of a direct linkage between earnings surprise and market movements plays a central role in Penman (1985). He documents that market returns tend to be higher in the early weeks of calendar quarters. He attributes this phenomenon to the prevalence of earlier disclosure positive earnings surprises relative to negative earnings surprises. Hence, this timing pattern implicitly supports the presence of a positive relation between earnings surprises and market returns.

Anilowski et al. (2005) evaluates the relation between management earnings forecasts/guidance and market returns. They find that guidance is generally positively related to other measures of aggregate earnings surprise such as seasonal change in earnings and mean forecast error. They also find some limited evidence of a direct association between guidance and monthly market returns, but this evidence is most supportive of market return leading guidance.

Anilowski et al. also conduct a short window (three-day) evaluation of the association between guidance and market return that focuses on guidance provided by “market movers.” For qualitative guidance, they find a strong positive association between market return and various measures of market return in the three days surrounding the date the guidance is released. This finding is consistent with the direct relation between earnings news and market return posited in the financial press. It is, however, limited to a small subset of earnings-related news (i.e., non-quantitative voluntary disclosures of earnings guidance by “market movers”). Unlike our analysis, it also does not control for the level of market return prior to the event period.

## **2.2 Earnings and Factors Driving Expected Market Return**

Campbell (1991) identifies the two fundamental drivers of market return as unexpected cash flows and discount rates. While unexpected earnings most directly map to unexpected cash flows as evidenced by the strong directional market response to earnings surprises at the firm level, Kothari et al. (2006) argue that the cash flow shocks underlying these surprises are largely idiosyncratic and hence their impact is diversified

away in aggregate market return. Hence, the relation between earnings surprises and discount rates is of primary importance in evaluating any aggregate informational role for earnings. Somewhat less clear, however, is what the expected direction of this relation should be.

Conceptualizations of the more general (relative to earnings) relation between cash flow shocks and discount rates favor a negative relation between discount rates and cash flow surprises (E.g., Campbell and Cochrane (1999) and Chan and Kogan (2002)). Specific to earnings, Yan (2004) presents a model in which contemporaneous aggregate returns “are negatively correlated with aggregate earnings surprise” even though surprise is positively related to future market return. While a positive (negative) surprise signals an increase (decrease) in the growth rate of the aggregate economy which in turn raises (lowers) expected future returns. This change in future return expectations in turn engenders what Yan identifies as a contemporaneous “hedging effect.” Specifically, current period aggregate market value may move in a direction opposite that of the future return expectations because future cash flows are now discounted at this new rate. *Ceteris paribus*, an increase (decrease) in discount rate decreases (increases) present value. This “hedging effect” is generally too small to significantly impact the firm-specific price response to the earnings surprise meaning that firm level price response is directionally consistent with the surprise. It can, however, dominate across aggregate market so that aggregate market value moves in a direction opposite firm level earnings surprises.

Interestingly, however, this contemporaneous market revaluation effect of the earnings surprise should be followed by the realization of the aggregate future market return effect they signal. Hence, for example, a negative aggregate earnings surprise

implies lower future discount rates exerting a positive announcement date aggregate market revaluation impact, but necessarily also signaling a decline in future period expected market return. Thus, the announcement date association between earnings and market returns is negative but the post announcement association is positive. The potential for such a reversal of effect underscores the importance of examining the relation between aggregate earnings and market return in the time periods immediately surrounding earnings announcements.

Empirically, Kothari et al. (2006) document that the relation between average change in seasonal earnings and market return is negative in both the quarter to which the earnings pertain and the quarter in which earnings is reported. This association is present even after introducing controls for discount rate changes (changes in treasury bill rates, changes in yield spreads). Kothari et al. interpret this persistence in the negative aggregate earnings/return correlation as evidence that omitted/unknown “discount-rate shocks ... explain a significant fraction of stock returns.” This persistence also raises the possibility, consistent with Yan (2004), that aggregate earnings surprises themselves represent one mechanism by which the market learns about the values of these omitted/unknown factors and that, in turn, this learning impacts observed market return around earnings announcement dates.

It is this learning role of earnings surprises that, in particular, motivates our analysis. Specifically, we use daily rather than quarterly or monthly returns in the time period immediately surrounding earnings releases to provide a sharper understanding of the degree to which earnings news influences aggregate market returns. We also incorporate prior market return into the analysis in order to more directly control for the

level of expected market return prior to the earnings announcement news.

### **3. Conceptualization**

Prior empirical efforts addressing the relation between firm level earnings surprises and market returns largely focus on the associations between surprises and returns measured over long time periods. While such long periods better reflect the aggregate association between earnings and market returns they do not offer any direct insights into how earnings surprises in and of themselves may influence market-wide movements. That is, any observed association may merely reflect the response of both earnings and market return to other more fundamental drivers. Indeed, Kothari et al. (2006) make this point as a likely explanation for the negative relationship they document.

We instead examine the association in short time periods (days) immediately surrounding the announcement of the earnings (surprise). Such a perspective is consistent with the “earnings season” effects postulated in the popular press and allows us to derive more precise inferences about the relation between earnings surprise and market return. Specifically, focusing on daily rather than quarterly time intervals allows us to: (1) evaluate whether the association between market return and earnings surprise differs in the immediate announcement period relative to the pre- and post- announcement period; and, (2) evaluate whether the association is incremental to market return immediately preceding the announcement.

An announcement period change in the degree of association, much like an announcement period change in price variability or volume (e.g., Beaver (1968)),

strongly supports the notion that the earnings announcement itself is serving as a vehicle for conveying aggregate return relevant information to market participants. Such information may pertain to aggregate unexpected cash flow shocks, consistent with the popular press “earnings season” story. Or, it may alter expectations about underlying macro-factors via the association of unexpected earnings association with such factors hypothesized in Kothari et al. (2006). That is, market participants use the association to update their beliefs about various macro factor values which in turn impacts market return. Importantly, the fact that a distinct market return movement occurs in a short time period coincident with the occurrence of firm earnings surprise is highly consistent with the surprise playing an informational role.

Similarly, an association between earnings surprise and market return that persists after the inclusion of prior market return also supports the notion of an informational role for earnings in a daily return context. Specifically, if market return in the days immediately preceding an earnings announcement is an unbiased and informative measure of expected future market return then the incremental contemporaneous association of earnings surprise with market return suggests that earnings surprise is directly and immediately linked to a systematic change in expectations regarding market returns. That is, earnings are informative with respect to market return.

## **4. Empirical Analysis**

### **4.1 Sample**

Our sample consists of all quarterly earnings announcements from the 1972 to 2004 time period subject to the following screens: (1) earnings, earnings announcement

date and beginning of year stock price are available on COMPUSTAT; (2) stock price exceeds \$5 and is less than \$10,000; (3) absolute random walk forecast error is less than 100%. After application of these screens 349,454 firm-announcement observations remain.<sup>2</sup>

Tables 1 and 2 provide information on value-weighted and equal-weighted returns over the sixty-one days centered on each of the announcements in the sample. Panel A of table 1 reports mean daily market returns over five day intervals beginning with days -30 to -26 relative to each announcement and ending with days +26 to +30. Returns are separated by whether the announcement surprise is positive or negative, where expected earnings equals year-ago same quarter earnings (i.e., a seasonal random walk). Five day value-weighted market returns vary between .02940% (days -25 to -21) and .07090% (days +6 to +10) for positive surprise firms and between .03093% (days -30 to -26) and .07226% (days +6 to +10) for negative surprise announcements. Over the entire sixty-one day time period daily return averages .04607% for positive surprise announcements and .05027% for negative surprise announcements. Consistent with Kothari et al. (2006) mean daily return for positive news announcement is less than mean daily return for negative news announcements by .00420%. Moreover, this difference is most negative in days -10 to -6 where it expands to -.01116%, closely followed by the day -5 to -1 value of -.01032%.

Focusing solely on S&P 500 surprises the largest market return for positive surprise announcements again occurs in the day +6 to +10 period (.08327%) while the smallest return occurs in the day -5 to -1 time period (.02604%). For negative surprises

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<sup>2</sup> All findings reported here are robust to the exclusion of the three market “crashes” in our sample time period (i.e., 10/19/87, 10/27/97, 9/11/01).

the largest return occurs on days +11 to +15 (08187%) and the smallest on days -30 to -26 (.02293%). The overall daily difference between positive and negative surprise announcements is negative (-.00151%). This difference is most negative in days -5 to -1 relative to the announcement where it equals -.01846% while it is most positive in days -30 to -26 where it equals .01721%.

Panel B of table 1 reports daily mean market return data for the 11 days surrounding the earnings announcement. For all firms the difference is negative over all 11 days with the largest negative difference occurring on day -3 relative to the Compustat announcement date. For the S&P 500 subset the largest negative difference occurs on day -1 relative to the Compustat announcement date. This difference is also significantly different from 0 at the 5% level based on the standard deviation of the sixty one daily differences centered on the announcement date. Since Compustat dates are often the trading day after the official public announcement date this finding is consistent with the notion that a direct inverse relation exists between S&P 500 earnings announcement news and market movements.

The five day all announcement averages for the equally-weighted market index reported in panel A of table 2 are similar to those reported in panel A of table 1. The day -10 to -6 difference is -.01361% while the day -5 to -1 difference is -.01321%. As in table 1 the average daily difference between positive and negative surprise announcements of -.00470% is negative and, based on the associated standard deviation of the daily differences, significant at the 1% level. Averages for the S&P 500 firms are also similar. The day -5 to -1 difference of -.02138% is larger in absolute magnitude than it's the all firm announcement value and is the smallest mean five day difference observed in the

time series of mean differences reported in table 2..

The daily equally-weighted market index returns reported in panel B of table 2 are uniformly negative in all 11 days surrounding the announcement for all announcements as well as S&P 500 announcements. The day -1 differences of  $-.01791\%$  for all announcements and  $-.04223\%$  for S&P 500 announcements each differ from 0 at the 5% level based on the standard deviation of the daily differences reported in panel A. Again, this close correspondence between negative differences in market returns and the earnings announcement period and day are consistent with a direct inverse linkage between earnings surprise news and aggregate market return.

#### **4.2 Trend Analysis**

Random walk earnings surprise is by conceptual construction related to economic conditions as they exist in the fiscal period to which the earnings pertain as well as periods preceding that period. That is, economic activity and events occurring after the end of a fiscal period are largely excluded from the determination of earnings for a fiscal period per the periodicity assumption and the application of this assumption to accounting principles governing subsequent events. Since expected random walk expected earnings is similarly rooted in the past it follows that if earnings surprise is an indicator of economy-wide drivers of expected market return, it is a lagging indicator of them. If, in addition to being associated with earnings surprise, these drivers exert a persistent over time influence on expected market return then market return will be correlated with earnings surprise in future time periods. Hence, the presence of even an immediate announcement period association between market return and earnings surprise possesses a degree of ambiguity. It may reflect earnings influencing market return by

revealing something about past economy-wide market drivers or it may just be a spurious artifact of a correlation between earnings surprise and persistent influences of these market return drivers on market return.

We use two approaches in our analysis to address this fundamental ambiguity in understanding observed associations between earnings surprise and market returns. First, in the analyses reported in table 3 and following pre-announcement period market return is used to control for expected return given available prior information. Second, and most directly pertinent to the analysis we report in this section, we postulate that if the association is of an artifactual nature then it should weaken as the distance from the fiscal period to which the earnings information applies increases, or, in other words, as the earnings announcement date approaches. If, however, the association strengthens as the earnings announcement date approaches then the arrival of new information about prior fiscal period economic fundamentals is the most plausible source of this strengthening. Moreover, allowing for the possibility of pre-disclosure leakages and revisions, one such source of such information is the earnings announcements themselves.

Figures 1 and 2 plot the differences in mean market return for the value-weighted and equal-weighted indices over the 61 days centered on the earnings announcement date. These graphs, consistent with the descriptive means reported in tables 1 and 2, portray a strengthening negative relation between earnings surprise and market return as the announcement date approaches. This pattern is consistent with earnings playing an informational role in this time period.

More formally, when we estimate the following trend equation,

$$ARMKT_{+D} - ARMKT_{-D} = b_0 + b_1 DAY + e_D \quad (1)$$

where

$ARMKT+(-)_D$  is the mean market return (multiplied by 1000) for all positive (negative) announcement surprise firms on day D relative to the announcement day,

DAY indicates the day relative to the announcement day ranging from -30 to 0<sup>3</sup>,

When we estimate (1) for all firms based on the value-weighted index  $b_0$  equals -.141 and  $b_1$  equals -.00511 (both significant at the 1% level).  $R^2$  equals 40.34%. When estimated based on S&P 500 announcements these coefficient values are -.239 and -.0132 respectively (both significant at the 1% level), with an  $R^2$  of 48.29%. That is, the difference in market return between the positive and negative earnings surprise portfolios is increasingly negative as the announcement date approaches.<sup>4</sup>

Even stronger results occur when using returns on the equal-weighted market portfolio. Intercept coefficients are -.163 and -.281 (both significant at the 1% level) for the all announcement and S&P announcement samples. Respective slope estimates are -.00671 and -.0158 (both significant at the 1% level). Model  $R^2$ s are 63.73% and 69.02%.

Moreover, this negative trend is in no way a general phenomenon of the underlying portfolios in the time period studied. When equation (1) is estimated over the day 0 to +30 post-announcement period the  $b_1$  coefficient estimates turn distinctly positive. Specifically, while the intercept estimates remain negative (significant at the 1% level in all instances except for the S&P 500 value-weighted portfolio analysis), the all

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<sup>3</sup> In additional analyses not reported here day 0 is excluded from all of the trend periods examined. The results are substantively identical and hence not reported in detail here.

<sup>4</sup> The intercept values in equation (1) correspond to a test of whether the difference in mean market return is negative when day =0.

announcements value-weighted and equal-weighted slope coefficients are +.00406 and +.00573 (both significant at the 1% level) while the respective S&P 500 sample coefficients are +.00422 (significant at the 5% level) and +.00896 (significant at the 1% level). The  $R^2$ s for the two post-announcement value-weighted return models are 44.87% and 12.88% respectively while for the equal-weighted return models they are 68.77% and 47.81%.

As a more general test of whether this shift in trend direction is truly announcement date related we estimated the following quadratic variation of (1):

$$\text{ARMKT}_{+D} - \text{ARMKT}_{-D} = b_0 + b_1\text{DAY} + b_2\text{DAY}^2 + e_D \quad (2),$$

and solved its derivative for the minimization point ( $\text{DAY}_{\text{MIN}}$ ) as follows:

$$\text{DAY}_{\text{MIN}} = -b_1/2b_2$$

For the all announcement sample  $\text{DAY}_{\text{MIN}}$  equals -2.87 (i.e., between days -3 and -2) using the value-weighted index and equals -1.46 (i.e., between days -2 and -1) for the equal-weighted index. For the S&P 500 sample  $\text{DAY}_{\text{MIN}}$  is -.35 using value-weighted index returns and -.59 using equal-weighted index returns (i.e., between days -1 and 0 in both cases).

Overall, the trend analysis portrays a setting in which market return for positive news earnings announcements is generally smaller than market return for negative news earnings announcements in the pre-announcement time period. Moreover this differential appears to reach its zenith at or just before the Compustat earnings announcement date. This pattern is inconsistent with the notion of positive (negative) market impacts commonly attributed to positive (negative) earnings performance in the popular press and, seemingly, by many investment professionals. The apparent attenuation of this effect

to the earnings announcement event date is, however, indicative of earnings playing an informational role with respect to market return.

The reversal of the trend effect occurring in the post-announcement period is most consistent with a gradual return of the differential market return to a zero baseline as the time period to which the earnings news pertains becomes more distant. This too is consistent with earnings playing an informational role and once that role is completed (at the formal release of earnings) earnings can only become stale and hence the association with market return weakens as time passes. It is also consistent with a short-lived aggregate earnings surprise drift effect in that market return for positive news announcements is increasing relative to negative news announcements in the post-announcement time period. However, there is no evidence that positive news market return exceeds negative news market return, the classic post-announcement drift signature, in the post-announcement period. Indeed, for the equally-weighted index the differential return is negative and significant (1% level) in the day 0 to +30 time period.

Finally, while these findings do not directly contradict Yan's (2004) future expected market return signaling hypothesis, they are not particularly supportive. Specifically, the Yan model suggests an inverse informational signaling role for earnings surprise, consistent with what we find in the pre-announcement and immediate announcement time period. However, for the Yan model to be strongly supported the post-announcement period effect should immediately reverse with market return for positive news announcements exceeding market return for negative news announcements. Figures 1 and 2 portray a gradual, rather than immediate closing of the differential between positive and negative earnings surprise returns and offers no support for the

notion that the differential is fully reversed.

### 4.3. Market Return and Subsequent Earnings Surprise

The trend analysis as well as the descriptive means analysis in tables 1 and 2 are limited to some degree since they do not explicitly control for past market return, a generally agreed upon predictor of future market return, and rely on a simple good news/bad news dichotomy of earnings announcements. In this section we initiate an analysis that evaluate the association between earnings surprise measured as both a continuous and discrete variable and market return controlling for prior market return.

Kothari et al. (2006) document that a negative relation exists between aggregate market return and aggregate measures of earnings surprise in the quarter earnings is disclosed. They hypothesize that a likely explanation for this association is that earnings surprises are negatively correlated with other macro-factors such as interest rates and unexpected inflation. If so, then market returns in the time period preceding the earnings announcement should predict earnings surprises.<sup>5</sup>

We evaluate this possibility by estimating the following regression:

$$UE_{it} = b_0 + b_1 ARMKT_{t-2 \text{ to } t-6} + b_2 ARMKT_{t-7 \text{ to } t-30} + e_{it} \quad (3)$$

Where:

$UE_{it}$  is a measured as either a dummy variable taking on the value of 1 when seasonal random walk unexpected earnings exceeds 0 (and logistic regression procedures are employed) or as seasonal random walk unexpected earnings divided by stock price at  $t - 30$ .

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<sup>5</sup> Allowing for the pre-disclosure of earnings news in this pre-announcement time period then such relations are also consistent with such UE pre-disclosures altering market expectations about market return (i.e., it possesses information content as a lagging indicator).

ARMKT is market return over the subscripted announcement relative time period. We separate market return into two time periods in order to evaluate the degree to which the association changes as the earnings announcement release date approaches. If information about forthcoming earnings is partially disclosed to analysts and investors in this pre-announcement time period and this information has market return implications then the degree of association could differ between these two time periods. Hence, in addition to evaluating individual coefficient significance levels we also evaluate whether  $b_1$  and  $b_2$  differ in magnitude.

The placement of UE as the dependent variable and various measures of market return as dependent variables in (3) as well as further equations that follow should not be interpreted as an implication of directional causality. Indeed, it is impossible for ARMKT to cause UE in this setting since UE is by construction historical relative to almost all of the market returns appearing in the market return measures. Hence, any associations between ARMKT and UE reflect underlying macroeconomic factors that are common to the determination of both of them. Beyond that, and of particular interest in this study, is the question of whether market participants employ associations between earnings and macroeconomic factors to update their expectations about factor values and, in turn, expected market returns. That is, do earnings possess information content as lagging economic indicators of market return?

Panel A of table 3 reports estimations of (3) using both value-weighted and equal-weighted market return indices. For the value-weighted index the market return coefficient is negative and significant (.01 level) in both the t-2 to t-6 and more distant t-7 to t-30 time periods when unexpected earnings is measured as its sign. Similarly, when

unexpected earnings is measured as a continuous variable the t-2 to t-6 coefficient equals -.01, which is significant at the 5% level while the t-30 to t-7 coefficient of -.014 is significant at the 1% level. For the equal-weighted index the t-2 to t-7 market return is negative and significant at the 1% level for both the sign and UE magnitude estimations. Interestingly, for the market return for the t-7 to t-30 period lacks significance for the sign of UE estimation and is less negative and less significant (5% level) for the UE magnitude estimation.

In the formal analysis of differences between market return coefficients by announcement-relative time period the two t-2 to t-6 sign of UE coefficients are each significantly smaller (more negative) than their companion t-30 to t-7 coefficient at the 1% significance level. However, in the UE magnitude models these differences lack significance. Hence, after controlling for the market return and, indirectly, the macro factors driving market return, over days -30 to -7 relative to the announcement, market return in the immediate pre-announcement time period is either more associated (sign of UE analysis) or no less associated (magnitude of UE analysis) with earnings announcement surprise than the more historical, more coincident with the fiscal period to which earnings pertain, t-30 to t-7 market return.

Panel B of table 3 divides announcements into those made by S&P 500 firms and those made by non-S&P 500 firms. In the popular press literature on the relation between earnings surprises and market returns particular attention is paid to the earnings of “bellweather” stocks. We evaluate whether the market return association with earnings for these “bellweathers” differ from other firms using S&P membership as our identifier of “bellweather.”<sup>6</sup> Panel B reports values for estimations of the following expansion of

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<sup>6</sup> In additional analyses, not reported in detail here we used size and Dow Jones Index membership as

equation (3):

$$\begin{aligned}
 UE_{it} = & b_0 + b_1SP_{it} + b_2NSP*ARMKT_{t-2 \text{ to } t-6} + b_3NSP*ARMKT_{t-7 \text{ to } t-30} + \\
 & b_4SP*ARMKT_{t-2 \text{ to } t-6} + b_5SP*ARMKT_{t-7 \text{ to } t-30} + e_{it}
 \end{aligned} \tag{4}$$

Where:

$SP_{it}$  Is 1 if firm  $i$  is a member of the S&P 500 at time  $t$ ;

$NSP_{it}$  Is 1 if firm  $i$  is not a member of the S&P 500 at time  $t$ .

The non-S&P 500 coefficients reported in panel B are uniformly negative and significant at the 5% level or better for both the t-2 to t-6 and t-7 to t-30 market return accumulation periods. The S&P coefficients for the t-2 to t-6 period are also uniformly negative and significant at the 5% level or better with the lone exception being the UE magnitude model employing value-weighted market return where the estimated -.007 coefficient lacks significance. The S&P coefficients for the t-7 to t-30 market return accumulation period, however, lack significance and, in three out of four cases are positive.

The formal analysis of differences in coefficients reveals that when market return is measured as the equal-weighted index a more pronounced negative association exists between market return in the immediate pre-announcement t-2 to t-6 time period and earnings surprise than in the t-7 to t-30 time period. The difference in coefficients is significant at the 5% level or better in all instances except when the magnitude of UE model is applied to non-S&P 500 firms. Alternatively, if the value-weighted index is used, the sole significant difference is for non-S&P firms using the sign of UE model.

The second set of coefficient comparisons of interest in equation (4) addresses how S&P 500 membership impacts coefficient magnitudes. While there are no significant alternative measures of “bellweather” and obtained substantively similar results.

differences in coefficients in these immediate t-2 to t-6 pre-announcement period, in three of the four t-7 to t-30 comparisons the non-S&P 500 market return coefficient is significantly (.05 level or better) more negative than the companion S&P 500 market return coefficient. These significant differences together with the insignificance of the t-7 to t-30 market return coefficients for S&P 500 firms imply that the association between market returns and S&P 500 membership is, in particular, an immediate pre-announcement period phenomenon. Hence, foreknowledge of S&P 500 surprises seems particularly informative with respect to market return, in a relative sense, in the immediate pre-announcement time period.

An incidental association also reported in panel B is a highly significant positive (1% level in all cases) S&P 500 member coefficient. This positive coefficient means that relative to non-S&P 500 firms, S&P 500 firms are more likely to report positive earnings surprises. This may reflect some sort of added pressure applied to such firms to meet or beat target earnings that comes with membership in the S&P 500.<sup>7</sup>

#### **4.4. Contemporaneous Association of Market Return With Earnings Surprise**

The findings reported in table 3 suggest that a widespread negative association exists between market returns in the immediate, and for non-S&P firms the more distantly immediate pre-announcement time periods. Such an association is informative to market participants in the sense that if a market participant possessed foreknowledge of the direction and or magnitude of one or more firm earnings surprises at the start of either of these time periods he or she could use that knowledge information to infer

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<sup>7</sup> S&P 500 is determined at the time of the earnings announcement by tracking yearly additions and deletions from the index over the sample time period. Brown (1997) documents that analyst forecast based surprises for S&P 500 firms are less likely to be negative than surprises for non-S&P 500 firms.

expected future market return in the subsequent pre-announcement time period.

Specifically, foreknowledge that a future near term earnings surprise is positive rather than negative implies a lowering of expected market return. Moreover, for the immediate day -6 to -2 pre-announcement case this association and hence this informational role exists after controlling for the level of market return in the day -30 to -7 time period.

In this section we examine the contemporaneous association between random walk earnings surprise and market return since it is in this period that earnings surprise becomes fully known. In the pre-announcement time period foreknowledge of random walk earnings surprise is hypothetical. In the immediate announcement period, however, the earnings surprise is known. Hence, the presence of a significant association in this time period, after controlling for prior market returns, supports the underlying informational argument in a non-hypothetical setting. We examine this contemporaneous association possibility by estimating:

$$\begin{aligned}
 UE_{it} = & b_0 + b_1SP_{it} + b_2NSP*ARMKT_{t-2 \text{ to } t-6} + b_3NSP*ARMKT_{t-7 \text{ to } t-30} + \\
 & b_4SP*ARMKT_{t-2 \text{ to } t-6} + b_5SP*ARMKT_{t-7 \text{ to } t-30} + b_6NSP*ARMKT_{t-1} + \\
 & b_7NSP*ARMKT_{t=0} + b_8SP*ARMKT_{t-1} + b_9SP*ARMKT_{t=0} + e_{it} \quad (5);
 \end{aligned}$$

The coefficients  $b_6$  through  $b_9$  in (3) reflect the contemporaneous associations between market return and earnings surprise conditional on whether the announcing firm is classified as a market mover or not. Positive values for these parameters reflect the popular press and investment professional notion that earnings surprises move the market in the direction of the surprise. Negative values, however, are consistent with either the Yan (2004) argument that positive (negative) surprises portend higher (lower) future

expected returns or the Kothari et al. consistent notion that earnings surprises are inversely related to fundamental macro-drivers of market returns.

Table 4 reports estimates of equation (5) using both UE (sign and magnitude) measures for value-weighted and equal-weighted index returns. In all instances the estimated  $t-t$  and  $t$  market return coefficients are negative for both day -1 and day 0 relative to the announcement date. These estimates are directionally consistent with the negative immediate pre-announcement coefficients and their estimated magnitudes are generally either similar or more negative than the coefficient estimates for the pre-announcement market return accumulations. However, for non-S&P 500 firms the only significant (5% level) coefficient is the -1.173 obtained for the equal-weighted market return in day -1 in the sign of UE model. For S&P 500 firms, however, significant negative coefficients arise in three of the four day -1 analyses. The two sign of UE coefficients are -2.592 and -3.479, are far larger in absolute magnitude than the companion  $t-2$  to  $t-6$  coefficients and are significant at the 1% level. The day 0 coefficients, however, lack significance at conventional levels.

#### **4.5 Association Between Unexpected Earnings and Future Market Return**

Finally, it is also possible to use the relation between unexpected earnings and post-announcement market returns. Specifically, since market return effects are macro-factor driven and such factors are sticky a given return innovation tends to linger in time. Indeed this is the rationale that supports the use of past period market returns as a baseline for predicting next period expected return. Hence, a market return effect that arises at time  $t$  tends to persist beyond  $t$ . Likewise, if the market return effect in question

is earnings announcement specific then its impact should be observable in the immediate post-announcement time period. We examine this possibility by estimating the following equation:

$$\begin{aligned}
 UE_{it} = & b_0 + b_1 SP_{it} + b_2 NSP * ARMKT_{t-2 \text{ to } t-6} + b_3 NSP * ARMKT_{t-7 \text{ to } t-30} + \\
 & b_4 SP * ARMKT_{t-2 \text{ to } t-6} + b_5 SP * ARMKT_{t-7 \text{ to } t-30} + b_6 NSP * ARMKT_{t+1 \text{ to } t+p} \\
 & + b_7 SP * ARMKT_{t+1 \text{ to } t+p} + e_{it}
 \end{aligned} \tag{6},$$

for p equal to 1, 5, and 30.<sup>8</sup>

Table 5 reports the  $b_6$  and  $b_7$  estimates for the three post-announcement market return accumulation periods defined by these three values for p. The  $b_6$  non-S&P 500 coefficient estimates are consistently negative for all three periods. Moreover, for the t+1 to t+6 and t+1 to t+30 accumulations all of these estimated coefficients are significant at the 5% level or better. Minimally these results imply that market participants can draw inferences about future market index returns based on non-S&P firm random walk earnings surprises that are incremental to the inferences drawn from the knowledge of pre-announcement market return.

The S&P 500  $b_7$  coefficient estimates are, with the exception of the t+1 value weighted index UE magnitude model, negative, often sizably so, in the t+1 and t+1 to t+5 time periods. However, they lack significance at conventional levels. In the longer t+1 to t+30 time period they are positive for the sign of UE models, small in magnitude, and lack statistical significance. The insignificance of these coefficients in conjunction with the significant non-S&P 500 coefficients may be somewhat attributable to the relatively small number of S&P 500 announcements in the sample (less than 15% of the

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<sup>8</sup> Announcement period ARMKT (i.e., for t-1 and t) is excluded from (6) since return includes the hypothetical announcement information effect of interest.

announcements are by S&P 500 firms). It may also, however, reflect some sort of delayed response to the marketwide implications of earnings information provided by smaller less visible non-S&P 500 firms.

#### 4.6. Index Based Analysis

The preceding analyses are based on evaluating the association between earnings and returns with earnings in the dependent variable position. If each earnings observation is to count as a single observation this design is necessary since the reverse “by observation” design requires that multiple diverse earnings announcements on a given day all explain that days market return which is necessarily identical for each of them. This commonality of dependent variable by day introduces a complex correlated error structure into the design that is not easily corrected or controlled. It is possible, however, to construct daily earnings announcement indices along the lines of the quarterly earnings indices employed by Kothari et al. (2006). The construction of such indices is necessarily ad hoc and hence our preference for the approach embodied by equations (4) through (6). Here, we consider two specific independent variable unexpected daily earnings indices (UEI) as follow: (1) the percentage of earnings surprises occurring on day t that are positive; (2) mean unexpected earnings (scaled by beginning of year price) for announcements occurring on day t+g relative to the market return date t:

$$\text{Model: } ARMKT_t = c_0 + c_1 ARMKT_{t-2 \text{ to } t-6} + c_2 ARMKT_{t-7 \text{ to } t-30} + \sum_{g=-1}^{+1} d_g * UEI_{t+g} + e_{it} \quad (7)$$

The lagged market return independent variables are for the same index as the dependent market return variable. That is, if the dependent variable is a value (equal) weighted index then the independent variables are also value (equal) weighted indices.

Table 6 reports estimates for both indices for the entire sample of announcements. Both specifications provide support for the notion that aggregated earnings announcement surprise impacts market returns. The percentage of earnings surprise index is negative for the day +1 index (which corresponds to the day -1 coefficients in table 4). For the value weighted index, it is significant at the 5% level when it is the sole independent variable, and at the 10% level in the full model estimation. For the equal-weighted index the day +1 index is consistently negative and significant at the 1% level. The index lacks significance, however, on days 0 and -1. The three day sum also lacks significance at conventional levels. The three day mean earnings surprise index is negative and significant at the 1% level on day -1 and for the three day accumulation for both equal weighted and value weighted indices. For the equal weighted index it is also negative and significant for the day +1 index at the 5% level.

## **5. Conclusions**

While the relation between earnings and firm value is the subject of extensive conceptual and empirical analysis in the accounting literature over the past forty years, comparatively little attention has been given to earnings role in informing market participants about expected market return. This lack of attention is particularly surprising in light of the widespread popular press and financial commentator attributions of marketwide movements to both firm-specific and general earnings outcomes. Indeed, a principal finding is an utter lack of empirical support for the seemingly widely held notion that positive (negative) announcement period earnings surprises bode well (ill) for the market. Indeed, our analysis suggests precisely the opposite. Positive surprises are

associated with lower announcement period market returns than negative surprises. Moreover, there is no evidence that expected market return for positive surprise firms exceeds expected market return for negative surprise firms in the post-announcement period either.

Our analysis also strongly support the proposition that earnings announcement possess associative information content in the immediate announcement time period. That is, a market participant having no other knowledge of market expected return factors would find knowledge of the earnings announcement surprises useful since they are negatively associated with market returns. In this sense our analysis confirms the associative inferences found in Kothari et al. (2006) using daily rather than quarterly time horizons.

Finally, some of our findings suggest that earnings announcements may play an active informational role in the determination of daily market return expectations. First, we find that the negative association between earnings and market return increases in the pre-announcement time period peaking in the immediate announcement period. This differs from the baseline information relevance decaying with lack of timeliness perspective where the association is expected to decrease with the amount of time elapsed between period to which the information pertains (i.e., the fiscal quarter) and the period in which it is released (the announcement). Information relevance decaying with loss of timeliness does, however, describe the differential return pattern in the post-announcement time period.

Second, after controlling for market return in the pre-announcement time period, a negative correlation exists between market return and earnings surprise in the immediate

announcement period. This coincidental association is best explained as market return responding to the revelation of earnings surprise. These results are further bolstered by the persistence of a negative association in the time period immediately beyond the earnings announcement release date for announcements by non-S&P500 firms after controlling for pre-announcement market returns. Finally, we evaluate the relation between market return and two unexpected earnings indices. Both indices provide support for a negative announcement period relation between random walk earnings surprise and market return.

Given the large sample sizes employed, the rather small coefficient values obtained, and the absence of pervasive consistency in terms of achieved statistical significance it is plausible to wonder whether the relations between market return and earnings surprise documented here possess economic significance. The empirical analysis we perform that most readily lends itself to direct determinations of effect magnitudes is the table 6 index analyses. In this respect, the day -1 to +1 earnings surprise index coefficients reported in panel B imply that an index value averaging 1% (of stock price) is associated with a contemporaneous three day change in market return effect in the neighborhood of .03 percent.<sup>9</sup> In the context of a firm-specific effect such an impact is clearly trivial. However, the asset in question here is the entire equity market, which in recent years possesses a value in the neighborhood of ten trillion dollars. Multiplying .03% by twenty trillion yields an aggregate market capitalization effect of six billion dollars. Hence, while unquestioned causal statistical significance remains an issue best

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<sup>9</sup> The value of .03% is calculated by dividing by 1000 the three day coefficients reported in panel b of table 6 and multiplying by .01 and then rounding. Empirically, the standard error in this index is 1.12% of stock price, so the 1% value is a conservative approximation of the impact of a one unit standard deviation impact.

settled by future research, we think there can be little doubt that the effects estimated here possess economic significance.

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**Table 1**  
Mean Value-Weighted Market Return Relative to Positive and Negative  
News Earnings Announcements Between 1972 and 2004  
(349,454 announcements)

**Panel A: Returns<sup>a</sup> in Five Day Time Periods Surrounding Earnings Announcements**

Days relative to announcement	<u>All Firm Announcements</u>			<u>S&amp;P 500 Announcements</u>		
	Positive Surprise	Negative Surprise	Difference	Positive Surprise	Negative Surprise	Difference
<b>-30 to -26</b>	0.3689	<b>0.3093</b>	<i>0.0596</i>	0.4014	<b>0.2293</b>	<i>0.1721</i>
<b>-25 to -21</b>	<b>0.2940</b>	0.3615	-0.0674	0.3677	<i>0.2961</i>	0.0717
<b>-20 to -16</b>	0.3609	0.4305	-0.0695	0.3517	0.3990	-0.0473
<b>-15 to -11</b>	0.4723	0.5710	-0.0987	0.5693	0.6951	-0.1258
<b>-10 to -6</b>	0.3981	0.5097	<b>-0.1116</b>	0.4009	0.5216	-0.1207
<b>-5 to -1</b>	0.3351	0.4382	-0.1032	<b>0.2604</b>	0.4449	<b>-0.1846</b>
<b>+1 to +5</b>	0.5114	0.5848	-0.0734	0.4759	0.5136	-0.0377
<b>+6 to +10</b>	<i>0.7090</i>	<i>0.7226</i>	-0.0136	<i>0.8327</i>	0.7503	0.0824
<b>+11 to +15</b>	0.6346	0.7066	-0.0720	0.7405	<i>0.8187</i>	-0.0782
<b>+16 to +20</b>	0.4892	0.5074	-0.0182	0.6618	0.6870	-0.0252
<b>+21 to +25</b>	0.4614	0.4414	0.0200	0.6277	0.5343	0.0935
<b>+26 to +30</b>	0.4823	0.4393	0.0431	0.6063	0.5271	0.0792
N	201,660	147,794		23,900	15,727	
<b>-30 to +30</b>	0.4607	0.5027	-0.0420	0.5229	0.5344	-0.0115
(std. dev.)	(0.1353)	(0.1380)	(0.0686)	(0.2024)	(0.2192)	(0.1460)

(Highest Value in Time Series Denoted in *Italics*; Smallest Value Denoted in **Bold**.)

**Panel B: Single Day Returns<sup>a</sup> in the 11 Days Surrounding Earnings Announcements**

Day relative to Announcement	<u>All Firm Announcements</u>			<u>S&amp;P 500 Announcements</u>		
	Positive Surprise	Negative Surprise	Difference	Positive Surprise	Negative Surprise	Difference
<b>-5</b>	0.3466	0.4343	-0.0877	0.2441	0.4185	-0.1744
<b>-4</b>	0.4188	0.5327	-0.1139	0.4173	0.6578	-0.2405
<b>-3</b>	0.218	0.3517	-0.1337	0.1623	0.2792	-0.1169
<b>-2</b>	0.3288	0.3769	-0.0481	0.288	0.2161	0.0719
<b>-1</b>	0.3631	0.4956	-0.1325	0.1901	0.6531	-0.4630
<b>0</b>	0.5173	0.5555	-0.0382	0.4137	0.5126	-0.0989
<b>+1</b>	0.4391	0.5466	-0.1075	0.3345	0.4661	-0.1316
<b>+2</b>	0.4136	0.5014	-0.0878	0.3135	0.2418	0.0717
<b>+3</b>	0.4489	0.4906	-0.0417	0.2766	0.2415	0.0351
<b>+4</b>	0.5749	0.6751	-0.1002	0.6736	0.743	-0.0694
<b>+5</b>	0.6806	0.7104	-0.0298	0.7812	0.8756	-0.0944

<sup>a</sup>Mean return is multiplied by a factor of 1000. For **All Firms (S&P 500 Firms)** it is the average of the daily value-weighted market index return in the announcement relative day or time interval for all 349,454 (39,627 S&P 500) announcements in the sample.

**Table 2**  
Mean Equal-Weighted Market Return Relative to Positive and Negative  
News Earnings Announcements Between 1972 and 2004  
(349,454 announcements)

**Panel A: Returns<sup>a</sup> in Five Day Time Periods Surrounding Earnings Announcements**

Days relative to Announcement	<u>All Firm Announcements</u>			<u>S&amp;P 500 Announcements</u>		
	Positive Surprise	Negative Surprise	Difference	Positive Surprise	Negative Surprise	Difference
<b>-30 to 26</b>	0.6373	0.5810	<i>0.0563</i>	0.6856	0.5246	<i>0.1610</i>
<b>-25 to -21</b>	0.5337	<b>0.5785</b>	-0.0448	0.5880	<b>0.4929</b>	0.0951
<b>-20 to -16</b>	0.7115	0.7629	-0.0514	0.8201	0.8245	-0.0044
<b>-15 to -11</b>	<i>0.8232</i>	0.8861	-0.0629	<i>1.0430</i>	<i>1.1316</i>	-0.0886
<b>-10 to -6</b>	0.6333	0.7694	<b>-0.1361</b>	0.6973	0.8844	-0.1873
<b>-5 to -1</b>	<b>0.4943</b>	0.6264	-0.1321	<b>0.4933</b>	0.7067	<b>-0.2138</b>
<b>+1 to +5</b>	0.6094	0.7196	-0.1102	0.6179	0.7120	-0.0941
<b>+6 to +10</b>	<i>0.8651</i>	<i>0.9120</i>	-0.0470	1.0385	1.0319	0.0066
<b>+11 to +15</b>	0.7775	0.8489	-0.0713	0.9479	1.0143	-0.0665
<b>+16 to +20</b>	0.5901	0.6163	-0.0263	0.7954	0.7707	0.0247
<b>+21 to +25</b>	0.6089	0.5871	0.0218	0.8312	0.6969	0.1342
<b>+26 to +30</b>	0.7066	0.6596	0.0470	0.9274	0.8330	0.0945
N	201,660	147,794		23,900	15,727	
<b>-30 to +30</b>	0.6643	0.7113	-0.047	0.7857	0.8002	-0.0145
(std. dev.)	(0.1469)	(0.1414)	(0.0714)	(0.2301)	(0.2320)	(0.1487)

(Highest Value in Time Series Denoted in *Italics*; Smallest Value Denoted in **Bold**.)

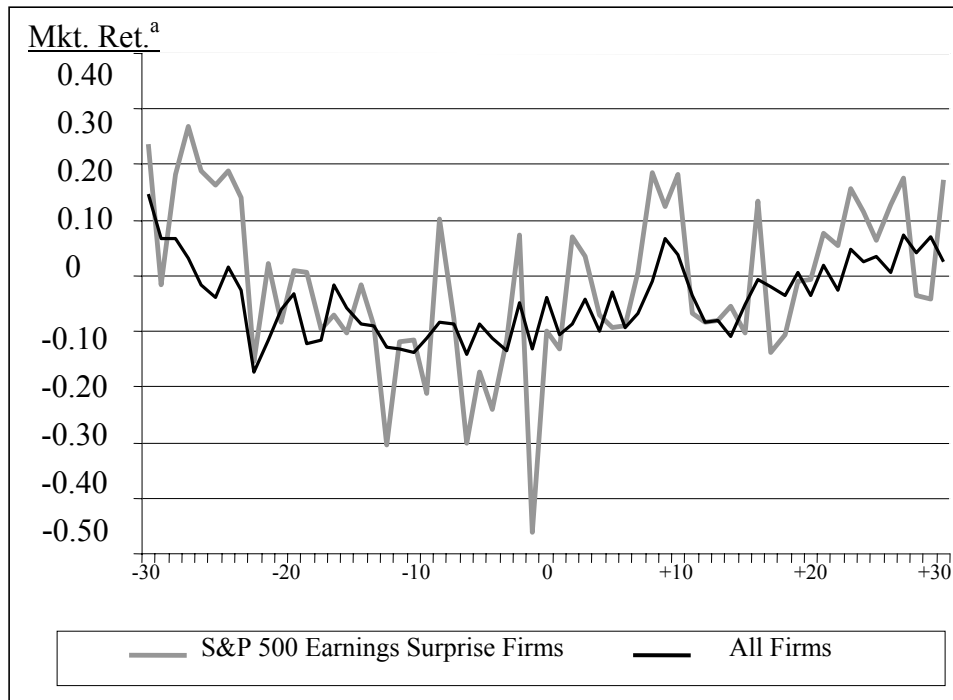
**Panel B: Single Day Returns<sup>a</sup> in the 11 Days Surrounding Earnings Announcements**

Day relative to Announcement	<u>All Firm Announcements</u>			<u>S&amp;P 500 Announcements</u>		
	Positive Surprise	Negative Surprise	Difference	Positive Surprise	Negative Surprise	Difference
<b>-5</b>	0.5158	0.6202	-0.1044	0.5494	0.7001	-0.1507
<b>-4</b>	0.6723	0.7784	-0.1061	0.755	0.9821	-0.2271
<b>-3</b>	0.4516	0.5981	-0.1465	0.4709	0.6660	-0.1951
<b>-2</b>	0.4262	0.5504	-0.1242	0.4257	0.4993	-0.0736
<b>-1</b>	0.4056	0.5847	-0.1791	0.2636	0.6859	-0.4223
<b>0</b>	0.5675	0.6473	-0.0798	0.5057	0.6954	-0.1897
<b>1</b>	0.6144	0.7067	-0.0923	0.5609	0.7570	-0.1961
<b>2</b>	0.5379	0.6587	-0.1208	0.4957	0.5162	-0.0205
<b>3</b>	0.5291	0.637	-0.1079	0.453	0.5270	-0.0740
<b>4</b>	0.6049	0.75	-0.1451	0.6763	0.7683	-0.0920
<b>5</b>	0.7605	0.8456	-0.0851	0.9037	0.9914	-0.0877

<sup>a</sup>Mean return is multiplied by a factor of 1000. For **All Firms (S&P 500 Firms)** it is the average of the daily equal-weighted market index return in the announcement relative day or time interval for all 349,454 (39,627 S&P 500) announcements in the sample.

**Figure 1**  
Differences and Trends in Average Value-Weighted Index Return  
For Positive and Negative Earnings Surprise Firms Around  
Earnings Announcement Dates

Value Weighted Index Return for Positive Less Value Weighted Index Return for  
Negative Surprise Firms in Days Relative to Announcement Date



**Pre- and Post-Announcement Means and Trends:**

	Days -30 to 0	Days 0 to +30	Difference
All Firms:			
Mean <sup>b</sup>	-.0643**	-.0196	-.0446**
Trend (t-value) <sup>c</sup>	-4.43**	4.86**	7.00**
S&P 500 Firms:			
Mean <sup>b</sup>	-.0410	.0152	-.0561
Trend (t-value) <sup>c</sup>	-5.20**	2.07*	5.54**

\* Significant at the .05 level (two-tailed test).

\*\* Significant at the .01 level (two-tailed test).

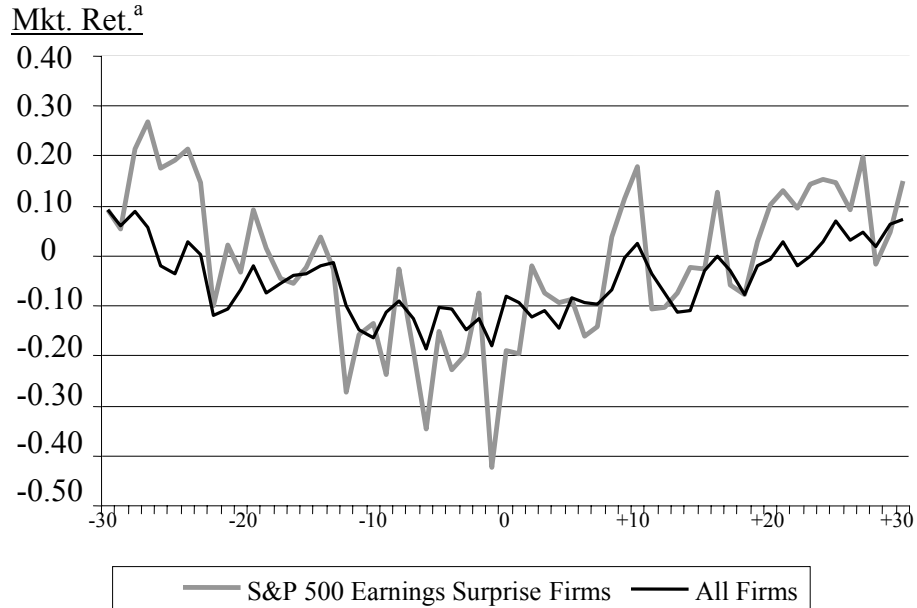
<sup>a</sup>Mean index return is multiplied by a factor of 1000. It is the average of the value-weighted market index return on the announcement relative day for all 349,454 announcements in the sample.

<sup>b</sup>Significance of means based on test against 0 based on the standard deviation of the daily observations. Significance of the difference in means is based on a two-sample t-test.

<sup>c</sup>Trend is based on a regression of difference in market return on the variable DAY, defined as day relative to the earnings announcement date. The significance of the difference in trend is assessed using a regression in which DAY is interacted with a dummy variable that takes on the value of 1 for DAY>0. (This dummy variable is also included as a stand-alone explanatory variable in the trend model.)

**Figure 2**  
Differences and Trends in Average Equal-Weighted Index Return  
For Positive and Negative Earnings Surprise Firms Around  
Earnings Announcement Dates

Equal Weighted Index Return for Positive Less Equal Weighted Index Return for  
Negative Surprise Firms in Days Relative to Announcement Date



**Pre- and Post-Announcement Means and Trends:**

	Days -30 to 0	Days 0 to +30	Difference
All Firms:			
Mean <sup>b</sup>	-.0624**	-.0326**	-.0297
Trend (t-value) <sup>c</sup>	-7.14**	5.73**	11.09**
S&P 500 Firms:			
Mean <sup>b</sup>	-.0445	.0099	-.0544
Trend (t-value) <sup>c</sup>	-8.04**	5.15**	9.44**

\* Significant at the .05 level (two-tailed test).

\*\* Significant at the .01 level (two-tailed test).

<sup>a</sup> Mean index return is multiplied by a factor of 1000. It is the average of the daily equal-weighted market index return on the announcement relative day for all 349,454 announcements in the sample.

<sup>b</sup> Significance of means based on test against 0 based on the standard deviation of the daily observations. Significance of the difference in means is based on a two-sample t-test.

<sup>c</sup> Trend is based on a regression of difference in market return on the variable DAY, defined as day relative to the earnings announcement date. The significance of the difference in trend is assessed using a regression in which DAY is interacted with a dummy variable that takes on the value of 1 for DAY>0. (This dummy variable is also included as a stand-alone explanatory variable in the trend model.)

**Table 3**  
Associations Between Market Return and Subsequent Earnings Surprise  
(For 394,454 earnings announcements between 1974 and 2004)

**Panel A: Unconditional Relation Between Market Return and Subsequent Unexpected Earnings:**

$$\text{Model: } UE_{it} = b_0 + b_1 \text{ARMKT}_{t-2 \text{ to } t-6} + b_2 \text{ARMKT}_{t-7 \text{ to } t-30} + e_{it} \quad (3)$$

Coefficient Estimates:

Model	Value Weighted Market Index		Equal Weighted Market Index	
	ARMKT (t-2 to t-6)	ARMKT (t-7 to t-30)	ARMKT (t-2 to t-6)	ARMKT (t-7 to t-30)
Sign of UE <sup>a</sup>	-.659**	-.406**	-.895**	-.126
Magnitude of UE <sup>b</sup>	-.010*	-.014**	-.015**	-.005*

Coefficient Differences:

Model	Value-Weighted Index (b <sub>1</sub> - b <sub>2</sub> )	Equal-Weighted Index (b <sub>1</sub> - b <sub>2</sub> )
Sign of UE <sup>a</sup>	-.253**	-.769**
Magnitude of UE <sup>b</sup>	+.004	-.010

**Panel B: Market Return and Subsequent Unexpected Earnings Conditional S&P Membership:**

$$\text{Model: } UE_{it} = b_0 + b_1 SP_{it} + b_2 \text{NSP} * \text{ARMKT}_{t-2 \text{ to } t-6} + b_3 \text{NSP} * \text{ARMKT}_{t-7 \text{ to } t-30} + b_4 \text{SP} * \text{ARMKT}_{t-2 \text{ to } t-6} + b_5 \text{SP} * \text{ARMKT}_{t-7 \text{ to } t-30} + e_{it} \quad (4)$$

Coefficient Estimates:

Model	SP	NSP*ARMKT (t-2 to t-6)	NSP*ARMKT (t-7 to t-30)	SP*ARMKT (t-2 to t-6)	SP*ARMKT (t-7 to t-30)
<b>VW Index</b>					
Sign of UE <sup>a</sup>	.071**	-.637**	-.456**	-.792*	.001
Magnitude of UE <sup>b</sup>	.001**	-.011*	-.015**	-.007	-.000
<b>EW Index</b>					
Sign of UE <sup>a</sup>	.0071**	-.814**	-.171*	-1.521**	.193
Magnitude of UE <sup>b</sup>	.001**	-.013*	-.006*	-.025**	.001

Coefficient Differences:

Model	t-2 to t-6 less t-7 to t-30		Non-S&P 500 less S&P 500	
	Non-S&P (b <sub>2</sub> - b <sub>3</sub> )	S&P 500 (b <sub>4</sub> - b <sub>5</sub> )	t-2 to t-6 (b <sub>2</sub> - b <sub>4</sub> )	t-7 to t-30 (b <sub>3</sub> - b <sub>5</sub> )
<b>VW Index</b>				
Sign of UE <sup>a</sup>	-.181*	-.791	+.155	-.455**
Magnitude of UE <sup>b</sup>	+.004	-.008	-.004	-.014**
<b>EW Index</b>				
Sign of UE <sup>a</sup>	-.643**	-1.714**	+.707	-.264**
Magnitude of UE <sup>b</sup>	-.007	-.026**	+.012	-.007

\* Significant at the .05 level (two-tailed test).

\*\* Significant at the .01 level (two-tailed test).

<sup>a</sup>Sign of  $UE_{it}$  is 1 if firm  $i$ 's seasonal random walk unexpected earnings is positive for the earnings announcement occurring on date  $t$  and 0 otherwise. Estimates based on logistic regression procedures.

<sup>b</sup>Magnitude of  $UE_{it}$  is seasonal random walk unexpected earnings for firm  $i$  announced on day  $t$  divided by stock price at  $t - 30$ .

Independent variables in the UE models are:

ARMKT is the value-weighted (equal-weighted) market index return over the sub-scripted announcement relative time period for each of the 394,454 announcements in the sample.

$SP_{it}$  is 1 if the firm  $i$  is a member of the S&P 500 at time  $t$  and 0 otherwise.

$NSP_{it}$  is 1 if the firm is not a member of the S&P 500 at time  $t$  and 0 otherwise.

**Table 4**  
**Contemporaneous Association Between Market Return and Earnings Surprise**

$$Model: UE_{it} = b_0 + b_1 SP_{it} + b_2 NSP * ARMKT_{t-2 \text{ to } t-6} + b_3 NSP * ARMKT_{t-7 \text{ to } t-30} + b_4 SP * ARMKT_{t-2 \text{ to } t-6} + b_5 SP * ARMKT_{t-7 \text{ to } t-30} + b_6 NSP * ARMKT_{t-1} + b_7 NSP * ARMKT_{t=0} + b_8 SP * ARMKT_{t-1} + b_9 SP * ARMKT_{t=0} + e_{it} \quad (5)$$

Model	SP	Non-S&P 500 Firm x				S&P 500 Firm x			
		ARMKT (t-2 to t-6)	ARMKT (t-7 to t-30)	ARMKT t - 1	ARMKT t = 0	ARMKT (t-2 to t-6)	ARMKT (t-7 to t-30)	ARMKT t - 1	ARMKT t = 0
<b>VW Index</b>									
Sign of UE <sup>a</sup>	.072**	-.639**	-.450**	-.489	-.103	-.791	<b>.032</b>	<b>-2.592**</b>	-.442
Magnitude of UE <sup>b</sup>	.001**	-.011*	-.015**	-.010	-.008	-.007	<b>-.000</b>	-.028	-.004
<b>EW Index</b>									
Sign of UE <sup>a</sup>	.071**	-.767**	-.163*	-1.173*	-.140	<b>-1.342**</b>	<b>.228</b>	<b>-3.479**</b>	-.736
Magnitude of UE <sup>b</sup>	.001**	-.012*	-.005*	-.016	-.021	-.023**	.001	-.045*	-.004
						Coefficient estimates differing in value from non-S&P companions at 5% level are bolded.			

\* Significant at the .05 level (two-tailed test).

\*\* Significant at the .01 level (two-tailed test).

<sup>a</sup>Sign of UE<sub>it</sub> is 1 if firm i's seasonal random walk unexpected earnings is positive for the earnings announcement occurring on date t and 0 otherwise. Estimates based on logistic regression procedures.

<sup>b</sup>Magnitude of UE<sub>it</sub> is seasonal random walk unexpected earnings for firm i announced on day t divided by stock price at t - 30.

Independent variables in the UE models are:

ARMKT is the value-weighted (equal-weighted) market index return over the sub-scripted announcement relative time period for each of the 394,454 announcements in the sample.

SP<sub>it</sub> is 1 if the firm i is a member of the S&P 500 at time t and 0 otherwise.

NSP<sub>it</sub> is 1 if the firm is not a member of the S&P 500 at time t and 0 otherwise.

**Table 5**  
**Association Between Earnings Surprise and Future Market Return**

$$Model: UE_{it} = b_0 + b_1 SP_{it} + b_2 NSP * ARMKT_{t-2 \text{ to } t-6} + b_3 NSP * ARMKT_{t-7 \text{ to } t-30} + b_4 SP * ARMKT_{t-2 \text{ to } t-6} + b_5 SP * ARMKT_{t-7 \text{ to } t-30} + b_6 NSP * ARMKT_{t+1 \text{ to } t+p} + b_7 SP * ARMKT_{t+1 \text{ to } t+p} + e_{it} \quad (6)$$

Model	Non-S&P 500 Firm x			S&P 500 Firm x		
	ARMKT t+1	ARMKT t+1 to t+5	ARMKT t+1 to t+30	ARMKT t+1	ARMKT t+1 to t+5	ARMKT t+1 to t+30
<b>VW Index</b>						
Sign of UE <sup>a</sup>	-0.584	-.544**	-0.195*	-0.808	-0.296	<b>0.142</b>
Magnitude of UE <sup>b</sup>	-0.014	-0.010*	-0.007**	0.029	-0.004	<b>-0.002</b>
<b>EW Index</b>						
Sign of UE <sup>a</sup>	-0.599	-0.695**	-0.165*	-1.535	-0.562	<b>0.133</b>
Magnitude of UE <sup>b</sup>	-0.018	-0.010*	-0.005*	-0.038	-0.008	-0.001
				Coefficient estimates differing in value from non-S&P companions at 5% level are bolded.		

(Separate estimations are performed for each post-announcement market return period (i.e., t+1; t+1 to t+5; and, t+1 to t+30). Only post-announcement market return coefficient estimates are reported for each estimation.)

\* Significant at the .05 level (two-tailed test).

\*\* Significant at the .01 level (two-tailed test).

<sup>a</sup>Sign of UE<sub>it</sub> is 1 if firm i's seasonal random walk unexpected earnings is positive for the earnings announcement occurring on date t and 0 otherwise. Estimates based on logistic regression procedures.

<sup>b</sup>Magnitude of UE<sub>it</sub> is seasonal random walk unexpected earnings for firm i announced on day t divided by stock price at t - 30.

Independent variables in the UE models are:

ARMKT is the value-weighted (equal-weighted) market index return over the sub-scripted announcement relative time period for each of the 394,454 announcements in the sample.

SP<sub>it</sub> is 1 if the firm i is a member of the S&P 500 at time t and 0 otherwise.

NSP<sub>it</sub> is 1 if the firm is not a member of the S&P 500 at time t and 0 otherwise.

**Table 6**  
**Relation Between Market Return and Unexpected Earnings Indexes**  
(n=8,059 days)

$$Model: ARMKT_t = c_0 + c_1 ARMKT_{t-2 \text{ to } t-6} + c_2 ARMKT_{t-7 \text{ to } t-30} + \sum_{g=-1}^{+1} d_g * UE_{i,t+g} + e_{it} \quad (7)^a$$

<b>Panel A: UEI = Percentage of Positive Earnings Surprises on Day t+g<sup>b</sup></b>						
	ARMKT t-2 to t-6 (Signif.)	ARMKT t-7 to t-30 (Signif.)	$d_g * UE_{i,t+g}$			
			g=+1 (Signif.)	g=0 (Signif.)	g=-1 (Signif.)	g=-1 to +1 (Signif.)
<b>VW Index Models</b>						
Day +1 Index			-1.353 (.0329)			
Day 0 Index				-0.527 (.4297)		
Day -1 Index					-0.890 (.1760)	
Full Model	-0.010 (.3099)	0.009 (.0026)	-1.119 (.0910)	0.244 (.7316)	-0.511 (.4673)	-1.38 (.1370)
<b>EW Index Models</b>						
Day +1 Index			-1.646 (.0016)			
Day 0 Index				-0.442 (.4220)		
Day -1 Index					-0.464 (.3999)	
Full Model	0.032 (.0001)	0.005 (.0086)	-1.432 (.0081)	0.100 (.8642)	0.108 (.8520)	-1.22 (.1100)
<b>Panel B: UEI = Mean Earnings Surprise on Day t+g Standardized by Price<sup>c</sup></b>						
	ARMKT t-2 to t-6 (Signif.)	ARMKT t-7 to t-30 (Signif.)	$d_g * UE_{i,t+g}$			
			g=+1 (Signif.)	g=0 (Signif.)	g=-1 (Signif.)	g=-1 to +1 (Signif.)
<b>VW Index Models</b>						
Day +1 Index			-8.477 (.1764)			
Day 0 Index				-6.582 (.3225)		
Day -1 Index					-26.146 (.0002)	
Full Model	-0.010 (.3072)	0.009 (.0028)	-6.213 (.3293)	-1.733 (.8048)	-24.646 (.0004)	-32.59 (.0010)
<b>EW Index Models</b>						
Day +1 Index			-13.867 (.0103)			
Day 0 Index				-7.840 (.1564)		
Day -1 Index					-20.068 (.0006)	
Full Model	0.032 (.0001)	0.005 (.0104)	-11.842 (.0302)	-4.983 (.3797)	-16.434 (.0051)	-33.36 (.0021)

UEI coefficients are multiplied by a factor of 1000.

<sup>a</sup>ARMKT<sub>t</sub> is the market return on day t. UEI<sub>t</sub> is an earnings index for day t as specified below.

<sup>b</sup>The percentage of positive surprise index is calculated as the number of positive surprise announcements on day t divided by the total number of announcements occurring on day t.

<sup>c</sup>The mean earnings surprise on day t standardized by price is the mean of each earnings surprise for firm i divided by the price of firm i on day -30 relative to t.