Intra-industry information transfers: Evidence from earnings announcements

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Dissertation submitted to the faculty of the

Virginia Polytechnic Institute and State University

in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

In

Finance

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April 2006

Blacksburg, Virginia

Keywords: Information assimilation, Post-earnings drift, Intra-industry information transfer, Product market relations

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ABSTRACT

I examine the role of product market relations in information assimilation surrounding corporate earnings announcements. I provide evidence that intra-industry information transfers measured by industry rival earnings announcements account for a substantial portion of the well documented post-earnings announcement drift. While this evidence appears to be most consistent with rational structural uncertainty [Brav and Heaton (2002)] one cannot rule out the possibility of behavioral biases.

ACKNOWLEDGEMENTS

I would like to thank my committee chair Gregory B. Kadlec for all his guidance throughout the Ph.D. program and for helping me prepare for the job market. I am indebted to him for numerous discussions on this as well as on a number of other projects. I have been his graduate assistant ever since joining the Ph.D. program and learned a lot from him about conducting research and about the profession during these years.

I would like to thank Huseyin Gulen for his support, interest in working with me, and his friendship throughout the Ph.D. program. I am also indebted to Raman Kumar for his openness and accessibility whenever I had questions on research or other things. I would also like to thank to Mike Cliff for agreeing to be on my committee and for providing his comments on the paper.

This work has also greatly benefited from comments by Dilip Shome, Alexei Ovtchinikov, Vijay Singal, and other finance faculty members offering their comments during presentations. I am grateful further to Don M. Chance for accepting me to the Ph.D. program and to Vijay Singal, the department head, for providing (not just technical and material) support to do research and to have a successful job market.

A special thank you goes to Don Autore who has been a special friend throughout our years together in the Ph.D. program. I have learned a lot from him both about research and character and benefited a great deal of his support both in the professional and personal levels.

On a personal level I would like to thank Caroline Woelfle for always having time for me when I needed it most and for providing a relaxed home atmosphere.

Finally, I am indebted to my parents, sisters, and extended family for their continued support wherever I go and whatever dream I pursue. Without their help none of this would be possible. I am very fortunate to have the family that I do.

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I. Introduction

Intra-industry information transfers play an important role in information assimilation in security markets. For example, corporate events convey information that is relevant to both the announcing firm and other firms linked to that firm through the product market (e.g. competitors, buyers, or suppliers). Studies find a positive association between firm and peer returns surrounding going private transactions [Slovin, Shushka, and Bendeck (1991)], security issues [Szewczyk (1992)], earnings forecast releases [Baginski (1987), Freeman and Tse (1992)], and earnings announcements [e.g. Foster (1981), Clinch and Sinclair (1987)] and a negative association between firm and peer returns surrounding announcements of new product innovations [Akhigbe (2002)]. In addition, the importance of intra- and inter-industry relations in information assimilation is evident from studies of momentum [Moskowitz and Grinblatt (1999)], lead-lag effects across industries [Hong, Tourus, and Valkanov (2006), Menzly and Ozbas (2006)], and lead-lag effects within industries [Hou (2003)].

This paper examines the role of intra-industry information transfer in explaining the widely documented post-earnings announcement drift.[1] Both behavioral and rational theories of post-earnings announcement drift assign a key role to information dissemination following earnings announcements. In Barberis, Shleifer and Vishny (1998) investors suffer from conservatism bias and place too little weight on recent information in their valuation. As further news arrives to the market, investors slowly revise their valuation. In Daniel, Hirshleifer, and Subrahmanyam (1998) the post-earnings drift is a consequence of overreaction as investors incorporate selective public news that confirms their initial private beliefs. In Brav and Heaton (2002) rational investors incorporate

[1] Post-earnings announcement drift is a phenomenon where firms releasing positive unexpected earnings continue to earn positive abnormal returns while firms releasing negative unexpected earnings continue to earn negative abnormal returns [e.g. Ball and Brown (1968), Rendleman, Jones, and Latane (1982) and Bernard and Thomas (1989,1990)].

earnings surprises into a firm's price only partially, because they are uncertain whether an earnings surprise is idiosyncratic in nature or if it signals positive future prospects for the firm. Subsequent information, if consistent with a change of the firm's future prospects, prompts the investor to further adjust his assessment of the firm's value, giving the appearance of post-earnings drift.

While short-term price continuations are documented following other corporate events, the post-earnings announcement drift stands out as the strongest and most protracted [Pritamani and Singal (2001)]. Why is the assimilation of earnings information different from other events? In contrast to other corporate events, earnings announcements are systematically followed by earnings announcements of industry peers.

I motivate the post-earnings drift via product market relations, and identify earnings announcements of industry peers as a source of value relevant information regarding the firm. Consistent with this view, studies document a positive association between the announcing firm's and its non-announcing industry peers' returns around earnings announcements [e.g. Foster (1981), Clinch and Sinclair (1987), Han and Wild (1990), Pyo and Lustgarten (1990), Asthana and Mishra (2001), Tookes (2003)]. I hypothesize that investors use earnings information regarding industry peers to update their Bayesian inferences about a firm's future prospects. An empirical implication of this hypothesis is that the post-earnings drift is associated with intra-industry information transfers.

I test this basic prediction regarding the role of intra-industry information transfers in explaining the post-earnings announcement drift using several alternative specifications. My first specification considers a sample of firms that are likely to have strong and/or well defined product market relations -- large firms in highly concentrated industries. More specifically, I restrict the sample to the five firms with the largest market share within each industry, and require that these five firms account for at least 50% of total industry sales. This selection criterion is similar to other studies of intra-industry information transfer that employ a Cournot oligopoly framework [e.g. Laux, Starks, and Yoon (1998), Tookes (2003)].

Consistent with prior studies, I find that a firm's stock price change is positively related to industry peers' earnings surprises regardless of whether the firm has already

announced its own quarterly earnings. Thus earnings announcements contain substantial industry-relevant information that is not fully captured by a firm's own earnings. One of the novel results of this study is the fact that the post-earnings drift is nearly eliminated after controlling for the effect of industry peers' announcements. Thus, intra-industry information transfers explain a substantial portion of the post-earnings drift. Furthermore, I find that firms' post-earnings returns depend on whether subsequent earnings announcements of industry peers reinforce or contradict a firm's own earnings report. Thus, arbitrageurs trying to exploit a firm's post-earnings drift face the risk of contradicting industry news. Finally, consistent with the intra-industry information transfer hypothesis only those industries with contagion type intra-industry information transfer exhibit post-earnings drift.

Given the fact that the post-earnings announcement drift is more prominent among small firms than among large firms, a natural question concerns the extent to which intra-industry information transfers explain post earnings announcement drift for small firms. Unfortunately, it may be difficult to answer this question given the fact that small firms tend to have highly specialized products that serve as inputs to a diverse array of industries (e.g. injection molded plastic parts manufacturer) and operate in geographically segmented markets (e.g. local business service providers) thus making the identification of relevant product market relations more difficult. Nevertheless, my next specification examines whether my findings can be extended to a more general setting. I construct a sample from all firms on Compustat, excluding those firms whose stocks exhibit serious non-trading. While the importance of intra-industry information transfers is evident in this broader sample, the results are not as conclusive as those drawn from the sample of large firms. For example, I find that controlling for intra-industry information transfers reduces, but does not eliminate the post-earnings drift. Consistent with my priors regarding product market relations, the inferences sharpen considerably when I weight observations according to the quality of each firm's industry classification. Further, as in my sample of large firms, I find that post-announcement returns depend on whether subsequent peer announcements confirm or contradict the firm's initial news. Thus, collectively these results provide evidence that post-earnings announcement drift is related to intra-industry information transfers.

My final specification explores possible connections between post-earnings announcement drift, intra-industry information transfer, and momentum. Recent studies provide evidence that momentum and post-earnings announcement drift are related [Chan, Jegadeesh, Lakonishok (1996), and Chordia and Shivakumar (2005)] and that momentum is an industry phenomenon [Moskowitz and Grinblatt (1999)]. I verify the results of Chan, Jegadeesh, Lakonishok (1996), and Chordia and Shivakumar (2005) for my sample and examine the extent to which earnings announcement intra-industry information spillover plays a role in explaining momentum returns. My results in this regard are inconclusive.

The remainder of the paper is organized as follows. Section II provides a literature review and develops the paper's main hypothesis. Section III describes the sample selection and Section IV provides the main empirical results. Section V extends the analysis to small firms, Section VI discusses the implications for momentum, and Section VII provides additional analysis using aggregate returns and earnings. Section VIII concludes the paper.

II. Product market relations and stock returns

A number of studies examine the role of industry and product market relations in information assimilation. For example, Hong, Tourus, and Valkanov (2006) find that returns of certain industries tend to lead, while others tend to lag the market, Menzly and Ozbas (2006) provide evidence that industry lead-lag relations are related to supply chains, and Moskowitz and Grinblatt (1999) argues that momentum profits are due to industry momentum. Within industries, Hou (2003) provides evidence that intra-industry information transmission leads to a lead-lag effect.

Intuitively, industry and product market relations are potentially important information channels as investors infer value relevant information from common economic fundamentals. For example, corporate events are likely to contain information relevant to both the announcing firm and other firms that are related to the announcing firm through the product market (e.g. competitors, buyers, or suppliers). Below I first review the theory and empirical evidence related to intra-industry information transfers surrounding corporate events. I then provide an overview of one of the most value relevant corporate

events – earnings announcements. Finally, I develop my central hypotheses regarding the role that intra-industry information transfers play in explaining the well documented post-earnings announcement drift.

A. Intra-industry information transfers

Theoretical studies examining information transfers within an industry typically frame their analyses using a standard Cournot oligopoly model. In this setting there is full information, the industry faces a homogeneous demand curve, and firms set their output according to their relative cost efficiency taking into account other firms' actions. Formally, let's consider an industry with two firms (*i* and *j*), where each firm in the industry produces the same homogenous good. Let's assume that the price of the good is determined by the linear inverse demand function $p(Q) = a - bQ$, where industry output equals the sum of individual firm outputs ($Q=\Sigma q_i$). Each firm chooses its own profit maximizing output level based on its costs $C_i(q_i) = c_i q_i$. The first-order condition that maximizes firm i's profit,

$$\pi_i = (p(Q) - c_i)q_i = [a - b(q_i + q_j) - c_i]q_i \qquad (1)$$

is given by:

$$q_i^* = \frac{a - bq_j^* - c_i}{2b} = \frac{a - 2c_i + c_j}{3b}. \qquad (2)$$

To ensure that both firms produce positive output the assumptions of $a > 2c_i + c_j$ and $a > c_i + 2c_j$ need to hold. Equation (2) illustrates that firms *i* and *j* divide the market so that the firm with the lower cost takes a larger portion of the market (i.e. if $c_i < c_j$ then $q_i^* > q_j^*$). The equilibrium industry output and price are given by

$$Q^* = \frac{2a - c_i - c_j}{3b} \quad \text{and} \quad P^* = \frac{a + c_i + c_j}{3} \qquad (3)$$

and the equilibrium profit for firm i is:

$$\pi_i^* = \frac{1}{b}\left[\frac{a - 2c_i + c_j}{3}\right]^2. \qquad (4)$$

Equations (2) and (4) show that firm i's equilibrium output and profit will both be a negative function of the firm's own marginal cost, c_i, as well as a positive function of the

competitor firm's marginal cost, c_j. Changes in either firm's cost will thus affect the output and the profit of both firms.

$$\frac{\partial \pi_i}{\partial c_i} = \frac{-4}{9b}\left[a - 2c_i + c_j\right] \quad \text{and} \quad \frac{\partial \pi_i}{\partial c_j} = \frac{2}{9b}\left[a - 2c_i + c_j\right] \tag{5}$$

A decrease in firm i's marginal cost will increase the output, market share, and the profit of firm i, while it will decrease the output, market share, and the profit of firm j. Notice also that $\left|\frac{\partial \pi_i}{\partial c_i}\right| > \left|\frac{\partial \pi_i}{\partial c_j}\right|$; if both firms' marginal cost changes the same way, the effect of the firm's own cost change will dominate. Thus if costs decrease for all firms because of an industry-wide shock, each firm's output will increase, and even though the product market price will decrease, each firm's profit will increase.

These results provide the basic framework for empirical analyses of intra-industry information transfer. Value-enhancing news for firm i will affect competing firms adversely when the news is idiosyncratic in nature, since it will indicate that firm i is likely to gain market share in the expense of its competitors. However, value-enhancing news for firm i will affect competing firms positively when the news conveys industry wide-information, since all firms in the industry benefit from industry-wide positive news.

Accordingly, a central issue in previous empirical studies is the existence and the direction of the intra-industry information effect. When an announcement contains industry wide information, contagion can cause the stock prices of the announcing firm and related firms to move in the same direction (contagion effect). Alternatively, announcements can contain information about a shift in market power between competing firms, which can cause the prices of the announcing firm and related firms to move in opposite directions (competitive effect). The total effect of a corporate announcement on related firms is the sum of the contagion and competitive effects, and thus can be positive, negative, or zero, depending on which, if any, of the two effects dominate [Foster (1981), Lang and Stulz (1992), Laux, Starks, and Yoon (1998), and Tookes (2003)].

The empirical literature suggests that the direction of the announcement effect on competitor firms is related to the type of corporate announcement. Slovin, Sushka, and Bendeck (1991) and Szewczyk (1992) document contagion effects: a positive reactions in rivals of firms going private and a negative reaction in rivals of firms that issue public

securities. Akhigbe (2002) documents competitive effects: a negative reaction to new product innovations from industry rivals. Hertzel (1991) fails to find a dominating effect on competitors of firms that announce a stock repurchase program and Howe and Shen (1998) find no reaction for competitors of firms that announce dividend initiations.

Other studies find that contagion or competition might be dominant in different industries, among firms with different characteristics, or depending on the news characteristics. Lang and Stulz (1992) find that the effect of bankruptcy announcements is negative for the bankrupt firm's industry peers, indicating a strong contagion effect, although they find that bankruptcy has a positive effect on peers in highly concentrated, low-leverage industries, where competitive shift in the market power dominates. Laux, Starks, and Yoon (1998) document that dividend increase announcements exhibit contagion for rivals with high growth options and a strong market share, while dividend decrease announcements exhibit contagion for weaker, low-growth rivals only. Finally, Joh and Lee (1992) find that positive earnings surprises are more likely to result in positive peer reactions when the source of earnings increase is in increased sales rather than in decreased costs, because the former is more industry-wide while the latter is more idiosyncratic in nature.

The literature suggests that earnings announcements convey more industry-relevant information (contagion) than market power information (competitive). Foster (1981), Clinch and Sinclair (1987), and Tookes (2003) find a positive correlation between the abnormal returns of announcing and non-announcing firms on the announcement day, while Han and Wild (1990) find a similar, though weaker, positive association between earnings surprises (measured based on a time-series model of earnings) and rival firms' announcement day abnormal return. Similar results are reported by Baginski (1987) and Freeman and Tse (1992) around manager earnings forecast releases. Further evidence for the dominance of industry-relevant information is provided by Han, Wild, and Ramesh (1989), who show that the abnormal returns of announcer and rival firms are not correlated when abnormal returns are defined from a two-factor model that includes an industry index. Even though contagion effects dominate on average, there is evidence for competition effects between some firms. Pyo and Lustgarten (1990) estimate pairwise historical correlations between same-industry firms' quarterly earnings and find that about

20% of the correlations are negative. They find that controlling for the historical correlation between the announcer and the non-announcing firm helps explain non-announcing firms' abnormal returns around manager forecast releases.

There is important variation in the strength of intra-industry effects both across time and across firms. Freeman and Tse (1992) find decreasing marginal effects to successive earnings releases in the same industry. Tookes (2003) provides a theoretical model that predicts that smaller firms are more sensitive to industry-wide information than large ones. Han and Wild (2000) find that smaller firms experience a larger price reaction on their earnings release date than do large firms, but only weak evidence regarding the relation between firm size and intra-industry information transfers. Asthana and Mishra (2001) find that announcements of large firms have more information for nonanncouncers than announcements of small firms, but the size of nonannouncers seems to have no effect on the size of the information transfer. Clinch and Sinclair (1987) find that Australian firms that have already announced and those that are yet to announce react to a different degree to the reports of their peers. Firms that have already announced are more sensitive to positive news announcements, while firms that are yet to announce are more sensitive to negative news announcements.

This paper further characterizes intra-industry information transfers and examines its role in explaining the widely documented post-earnings drift.

B. The post-earnings announcement drift and intra-industry information transfers

The post-earnings announcement drift is one of the most widely studied anomalies of the financial and accounting literature[2]. Several papers [e.g. Ball and Brown (1968), Rendleman, Jones, and Latane (1982) and Bernard and Thomas (1989,1990)] document that firms releasing a positive earnings surprise continue to earn positive subsequent abnormal returns, while firms releasing negative earnings news continue to earn negative subsequent abnormal returns up to three quarters immediately following.

Most studies attribute the post-earnings drift to behavioral biases. For example, Bernard and Thomas (1989, 1990) and Abarbanell and Bernard (1992) attribute the post-earnings drift to investors' and analysts' underreaction, respectively. Barberis, Shleifer and

[2] A review of this literature is offered by Kothari (2001).

Vishny (1998) provide a theoretical model in which investors suffer from conservatism bias and place too little weight on new information in their valuation. In contrast, Daniel, Hirshleifer, and Subrahmanyam (1998) attribute the post-earnings drift to overreaction. In their model investors exhibit a self-attribution bias: public news confirming initial private signals is looked upon as a result of talent, boosting investors' confidence, while disconfirming news is attributed to noise, decreasing investors' confidence to a lesser degree or not at all. Mirroring this, stock prices exhibit a drift following news in the short term as confirming information is incorporated in prices to a greater extent than disconfirming news (overreaction) and revert to their fundamental value gradually over a longer period.

Consistent with these behavioral interpretations, empirical studies find that the post-earnings drift is larger for firms with less information production, more uncertainty, and higher arbitrage costs. For example, post-earnings drift is greater for firms with less analysts following and fewer institutional owners [Walther (1997) and Bartov, Radhakrisnan, and Krinsky (2000)], for firms with lower earnings quality [Francis, LaFond, Olsson, and Schipper (2004)], and for firms with higher arbitrage risk [Mendenhall (2002)]. However, the finding that both private and public information affect the post-earnings drift similarly [Vega (2005)], is inconsistent with the Daniel et al. (1998) overreaction hypothesis.

The above empirical findings are also consistent with a rational structural uncertainty model. Brav and Heaton (2002) show that structural uncertainty can lead to positive serial correlation in security returns that is both rational and qualitatively similar to that generated by behavioral biases. In contrast to behavioral models, models of structural uncertainty maintain the assumption of investor rationality and relax the assumption of complete information. The representative rational investor is aware that model parameters can be unstable and revises the probability that a regime shift has occurred within a Bayesian framework. The model can account for both overreaction and underreaction of prices to new information. On one hand, the model predicts over adjustment (overreaction) when in fact the regime is stable, because the investor always places some weight on the possibility that the information signals a regime change. On the other hand, the model predicts partial adjustment (underreaction) when in fact a regime

shift has happened, since the investor places some weight on the possibility that the information is an idiosyncratic occurrence as opposed to a regime shift.

I motivate the post-earnings drift via product market relations, and identify earnings announcements of industry peers as a source of value relevant information regarding the firm.

To illustrate how a firm's earnings announcement can prompt a price reaction from the firm's industry rival, even if that firm has already announced its earnings, I provide a thought experiment that extends the standard full information Cournot-oligopoly model to an incomplete information setting.[3] In a Cournot-oligopoly model firms set their output levels taking into account their rivals' actions. The output levels of firms reflect the cost advantage each firm has in producing the same homogenous output. If firms do not have full information about whether a change in their competitor's costs has taken place, but attach a positive probability to it, the output that maximizes expected profits will be suboptimal. This leads to suboptimal industry output and a suboptimal product market price. Disclosing the profits of a firm is not enough information to infer whether its profit was optimal, or whether the firm's market power or the industry's prospects have improved. Every firm's announcement is needed to learn how the industry and each firm's future outlook have changed. Thus each earnings announcement is informative. If industry-wide information dominates the industry, then cost changes and optimization strategies are positively correlated and the news provided by each firm's earnings release is positively correlated.

Motivating rational structural uncertainty with product market relations that give rise to intra-industry information transfers thus leads to the following hypothesis.

[3] Rotemberg and Scharfstein (1990) develop an incomplete information Cournot oligopoly model that explains how a firm's earnings announcement can prompt a price reaction from the firm's industry rival, even if that has already announced its earnings. They assume that managers maximize next period stock price rather than the discounted value of long-term profits. In this setting firms systematically deviate from the optimum Cournot-oligopoly output to affect the product market price. For example, when industry news is thought to be the dominant factor in an industry a firm can signal good industry news by cutting its output below the optimum level. This decrease in output is offset by an increase in industry prices, making investors infer - using other firms' profits - that the long-term industry costs have changed favorably.

H_0: The post-earnings drift of a firm is the result of investors reacting to subsequent earnings announcements of the firm's industry rivals. If firm A announces its earnings before firm B in a quarter, then firm B's earnings announcement affects the post-earnings drift of firm A.

To test this hypothesis I examine the relation between earnings surprises and post-earnings returns. Bernard and Thomas (1989, 1990) show that the post-earnings drift lasts up to three quarters and is concentrated around firms' subsequent earnings releases. To control for the potential effect of firms' subsequent earnings announcements, this study focuses on the 60 trading day period following an earnings release. Rival firms' earnings releases are just one of many information events that happen following a firm's earnings release.[4] However, this is a source of information that recurs systematically. Disregarding other corporate events that take place between earnings announcements means that the tests performed here are conservative in nature: they are not designed to completely explain the post-earnings drift, but rather to provide inferences about the link between intra-industry information transfers and the post-earnings drift.

III. Sample selection

I construct two samples for analysis. First, I select a sample of large firms to examine intra-industry information transfer in an oligopolistic setting. Second, I expand my sample to include both large and small firms and examine the degree to which my findings can be generalized.

The initial sample includes all earnings announcements reported on Compustat during the period 1983 first quarter to 2004 first quarter. Sample firms are assigned to industries based on the Edelen and Kadlec (2005) modification to the Fama-French 48 industry classification.[5] I exclude financials (SIC 6000-6999) and utilities (SIC 4600-4699)

[4] Freeman and Tse (1989) and Koch and Sun (2004) examines announcement reactions around the firm's subsequent earnings announcement and dividend changes, respectively, conditioning on the sign of the firm's unexpected earnings.

[5] Edelen and Kadlec (2005) refine the Fama and French (1997) industry classification schemes by introducing new categories for pharmaceutical companies (SIC 8731), for software firms (SIC 7370-7375), and for bank holding companies (SIC 6799).

to focus on non-regulated industries. My initial analysis focuses on firms that are likely to have strong product market relations -- large industry rivals in concentrated industries. More specifically, for each quarter I select the five firms with the largest sales in each industry, and require that these five firms account for at least 50% of the total quarterly industry sales. This sample selection criterion is consistent with the theoretical motivation of intra-industry information transfer studies that employ a Cournot oligopoly framework [e.g. Laux, Starks, and Yoon (1998), Tookes (2003)].

Small firms are less likely to have strong product market relations due to their highly specialized product niches and geographic segmentation [Szewczyk (1992)]. Likewise, firms in competitive industries are likely to have weaker product market relations due to the fact that they are price takers, and thus, do not influence each other. Finally, examining a sample of large firms also helps in minimizing the influence of known sources of partial adjustment such as infrequent trading.

I require that each stock has return and volume data available on CRSP for the [-1,0] window and at least 50 days of returns available in the [+1,+60] window around the earnings announcement date. This latter window is used to calculate post-earnings abnormal returns (buy-and-hold market-adjusted returns, Jensen's alphas, and Fama-French three factor model alphas).

Table 1 reports descriptive statistics of the sample's industry composition. There are 39 industries for 1993-2004 and 40 industries for the 1983-2004 periods in the final sample, totaling 1220 and 2588 industry quarters, respectively. In some instances there are less than five firms on Compustat in a certain industry in a given quarter so the average and median firm number for the industry is below five. These industries remain in my sample, however, I do require that there are at least two firms available for each industry in each quarter. In some cases data is missing for a selected firm, this can drive the number of firms further down and the total sales of sample firms below 50% of total industry sales.

To identify the effective earnings announcement date, the day on which investors could first trade on the announcement information, I adjust the Compustat earnings reporting date using a method that is used to identify seasoned equity offering dates (e.g. Safieddine and Wilhelm (1996)). Specifically, if the volume on the trading day following the Compustat reporting date is more than twice the volume on the reporting date, then I

designate the day after the Compustat reporting date as the event date. Out of the longer sample's 11575 earnings announcement dates 1663 are modified. I manually check the validity of this date-adjustment method on a sample of 100 earnings announcement days by looking up the exact time of the earnings release on the Dow Jones Newswires, Press Release Wires, and Reuters Newswires. The observations that are adjusted based on volume identify the correct date 60% of the time. However, the observations that are not adjusted based on volume do not identify the correct date 10% of the time due to the earnings release happening after hours. This lack of adjustment is, however, unlikely to bias the results, since earnings releases not accompanied by increased volume are likely to convey little surprise element.

My analysis considers three alternative measures of earnings surprises used in the literature: the abnormal return on the earnings announcement date, an accounting-based earnings surprise, and an analyst forecast-based earnings surprise. Studies of intra-industry information transfer use abnormal returns to measure the quality and the size of the earnings surprise, while studies of post-earnings drift use the accounting based and analyst forecast based measures of earnings surprise. I use multiple proxies since each has its advantages and disadvantages and neither of them clearly dominates the others.

The market-adjusted announcement reaction is measured as the difference between the firm's and the market's return on the earnings announcement date. This proxy captures the market's reaction to the earnings announced, but it also reflects other information released on that day. It is not rare that firms announce other news together with their quarterly earnings. However, in the context of my investigation of whether information transfers explain partial adjustment around earnings announcements, any relevant information, not just earnings, might play a role.

The accounting based measure (SUE) is the difference between earnings per share (without extraordinary items) in the current quarter and in the same quarter of the previous year, scaled by the current end-of-quarter stock price. Similarly to Bernard and Thomas (1990), Affleck-Graves and Mendenhall (1992), and Battalio and Mendenhall (2005), I form deciles in each quarter based on this SUE measure and assign equally spaced ranks to each decile between -0.5 (lowest SUE) and 0.5 (highest SUE). The advantage of the SUE rank measure is that it isolates earnings from other information. However, this measure is

likely to be stale since it uses the previous year's same-quarter earnings to proxy for the market's expectation.

The third proxy for earnings surprise, analyst forecast error, is calculated as the difference between the actual earnings and the median of analysts' most recent earnings forecasts made no earlier than 60 days prior to the earnings announcement, scaled by the end-of-quarter stock price. To avoid the influence of outliers and similarly to the SUE variable, I form deciles in each quarter based on analyst forecast error and assign equally spaced ranks to each decile between -0.5 (lowest forecast error) and 0.5 (highest forecast error). I do not find available analyst forecasts for approximately 27% of my firms. This is not surprising, since even though I select the largest firms in each industry, the firms in my sample are not all unconditionally large (see Table 1). This analyst forecast based measure is less stale than the accounting based measure, since analysts update their forecasts based on information; however, there is evidence in the literature that analysts revise their forecast sluggishly and that analyst forecast tend to be influenced by some behavioral considerations.

I also calculate various microstructure variables to gauge the liquidity and asymmetric information effects of the information transmission around the earnings announcement date: dollar effective spread, number of trades, volume, and trading imbalance. These variables are calculated for the days [-1, 0] using the TAQ tapes[6] and are available only for the 1993/1-2004/1 subperiod.

IV. Empirical findings: Oligopolistic sample

A. Intra-industry information transfer

I first verify that the intra-industry information transfer around earnings announcements documented in prior studies [Foster (1981), Clinch and Sinclair (1987), Han and Wild (1990), Pyo and Lustgarten (1990), and Asthana and Mishra (2001)] is present in my sample. In each quarter I form deciles based on the earnings surprise, as measured by market-adjusted announcement reaction (Panels A and B of Table 2), by the

[6] Quotes and trades reported out of sequence, during a trading halt, or with zero depth or zero reported trade size are deleted. To assign buy and sell classifications I use the Lee and Ready (1991) method.

random walk SUE (Panels C and D of Table 2), and by analysts forecast error (Panels E and F of Table 2). In each decile I calculate the equal-weighted average market-adjusted return of announcing firms and of non-announcing same-industry firms. Consistent with prior studies, Panels A and B of Table 2 document a significant positive association between a firm's earnings announcement and the market-adjusted return of non-announcing same-industry firms. The relation is monotonic; moreover, non-announcing firms' abnormal returns are negatively significant in the bottom 4 deciles and are positively significant in the top five deciles. Specifically, the average announcement day abnormal return for non-announcing firms ranges from –0.63% to 0.83% across deciles in the last decade and from -0.44% to 0.54% in the full sample. The smaller spread in the longer time period reflects a smaller spread of market-adjusted announcement reaction for announcers: the difference between the average announcement reaction in decile ten and decile one is 13.81% in the full sample and 17.07% after 1993. Regression[7] estimates confirm the relation between announcer and non-announcing firms' returns and reveal that the magnitude of the reaction for non-announcing firms is on average about 8.3% of that for the announcer firm. These results indicate that the information transfer is predominantly contagion (i.e., industry-relevant information) [e.g. Foster (1981), Clinch and Sinclair (1987), and Tookes (2003)].

Deciles formed on SUE, in Panels C and D of Table 2, provide little evidence of intra-industry information transfer. Specifically, the market-adjusted return of non-announcing firms is relatively flat across deciles. Han and Wild (1990) also find weaker evidence of intra-industry information transfer when measuring earnings surprises by SUE. This may be due to the fact the intra-industry information transfer is not confined to earnings but also conveys other information announced simultaneously with earnings. Alternatively, SUE might be a weaker proxy for earnings surprises because it does not take into account revisions in the market's expectation since the previous year's announcement. The result for analyst forecast error take a middle ground by providing some evidence for intra-industry information transfers. In Panels E and F of Table 2, deciles with higher forecast errors display higher average market-adjusted price reactions for non-announcing firms than deciles with lower forecast errors, although not monotonically.

[7] All regressions in the study include time and industry fixed effects.

Intra-industry information transfer is thus strongest for measuring earnings surprises with announcement reactions – a result not surprising since we measured the contagion itself by price reaction to non-announcers. The relation between earnings surprise proxies and intra-industry transfer is well illustrated by the earnings announcement of Yahoo for the fourth quarter of 2005. On January 17th, 2006 Yahoo announced quarterly earnings of 16 cents per share. The announcement represented positive surprise measured by accounting random walk: earnings per share in the same quarter a year prior were 13 cents per share, representing a 23% increase. Given the end-of quarter stock price of $39.18, SUE=0.076%, placing Yahoo on in the 8th SUE surprise decile in an average year. Analysts on average forecasted 17 cents earnings per share, thus the firm underperformed by one cent per share. This gives an analyst forecast error of -0.255% placing Yahoo in the 3rd forecast error decile. Finally, the market's reaction to the earnings announcement was strongly negative, -12.29%, placing Yahoo in the bottom earnings surprise decile. On the same day Yahoo's largest rival, Google, also experienced a -4.75% drop in price, while there was no drip in the overall market, the S&P 500 moving only -0.39%. This example demonstrates that different proxies for earnings surprise can give very different results. Intra-industry information transfer with respect to the announcement reaction proxy was positive, as the market interpreted the earnings number reported as strong disappointment, not just for the firm, but also for its same-industry rival.

Table 3 provides correlations between the three earnings surprise proxies. I report both correlation in the pooled sample and the time-series average of cross-sectional correlation coefficients. The correlation between announcement reactions and forecast error decile ranks is around 20-24%, higher than the correlation between announcement reaction and SUE ranks of 11-12%. This result is consistent with the SUE measure relying on more stale expected earnings than the forecast error measure. The SUE and forecast error measures are highly correlated (21-29%), consistent with the notion that these two measures focus on earnings, while announcement reactions can be contaminated by other news sources. The correlations among the three proxies are all significant at the 1% level.

Consistent with the results in Table 2, Table 3 provides evidence that non-announcing firms' price reaction is most closely related to the price reaction of announcers, while it is less related to forecast errors and it is only marginally related to SUE. This

raises the question of whether the strong relation between price reactions of announcers and non-announcing industry peers is related to earnings news, or is just a manifestation of some other industry-wide news arriving to the market. To address this concern I decompose the market-adjusted announcement reaction proxy to earnings related and earnings-unrelated components by regressing it on the forecast error and SUE measures. I find that both components of announcement reactions are significantly related to non-announcer industry peers' price reactions. Thus while there can be industry news affecting both announcers and non-announcing industry peers at the same time, I find support also for a positive earnings-related intra-industry information transfer.

To further characterize information transfers around earnings announcements, I test whether large firms' earnings announcements convey more information for non-announcing firms than smaller firms' earnings announcements do. Specifically, I regress non-announcers' average market adjusted return on the announcing firm's market adjusted return. I also include in the specification the regressor interacted with a binary variable that takes the value of 1 when the firm is the largest firm of its industry in my sample. I find that the coefficients on both variables are positive and significant, providing evidence that non-announcers react stronger to the announcements of the largest firm in their industry.

If earnings announcements convey information to non-announcing firms, one would expect to observe changes in non-announcing firms' liquidity and asymmetric information. Kim and Verrechia (1994) predict that information releases increase asymmetric information for the announcing firm due to differences in interpretation stemming from investors' diverse prior beliefs, and Krinsky and Lee (1996) provide empirical findings that both spreads and volume increase at a firm's earnings release.

Table 4 documents announcement day changes in trading volume, in the number of daily trades, effective spread, and daily imbalance for announcing firms (Panel A) and for non-announcing firms (Panel B) assigned to deciles based on earnings surprise as measured by market-adjusted announcement reaction. Abnormal volume is the volume on the earnings release date relative to the average volume during the previous 250 trading days. All other variables are adjusted relative to their values on the trading day prior to the announcement date to simplify the computational requirement when accessing TAQ data.

Panels A of Table 4 confirms the findings of previous studies: announcing firms experience a significant increase in trading volume, number of trades, and spread. Further, the increase is greater when the earnings surprise is larger in magnitude. For example, volume increases by 300% and the number of trades increases by 150% in the deciles of extremely good or bad news. Similarly, effective dollar spreads widen by 14% for very good news and 16% for very bad news. This suggests that earnings news increases asymmetric information on the day of the announcement, more so for larger surprises.

Panel B reports that non-announcing rival firms also experience a significant increase in volume, in the number of trades, and in spreads on their peers' earnings announcement days, although there is no clear pattern evident across earnings surprise deciles. More specifically, trading volume increases by 13-32%, number of trades by 12-15%, and spreads by 4-5%. The trading imbalance for non-announcing firms increases significantly by 3.7% only when announcers' reaction is the highest. These results are consistent with information transfer taking place. Earnings announcements thus contain not only firm specific, but also industry-wide news.

B. Intra-industry information transfer and the post-earnings announcement drift

First I examine the extent to which earnings announcements convey information for firms that have already announced their earnings. Intra-industry information transfer to firms that have already announced their earnings is a necessary, but not sufficient, condition to provide support for the intra-industry information transfer hypothesis.

Table 5 reports average price reactions of non-announcing firms within earnings surprise deciles, separately for firms that have already announced their earnings and firms that are yet to announce their earnings. Intra-industry information transfer is present both for firms that have already announced their earnings and for firms that are yet to announce. The spread between the first and tenth earnings surprise decile for non-announcers is 1.7% among firms that are yet to announce, and 1.45% among firms that have already announced their earnings. The relation between earnings surprise and non-announcers' price reaction is close to monotonic for both groups, and it is not statistically different between the two groups. The results suggest that earnings announcements of industry peers convey information even for firms that have already announced their earnings.

The next set of tests examines the comprehensive effect of intra-industry transfers on the magnitude of the post-earnings drift. More specifically, I calculate cumulative post-earnings abnormal returns for each stock as the buy-and-hold market-adjusted return in the 60 trading days following the firm's earnings announcement (BHRET). To adjust for differences in risk, I also calculate Jensen's alpha (ALPHA) and the Fama-French three factor model alpha (FFALPHA) for each stock during the 60-day post-announcement period. To facilitate comparison between 60-day buy-and-hold returns and the market- and Fama-French model alphas, I multiply the latter two buy the number of trading days used in each model estimation. If intra-industry information transfer is a significant source of the post-earnings drift, then excluding the days on which other same-industry firms announce their earnings should reduce the magnitude of the post-earnings drift. To test this hypothesis, I also calculate the 60-day post-earnings buy-and-hold return, Jensen's alpha, and the Fama-French three factor model alpha excluding the announcement days of other firms in the same industry (NBHRET, NALPHA, and NFFALPHA, respectively). Note that, since each industry has five sample firms, a maximum of four days are excluded from the post earnings announcement 60-day window.

Tables 6, 6b and 6c present univariate regression estimates[8], in which the dependent variable is a post-earnings return (BHRET, ALPHA, FFALPHA, NBHRET, NALPHA, or NFFALPHA) and the independent variable is the firm's announcement day return (Panels A and C), the scaled SUE rank (Panels B and D), and the scaled analyst forecast error rank (Table 6c). For instance, in Model (1) Panel A of Table 6, 0.1342 is the coefficient from regressing post-announcement 60-day market-adjusted buy-and-hold returns on the price reaction at the earnings release and dummy variables for industries and quarters. The standard deviation reported in parentheses, 0.707, is heteroskedasticity adjusted with the White (1980) method. Models (1) - (3) report that the association between post-announcement returns and earnings surprise is positive and statistically significant, confirming the post-earnings drift phenomenon in my sample. However, the coefficients on the earnings surprise measures are much lower when the regression is estimated with NBHRET, NALPHA, or NFFALPHA as the dependent variable [Models (4) through (6)].

[8] Both industry and time fixed effects are used in the regression. The standard errors are reported with correction for heteroskedasticity [White (1980)].

This suggests that rival firms' earnings announcements explain a large portion of the post-earnings drift. The reduction in the coefficient on the earnings surprise variable from Model (1) to Model (3), from Model (2) to Model (4), and from Model (3) to Model (6) is statistically significant. The relation between the earnings surprise and post-announcement returns thus weakens, and in some specification gets eliminated, when post-announcement returns exclude the earnings release dates of industry peers. This effect is particularly strong in the 1993/1-2004/1 period.

Fama-MacBeth (1973) estimations of cross-sectional regressions also confirm the effect of intra-industry transfers on the post-earnings drift (Panels C and D of Tables 6, 6b, 6c). These results are consistent with the hypothesis that intra-industry information transfers play a significant part in the partial adjustment known as the post-earnings announcement drift.

Bernard and Thomas (1990) document that although the post-earnings announcement drift is not just prevalent in the first quarter immediately following the announcement, but it last up to three quarters. Moreover, they find that during this long post-announcement window the returns are concentrated around the firm's subsequent earnings announcements. This finding is also consistent with the structural uncertainty hypothesis of Brav and Heaton (2002), since subsequent announcements of the firm can be interpreted as confirmation that the initially reported earning was not just an idiosyncratic occurrence.

I repeat my analysis of Table 6 extending the post-announcement window from 60 trading days to three quarters. Table 7 presents the results. In Models (4)-(6) I use post-announcement returns estimated excluding not just industry peers' earnings announcement dates, but also the firm's own subsequent earnings announcements. The results are generally consistent with that of Bernard and Thomas as well as with that of Table 6: the post-announcement returns - earnings surprise relation becomes significantly weaker when earnings announcement days from the post-event window are eliminated.

An important question concerns why the post-earnings announcement drift persists more than 30 years after it was first documented [Ball and Brown (1968)]. In the context of rational structural uncertainty, this question is identical to asking why rational investors do not learn to anticipate that positively autocorrelated earnings releases lead to the post-

earnings drift, and in the context of behavioral models it is identical to asking why are there limits to arbitrage. To explore this issue I examine whether post-earnings returns differ depending on the extent to which subsequent earnings announcements of industry peers confirm a firm's earnings report. Table 8 groups earnings releases into four categories. First I split the sample of earnings announcements based on whether the earnings surprise is good or bad (i.e. whether it is in the top or bottom half of surprises in that quarter), and then I split each of these groups in two based on whether subsequent industry information is good or bad (i.e. whether the average of industry peers' earnings surprises occurring within 60 trading days is in the top or bottom half of all such average subsequent industry surprises). In Panel A of Table 8 earnings surprises are measured by announcement day returns. The table reports that the 60-day post earnings announcement abnormal return is highest when positive news is confirmed by positive subsequent peer announcements. Further, 60-day post-earnings abnormal returns are lowest when negative news is confirmed by negative subsequent peer announcements. The initial reaction to an earnings surprise in the top half (bottom half) is about 3.4% (-3.0%) regardless of the quality of subsequent news, indicating that at the time of the announcement investors do not anticipate a difference in subsequent peer earnings announcements. However, when industry peers' subsequent announcements convey better news, post-announcement abnormal returns are higher, and when industry peers' subsequent announcements convey worse news, post-announcement abnormal returns are lower. Thus, there is evidence that the post-earnings drift is present only when industry peers confirm the news reported by the firm. This implies that arbitrageurs bear a risk when trading on the original earnings surprise information and therefore rational learning is unlikely to eliminate the post-earnings drift.

The results in Panel B, in which earnings surprises are measured by SUE ranks, are similar when a firm reports positive news. However, when a firm's SUE is in the bottom half of all other earnings surprises in that quarter (negative news), post-earnings returns depict the opposite pattern compared to Panel A. Since the results from Table 2 show that intra-industry transfers are not directly related to SUE, these results need to be interpreted with caution. Panel C, in which analyst forecast error ranks proxy for earnings surprises confirms the results of Panel A.

Overall, the evidence is largely consistent with a pivotal role of intra-industry information transfers in the post-earnings drift. I find that the post-earnings drift is largely eliminated when I calculate post-earnings returns excluding days on which substantial intra-industry information transfers are present in the form of rival firms' earnings announcements. I further find that post-announcement returns depend on not just the quality of the earnings surprise, but also on whether the news gets confirmed by successive industry peer earnings announcements.

C. Intra-industry information transfer subsamples

The evidence so far indicates that there is a positive intra-industry information transfer at earnings announcements, on average, and that this can partially explain the post-earnings drift observed in the sample. However, there could be industry-specific differences about the nature of intra-industry information transfer around earnings announcements. In some industries, announcements may be dominated by industry wide information, while in others announcements may be dominated by information about shifts in market power among competing firms. The total effect of a corporate announcement on related firms can thus be positive, negative, or zero, depending on which of the two effects dominate in the given industry [Foster (1981), Lang and Stulz (1992), Laux, Starks, and Yoon (1998), and Tookes (2003)].

Table 9 provides evidence of the nature of intra-industry information transfer in different industries. Specifically, the table reports the industry-specific association between announcing and related firms' price change on earnings announcement dates. The table lists industries sorted by the t-statistic on the coefficient from regressing related non-announcing firms' average market-adjusted return on the announcer's market-adjusted announcement day return. Out of the 38 sample industries[9], there is one industry in which announcing and non-announcing firms' returns move in the opposite direction, there are 15 industries in which announcing and non-announcing firms' returns are not significantly related, and there are 22 industries in which announcing and non-announcing firms' returns move in the same direction. Thus, the majority of industries display contagion, implying

[9] One industry, Printing and publishing, has too few observations in the sample (less than 25) to estimate industry-specific regressions.

that earnings announcements contain predominantly industry news. However, cross-sectional differences lead to different predictions concerning post-earnings returns in the rational structural uncertainty framework.

Industries exhibiting contagion are hypothesized to also exhibit post-earnings drift, following the arguments made earlier in the paper. These industries include some that are dependent on the prices of natural resources (e.g. Precious metal, Non-metallic and industrial metal mining, Energy, Coal) and some that are dependent on consumer demand (Automobiles and trucks, Wholesale, Consumer goods, etc.). Thus, it is of little surprise that industry information plays a dominant role in firms' earnings releases. It is also interesting that Hong, Torous, and Valkanov (2003) find that returns of some of these industries predict future market returns, perhaps due to an association with economic cycles. According to my motivation, industries that do not exhibit a strong intra-industry information transfer effect are hypothesized not to exhibit a consistently detectible post-earnings drift. Finally, the one industry that exhibits competitive intra-industry information transfer, Shipbuilding and railroad equipment, is predicted to have a post-earnings drift only if earnings releases in the industry have a negative autocorrelation.

Given that rational structural uncertainty has different predictions about post-earnings returns for industries with positive, negative, and no intra-industry information transfer, I form three subsamples and estimate the relation between earnings surprise and post-earnings returns for each subsample. Table 10 reports estimates from regressions in which the 60-day market adjusted buy-and-hold return is regressed on different earnings surprise measures: the market-adjusted announcement reaction (Panel A), the SUE decile rank (Panel B), and the analyst forecast error decile rank. The deciles, like before, are calculated cross-sectionally each quarter for the full sample (unconditional on subsamples) and scaled between -0.5 and +0.5. If there is post-earnings drift in a subsample, I expect the coefficient on the earnings surprise to be significantly positive.

The results indicate that the post-earnings drift is only consistently evident in the positive intra-industry information transfer subsample. This result is robust to using different earnings surprise measures and provides strong support for the hypothesis that intra-industry information transfers are a predominant source of the post-earnings drift phenomenon.

V. Small firms

The drawback of the analysis presented so far is its limited scale due to the specific sample selection. Given the fact that the post-earnings announcement drift is more prominent among small firms than among large firms, a natural question concerns the extent to which intra-industry information transfers explain the post-earnings announcement drift for small firms.

Examining a large number of small firms introduces difficulties in identifying relevant product market relations. Small firms tend to be more specialized and operate in geographically segmented markets. Thus, industry classification is less likely to result in firms with relevant product market linkages. Nevertheless, the specifications in this section examine whether my findings can be extended to a more general setting.

I construct an extended sample starting with all quarterly earnings announcements on Compustat from 1983/1-2004/1 by U.S. firms listed in the NYSE, AMEX, or NASDAQ. I form industries and adjust earnings announcement dates using the same method I used for large firms. I eliminate financials and utilities, as well as firms whose SIC code ends with "99", a catch-all category of SIC codes, to make industry definitions more precise. I further impose a restriction to limit the effect of non-trading related price adjustment delays. Specifically, I require each firm to trade on at least 95% of trading days in the calendar year prior to the earnings announcement. This restriction eliminates about 20 % of firms.

Table 11 provides descriptive statistics of the extended sample. The average number of firms in a quarter varies between two (Agriculture) and 217 (Software). The sample consists a total of 42 industries, 3561 industry quarters, and 83,179 earnings announcements. All observations have non-missing announcement reaction, 159,993 observations have non-missing SUE, and 98,188 observations have non-missing analyst forecast error data.

Intra-industry information transfer is strongly present in the sample. Table 12 examines information spillover by dividing both the "transmitting" earnings announcer and the "receiving" non-announcer firms into sales quintiles. Specifically, the cells in the table

contain the coefficients from regressing the average market-adjusted return of each size quintile of non-announcing firms on the market-adjusted announcement reactions of each sales quintile of same-industry firms.[10] All coefficients are positive and significant; however, there is a distinct pattern in the strength of intra-industry information transfers. Within each non-announcing firm quintile, non-announcer returns have the highest association with large firm announcements, consistent with the finding that large firm announcements convey more information. Regressions estimates (unreported) also confirm this finding. Large (small) firm announcements have substantially stronger (weaker) correlations with non-announcer firm returns. A different pattern is apparent within each announcer firm quintile. Large firm announcements affect the largest firms the most and the smallest firms the least, while small firm announcements affect the smallest firms the most and the largest firms the least. These results suggest that intra-industry information transfer is particularly strong among firms of similar sizes, perhaps because these firms tend to share the same function (product market niche) within an industry.

Since the average number of firms in an industry quarter is over 50, the methodology of eliminating industry peer earnings announcement days from the post-announcement window - used in the large firm sample analysis - is not applicable. Instead, I hypothesize that intra-industry information transfers can be captured by industry returns. Specifically, if a firm's earnings announcement conveys the same information for all industry peers, then industry returns should be a proxy for the information transmission. Thus I control for intra-industry information transfer by using industry adjusted post-announcement returns. The caveat to using this approach is that it does not take into account potential differential effects of a firm's announcement on different industry peers (Laux, Starks, and Yoon (1988)).

I replicate Table 6 for the extended sample, but instead of excluding industry peer announcement dates to control for intra-industry transfer, I adjust post-announcement returns with the respective industry returns. Specifically, I calculate 60-day buy-and-hold returns for each firm and deduct from it the buy-and-hold equal-weighted industry portfolio return (EWINDADJRET) or the value-weighted industry portfolio return

[10] To control for the possibility that multiple firms from the same industry can announce earnings on the same day, I treat each industry announcement day as one observation and weight the announcers based on their market capitalization.

(VWINDADJRET). To avoid potential biases, I purge the industry portfolio returns from the contribution of the firm's own return before making the adjustment. In addition, I estimate EWALPHA and VWALPHA in the 60-day post-announcement window by regressing the firm's return on the market and on either the purged equal- or the purged value-weighted industry portfolio return, respectively. The alphas are multiplied by 60 for a better comparison with the buy-and-hold returns.

Table 13 provides evidence that the post-earnings announcement drift weakens when post-announcement returns are industry adjusted. The table presents coefficient estimates from regressing post-announcement returns on earnings surprise measures, separately for sales quintiles. The association between post-announcement returns and earnings surprise measures weakens when using industry adjusted returns, especially equal-weighted industry adjusted returns. The findings are consistent with intra-industry information spillover contributing a considerable amount to the post-earnings drift. The results are strongest when earnings surprise is proxied by announcement reaction and weakest when earnings surprise is proxied by SUE decile ranks.

The table also documents an interesting phenomenon across sales quintiles. Consistent with previous literature, I find that the association between earnings surprise and post-announcement returns decreases across size quintiles, when earnings surprise is measured by SUE or analyst forecast error. Previous studies interpret this as consistent with behavioral theories, since smaller firms are associated with more uncertainty and less information production leading to greater behavioral biases and greater limits to arbitrage. However, I also find that this relation reverses when I measure earnings surprise with market-adjusted announcement reaction. The association between earnings surprise and post-announcement returns increases across size quintiles, and is strongest among the largest firms. This result is puzzling for behavioral theories, but is consistent with rational structural uncertainty. On one hand, smaller firms carry more uncertainty that increases the price adjustment delay in the structural uncertainty model. On the other hand, small firms' earnings announcements are likely to contain more idiosyncratic news that is unrelated to the industry information spilling over from successive same-industry earnings announcements. This second effect – while consistent with intra-industry information

transfers driving the post-earnings announcement drift – can explain the differential strength of the effect on small and large firms depending on the earnings surprise measure.

Proper industry classification is important when using industry returns as a proxy for industry news dissemination. I introduce a weighting scheme into the regressions in Table 13 based on how properly a firm is classified. Specifically, I calculate weights by examining the fit from a regression of monthly firm returns on the market index and on industry portfolio returns, all taken from the most recent three calendar years prior to each earnings announcement. I estimate two regressions for each firm announcement, one using value-weighted and one using equal-weighted industry portfolio returns, and measure fit using the residual mean squared error (RMSE). Firms with lower RMSE are more likely to be classified in their industry correctly, since industry returns leave less of the variation in firm returns unexplained. Then, I re-estimate Table 13 with the weighted least squares method, employing 1/RMSE as the weight for each firm. Weights from estimations using value- and equal weighted industry portfolio returns are used in the regressions that have VWALPHA and EWALPHA as dependent variables, respectively. This approach gives more weight to firms that are more likely to be classified correctly.

Table 13b replicates the first row for each panel from Table 13 for comparison and reports results from the weighted least square estimation in rows two and three. The table provides evidence that after controlling for the quality of industry assignment, industry adjustments weaken or eliminate the post-earnings announcement drift. The results in Tables 13 and 13b underscore the role of industry information dissemination as the primary source of post-earnings drift.

Table 14 re-examines the question of why rational investors do not learn and eliminate the post-earnings drift. I replicate the analysis of Table 8 in my extended sample and examine post-announcement returns conditioning on whether subsequent earnings announcements of industry peers confirm or contradict a firm's earnings news. First I split the sample of earnings announcements based on whether an earnings surprise is good or bad (i.e. whether it is in the top or bottom half of surprises in that quarter), and then I split each of these groups in two based on whether subsequent industry information is good or bad (i.e. whether the average of industry peers' earnings surprises occurring within 60 trading days is in the top or bottom half of all such average subsequent industry surprises).

The results in Table 14 suggest that not just the quality of a firm's earnings surprise, but also whether that news is confirmed by subsequently reporting same-industry firms has a significant impact on post-announcement returns. For all earnings surprise definitions I find that post-announcement returns are larger when the original good news is confirmed, rather than contradicted, by subsequent announcements. Similarly, I find that post-announcement returns are lower when the original bad news is confirmed, rather than contradicted, by subsequent announcements. These findings constitute further evidence that arbitrageurs bear risks when trading on earnings news and thus might not be able to eliminate the post-earnings announcement drift.

VI. Momentum and the post-earnings announcement drift

Two short-term return continuation anomalies have proven to be persistent in financial markets: the drift observed following earnings announcements [e.g. Bernard and Thomas (1989, 1990)] and the continuing 3-12 month high (low) performance of stocks that performed well (poorly) in the past 3-12 months [Jegadeesh and Titman (1993)]. Given the relation of accounting information and stock returns, and the similarity of time horizon in the two anomalies, the question arises: are these anomalies related?

The first to analyze this question are Chan, Jegadeesh, and Lakonishok (1996), who employ two-way sorts and Fama-MacBeth cross-sectional regressions to show that both past returns (six-month buy-and hold) and earnings surprises (abnormal announcement reactions, SUE, and analyst forecast revisions) have incremental explanatory power in predicting future stock returns. In contrast, Chordia and Shivakumar (2005) show that a pricing factor constructed as the return on a zero-investment portfolio long in stocks in the highest SUE and short in stocks in the lowest SUE decile subsumes the effect of momentum both in the time-series and in the cross-section. This finding implies that price momentum is just a manifestation of earnings momentum.

My evidence that the post-earnings drift is due to intra-industry information transfers coupled with Grinblatt and Moskowitz's (1999) evidence that momentum in individual stock returns is due to momentum in industry returns also hints to the relatedness of the momentum and post-earnings drift anomalies. To gain further insight I

replicate the main analysis of Chan, Jegadeesh, and Lakonishok (1996) and Chordia and Shivakumar (2005) on my sample.

Similar to Chordia and Shivakumar (2005), I calculate six-month buy-and-hold returns from monthly data for each firm and form decile portfolios each month both based on the pre-formation six-month returns and on the most recent SUE of each stock. After each portfolio rebalancing I keep future returns for the following six months [Jegadeesh and Titman (1993)]. I define a PMN (positive-minus-negative) factor as the return on stocks in the highest SUE decile minus the return on stock in the lowest SUE decile. I also calculate a WML (winner-minus-loser) factor as the return on stocks in the highest past performance decile minus the return on stocks in the lowest past performance decile.

To assess the relative strength of the two strategies I perform Fama-French 3-factor regressions on PMN adding WML as an explanatory variable, and vice versa [Chordia and Shivakumar(2005)]. The regression estimates (t-statistics) are below.

$$PMN = 0.0097 + 0.0095 * MKTRF - 0.0724 * HML - 0.0728 * SMB + 0.2440\ WML$$
$$(5.63) \quad (0.22) \quad (1.12) \quad (1.34) \quad (8.12)$$

$$WML = -0.0018 - 0.1564 * MKTRF - 0.0772 * HML - 0.0648 * SMB + 0.8109\ PMN$$
$$(0.55) \quad (1.98) \quad (0.65) \quad (0.65) \quad (8.12)$$

Similarly to Chordia and Shivakumar (2005) I find that the PMN factor stays positive and significant after adjusting for the Fama-French three factors and the momentum (WML) factor, but the WML factor becomes insignificant when PMN is used as an explanatory variable. These results indicate that earnings momentum subsumes price momentum. To compare the cross sectional explanatory power of past returns and past earnings, I estimate cross-sectional regressions using both variables. Similar to Chan, Jegadeesh, and Lakonishok (1996), I find that the coefficient on both variables is positive and significant when predicting six-month future returns. These results indicate that both momentum and the post-earnings drift have future predictive ability beyond the other phenomenon to predict future returns.

Finally, I examine the returns on a portfolio long in the firms in the highest decile and short in the firms in the lowest decile based on the pre-announcement 180-day returns and rebalanced in each calendar quarter. I find that excluding the announcement days of

the five firms with the most sales in an industry reduces the portfolio's 90-day post-announcement buy-and hold return from 1.21% to 0.97% and the 180-day returns from 4.86% to 4.29%. This reduction is small in magnitude, thus I am not able provide definite support for the hypothesis that intra-industry information transfers are associated with the momentum effect.

VII. Aggregate returns and earnings

While the post-earnings announcement drift among individual firms is widely documented, there is only one study to date that examines the same phenomenon in aggregate returns. Specifically, Kothari, Lewellen, and Warner (2006) calculate market-wide scaled aggregate earnings changes (similar to the SUE variable used here) and examine the earnings changes' predictive ability on quarterly market returns. They find a negative contemporaneous relation between earnings changes and returns, but no predictive ability for past earnings on current returns. Kothari, Lewellen, and Warner interpret these results as a contemporaneous comovement between earnings changes and discount rates, but no indication of market-wide under- or overreaction. This latter finding indicates that the post-announcement drift present in individual firm returns is a cross-sectional phenomenon related to idiosyncratic, rather than to market-wide news.

Given the contrast between firm-level and market-wide effects, one way to examine what role industries play in the post-earnings drift is to aggregate earnings changes and returns on the industry level. Similar to Kothari, Lewellen, and Warner (2006), I restrict my extended sample to firms with fiscal year end of March, June, September, or December and calculate earnings changes as follows:

$$aggdE\_S_t = \left(\sum_{industry} Earnings_t - \sum_{industry} Earnings_{t-4} \right) / \sum_{industry} S_{t-4}$$

S is either the book asset or the stock price of a firm. Quarterly industry returns are calculated by equal-weighting firm buy-and-hold returns. Similarly, I also calculate a market earnings change variable.

Table 15 compares the relation between returns and earnings changes for firms (in the cross section), for industries (both in the cross-section and in time-series), and for the

market (in time-series). The table provides coefficient estimates along with Fama-MacBeth t-statistics from simple regressions where the dependent variable is quarterly returns. Panel A displays estimates from the univariate cross-sectional regression of quarter *t* firm returns on quarter *t-k* (*k=0,…,5*) changes in earnings. Consistent with Kothari, Lewellen, and Warner (2006), I find that earnings changes are significantly positively related to returns 0-2 quarters ahead, indicating the existence of post-earnings drift in my sample. Panel B displays similar cross-sectional regressions between industry returns and industry earnings changes. The findings suggest that aggregated earnings changes predict industry returns up to two quarters ahead in the cross section. Industries with higher earnings change earn higher returns contemporaneously, one, and two quarters ahead in the future, displaying a similar post-earnings drift to individual firms.

Panels C and D of Table 15 report coefficients from time-series regressions of aggregate quarterly returns on earnings changes. Panel D displays time series estimates using market-wide aggregate variables. Similarly to Kothari, Lewellen, and Warner (2006), I find no evidence of under- or overreaction to earnings changes in market-wide data. The coefficient estimates of earnings changes from past quarters are insignificant. While Kothari, Lewellen, and Warner document a negative contemporaneous relation between market returns and aggregate earnings changes, I find a negative, but insignificant relation in my sample.

Panel C displays cross-sectional averages of time-series estimates using industry-aggregate variables. The results suggest that an industry's returns are lower, when the most recent quarter's earnings change is higher. Current quarter returns, on the other hand, are positively related to earnings changes in the industry three and five quarters prior. The marked difference between the results of Panels B and C indicates that cross-sectional and time-series relations between earnings changes and returns are not uniform. Post-earnings announcement drift is a phenomenon that exists primarily in the cross section, e.g. industries that have relatively high earnings changes compared to other industries experience relatively higher returns in subsequent quarters. However, my evidence indicates that the same does not hold true in the time-series. When an industry's earnings change from four quarters ago is higher, the industry experiences lower returns in the short term and higher returns on the longer run.

VIII. Conclusions

In this paper I provide evidence that intra-industry information transfers are a significant source of the post-earnings announcement drift. The results of the study imply that the drift is a result of prices moving in response to information arrival, consistent with the hypothesis that product market relations provide a channel for information dissemination.

This paper explores some, but by no means all, product market relations. Besides the horizontal relations studied here, vertical product market relations [e.g. Menzly and Ozbas (2005)] can also be of considerable importance. Further, specialization, geographical segmentation, and imperfections in industry assignments present constraints in identifying product market relations. Although the focus of the paper is limited in both the type and number of product market relations, the results provide evidence that these relations are an important source of information for the financial markets.

I demonstrate that exploring the effect of product market relations on information assimilation can contribute to our understanding of financial anomalies. Given the richness of product market relations and the large number of financial anomalies documented in the literature, studying product market relations remains a fruitful area for future research.

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Table 1

Descriptive statistics (1993/1-2004/1)

This table displays the number of quarters, the mean and median number of firms in an industry, the average market capitalization of industry firms, and the total sales of sample industry firms as a percentage of total industry firms on Compustat. The sample period is 1993-2003, and the sample consists of the five firms with the largest sales in each industry, as long as the total sales of these five firms make up at least 50% of total industry sales. The industry definitions are based on the Fama-French industry classification that includes 48 groups, modified by adding software, pharmaceutical and bank holding companies [Edelen and Kadlec (2005)].

Industry	Number of quarters	Average number of firms	Median number of firms	Average market capitalization ($ millions)	Total sales of sample industry firms as % of total industry sales
Aircraft	45	5	5	16296.61	0.94
Agriculture	45	3.67	4	1846.64	0.83
Apparel	23	5	5	3715.97	0.55
Automobiles and trucks	45	3.67	4	21954.35	0.69
Beer & liquor	45	5.22	5	32024.65	0.68
Business supplies	19	4.95	5	16432.71	0.57
Candy and soda	45	4.98	5	2572.06	0.99
Chemicals	8	4.63	5	17789.84	0.5
Coal	45	3.4	3	615.82	0.98
Communication	7	4.86	5	87219.81	0.5
Computers	41	5	5	53650.86	0.61
Construction	23	3.87	4	1745.25	0.4
Construction materials	9	5	5	14386.02	0.58
Consumer goods	45	4.96	5	27503.57	0.65
Defense	45	5.44	5	3320.63	0.97
Electrical equipment	45	3.47	3	8743.40	0.48
Electronic equipment	13	3.23	5	31849.43	0.28
Energy	45	4.47	5	72606.36	0.65
Entertainment	38	4.79	5	21050.63	0.52
Fabricated products	45	4.24	4	274.63	0.69
Food products	13	3.92	4	20494.98	0.48
Healthcare	12	3.08	3	8474.43	0.51
Ind. mining	45	3.8	4	2455.87	0.77
Measuring and control eq.	15	5	5	4187.87	0.51
Medical equipment	11	5	5	10940.47	0.51
Personal services	11	4.09	4	2349.19	0.53
Pharmaceutical products	35	5	5	109384.56	0.57
Precious metals	45	4.67	5	2176.86	0.88
Printing and publishing	3	5	5	10804.23	0.51
Recreation	45	4.93	5	2585.62	0.77
Restaurants, hotels, motels	25	3.76	4	11441.30	0.45
Rubber and plastic prod.	33	3.82	4	2874.37	0.52
Shipbuilding, railroad eq.	45	4.96	5	2584.83	0.92
Shipping containers	45	3	3	2319.78	0.51
Software	45	2.58	2	135373.28	0.48
Steel works etc.	16	4.56	5	7773.03	0.54
Textiles	45	5	5	1167.95	0.71
Tobacco products	45	4.33	5	20251.00	0.98
Wholesale	10	2.1	2	16741.61	0.27

Table 1

Descriptive statistics (1983/1-2004/1)

This table displays the number of quarters, the mean and median number of firms in an industry, the average market capitalization of industry firms, and the total sales of sample industry firms as a percentage of total industry firms on Compustat. The sample period is 1993-2003, and the sample consists of the five firms with the largest sales in each industry, as long as the total sales of these five firms make up at least 50% of total industry sales. The industry definitions are based on the Fama-French industry classification that includes 48 groups, modified by adding software, pharmaceutical and bank holding companies [Edelen and Kadlec (2005)].

Industry	Number of quarters	Average number of firms	Median number of firms	Average market capitalization ($ millions)	Total sales of sample industry firms as % of total industry sales
Aircraft	85	4.95	5	10986.61	0.9
Agriculture	85	4.21	4	1258.08	0.9
Apparel	51	5	5	2652.05	0.56
Automobiles and trucks	85	4.28	4	16731.71	0.76
Beer & liquor	85	5.09	5	21262.08	0.82
Business supplies	22	4.95	5	15114.30	0.56
Candy and soda	85	4.32	5	1933.90	0.99
Chemicals	47	4.94	5	10280.51	0.54
Coal	85	3.12	3	457.22	0.99
Communication	41	4.98	5	29326.64	0.57
Computers	81	5	5	30643.73	0.63
Construction	63	4.54	5	1492.71	0.53
Construction materials	10	5	5	13590.07	0.57
Consumer goods	85	4.98	5	18314.30	0.68
Defense	85	5.13	5	2352.92	0.99
Electrical equipment	85	4.15	4	6281.47	0.59
Electronic equipment	40	4.43	5	13292.03	0.44
Energy	85	4.72	5	49873.50	0.65
Entertainment	77	4.86	5	11783.15	0.6
Fabricated products	85	4.58	5	236.81	0.72
Food products	13	3.92	4	20494.98	0.48
Healthcare	48	3.6	4	3360.91	0.53
Ind. mining	85	4.35	4	1686.03	0.85
Machinery	24	4.96	5	3300.89	0.53
Measuring and control eq.	55	5	5	2120.28	0.56
Medical equipment	51	4.98	5	4088.23	0.6
Personal services	51	4.61	5	1155.26	0.63
Pharmaceutical products	49	5	5	84214.95	0.56
Precious metals	85	4.71	5	1898.75	0.89
Printing and publishing	3	5	5	10804.23	0.51
Recreation	85	4.93	5	1811.65	0.78
Restaurants, hotels, motels	65	4.48	5	6088.67	0.52
Rubber and plastic prod.	73	4.38	5	1862.24	0.56
Shipbuilding, railroad eq.	85	4.96	5	1859.27	0.96
Shipping containers	85	3.85	3	1746.30	0.63
Software	85	3.69	4	79682.80	0.65
Steel works etc.	55	4.84	5	4019.35	0.53
Textiles	84	4.99	5	870.57	0.66
Tobacco products	85	3.96	4	15105.52	0.98
Wholesale	10	2.1	2	16741.61	0.27

Table 2

Intra-industry information transfer -- Announcement reaction

This table displays the market-adjusted price change of announcing and non-announcing firms on earnings release dates. Earnings surprise deciles are formed each quarter by sorting on the firm's market-adjusted price change on the earnings release date. Panel A uses data from 1993/1-2004/1 and Panel B uses data from 1983/1-2004/1. T-statistics are in parentheses.

Earnings surprise decile	Average market-adjusted price reaction	Average market-adjusted price reaction (t-tatistics)	Average market-adjusted price reaction for non-announcing firms	Average market-adjusted price reaction for non-announcing firms (t-statistics)
Panel A: Market adjusted earnings announcement reaction deciles (1993/1-2004/1)				
1	-0.0832	(-36.86)	-0.0063	(-7.34)
2	-0.0333	(-63.38)	-0.0055	(-7.42)
3	-0.0188	(-63.05)	-0.0030	(-3.97)
4	-0.0097	(-46.41)	-0.0016	(-2.64)
5	-0.0018	(-11.77)	-0.0000	(-0.10)
6	0.0051	(30.33)	0.0022	(3.08)
7	0.0128	(59.97)	0.0016	(2.14)
8	0.0230	(74.32)	0.0027	(3.87)
9	0.0386	(73.51)	0.0056	(6.87)
10	0.0874	(36.28)	0.0083	(7.87)
10-1	0.1707	p-value: 0.0000	0.0147	p-value: 0.0000
Panel B: Market adjusted earnings announcement reaction deciles (1983/1-2004/1)				
1	-0.0673	(-50.35)	-0.0044	(-8.40)
2	-0.0280	(-85.16)	-0.0035	(-7.52)
3	-0.0160	(-85.70)	-0.0024	(-5.66)
4	-0.0084	(-66.86)	-0.0012	(-3.18)
5	-0.0020	(-21.75)	0.0001	(0.33)
6	0.0037	(35.31)	0.0013	(3.37)
7	0.0102	(71.27)	0.0010	(2.51)
8	0.0186	(84.08)	0.0026	(6.04)
9	0.0315	(86.12)	0.0039	(8.31)
10	0.0707	(50.13)	0.0054	(8.58)
10-1	0.1381	p-value: 0.0000	0.0098	p-value: 0.0000

Table 2

Intra-industry information transfer -- SUE

This table displays the market-adjusted price change of announcing and non-announcing firms on earnings release dates. Earnings surprise deciles are formed each quarter by sorting on the firm's SUE. Panel A uses data from 1993/1-2004/1 and Panel B uses data from 1983/1-2004/1. T-statistics are in parentheses.

Earnings surprise decile	Average market-adjusted price reaction	Average market-adjusted price reaction (t-tatistics)	Average market-adjusted price reaction for non-announcing firms	Average market-adjusted price reaction for non-announcing firms (t-statistics)
Panel C: SUE deciles (1993/1-2004/1)				
1	-0.0085	(-3.03)	-0.0001	(-0.15)
2	-0.0039	(-1.98)	-0.0001	(-0.13)
3	-0.0024	(-1.24)	-0.0017	(-2.18)
4	0.0003	(0.15)	0.0010	(1.30)
5	0.0029	(1.70)	0.0018	(2.18)
6	0.0026	(1.50)	0.0013	(1.91)
7	0.0046	(2.46)	0.0006	(0.80)
8	0.0062	(2.88)	0.0006	(0.90)
9	0.0099	(4.72)	0.0019	(2.40)
10	0.0104	(3.37)	-0.0003	(-0.30)
10-1	0.0189	p-value: 0.000	-0.0002	p-value: 0.9062
Panel D: SUE deciles (1983/1-2004/1)				
1	-0.0083	(-5.20)	-0.0000	(-0.07)
2	-0.0030	(-2.72)	0.0001	(0.35)
3	-0.0018	(-1.72)	-0.0002	(-0.57)
4	-0.0002	(-0.18)	0.0002	(0.52)
5	0.0012	(1.25)	0.0007	(1.63)
6	0.0019	(1.93)	0.0005	(1.25)
7	0.0032	(3.04)	0.0008	(1.82)
8	0.0048	(4.15)	0.0005	(1.17)
9	0.0078	(6.52)	0.0012	(2.61)
10	0.0084	(4.89)	0.0000	(0.01)
10-1	0.0168	p-value: 0.0000	0.0000	p-value: 0.9514

Table 2

Intra-industry information transfer – Analyst forecast error

This table displays the market-adjusted price change of announcing and non-announcing firms on earnings release dates. Earnings surprise deciles are formed each quarter by sorting on the firm's analyst earnings forecast. Panel A uses data from 1993/1-2004/1 and Panel B uses data from 1983/1-2004/1. T-statistics are in parentheses.

Earnings surprise decile	Average market-adjusted price reaction	Average market-adjusted price reaction (t-tatistics)	Average market-adjusted price reaction for non-announcing firms	Average market-adjusted price reaction for non-announcing firms (t-statistics)
Panel E: Analyst forecast error deciles (1993/1-2004/1)				
1	-0.0155	(-4.19)	-0.0000	(-0.06)
2	-0.0133	(-5.11)	-0.0020	(-2.55)
3	-0.0071	(-3.61)	-0.0006	(-0.70)
4	-0.0003	(-0.17)	0.0016	(2.23)
5	-0.0005	(-0.30)	0.0007	(0.94)
6	0.0043	(2.35)	0.0016	(1.98)
7	0.0112	(5.96)	0.0000	(0.10)
8	0.0077	(4.10)	0.0018	(2.16)
9	0.0114	(5.28)	0.0012	(1.42)
10	0.0201	(7.74)	0.0019	(1.90)
10-1	0.0351	p-value: 0.0000	0.0021	p-value: 0.1455
Panel F: Analyst forecast error deciles (1983/1-2004/1)				
1	-0.0114	(-5.38)	-0.0005	(-0.97)
2	-0.0087	(-6.01)	-0.0004	(-0.80)
3	-0.0058	(-4.76)	0.0000	(0.07)
4	-0.0019	(-1.79)	0.0005	(1.04)
5	-0.0006	(-0.62)	0.0004	(0.94)
6	0.0030	(2.73)	0.0014	(2.56)
7	0.0075	(6.94)	-0.0000	(-0.02)
8	0.0072	(6.32)	0.0011	(2.01)
9	0.0103	(7.81)	0.0005	(1.07)
10	0.0157	(9.72)	0.0011	(1.80)
10-1	0.0266	p-value: 0.0000	0.0015	p-value: 0.0795

Table 3

Correlation of earnings surprise measures

Pooled correlations and the time-series average of cross-sectional correlation 1993/1-2004/1 (Panel A) and 1983/1-2004/1 (Panel B). Announcement reaction is the market-adjusted stock return on the earnings announcement day. Analyst forecast rank is the scaled decile rank sorted on the difference between the actual earnings per share and the one-quarter ahead median analyst forecast, scaled by the stock price at the end of the quarter. SUE rank is the rank of the standardized unexpected earnings (scaled between .5 and -.5), where SUE= $(EPS_t-EPS_{t-4}) /P_t$. Non-announcing firm return is the market-adjusted average return for non-announcing firms in an industry on industry peer earnings release dates.

Panel A: 1993/1-2004/1

Pooled correlation

	Analyst forecast rank	SUE rank	Non-announcing firm return
Announcement reaction	0.22***	0.11***	0.22***
Analyst forecast rank		0.21***	0.05***
SUE rank			0.02

Time-series average of cross-sectional correlations

	Analyst forecast rank	SUE rank	Non-announcing firm return
Announcement reaction	0.24***	0.12***	0.20***
Analyst forecast rank		0.21***	0.06***
SUE rank			0.03

Panel B: 1983/1-2004/1

Pooled correlation

	Analyst forecast rank	SUE rank	Non-announcing firm return
Announcement reaction	0.21***	0.12***	0.19***
Analyst forecast rank		0.28***	0.03***
SUE rank			0.01

Time-series average of cross-sectional correlations

	Analyst forecast rank	SUE rank	Non-announcing firm return
Announcement reaction	0.20***	0.12***	0.17***
Analyst forecast rank		0.29***	0.05***
SUE rank			0.02*

Table 4
Changes in volume, trading, and spread measures

This table displays average percentage changes in volume, trading, and spread measures from the day prior to the earnings release to the day of the earnings release. Change in trading imbalance is the change in the net number of buys from the day prior to the earnings release to the day of the earnings release, scaled by the number of trades on the day prior to the earnings release. The number of trades, effective spread, and imbalance measures are calculated using data from the TAQ tapes. Trade direction is assigned using the Lee and Ready (1991) method. T-statistics are in parentheses.

Earnings surprise decile	Abnormal volume	Change in the daily number of trades	Change in the effective spread	Change in trading imbalance
Panel A: Announcing firms				
1	3.4523	1.4229	0.1661	0.0228
	(14.58)	(10.50)	(9.11)	(0.58)
2	1.0123	0.5540	0.0756	-0.0477
	(16.16)	(6.68)	(5.18)	(-2.30)
3	0.6918	0.3165	0.0531	-0.0110
	(12.58)	(5.88)	(4.17)	(-0.41)
4	0.4927	0.2481	0.0689	0.0030
	(10.51)	(7.24)	(3.13)	(0.11)
5	0.4686	0.2534	0.0654	-0.0083
	(5.58)	(7.22)	(3.39)	(-0.49)
6	0.3933	0.2850	0.0549	0.0563
	(8.88)	(6.41)	(3.58)	(3.13)
7	0.5910	0.2804	0.0569	0.0649
	(9.39)	(9.08)	(4.35)	(4.44)
8	0.7591	0.4676	0.0905	0.1177
	(14.88)	(10.18)	(6.09)	(5.70)
9	1.0409	0.5164	0.0790	0.1031
	(19.03)	(16.71)	(6.55)	(6.97)
10	2.9313	1.5033	0.1466	0.3751
	(10.64)	(5.50)	(7.96)	(3.26)
Panel B: Non-announcing firms				
1	0.2325	0.1664	0.0461	0.0093
	(6.89)	(7.86)	(3.89)	(0.98)
2	0.1955	0.1420	0.0468	0.0059
	(5.67)	(6.80)	(5.56)	(0.59)
3	0.2424	0.1306	0.0402	0.0255
	(5.95)	(6.44)	(4.91)	(2.59)
4	0.1766	0.1652	0.0575	0.0225
	(6.40)	(5.79)	(6.05)	(1.40)
5	0.1819	0.1190	0.0419	-0.0035
	(5.98)	(6.87)	(4.67)	(-0.42)
6	0.1974	0.1376	0.0333	0.0098
	(5.20)	(4.26)	(3.95)	(0.92)
7	0.1299	0.0955	0.0495	-0.0058
	(4.91)	(5.62)	(5.27)	(-0.62)
8	0.1869	0.1191	0.0422	0.0032
	(6.78)	(5.00)	(5.42)	(0.37)
9	0.2341	0.1350	0.0553	0.0033
	(7.64)	(7.80)	(5.63)	(0.36)
10	0.3284	0.1566	0.0552	0.0370
	(8.74)	(8.28)	(6.21)	(4.03)

Table 5

Information transfer at earnings announcements for non-announcing firms that have already reported and that are yet to report earnings (1993/1-2004/1)

Average market-adjusted stock return for non-announcing firms on the earnings announcement dates of same-industry firms, separated based on whether the non-announcing firm has already announced or is yet to announce its quarterly earnings. The p-value for differences in medians is calculated using the Wilcoxon statistic.

Market-adjusted price reaction deciles	Other same-industry firms that					
	are yet to announce their earnings		have already announced their earnings		Differences of (p-value)	
	mean	median	mean	median	means	medians
1	-0.0078	-0.0061	-0.0061***	-0.0047	0.2890	0.3226
2	-0.0051	-0.0044	-0.0051***	-0.0039	0.9499	0.8254
3	-0.0041	-0.0045	-0.0023**	-0.002***	0.2079	0.0952
4	-0.0017	-0.0004	-0.0015**	-0.0019	0.8623	0.7764
5	-0.0021	-0.0012	0.0007	-0.0005	0.0506	0.2769
6	0.0014	0.0013	0.0026***	0.0017***	0.4262	0.3711
7	0.0019***	0.0011***	0.001	0.0011	0.5211	0.6889
8	0.0012	0.0002	0.0032***	0.0024***	0.2187	0.0995
9	0.005***	0.002***	0.0042***	0.0031***	0.6147	0.5593
10	0.0092***	0.0042***	0.0084***	0.0049***	0.6745	0.7631

*, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 5

Information transfer at earnings announcements for non-announcing firms that have already reported and that are yet to report earnings (1983/1-2004/1)

Average market-adjusted stock return for non-announcing firms on the earnings announcement dates of same-industry firms, separated based on whether the non-announcing firm has already announced or is yet to announce its quarterly earnings. The p-value for differences in medians is calculated using the Wilcoxon statistic.

Market-adjusted price reaction deciles	Other same-industry firms that					
	are yet to announce their earnings		have already announced their earnings		Differences of (p-value)	
	mean	median	mean	median	means	medians
1	-0.0058	-0.0038	-0.0036***	-0.0023	0.0354	0.0302
2	-0.0039	-0.0029	-0.0025***	-0.0018	0.1202	0.3187
3	-0.0033	-0.0028	-0.0017***	-0.0016	0.0686	0.0926
4	-0.001	-0.0009	-0.0013**	-0.0013	0.7237	0.9666
5	-0.0012	-0.0003	0.0004	-0.0005	0.0592	0.2794
6	0.0006	0.0004	0.0017***	0.0014***	0.1839	0.0440
7	0.001	0.0007	0.0008	0.0007***	0.7671	0.9600
8	0.0019***	0.0012***	0.0021***	0.0019***	0.7723	0.4568
9	0.0036***	0.001***	0.0033***	0.0025***	0.7338	0.4114
10	0.0063***	0.0029***	0.0054***	0.002***	0.4282	0.4335

*, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 6

Post-earnings drift 1993/1-2004/1 (45 qtrs)

This table presents regression estimates in which the dependent variable is the 60-day post-earnings drift, defined in the following ways. BHRET is the buy-and-hold market adjusted return in the 60-day post-earnings period, and ALPHA and FFALPHA are the Jensen's alpha and the Fama-French 3-factor model alpha for the stock estimated over the same period, respectively. NBHRET, NALPHA, and NFFALPHA are the buy-and-hold market-adjusted return, Jensen's alpha, and the Fama-French 3-factor model alpha respectively, excluding the days on which other, same-industry firms announce their earnings. The independent variable in Panel A is the firm's initial earnings surprise, as measured by the market-adjusted announcement day stock return (ADJRET). The independent variable in Panel B is the rank of the standardized unexpected earnings (scaled between .5 and -.5), where SUE= $(EPS_t-EPS_{t-4}) /P_t$. The regressions include industry and time fixed-effects. Heteroskedasticity adjusted standard errors are in parentheses. Panels C and D are Fama and MacBeth (1973) estimates with t-statistics in parentheses.

Explanatory variables	**Dependent variables**					
	(1) **BHRET**	(2) **ALPHA**	(3) **FFALPHA**	(4) **NBHRET**	(5) **NALPHA**	(6) **NFFALPHA**
Panel regression with fixed effects						
Panel A: Earnings surprise measured by announcement reaction (ADJRET)						
Announcement reaction	0.1342*	0.1233*	0.0957	0.1051	0.0814	0.0754
	(0.0707)	(0.0634)	(0.0656)	(0.0727)	(0.0658)	(0.0653)
Panel B: Earnings surprise measured by SUE						
SUE rank	0.0214**	0.0212***	0.0237***	0.0145	0.0144*	0.0150*
	(0.0096)	(0.0084)	(0.0086)	(0.0092)	(0.0082)	(0.0084)
Fama-MacBeth estimation (t-statistic)						
Panel C: Earnings surprise measured by announcement reaction						
Announcement reaction	0.1689**	0.1415**	0.1543**	0.1403*	0.1007	0.1226*
	(1.98)	(1.93)	(2.17)	(1.67)	(1.37)	(1.74)
Panel D: Earnings surprise measured by SUE						
SUE rank	0.0222**	0.0215***	0.0234***	0.0149	0.0146	0.0146
	(2.17)	(2.33)	(2.51)	(1.51)	(1.63)	(1.55)

*, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 6b

Post-earnings drift 1983/1-2004/1 (85 qtrs)

This table presents regression estimates in which the dependent variable is the 60-day post-earnings drift, defined in the following ways. BHRET is the buy-and-hold market adjusted return in the 60-day post-earnings period, and ALPHA and FFALPHA are the Jensen's alpha and the Fama-French 3-factor model alpha for the stock estimated over the same period, respectively. NBHRET, NALPHA, and NFFALPHA are the buy-and-hold market-adjusted return, Jensen's alpha, and the Fama-French 3-factor model alpha respectively, excluding the days on which other, same-industry firms announce their earnings. The independent variable in Panel A is the firm's initial earnings surprise, as measured by the market-adjusted announcement day stock return (ADJRET). The independent variable in Panel B is the rank of the standardized unexpected earnings (scaled between .5 and -.5), where SUE= (EPS_t-EPS_{t-4}) $/P_t$. The regressions include industry and time fixed-effects. Heteroskedasticity adjusted standard errors are in parentheses. Panels C and D are Fama and MacBeth (1973) estimates with t-statistics in parentheses.

Explanatory variables	**Dependent variables**					
	(1) **BHRET**	(2) **ALPHA**	(3) **FFALPHA**	(4) **NBHRET**	(5) **NALPHA**	(6) **NFFALPHA**
Panel regression with fixed effects						
Panel A: Earnings surprise measured by announcement reaction (ADJRET)						
Announcement reaction	0.1493*** (0.0538)	0.1324*** (0.0489)	0.0972* (0.0500)	0.1100** (0.0553)	0.0883* (0.0500)	0.0729 (0.0499)
Panel B: Earnings surprise measured by SUE						
SUE rank	0.0277*** (0.0056)	0.0264*** (0.0050)	0.0276*** (0.0052)	0.0244*** (0.0054)	0.0231*** (0.0049)	0.0238*** (0.0051)
Fama-MacBeth estimation (t-statistic)						
Panel C: Earnings surprise measured by announcement reaction						
Announcement reaction	0.1849*** (3.32)	0.1522*** (2.98)	0.1441*** (3.00)	0.1390*** (2.54)	0.1032** (2.06)	0.1055** (2.20)
Panel D: Earnings surprise measured by SUE						
SUE rank	0.0282*** (4.34)	0.0264*** (4.41)	0.0274*** (4.47)	0.0243*** (3.84)	0.0227*** (3.91)	0.0231*** (3.78)

*, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 6c

Post-earnings drift – Earnings surprise measured by analyst forecast error

This table presents regression estimates in which the dependent variable is the 60-day post-earnings drift, defined in the following ways. BHRET is the buy-and-hold market adjusted return in the 60-day post-earnings period, and ALPHA and FFALPHA are the Jensen's alpha and the Fama-French 3-factor model alpha for the stock estimated over the same period, respectively. NBHRET, NALPHA, and NFFALPHA are the buy-and-hold market-adjusted return, Jensen's alpha, and the Fama-French 3-factor model alpha respectively, excluding the days on which other, same-industry firms announce their earnings. The independent variable is the rank of analyst forecast errors (scaled between .5 and -.5), where Forecast error= (EPS_t-median analyst forecast EPS_t) /P_t. The regressions include industry and time fixed-effects. Heteroskedasticity adjusted standard errors are in parentheses. Panels C and D are Fama and MacBeth (1973) estimates with t-statistics in parentheses.

Explanatory variables	**Dependent variables**					
	(1) **BHRET**	(2) **ALPHA**	(3) **FFALPHA**	(4) **NBHRET**	(5) **NALPHA**	(6) **NFFALPHA**
Panel regression with fixed effects						
1993/1 -2004/1 44 qtrs						
Analyst forecast error	0.0266*** (0.0093)	0.0267*** (0.0085)	0.0258*** (0.0087)	0.0197** (0.0089)	0.0197** (0.0082)	0.0191** (0.0084)
1983/1-2004/1 80 qtrs						
Analyst forecast error	0.0388*** (0.0057)	0.0352*** (0.0053)	0.0322*** (0.0055)	0.0344*** (0.0055)	0.0310*** (0.0051)	0.0278*** (0.0054)
Fama-MacBeth estimation (t-statistic)						
1993/1 -2004/1 44 qtrs						
Analyst forecast error	0.0283*** (2.57)	0.0268*** (2.82)	0.0252*** (3.07)	0.0212* (1.88)	0.0198** (2.03)	0.0181** (2.18)
1983/1-2004/1 80 qtrs						
Analyst forecast error	0.0364*** (5.27)	0.0318*** (5.14)	0.0297*** (5.26)	0.0315*** (4.51)	0.0274*** (4.41)	0.0249*** (4.49)

*, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 7

Post-earnings drift with three quarter post-announcement window (1993/1-2004/1)

This table presents regression estimates in which the dependent variable is the 3-quarter post-earnings drift, defined in the following ways. BHRET is the buy-and-hold market adjusted return in the 3-quarter post-earnings period, and ALPHA and FFALPHA are the Jensen's alpha and the Fama-French 3-factor model alpha for the stock estimated over the same period, respectively. NBHRET, NALPHA, and NFFALPHA are the buy-and-hold market-adjusted return, Jensen's alpha, and the Fama-French 3-factor model alpha respectively, excluding the days on which the firm or other, same-industry firms announce their earnings. The independent variables are the firm's initial earnings surprise, as measured by the market-adjusted announcement day stock return (ADJRET), the rank of the standardized unexpected earnings (scaled between .5 and -.5), where SUE= $(EPS_t\text{-}EPS_{t-4})$ $/P_{t,}$ and the rank of the analyst forecast errors (scaled between .5 and -.5), where Forecast error= (EPS_t-median analyst forecast EPS_t) $/P_t$. The regressions include industry and time fixed-effects. In the panel regression heteroskedasticity adjusted standard errors are in parentheses, while in the Fama and MacBeth (1973) estimation t-statistics are in parentheses.

Explanatory variables	**Dependent variables**					
	(1) **BHRET**	(2) **ALPHA**	(3) **FFALPHA**	(4) **NBHRET**	(5) **NALPHA**	(6) **NFFALPHA**
Panel regression with fixed effects						
Announcement reaction	0.4239** (0.1707)	0.2612** (0.1135)	0.2618** (0.1157)	0.3152* (0.1688)	0.2215* (0.1160)	0.2244* (0.1174)
SUE decile rank	0.1147*** (0.0260)	0.0768*** (0.0171)	0.0752*** (0.0168)	0.0969*** (0.0366)	0.0583*** (0.0168)	0.0576*** (0.0164)
Analyst forecast error	0.0310 (0.0216)	0.0294* (0.0163)	0.0225 (0.0160)	0.0258 (0.0204)	0.0192 (0.0157)	0.0148 (0.0152)
Fama-MacBeth estimation (t-statistic)						
Announcement reaction	0.3896** (2.11)	0.2580** (1.99)	0.3370*** (2.48)	0.1603 (0.76)	0.1353 (1.07)	0.2064 (1.57)
SUE decile rank	0.1145*** (4.96)	0.0748*** (4.36)	0.0740*** (4.01)	0.0924*** (3.05)	0.0550*** (3.31)	0.0551*** (3.15)
Analyst forecast error	0.0394* (1.65)	0.0334** (1.95)	0.0233 (1.57)	0.0311 (1.43)	0.0219 (1.35)	0.0133 (0.95)

*, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 7 (continued)

Post-earnings drift with three quarter post-announcement window (1983/1-2004/1)

This table presents regression estimates in which the dependent variable is the 3-quarter post-earnings drift, defined in the following ways. BHRET is the buy-and-hold market adjusted return in the 3-quarter post-earnings period, and ALPHA and FFALPHA are the Jensen's alpha and the Fama-French 3-factor model alpha for the stock estimated over the same period, respectively. NBHRET, NALPHA, and NFFALPHA are the buy-and-hold market-adjusted return, Jensen's alpha, and the Fama-French 3-factor model alpha respectively, excluding the days on which the firm or other, same-industry firms announce their earnings. The independent variables are the firm's initial earnings surprise, as measured by the market-adjusted announcement day stock return (ADJRET), the rank of the standardized unexpected earnings (scaled between .5 and -.5), where SUE= $(EPS_t\text{-}EPS_{t-4}) / P_{t,}$ and the rank of the analyst forecast errors (scaled between .5 and -.5), where Forecast error= (EPS_t-median analyst forecast EPS_t) $/P_t$. The regressions include industry and time fixed-effects. In the panel regression heteroskedasticity adjusted standard errors are in parentheses, while in the Fama and MacBeth (1973) estimation t-statistics are in parentheses.

Explanatory variables	**Dependent variables**					
	(1) **BHRET**	(2) **ALPHA**	(3) **FFALPHA**	(4) **NBHRET**	(5) **NALPHA**	(6) **NFFALPHA**
Panel regression with fixed effects						
Announcement reaction	0.5160** (0.2243)	0.3351*** (0.1051)	0.3382*** (0.1041)	0.5920* (0.3662)	0.2828*** (0.1059)	0.2915*** (0.1050)
SUE decile rank	0.1066*** (0.0244)	0.0607*** (0.0112)	0.0677*** (0.0111)	0.0901* (0.0476)	0.0524*** (0.0109)	0.0588*** (0.0108)
Analyst forecast error	0.0010 (0.0255)	0.0434*** (0.0114)	0.0350*** (0.0113)	-0.0394 (0.0527)	0.0359*** (0.0113)	0.0299*** (0.0112)
Fama-MacBeth estimation (t-statistic)						
Announcement reaction	0.5755 (1.38)	0.4417*** (3.99)	0.4763*** (4.37)	0.4172 (0.59)	0.2976*** (2.59)	0.3307*** (2.97)
SUE decile rank	0.1070*** (4.82)	0.0644*** (5.18)	0.0703*** (5.88)	0.0963*** (2.22)	0.0541*** (4.62)	0.0596*** (5.35)
Analyst forecast error	0.0180* (0.67)	0.0434*** (3.21)	0.0345*** (2.76)	-0.0204 (-0.38)	0.0206*** (3.48)	0.0276** (2.22)

*, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 8
Initial surprise and confirming / disconfirming news (1993/1-2004/1)

This table groups earnings releases into four categories. I first separate all earnings announcements into two groups based on whether the earnings surprise was in the top or bottom half of all earnings announcements that calendar quarter. For each earnings announcement I calculate the average of industry peers' earnings surprises that occurred within 60 trading days after the announcement in question. I then divide both the top and bottom half of earnings surprises into two groups based on whether the subsequent industry earnings surprise was in the top or bottom half of all subsequent earnings surprises in that quarter. Panel A displays results for earnings surprise measured by market-adjusted announcement day reaction, Panel B measures earnings surprise by the scaled decile rank of SUE, and Panel C measures earnings surprise by the scaled rank of analyst forecast errors.

Earnings surprise split	Subsequent news split	Earning surprise	Earnings surprise t-statistic	60-day market adjusted buy-and-hold return	60-day market adjusted buy-and-hold return t-statistic	Jensen's alpha [+1,+60]	Jensen's alpha [+1,+60] t-statistic	Number of observations
Panel A: Earnings surprise measured by announcement reaction								
Bottom half	Bottom half	-0.02945	-29.92	-0.00198	-0.39	0.0001330	1.68	1361
Bottom half	Top half	-0.03036	-26.48	0.02163	4.05	0.0004372	5.30	1304
Top half	Bottom half	0.03318	36.21	0.00495	0.99	0.0002087	2.67	1336
Top half	Top half	0.03532	29.69	0.02801	4.99	0.0005473	6.52	1304
Panel B: Earnings surprise measured by the scaled decile rank of SUE								
Bottom half	Bottom half	-0.28216	-64.95	0.01223	2.27	0.0002962	3.64	1269
Bottom half	Top half	-0.27403	-60.44	0.00110	0.20	0.0001423	1.65	1214
Top half	Bottom half	0.27619	61.67	0.01565	3.01	0.0003537	4.36	1263
Top half	Top half	0.28347	64.13	0.02308	4.16	0.0004929	5.93	1211
Panel C: Earnings surprise measured by the scaled decile rank of analyst forecast error								
Bottom half	Bottom half	-0.26572	-54.39	-0.00590	-1.10	0.000988	0.21	986
Bottom half	Top half	-0.27801	-55.56	-0.00276	-0.49	0.003798	0.70	954
Top half	Bottom half	0.26601	51.42	0.01272	2.33	0.017340	3.55	944
Top half	Top half	0.29150	58.31	0.01748	3.28	0.024009	4.86	915

Table 8
Initial surprise and confirming / disconfirming news (1983/1 – 2004/1)

This table groups earnings releases into four categories. I first separate all earnings announcements into two groups based on whether the earnings surprise was in the top or bottom half of all earnings announcements that calendar quarter. For each earnings announcement I calculate the average of industry peers' earnings surprises that occurred within 60 trading days after the announcement in question. I then divide both the top and bottom half of earnings surprises into two groups based on whether the subsequent industry earnings surprise was in the top or bottom half of all subsequent earnings surprises in that quarter. Panel A displays results for earnings surprise measured by market-adjusted announcement day reaction, Panel B measures earnings surprise by the scaled decile rank of SUE, and Panel C measures earnings surprise by the scaled rank of analyst forecast errors.

Earnings surprise split	Subsequent news split	Earning surprise	Earnings surprise t-statistic	60-day market adjusted buy-and-hold return	60-day market adjusted buy-and-hold return t-statistic	Jensen's alpha [+1,+60]	Jensen's alpha [+1,+60] t-statistic	Number of observations
Panel A: Earnings surprise measured by announcement reaction								
Bottom half	Bottom half	-0.02445	-42.71	-0.00336	-1.13	0.00116	0.65	2867
Bottom half	Top half	-0.02375	-39.74	0.01533	4.85	0.00644	3.28	2811
Top half	Bottom half	0.02650	47.13	0.00285	0.98	0.00212	1.23	2844
Top half	Top half	0.02724	42.32	0.02012	6.28	0.01129	5.70	2783
Panel B: Earnings surprise measured by the scaled decile rank of SUE								
Bottom half	Bottom half	-0.28039	-94.47	0.00558	1.75	0.00013	0.07	2761
Bottom half	Top half	-0.26671	-84.26	-0.00443	-1.44	-0.00003	-0.01	2559
Top half	Bottom half	0.27180	88.47	0.01212	3.98	0.00764	4.07	2619
Top half	Top half	0.28146	93.45	0.01986	6.22	0.01106	5.97	2655
Panel C: Earnings surprise measured by the scaled decile rank of analyst forecast error								
Bottom half	Bottom half	-0.26576	-75.2468	-0.01003	-2.98	-0.00366	-1.76	2043
Bottom half	Top half	-0.27141	-76.82	-0.00551	-1.59	-0.00319	-1.49	1990
Top half	Bottom half	0.27395	77.34	0.01327	3.96	0.00709	3.67	1943
Top half	Top half	0.28632	81.64	0.01959	5.96	0.01026	5.33	1899

Table 9
Intra-industry information transfer by industries

This table displays the association between the announcing and non-announcing same-industry firms' return on the announcer's earnings release date. More specifically, coefficient is the coefficient from regressing non-announcers' return on the announcer's return. The regression is estimated separately for each industry and the table is sorted by the t-statistic of the coefficient.

Industry	Coefficient	Coefficient t-statistic	R^2	Degrees of freedom
Shipbuilding, railroad	-0.05793	-2.64	0.03059	221
Rubber and plastics	-0.02778	-1.18	0.01117	124
Defense	-0.00063	-0.04	0.00001	243
Software	0.00539	0.12	0.00012	114
Construction	0.01245	0.30	0.00104	86
Healthcare	0.02505	0.44	0.00550	35
Electrical equipment	0.00975	0.45	0.00129	154
Printing and publishing	0.06503	0.62	0.02833	13
Measuring eq.	0.02891	0.86	0.01002	73
Recreation	0.01934	1.01	0.00460	220
Entertainment	0.02723	1.07	0.00637	180
Textiles	0.02641	1.28	0.00735	223
Medical equipment	0.06463	1.43	0.03703	53
Fabricated products	0.03234	1.52	0.01205	189
Restaurants, hotels	0.05706	1.54	0.02503	92
Personal services	0.10667	1.54	0.05241	43
Apparel	0.04298	1.80	0.02799	113
Electronic equipment	0.10606	2.09	0.11443	34
Food products	0.08843	2.14	0.08562	49
Construction material	0.13837	2.17	0.09915	43
Steel works etc.	0.14510	2.61	0.08781	71
Ind. Mining	0.10139	2.64	0.03962	169
Communication	0.18762	2.70	0.18567	32
Agriculture	0.06740	2.90	0.04919	163
Candy & soda	0.05920	3.03	0.03959	222
Shipping containers	0.12816	3.14	0.06899	133
Business supplies	0.12803	3.24	0.10259	92
Chemicals	0.14398	3.33	0.24114	35
Coal	0.14639	3.45	0.07531	146
Beer & liquor	0.08454	4.14	0.06838	233
Tobacco products	0.14947	4.33	0.08869	193
Computers	0.07175	4.74	0.09976	203
Aircraft	0.11635	4.92	0.09785	223
Pharmaceutical prod.	0.19156	5.45	0.14632	173
Wholesale	0.31974	5.64	0.62611	19
Consumer goods	0.12826	6.10	0.14400	221
Autos and trucks	0.21132	6.56	0.20883	163
Precious metals	0.52103	13.44	0.46463	208
Energy	0.47719	14.16	0.50175	199

Table 10
Post-earnings drift in intra-industry transfer subsamples (1993/1-2004/1)

This table displays estimates from regressing 60-day market-adjusted post-announcement buy-and-hold returns (BHRET) on various measures of earnings surprises, for subsamples formed on intra-industry information transfer. Intra-industry information transfer is negative in one industry (N=225), not significant in 14 industries (N=1627), and positive (significant at the 5% level) in 23 industries (N=3728). Earnings surprise is measured in Panel A by market-adjusted announcement reaction, in Panel B by SUE decile ranks, and in Panel C by analyst forecast decile ranks, ranks scaled between -0.5 and +0.5. The regressions control for industry and quarter fixed effects.

Panel A: Earnings surprise measured by market-adjusted announcement reaction

Estimate	Std. error	t-statistic
Negative intra-industry information transfer		
-0.4369	0.3081	-1.42
Not significant intra-industry information transfer		
-0.0247	0.0772	-0.32
Positive intra-industry information transfer		
0.3037	0.0705	4.31

Panel B: Earnings surprise measured by SUE decile rank (unconditional)

Negative intra-industry information transfer		
0.0488	0.0395	1.24
Not significant intra-industry information transfer		
0.0179	0.0136	1.32
Positive intra-industry information transfer		
0.0207	0.0103	2.00

Panel C: Earnings surprise measured by forecast error decile rank (unconditional)

Negative intra-industry information transfer		
-0.0405	0.0477	-0.85
Not significant intra-industry information transfer		
0.0144	0.0154	0.93
Positive intra-industry information transfer		
0.0306	0.0094	3.24

Table 10

Post-earnings drift in intra-industry transfer subsamples (1983/1-2004/1)

This table displays estimates from regressing 60-day market-adjusted post-announcement buy-and-hold returns (BHRET) on various measures of earnings surprises, for subsamples formed on intra-industry information transfer. Intra-industry information transfer is negative in one industry (N=225), not significant in 14 industries (N=1627), and positive (significant at the 5% level) in 23 industries (N=3728). Earnings surprise is measured in Panel A by market-adjusted announcement reaction, in Panel B by SUE decile ranks, and in Panel C by analyst forecast decile ranks, ranks scaled between -0.5 and +0.5. The regressions control for industry and quarter fixed effects.

Estimate	Std. error	t-statistic
Panel A: Earnings surprise measured by market-adjusted announcement reaction		
Negative intra-industry information transfer		
-		
Not significant intra-industry information transfer		
0.00235	0.05585	0.04
Positive intra-industry information transfer		
0.25313	0.04842	5.23
Panel B: Earnings surprise measured by SUE decile rank (unconditional)		
Negative intra-industry information transfer		
-		
Not significant intra-industry information transfer		
0.03734	0.00794	4.70
Positive intra-industry information transfer		
0.02142	0.00592	3.62
Panel C: Earnings surprise measured by forecast error decile rank (unconditional)		
Negative intra-industry information transfer		
-		
Not significant intra-industry information transfer		
0.02527	0.00937	2.70
Positive intra-industry information transfer		
0.03824	0.00598	6.40

Table 11
Descriptive statistics

This table displays the number of quarters, the mean number of firms in an industry, the average market capitalization of industry firms, and the total sales of sample industry firms as a percentage of total industry firms on Compustat. The sample period is 1983/1-2004/1, and the sample consists of all firms from Compustat that trade at least 95% of all trading days in the calendar year prior to their earnings announcement. The industry definitions are based on the Fama-French industry classification that includes 48 groups, modified by adding software, pharmaceutical and bank holding companies [Edelen and Kadlec (2005)].

Industry	Number of quarters	Average number of firms	Average market capitalization ($ millions)	Total sales of sample industry firms as % of total industry sales
Aircraft	85	14.2	4527.05	0.98
Apparel	85	35.7	654.73	0.93
Autos and trucks	85	44.5	2209.25	0.93
Beer & liquor	85	10.7	10920.28	0.99
Business services	85	114	587.75	0.88
Business supplies	85	46.4	2196.38	0.96
Candy and soda	85	4.36	1888.37	0.99
Chemicals	85	62.3	2038.67	0.98
Coal	85	3.18	430.15	0.9
Communication	85	80.6	5450.84	0.95
Computers	85	88.1	2497.40	0.98
Construction	85	31.2	642.43	0.89
Construction material	85	55	1175.64	0.89
Consumer goods	85	43.8	2635.26	0.96
Defense	85	5.71	2057.47	1
Electric equipment	85	39.7	892.65	0.89
Electronic equipment	85	169	1346.88	0.95
Energy	85	100	3222.84	0.97
Entertainment	85	37.6	1669.75	0.95
Fabricated products	85	7.85	166.04	0.78
Food products	85	49.1	2506.80	0.9
Healthcare	85	48.4	704.19	0.83
Ind. Mining	85	6.59	1161.00	0.94
Machinery	85	92.2	894.92	0.94
Measuring & control eq.	85	63.6	541.88	0.92
Medical equipment	85	94	712.99	0.94
Personal services	85	25.4	582.56	0.86
Pharmaceutical products	85	146	3102.68	0.98
Precious metals	85	6.94	1465.72	0.97
Printing and publishing	85	29	1999.41	0.93
Recreation	85	17.7	572.58	0.95
Restaurants, hotels	85	50.1	957.71	0.88
Retail	85	154	2089.24	0.95
Rubber and plastic prod.	85	21.5	550.39	0.84
Shipbuilding, railroad eq.	85	6.76	1437.07	0.99
Shipping containers	85	10.7	821.97	0.85
Software	85	217	1800.26	0.94
Steel works etc.	85	41.7	902.10	0.97
Textiles	85	12.8	480.99	0.88
Tobacco products	85	3.79	16372.73	0.98
Wholesale	85	94	548.31	0.83

Table 12

Intra-industry information transfer between different sales quintiles

Regression estimates displaying the association between announcing and non-announcing industry peers' announcement day returns, 1983/1-2004/1. Firms are sorted into quintiles each quarter depending on their sales. Q1 contains the firms with the smallest, Q5 the firms with the largest sales. Standard errors are in parentheses.

	Announcing firm					
Non-announcing firm	**all**	**Q1**	**Q2**	**Q3**	**Q4**	**Q5**
All	0.0248 (0.0006)	0.0119 (0.0009)	0.0208 (0.0011)	0.0293 (0.0013)	0.0367 (0.0016)	0.0496 (0.0020)
Q1	0.0234 (0.0013)	0.0228 (0.0023)	0.0224 (0.0026)	0.0238 (0.0029)	0.0240 (0.0035)	0.0260 (0.0044)
Q2	0.0241 (0.0010)	0.0165 (0.0017)	0.0251 (0.0019)	0.0277 (0.0022)	0.0278 (0.0026)	0.0329 (0.0033)
Q3	0.0254 (0.0009)	0.0099 (0.0014)	0.0251 (0.0017)	0.0359 (0.0021)	0.0358 (0.0023)	0.0382 (0.0029)
Q4	0.0290 (0.0008)	0.0088 (0.0013)	0.0209 (0.0015)	0.0367 (0.0018)	0.0517 (0.0023)	0.0658 (0.0027)
Q5	0.0237 (0.0007)	0.0033 (0.0011)	0.0112 (0.0013)	0.0240 (0.0016)	0.0447 (0.0019)	0.0916 (0.0025)

Table 13

Post-earnings drift with industry adjustment by sales quintiles

Regression estimates with dependent variables defined in the following ways. MKTADJRET is the 60-day post-announcement buy-and-hold market adjusted return, VWINDADJRET and EWINDADJRET are the buy-and-hold returns adjusted with the value- and equal-weighted industry returns. ALPHA is Jensen's alpha, VWALPHA and EWALPHA are the alpha from regressing the firm's returns on the market and on the value- or equal-weighted industry returns in the post-announcement 60-day window. The independent variables are the firm's initial earnings surprise, as measured by the market-adjusted announcement day stock return, the rank of the standardized unexpected earnings (scaled between .5 and -.5), where SUE= $(EPS_t\text{-}EPS_{t-4}) / P_t$, and the rank of the analyst forecast errors (scaled between .5 and -.5), where Forecast error= (EPS_t-median analyst forecast EPS_t) $/P_t$. The regressions are Fama and MacBeth (1973) estimations with t-statistics in parentheses.

Sales quintile	Q1 (smallest)	Q2	Q3	Q4	Q5
Panel A: Earnings surprise measured by announcement reaction					
MKTADJRET	0.0709	0.946	0.1486	0.1721	0.1832
	(3.05)	(4.49)	(7.55)	(9.40)	(10.72)
VWINDADJRET	0.0524	0.0799	0.1385	0.1557	0.1607
	(2.27)	(3.85)	(7.19)	(8.81)	(9.84)
EWINDADJRET	0.0266	0.0554	0.1068	0.1071	0.1173
	(1.19)	(2.81)	(5.89)	(6.21)	(6.95)
Panel B: Earnings surprise measured by SUE rank					
MKTADJRET	0.0829	0.0517	0.0388	0.0354	0.0160
	(12.88)	(9.95)	(8.63)	(8.55)	(4.67)
VWINDADJRET	0.0838	0.0512	0.0403	0.0346	0.0116
	(13.16)	(9.97)	(9.16)	(8.68)	(3.54)
EWINDADJRET	0.0792	0.0455	0.0348	0.0328	0.0075
	(12.90)	(9.37)	(8.39)	(8.41)	(2.22)
Panel C: Earnings surprise measured by analyst forecast error rank					
MKTADJRET	0.0619	0.0548	0.0618	0.0417	0.0399
	(6.79)	(8.49)	(10.90)	(8.84)	(11.09)
VWINDADJRET	0.0601	0.0555	0.0612	0.0439	0.0383
	(6.75)	(8.82)	(11.15)	(9.76)	(11.21)
EWINDADJRET	0.0544	0.0521	0.0554	0.0408	0.0344
	(6.43)	(8.74)	(10.80)	(9.37)	(9.69)

Table 13 (continued)

Post-earnings drift with industry adjustment by sales quintiles

Sales quintile	Q1 (smallest)	Q2	Q3	Q4	Q5
	Panel A: Earnings surprise measured by announcement reaction				
ALPHA	0.0468	0.0729	0.1258	0.1465	0.1454
	(2.30)	(3.98)	(7.05)	(8.75)	(9.02)
VWALPHA	0.0389	0.0643	0.1301	0.1378	0.1360
	(1.89)	(3.53)	(7.38)	(8.42)	(8.80)
EWALPHA	0.0091	0.0341	0.1018	0.0795	0.1046
	(0.44)	(1.88)	(5.87)	(4.80)	(6.53)
	Panel B: Earnings surprise measured by SUE rank				
ALPHA	0.0612	0.0376	0.0305	0.0287	0.0128
	(10.86)	(8.51)	(7.49)	(7.62)	(397)
VWALPHA	0.0633	0.0380	0.0325	0.0290	0.0148
	(11.14)	(8.60)	(8.08)	(7.90)	(4.81)
EWALPHA	0.0557	0.0296	0.0266	0.0256	0.0118
	(9.87)	(6.80)	(6.74)	(6.90)	(3.70)
	Panel C: Earnings surprise measured by analyst forecast error rank				
ALPHA	0.0415	0.0434	0.0493	0.0351	0.0360
	(4.96)	(7.45)	(9.85)	(8.11)	(10.51)
VWALPHA	0.0408	0.0448	0.0508	0.0379	0.0363
	(4.89)	(7.80)	(10.37)	(9.08)	(11.20)
EWALPHA	0.0287	0.0419	0.0444	0.0309	0.0290
	(3.45)	(7.41)	(9.21)	(7.29)	(8.53)

Table 13b

Post-earnings drift with industry adjustment and weighting

Weighted least squares regression estimates with weighting reflecting the correctness of industry classification. The weight is the inverse of the residual means square error from regressing the firms monthly returns on the market return and on industry returns in a 3 calendar years pprior to the earnings announcements. Weighting is applied in the regressions with VWALPHA and EWALPHA as the independent variables. ALPHA is Jensen's alpha, VWALPHA and EWALPHA are the alpha from regressing the firm's returns on the market and on the value- or equal-weighted industry returns in the post-announcement 60-day window. The independent variables are the firm's initial earnings surprise, as measured by the market-adjusted announcement day stock return, the rank of the standardized unexpected earnings (scaled between .5 and -.5), where SUE= $(EPS_t\text{-}EPS_{t-4})$ $/P_{t,}$ and the rank of the analyst forecast errors (scaled between .5 and -.5), where Forecast error= (EPS_t-median analyst forecast EPS_t) $/P_t$. The regressions are Fama and MacBeth (1973) estimations with t-statistics in parentheses.

Panel A: Earnings surprise measured by announcement reaction					
ALPHA	0.0468	0.0729	0.1258	0.1465	0.1454
	(2.30)	(3.98)	(7.05)	(8.75)	(9.02)
VWALPHA	-0.0990	0.04277	0.0077	0.0629	0.0184
	(-2.17)	(1.06)	(0.21)	(1.82)	(0.60)
EWALPHA	-0.1050	0.0168	0.0077	0.0241	0.0385
	(-2.34)	(0.42)	(0.19)	(0.58)	(1.17)
Panel B: Earnings surprise measured by SUE rank					
ALPHA	0.0612	0.0376	0.0305	0.0287	0.0128
	(10.86)	(8.51)	(7.49)	(7.62)	(397)
VWALPHA	0.0527	0.0365	0.0215	0.0143	0.0075
	(4.54)	(4.26)	(2.72)	(2.09)	(1.35)
EWALPHA	0.0503	0.0256	0.0093	0.0132	0.0088
	(4.39)	(3.04)	(1.08)	(1.58)	(1.45)
Panel C: Earnings surprise measured by analyst forecast error rank					
ALPHA	0.0415	0.0434	0.0493	0.0351	0.0360
	(4.96)	(7.45)	(9.85)	(8.11)	(10.51)
VWALPHA	0.0349	0.0397	0.0396	0.0286	0.0294
	(2.02)	(3.71)	(4.63)	(3.70)	(5.27)
EWALPHA	0.0293	0.0426	0.0360	0.0148	0.0229
	(1.68)	(4.06)	(4.25)	(1.46)	(3.73)

Table 14
All firms: Initial surprise and confirming / disconfirming news

This table groups earnings releases into four categories. I first separate all earnings announcements into two groups based on whether the earnings surprise was in the top or bottom half of all earnings announcements that calendar quarter. For each earnings announcement I calculate the average of industry peers' earnings surprises that occurred within 60 trading days after the announcement in question. I then divide both the top and bottom half of earnings surprises into two groups based on whether the subsequent industry earnings surprise was in the top or bottom half of all subsequent earnings surprises in that quarter. Panel A displays results for earnings surprise measured by market-adjusted announcement day reaction, Panel B measures earnings surprise by the scaled decile rank of SUE, and Panel C measures earnings surprise by the scaled decile analyst forecast error.

Earnings surprise split	Subsequent news split	Earning surprise	Earnings surprise t-statistic	60-day market adjusted buy-and-hold return	60-day market adjusted buy-and-hold return t-statistic	Jensen's alpha [+1,+60]	Jensen's alpha [+1,+60] t-statistic	Number of observations
Panel A: Earnings surprise measured by announcement reaction								
Bottom half	Bottom half	-0.039832	-168.30	-0.010179	-7.82	.000219294	10.44	47744
Bottom half	Top half	-0.040888	-170.18	0.027872	18.64	.000763503	34.54	47533
Top half	Bottom half	0.044454	170.82	-0.002791	-2.28	.000274338	13.92	47627
Top half	Top half	0.046222	159.84	0.040616	27.71	.000886271	42.95	47370
Panel B: Earnings surprise measured by the scaled decile rank of SUE								
Bottom half	Bottom half	-0.2844	-374.45	-0.001355	-1.02	.000331552	15.52	42441
Bottom half	Top half	-0.2695	-341.60	0.008724	6.08	.000464849	20.45	40020
Top half	Bottom half	0.2690	344.11	0.019682	14.52	.000573493	26.99	40054
Top half	Top half	0.2865	374.42	0.040909	25.08	.000865962	38.47	42209
Panel C: Earnings surprise measured by the scaled decile rank of analyst forecast error								
Bottom half	Bottom half	-0.2788	-277.71	-0.012666	-8.20	.000018467	0.73	25086
Bottom half	Top half	-0.2714	-272.03	-0.003795	-2.40	.000143271	5.98	24965
Top half	Bottom half	0.2771	277.85	0.018931	11.48	.000454060	17.78	24806
Top half	Top half	0.2809	282.35	0.023772	14.21	.000491198	20.07	24664

Table 15
Aggregate returns and earnings changes

Coefficients from simple univariate regressions of quarterly returns on earnings changes lagged by 0-5 quarters. Quarterly earnings are average buy-and-hold returns, earnings changes are measured from four quarters ago, scaled by the stock price (left side) or by the total book assets (right side) at the end of quarter t-4. Only firms with fiscal year end in March, June, September, or December are included. Panels B and C aggregate earnings on the industry, and Panel D aggregates earnings at the market level. Statistics in bold are significant at the 10% level.

	Estimate	**t-statistic**		**Estimate**	**t-statistic**
Panel A: Firms – cross sectional regressions (Fama-MacBeth)					
de_prc	**0.8521**	**13.55**	de_b	**0.9456**	**5.83**
lde_prc1	**0.2570**	**10.47**	lde_b1	**0.5396**	**6.48**
lde_prc2	**0.0256**	**1.96**	lde_b2	**0.1295**	**2.16**
lde_prc3	0.0053	0.31	lde_b3	0.0818	1.23
lde_prc4	0.0048	0.33	lde_b4	0.0160	0.33
lde_prc5	**-0.0332**	**-2.49**	lde_b5	-0.0216	-0.46
Panel B: Industries – cross sectional regressions (Fama-MacBeth)					
aggde_prc	**1.1537**	**4.36**	aggde_b	**1.3292**	**4.81**
laggde_prc1	**0.6332**	**3.37**	laggde_b1	**0.7418**	**3.08**
laggde_prc2	**0.4618**	**1.81**	laggde_b2	**0.6352**	**2.31**
laggde_prc3	0.0673	0.28	laggde_b3	0.2969	1.04
laggde_prc4	-0.2153	-0.83	laggde_b4	-0.0274	-0.1
laggde_prc5	-0.0677	-0.31	laggde_b5	0.1742	0.74
Panel C: Industries – time series regressions (Fama-MacBeth)					
aggde_prc	0.3068	0.9	aggde_b	**0.6733**	**2.49**
laggde_prc1	**-0.6400**	**-2.45**	laggde_b1	**-0.9248**	**-2.56**
laggde_prc2	0.2947	1.17	laggde_b2	0.1888	0.67
laggde_prc3	**0.8019**	**2.15**	laggde_b3	**0.7219**	**2.12**
laggde_prc4	0.1918	0.5	laggde_b4	0.4169	1.27
laggde_prc5	**0.7207**	**2.76**	laggde_b5	**0.7516**	**2.92**
Panel D: Market – time series regressions					
mktde_prc	-1.9516	-0.58	mktde_b	0.0965	0.03
lmktde_prc1	-3.5318	-1.07	lmktde_b1	-2.0600	-0.69
lmktde_prc2	-2.1723	-0.62	lmktde_b2	-0.0334	-0.01
lmktde_prc3	0.9615	0.28	lmktde_b3	2.0705	0.66
lmktde_prc4	-0.2362	-0.07	lmktde_b4	0.8762	0.28
lmktde_prc5	0.5622	0.17	lmktde_b5	2.3366	0.74

VITA

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