Discussion of "Anomalous stock returns around internet firms’ earnings announcements"

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Abstract

Trueman, Wong, and Zhang (TWZ) investigate an apparent anomaly in the pricing of internet firms around their earnings announcements, which they attribute to price pressure. The discussion addresses three concerns. The paper is unusual in choosing an event (earnings announcements) that does not appear to have an obvious non-information-related reason for triggering unjustified changes in demand for the firm’s shares. Relatedly, there are limitations to the tests made of the price pressure hypothesis. Finally, the discussion elaborates on TWZ’s brief mention of the difficulties with implementing a profitable trading strategy based on the stock return pattern they document.

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1. Introduction

The study by Trueman, Wong, and Zhang (TWZ) documents an apparent anomaly in the pricing of internet firms around their earnings announcements during a 32-month period. TWZ find that stock prices of internet firms tend to rise during the 5 days prior to the earnings announcement, only to reverse this pattern in the 5 days following the announcement. They then consider several potential explanations for the observed price pattern and conclude that the only one that receives at least some support is that of price pressure. TWZ’s price pressure explanation is that an
unjustifiably high level of investor optimism and share demand (relative to a firm’s expected future performance) boosts prices in the days before an earnings announcement, and an abating of the unjustified demand causes the subsequent price reversal.

The TWZ paper has the potential to contribute to the large body of literature that documents price patterns that appear inconsistent with market efficiency. Because this literature has grown so large, however, it has become increasingly difficult to make an incremental contribution to it. TWZ do appear to document an anomalous stock return pattern around internet firms’ earnings announcements, consistent with some irrationality in the pricing of internet stocks during January, 1998–August, 2000. It is not clear, however, whether the price pressure explanation they offer tells us any more than the fact that there are more buyer-initiated trades when the stock price is rising and more seller-initiated trades when it is falling. Other explanations are quickly dismissed, and we are left wondering what (if anything) the documented pricing pattern means and why it is connected with earnings announcements (even though TWZ claim it has nothing to do with accounting information). The paper thus presents an intriguing apparent anomaly, but is unable to make much progress in explaining it.

The remaining discussion addresses three issues. Section 2 explains why it is unusual to examine the price pressure explanation in the context of pricing surrounding earnings announcements. Section 3 addresses the related issue of the limitations of the tests offered by TWZ of the price pressure hypothesis. Section 4 discusses difficulties with implementing a profitable trading strategy based on the documented stock return pattern. Concluding remarks are offered in Section 5.

2. Contrasting TWZ’s price pressure explanation with previous tests of price pressure

Price pressure hypotheses have been examined in numerous papers dating back at least to Scholes (1972) and Kraus and Stoll (1972). A key difference between the previous investigations of price pressure and the TWZ study, however, is that prior work generally specifies why “unjustified” demand changes are triggered by the event of interest. For example, listing in the S&P 500 creates additional demand for the newly listed company’s shares by index funds, which Harris and Gurel (1986) find leads to price pressure. Others have studied the impact on price of large stock sales (through secondary distributions, block trades, or seasoned security offerings) to test whether there is an unjustified drop in demand for the shares when a large block of supply is made available. TWZ posit that unjustified demand for an internet firm’s shares arises in the days prior to its earnings announcement, yet they offer no rationale for why the demand would arise.

1 Evidence inconsistent with the efficient market hypothesis actually considerably predates the hypothesis itself, going back at least to the Cowles and Jones (1937) finding that portfolio returns have strongly predictable components in that daily, weekly, and monthly returns are strongly positively autocorrelated.
Why is the lack of a rationale of concern? Because different reasons suggest different testing strategies for assessing price pressure. If a forthcoming earnings announcement for an internet firm during January, 1998–August, 2000 is generally associated with positive information about the firm’s stock price prospects, the effect of the information on price must be separated from any price pressure effect. Alternatively, testing and interpretation are easier if the approach of an earnings announcement is unlikely to convey new information to the market.

TWZ are aware of this issue and offer support for the view that the approach of an earnings announcement date conveys no information to the market. They show that the earnings and revenue surprises explain very little of the stock return behavior surrounding the earnings announcement. They also find that the pre-announcement abnormal difference between buyer-initiated trades and seller-initiated trades (the abnormal order imbalance) is not significantly correlated with the earnings or revenue surprises. Finally, they argue that it is unlikely that information about a small probability of a large positive earnings (or revenue) surprise is conveyed in the days prior to the earnings announcement. These results cast doubt on the possibility that positive information about the firm’s stock price prospects is being conveyed in the days prior to the earnings announcements, but there are several reasons why the possibility cannot be dismissed.

First, a concern with the information explanation tests is that the inferences from these tests are based on their inability to reject the null. Obviously the absence of evidence is not evidence of absence, and the non-results could arise if the surprise variables are measured with substantial error. Measurement error biases the coefficient estimates on the surprise variables toward zero and could explain their insignificance. In an attempt to reduce the error in measuring surprise the paper uses only forecasts issued within 45 days of the quarter’s end, but this requirement results in consensus analyst forecasts being based on two or fewer analysts in 53% (84%) of the consensus earnings (revenue) forecasts. Consistent with a substantial portion of the forecasts measuring expectations as of day -6 with considerable error, the reported earnings response coefficients are below 0.4 on days other than day 0, whereas they have generally been between one and two in most prior studies using short event windows. Revenue surprise is also likely measured with considerable error. TWZ acknowledge this concern, which is consistent with the conclusion in their own prior paper that “analysts almost always underestimate the revenues of internet firms” (Trueman et al., 2001).

Finally, earnings announcements often contain potentially price-relevant information about items other than earnings and revenues. It is possible that positive information not completely correlated with earnings or revenue surprise is being conveyed in the days prior to the earnings announcements. This possibility also suggests a broader consideration is needed of the “very small chance of a large surprise” explanation briefly considered by TWZ just prior to their concluding section. Rather than focusing only on the probability of large earnings surprises, this explanation really only requires that internet stocks’ pre-announcement prices incorporate a very small likelihood of large, positive, price-relevant surprise of any kind. Earnings surprises are the natural information events to focus on for earnings
announcements, but the possibility that the days prior to these announcements convey positive information about the announcing internet firm’s stock price cannot be completely dismissed.

3. Limitations of the tests of the price pressure hypothesis

The price pressure explanation supported by TWZ relies on the observation that most trades take place when one side of the transaction (the buyer or seller) demands immediate trade execution (Lee and Ready, 1991). The paper therefore makes use of an abnormal order imbalance (OI) measure to capture the difference between buyer-initiated trades and seller-initiated trades. A concern with the OI measure used is that trades occurring inside the spread have not been removed. Some of the past studies using an OI measure as a proxy for price pressure have removed the (roughly 20–30% of) trades occurring inside the spread because it is difficult to argue that such trades exert significant price pressure (see, e.g., Blume et al., 1989). Justification for such removals emerges from the Ellis et al. (2000) finding that only about 60% of a sample of 1996–97 NASDAQ trades occurring inside the spread are correctly classified by the tick rule. Finucane (2000) reports a better success rate using a sample of 1990–91 NYSE trades. Contrary to what is typically assumed, however, he also notes that nearly one-fourth of all trades do not occur as the result of the arrival of market orders. Such trades cannot be unambiguously classified as buys or sells by any classification algorithm.

Conference participants noted the possibility that non-earnings disclosures made around the time of the earnings announcement could influence the results. As noted in their third footnote, TWZ are able to dismiss this possibility with respect to industry-wide news. Concerns remain, however, with regard to firm-specific news. Hoskin et al. (1986) and Thompson et al. (1987) provide evidence that non-earnings disclosures are often made around the time of earnings announcements. In addition, Brown and Kim (1993) show that small firms’ non-earnings disclosures, on average, are associated with significant stock price increases. Linking these two sets of results, Brown and Kim go on to show that the Chari et al. (1988) finding of an abnormal price run-up preceding on-time earnings announcements of small firms is only present for the observations with “contaminating” non-earnings news made from 2 days prior through 1 day following the earnings announcement. Although TWZ’s anomaly differs from that of Chari et al. because of its larger magnitude and its post-announcement reversal, non-earnings disclosures made by internet firms in the period surrounding the earnings announcement could be influencing the results.

It is also worthwhile to elaborate on TWZ’s discussion of the distinction between necessary and sufficient conditions for supporting their price pressure hypothesis. They note that they document two necessary conditions: (1) an abnormally high ratio of buyer-initiated to seller-initiated trades in the days preceding an earnings announcement, and (2) a positive association between the pre-announcement price run-up and the magnitude of the abnormal OI. They also admit that these findings are not sufficient for the price pressure hypothesis because it is natural for price
increases to be accompanied by an abnormally large ratio of buyers to sellers regardless of the reason for the price increase. To reinforce their inference, TWZ show that the return pattern they document is attenuated for earnings announcements that occur more than 6 months after the IPO (the length of the normal share lockup period). Thus, the issue arises of what else the paper could have done in an attempt to further support the price pressure conclusion.

One suggestion made by Conference participants was to simply provide more distributional data about the sample’s return results. For example, the careful reader cannot ascertain whether results such as those in Table 3 are driven by a small portion of the sample. The other major suggestion made was pursued by the authors—namely to provide the correlation between the size of the pre-announcement positive abnormal returns and that of the post-announcement negative returns. The paper now notes that this correlation is almost 11%. Although significantly greater than zero, the correlation is much smaller than the levels documented in prior price pressure papers (on the order of 60%). Moreover, to the extent that information-driven price reversals also tend to produce a non-zero correlation, it is questionable whether the null hypothesis should be of a zero correlation.

TWZ motivate the possibility of price pressure by noting that the trading of internet stocks during their sample period was characterized by a relatively large demand for shares from short-term retail investors, especially momentum traders. This motivation suggests testing whether abnormal returns and trading volume around the earnings announcements are driven by noise trading from naive investors. For example, Liang (1999) tests a similar conjecture by examining whether relative bid–ask spreads of the stocks of interest are smaller on the days of the announcements he studies. He finds that they are, consistent with market makers believing they face less informed traders on the announcement day.

Finally, while the anomalous return behavior of internet stocks around earnings announcements does not appear to merely reflect the unusual pre-earnings-announcement price behavior noted in prior studies, it is less clear how this “internet earnings announcement” anomaly ties in to the myriad of anomalies to market efficiency already in the literature. The paper’s findings appear to be related to Lee’s (1992) result that small trades display an unexplained tendency toward buys during earnings announcement periods irrespective of the news in the announcement, but the link is not pursued. The return reversals documented by TWZ seem fit in with prior “contrarian strategy” anomaly findings, yet the paper does not explain how some of its tests help to address concerns about testing for contrarian anomalies.2

### 4. Difficulties with using the paper’s results to implement a profitable trading strategy

In the Conference version of the paper, TWZ presented evidence of what appeared to be a persistently profitable (before transaction costs) trading strategy within their

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2 For example, Lo and MacKinlay (1990) show that cross-predictability of stocks within a portfolio is a major source of what other researchers have labeled as “contrarian” profits.
January, 1998–August, 2000 sample period. That part of the paper has been eliminated, and the published version provides (in its footnote 12) some warnings about why it may be difficult to implement a profitable trading strategy based on the anomalous return pattern documented. These warnings warrant further elaboration, which this section provides.

The fact that the short “internet boom” period examined appears to be a highly unusual one does not mean that interesting insights cannot be gained from examining it. The exceptional nature of this time frame does, however, seem to preclude researchers from gaining structural insights about trading rules that are likely to apply outside of the peculiar time-frame examined. In other words, the fact that the trading strategy is both derived and tested using the same data creates the problem of ex post, or data snooping, bias.3

Another concern with implementing a trading strategy is the issue of how difficult it is to execute trades at the prevailing quote. The paper notes that it is more realistic to assume end-of-day buy orders are filled at the closing ask price and beginning-of-day sell orders are filled at the opening bid price. Even making such a “bid–ask” adjustment may be insufficient when calculating potential trading rule returns because of the notion of “price improvement.” This term was coined by Petersen and Fialkowski (1994) to represent the difference between the execution price and the prevailing quote. Knez and Ready (1996) show that the expected price improvement for a market order depends mainly on the difference between quoted depth and order size, which they call “excess depth.” They find that the expected price improvement becomes negative as excess depth becomes negative and that negative price improvement is a particularly important concern for small firms because their quoted depths are low. Thus, although TWZ’s bid–ask adjustments are conservative with respect to incorporating the effect of quoted spreads, they may not be big enough with respect to the effective spreads of small firms.4 Adjusting for quoted spreads will tend to provide an insufficient adjustment for those firms for which the order sizes used to implement a trading strategy exceed the quoted depth.

The extent to which such negative “price improvement” in executing trades affects the profitability of a trading strategy points to a related concern. To realistically evaluate a proposed trading rule it is necessary to have some idea of how large the market orders used to execute the strategy will be. Recall that Knez and Ready (1996) showed that negative price improvement within the smallest quintile of NYSE firms is much worse for a $30,000 order size than it is for a $10,000 order. But to know how large an order size TWZ would actually use to implement their strategy, we need to know what the initial costs are for them to develop and thoroughly test the strategy (i.e., we need to know the fixed costs that need to be recovered).

3 For an examination of the extent to which data snooping biases lead to overstatement of within-period results see Lo and MacKinlay (1990).
4 Knez and Ready (1996) illustrate the extent to which effective spreads exceed quoted spreads for small firms. They document that mean (median) quoted spreads for the bottom quintile of NYSE firms are 5.45% (3.23%). In contrast, the mean (median) effective spreads for this quintile are 7.22% (3.29%) for a $10,000 order and 10.71% (5.02%) for a $30,000 order size.
Related to the concerns about the prices at which trades would actually be executed are a broader set of arguments about the limits to arbitrage. These arguments are that imperfect information and transaction costs impede arbitrage in two main ways. First, Merton (1987) argues that uncertainty over the economic nature of an apparent mispricing reduces arbitrage opportunities. Given the difficulty that TWZ have in identifying an explanation for the anomalous pricing behavior around internet firms’ earnings announcements, Merton’s concern appears to be applicable to their trading rule. Second, a number of papers have noted that arbitrageurs are exposed to fundamental and financial risks (see, e.g., Shleifer and Vishny, 1997). Fundamental risk arises if prices take a very long time to revert to their fundamental values. Given the quick reversal of prices around the earnings announcements this does not appear to be a concern with the TWZ trading rule.

Financial risk occurs when the cost to implement the arbitrage in the face of market frictions makes it unattractive given non-zero risk. Moreover, some market frictions may preclude implementation of the arbitrage strategy. With regard to TWZ’s trading strategy, the main friction to consider is likely short sale constraints. Given that TWZ’s portfolio of shorted stocks is being rebalanced at each day’s open, it is unlikely the SEC’s “uptick rule” (which precludes short selling on a downtick or zero-downtick) seriously reduces the ability to implement the short sales required by their trading rule. Several recent papers do, however, provide evidence of severe limits on the ability to either directly or synthetically short internet stocks during much of the period examined by TWZ (e.g., Ofek and Richardson, 2001; Mitchell et al., 2001; Lamont and Thaler, 2001). The consensus view in these papers is that the much greater level of short interest in internet stocks (versus old economy stocks) from early on in the internet boom resulted in it becoming increasingly difficult to accumulate additional short positions in internet stocks as the internet bull market progressed.

5. Conclusion

TWZ document an evident anomaly of considerable magnitude in the pricing of internet firms’ stocks around their earnings announcements for the January, 1998–August, 2000 period. The pattern found is rather captivating, yet difficult to explain. This discussion focused on the major concerns raised by the price pressure explanation offered, beginning with potential reasons why the price pattern found could be related to an information effect.

Limitations of the paper’s price pressure tests were also described. First, trades occurring inside the spread were not removed when measuring the imbalance

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5To be sold short, stocks are often borrowed in the equity lending market. Cash collateral is usually required for equity loans, with lenders returning part of the interest earned on the collateral in the form of a rebate rate. Because the rebate rate on cash collateral is less than the cash rate available elsewhere, the rebate rate effectively determines the opportunity cost of short-selling. These papers examine short interest and the rebate rate on shorts to provide at least indirect evidence of the difficulty in accumulating additional short positions in internet firms.
between buyer- and seller-initiated trades, although it is difficult to argue that such trades exert significant price pressure and their ability to be correctly classified by the tick rule has been questioned. Next, the possibility of the results being affected by non-earnings disclosures made around the earnings announcement was detailed. Finally, some additional testable implications of the price pressure explanation that were not pursued in the paper were outlined.

The paper goes to considerable trouble to document in rather convincing fashion a very unusual pricing pattern around internet firms’ earnings announcements. Serious effort is also expended on attempting to explain the pattern but, like much about the internet boom and bust, the endeavor seems to raise far more questions than it answers.

References


