Volume 22, Number 2 – June 2020
China Accounting and Finance Review
中 国 会 计 与 财 务 研 究
2020 年 6 月 第 22 卷 第 2 期

Immediate and Subsequent Market Responses to Earnings Announcements *

Zhipeng Yan,[1] Yan Zhao,[2] and Ming Fang[3]

Received 3rd of December 2019 Accepted 20th of April 2020

Abstract

This paper studies the relation between immediate market response to corporate earnings announcements and subsequent stock price movement. By adapting an information signal model from Holthausen and Verrecchia (1988), we develop a new measure—the immediate earnings response coefficient (IERC)—to capture immediate market response. We find that a smaller immediate market reaction to earnings surprise, or a lower IERC, leads to a larger subsequent market response. A trading strategy based on our findings can generate an average abnormal return of 5.21% per quarter.

***Keywords*:** Immediate Earnings Response Coefficient, Post-Earnings-Announcement Drifts
***JEL classification*:** G14, G11

* We thank Martin Walker, Runeet Kishore, Wayne Ferson, Ming Huang, Blake LeBaron, Laarni Bulan, Carol Osler, Jens Hilscher, Asokan Anandarajan, and George Hall and seminar participants at Brandeis University, Cornerstone Research, Wharton Research Data Service, the Midwest Financial Association 2007 Annual Meeting, and the Financial Management Association 2007 Annual Meeting for their helpful comments and suggestions. We accept full responsibility for any remaining errors.
[1] Martin Tuchman School of Management, New Jersey Institute of Technology, Newark, NJ 07102, USA. Email: zyan@njit.edu.
[2] Department of Economics and Business, City College of New York, New York, NY 10031, USA. Email: yzhao2@ccny.cuny.edu.
[3] Corresponding author. Martin Tuchman School of Management, New Jersey Institute of Technology, Newark, NJ 07102, USA. Email: mfang@njit.edu.

盈余公告的即期和后续市场反应

摘要

本文研究了市场对公司盈余公告的即期反应与后续股价波动之间的关系。通过改编 Holthausen and Verrecchia（1988）的信息信号模型，我们开发了一种新方法，“即期盈余反应系数（IERC）”，来捕捉即期市场反应。我们发现，如果市场对盈余不符預测的即期反应较小（即期盈余反应系数 IERC 较低），则后续的市场反应会更大。根据我们的发现进行交易的策略可以每季度平均产生 5.21％的超常收益。

关键词：即期盈余反应系数、盈余漂移

I. Introduction

In an efficient stock market, we would expect an immediate market response to unanticipated corporate earnings news and a negligible subsequent market response. However, researchers have documented that even after earnings are announced, stock prices continue to drift up for "good news" firms and down for "bad news" firms, a phenomenon known as post-earnings-announcement drift (refer to Kothari, 2001, for a literature review).

To the best of our knowledge, no existing research directly studies the relation between two sequential market reactions. A few studies investigate the relation indirectly, and their findings are inconclusive. In a two-period limited attention model, Hirshleifer *et al.* (2011) illustrate that the higher the fraction of investors who neglect earnings information, the weaker the average immediate reaction to a given earnings surprise and the stronger the post-earnings-announcement drift. Thus, subsequent market response is negatively linked to immediate market reaction through the force of inattentive investors. Empirically, Zhang (2008) finds that the earnings response coefficient (ERC) is significantly higher and the corresponding post-earnings-announcement drift is significantly lower for firm-quarters when analysts are responsive. Ng *et al.* (2008) illustrate that transaction costs constrain the informed trades that are necessary to incorporate earnings information into price. This implies weaker return responses at the time of the earnings announcement and higher subsequent returns drift for firms with higher transaction costs. However, the relation can also be positive. Chan *et al.* (1996) find that portfolios with higher earnings announcement returns generate substantially higher post-earnings-announcement drifts than portfolios with lower earnings announcement returns.

In this paper, we aim to fill the gap in the literature by directly investigating the relation between the two sequential market reactions. In order to do so, we utilise a new measure of immediate market response by adapting a single-period single-information signal model from Holthausen and Verrecchia (1988).

In theory, the ERC is an ideal measure of immediate market response because it incorporates information from both earnings surprises and stock market reaction. However, it cannot be used as an investment signal in practice due to the nature of the regression techniques used in estimating the response coefficient.

The ERC is commonly defined as the slope coefficient in a regression of the abnormal stock returns and unexpected earnings, either cross-sectionally or inter-temporally (Easton and Zmijewski, 1989; Teets and Wasley, 1996; Collins and Kothari, 1989; Kormendi and Lipe, 1987). If the ERC is estimated cross-sectionally, many stocks will share the same ERC. If the ERC is estimated from time-series regressions, each firm will have a firm-specific ERC. However, this firm-specific ERC will have little variation over time for the same firm. For instance, if we use previous 5-year quarterly data (20 quarters) to regress firm A's abnormal stock returns on its unexpected earnings, we can get an ERC for firm A in any quarter. But the

ERCs in any two adjacent quarters should be very similar to each other because 19 out of the 20 quarterly observations used in both regressions are exactly the same.

To alleviate the drawbacks of the ERC, we develop a new measure, the immediate earnings response coefficient (IERC). It is defined as the earnings announcement abnormal return (EAAR) scaled by the earnings surprise, the latter measured by analysts' forecast error divided by the stock price before the earnings announcement. Theoretically, we show that the IERC is equivalent to the traditional ERC widely used in the accounting literature. The advantage of the IERC over a regression-based ERC is that it can be computed immediately after an earnings announcement without a regression and is unique for any firm-quarter observation.

We illustrate that the relation between immediate and subsequent market responses is conditional on the sign of earnings news. We provide empirical evidence showing that immediate market response is inversely related to the magnitude of post-earnings-announcement drifts, contingent on the signs of earnings surprises and EAARs. We also design a new and easily implementable trading strategy that can generate an average abnormal return of 5.21% per quarter.

The remainder of the paper is organised as follows. Section II develops our measure of immediate market response. Section III explains the sample selection and methodology. Section IV presents the empirical findings. Section V discusses the robustness checks, and section VI concludes the paper.

II. Immediate Earnings Response Coefficient (IERC)

In this section, we develop a simple measure that can capture immediate stock market response to earnings signals. Following Teoh and Wong (1993), we adapt a single-period single information signal model from Holthausen and Verrecchia (1988).

At a pre-earnings-announcement date -1, the stock price of firm i is P_{-1}. At the earnings announcement date 0, the stock price is P_0. Assume the firm value, *v*, is unknown and follows a normal distribution with mean μ and variance σ^2. At date -1, the stock price is

$$P_{-1} = E[v] = \mu. \tag{1}$$

Let X be the earnings signal that is released at date 0 and assume that X signals the true value of the firm with a Gaussian white noise, ε, which has a normal distribution with mean zero and variance ω^2. Therefore, $x = v + \varepsilon$.

$$P_0 = E[v \mid x = X] = \mu + \frac{\sigma^2}{\sigma^2 + \omega^2}[X - \mu] \tag{2}$$

Therefore, the stock price response to the earnings announcement is

$$P_0 - P_{-1} = \frac{\sigma^2}{\sigma^2 + \omega^2}[X - \mu]. \tag{3}$$

The standard ERC from the accounting literature is $\frac{\sigma^2}{\sigma^2 + \omega^2}$. So far, our deduction is the same as that in Teoh and Wong (1993). If we divide both sides of equation (3) by stock price at date -1, P_{-1}, we can get a new measure—the IERC:

$$IERC = \frac{(P_0 - P_{-1}) / P_{-1}}{(X - \mu) / P_{-1}} = \frac{\sigma^2}{\sigma^2 + \omega^2} = ERC. \tag{4}$$

The numerator of $\frac{(P_0 - P_{-1}) / P_{-1}}{(X - \mu) / P_{-1}}$, $(P_0 - P_{-1}) / P_{-1}$ is the earnings announcement return. The denominator, $(X - \mu) / P_{-1}$, is a standard measure of earnings surprise (Teoh and Wong, 1993; Kormendi and Lipe, 1987). Thus, theoretically, the ERC of a firm is equal to its earnings announcement return divided by the earnings surprise—the IERC.[4] Empirically, the abnormal return over a 3-day window around the earnings announcement is a proxy for $(P_0 - P_{-1}) / P_{-1}$ in equation (4). In this case, the price at date -1, P_{-1}, is the closing stock price two trading days before the earnings announcement date (Johnson and Zhao, 2012).

The advantage of the IERC over the traditional ERC is that it can be computed immediately after an earnings announcement without a regression and is unique for each firm-quarter observation. The main drawback is that the IERC has no definition when earnings surprise is zero (the analyst forecast is right on target). In this case, the denominator of the IERC is zero. We will discuss this special case separately.

III. Methodology and Sample Selection

3.1 Construction of the IERC

According to equation (4), the IERC is defined as the ratio of the EAAR over the earnings surprise. Since this ratio can be negative, we take the absolute value of the ratio as our measure of the IERC.

$$IERC_{i,q} = \left| EAAR_{i,q} \Big/ EarningsSurprise_{i,q} \right|,$$

[4] Strong simplifying assumptions are made in the single information signal model. We abstract from some pertinent factors that would be incorporated in a more general model, such as the firm's riskiness, the degree of earnings persistence and predictability, and other time series characteristics. The same assumptions are seen in Teoh and Wong (1993) and Holthausen and Verrecchia (1988). We expect the basic results to hold in more general settings with multiple information signals.

$$EarningsSurprise_{i,q} = \frac{E_{i,q} - mean(E_{i,q})}{p_{i,-1}},$$

$$EAAR_{i,q} = \prod_{t=-1}^{t=+1}(1 + R_{i.t}) - \prod_{t=-1}^{t=+1}(1 + R_{b.t}). \quad (5)$$

$EarningsSurprise_{i,q}$ is the accounting earnings surprise for firm i in quarter q. It is measured as the difference between actual earnings per share ($E_{i,q}$) and expected earnings per share (EPS) divided by the stock price for firm i two trading days before the quarterly earnings announcement date ($P_{i,-1}$), where expected EPS is proxied by the mean analyst forecast of quarterly EPS (mean($E_{i,q}$)). This definition is the same as that in Imhoff and Lobo (1992). Our findings remain unchanged if the median analyst forecast of earnings is used. When $EarningsSurprise_{i,q}$ is equal to zero, our IERC measure is not defined. The analysis of this zero-surprise group is separated from other groups in the following sections.

$EAAR_{i,q}$ is the abnormal return for firm i in quarter q recorded over a 3-day window centred on the earnings announcement date. $R_{i,t}$ is the daily return for firm i in day t. $R_{b,t}$ is the daily value-weighted benchmark return on the Fama-French size and book-to-market equity ratio portfolio to which stock i belongs. The benchmark portfolios are constructed at the end of each June using the June market equity and NYSE breakpoints. All the benchmark returns and breakpoints are taken from Kenneth French's on-line data library.

Benchmark-adjusted post-earnings-announcement drifts are calculated in a similar manner to EAARs:

$$Drift_{i,n} = \prod_{t=2}^{t=n}(1 + R_{i.t}) - \prod_{t=2}^{t=n}(1 + R_{b.t}), \quad (6)$$

where $Drift_{i,n}$ [5] is for firm i from the second day to nth day after the earnings announcement.

3.2 Data and Stock Assignment

The mean/median analyst forecasts of quarterly EPS, earnings announcement dates, and actual realised EPS are taken from the summary statistics files of the Institutional Brokers Estimate System (I/B/E/S). To avoid using stale forecasts, variable values in the last I/B/E/S statistical period prior to the earnings announcement date are utilised. The earnings forecasts for the companies are matched with daily stock returns obtained from the Center for Research on Security Prices (CRSP). Financial statement data are obtained from the Compustat annual tape. Lastly, 13F institutional holdings data are obtained from the Thomson Reuters databases.

Our sample period covers 94 quarters, from the third quarter of 1985 through to the last quarter of 2008, and includes all the firms from the I/B/E/S. For each quarter, firms are

[5] Many firms in a few trading days and a few firms in many trading days have missing return values, mainly due to missing prices or not trading on the current exchange. We replace the missing values with concurrent benchmark portfolio returns.

grouped into five subsamples on the basis of the signs of earnings surprises and EAARs: (1) both earnings surprises and EAARs are positive; (2) both earnings surprises and EAARs are negative; (3) earnings surprises are positive and EAARs are negative; (4) earnings surprises are negative and EAARs are positive; (5) zero earnings surprises.

This feature of our research design is important since the signs of both earnings surprises and EAARs contain different pieces of valuable information. Skinner and Sloan (2002) find that growth stocks exhibit an asymmetrically large negative price response to negative earnings surprises. Doyle *et al.* (2006) find that firms with large positive earnings surprises experience large positive stock returns over the 3 years following the earnings announcement. In addition, this design can help us study an important empirical phenomenon that goes against conventional wisdom, namely that the stock price response is not always positively related to earnings surprise. For example, on 2 June 2011, Quiksilver Inc. (ZQK) and Oculus Innovative Sciences, Inc. (OCLS) announced first quarter earnings. Both companies beat analysts' mean estimates by 2 cents and the same 28.6%. However, the 3-day (1 June–3 June) stock return was 13.3% for ZQK and -15.3% for OCLS. Other information released around earnings announcement dates may lead to this 'wrong' market reaction (Liu and Thomas, 2000; Jegadeesh and Livnat, 2006). This is one of the reasons for the low explanatory power of earnings surprises for drifts (Kinney *et al.*, 2002).

For subsamples (1) through (4), the IERC is computed for every firm-quarter observation. Quintile breakpoints are then calculated by ranking the IERCs in the previous quarter to avoid look-ahead bias (IERC1 represents the lowest IERC quintile, and IERC5 represents the highest IERC quintile). Since the IERC does not exist when realised earnings equal expected earnings, in subsample (5), the zero-surprise firms are sorted into five quintiles by their 3-day EAARs in lieu of the IERC. The pattern of post-earnings-announcement drifts are then examined for every quintile within each subsample over the periods of 1 to 12 months after the earnings announcement, respectively.

3.3 Other Key Variables

To ascertain whether the relation between immediate (*IERC*) and subsequent market responses (*DRIFTS*) holds after controlling for transaction costs and investor sophistication, we perform a multivariate regression analysis. Following Mendenhall (2004), we use six explanatory variables to capture transaction costs and investor sophistication: recent price (*PRICE*), number of analysts (*ANUM*), recent trading volume (*VOLUME*), institutional holdings (*INST*), arbitrage risk (*ARBRISK*), and book-to-market equity ratio (*BM*).

$PRICE_i$ is the CRSP closing stock price 20 days prior to the earnings announcement. $ANUM_i$ is the number of analysts reporting quarterly forecasts to the I/B/E/S in the 90 days prior to the earnings announcement date. $VOLUME_i$ is the CRSP daily closing price times the CRSP daily shares traded averaged over day -270 to -21 relative to the announcement. $INST_i$ is the fraction of the firm's shares held by institutions that filed Form 13F with the SEC in the

calendar quarter prior to the announcement. $ARBRISK_i$ is one minus the squared correlation between the monthly return on firm i and the monthly return on the S&P 500 index for 60 months ending 1 month prior to the announcement. BM_i is the book-to-market equity ratio following the Fama and French (1992) definition.

The regression model is as follows:

$$DRIFTS_i^{3mth} = \alpha_0 + \alpha_1 IERC_i + \alpha_2 PRICE_i + \alpha_3 ANUM_i + \alpha_4 VOLUME_i + \alpha_5 INST_i + \alpha_6 ARBRISK_i + \alpha_7 BM_i + \varepsilon_i, \quad (7)$$

where $DRIFTS_i^{3mth}$ is the 3-month cumulative abnormal returns post earnings announcement for each firm i. $IERC_{i,,}$ and $EAAR_{i,}$ are as defined earlier in the paper. Since the stock price is normally negatively related to commissions, we expect a negative relation between $PRICE_i$ and post-earnings-announcement drifts. $ANUM_i$ is also a proxy for transaction costs and is expected to be negatively related to post-earnings-announcement drifts. We expect the dollar trading volume ($VOLUME_i$) to be negatively related to post-earnings-announcement drifts (Bhushan, 1994). It is expected that the drift should be smaller for firms with greater proportions of institutional investors; thus, a negative relation between post-earnings-announcement drifts and $INST_i$ is expected. Mendenhall (2004) shows that the drift is larger when the arbitrage risk ($ARBRISK_i$) is higher; therefore, we expect a positive relation between arbitrage risk and post-earnings-announcement drifts. All independent variables in this regression model are normalised.

IV. Empirical Rests and Results

4.1 Summary Statistics

Table 1 reports the summary statistics for the key variables. All the values are winsorised at 1% and 99% to reduce the influence of extreme values. There are 176,135 firm-quarter observations in our sample. The mean values of *IERC*, *ME*, and *BM* are 74.98, $2937 million, and 0.67, respectively, and the median values of these variables are 20.14, $419 million, and 0.54, respectively. The distributions of these variables are thus positively skewed. The distributions of *PRICE*, *VOLUME*, *ANUM*, and *INST* are generally comparable to those reported in Bartov *et al.* (2000) and Mendenhall (2004). *ARBRISK* is higher than that reported by Mendenhall (2004) since we measure the arbitrage risk differently. We use one minus the squared correlation between the monthly return on firms i and the monthly return on the S&P 500 index, whereas Mendenhall (2004) measures *ARBRISK* as the residual variance from a market model regression of the stock's monthly returns on the returns of the S&P 500 for the 48 months ending 1 month prior to the announcement.

Panel B reports the correlation matrix. The IERC, firm size, stock price level, number of analysts, trading volume, and institutional holdings are positively correlated with each other and negatively correlated with BM and the arbitrage risk. It seems that firms with bigger (in

absolute value) immediate market responses to earnings announcements are on average larger; have higher stock price levels and trading volumes; are followed by more financial analysts; and have higher levels of institutional shareholdings. They also have lower arbitrage risks and tend to be more growth oriented (lower BM).

To further illustrate the relationship between the IERC and the key variables, Panel C presents the mean values of the control variables in each quintile sorted by the IERC. The results are consistent with the correlation analysis. Firms in the lowest IERC quintile are three times smaller, 10 dollars cheaper, and less frequently traded. They are covered by three fewer analysts, associated with higher arbitrage risks, and have lower levels of institutional shareholdings and higher BM ratios than firms in the highest IERC quintile.

Table 1 Summary Statistics

Panel A and Panel B present the descriptive statistics and correlation matrix of the key variables, respectively. Panel C presents the portfolio characteristics of IERC-sorted portfolios. The IERC1 portfolio has the lowest IERC, and the IERC5 portfolio has the highest IERC. Panel C presents the time-series averages of these portfolio-level means. The sample period is from June 1985 to December 2008.
N: total number of firms-quarter observations. **ME:** market equity at the earnings announcement date, in million dollars. **EAARs:** 3-day earnings announcement abnormal returns. **ES:** earnings surprises. **IERC:** immediate earnings response coefficient. **PRICE:** the CRSP closing stock price 20 days prior to the earnings announcement. **ANUM:** the number of analysts reporting quarterly forecasts to the I/B/E/S in the 90 days prior to the earnings announcement date. **VOLUME:** the CRSP daily closing price times the CRSP daily shares traded averaged over day -270 to -21 relative to the announcement, in thousand dollars. **INST:** the fraction of the firm's shares held by institutions that filed Form 13F with the SEC in the calendar quarter prior to the announcement. **ARBRISK:** one minus the squared correlation between the monthly return on firm *i* and the monthly return on the S&P 500 index for 60 months ending 1 month prior to the announcement. **BM:** the book-to-market equity ratio following the Fama and French (1992) definition.

Panel A: Descriptive statistics

Variable	N	MEAN	MEDIAN	STD	MIN	MAX
ME	176135	2937	419	13355	1	524352
IERC	151278	74.98	20.14	159.4	0.07	1050.26
PRICE	176135	24.42	20.18	18.37	1.37	93.48
ANUM	176135	5.56	4	5.13	1	24
VOLUME	176135	407	97	954	2.2	6613
INST	175534	0.49	0.48	0.27	0.02	1
ARBRISK	163918	0.35	0.35	0.19	0.09	0.76
BM	176130	0.67	0.54	0.57	0.01	3.74

Panel B: Correlation matrix (Pearson correlations are shown above the diagonal with Spearman below)

NAME	IERC	ME	PRICE	ANUM	VOLUME	INST	ARBRISK	BM
IERC	1.00	0.09***	0.15***	0.15***	0.03***	0.13***	-0.02 ***	-0.12***
ME	0.10***	1.00	0.44***	0.58***	0.51***	0.17***	-0.19***	-0.13***
PRICE	0.00***	0.09***	1.00	0.45***	0.09***	0.36***	-0.22***	-0.15***
ANUM	0.19***	0.59***	0.02***	1.00	0.40***	0.45***	-0.29***	-0.20***
VOLUME	0.02***	0.51***	0.13***	0.42***	1.00	0.14***	-0.12***	-0.08***
INST	0.12***	0.17***	0.46***	0.43***	0.14***	1.00	-0.15***	-0.16***
ARBRISK	-0.08***	-0.19***	-0.22***	-0.28***	-0.12***	-0.15***	1.00	0.02***
BM	-0.15***	-0.13***	-0.15***	-0.20***	-0.08***	-0.16***	0.02***	1.00

Panel C: Control variables of IERC-sorted portfolios							
IERC_rank	**ME**	**BM**	**PRICE**	**ANUM**	**INST**	**VOLUME**	**ARBRISK**
1 (Low)	1368	0.82	19.72	4.14	0.43	352	0.36
2	1768	0.74	22.46	4.79	0.46	413	0.36
3	2124	0.68	24.53	5.35	0.48	464	0.35
4	2509	0.61	27.00	6.02	0.52	531	0.35
5 (High)	3284	0.54	30.08	7.01	0.56	612	0.34

Note: *** represents statistical significance at the 1% level.

4.2 Immediate and Subsequent Market Responses

Table 2 reports post-earnings-announcement drifts for the IERC portfolios in the five subsamples. Across all subsamples, firms with greater immediate market responses (higher IERCs) are bigger firms (in terms of market equity). Their quarterly earnings surprises (in absolute value) are smaller and their EAARs (in absolute value) are larger than those of firms with lower IERCs.

Table 2 IERC and Post-Earnings-Announcement Drifts

For every quarter between July 1985 and December 2008, five subsamples are formed according to different signs of earnings surprises and earnings announcement abnormal returns. Within each subsample, five quintile portfolios are formed in ascending order on the basis of the value of IERC. The values presented in the table are averages over all formation periods. **N:** the average number of firms in a quarter. **ME:** market equity at the earnings announcement date, in million dollars. **EAARs**: 3-day earnings announcement abnormal returns. **ES:** earnings surprises. **IERC:** immediate earnings response coefficient. **1mth–12mth:** post-earnings-announcement drifts in **1, 2, 3, 6, 9, and 12 months.**

Rank	N	ME	EAARs (%)	ES (%)	IERC	1mth (%)	2mth (%)	3mth (%)	6mth (%)	9mth (%)	1year (%)
Panel A: ES>0 & EAARs>0											
IERC1	129	1,518	2.61	1.10	2.70	**0.91**	**1.51**	**2.79**	**4.81**	**7.39**	**10.05**
IERC2	129	1,974	4.26	0.42	11.33	0.93	1.46	2.09	2.71	3.28	4.28
IERC3	129	2,277	5.45	0.21	28.67	1.06	1.53	1.96	2.19	2.63	3.05
IERC4	129	2,521	6.54	0.11	69.14	1.32	1.55	1.71	2.40	2.91	3.66
IERC5	129	3,672	8.03	0.04	304.79	0.74	0.99	1.42	1.87	2.02	2.42
Panel B: ES <0 & EAARs<0											
IERC1	102	786	-3.37	-4.56	0.93	**-0.98**	**-2.03**	**-2.42**	**-5.02**	**-5.59**	**-6.03**
IERC2	103	1,107	-4.56	-1.23	4.52	-0.78	-1.62	-1.95	-3.09	-4.16	-4.25
IERC3	103	1,360	-5.45	-0.48	12.86	-0.29	-1.25	-2.00	-2.54	-3.79	-3.93
IERC4	103	1,904	-6.22	-0.20	35.84	-0.15	-0.64	-1.13	-1.48	-2.00	-2.08
IERC5	103	3,008	-7.55	-0.06	228.43	-0.21	-0.26	-0.31	-0.24	-1.13	-2.05
Spread between ERC1 in Panel A and ERC1 in Panel B						**1.89*** **	**3.54*** **	**5.21*** **	**9.84*** **	**12.98*** **	**16.08*** **

Panel C: ES <0 & EAARs>0											
IERC1	64	961	2.56	-4.14	0.74	-1.55	-2.36	-2.89	-3.92	-4.85	-3.87
IERC2	65	1,124	3.65	-1.13	3.94	-0.79	-1.32	-1.87	-1.91	-3.19	-3.11
IERC3	65	1,596	4.20	-0.42	12.00	-0.37	-0.84	-0.82	-1.18	-1.85	-1.27
IERC4	65	1,948	5.03	-0.17	36.73	-0.14	-0.30	-0.78	-0.91	-0.49	0.12
IERC5	64	2,867	6.53	-0.05	253.63	0.23	0.30	0.66	2.31	3.59	5.18
Panel D: ES >0 & EAARs <0											
IERC1	83	1,503	-1.80	1.18	1.72	0.22	0.5	0.83	2.81	4.16	5.59
IERC2	84	2,011	-2.75	0.38	8.22	0.33	0.4	0.44	1.21	1.23	2.07
IERC3	84	2,283	-3.58	0.18	22.66	0.82	0.78	1.17	1.41	1.92	1.95
IERC4	84	2,770	-4.59	0.09	61.53	0.47	0.66	1.11	1.04	0.79	1.12
IERC5	84	3,672	-6.71	0.03	312.83	0.58	0.7	0.87	1.18	1.38	0.83
Panel E: ES =0											
EAAR1	48	1,746	-8.82			-0.10	-1.49	-1.47	-1.88	-3.58	-4.33
EAAR2	49	2,910	-2.61			0.05	-0.49	-0.83	-0.86	-1.00	-0.99
EAAR3	49	3,129	-0.25			0.22	0.07	-0.34	-0.58	-1.25	-0.86
EAAR4	49	2,925	2.14			-0.03	-0.29	-0.26	-0.73	-1.12	-1.54
EAAR5	48	1,903	8.13			0.09	-0.39	-0.22	-0.30	-0.43	-0.87

Note: *, **, and *** represent statistical significance at the 10%, 5%, and 1% levels, respectively.

When earnings news is good (Panel A and Panel D), stocks with smaller IERCs have larger (more positive) post-earnings-announcement drifts. In Panel A, when both earnings surprises and EAARs are positive, the drifts of the firms with the smallest immediate market responses (IERC1) over 3 months, 6 months, and 9 months post earnings announcements are respectively 2.79%, 4.81%, and 7.39%, whereas those for firms with the biggest immediate market responses (IERC5) are about 1.42%, 1.87%, and 2.02% respectively. The differences in drifts between these two groups of firms are significant at the 1% level.

When earnings news is bad (Panel B and Panel C), stocks with lower IERCs also have larger (more negative) drifts. For instance, in Panel B, when both signs are negative, the negative drifts of firms with the smallest immediate market responses (IERC1) are significantly larger than those of firms with the biggest immediate market responses (IERC5).

We can easily design a profitable trading strategy based on our findings in panels A and B. Investors can take a long position in the IERC1 portfolio when both earnings surprises and EAARs are positive and a short position in the IERC1 portfolio when both are negative. Such a strategy can generate 5.21% cumulative abnormal returns over the 3-month period following the earnings announcements. In practice, since not all firms announce quarterly earnings on the same day, investors need to monitor earnings announcements closely and balance their portfolios dynamically.

When earnings surprises and EAARs move in opposite directions (Panels C and D), most

drifts are smaller in magnitude and have the same sign as the earnings surprises across all stock quintiles. This is consistent with Johnson and Zhao (2012), who find that "contrarian stocks" have a quite muted drift.

When analysts are right on target, there is no earnings surprise and the IERC is not defined. We group these firms into five quintiles according to their EAARs, and the empirical findings are summarised in Panel E of Table 2. On average, this group of firms has negative post-earnings-announcement drifts. Burgstahler and Eames (2006) provide empirical evidence of both (1) upward management of reported earnings and (2) downward 'management' of analysts' forecasts to achieve zero and small positive earnings surprises. However, the subsequent negative market responses indicate that investors are not easily fooled.

Combining our findings in tables 1 and 2, we conclude that firms with smaller immediate market responses have larger subsequent market responses (in absolute values) across all panels.

4.3 Regression Analysis

A regression analysis is performed in this section to ascertain whether the relation between immediate and subsequent market responses holds after other factors are controlled for. For each of our four IERC subsamples, we run an OLS regression in equation (7) for every quarter between July 1985 and December 2008 and then calculate the time-series averages of the estimated coefficients. The regression results are presented in Table 3. In general, the IERC coefficients are significant across all subsamples after controlling for the six explanatory variables. Most control variables are not consistently significant across all subsamples, indicating the IERC trading strategies are not associated with high transaction costs, low sophisticated investors, or high arbitrage risks. When earnings news is good (Panels A and D), IERC is negatively associated with the 3-month post-earnings abnormal return: the lower the IERC, the larger (more positive) the drift. In contrast, when earnings news is bad (Panels B and C), the IERC is positively related to the 3-month drift. The drift is on average negative when earnings news is bad, indicating that a lower IERC also leads to larger (more negative) post-earnings-announcement drift.

The regression results are consistent with our findings in the previous section. Independent of the signs of earnings surprises and EAARs, immediate market response is negatively associated with subsequent market response.

Table 3 Regression Analysis

For every quarter between July 1985 and December 2008, four subsamples (Panels A, B, C, and D) are formed contingent on the signs of ES and EAARs. The dependent variable is the 3-month post-earnings-announcement drifts. **ES:** earnings surprises. **EAARs:** 3-day earnings announcement abnormal returns. **IERC:** immediate earnings response coefficient. **PRICE:** closing price at day -20. **ANUM:** the number of analysts providing quarterly earnings forecasts to the I/B/E/S in the 90 days prior to the announcement.

VOLUME: recent daily dollar trading volume averaged over days -270 through -21 relative to the announcement. **INST:** the fraction of the firm's shares held by institutions that file Form 13F with the SEC in the calendar quarter prior to the announcement. **ARBRISK:** one minus the squared correlation between the monthly return on firm j and the monthly return on the S&P 500 index for 60 months ending 1 month prior to the announcement. **BM:** book-to-market equity ratio. The sample period runs from the third quarter of 1985 through to the last quarter of 2008. All independent variables are normalised. T-statistics are reported in parentheses. All the statistics are calculated using the Fama-MacBeth (1973) method.

Dependent variable: 3-month drifts

	Panel A	**Panel B**	**Panel C**	**Panel D**
	ES >0 & EAARs>0	**ES <0 & EAARs<0**	**ES <0 & EAARs>0**	**ES >0 & EAARs<0**
Intercept	**0.0190832**	**-0.0170597**	**-0.0138587**	**0.0070888**
	(1.99*)**	**(-6.34***)**	**(-4.43***)**	**(2.10***)**
IERC	**-0.029598**	**0.004787**	**0.0098048**	**-0.00432174**
	(-4.64)**	**(4.02**)**	**(5.68**)**	**(-2.38***)**
PRICE	-1.2527695	-0.043320	-0.1978289	-0.1166410
	(-1.87)	(-0.35)	(-1.36)	(-1.13)
ANUM	-0.021663	**0.0044304**	0.0030109	-0.000410981
	(-2.6)	**(2.59***)**	(1.26)	(-0.21)
VOLUME	-0.0150591	-0.0048778	-0.0088411	-0.0111771
	(-0.26)	**(**-0.68**)**	(-0.97)	**(**-0.91**)**
INST	**-0.0201804**	0.000622193	0.0016936	-0.0029545
	(-2.17)**	(0.33)	**(**1.01**)**	**(**-1.40**)**
ARBRISK	-0.0100486	0.0027782	**0.0042755**	-0.00094007
	(-1.06)	**(**1.30**)**	**(1.76*)**	(-0.46)
BM	0.00072363	-0.000940301	**0.0045994**	-0.0010788
	(0.13**)**	(-0.67)	**(2.83***)**	(-0.68)

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

V. Robustness Checks

5.1 Using Median Analysts' Forecast to Estimate Earnings Surprises

In our main test, we use the mean analysts' forecast to estimate earnings surprises. In this section, we use the median analysts' forecast instead to observe whether the results still hold. Table 4 reports the results. All major conclusions remain unchanged. In particular, across all four subsamples, larger firms in terms of market equity are usually associated with smaller earnings surprises and higher EAARs (in absolute values), as well as higher IERC quintiles. The magnitude of the post-earnings-announcement drifts is similar to that of the portfolios formed on the mean analysts' forecasts.

5.2 Timing of the Portfolio Formation

The timing of the portfolio formation is very important for investors who intend to take advantage of 'market anomalies'. One practitioner reported that his company initiates trades within "30 seconds of the earnings announcement" (Battalio and Mendenhall, 2007, footnote

Table 4 Robustness Check – IERC Calculated Using Median Analyst Forecasts

For every quarter between July 1985 and December 2008, five subsamples are formed according to different signs of earnings surprises and earnings announcement abnormal returns. Within each subsample, five quintile portfolios are formed in ascending order on the basis of the value of IERC. The values presented in the table are averages over all formation periods. **N:** the average number of firms in a quarter. **ME:** market equity at the earnings announcement date, in million dollars. **EAARs**: 3-day earnings announcement abnormal returns. **ES:** earnings surprises calculated using median analyst forecasts. **IERC:** immediate earnings response coefficient. **1mth–12mth:** post-earnings-announcement drifts in **1, 2, 3, 6, 9, and 12 months.**

Rank	N	ME	EAARs (%)	ES (%)	IERC	1mth (%)	2mth (%)	3mth (%)	6mth (%)	9mth (%)	1year (%)
Panel A: ES>0 & EAARs>0											
IERC1	128	1,521	2.60	1.10	2.71	**0.91**	**1.53**	**2.83**	**4.81**	**7.17**	**9.95**
IERC2	129	1,996	4.28	0.42	11.40	0.89	1.44	2.10	2.74	3.34	4.48
IERC3	129	2,240	5.48	0.21	28.83	1.26	1.48	1.68	2.32	2.89	3.66
IERC4	129	2,567	6.48	0.11	69.61	1.07	1.50	1.99	2.15	2.62	2.88
IERC5	129	3,601	8.07	0.04	307.01	0.77	1.01	1.33	1.77	1.87	2.28
Panel B: ES <0 & EAARs<0											
IERC1	101	788	-3.39	-4.59	0.93	**-0.98**	**-2.01**	**-2.29**	**-4.92**	**-6.40**	**-5.85**
IERC2	102	1,123	-4.61	-1.24	4.54	-0.79	-1.66	-2.04	-2.99	-4.21	-4.19
IERC3	102	1,395	-5.44	-0.48	12.92	-0.31	-1.12	-1.86	-2.39	-3.33	-3.28
IERC4	102	1,851	-6.25	-0.20	36.55	-0.17	-0.74	-1.27	-1.52	-1.97	-2.01
IERC5	102	3,005	-7.52	-0.06	234.41	0.10	-0.32	-0.29	0.30	1.21	2.12
Spread between ERC1 in Panel A and ERC1 in Panel B						**1.89*** **	**3.55*** **	**5.12*** **	**9.73*** **	**13.57*** **	**15.80*** **
Panel C: ES <0 & EAARs >0											
IERC1	64	951	2.59	-4.17	0.74	-1.58	-2.36	-2.88	-3.86	-4.91	-4.01
IERC2	64	1,171	3.67	-1.14	3.95	-0.78	-1.30	-2.00	-1.75	-2.85	-2.45
IERC3	64	1,599	4.22	-0.41	12.23	-0.34	-0.78	-0.90	-1.25	-1.87	-1.26
IERC4	64	1,922	5.02	-0.17	37.45	-0.27	-0.42	-0.89	-0.84	-0.38	0.18
IERC5	64	2,959	6.45	-0.05	262.60	0.32	0.36	0.69	2.32	3.49	5.16
Panel D: ES >0 & EAARs <0											
IERC1	84	1,500	-1.80	1.18	1.74	0.22	0.5	0.89	2.66	3.83	5.32
IERC2	84	1,988	-2.72	0.38	8.25	0.39	0.54	0.53	1.38	1.54	2.06
IERC3	84	2,301	-3.60	0.18	22.92	0.78	0.64	1.01	1.31	1.84	1.98
IERC4	84	2,728	-4.58	0.08	62.76	0.5	0.68	1.1	0.99	0.76	1.06
IERC5	84	3,741	-6.71	0.03	318.36	0.57	0.61	0.62	0.96	1.04	0.47
Panel E: ES =0											
EAAR1	50	1,797	-8.82	0.00		-0.03	-1.61	-1.87	-2.15	-4.10	-4.88
EAAR2	50	2,915	-2.66	0.00		0.15	-0.16	-0.63	-1.13	-1.60	-1.58
EAAR3	50	3,070	-0.27	0.00		0.16	-0.02	-0.25	-0.56	-1.02	-1.05
EAAR4	50	2,928	2.09	0.00		0.15	-0.24	-0.21	-0.54	-0.86	-1.45
EAAR5	50	1,881	8.03	0.00		-0.03	-0.41	-0.24	-0.43	-0.22	-1.08

Note: *, **, and *** represent statistical significance at the 10%, 5%, and 1% levels, respectively.

2). As a sensitivity test, we form IERC portfolios on the sixth trading day. The findings are presented in Table 5. All major patterns remain the same. However, the magnitude of the post-earnings-announcement drifts for the portfolios formed on the sixth day is slightly smaller than the magnitude of the post-earnings-announcement drifts for the portfolios formed on the second day after earnings announcements.

Table 5 Robustness Check — Portfolio Formed on the Sixth Day after Earnings Announcement

For every quarter between July 1985 and December 2008, five subsamples are formed according to different signs of earnings surprises and earnings announcement abnormal returns. Within each subsample, five quintile portfolios are formed in ascending order on the basis of the value of IERC. The values presented in the table are averages over all formation periods. **N:** the average number of firms in a quarter. **ME:** market equity at the earnings announcement date, in million dollars. **BM:** book-to-market equity ratio. **EAARs:** 3-day earnings announcement abnormal returns. **ES:** earnings surprises. **IERC:** immediate earnings response coefficient. **1mth–12mth:** post-earnings-announcement drifts in **1, 2, 3, 6, 9, and 12 months.**

Rank	N	ME	EAARs (%)	ES (%)	IERC	1mth (%)	2mth (%)	3mth (%)	6mth (%)	9mth (%)	1year (%)
Panel A: ES>0 & EAARs>0											
IERC1	128	1,511	2.58	1.08	2.72	**1.06**	**1.75**	**2.28**	**5.13**	**6.70**	**9.21**
IERC2	129	1,963	4.21	0.41	11.37	0.82	1.36	1.97	2.57	3.05	4.16
IERC3	129	2,240	5.39	0.21	28.77	1.09	1.28	1.83	1.94	2.70	3.13
IERC4	129	2,489	6.51	0.11	69.46	0.94	1.29	1.85	1.80	2.35	2.79
IERC5	129	3,627	7.97	0.04	306.73	0.70	1.02	1.31	1.71	1.79	2.02
Panel B: ES <0 & EAARs<0											
IERC1	102	779	-3.31	-4.44	0.93	**-0.81**	**-1.85**	**-2.75**	**-4.02**	**-5.54**	**-6.07**
IERC2	103	1,095	-4.51	-1.21	4.53	-0.64	-1.38	-1.88	-3.55	-3.98	-4.32
IERC3	103	1,340	-5.38	-0.47	12.89	-0.26	-1.32	-1.78	-2.74	-3.92	-4.05
IERC4	103	1,878	-6.14	-0.20	35.96	-0.08	-0.76	-1.02	-1.46	-1.78	-1.83
IERC5	102	2,990	-7.47	-0.06	229.90	0.30	-0.27	-0.03	0.37	1.28	2.18
Spread between ERC1 in Panel A and ERC1 in Panel B						**1.87*** **	**3.60*** **	**5.03*** **	**9.15*** **	**12.23*** **	**15.28*** **
Panel C: ES <0 & EAARs >0											
IERC1	64	950	2.52	-4.02	0.74	-1.14	-1.95	-2.46	-3.76	-4.54	-3.53
IERC2	65	1,109	3.61	-1.11	3.95	-0.26	-0.94	-1.24	-1.87	-2.85	-2.74
IERC3	65	1,586	4.16	-0.41	12.05	-0.21	-0.55	-0.54	-1.05	-1.61	-1.23
IERC4	65	1,942	4.97	-0.16	36.90	0.04	-0.07	-0.28	-0.58	-0.21	0.35
IERC5	64	2,840	6.47	-0.05	255.56	0.37	0.57	0.94	2.53	3.98	5.47
Panel D: ES >0 & EAARs <0											
IERC1	83	1,490	-1.78	1.16	1.73	0.33	0.38	1.1	3.06	4.37	5.69
IERC2	84	2,008	-2.70	0.37	8.24	0.85	0.82	1.11	1.35	1.88	1.72
IERC3	84	2,261	-3.55	0.17	22.72	0.23	0.27	0.64	0.93	1.3	1.72
IERC4	84	2,741	-4.54	0.08	61.70	0.48	0.75	0.99	1.06	0.71	0.9
IERC5	84	3,641	-6.62	0.03	314.64	0.31	0.4	0.63	1.06	0.97	0.58

Panel E: ES =0										
EAAR1	48	1,746	-8.72	0.00	-0.02	-1.47	-1.51	-2.16	-3.72	-4.50
EAAR2	49	2,890	-2.58	0.00	0.20	-0.34	-0.73	-0.51	-0.66	-0.96
EAAR3	49	3,125	-0.25	0.00	0.12	-0.02	-0.07	-0.04	-1.09	-0.95
EAAR4	49	2,899	2.11	0.00	0.15	-0.29	-0.16	-0.63	-0.80	-1.47
EAAR5	48	1,897	8.07	0.00	0.08	-0.30	-0.09	-0.97	-0.42	-0.87

Note: *, **, and *** represent statistical significance at the 10%, 5%, and 1% levels, respectively.

5.3 Other Robustness Checks

Finally, we use 3-day EAARs (from day-2 to day+2) instead of 3-day EAARs and employ different benchmarks, including the S&P 500 index and Fama-French size portfolios, to compute cumulative abnormal returns. All the main results remain the same (unreported).

VI. Conclusion

Post-earnings-announcement drift, as one of the most prominent market anomalies, has been studied for decades. However, few studies have investigated the relation between this phenomenon and immediate market response to earnings announcements. Empirically, the ERC estimated from a regression can be employed as a proxy of immediate market response. Unfortunately, a regression-based response coefficient cannot be used in real-world investment. Motivated by Holthausen and Verrecchia (1988), we develop a new measure of immediate market response—the IERC—that is not only unique for any firm-quarter observation but can also capture information signalled by the earnings surprises and market reaction. We find that contingent on the signs of earnings surprises and EAARs, stocks with a smaller IERC are associated with larger subsequent market responses or larger post-earnings-announcement drifts. A trading strategy based on our findings can generate a quarterly abnormal return of about 5.21%.

There are many possible explanations for our finding. In general, investors' response to earnings surprise depends on the perceived credibility of the earnings report (Teoh and Wong, 1993). So, the initial underreaction and larger subsequent market response could be a sign that the market needs time to digest or verify the financial information reported by those firms due to a lack of transparency, poor earnings quality, or lack of visibility of those firms. Teoh and Wong (1993) find that the ERC is positively and significantly correlated with the auditor's reputation because an auditor's reputation lends credibility to the earnings report that he/she audits. On the other hand, attention from analysts and investors matter. Zhang (2008) finds that the ERC is significantly higher and the corresponding post-earnings-announcement drift is significantly lower for firm-quarters when analysts are responsive. Hirshleifer *et al.* (2011) suggest immediate reaction to a given earnings surprise is linked to the fraction of investors who neglect earnings information. Earnings announcements come out in clusters. We expect

clustered announcements to receive relatively less attention individually from investors and analysts, and therefore it would take longer for the market to absorb information to adjust stock prices.

Our contributions to the literature on the ERC and post-earnings-announcement-drift are twofold. First, on the basis of existing theory, we develop a new measure of immediate market response: the IERC. With this measure, we provide empirical evidence showing that immediate market response is negatively associated with the magnitude of subsequent market response. Second, the trading strategy discovered in our study is new and easily implementable.

The importance of ERC research arises mainly from the need to enhance the confidence of a firm's stakeholders in accounting information announcements, which help equity investors to make informed decisions. Research on the ERC is also useful to financial accounting standards setters and contributes to the broader question of the earnings-to-returns relationship. The IERC provides a measure for the ERC that is unique for any firm-quarter observation. It creates opportunities for future research in accounting on topics such as the determinants of market response to earnings, and the implications or consequences of the market's adequate or lack of response to earnings.

References

Bartov, E., Radhakrishnan, S., and Krinsky, I. (2000), 'Investor Sophistication and Patterns in Stock Returns after Earnings Announcements', *The Accounting Review* 75 (1): 43–63.

Battalio, R. H. and Mendenhall, R. R. (2007), 'Post-earnings announcement drift: Timing and liquidity costs', available at SSRN 937257.

Battalio, R. H. and Mendenhall, R. R. (2011), 'Post-Earnings Announcement Drift: Bounds on Profitability for the Marginal Investor', *The Financial Review* 46 (4): 513–539.

Bhushan, R. (1994), 'An Informational Efficiency Perspective on the Post-earnings Announcement Drift', *Journal of Accounting and Economics* 18 (1): 45–65.

Burgstahler, D. and Eames, M. (2006), 'Management of Earnings and Analysts Forecasts to Achieve Zero and Small Positive Earnings Surprises', *Journal of Business Finance & Accounting* 33 (5-6): 633–652.

Chan, L., Jegadeesh, C., and Lakonishok, J. (1996), 'Momentum Strategies', *The Journal of Finance* 51 (5): 1681–1713.

Collins, D. and Kothari, S. (1989), 'An Analysis of the Cross-sectional and Intertemporal

Determinants of Earnings Response Coefficients', *Journal of Accounting and Economics* 11 (2-3): 143–181.

Doyle, J., Lundholm, R. J., and Soliman, M. T. (2006), 'The Extreme Future Stock Returns Following I/B/E/S Earnings Surprises', *Journal of Accounting Research* 44 (5): 849–887.

Easton, P. D. and Zmijewski, M. E. (1989), 'Cross-Sectional Variation in the Stock Market Response to Accounting Earnings Announcements', *Journal of Accounting and Economics* 11 (2-3): 117–141.

Fama, E. and French, K. (1992), 'The Cross-Section of Expected Stock Returns', *The Journal of Finance* 47 (2): 427–465.

Fama, E. and MacBeth, J. (1973), 'Risk, Return, and Equilibrium: Empirical Tests', *Journal of. Political Economy* 81 (3): 607–636.

Hirshleifer, D., Lim, S. S., and Teoh, S. H. (2011), 'Limited Investor Attention and Stock Market Misreactions to Accounting Information', *The Review of Asset Pricing Studies* 1 (1): 35–73.

Holthausen, R. W. and Verrecchia, R. R. (1988), 'The Effect of Sequential Information Release on the Variance of Price Changes in an Intertemporal Multi-Asset Market', *Journal of Accounting Research* 26 (1): 82–106.

Imhoff, E. and Lobo, G. (1992), 'The effect of ex ante earnings uncertainty on earnings response coefficients', *The Accounting Review* 67 (2): 427–439.

Jegadeesh, N. and Livnat, J. (2006), 'Post-Earnings-Announcement Drift: The Role of Revenue Surprises', *Financial Analysts Journal* 62 (2): 22–34.

Johnson, W. B. and Zhao, R. (2012), 'Contrarian Share Price Reactions to Earnings Surprises', *Journal of Accounting, Auditing and Finance* 27 (2): 236–266.

Kinney, W., Burgstahler, D., and Martin, R. (2002), 'Earnings Surprise Materiality as Measured by Stock Returns', *Journal of Accounting Research* 40 (5): 1297–1329.

Kormendi, R. and Lipe, R. (1987), 'Earnings Innovations, Earnings Persistence and Stock Returns', *The Journal of Business* 60 (3): 323–345.

Kothari, S. P. (2001), 'Capital markets research in accounting', *Journal of Accounting and Economics* 31 (1-3): 105–231.

Liu, J. and Thomas, J. (2000), 'Stock Returns and Accounting Earnings', *Journal of Accounting Research* 38 (1): 71–101.

Mendenhall, R. (2004), 'Arbitrage Risk and Post-Earnings-Announcement Drift', *The Journal of Business* 77 (4): 875–894.

Ng, J., Rusticus, T., and Verdi, R. (2008), 'Implications of Transaction Costs for the Post-Earnings Announcement Drift', *Journal of Accounting Research* 46 (3): 661–696.

Skinner, D. and Sloan, R. (2002), 'Earnings Surprises, Growth Expectations, and Stock Returns or Don't Let an Earnings Torpedo Sink Your Portfolio', *Review of Accounting Studies* 7: 289–312.

Teets, W. R. and Wasley, C. E. (1996), 'Estimating Earnings Response Coefficients: Pooled versus Firm-Specific Models', *Journal of Accounting and Economics* 21 (3): 279–295.

Teoh, S. H. and Wong, T. J. (1993), 'Perceived Auditor Quality and the Earnings Response Coefficient', *The Accounting Review* 68 (3): 346–366.

Zhang, Y. (2008), 'Analyst responsiveness and the post-earnings-announcement drift', *Journal of Accounting and Economics* 46 (1): 201–215.