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Market reaction on earnings announcement information contents: Analysis from book-to-market

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Abstract
Purpose: This study examines the market's reaction to information content during earnings announcements from the viewpoint of changes in the book-to-market ratio.
Research methodology: This study used a quantitative approach and an event study methodology as the primary measurement. It applies a market model based on Indonesia's equity market daily stock returns to analyze the cumulative average abnormal returns in firms with upward/downward book-to-market value changes.
Results: The findings reveal that stock prices in Indonesia's stock equity grew significantly above the firms' book values, indicating that investors pay more attention to expected future returns than the accounting value. This study also reveals that changes in book value may cause more significant changes in market value, following the direction of information content. The study found that the market is more sensitive to bad news than to good news and noted a significant relationship between book-to-market and post-earnings announcement abnormal returns.
Limitations: This study did not cover the long-term impact of the long-horizon test. A long-horizon test may provide evidence of market efficiency from the long-term perspective. Accordingly, this study suggests an issue for future research.
Contribution: This study contributes to the literature by suggesting that testing market efficiency from the view of changes in book-to-market provides robust grounds to explain the market reaction to good or bad news information content.
Novelty: Our findings show that Rp. One adjustment in book value in the Indonesian stock market corresponds to an average value of Rp. 16.43 adjustment in market value. This result implies that book value changes can lead to more significant changes in the market value.
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1. Introduction

The information disclosed at earnings release may include either good or bad news in the stock market (Bildik, 2023; Supawat & Arnat, 2023; Yang & Yung, 2024). Various studies have analyzed this issue by exploring the relationship between reported net earnings and stock prices (Aqel, 2021; Arunrungsirilert, Sangiumvibool-Howell, & Kitticharoenrerk, 2022; Ayu & Supriana, 2021; Rahmawati & Hadian, 2022). These studies repeatedly show that the market reacts to the information disclosed in earnings announcements, causing stock prices to either rise or fall depending on the nature of the announcement information, whether positive or negative. Nevertheless, a market is also responsive to non-financial data (Monteiro et al., 2022) and frequently undervalues a firm's stated book

value at the time of the event. Investors prioritize stock growth as they anticipate it to outperform value stocks. As a result, market values often exceed book value. This dilemma arises due to the persistent discrepancy between the market value and book value of firms, with the former constantly surpassing the latter despite periodic announcements of book value.

This study examines the market's reaction to information content during earnings announcements from the viewpoint of changes in the book-to-market ratio. Book-to-market ratio represents the gap between accounting value and market value. A high market-to-book or low book-to-market ratio indicates that investors pay more attention to future earnings expectations than reported earnings announcements. Several studies have investigated the relationship between book-to-market value and stock prices. (Ball, Gerakos, Linnainmaa, & Nikolaev, 2020) suggest that book-to-market can predict future returns. Nugroho 2020) explains that a high book-to-market signal indicates poor stock earnings, while a low one indicates strong earnings. When an earnings announcement formally declares the firm's book value, investors rationally compare the market price to the reported book value, adjust the stock price following the book value changes, and an earnings announcement abnormal return is likely to occur. However, investors may view the report as a historical value rather than a growth opportunity and change in investors' required rates of return. Lev and Gu (2016) claimed that financial reports have become less valuable and irrelevant to capital market decisions. Furthermore, a market may neglect book value in stock pricing development due to bias and lag reasoning (E. Fama & French, 2021). This argument suggests that book value bias might occur because of the combined effects of accounting standards and the economic environment. Book value lags occur when book value recognizes unexpected future income over time rather than immediately, indicating that the book-to-market ratio is temporarily lower (higher) than its mean. These parameters can reduce investors' attention on the importance of book value in the valuation of firms and the basis of their investment strategy considerations.

The puzzle about this issue arises because even though firms periodically announce their book value, the market consistently puts a higher market value than the book value, which indicates that investors pay more attention to growth stocks as they expect to outperform value stocks. (Lev, 2000) reported that the average book-to-market value ratio for the S&P 500 index firms ranged from around 0.5 to 0.29, implying that investors paid 2.0 to 3.5 of the net assets worth stated in the book value. This ratio increased from 3.5 to 7.5 during the technology boom period from 1996 to 2000. Hulten and Hao (2008) made this more complicated by presenting more exciting puzzles. According to their tables, a $1 increase in the book value of equity increases market value by an expected $3.59. These facts imply that book value changes differ from changes in market value.

Similar to the above US market report, the Indonesian equity market statistical report of June 2018 documented a market-to-book value ratio of 2.65, which implies that investors had paid Rp. 2.65 for each rupture of the net assets stated in book value (IDX, 2019). In other words, the stock prices in Indonesia's equity market grew significantly above the firms' book values, indicating that investors in the market pay more attention to expected future returns than to accounting valuation. Another IDX report revealed an increase in book value of 0.44% from Q3 to Q4 of 2018, followed by an increase in the market value of 7.72% (IDX, 2019). This ratio implies an increase in Rp. A book value in the IDX market may lead to Rp. 16.43 of market value. This ratio is even larger than the (Hulten & Hao, 2008) finding, which reported that a $1 increase in the book value of equity increases market value by an expected $3.59 in the US market. This implies that changes in book value may cause more significant changes in market value. Therefore, this study examines how the IDX market identifies changes in book-to-market value, which indicates stock market mispricing, and relates these changes to market efficiency theory.

Based on the above rationale, this study assesses how the Indonesian equity market responds to earnings announcement information content proxied by the book-to-market ratio. This study contributes to the literature by suggesting that testing market efficiency from the view of changes in book-to-market provides robust grounds to explain the market reaction to good or bad news information content. This

study uses book-to-market value changes to proxy earnings announcement information content using upward changes as a proxy for good news and downward changes as a bad news indicator. This suggests that in addition to net earnings, this assessment also includes the changes in all equity accounts, current market value, and other valuation factors affecting price adjustments following earnings announcements. Therefore, upward changes in book-to-market ratio may be considered good news, and vice versa, downward as bad news.

2. Literature review

Various studies have evaluated market efficiency across many markets and circumstances for several decades (Ball and Brown, 1968; Fama et al., 1969; Polillo, 2020). Nevertheless, continuing empirical research is being conducted on various markets, viewpoints, and methodologies to address this issue. Researchers commonly measure market reactions to earnings announcements by quantifying the extent of abnormal returns (Afifah, Hasanah, & Irfany, 2023). Abnormal returns refer to the disparity between the actual and anticipated returns that arise before the release of earnings information or as a result of the unauthorized disclosure of information. An abnormal return is considered positive when the actual return exceeds the expected return, and negative when the expected return exceeds the actual return. Regardless of whether they are good or negative, abnormal returns might pique investors' interest in transactions during the announcement period, with the expectation of achieving financial gain or minimizing losses (Rikumahu, 2024).

Furthermore, in addition to analyzing abnormal returns, Ball and Brown (1968) elaborate on this issue by conducting a study using a sample of 261 companies from 1946 to 1966 on the New York Stock Exchange. They classified information content into two categories: increased earnings or positive changes (good news) and decreased earnings or negative changes (bad news). The report concluded that cumulative abnormal returns might continue to drift upward for positive earnings surprises and downward for negative earnings surprises for up to three months after the announcement. Similarly, (Mahmoudi, Shirkavand, & Salari, 2011) also report that earning increases induce a significant positive stock price reaction, whereas earning decreases bring about a significant adverse stock price reaction. Baek, Mohanty, and Glambosky (2020) suggest that abnormal returns are more reactive to negative earnings surprises than are positive returns. It aligns with the study of (Conrad, Cornell, & Landsman, 2002), who examined the stock market response to good or bad news by using the announcement of annual earnings from 1988 to 1998. Their study reports that markets react more to decreased net earnings. They also noted that the responses increased in larger firms.

This study suggests that book-to-market value changes provide a platform to proxy for earnings announcement content. It argues that in addition to net earnings, changes in other equity accounts and market value also determine price adjustments following earnings announcements. Earnings announcements provide good news concerning the earnings announcement content when the reported book-to-market value provides upward or positive book-to-market changes ($\delta BTM > 0$). In other words, the current book-to-market value as per the announced book-value times the current prices are higher than those reported in the previous quarter's announcement and prices. On the contrary, if the statement contained downward changes ($\delta BTM \leq 0$), the information content provided bad news to the market because the current book-to-market value included negative adjustments to the previous quarter's announcement. Ball and Brown (1968) assessed the upward/downward changes in BTM, indicating that cumulative abnormal returns continue to drift upward for positive earnings surprises and downward for negative earnings surprises.

Several studies assess the importance of book-to-market indicators in capital market decisions. (Hall 2024) argues that book-to-market value may capture shareholder value creation better than other measurements. Abdeljawad et al. (2024) suggest that this ratio is a major driver of investment decisions. Furthermore, studying market efficiency from this point of view is considered robust as according to (Mrad, Hamza, & Manita, 2024), this ratio may capture market mispricing. The study argues that stock prices may deviate further from their fundamentals, as indicated by a low book-to-market ratio. Ball et al. (2020) suggest using the book-to-market ratio as a predictor of market returns. It argues that the ratio

contains information about past earnings and is a good proxy for the underlying earnings yield. When an earnings announcement formally declares the firm's book value, investors rationally compare the market price to the reported book value, adjust the stock price following the book value changes, and an earnings announcement abnormal return is likely to occur. Similar to the report, Ali, Hwang, and Trombley (2003) provide consistent outcomes and relate them to the mispricing issue in stock prices. Brookfield, Boussabaine, and Su (2020) also stated that besides stock return predictors, book-to-market changes are associated with firms' risk behavior. Agreeing with the premise, (Kale, Kale, & Villupuram, 2024) also suggested that the book-to-market ratio is a financial distress proxy. However, despite the importance of book-to-market value as a predictor of stock returns and proxy of risk, these studies need to examine the book-to-market value effect during earnings announcement events to comprehensively investigate how a certain market considers this ratio to be significant information content.

Based on the above arguments, this study assesses the reaction of the Indonesian equity market to information content from the viewpoint of book-to-market value by testing the following hypothesis:
H_1: There is a positive cumulative abnormal return in firms with upward book-to-market value changes.
H_2: There is a negative cumulative abnormal return in firms with downward book-to-market value changes.
H_3: There is a significant relationship between the changes in book-to-market value and cumulative abnormal return.

3. Research methodology

This study used quantitative data and applied an event study as the primary measurement to answer the research questions. An event study is a statistical tool for empirical research in accounting and finance that analyzes market behavior during a particular event. In this case, it is an earnings announcement. This study investigates abnormal returns during earnings announcements using several parameters and tests their significance. It observes the parameters during the observation periods, compares them to the estimation periods, and concludes the outcomes.

3.1 Data

This study examined 621 sample firms from a population of 634 firms. It assesses financial statements for the year ending December 31, 2018, which are expected to be made available to the public in 2019. Indonesia's economy remained stable both before the COVID-19 outbreak and after the global financial crisis, allowing for a comprehensive examination of the behavior of the financial market. The study's official announcement dates are the specific submission dates published on the Internet and are treated as day 0. Furthermore, the present timeframe is compared to a broader estimation period ranging from 120 to 90 days before the announcement date.

3.2 Measuring changes in book-to-market

(E. F. Fama & French, 1992) suggest that individual stocks' book-to-market ratio (BTM) can explain cross-sectional stock return variation. They measure a firm's market value using stock price multiplied by outstanding shares. This study measures changes in book-to-market value (δBTM) by comparing book-to-market value on the announcement date (BTM_2) to the book-to-market value in estimation windows using the previous quarter earnings announcement (BTM_1).

$$\delta BTM = \frac{BTM_2 - BTM_1}{BTM_1} \quad (1)$$

Where:
δBTM is the change in the book-to-market value.
BTM_1 is the book-to-market value of the previous quarter announcement.

$$BTM_1 = \frac{TE_1}{Q_1 * \overline{P_{i,e}}} \quad (2)$$

Where:
TE_1 is the total equity announced in the previous quarter of earnings announcements.

Q_1 is the number of outstanding shares in the previous quarter;
$\overline{P_{i,e}}$ where is the average price in the event window.
P_{t-1} is the closing price on day -1.

BTM_2 is the book-to-market value on the announcement date, calculated based on the following formula.

$$BTM_2 = \frac{TE_2}{Q_2 * P_{t-1}} \quad (3)$$

Where:
TE_2 is total equity announced on announcement date.
Q_2 is the number of outstanding shares on the announcement date.
P_{t-1} is the closing price on day -1.

The announcement's information content provides good news when book-to-market value changes are positive (δBTM > 0). This type of change is an upward change in book-to-market value. In other words, the current book-to-market value as per announced book-value times the current prices are higher than those reported in the previous quarter's announcement and prices. On the contrary, if δBTM $\leq$ 0, the information content provides bad news to the market, as the current book-to-market value contains negative adjustments to the previous quarter's announcement. This type of change is a downward change in book-to-market value.

3.3 Measuring abnormal returns

This study investigates the significance of abnormal returns after earnings announcements using an event study market model. An event study is a statistical method employed in empirical research on accounting and finance to analyze market dynamics during a particular event. The standard approach to performing an event study entails evaluating the significance of abnormal returns by comparing the actual return during the event with the expected or normal return. The method examines and evaluates parameters during the observation periods, compares them with the estimation periods, and establishes the results.

The daily returns of a company's stock prices were calculated using the following formula:

$$R_{i,t} = \ln \frac{P_{i,t}}{P_{i,t-1}} \quad (4)$$

Where:
$R_{i,t}$ = daily return.
$P_{i,t}$ = closing price on day *t*
$P_{i,t-1}$ = closing price on day $t - 1$,

Then, abnormal returns are calculated using the following equation:

$$AR_{i,t} = R_{i,t} - (\alpha_i + \beta_i R_{mt}) \quad (5)$$

Where:
$AR_{i,t}$ = abnormal return;
$R_{i,t}$ = Daily stock returns;
R_{mt} = Daily market index returns
α_i = Intercept between firm and market returns in the estimation window
β_i = Slope of firm and market returns in the estimation window.

The study then computes the cumulative abnormal returns of stocks after determining the abnormal returns. The following formula calculates cumulative abnormal return (CAR) and total abnormal returns (AR) for firm stock prices during the event period.

$$CAR_{i,t} = \sum_{t=1}^{n} AR_{i,t} \quad (6)$$

Where:
$CAR_{i,t}$ = cumulative abnormal returns.
$AR_{i,t}$ = abnormal return.

The average abnormal returns on the observed days were calculated for the remaining studies. The following method is used to measure the average abnormal return (AARt) of the daily cross-sectional data for a particular event day:

$$AAR_t = \frac{1}{N}\sum_{t=1}^{m} AR_{i,t} \quad (7)$$

Where:
AAR_t = average abnormal return
$AR_{i,t}$ = abnormal return;
m = number of firms.

Finally, the following method is used to compute the cumulative average abnormal returns ($CAAR_m$) around the earnings releases.

$$CAAR_m = \sum_{t=1}^{n} AAR_t \quad (8)$$

Where:
$CAAR_m$ = cumulative average abnormal returns
AAR_t = average abnormal return
N = periods.

3.4 Univariate analysis to test H_1 and H_2

The study uses univariate analysis to test the significance of the cumulative abnormal return post-earnings announcement (CAR) for downward and upward changes in BTM. Using this test, the market model suggests employing multiple formulas to determine the significance of abnormal returns. **First,** the t-statistic was used to evaluate the abnormal return's (AR) significance level.

$$t_{AR} = \frac{AR_t}{\sigma(\mathrm{AR_{it}})} \quad (9)$$

Where:
t_{AR} = t-value for abnormal returns.
AR_t = abnormal return;
$\sigma(\mathrm{AR_{it}})$ is the standard deviation of AR in the estimation window.

Second, this study applies the t-statistic method to examine the significance of average abnormal return (AAR).

$$t_{AAR} = \frac{AAR_t}{\sigma(AAR_{it})} \quad (10)$$

Where:
t_{AAR} = t-value for average abnormal return
AAR_t = average abnormal return
$\sigma(A\mathrm{AR_{it}})$ where is the standard deviation of the AAR in the estimation window.

Third, using the t-statistic method, this study assessed the significance of cumulative abnormal return (CAR).

$$t_{CAR} = \frac{CAR_t}{\sigma(CAR_{it})} \quad (11)$$

Where:
t_{CAR} = t-value for abnormal returns.
CAR_t = abnormal return;
$\sigma(CAR_{it})$ is the standard deviation of CAR in the estimation window.

Fourth, this study used the t-test procedure, which measures the significance level of cumulative abnormal returns within a specific period, to investigate the significance of cumulative average abnormal returns (CAAR).

$$t_{CAAR} = \frac{CAAR_m}{\sigma(CAR_{it})/\sqrt{N}} \quad (12)$$

Where:
t_{CAAR} is the t-value of CAAR;
$CAAR_m$ where is the cumulative average abnormal return.
$\sigma(CAR_{it})$ where is the standard deviation of the CAAR estimation window.
where N is the number of observed days.

The confidence levels were 90%, 95%, and 99%, with corresponding acceptable errors of 10%, 5%, and 1%, respectively. The sample size will fall between the estimated population means of 1.645, 1.96, and 2.58 standard deviations, according to the 90%, 95%, and 99% confidence intervals (Lind et al., 2005). Therefore, when the absolute t-value is 2.58 or higher, a distribution is deemed abnormal at the 99% confidence level (Sig***). The distribution is abnormal at the 95% confidence level (Sig**) if the value falls between 1.96 and 2.58. The distribution was deemed abnormal at a 90% confidence level (Sig*) if the result fell between 1.645 and 1.96. A value of less than 1.645 indicates that the distribution is normal; therefore, the AR, CAR, or CAAR are insignificant.

3.5 Estimation model to test H_3

The study uses least-squares regression (OLS) to test H_3 and examines the significant relationship between changes in book-to-market value and cumulative abnormal returns (CAR). The study uses earnings per share *(EPS),* return on asset *(ROA)*, and debt-to-equity ratio *(DER)* as the control variables. The following model estimates the relationship between independent variables and the observed dependent variable:

Model:

$$CAR_{i,t} = \beta_0 + \beta_1 BTM + +\beta_7 EPS + \beta_8 Log(Size) + \beta_9 DER \quad (13)$$

Where:
$CAR_{i,t}$ = Cumulative abnormal returns during the post-earnings announcement periods
BTM = Changes in book-to-market value from Q_3 to Q_4 2018
EPS = earnings per share reported in Q_4 2018
Log(Size)= Natural log of total assets in Q_4, 2018
DER = Debt-to-equity ratio in Q_4 2018.

4. Results and discussions

4.1 Book-to-Market Changes in IDX Market

The study begins its findings by presenting Table 1, which reveals data from 621 out of the 634 sample firms in the IDX market. The data indicate that the total book value reported in the fourth quarter (Q4) and third quarter (Q3) of 2018 was Rp. 3,253,688,991,532,060 and Rp. 3,238,509,563,386,590, respectively. In contrast, the market value rose from Rp. 6,860,526,401,918,500 in Q3 to Rp. 7,389,857,608,117,510 in Q4. The data show that the book-to-market value ratio is 0.44 Q4 and 0.47

Q3 2018. To clarify, the market price-to-book value ratios for the fourth and third quarters of 2018 were 2.27 and 2.12, respectively. These ratios indicate that investors paid Rp during the specified period. 2.27 and Rp. 2.12 for every Rp. Book values, respectively. This observation corroborates Lev's earlier discovery (Lev, 2000) and the findings of Hulten and Hao (2008), who indicated that market values consistently exceed book value. The results indicate that stock prices in Indonesia's stock market have experienced substantial growth, significantly exceeding the book value of firms. These findings imply that investors prioritize anticipated future profits over accounting value.

The data provided in the table indicate a 0.47% increase in the overall book value in Q3 2018, resulting in a 7.72% expansion in market value in Q4 2018. This ratio indicates that Rp. 1 increase in book value in the IDX market is likely to lead to Rp. 16.43 an increase in market value. The overall magnitude of this ratio exceeds the findings of Hulten and Hao (2008), who discovered that a $1 increment in the book value of equity is linked to an estimated $3.59 increment in market value in the US market. These findings indicate that fluctuations in book value can lead to more significant changes in the IDX market value.

Table 1. Distribution of Book-to-Market Value in IDX

Description	Q4 2018 (Rp.)	Q3 2018 (Rp.)	Changes
Total book value	3,253,688,991,532,060	3,238,509,563,386,590	0.47%
Total market value	7,389,857,608,117,510	6,860,526,401,918,550	7.72%
Market-to-book	2.27	2.12	
Book-to-market	**44.03%**	**47.20%**	**-6.73%**

Source: Data processed by the researcher (2023)

The examination continues by presenting Table 2, which displays statistical data regarding book-to-market (δBTM) changes from the third to the fourth quarter of 2018. The table shows positive and negative fluctuations, which signify upward and downward changes in BTM. The figures indicate that 287 firms belong to Category I, representing 46.22% of the sample. In this category, δBTM experienced increasing movement, as seen by δBTM values greater than 0. The average δBTM value for this category is 22.88%. By contrast, 334 enterprises, accounting for 53.78% of the total, were classified under Category II. These firms demonstrated a decrease in δBTM, as evidenced by δBTM values below 0.

Table 2. Book-to-Market Value by Upward/Downward Changes

Cat	Changes	Description	No of firms	in %	Average Changes
I	**Upward**	δBTM > = 0	287	46.22%	22.88%
II	**Downward**	δBTM < 0	334	53.78%	-20.28%
	Total Firms		**621**	**100.00%**	

Source: Data processed by the researcher (2023)

4.2 Good news and bad news: Testing of hypothesis H_1 and H_2

Table 3 presents comparative figures of the AARs for firms with good and bad news in the window (0, +30). The AAR for good news recorded an abnormal return of 0.0036*** on the announcement date; however, the impact was insignificant, with a *t*-value of 1.36. Conversely, firms with bad news have significantly negative abnormal returns of -0.0080**, with a *t*-value of -3.69. These figures imply that the IDX market is more reactive to bad news than to good news. Figure 5.3 plots the movements of the AARs and displays the fluctuating trend from day 0 to day +30, indicating that the AARs of firms with bad news are more volatile than those with good news.

The table also shows that except on day +28, there was no significant AAR in firms with good news. The maximum AAR of 0.0050* was noted on day +28, whereas the minimum -0.0036 was on day +22. On an average, firms with good news recorded a positive return of 0.0008. The insignificant abnormal

returns on almost all investigated days imply that even though the AARs are moving in the same direction, the impact of good news does not create any abnormal returns during the post-earning announcement periods. However, firms with bad news showed different patterns. The table reports significant average abnormal returns on days 0, +2, +3, +4, +8, +9, +10, +12, +16, +18, +19, and +22, which indicates that the market reacts instantaneously to the decrease in book-to-market value and the influence remains up to several weeks. A maximum AAR of 0.0020 was noted on day +24, while a minimum of -0.107*** was observed on day +2. On average, firms with bad news have a negative return of 0.0031. This result indicates a significant response of the IDX to bad news, which causes stock returns to react in the same direction.

Table 3. AARs of Bad News versus Good News

Day	Good News			Bad News		
	AAR	t-value	Sig	AAR	t-value	Sig
0	0.0036	1.3586	No	(0.0080)	(3.6881)	Sig***
1	(0.0023)	(0.8847)	No	(0.0033)	(1.5118)	No
2	0.0013	0.4878	No	(0.0107)	(4.9575)	Sig***
3	(0.0002)	(0.0712)	No	(0.0063)	(2.9055)	Sig**
4	0.0006	0.2248	No	(0.0074)	(3.4292)	Sig***
5	0.0031	1.1744	No	(0.0014)	(0.6558)	No
6	0.0035	1.3388	No	(0.0030)	(1.3825)	No
7	0.0013	0.5051	No	(0.0018)	(0.8398)	No
8	0.0021	0.7876	No	(0.0043)	(2.0008)	Sig**
9	(0.0005)	(0.1760)	No	(0.0044)	(2.0194)	Sig**
10	(0.0032)	(1.2299)	No	(0.0045)	(2.0793)	Sig**
11	0.0025	0.9394	No	(0.0012)	(0.5782)	No
12	0.0034	1.3076	No	(0.0058)	(2.6781)	Sig**
13	(0.0013)	(0.4941)	No	(0.0008)	(0.3905)	No
14	(0.0005)	(0.1750)	No	(0.0031)	(1.4354)	No
15	(0.0021)	(0.7920)	No	(0.0007)	(0.3064)	No
16	0.0019	0.7351	No	(0.0043)	(1.9888)	Sig**
17	0.0004	0.1581	No	(0.0019)	(0.8611)	No
18	0.0048	1.8396	No	(0.0037)	(1.7266)	Sig*
19	0.0017	0.6538	No	(0.0038)	(1.7801)	Sig*
20	(0.0012)	(0.4409)	No	(0.0016)	(0.7626)	No
21	0.0033	1.2387	No	(0.0032)	(1.4925)	No
22	(0.0036)	(1.3855)	No	(0.0037)	(1.7075)	Sig*
23	0.0017	0.6541	No	(0.0005)	(0.2299)	No
24	(0.0027)	(1.0429)	No	0.0020	0.9395	No
25	(0.0009)	(0.3482)	No	(0.0000)	(0.0225)	No
26	0.0027	1.0273	No	(0.0021)	(0.9536)	No
27	(0.0008)	(0.2883)	No	(0.0023)	(1.0527)	No
28	0.0050	1.9043	Sig*	(0.0023)	(1.0655)	No
29	(0.0007)	(0.2575)	No	(0.0014)	(0.6391)	No
30	0.0003	0.1324	No	(0.0012)	(0.5638)	No
Max	**0.0050**			**0.0020**		
Min	**(0.0036)**			**(0.0107)**		
Avg	**0.0008**			**(0.0031)**		

Source: Data processed by the researcher (2023)

Notes:
AAR = Average earnings announcements.
* Significant at the 90% confidence level,
** Significant at the 95% confidence level,
*** Significant at the 99% confidence level.
Upward = 286 firms, downward= 335 firms.

Furthermore, the study includes Table 4, which provides a detailed analysis of the comparative effects of negative and positive news. The results present the cumulative average abnormal returns (CAAR) from 30 days before the announcement to 30 days following disclosure. Figure 1 illustrates the graph, highlighting the proximity between the CAAR of bad news and positive news before the release. According to market efficiency theory, the difference widens after the release date, showing that investors respond quickly to information in the earnings announcement. It focuses on monitoring fluctuations in book-to-market value, which indicate the informational content of positive or negative news. The disparity widens over broader timeframes, indicating that the reaction continues after the post-earnings-announcement drift concept for a reasonably long time.

The patterns above indicate that the CAAR of the IDX market reacts to the content conveyed during earnings announcements, whether positive or negative. Nevertheless, the response is noteworthy only in the case of negative news, as evidenced by the cumulative average abnormal returns of -0.0370***, -0.0550***, -0.0666***, and -0.0966***. The table shows that the abnormal returns for positive news are not statistically significant, with cumulative average abnormal returns of 0.0060, 0.0057, 0.0113, and 0.0234. The data indicate that the market is more responsive to negative news than positive news. This discovery aligns with Veronesi's (1999) findings, which yielded comparable conclusions while examining the correlation between market trends and investors' responses to company-specific news.

Table 4: CAARs of Bad News versus Good News

Window	Good News			Bad News		
	CAAR	T-Value	Sig.	CAAR	T-Value	Sig.
(-30,0)	-0.0110	-0.76		-0.0069	-0.58	
(-15,0)	-0.0105	-1.03		-0.0052	-0.62	
(-10,0)	-0.0066	-0.79		-0.0062	-0.91	
(-5,0)	-0.0020	-0.34		-0.0053	-1.10	
(5,0)	0.0060	1.02		-0.0370	-7.67	***
(10,0)	0.0057	0.68		-0.0550	-8.05	***
(15,0)	0.0113	1.11		-0.0666	-7.97	***
(30,0)	0.0234	1.62		-0.0966	-8.17	***

Source: Data processed by the researcher (2023)

Notes:
CAAR = Cumulative average earnings announcement.
* Significant at the 90% confidence level,
** Significant at the 95% confidence level,
*** Significant at the 99% confidence level.
This group consists of 286 firms.

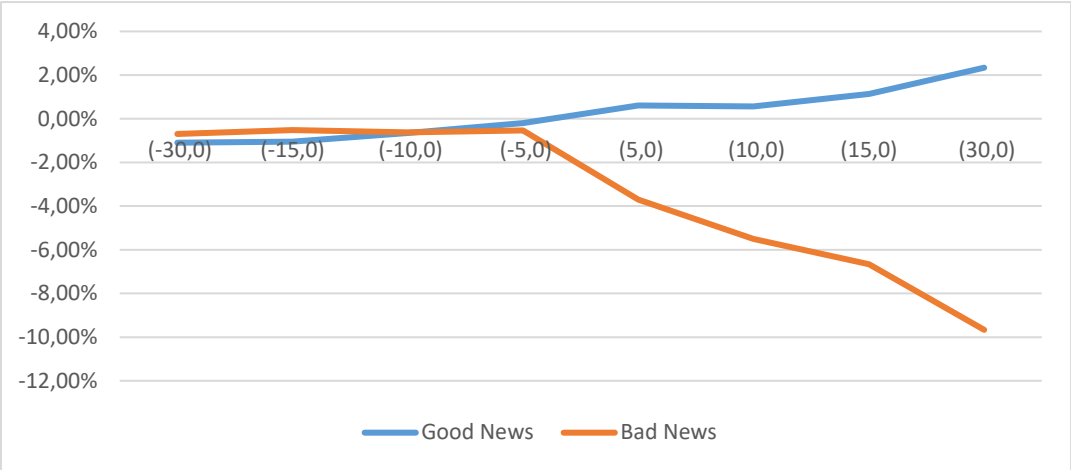

Figure 1. Cumulative Average Abnormal Returns (CAAR) of Good News vs. Bad News

The study continues by testing Hypotheses H_1 and H_2 to determine whether there is a statistically significant cumulative average abnormal return in firms with upward/downward changes in BTM. Significance was assessed using t-values, as shown in Table 4. The table indicates that the cumulative average abnormal returns of firms with good news (upward increases in BTM) are not statistically significant in all observed periods, namely, t = (0, +5), (0, +10), (0, +15), and (0, +30). However, these firms exhibited positive CAARs of 0.0060, 0.0057, 0.0113, and 0.0234, respectively. These data suggest that the IDX market does not immediately respond to upward increases in BTM and that the pattern consistently resembles a broader event window. Thus, this study rejects hypothesis H_3 and concludes that there is no statistically significant cumulative average abnormal return in firms' earnings announcements for firms with upward changes in BTM.

Nevertheless, the table displays different results for firms' CAARs when there are downward changes in BTM. Regression analysis reveals statistically significant negative cumulative average abnormal returns (CAARs) in the examined periods: t = (0, +5), (0, +10), (0, +15), and (0, +30). The corresponding coefficients are 0.0370***, 0.0550***, 0.0666***, and 0.0966***, respectively. These data suggest that the IDX market responds significantly to negative news in BTM. These responses were consistent over a wider period of time. Given that all event windows display a substantial t-value, the analysis does not reject H4 among enterprises experiencing downward trends in BTM. This study finds that firms with decreased book-to-market values experience a substantial negative cumulative average abnormal return.

4.3 Book-to-market value and earning announcement bbnormal return: Testing of Hypothesis H_4

Table 5.11 presents the regression of cumulative abnormal returns and book-to-market changes in the windows (0, +5), (0, +10, (0, +15), and (0, +30), with and without the control variable. The table shows a coefficient value of 0.3641* in the first week of the earnings announcement. The value increases to 0.4055** when the model includes the control variables EPS, log(Size), and DER, which increases the confidence level from 90% to 99%. The significance level of BTM increases to 99% in the larger windows of (0, +10), (0, +15), and (0, +30). Coefficient values of 0.4573***, 0.4087***, 0.5832***, and 0.4242***, 0.3838***, and 0.5731***, respectively, with and without the control variables. The figures indicate that book-to-market value changes significantly influence cumulative abnormal returns during the post-earnings announcement period, followed by a post-earning announcement drift up to day +30.

Table 5. CAR and Book-to-Market Value Changes

Window	C	BTM	EPS	Log (Size)	DER	R^2	F-Stat	D-W Stat
(0, 5)	-0.3125	0.3641*				0.0323	3.4177***	2.0347**

	-5.5145	0.4055**	-0.0144	2.0697	0.0088	0.0367	2.5811***	2.0415**
(0, 10)	-0.1793	0.4242***				0.0387	3.1244***	1.9742**
	-3.9209	0.4573***	-0.0034	1.4831	0.0154	0.0439	3.0987***	1.9820**
(0, 15)	-0.1149	0.3838***				0.0292	3.0823***	1.9661**
	-3.6450	0.4087***	-0.0022	1.3983*	0.0097	0.0354	2.4775***	1.9767**
(0, 30)	-0.0304	0.5731***				0.0608	6.6299***	2.0009*
	-2.0904	0.5832***	0.0003	0.8434	-0.0048	0.0639	4.6294***	2.0008**

Source: Data processed by the researcher (2023)

Notes:

Book-to-market changes coefficient, without the control variable,

Book-to-market changes coefficient, with the control variables.

* Significant at the 90% confidence level, ** Significant at the 95% confidence level,
*** Significant at the 99% confidence level.
Number of observations: 621

The study reveals a notable relationship between information content proxied by book-to-market value and the abnormal returns observed after earnings announcements. The analysis affirms that the stock market responds substantially to changes in book-to-market value, aligning with the information disclosed during earnings releases (Majid & Benazir, 2015). Thus, this study establishes a significant relationship between changes in book-to-market value and abnormal returns after earnings announcements and does not disprove H_3.

5. Conclusions

The analysis revealed a significant discrepancy between the market value and the reported book value, in which the stock prices of Indonesia's stock significantly exceeded its book value. This discovery suggests that investors in the Indonesian stock market pay more attention to expected future earnings than to the book value of assets. These findings also indicated that Rp. One adjustment in book value in the Indonesian stock market corresponds to an average of Rp. 16.43 adjustment in market value. The data suggest that changes in book value can lead to significant changes in market value.

This study provides evidence that the market responds positively to disclosed book-to-market value during earnings releases. This study discovered that the market is more responsive to negative than positive news, following the previous findings of Baek et al. (2020) and Conrad et al. (2002) when assessing net earnings as an information content proxy. A substantial correlation was also observed between the book-to-market ratio and abnormal returns after earnings announcements in firms with negative changes in BTM, but not in those with positive changes. The regression study indicates a statistically significant correlation between abnormal returns and book-to-market value, which serves as a proxy for the value of information content.

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