“Investor sentiment and earnings management: evidence from Korea”

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ARTICLE INFO	Sorah Park (2015). Investor sentiment and earnings management: evidence from Korea. *Investment Management and Financial Innovations*, *12*(4), 81-89
RELEASED ON	Tuesday, 15 December 2015
JOURNAL	"Investment Management and Financial Innovations"
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
0	0	0

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Investor sentiment and earnings management: evidence from Korea

Abstract

This paper examines whether earnings management varies with sentiment in the stock market. While many studies have focused on firm characteristics related to earnings management, this paper sheds light on the effect of aggregate investor sentiment on earnings management. The author identifies earnings management based on a firm's tendency to meet or beat earnings thresholds (e.g., analyst forecasts, last period's number, and zero earnings). Investor sentiment is measured by two alternative proxies: an index based on sentiment proxies suggested in recent work (Baker and Wurgler, 2007) and the level of the stock market (Conrad, Cornell and Landsman, 2002). Using a sample of firms listed on Korean Securities Market between 2003 and 2011, this study finds that a tendency of firms to meet or beat three earnings targets is negatively related to investor sentiment. This suggests that firms are more likely to engage in upward earnings management to meet analyst forecasts, to sustain recent performance, or to report positive profits during pessimistic sentiment periods than during optimistic periods. These findings may be of interest to investors and regulators, as these demonstrate that firms tend to inflate earnings to a greater extent in order to boost their stock prices during bad economic times.

Keywords: earnings management, meet-or-beat earnings thresholds, investor sentiment.
JEL Classification: M41, E32.

Introduction

This paper examines whether earnings management varies with investor sentiment. This question is important because the interaction between aggregate market condition and earnings management has received relatively less attention in the literature while most prior studies have focused on firm characteristics such as corporate governance and audit quality to study earnings management. I identify earnings management based on the tendency of firms to meet or beat earnings targets (e.g., analyst forecasts consensus, last period's number, and zero earnings). As suggested by prior research (Burgstahler and Dichev, 1997; Degeorge, Patel and Zeckhauser, 1999), a firm is suspected of earnings management as a means of meeting or beating earnings threshold if the surprise (i.e., actual earnings minus earnings threshold) is slightly above zero.

There is some evidence that suggests a negative relationship between market-wide investor sentiment and earnings management. First, Graham, Harvey and Rajgopal (2005) show the evidence from a survey of CFOs that firms tend to inflate earnings to a greater extent during the bad state of the economy since firms that report relatively strong earnings when the economy is down can boost their stock price by distinguishing themselves from other firms in the market. Second, behavioral theories on representativeness and confirmatory bias suggest that when investors are pessimistic, bad (good) earnings news will generate more negative (less positive) price shock in the stock market since 'investors overreact to the new information when it conforms to their prior beliefs and underreact when it contradicts the prior beliefs (Barberis and Thaler, 2003). Hence, management could be more inclined to meet or beat earnings targets during pessimistic periods in order to avoid negative shock in bad economic times.

The key issue in the investigation of my research question is the measurement of investor sentiment. The measures of investor sentiment are based on two different dimensions. First, I use an index that combines several sentiment proxies suggested in prior research (Baker and Wurgler, 2007; Kim and Byun, 2010). Second, I estimate the overall stock market level using the market price-to-earnings ratio (Conrad, Cornell and Landsman, 2002). The gap between the market P/E in the current month and the average market P/E over the previous 12 months is used as the investor sentiment proxy. Using two alternative proxies increases the confidence in the robustness of the results.

Based on a sample of firms listed on Korean Securities Market between 2003 and 2011, I find a negative relationship between the tendency of firms to meet or beat earnings benchmarks and investor sentiment measures. This suggests that firms are more likely to engage in upward earnings management to meet analyst forecasts, to sustain recent performance, or to report positive profits during pessimistic sentiment periods than during optimistic periods. In addition, this relationship stays significant when I control for time-varying firm characteristics. Taken collectively, I show that firms inflate earnings to a greater extent in order to boost their stock prices during the bad state of the economy.

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These findings have several contributions. First, while there is a voluminous research on earnings management, few papers (e.g., Cohen and Zarowin, 2007; Rajgopal, Shivakumar and Simpson, 2007) have focused on the effect of the market-wide condition on earnings management[1]. I shed light on the interaction between aggregate investor sentiment and a firm's tendency to meet or beat earnings thresholds in Korea. Second, the findings that upward earnings management is related to pessimistic investor sentiment have implications for Korea. Since Korea has gone through a fairly protracted recession in recent years, financial statements should be cautiously interpreted during economic downturns in order to fully understand the firm value.

The remainder of this paper is organized as follows. Section 1 reviews the related literature and develops hypothesis. Section 2 describes the methodology used in empirical analysis. Section 3 tests hypothesis, and Final Section concludes with implications of my findings.

1. Related literature and hypothesis development

1.1. Investor sentiment. Classical finance theory assumes that investors are rational and set the equity price at the present value of the expected future cash flows. Contrarily, behavioral finance research assumes that investors are subject to sentiment and thus stock prices are influenced by investor sentiment or psychology. Investor sentiment is defined as the degree of optimism or pessimism about stocks that is not justified by fundamental information (Baker and Wurgler, 2006, 2007).

Baker and Wurgler (2006, 2007) construct a comprehensive measure of investor sentiment by combining several imperfect measures that have been used as sentiment proxies in prior research: trading volume, dividend premium, closed-end fund discount, the number of initial price offerings (IPOs), the first-day returns on IPOs, and the equity share in new issues[2]. Baker and Wurgler (2007) find that the index is related to the cross-sections of stock returns.

1.2. Meeting-or-beating earnings benchmark. The main interest of this paper is the earnings management in order to meet or beat earnings benchmarks. Managers are motivated to avoid missing earnings thresholds, such as analyst forecasts, last period's earnings, and zero earnings. This behavior has been explained by psychological theories including human heuristics and prospect theory. First, human information processing is likely to have simple heuristics: positive or non-positive numbers. Thus, investors tend to categorize reported earnings based on the threshold of zero: profit or loss. These heuristics also could be the prior year's earnings and analyst forecast consensus. Hence, the reported earnings will be categorized into good news when meeting-or-beating earnings thresholds and bad news when missing these thresholds. Second, prospect theory (Kahneman and Tversky, 1979) suggests that investors' utility function at the reference point is S-shaped, thus negative earnings surprise hurts more than positive surprise feels good. Then, managers will be inclined to avoid missing the reference point. In doing so, they may manipulate earnings upward to meet or beat earnings thresholds.

Burgstahler and Dichev (1997) is one of the first studies on earnings management to avoid earnings decreases and losses. They show unusually low incidence of small earnings decreases (losses) and unusually high incidence of small earnings increases (profits). Companies tend to use cash flow from operations and changes in working capital to meet or beat earnings thresholds. Also, Degeorge, Patel and Zeckhauser (1999) identify three earnings thresholds that drive earnings management: (1) to report profits, (2) to sustain recent performance, and (3) to meet or exceed the analysts' consensus forecast. They find a big jump in density at these

[1] Cohen and Zarowin (2007) and Rajgopal, Shivakumar and Simpson (2007) examine the effect of the market-wide condition on earnings management based on U.S. data. Since investors are found to react more negatively to bad earnings news in good economic times (Conrad, Cornell and Landsman, 2002), firms may have more incentives to manage their earnings upward to avoid negative surprises in good times. Using the measure of the aggregate level of the stock market based on the market-wide P/E ratio, Cohen and Zarowin (2007) show that the tendency to meet or beat earnings benchmarks is significantly higher when the state of the economy is good. Rajgopal, Shivakumar and Simpson (2007) also provide consistent evidence that investor demand for stocks to report positive earnings surprises is time-varying and thus managers cater to such demand by using abnormal accruals.

[2] Detailed explanations of six individual sentiment proxies are as follows. (1) Trading volume is measured by New York Stock Exchange (NYSE) turnover (the ratio of trading volume to the number of shares listed on NYSE), and it has been shown to be higher when investors are optimistic and betting on rising stocks (Baker and Stein, 2004). (2) Dividend premium is the difference between the average market-to-book ratio of dividend payers and non-payers. Firms tend to decide whether to pay dividends to cater to prevailing sentiment for or against safety (Baker and Wurgler, 2004a, 2004b). (3) Closed-end fund discount: If closed-end funds are disproportionately held by retail investors, then the average discount on closed-end funds may indicate the level of investor sentiment (Lee et al., 1991; Neal and Wheatley, 1998). (4) The number of initial price offerings (IPOs) is shown to be higher in good economic times because the underlying demand for IPO is sensitive to investor sentiment. (5) First-day returns on IPOs: Its peaks and troughs are highly correlated with IPO volume and other sentiment proxies. (6) Equity share in new issues: High values of the equity share signal low stock market returns (Baker and Wurgler, 2000).

three thresholds. Further, Brown and Caylor (2005) examine earnings thresholds hierarchy. They find that since the mid-1990s, investors unambiguously rewarded (penalized) firms for meeting (missing) analyst forecasts more than they did for meeting (missing) the other two benchmarks. This implies that analyst forecasts have become the most important benchmark because media coverage given to analyst forecasts has increased over time.

One line of research examines managerial incentive to meet or beat earnings benchmarks. First, managers could be motivated for such behaviors to decrease a firm's transaction costs with stakeholders (Burgstahler and Dichev, 1997) and to avoid negative stock price shocks (Moehrle, 2002). Also, executives may manipulate earnings to meet or beat earnings benchmarks for private gains. Matsunaga and Park (2001) show the adverse effects of missing quarterly earnings benchmarks on CEO's annual bonus, implying that CEO bonus pay provides incentives to meet analyst forecasts and prior year earnings. Further, McVay, Nagar and Tang (2006) provide evidence that managers manipulate earnings prior to just meeting earnings thresholds and selling their shares.

In sum, prior research has focused on the incentives for meeting or beating earnings targets at firm level or executive level. By contrast, the interaction between aggregate market condition and a firm's tendency to meet or beat earnings thresholds has received relatively less attention in the literature.

1.3. Hypothesis development. Investors are likely to make decisions based on a subset of all available information because people have a limited capacity for information processing (Kahneman and Tversky, 1973a, 1973b). Thus, when earnings are released, investors will use simple heuristics and categorize earnings news into good news (i.e., positive earnings surprise) and bad news (i.e., negative earnings surprise). Moreover, according to prospect theory (Kahneman and Tversky, 1979), bad news hurt more than good news feels good because the value function passing through the reference point is asymmetric and S-shaped. Skinner and Sloan (2002) provide consistent evidence that market reaction to negative earnings surprises is larger than one to positive earnings surprises.

Also, behavioral theories on representativeness and confirmatory bias (e.g., Barberis and Thaler, 2003) suggest that investors overreact to the new information when it conforms to their prior beliefs and underreact when it contradicts the prior beliefs. Thus, bad (good) earnings news will generate more negative (less positive) price shock in the stock market when investor sentiment is pessimistic. Consequently, firms have greater incentives to meet or beat earnings targets in order to avoid negative shock during pessimistic periods.

In addition, Graham, Harvey and Rajgopal (2005) report the survey evidence that firms inflate earnings to a greater extent during the bad state of the economy because intrinsic earnings will increase when the economy recovers which leads to the reversal or catch-up. Also, firms that report relatively strong earnings when the economy is down can boost their stock prices by distinguishing themselves from other firms in the market.

Taken together, I expect that a firm's tendency to manipulate earnings upward to meet or beat earnings thresholds will be greater during pessimistic sentiment period than optimistic sentiment period. Therefore, the alternative hypothesis is stated as follows:

*H*1*: There is a negative relationship between investor sentiment and a firm's tendency to meet or beat earnings thresholds.*

2. Data and methodologies

2.1. Sample. I sample all firms listed on Korean Securities Market between 2003 and 2011 with sufficient financial data available on TS2000 database to calculate financial variables used in the regression analysis. I retrieve analyst forecast consensus data from FnGuide database. I delete 1) firms in financial industries, 2) firms with non-December year-ends due to data comparability, or 3) firms with impaired capital to avoid any sampling bias. As a result, my final samples based on a firm's tendency to meet or beat analyst forecasts, last period's earnings, or positive earnings consist of 4757, 15181, or 15735 firm-quarter observations (respectively).

2.2. Measuring meeting-or-beating earnings thresholds. Following prior research (e.g., Burgstahler and Dichev, 1997; Degeorge, Patel and Zeckhauser, 1999), three earnings thresholds are identified to define earnings management to meet or beat earnings threshold: the consensus analyst forecast, a positive earnings change for the current quarter compared to the same quarter last year, and positive earnings. Using three alternative benchmarks increases the confidence in the robustness of the results.

When firm-years are grouped into intervals based on net income scaled by total assets at the beginning of the year, researchers have documented the evidence of the prominent upward shift in the frequency of firm-years going from the left of earnings benchmark to the right. This evidence has been argued that firm-years in the interval just right of

benchmark are likely to manage their earnings to report income marginally above earnings target since the discontinuity at target cannot be explained by normal operation activities. Therefore, the focus has been on firm-years in the interval to the immediate right of earnings benchmark in order to detect upward earnings management to meet or beat such benchmark.

2.2.1. Meeting-or-beating analyst forecast consensus: SM_BEAT. I define *SURP* as the difference between current-quarter net income and forecasted net income (scaled by lagged market value). A firm is said to meet or beat analyst forecasts if *SURP* is slightly over zero. Following prior research (e.g., Burgstahler and Dichev, 1997; Song, Paek and Park, 2004), I set *SM_BEAT* to 1 if *SURP* is between 0 and 0.0025 and 0 elsewhere.

$$SURP = \frac{NI - FORECAST_NI}{Lagged\ MV} \quad (1A)$$

$$SM_BEAT = 1 \text{ if } 0 \le SURP < 0.0025,\ 0 \text{ elsewhere} \quad (1B)$$

2.2.2. Meeting-or-beating prior period's earnings: EPS_INCREASE. I calculate *CHG* as the difference between current-quarter net income and net income from the same quarter of the last year (scaled by the beginning market value). A firm is said to meet or beat previous period's earnings if *CHG* is slightly over zero. Hence, *EPS_INCREASE* is set to 1 if *CHG* is between 0 and 0.0025, and 0 elsewhere.

$$CHG = \frac{NI - Lagged_NI}{Lagged\ MV} \quad (2A)$$

$$EPS_INCREASE = 1 if\ 0 \le CHG < 0.0025,$$

0 elsewhere. (2B)

2.2.3. Meeting-or-beating zero earnings: ZERO. *NI_MV* is the current-quarter net income divided by the lagged market value. A firm is said to meet or beat the threshold of zero if the earnings is slightly over zero. Hence, *ZERO* is set to 1 if *NI_MV* is between 0 and 0.005, and 0 elsewhere.

$$NI_MV = \frac{NI}{Lagged\ MV} \quad (3A)$$

$$ZERO = 1\ if\ 0 \le NI_MV < 0.005,\ 0 \text{ elsewhere} \quad (3B)$$

2.3. Measuring investor sentiment. I measure the market-wide investor sentiment based on the following two different dimensions: investor sentiment index (Baker and Wurgler, 2007; Kim and Byun, 2010) and overall market price-to-earnings ratio (Conrad, Cornell and Landsman, 2002).

2.3.1. Investor sentiment index: KBSENT. As discussed earlier, Baker and Wurgler (2007) construct an investor sentiment index by using the common components of six individual sentiment measures suggested in prior research. Likewise, Kim and Byun (2010) take this insight to Korean setting in order to form an index of investor sentiment for Korean stock market. Among six individual sentiment proxies used by Baker and Wurgler (2007), only two variables (trading volume, equity share in new issues) are available and economically significant in Korea. Hence, they add the following four variables to formulate the index.

1. Retail investor trading (*BSI*): It is the net buying volume of retail investors divided by their total trading volume, and tends to be higher when retail investors are optimistic (Kumar and Lee, 2006).
2. Stock fund flows (*FUND*): When individual investors reallocate their funds between different types of funds, they consider economic prospects. Thus, when they believe the economy is promising, stock fund flows will increase (Frazzini and Lamont, 2008).
3. Customer Expectation Index (*CEI*): Korea National Statistics Office provides monthly Customer Expectation Index based on surveys of consumer expectation about business conditions, their financial situation and consumption expenditure in 6 months.
4. Customer's deposit for stock investment (*CD*): If viewed as temporary deposit for buying stocks, an increase in customer's deposits can be considered as a signal of investor optimism.

Next, Kim and Byun (2010) regress each of these six proxies on the six business-cycle-related variables (i.e., the growth of industrial production, durables sales, semi-durables sales, non-durables sales, service production, and coincident composite index for business cycle changes) and use the residuals from these regressions in order to construct the sentiment index controlled for business cycle. Thus, investor sentiment index (*KBSENT*) is defined as the first principal component of the correlation matrix of six variables as follows[3]:

$$KBSENT = 0.303BSI + 0.118FUND + 0.537CEI + \\ +0.574\ CD + 0.061TURN + 0.522SR, \quad (4)$$

where all independent variables indicate the residuals from regression of the six individual proxies on the six business-cycle-related variables.

2.3.2.Overall stock market level: DIFFPE. Conrad, Cornell and Landsman (2002) estimate the overall

[3] Because six individual proxies (*BSI*, *FUND*, *CEI*, *CD*, *TURN*, and *SR*) are likely to include common sentiment components as well as idiosyncratic non-sentiment-related components, principal components analysis is executed to isolate the common component.

level of stock market using the market price-to-earnings (P/E) ratio since investors are likely to be pessimistic during bad economic times and optimistic during good economic times. Monthly time-series of market P/E is calculated using the analyst consensus earnings forecast for the next fiscal quarter made in month *t* for each firm and the observed price at the beginning of month *t* for that firm. Then, a value-weighted average of the forecast earnings/price ratios across firms is calculated. I use the reciprocal of this figure as the overall market P/E ratio.

$$P/E_t = \frac{1}{\sum w_{it}(E_t(EPS_{t,\tau})/P_{it})}, \quad (5)$$

where w_{it} is the market capitalization of firm i relative to the total market capitalization of firms available in the sample for month t, P_{it} is the share price of firm i in month t, and $E_t(EPS_{t,\tau})$ is the analyst earnings forecast consensus for the next fiscal quarter τ made in month t. Firms are deleted from the average if they do not have market capitalization, stock price, or forecasted earnings available.

The difference between the market P/E in the current month and the average market P/E over the previous 12 months (*DIFFPE*) is the second proxy of investor sentiment. It is expected to be larger (smaller) if the sentiment in the current month is higher (lower) than that in the previous year.

2.4. Test model. To test my research question, I estimate the following regression model.

$$MBE = \alpha + \beta_1 SENT + \beta_2 Size + \beta_3 Leverage + \\ + \beta_4 ROA + \beta_5 BM + \beta_6 Analyst + \beta_7 SEO + \varepsilon \quad (6)$$

MBE is an indicator of whether a firm meets or beats earnings benchmarks. It equals *SM_BEAT* if the benchmark is analyst forecasts for the current quarter, *EPS_INCREASE* if the benchmark is reported earnings in the same quarter of the last year, or *ZERO* if the benchmark is positive earnings. *SENT* is one of two alternative investor sentiment proxies: *KBSENT* or *DIFFPE*.

In addition, I control for several variables that could potentially affect whether or not a firm meets or beats earnings thresholds. First, I control for firm size (natural logarithm of market capitalization at the end of quarter). Also, *Leverage* (debt to total assets ratio) is included since high-leverage firms are more inclined to meet or beat earnings expectations (Chevis, Das and Sivaramakrishnan, 2002), as well as *ROA* (operating income divided by the lagged total assets) to control for the performance effect. The book to market ratio (*BM*), calculated as book value per share divided by price per share, is included because high-growth firms experience an extreme stock price decline when missing earnings benchmarks (Skinner and Sloan, 2002). I also include the number of analysts following a firm (*Analyst*) to control for market pressure for meeting or beating benchmark. Moreover, Teoh, Welch and Wong (1998) suggest that managers tend to manipulate earnings to boost stock price to issue equity at favorable prices. Thus, I control for external financing by including *SEO*, which is an indicator for equity issuance in the current quarter. Finally, I include dummy variables for quarters and industries to control for any additional time and industry effects.

3. Test results

3.1. Descriptive statistics. Table 1 presents summary statistics for investor sentiment measures. The overall mean of monthly sentiment index (*KBSENT*) is 0.0210, with the minimum -2.6772 and the maximum 3.7299. Its average is close to zero, and this implies the overall market sentiment is neutral in Korea. Also, I show the average *KBSENT* (as well as the standardized mean in the parentheses) for each year. Mean *KBSENT* is above 1 in year 2002 and 2007, and above 0 in year 2001, 2003 and 2005, indicating that market sentiment was optimistic in early 2000's and 2007. By contrast, mean *KBSENT* is negative during the rest of sample period, indicating that sentiment was pessimistic during these years. The other investor sentiment proxy (*DIFFPE*) also exhibits the similar pattern (despite slight differences in few years).

Table 1. Summary statistics for investor sentiment measures

	KBSENT		*DIFFPE*	
Overall				
Mean	0.021		0.0612	
Std dev.	0.9545		1.1008	
Max	3.7299		2.9922	
Min	-2.6772		-2.1655	
By year				
2003	0.1824	(0.1691)	-0.0496	(-0.1007)
2004	-0.223	(-0.2556)	-0.3519	(-0.3753)
2005	0.3397	(0.3339)	1.0548	(0.9026)
2006	-0.0329	(-0.0565)	0.852	(0.7184)
2007	1.1133	(1.1444)	1.0766	(0.9224)
2008	-0.9205	(-0.9864)	-1.2371	(-1.1794)
2009	-0.6975	(-0.7528)	-0.035	(-0.0874)
2010	-0.0343	(-0.0580)	-0.2406	(-0.2742)
2011	-0.6115	(-0.6627)	-0.2338	(-0.2680)

Table 2 shows summary statistics of earnings surprise measures and meet-or-beat dummy variables. Column (1), (2), and (3) are based on analyst forecasts, prior period's earnings, and

positive earnings (respectively). Earnings surprise *SURP*, which is the gap between analyst consensus and reported earnings, has the overall mean 0.0352, minimum -2.8688 and maximum 3.7189. Also, indicators for meeting or beating analyst forecast, prior earnings, and positive earnings (*SM_BEAT*, *EPS_INCREASE*, *ZERO*) have the overall means of 0.0352, 0.0281, and 0.0271 (respectively), with the minimum 0 and maximum 1. In sum, three percent of sample observations locate in the area to the immediate right of earnings thresholds, on average. Also, firms exhibit lower tendencies to meet or beat these thresholds in year 2004-2005 and higher tendencies in year 2008 relative to other years.

Table 2. Summary statistics for meeting or beating earnings benchmarks

	(1)		(2)		(3)	
Year	*SURP*	*SM_BEAT*	*CHG*	*EPS_INCREASE*	*NI_MV*	*ZERO*
2003	0.0829	0.0316	-0.2138	0.0237	0.1222	0.0203
2004	0.1114	0.0304	0.0723	0.0143	0.1331	0.0070
2005	0.0697	0.0141	0.0110	0.0145	0.0991	0.0171
2006	0.0313	0.0260	0.0076	0.0330	0.0521	0.0220
2007	0.0418	0.0501	0.0104	0.0344	0.0622	0.0367
2008	0.0179	0.0546	-0.0134	0.0449	0.0187	0.0457
2009	0.0489	0.0455	0.0650	0.0299	0.0657	0.0349
2010	0.0624	0.0254	0.0446	0.0237	0.0772	0.0281
2011	0.0229	0.0418	-0.0236	0.0314	0.0227	0.0277
Mean	0.0554	0.0352	-0.0018	0.0281	0.0703	0.0271
Std dev.	0.1639	0.1844	0.9618	0.1653	0.3498	0.1624
Min.	-2.8688	0.0000	-55.0965	0.0000	-9.4504	0.0000
Max.	3.7189	1.0000	30.2039	1.0000	10.0750	1.0000

I report the Pearson correlation coefficients among variables in Table 3. First, three indicator variables of meet or beat earnings thresholds (*SM_BEAT, EPS_INCREASE*, and *ZERO*) are negatively correlated with investor sentiment proxies (*KBSENT, DIFFPE*), significant at 5% level in most specifications. This indicates that firms' tendency to meet or beat earnings benchmarks decreases with investor sentiment. Also, there are negative correlations between meet-or-beat indicators and *LEV*, *ROA*, and *BM*, implying that high-leverage, profitable, and under-valued firms are more likely to meet or beat earnings thresholds. Second, investor sentiment proxies (*KBSENT, DIFFPE*) are positively related to each other. Also, their correlations with *ROA* and *SEO* (*BM*) are positive (negative). This adds confidence to the sentiment proxies since the firms' financial performance and equity issuance increase with investor sentiment. Lastly, correlations among control variables are statistically significant but their magnitudes are not economically significant.

Table 3. Correlations (*p*-values below)

	SM_BEAT	*EPS_INCRASE*	*ZERO*	*KBSENT*	*DIFFPE*	SIZE	LEV	ROA	BM	ANALYST
KBSENT	-0.0189	-0.0339	-0.0296	1						
	(0.19)	(<.0001)	(0.0002)							
DIFFPE	-0.1569	-0.0245	-0.0336	0.304	1					
	(<.0001)	(0.002)	(<.0001)	(<.0001)						
SIZE	0.0226	0.0493	-0.0394	-0.0531	-0.0148	1				
	(0.12)	(<.0001)	(<.0001)	(<.0001)	(0.06)					
LEV	-0.0383	-0.0266	0.0023	-0.0022	-0.0214	0.1571	1			
	(0.008)	(0.001)	(0.78)	(0.78)	(0.007)	(<.0001)				
ROA	-0.133	0.0143	-0.0902	0.0157	0.0525	0.178	-0.1506	1		
	(<.0001)	(0.08)	(<.0001)	(0.05)	(<.0001)	(<.0001)	(<.0001)			
BM	-0.0534	-0.0597	-0.0341	-0.0667	-0.1272	-0.1041	-0.0476	-0.1724	1	
	(0.0002)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)		
ANALYST	0.0475	0.0582	-0.0277	0.0192	0.0621	0.6383	0.0041	0.2258	-0.3041	1
	(0.001)	(<.0001)	(0.001)	(0.02)	(<.0001)	(<.0001)	(0.61)	(<.0001)	(<.0001)	
SEO	-0.0143	-0.0149	-0.0079	0.0231	0.0117	-0.0216	0.0717	-0.054	-0.0477	-0.0343
	(0.32)	(0.07)	(0.32)	(0.004)	(0.14)	(0.007)	(<.0001)	(<.0001)	(<.0001)	(<.0001)

3.2. Main test results. Table 4 reports the regression results on the relationship between investor sentiment and a firm's tendency to meet or beat analyst forecasts. The dependent variable is

SM_BEAT, which is set to 1 if the earnings surprise is between 0 and 0.0025, and 0 otherwise. Each column is based on the alternative investor sentiment proxy as the key test variable: *KBSENT* and *DIFFPE*. The estimated coefficients on all two sentiment proxies are negative and statistically significant (-0.0105, *t*-value = -2.65; -0.0214, *t*-value = -6.72). This indicates that a firm's tendency to meet or beat analyst forecasts is lower during optimistic sentiment periods than pessimistic periods.

Since earnings management may be due to firm characteristics that vary over time and that are correlated with market condition, I include control variables such as firm size, leverage, ROA, book-to-market, analyst following and SEO activity in the regression in order to address the problem of omitted firm effects. I find that *SM_BEAT* is positively related to analyst coverage and negatively to leverage, ROA and book-to-market. Although these control variables enter significantly in most regressions, investor sentiment measures are still negatively related to *SM_BEAT*. Thus, I can conclude that time-varying firm characteristics do not drive the results.

Table 4. Investor sentiment and meeting or beating analyst forecast consensus

	(1)			(2)		
Variable	Coef.	*t*-value		Coef.	*t*-value	
Intercept	0.2242	3.37	***	0.1996	3.98	***
KBSENT	-0.0105	-2.65	***			
DIFFPE				-0.0214	-6.72	***
SIZE	0.0002	0.07		-0.0021	-0.76	
LEVERAGE	-0.0804	-3.4	***	-0.0487	-2.73	***
ROA	-1.0931	-13.79	***	-0.5763	-9.55	***
BM	-0.0257	-5.16	***	-0.0140	-3.76	***
ANALYST	0.0140	2.64	***	0.0080	2.02	**
SEO	-0.0226	-0.58		-0.0211	-0.72	
F-value	5.46			4.84		
Adj. R-square	0.0474			0.041		
Fixed effect	Quarter, industry			Quarter, industry		
N	4757			4757		

Note: The notation *, **, *** of *t*-value represent significance at the 10%, 5%, and 1% levels (two-tailed), respectively.

Next, I examine the relationship between investor sentiment and a firm's tendency to meet or beat prior period's earnings. < Table 5 > presents the regression results where the dependent variable is *EPS_INCREASE*, which is set to 1 if the change in earnings is between 0 and 0.0025, and 0 otherwise. The estimated coefficients on *KBSENT* and *DIFFPE* are negative and statistically significant (-0.0061, *t*-value = -4.15; -0.0046, *t*-value = -3.67). This implies that a firm's tendency to meet or beat prior earnings declines with stock market sentiment measured by *KBSENT* and *DIFFPE*. In sum, I show that managers avoid reporting earnings decreases when investor sentiment is pessimistic so as to distinguish their firms from poor-performing market.

Table 5. Investor sentiment and meeting or beating last period EPS

	(1)			(2)		
Variable	Coef.	*t*-value		Coef.	*t*-value	
Intercept	0.0205	0.92		0.0213	0.95	
KBSENT	-0.0061	-4.15	***			
DIFFPE				-0.0046	-3.67	***
SIZE	0.0039	3.03	***	0.0040	3.15	***
LEVERAGE	-0.0312	-4.17	***	-0.0321	-4.28	***
ROA	-0.0786	-2.76	***	-0.0773	-2.71	***
BM	-0.0057	-5.29	***	-0.0060	-5.48	***
ANALYST	0.0035	1.64		0.0035	1.63	
SEO	-0.0159	-1.55		-0.0164	-1.6	
F-value	4.78			4.71		
Adj. R-square	0.013			0.0128		
Fixed effect	Quarter, industry			Quarter, industry		
N	15181			15181		

Note: The notation *, **, *** of *t*-value represent significance at the 10%, 5%, and 1% levels (two-tailed), respectively.

Lastly, I investigate how investor sentiment is related to a firm's tendency to meet or beat zero thresholds. The results are reported in < Table 6 >. The dependent variable is *ZERO*, which is set to 1 if the net income scaled by lagged market cap is between 0 and 0.005, and 0 otherwise. The estimated coefficients on *KBSENT* and *DIFFPE* are negative and statistically significant (-0.0057, *t*-value = -4.10; -0.0054, *t*-value = -4.47). These results indicate a negative association between a firm's tendency to avoid losses and market-wide sentiment.

Taken collectively, I find evidence that firms engage in upward earnings management to avoid negative earnings surprise during pessimistic sentiment periods. These results are consistent with Graham, Harvey and Rajgopal (2005) since managers appear to inflate earnings to a greater extent in order to boost their stock prices during bad economic times in Korea.

Table 6. Investor sentiment and meeting or beating zero EPS

	(1)			(2)		
Variable	Coef.	*t*-value		Coef.	*t*-value	
Intercept	0.0580	2.72	**	0.0598	2.80	**
KBSENT	-0.0057	-4.10	***			
DIFFPE				-0.0054	-4.47	***
SIZE	-0.0022	-1.80	*	-0.0021	-1.73	*
LEVERAGE	-0.0047	-0.67		-0.0055	-0.78	
ROA	-0.3002	-11.07	***	-0.2977	-10.97	***
BM	-0.0067	-6.71	***	-0.0069	-6.94	***
ANALYST	-0.0023	-1.09		-0.0022	-1.07	
SEO	-0.0193	-1.98	**	-0.0197	-2.02	**
F-value	5.32			5.38		
Adj. R-square	0.0143			0.0145		
Fixed effect	Quarter, industry			Quarter, industry		
N	15735			15735		

Note: The notation *, **, *** of *t*-value represent significance at the 10%, 5%, and 1% levels (two-tailed), respectively.

Conclusions

This paper examines the relationship between the tendency of firms to meet or beat earnings thresholds (e.g., analyst forecasts, last period's number and zero earnings) and investor sentiment. Using two alternative measures of investor sentiment (an investor sentiment index and market price-to-earnings ratio), I find that a firm's tendency to meet or beat earnings benchmarks is negatively related to investor sentiment. These findings suggest that firms are more likely to engage in upward earnings management to meet analyst expectations, to sustain recent performance, or to report positive profits during pessimistic sentiment periods than optimistic periods.

While most prior studies have focused on firm-level or executive-level determinants of earnings management, this paper sheds light on the interaction between aggregate market condition and a firm's tendency to meet or beat earnings thresholds. These findings have implications for investors and researchers to incorporate the effects of behavioral bias on the reported earnings so that they can fully understand the fundamental value of the company. Also, since Korea has gone through a fairly protracted recession in recent years, earnings reports should be cautiously interpreted during economic downturns as pessimistic investor sentiment is related to upward earnings management.

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