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Stock Price Reactions to News and the Momentum Effect in the Korean Stock Market*

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Abstract

By analyzing how stock prices respond to public news, this paper examines the momentum effect in the Korean stock market. It is true that, as a whole, the momentum strategy generates no profits in Korea. However, among the stocks in a momentum portfolio, loser stocks with news headlines make significantly positive profits caused by negative return drift. These positive profits are cancelled out by negative returns, due mostly to reversals exhibited by winner stocks with and without public news. These reversals stand in contrast to the case of the United States market, where winner stocks show weak drift (Chan, 2003). Reversals of news winners and the drift of news losers in Korea imply that stock prices react asymmetrically to public news, which is overlooked in existing studies on momentum. Further analyses indicate that this asymmetric reaction can be attributed to transaction costs rather than to the incentive of managers to disclose bad news slowly. In addition to the asymmetric reaction of prices to news, we suggest that market misperceptions concerning firms' future prospects may also be a reason for the post-news return patterns in Korea.

Keywords Asymmetric reaction; Korean stock market; Market misperceptions; Momentum; Public news

JEL Classification: G12, G14

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1. Introduction

Momentum has been a prevalent stock market anomaly since Jegadeesh and Titman (1993) found that, in the United States market, longing stocks with high returns over the past months and shorting stocks with low returns over the same period generate profits for the following year. Many subsequent studies report that the profitability of this momentum strategy is also pervasive throughout the world (see, Rouwenhorst, 1998; Griffin *et al.*, 2003). However, Korea is an exception: Chui *et al.* (2003, 2010) find that Korea is among the few countries for which positive momentum profits do not exist. Similar results are reported by a number of Korean studies.[1]

While there is plenty of debate over the sources of momentum profits, some studies attempt to explain why these profits are absent in certain countries, most of which are in Asia. Chui *et al.* (2010) focus on cultural differences. Using an individualism index related to behavioral factors such as overconfidence and self-attribution bias, they find that countries with weaker levels of individualism have lower momentum profits, and *vice versa*. In contrast, Du *et al.* (2009) test the state-dependence of momentum profits in the Taiwan stock market, where, as a whole, no momentum profits exist either. They find that the momentum strategy there generates negative returns in down markets, whereas it produces substantial profits in up markets. They further show that down markets occur more frequently in Taiwan than in the United States. Thus, they maintain that the magnitude of momentum profits depends on the state of the market and not on differences among investors' behaviors.

Meanwhile, major theories on momentum argue that momentum profits arise because investors react slowly to new information. In Barberis *et al.* (1998), investors are subject to conservatism and representativeness heuristics. Therefore, they may slowly update their forecasts on a firm's future performance in the face of new information. Also, they connect future earnings too strongly with past performance. In Daniel *et al.* (1998), investors suffer from overconfidence and self-attribution bias. Therefore, they overestimate the precision of their own private information and underweight newly released public signals. Hong and Stein (1999) categorize investors into two groups: "news watchers" and "momentum traders." They argue that because the latter group ignores new information and reacts only to price changes, new information diffuses gradually. Thus, they explain momentum without depending on behavioral biases. In sum, all three models agree that investors' underreactions to new public information make the momentum strategy profitable, although they rely on different assumptions.

From this point of view, Chan's (2003) results shed light on how investors react to public news. He documents that stocks with public news exhibit momentum in the United States stock market, whereas stocks without news do not. Specifically,

[1]See section 2 and Kim and Byun (2011) for details.

loser stocks with news headlines show strong negative return drift. Winner stocks with news headlines also displayed drift, although the degrees are smaller. In contrast, loser stocks without news exhibit reversals. These reversals and drift appear mainly among smaller and more illiquid stocks. If stocks with substantial price changes and news headlines convey public information, these results imply that investors respond slowly to this information. Thus, Chan (2003) demonstrates that his findings are generally consistent with the arguments of all three of the aforementioned models.

This paper adds to this line of research by investigating how stock prices respond to public news in the Korean stock market and how the effectiveness of the momentum strategy is in turn affected. Using comprehensive Korean news data, we examine post-return patterns after substantial price movements with and without accompanying news headlines. First, we compute momentum profits by constructing zero-investment portfolios that buy winner stocks and short-sell loser stocks. We find that stocks with news headlines generate significantly positive profits approximately 1 year after the news while the entire set of stocks does not. This result supports the argument that momentum is caused by slow responses of investors to new information on stocks.

Further, we examine size- and B/M-adjusted returns in each leg of long–short portfolios. We find that the momentum profits of news stocks are induced mainly by the return drift of loser stocks with news. Winner stocks with news show significant reversals after the news and thus offset the profits from loser stocks. In addition, winner stocks without news exhibit overreactions, thus lowering overall profits further. The return reversals of winner stocks are in contrast to the case of the United States markets, where winners exhibit weak drift. This constitutes the difference between the two markets – the momentum strategy does not work in Korea, whereas it does in the United States. Table 1 provides a summary of these results.

Reversals of news winners and the drift of news losers are likely to result from the asymmetric reaction of stock prices to public news, which is overlooked in the existing literature on momentum. However, there are two possible explanations for this phenomenon. First, according to Hong *et al.* (2000), bad news travels slowly,

Table 1 A summary of post-news stock return patterns in the Korean and the United States market

	Korea	United States
Winners		
With news	Reversal	Drift
Without news	Reversal	Drift
Losers		
With news	Drift	Drift
Without news	Reversal	Reversal

as managers of firms have an incentive to reveal bad information on their firms slowly. The slow diffusion of bad news can cause drift in loser stocks with such news. Second, transaction costs may also be an important reason.[2] For instance, short-sale constraints or asymmetric market impact costs can keep investors from selling losers.[3]

To determine the validity of the first explanation, we divide stocks by firm size and perform the same analysis as before. We find that there is no post-news drift of news losers in the largest group. This result may not be compatible with the fact that managers of large firms also have incentives to conceal bad news. One can argue that more media attention and broad analyst coverage for large firms can be the main reason for this result. However, this argument is invalidated by the evidence that news winners in the largest group show drift.

Meanwhile, news losers in the smallest group are responsible for most of drift exhibited by the entire set of news losers. Because small firms are more likely to be exposed to trading obstacles, this result may support the role played by transaction costs for the presence of drift.

As we consider short-sale constraints to be an important aspect of transaction costs, causing the asymmetric reaction of stock prices to news, we conduct further analysis using institutional ownership as a proxy. According to Nagel (2005), stocks with a low level of institutional ownership are more likely subject to short-sale constraints. We find that news losers with a low level of institutional ownership show drift in their returns, while news losers with a high level of institutional ownership do not. This finding supports the explanation that transaction costs such as short-sale constraints may be a reason for the asymmetric reaction of stock prices to news and thus may cause the drift exhibited by news losers.

In addition to the asymmetric reaction of stock prices to news, we suggest that market misperceptions concerning firms' future prospects may also be a reason for the phenomenon in which news winners overreact and news losers underreact. The fact is that analysts and investors consistently tend to overestimate the future performance of stocks with public news regardless of past performance. In such a case, news winners will show excessive price hikes in the portfolio formation period, while news losers will experience insufficient price drops during the same period.

[2]In this paper, transaction costs refer to illiquidity costs or the costs of providing liquidity according to Amihud and Mendelson (1986, 1989), who propose that liquidity affects asset prices because investors require compensation for bearing transaction costs. Therefore, we use transaction costs in a broad sense in which they include all "cash outflows paid whenever the asset is traded" (see, Amihud and Mendelson, 1991): short-sale constraints, bid-ask spreads, brokerage commissions, market impact costs, transaction taxes, etc.

[3]Market impact costs are well known to be asymmetric between buyer- and seller-initiated trades in many equity markets (see, Holthausen *et al.*, 1987; Gemmill, 1996). That is, market impact costs are larger in seller-initiated trades.

Therefore, during the post-news period, both news winners and news losers will realize negative returns in the process of price-corrections.

To determine the validity of this hypothesis, we conduct the same analysis as before using monthly share turnover as a proxy for market misperceptions about stock performances. According to Lee and Swaminathan (2000), future profits of stocks with high (low) share turnover ratios tend to be overestimated (underestimated) in the market. We find that both news winners and news losers with high turnover ratios present significant negative post-news returns, whereas those with low-turnover ratios do not. Moreover, high-turnover news stocks outnumber low-turnover news stocks. Furthermore, analysts are indeed more optimistic about the future of high-turnover news stocks than that of low-turnover news stocks. These findings lead us to suggest that upward biases in forecasting stock performances may also contribute to generating the post-news return patterns and no momentum profits in the Korean market.

The remainder of the paper is organized as follows. Section 2 introduces related literature and reports the profitability of the momentum strategy in the Korean stock market. Section 3 describes the methodology used in this paper. Section 4 discusses the properties of news data. Section 5 presents main empirical results on the effectiveness of the momentum strategy in the presence of public news. Sections 6 and 7 derive further implications from these results. Section 8 summarizes and concludes the study.

2. The Momentum Effect in Korea

The first study of momentum in the Korean stock market is that by Kho (1997), who analyzes the data over the period of 1963–1989 using the methodology of Jegadeesh and Titman (1993). He finds that longing winner stocks and shorting loser stocks yields monthly average returns of −0.001 to −0.007 depending on the lengths of the portfolio formation and evaluation periods. These values are all insignificant, however. In the same year, Kim and Um (1997) test both momentum and contrarian strategies in various ranking and investment periods. They report that the contrarian strategy is more profitable than the momentum strategy. More recently, Kim and Jeong (2008) and Kam and Shin (2011) show that momentum profits are negative over the period of 1982–2005 and 1990–2009, respectively. While no momentum profits are generally found in Korea, Lee and Ahn (2002) find that an industry-level momentum strategy (i.e. longing winner industries and shorting loser industries) generates positive profits. In addition, Kim (2000) reports that the momentum strategy with smaller stocks in the KOSDAQ produces positive returns, though his sample period is only 9 months.

To explore why no momentum profits exist in the Korean market, Chae and Eom (2009) modify the decomposition of Lo and MacKinlay (1990) to obtain auto- and cross-serial covariances of winners and losers. They find that the negative autocovariance of losers and the positive cross-serial covariance between

past winners and current losers mainly drive negative momentum profits. Moreover, they argue that investors' overreactions to firm-specific information and underreactions to market-wide information, especially in the case of loser stocks, can explain the negative momentum profits. Our results support this argument, as we will show later that losers overreact to firm-specific information contained in news articles. Kim and Jeong (2008) examine the momentum effect in up- and down-markets separately. They argue that the conditional skewness in a down-market plays an important role in explaining the negative momentum profits.[4] Park and Son (2013) classify Korean firms into two groups according to their credit ratings and examine the relationship between the momentum profits of each group and the business cycle. They find that the speculative-grade group shows positive profits during economic expansions. However, these positive profits are offset by negative profits during recessions, partly explaining no momentum profits as a whole. Kim and Jeong (2008) and Park and Son (2013) are similar to Du *et al.* (2009) in that they attempt to show the dependency of momentum on market conditions.

As a preliminary part of our study in this paper, we replicate Jegadeesh and Titman (1993) using the data over the period of 2001–2010, which corresponds to the sample period chosen for our main analyses. After eliminating stocks under 1000KRW, we rank KOSPI and KOSDAQ stocks based on the past J-month holding period returns and classify those with the top (bottom) third highest returns as winner (loser) portfolios. Then, each portfolio is held for K months. To obtain monthly portfolio returns, all stocks in the winner and loser groups are averaged and equally weighted. We skip 1 month following the ranking period to remove the impact of such factors as the bid-ask spread, price pressure, and lagged reaction. We also implement the overlapping portfolio method in order to increase the power of the tests. Table 2 exhibits average monthly rebalanced returns on the momentum portfolios. Owing to the difference in the sample periods, momentum returns are generally higher than those in the literature. However, all momentum profits are statistically insignificant regardless of the lengths of the formation and evaluation periods. This result ensures that no momentum profits are found in the Korean market as a whole during the sample period.

3. Methodology

To analyze what patterns stock returns follow after public news is released, we undertake several event studies. In this section, we briefly explain how to construct event portfolios and summarize the test procedure applicable to all subsequent event studies in common. More details will be covered later where appropriate.

[4]Harvey and Siddique (2000) find that the momentum effect is related to the conditional skewness of asset returns.

Table 2 Momentum profits in Korea

This table presents average monthly rebalanced returns of momentum portfolios from 2001 to 2010, following Jegadeesh and Titman (1993). After eliminating stocks under 1000KRW, we rank the KOSPI and KOSDAQ stocks based on the past *K*-month holding period returns, and select those with the top (bottom) third highest returns as a winner (loser) portfolios. Then each portfolio is held for *J* months. To obtain monthly portfolio returns, all stocks in winners and losers are averaged and equally weighted. We skip 1 month following the ranking month to avoid effects from bid-ask spread, price pressure, and lagged reaction. Also the overlapping portfolio method is implemented in order to increase the power of the tests. The *t*-statistics are reported in parentheses.

	Formation period (*J*)				
Evaluation period (*K*)	1	3	6	9	12
1	−0.50 (−1.44)	0.10 (0.26)	0.05 (0.11)	0.34 (0.85)	0.47 (1.11)
3	0.06 (0.26)	0.15 (0.48)	0.17 (0.45)	0.51 (1.35)	0.35 (0.85)
6	0.17 (0.44)	0.25 (0.44)	0.77 (1.14)	0.90 (1.23)	0.49 (0.64)
9	0.54 (1.17)	0.92 (1.27)	1.24 (1.33)	1.04 (1.01)	0.30 (0.28)
12	0.80 (1.40)	1.07 (1.15)	1.02 (0.87)	0.59 (0.45)	−0.22 (−0.15)

3.1. Constructing Event Portfolios

Events are defined in two dimensions: news stocks versus no-news stocks, and winners versus losers. For one dimension, we define news stocks as firms with one or more news headlines during each month. We classify firms without any news in the same month as no-news stocks. This simple definition of news and no-news stocks is free from the selection bias problem, which one may encounter when dividing stocks using more complicated forms of public information.

For the other dimension, we split firms according to their performance each month. We first rank news stocks based on their monthly stock returns and then select the top third and the bottom third as winners and losers, respectively. In this ranking, we consider stocks that are traded in each month only. To divide no-news stocks into winners and losers, we use the breakpoints of news stocks as needed to analyze differences between new stocks and no-news stocks by the same standard. Finally, we construct four event portfolios: "news winners," "news losers," "no-news winners," and "no-news losers." Meanwhile, we also choose winners and losers from all stocks. In this case, we use their own breakpoints in ranking portfolios to determine if the momentum effect is, in fact, absent.

Note that no-news stocks play an important role as a benchmark for analyzing news stocks in this paper. Fama (1998) points out that a spurious abnormal return generated by a bad model can be statistically significant in the long run. However, if news and no-news stocks are all affected by the bad model problem in the same fashion, we may well analyze the problem using the difference between the two samples to discern how news arrivals affect stock return patterns.

3.2. The Test Procedure

Our test procedure follows Chan (2003), which is, in turn, based on Jegadeesh and Titman (1993) and Fama (1998). For each event, we construct equally weighted portfolios of stocks and then calculate the calendar-time overlapping portfolio returns.[5] We use cumulative, instead of average, returns to capture how portfolios perform over time after they are constructed. To be specific, suppose that we want to examine how well news winners perform over the subsequent 4 months. For calendar month t, we calculate the abnormal returns of all stocks. Then, we average abnormal returns during month t across news winners during the last month. For the same calendar month t, we also average abnormal returns during month t across stocks that were news winners 2 months previously. Following the same procedure, we calculate abnormal returns during month t for news winner portfolios in the months of $t - 3$ and $t - 4$. Finally, we sum these four abnormal returns of the overlapping portfolios. We repeat this process for every calendar month to obtain a time-series of abnormal returns.

The above approach uses 1-month horizons to form event portfolios, which is not usual in existing studies of momentum. There are three reasons why we mainly use 1-month formation, nevertheless. First, in this paper we assume that stocks with both good (bad) performance and news headlines in a month have good (bad) information released to the public. That is, we evaluate the information content of news articles in terms of stock price movements. We then want to analyze how stock prices change in response to the associated news. Therefore, building portfolios based on returns and news appearances in longer periods may conceptually contradict our assumption. For example, suppose that we use news headlines that were released over a 6-month period in order to distinguish between news and no-news stocks. Because news stocks possibly have more than one instance of influential news during this period (some good and some bad), it is hard to say that stocks with good (bad) performances and news headlines have only good (bad) information. Furthermore, some may argue that abnormal stock returns in the post-formation period are not necessarily due to the same information that affects stock performances in the formation period. In particular, the responses of stock returns to good news could be obscured by those to bad news. Thus, when building portfolios, it is critical to secure the freshness of news articles. However, how to incorporate 1-month news data into the construction of multi-month overlapping portfolios remains unclear. For example, it is challenging to specify how to weigh news arriving over a 6-month period. Second, if we distinguish between news and no-news stocks according to news appearances in a longer period, then news stocks become too numerous and no-news stock too few, especially in a size-split analysis. The proportion of no-news stocks decreases from 51.7% with 1-month formation to 26.8% and 14.0% with 3- and 6-month formations, respectively. Third, as we

[5]The calendar-time overlapping portfolio method has been widely adopted in the finance literature. Fama (1998) recommends this approach to mitigate the cross-sectional dependence problem.

compare a number of our results to the United States results in Chan (2003), we need to adopt his methodology.

Despite these three reasons pertaining to the 1-month formation, we perform two additional robustness checks by forming portfolios in longer periods. First, when building momentum portfolios, we use 3- and 6-month intervals for the purpose of both ranking stock performances and counting news headlines. Second, we separate stocks into winners and losers by buy-and-hold returns in 3- and 6-month periods. However, we divide them into news and no-news stocks according to news incidences in the last month. This will cause a problem in that the stock returns during the formation period may not be due to the information in the news articles. The results of both robustness checks are similar to those of the main analysis, as will be discussed later in Section 5.2.

4. Data and Descriptive Statistics

Our sample consists of all stocks included in two Korean stock market indices, KOSPI and KOSDAQ, from January 2001 to December 2010. The KOSPI, representative of the Korean stock market, is mainly for large stocks while the KOSDAQ is for smaller stocks. We include KOSDAQ stocks considering the finding of Chan (2003), who shows strong drift after news is observed mainly in smaller stocks. Also, we want to eliminate any sample bias arising from the fact that large stocks are usually prone to better information dissemination. On the other hand, we exclude stocks priced below 1000 KRW from the sample to ensure that the results are not driven by illiquid stocks. However, results with stocks priced below 1000KRW are essentially the same.

We use the incidence of newspaper articles about a stock as a proxy for public information. We do not consider analyst reports and investment letters, as they are not available to a broad audience. We also discard articles from magazines, in that it is not possible to capture the exact time when this information is released.

We search the Naver News Service for articles published in major Korean newspapers. The Naver News Service is one of the most comprehensive news data services in Korea. It also provides convenient search criteria with which to find articles relevant to the sample stocks used here. To avoid the data omission problem, we focus on the top five daily newspapers with nationwide circulation: *Chosun Ilbo*, *Dong-a Ilbo*, *Joongang Daily*, *MK Business News*, and *Hankyung*. These five newspapers combined have a market share of 77.8% of the daily circulation among the total 17 daily nationwide newspapers in Korea.[6] Thus, our news data is deemed a reasonable proxy for public information.

[6]According to the Korea Audit Bureau of Circulations, *Chosun Ilbo*, *Dong-a Ilbo*, *Joongang Daily*, *MK Business News*, and *Hankyung* had 1.8, 1.3, 1.2, 0.9 and 0.5 million daily publication copies in 2010, respectively. The total daily circulation of all nationwide newspapers was 7.4 million in the same year.

For each month, we determine the number of news articles that mention company names in the headline, not in the body, in order to ensure that the news is relevant to the company. Unlike in Chan (2003), however, we could not collect news articles that include company names in the lead paragraphs because the Naver News Service does not provide such a search service. Also, we collect articles appearing in the business and economics section. We consider all changes of company names during the sample period using disclosure data from the Korea Exchange (KRX). Most of these company names are commonly used in newspapers. However, for chaebols (conglomerates), the names of holding companies are also widely used for their subsidiaries. In this paper, we use only subsidiary names. Otherwise, it becomes difficult to clarify which subsidiary is related to the specific news without reading the content. Because the name of the holding company is frequently used for its subsidiaries, the data omission problem may be a shortcoming of this paper. However, we find that there are many news articles in the business and economics section in the Naver News Service that specify company names and stock symbols in their headlines. Moreover, we do not use the number of news articles but instead the incidence of public news in a given month. We believe that these features mitigate the data omission problem, as there are several sources of public news that cover the same information.

We do not use the number of articles as a weight in our analysis. Instead, we only classify firms with one or more news instances into news stocks for each month, as the number of news items is positively correlated with the firm size.[7] Moreover, the amount of information in a given month is not necessarily proportional to the number of articles, as there can be multiple news items on the same subject.

We obtain all other data, such as stock returns, market capitalizations, and book values of assets, from the Fn-Dataguide database. We also calculate monthly share turnovers by dividing the number of total trading shares by the average of the total shares outstanding in a given month. Note that the samples do not contain stocks that undergo abnormal price changes due to unusual events such as a trading suspension.

Panel A of Table 3 provides the number of stocks by news count at the end of each year. There appear to be limited improvements in the coverage by media; the number of stocks with five or more news items does not show a rising trend, while the percentage of no-news stocks does not tend to decrease. Cross-sectionally, stocks with no news account for about 52% of the total. On average, approximately 13% of sample stocks have five or more news items per month.

In Panel B of Table 3, we calculate the time-series average of monthly cross-sectional correlations between the news count and the firm's characteristics. It can be seen that firm size has a strong positive correlation with news incidence. This suggests that larger firms are apt to receive more attention from the press. In constrast,

[7]See Panel B of Table 3 for details.

Table 3 Summary statistics of news data

This table presents summary statistics of news observations from 2001 to 2010. Panel A lists the number of KOSPI and KOSDAQ stocks by news count for each December. News stocks refer to those that had one or more news headlines each month. Otherwise, stocks are categorized into no-news stocks. Cross-sectional proportions of each category are in parentheses. The last row averages the number of stocks in each category for all months. Panel B averages monthly Pearson cross-sectional correlations between the number of news and stock's characteristics: market capitalizations, return, and turnover. Panel C shows distribution of stocks by percents of months in which stocks had news headlines over their existence. All statistics are obtained after eliminating stocks under 1000 KRW from the sample.

Panel A: The number of stocks

			News stocks	
Year	Total stocks	No news stocks	4 or fewer news	5 or more news
2001	1104	332 (30.1)	394 (35.7)	378 (34.2)
2002	1137	420 (36.9)	525 (46.2)	192 (16.9)
2003	1169	636 (54.4)	397 (34.0)	136 (11.6)
2004	1129	603 (53.4)	389 (34.5)	137 (12.1)
2005	1409	793 (56.3)	491 (34.8)	125 (8.9)
2006	1471	930 (63.2)	457 (31.1)	84 (5.7)
2007	1533	770 (50.2)	609 (39.7)	154 (10.0)
2008	1306	749 (57.4)	414 (31.7)	143 (10.9)
2009	1473	718 (48.7)	605 (41.1)	150 (10.2)
2010	1529	867 (56.7)	486 (31.8)	176 (11.5)
Average	1314	679 (51.7)	470 (35.8)	165 (12.6)

Panel B: The time series average of monthly Pearson cross-sectional correlations between news count and selected statistics

	Market Cap.	Return	Turnover
Average	0.605	0.023	0.007
SD	0.115	0.045	0.039

Panel C: Proportions of stocks by percentage of news month over stocks' life

Percentage of news months	100–90%	100–75%	75–50%	50–25%	25–0%	10–0%
Proportion of stocks	0.12	0.20	0.26	0.38	0.17	0.02

stock return and turnover are weakly related to news occurrence. This implies that many stocks with abnormally high/low returns or high rates of turnover are not reported in newspapers. Alternatively, every instance of news does not change stock prices, nor does every instance trigger extra trading.

Panel C of Table 3 reports how frequently stocks have news. Over 60% of stocks have news during 25% to 75% of all periods in which they existed in the sample. About 12% of stocks are featured in the newspaper in more than 90% of the

periods, while only 2% of stocks have news for no more than 10% of the periods. On the whole, news coverage on stocks has a pattern similar to the United States case reported in Chan (2003), except that the proportion of the United States news stocks during no more than 10% of the sample periods is approximately 8%.

Table 4 presents the number of stocks, the average market capitalizations, and the average monthly returns for winners and losers at the end of each year. Although we use different breakpoints for monthly performances, the number of all stocks equals roughly the sum of news and no-news stocks for both winners and losers in Panel A. Interestingly, Panel B shows that winners tend to be larger in size than losers. News stocks are also larger than no-news stocks, confirming that the number of news articles is strongly related to firm size. Meanwhile, average monthly returns on news and no-news stocks are quite similar. This is consistent with the weak correlation between news count and stock returns reported in Panel C of Table 3.

If a single industry is dominant in each event portfolio, the industry effect is likely to determine any return patterns in our analysis. To remove this industry effect, we categorize all stocks into ten industries following the Fn-Dataguide classification. We then calculate the cross-sectional Herfindahl index of each event portfolio for each month. The Herfindahl index is calculated as $\sum_{i=1}^{10} S_{it}^2$, where S_{it} is the percentage of industry i's stocks in month t. This represents the monthly industrial concentration in each portfolio. The time-series average of the Herfindahl indices for four portfolios is in the range of 0.185–0.203, which is close to the index for all stocks, 0.176. Thus, news data are not highly biased toward a particular industry.

5. The Momentum Strategy and Public News

In this section, we examine the effectiveness of the momentum strategy in the Korean stock market by dividing the sample stocks into two groups: news stocks and no-news stocks. In addition, we further divide each group into winner stocks and loser stocks and analyze post-news returns on each leg of long–short portfolios to clarify the sources of profits and losses. In particular, we focus on examining the patterns of returns – drift or reversals – that each portfolio follows subsequent to events.

5.1. Momentum Profits With and Without News

To examine the profitability of the momentum strategy, we construct zero-investment portfolios that buy winners and short-sell losers with equal weights for all stocks, news stocks, and no-news stocks, respectively. Then we compute returns for subsequent months on the long–short portfolios. Panel A of Table 5 reports the cumulative returns of the long–short strategies for the period from the month of portfolio formation up to 2 years. The first column of Panel A shows that for the entire set of stocks there are no significantly positive profits from the momentum

Table 4 A summary of winner and loser portfolios

This table presents summary statistics of winner and loser portfolios from 2001 to 2010. After eliminating stocks under 1000KRW, KOSPI and KOSDAQ stocks are divided into news stocks and no-news stocks according to whether or not they had one or more news headlines in each month. Then each category is subdivided into winners and losers. Winners denote stocks with returns higher than or equal to the top third in each month. Losers are stocks withreturns below or equal to the bottom third. All stocks and news stocks are divided into winners and losers by their own breakpoints. For no-news stocks, the breakpoints of news stocks are used. All figures are for the year-end except for the last row, which averages the number of stocks for all months. Panel A counts stocks for each category. Panel B shows the cross-sectional average of market capitalizations for each category. Panel C reports the cross-sectional average of monthly returns.

	Panel A: The number of stocks						Panel B: Avg market capitalization (billion KRW)						Panel C: Avg monthly return (%)					
	Losers			Winners			Losers			Winners			Losers			Winners		
Year	All	News	No-news	All	News	No-news	All	News	No-news	All	News	No-news	All	News	No-news	All	News	No-news
2001	365	255	113	365	255	74	48.9	61.3	24.0	441.6	536.9	217.7	−14.0	−13.9	−13.8	17.1	19.4	14.8
2002	376	237	145	376	237	139	243.0	365.0	34.9	213.8	292.8	79.1	−25.4	−25.6	−24.8	3.7	4.8	1.6
2003	386	176	248	386	176	137	312.6	678.8	37.3	329.6	559.3	51.8	−11.6	−11.7	−9.9	20.1	23.6	21.9
2004	373	174	229	373	174	149	227.1	411.9	75.7	257.9	403.7	53.4	−8.9	−8.5	−8.1	24.2	29.6	23.2
2005	465	204	314	465	204	203	91.8	172.4	111.9	894.3	1867.1	83.6	−17.4	−15.5	−16.7	24.7	27.7	26.8
2006	486	179	389	486	179	236	123.7	261.6	113.4	687.5	1329.4	210.6	−14.7	−15.6	−12.2	14.0	16.6	15.4
2007	506	252	227	506	252	219	389.5	606.1	156.6	732.0	1165.1	112.1	−14.0	−15.2	−13.8	14.1	15.2	14.3
2008	431	184	311	431	184	235	508.5	1272.7	89.7	284.6	382.1	128.0	−7.8	−6.9	−6.0	32.6	35.2	31.4
2009	487	250	283	487	250	187	505.1	945.7	121.3	513.7	858.4	106.6	−3.3	−4.1	−1.2	29.2	33.0	28.2
2010	507	219	383	505	219	177	229.4	593.1	94.0	1373.7	2558.9	283.1	−6.7	−5.4	−5.7	17.8	19.8	21.6
Avg	434	210	243	434	210	179	324.3	600.3	94.6	513.6	804.8	131.1	−13.3	−13.8	−11.7	20.0	23.1	19.4

Table 5 Cumulative long–short portfolio returns (%)

This table shows cumulative returns of long–short portfolios over several holding periods from 2001 to 2010. After eliminating stocks under 1000 KRW, we categorize stocks into three groups: all stocks, news stocks that had at least one news during a month, and no-news stocks without any news. As in Table 4, we subdivide stocks of each group into two subgroups by their monthly performances: winners whose returns are higher than or equal to the top third, and losers whose returns are less than or equal to the bottom third. We calculate the calender-time overlapping portfolio returns for winner and loser portfolios, respectively. The monthly rolling portfolio returns are summed to obtain cumulative returns. And we compute returns on zero-investment portfolios that buy winners and short losers. Panel A lists equally-weighted average cumulative returns and *t*-statistics by investing immediately after portfolio construction. And panel B reports results of the same analysis by waiting 1 month after portfolio construction before making zero-investment.

Months after portfolio construction	Panel A: Immediate investment						Panel B: Waiting 1 month before zero investment					
	All stocks		News stocks		No-news stocks		All stocks		News stocks		No-news stocks	
	Avg (%)	*t*-stat	Avg (%)	*t*-stat	Avg (%)	*t*-stat	Avg (%)	*t*-stat	Avg (%)	*t*-stat	Avg (%)	*t*-stat
1	−1.01	−2.68	−0.79	−1.88	−1.26	−3.17	−0.50	−1.44	−0.46	−1.17	−0.44	−1.18
3	−1.04	−1.32	−0.60	−0.70	−1.39	−1.90	0.18	0.26	0.61	0.81	−0.05	−0.08
6	−0.41	−0.35	0.61	0.47	−1.33	−1.31	0.51	0.44	1.49	1.22	−0.69	−0.67
9	−0.25	−0.17	1.49	0.91	−2.33	−1.88	1.63	1.17	3.57	2.37	−0.80	−0.66
12	1.48	0.86	3.91	2.14	−1.07	−0.73	2.41	1.40	4.57	2.48	0.34	0.23
15	0.97	0.46	3.15	1.43	−0.72	−0.41	1.54	0.72	3.60	1.61	−0.18	−0.10
18	−0.07	−0.03	2.52	1.00	−2.30	−1.15	0.93	0.38	3.34	1.32	−0.97	−0.48
24	−0.44	−0.14	1.76	0.56	−2.14	−0.91	0.73	0.24	3.01	0.94	−1.17	−0.49

strategy. In particular, the momentum profits for the first 2 months are significantly negative.

However, stocks with news headlines produce different results. Returns on these stocks are around 4% at the 5% significance level for 11–12 months after portfolio construction. Moreover, these positive returns are not eliminated thereafter, although they are statistically insignificant. By comparison, the post-holding-period returns of no-news stocks are significantly negative during the first 2 months. These results support the conjecture that the momentum effect is closely related to how investors react to public news.

In the first 4 months, the long–short portfolios of news stocks generate negative returns as do those of no-news stocks. These return patterns may be caused by short-run market-microstructure movements such as bid-ask bounce. Following previous studies, we wait 1 month before creating the zero-investment portfolios.[8] Panel B of Table 5 indicates that this procedure reduces the loss in the early months for both news and no-news stocks. Moreover, these zero-investment strategies with news stocks become more profitable for longer periods. In addition, the negative returns on no-news stocks become smaller and insignificant. Nevertheless, positive returns on all stocks remain statistically insignificant. Thus, eliminating the market-microstructure effect appears to strengthen the results in Panel A.

5.2. Abnormal Returns on Event Portfolios

Table 6 analyzes the long (winners) and short (losers) legs of the zero-investment portfolios separately. Following Fama and French (1993), we adjust the returns on each leg by controlling size and B/M (book-to-market value) effects. To be specific, in June of each year t, we sort all KOSPI and KOSDAQ stocks in the sample by size and B/M and then calculate the quintiles in each case. When sorting by size, the market capitalization is measured at the end of June in year t. When sorting by B/M, we use the market value of a share at the end of December in year $t - 1$, and its book value for the fiscal year ending in year $t - 1$. Using 5×5 breakpoints, we allocate stocks into 25 portfolios and compute equally weighted monthly returns on each benchmark portfolio from July of year t to June of year $t + 1$.

At the end of each June, we select, from our sample, only stocks that are used to construct these 25 portfolios. During this process, we lose 21% of the observations because data from the previous year to each June are required for stocks to remain in the sample. Also, we remove stocks in financial and foreign sectors, consistent with Fama and French (1993).

Finally, we obtain abnormal returns on each stock by subtracting the size and B/M matching portfolio returns for each month. With these adjusted returns, we repeat the same analysis used in Section 5.1. Note that we wait 1 month after

[8]Chan (2003) waits a week between portfolio formation and investment. However, we wait longer, as we want to test whether the micro-structure effect offsets positive momentum profits in the Korean stock market. Also, a 1-month gap is more standard in the literature.

Table 6 Cumulative abnormal returns (%), waiting 1 month before investments

This table shows cumulative abnormal returns of winner and loser portfolios over several holding periods from 2001 to 2010. We compute abnormal returns by controlling for size and B/M, following Fama and French (1993). After eliminating stocks under 1000 KRW from the sample, we categorize stocks into news and no-news stocks. Then, we subdivide each group into winners and losers by monthly abnormal returns. For performance breakpoints, we use the top third and the bottom third of monthly abnormal returns on news stocks as before. We wait 1 month after portfolio construction, and calculate the calender-time overlapping portfolio abnormal returns for winner and loser portfolios. The monthly rolling portfolio returns are summed to obtain cumulative returns. Panel A and Panel B list the results for winner and loser portfolios, respectively. And Panel C shows differences between the two portfolios.

Months after portfolio construction	News stocks		No-news stocks		Difference	
	Avg (%)	*t*-stat	Avg (%)	*t*-stat	Avg (%)	*t*-stat
Panel A: Winner portfolio						
Construction month	20.87	46.78	17.35	45.00	3.52	13.08
1	−0.40	−2.12	−0.45	−2.33	0.04	0.19
3	−0.73	−2.10	−0.87	−2.62	0.15	0.36
6	−0.97	−1.82	−1.85	−3.55	0.88	1.40
9	−0.39	−0.53	−2.42	−3.68	2.03	2.19
12	0.45	0.47	−2.61	−3.11	3.06	2.43
15	0.37	0.34	−3.58	−3.95	3.95	2.72
18	0.40	0.32	−4.61	−4.09	5.01	2.96
24	0.81	0.56	−5.24	−3.61	6.05	2.82
Panel B: Loser portfolio						
Construction month	−15.07	−75.94	−14.16	−61.71	−0.91	−7.83
1	0.02	0.11	0.31	1.72	−0.29	−1.30
3	−0.38	−0.98	0.41	1.45	−0.78	−1.97
6	−1.03	−1.61	0.16	0.38	−1.19	−1.93
9	−1.67	−1.92	−0.09	−0.18	−1.58	−1.74
12	−2.58	−2.46	−1.33	−1.93	−1.26	−1.07
15	−2.52	−1.97	−2.03	−2.55	−0.49	−0.35
18	−2.63	−1.82	−2.93	−3.03	0.30	0.19
24	−3.98	−2.08	−4.84	−3.57	0.86	0.39
Panel C: Winner–loser						
1	−0.42	−1.31	−0.76	−2.31	0.33	0.99
3	−0.35	−0.59	−1.28	−2.51	0.93	1.81
6	0.06	0.06	−2.01	−2.62	2.07	3.00
9	1.28	1.12	−2.33	−2.70	3.61	3.95
12	3.03	2.37	−1.28	−1.29	4.31	3.70
15	2.90	1.95	−1.55	−1.48	4.45	3.22
18	3.02	1.86	−1.68	−1.25	4.70	3.02
24	4.79	2.48	−0.39	−0.27	5.18	2.94

portfolio construction before creating a zero-investment portfolio to alleviate the market microstructure effects. Also, following previous studies,[9] we reconstruct four event portfolios based on the abnormal returns to determine how investors react to idiosyncratic information.

In Panel C of Table 6, the differences in abnormal returns between winners and losers show patterns similar to those of the long–short portfolio returns in Table 5. News stocks generate significant profits starting 10 months after portfolio construction, while no-news stocks show significantly negative returns during the first 9 months. Overall, news incidences cause a statistically meaningful difference.

In Panels A and B of Table 6, each leg of the long–short portfolios with news stocks and no-news stocks reveals more interesting results. For news stocks, abnormal returns on winners show significant reversals for the first 5 months. In constrast, returns on loser stocks exhibit significant drift after 9 months. Thus, buying news winners reduces positive profits earned by shorting news losers. On the presumption that news winners have good news and news losers have bad news, these results suggest that investors overreact to good news and underreact to bad news in Korea.

We obtain disparate results from the legs of no-news stocks. Abnormal returns on no-news winners show significant reversals, but no-news losers show weak reversals during the first 8 months. As a result, differences in post-holding-period returns between winners and losers for no-news stocks are negative.

Comparing the above results with the United States case reported in Chan (2003), we find that the key difference between the two countries stems from news winners and no-news winners. In the United States stock market, post-news returns on news winners are weakly positive while these returns on no-news winners show significant drift. In contrast, corresponding returns in the Korean market show reversals irrespective of news incidence. We thus come to the conclusion that overreactions of winner stocks are the main reasons for the absence of momentum profits in Korea.

As discussed in Section 3.2, we perform two additional analyses to check the robustness of portfolio formation with 1-month returns and the appearance of news. Both analyses yield results similar to those obtained from the main analysis. One notable exception is that the statistical significance of momentum profits from news stocks is reduced as no-news stocks in the 1-month formation period become news stocks. However, the patterns and magnitudes of the returns are similar. In the case of a 3-month formation period and waiting 1 month before investment, the long–short portfolios of news stocks also generate positive returns at the 10% significance level. Furthermore, differences in post-news abnormal returns between winners and losers are still highly significant, as shown in Table 6.

[9]Chan (2003) primarily reports abnormal returns of event portfolios formed by ranking on raw returns, but he also repeats the same analysis by ranking on adjusted returns, showing that both approaches generate the same results.

5.3. Discussion

Reversals of news winners and the drift of news losers may indicate that stock prices react asymmetrically to public news. Will this evidence be compatible with the arguments of the three studies on momentum mentioned in Section 1?

In Daniel *et al.* (1998), investors underreact to public signals and overreact to private signals due to their overconfidence about the precision of the private signals. Moreover, biased self-attribution triggers positive short-term momentum and long-run reversal, as reinforcing public information leads to further overreactions to preceding private information. In order to compare our results with this theory, we should determine whether the information from news articles is public or private. According to Daniel *et al.* (1998), private information is defined as that which analysts and investors generate through their skills, such as (i) interviewing management, (ii) verifying rumors, (iii) analyzing financial statements, and (iv) identifying the significance of existing data that others neglect. Unless investors make significant efforts to extract valuable information from news articles, signals from news should be considered to be public. In contrast, if investors require some special skills to verify useful information from news stories, then (iv) may imply that signals from news would be private. If signals from news articles are classified as public information and the price movements of no-news stocks capture private information, reversals of no-news stocks would be consistent with the overreactions of investors to private signals. However, 1-month reversals are much shorter than the length of time during which Daniel *et al.* (1998) expect overreactions to private information to be corrected. Moreover, the reversals of news winners may be inconsistent with investors' underreactions to public information. On the other hand, if private information includes signals from news articles, then the drift of news losers would contradict investors' overreactions to private information. Neither interpretation fails to explain the asymmetric response of stock prices to news in the Korean stock market.

In Hong and Stein (1999), stock prices underreact in the short run because news watchers fail to extract other news watchers' signals and private information therefore diffuses gradually. However, stock prices overreact over a long horizon, as momentum traders use simple trading strategies based on past price changes. Hong and Stein (1999) do not specify what private signals of news watchers are in the real-world environment. Also, they do not formally include public signals in their model.[10] Therefore, it would be reasonable to conclude that public news in Hong and Stein (1999) are private signals, as investors appear to pay little attention to news headlines, like news watchers. With this interpretation, reversals of no-news stocks are consistent with overreaction of momentum traders to pure price movements. However, reversals of news winners contradict the contention of

[10]They conjecture that including public signals into the model will eliminate long-term overreactions, as momentum traders can refine their simple trend-chasing strategies immediately after the release of public news.

underreactions of news watchers to private signals, although the instances of drift of news losers are consistent with this behavior.

In Barberis *et al.* (1998), investors underreact to news stories, contradictory to their priors, while they overreact to reinforcing news articles. Therefore, it is difficult to test Barberis *et al.* (1998), unless one is able to trace a long string of news articles and stock returns and has good grounds for an appropriate length of time period in which investors update their priors. For the same reason, we cannot directly compare our results with Barberis *et al.* (1998). However, we do not expect that news winners (losers) experience overreactions (underreactions), as they consistently have a series of reinforcing (contradictory) public news. Therefore, Barberis *et al.* (1998) would also be unable to account for the reversals of news winners and the drift of news losers in the Korean stock market.

In sum, judging whether our empirical results are consistent with the detailed assumptions and implications of the previous three studies is not straightforward. Nevertheless, all three theories fail to explain the evidence in the Korean market that investors overreact to good news but underreact to bad news. As their models assume symmetric responses of investors to information regardless of news content, it is not surprising that none of these models can successfully explain the Korean case. Chan (2003) also points out that none of these models justifies differences in the degree of return drift or reversals between winners and losers, although his empirical results on the United States market are generally consistent with the assertions of these models.

Therefore, how can one explain the asymmetric reactions of stock prices to news? With respect to this question, Hong *et al.* (2000) proposes a hypothesis which states "bad news travels slowly." They test the gradual-information-diffusion model of Hong and Stein (1999) by sorting stocks using two measures for a rate of information diffusion: firm size and analyst coverage. As predicted by their model, the result is that firms of a smaller size and less analyst coverage have more momentum profits. More interestingly, they find that stocks with less analyst coverage react more sluggishly to bad news than to good news. They interpret this result as follows: "To the extent that its managers prefer higher to lower stock prices . . . if the same firm is sitting on bad news, its managers will have much less incentive to bring investors up to date quickly."[11] While managers are reluctant to reveal bad news, analysts will work hard to discover this type of news. This implies that bad information diffuses gradually via newspapers, causing drift in news losers. While this interpretation appears to be consistent with the findings of this paper, it will turn out not necessarily to be so in Section 6.

[11]This interpretation could be problematic, though, as analyst coverage can also be a measure of differences in transaction costs. Therefore, Hong *et al.* (2000) also include two proxies for transaction costs in their analysis: (i) share turnover; and (ii) a dummy variable that represents the existence of listed options on a given stock. They find that the asymmetric effect of the analyst coverage is still robust to these controls of transaction costs. However, they admit that their robustness checks cannot rule out all alternative hypotheses, given that there is no perfect measure of transaction costs.

Alternatively, the role of transaction costs may be an explanation with regard to the asymmetric reactions of stock prices to news. Any information on firms is usually incorporated into stock prices via trading activities. However, if trading obstacles such as short-sale constraints or asymmetric market impact costs keep investors from trading on bad news, then returns on loser stocks will drift after such news. Chan (2003) reports that underreactions after news are found mainly in small and illiquid stocks, also arguing that transaction costs are possible causes of momentum.

Besides the asymmetric reaction of stock prices to news, the reversals of news winners and the drift of news losers can also be explained by market misperceptions about future stock performances. That is, because Korean investors are more inclined to misperceptions, they may consistently be optimistic for both news winners and news losers. In such a case, the stock prices of news winners would overreact in the portfolio formation period, while those of news losers underreact in the same period. Therefore, both news winners and news losers will exhibit negative post-holding-period returns during the process of correcting overestimations.

6. What Causes the Asymmetric Reaction of Stock Prices to News?

In this section, we attempt to provide an answer to the question of what is the real cause of the asymmetric reaction of stock prices to news. We focus on examining the validity of the two possible explanations mentioned above: managers' incentives to reveal bad information slowly, and transaction costs.

6.1. The "Bad News Travels Slowly" Hypothesis

The hypothesis of Hong *et al.* (2000) that "bad news travels slowly" implies that a manager of any firm has an incentive to disclose good news quickly and to release bad news slowly. If so, bad news will diffuse slowly regardless of the size of the firm. We thus anticipate that large stocks will also exhibit significantly different return patterns depending on whether they are news winners or news losers. At the end of each June, we separate sample stocks into five groups according to size, as in the previous analysis. Then, for each group, we repeat the same analysis used in Table 6. Note that we use returns on size- and B/M-matched portfolios in the previous analysis to compute the abnormal returns of each group.

In Table 7, news losers in the largest quintile (size 5) do not show significant return drift. This is not consistent with the hypothesis that managers of large firms also have an incentive to reveal bad information slowly. One can argue that information about large firms tends to be disseminated more quickly, as these firms are subject to more attention from news media and broader analyst coverage.[12]

[12]Hong *et al.* (2000) argue that the sluggish diffusion of news about small firms is caused by the fixed costs of information acquisition. That is, investors are reluctant to pay these costs for small stocks that represent low weights in their portfolios.

Table 7 Cumulative abnormal returns (%) by size quintiles, waiting 1 month before investments

This table shows cumulative abnormal returns on winner and loser portfolios by five size quintiles using the sample from 2001 to 2010. We compute abnormal returns by controlling for size and B/M, following Fama and French (1993). After eliminating stocks under 1000 KRW from the sample, we categorize stocks into news and no-new stocks, and also split them into five size quintiles. Then, we subdivide each group into winners and losers by monthly abnormal returns. For performance breakpoints, we use the top third and the bottom third of monthly abnormal returns on news stocks, as before. We wait 1 month after porfolio construction, and calculate the calender-time overlapping portfolio abnormal returns for each portfolio. The monthly rolling portfolio returns are summed to obtain cumulative returns. Size 5 denotes the largest quintile, while size 1 denotes the smallest quintile. The time-series average of stock counts in each portfolio is in parenthesis.

Months after portfolio construction	Winner portfolio						Loser portfolio						Winner–loser					
	News stocks		No-news stocks		Difference		News stocks		No-news stocks		Difference		News stocks		No-news stocks		Difference	
	Avg (%)	*t*-stat	Avg (%)	*t*-stat	Avg (%)	*t*-stat	Avg (%)	*t*-stat	Avg (%)	*t*-stat	Avg (%)	*t*-stat	Avg (%)	*t*-stat	Avg (%)	*t*-stat	Avg (%)	*t*-stat
Size 5 (large)	(55)		(16)				(50)		(23)				(104)		(37)			
Construction	13.81	46.22	12.74	35.17	1.07	3.03	−11.71	−52.85	−11.76	−45.59	0.05	0.29	–	–	–	–	–	–
1	0.16	0.65	−0.51	−1.18	0.67	1.50	0.13	0.58	0.18	0.32	−0.05	−0.09	0.03	0.06	−0.69	−0.94	0.72	1.10
3	1.14	2.57	−0.40	−0.49	1.54	1.70	0.00	0.00	−1.59	−2.08	1.59	1.99	1.14	1.40	1.19	1.06	−0.05	−0.05
6	1.78	2.50	−0.34	−0.26	2.12	1.47	0.04	0.05	−2.89	−2.28	2.93	2.21	1.74	1.38	2.55	1.51	−0.81	−0.58
9	2.69	2.76	−0.84	−0.53	3.53	1.93	0.53	0.52	−2.87	−1.66	3.40	1.86	2.16	1.36	2.03	0.99	0.12	0.07
12	4.09	3.34	−1.05	−0.55	5.15	2.29	0.72	0.60	−2.65	−1.28	3.37	1.50	3.37	1.88	1.59	0.66	1.78	0.86
15	5.17	3.37	−0.98	−0.42	6.15	2.15	1.71	1.20	−3.18	−1.37	4.89	1.88	3.45	1.63	2.20	0.81	1.25	0.50
24	8.92	3.56	0.20	0.06	8.71	1.98	4.60	2.11	−2.61	−0.75	7.20	1.78	4.32	1.54	2.81	0.92	1.51	0.51
Size 4	(38)		(32)				(37)		(45)				(75)		(75)			
Construction	17.84	36.95	15.29	37.65	2.55	8.04	−13.57	−50.73	−12.72	−49.01	−0.85	−4.99	–	–	–	–	–	–
1	0.10	0.36	−0.25	−0.68	0.35	0.81	0.16	0.52	0.20	0.83	−0.04	−0.13	−0.06	−0.13	−0.45	−0.92	0.40	0.75
3	−0.10	−0.21	−0.74	−0.99	0.63	0.78	−0.05	−0.09	−0.16	−0.34	0.11	0.18	−0.05	−0.06	−0.57	−0.58	0.52	0.58
6	0.50	0.63	0.13	0.11	0.37	0.27	−0.83	−0.87	0.25	0.33	−1.08	−0.98	1.33	1.06	−0.12	−0.08	1.45	0.99
9	1.08	1.04	−0.07	−0.04	1.15	0.64	−1.67	−1.28	0.39	0.32	−2.06	−1.22	2.76	1.71	−0.46	−0.29	3.21	1.81
12	2.42	1.69	0.48	0.25	1.94	0.81	−3.04	−2.01	0.15	0.10	−3.19	−1.58	5.46	3.01	0.33	0.19	5.13	2.45
15	3.27	1.85	0.39	0.18	2.88	1.03	−3.48	−1.96	0.89	0.50	−4.37	−1.81	6.75	3.16	−0.50	−0.25	7.25	2.80
24	6.74	2.50	9.04	1.97	−2.31	−0.47	0.44	0.14	9.05	2.12	−8.87	−1.76	6.30	2.05	1.65	0.56	5.49	1.42
Size 3	(31)		(38)				(31)		(53)				(61)		(89)			
Construction	21.62	33.51	16.54	29.34	5.08	10.27	−14.92	−62.24	−13.48	−51.14	−1.44	−6.42	–	–	–	–	–	–
1	−0.35	−0.98	−0.35	−1.03	0.00	0.00	−0.21	−0.52	−0.11	−0.42	−0.10	−0.21	−0.14	−0.22	−0.24	−0.49	0.10	0.13
3	−0.27	−0.39	−0.24	−0.38	−0.03	−0.03	−0.67	−0.81	−0.10	−0.22	−0.57	−0.63	0.40	0.34	−0.14	−0.17	0.53	0.41

Table 7 (*Continued*)

Months after portfolio construction	Winner portfolio						Loser portfolio						Winner–loser					
	News stocks		No-news stocks		Difference		News stocks		No-news stocks		Difference		News stocks		No-news stocks		Difference	
	Avg (%)	*t*-stat	Avg (%)	*t*-stat	Avg (%)	*t*-stat	Avg (%)	*t*-stat	Avg (%)	*t*-stat	Avg (%)	*t*-stat	Avg (%)	*t*-stat	Avg (%)	*t*-stat	Avg (%)	*t*-stat
6	−0.53	−0.48	−0.81	−0.81	0.29	0.19	−1.35	−1.16	−0.83	−1.01	−0.52	−0.41	0.82	0.50	0.02	0.01	0.80	0.45
9	−0.84	−0.60	−1.61	−1.26	0.62	0.32	−1.67	−1.03	−0.88	−0.69	−0.79	−0.45	0.82	0.42	−0.29	−0.19	0.95	0.46
12	−0.36	−0.20	−0.58	−0.34	0.20	0.08	−3.58	−1.56	−1.68	−1.05	−1.90	−0.75	3.22	1.40	0.99	0.52	2.13	0.80
15	−2.45	−1.14	−1.35	−0.64	−0.99	−0.34	−5.74	−2.16	−3.12	−1.66	−2.61	−1.00	3.29	1.26	1.71	0.76	1.59	0.54
24	−1.39	−0.36	−0.28	−0.07	−1.21	−0.26	−6.93	−1.70	−0.43	−0.12	−6.81	−1.51	6.51	1.73	0.29	0.08	5.34	1.27
Size 2	(29)		(38)				(31)		(61)				(59)		(98)			
Construction	26.43	23.64	18.46	31.08	7.97	8.68	−16.84	−40.46	−15.30	−42.20	−1.54	−6.40	–	–	–	–	–	–
1	−1.14	−2.74	−0.22	−0.64	−0.92	−1.79	−0.50	−1.20	0.41	1.28	−0.90	−1.62	−0.64	−1.07	−0.62	−1.18	−0.02	−0.02
3	−2.22	−2.80	−0.10	−0.14	−2.12	−1.95	−1.48	−1.74	0.57	1.05	−2.05	−1.95	−0.74	−0.70	−0.67	−0.73	−0.07	−0.05
6	−3.56	−2.82	−1.28	−1.18	−2.28	−1.41	−3.11	−2.01	0.45	0.48	−3.55	−1.89	−0.46	−0.26	−1.73	−1.24	1.28	0.63
9	−2.76	−1.44	−2.84	−1.89	0.08	0.03	−3.06	−1.54	−0.20	−0.15	−2.86	−1.17	0.30	0.13	−2.64	−1.66	2.94	1.15
12	−1.38	−0.54	−3.36	−1.71	1.99	0.61	−4.44	−1.51	−1.00	−0.54	−3.44	−0.95	3.06	1.25	−2.36	−1.21	5.42	1.72
15	−3.16	−0.95	−5.19	−2.13	1.82	0.47	−6.41	−1.82	−0.68	−0.29	−5.73	−1.35	3.25	1.07	−4.61	−2.41	7.81	2.15
24	−2.89	−0.56	−6.09	−1.35	2.49	0.40	−14.59	−2.53	−3.73	−0.87	−10.62	−1.60	10.12	2.96	−1.70	−0.59	11.35	2.22
Size 1	(27)		(45)				(32)		(74)				(59)		(116)			
Construction	34.45	25.31	22.48	26.30	11.97	11.02	−21.70	−48.37	−18.61	−43.74	−3.09	−11.24	–	–	–	–	–	–
1	−1.52	−2.31	−0.38	−0.69	−1.14	−1.28	−1.14	−2.66	0.31	0.77	−1.45	−2.41	−0.39	−0.47	−0.69	−0.89	0.31	0.29
3	−4.22	−3.98	−1.14	−1.36	−3.08	−2.28	−1.74	−1.58	0.86	1.02	−2.60	−1.79	−2.48	−1.59	−2.00	−1.75	−0.48	−0.27
6	−7.02	−4.20	−3.30	−2.36	−3.73	−1.77	−3.66	−2.15	0.35	0.30	−4.01	−2.00	−3.36	−1.52	−3.65	−2.49	0.28	0.12
9	−9.63	−3.83	−4.63	−2.37	−5.01	−1.65	−5.61	−2.40	−0.04	−0.03	−5.56	−1.83	−4.03	−1.34	−4.58	−2.33	0.56	0.16
12	−11.23	−3.63	−5.47	−2.32	−5.77	−1.51	−9.36	−2.74	−1.62	−0.83	−7.74	−1.95	−1.87	−0.49	−3.84	−1.72	1.97	0.47
15	−13.19	−3.49	−6.96	−2.77	−6.23	−1.37	−12.77	−3.08	−3.55	−1.47	−9.22	−1.89	−0.42	−0.09	−3.41	−1.43	2.98	0.58
24	−24.77	−4.10	−9.53	−2.15	−15.24	−2.17	−26.67	−4.31	−6.38	−1.41	−20.29	−2.62	1.90	0.30	−3.15	−0.88	5.05	0.62

However, this argument is invalidated by the evidence that news winners in the largest quintile exhibit significant return drift.

Meanwhile, it can be seen that news losers in the smallest quintile continue to have negative returns in the subsequent periods, accounting for most of the drift found in the entire set of news losers. On the other hand, news winners in the smallest quintile show strong reversals after news. As a result, losses from these reversals offset most of the profits generated from the drift of news losers, making the momentum strategy ineffective in Korea. This result stands in contrast to the case of the United States market (see, Chan, 2003), in which the smallest news winners have positive returns and thus contribute to the profitablity of the momentum strategy.[13]

To recapitulate, the presumption that bad news travels slowly can explain the post-news return patterns of small news losers, but not those of large news losers. It cannot explain the return drift of large news winners, either. Thus, the hypothesis of Hong *et al.* (2000) cannot be used to explain the asymmetric reactions of stock prices to news in the Korean market.[14]

6.2. The Impact of Short-Sale Constraints

In view of the result that post-news return drift appears mostly in small news losers, it is worthwhile to test the validity of Chan (2003)'s argument in the Korean market. His argument is that transaction costs play a role in creating positive momentum profits, as small stocks are more vulnerable to trading obstacles.

In order to examine the role of transaction costs, we consider the impact of short-sale constraints, which we believe are an important proportion of transaction costs, in terms of whether they cause the asymmetric response of stock prices to news. The existence of listed options on a given stock and institutional ownership are commonly used as proxies for short-sale constraints. However, the first proxy,

[13]For this analysis, Chan (2003) redefines news stocks as firms with both news headlines and high share turnover. This procedure is a remedy to increase the number of no-news stocks in the largest quintile. However, we do not use this more restrictive definition of news stocks because it can undermine the consistency of the analysis.

[14]It is also interesting that smaller news winners present strong reversals while larger news winners show drift. The difference between smaller and larger news winners can be explained in part by the intuitions of Daniel *et al.* (1998) and Hong and Stein (1999). As Panel B of Table 3 indicates, smaller stocks have fewer news articles than larger stocks. This implies that investors rely on private information to a greater extent when investing smaller stocks. If so, the phenomenon of strong reversals for smaller news winners is consistent with the argument of Daniel *et al.* (1998) that stock prices overreact to private signals and underreact to public information. Moreover, in the sense that investors are more sensitive to price changes than to public news when trading smaller stocks, the phenomenon can also be consistent with the argument of Hong and Stein (1999), who state that investors will overreact to price movements and underreact to news. These explanations are also compatible with the drift of larger news winners and weak reversals in larger no-news winners.

which is used by Hong *et al.* (2000), is inappropriate for our purpose because, in Korea, the number of stocks that have listed options is too small (seven in 2002 to 33 in 2013). Moreover, stocks having listed options are all large-cap stocks. Thus, we chose institutional ownership as a proxy for short-sale constraints. According to Nagel (2005), stocks with a lower level of institutional ownership are subject to these constraints to a greater extent because lenders of stocks are mainly institutional investors. In addition, indirect short-sale constraints are more likely to affect stocks that are owned mainly by individual investors because they are less sophisticated than institutional investors.[15]

We divide news stocks into two groups with low- and high-level institutional ownership using the median level as the breakpoint. We then subdivide each group into winners and losers as before. Panel A of Table 8 shows the post-news return patterns for each category. Note that we use the same size- and B/M-adjusted returns used in Section 6.2. Also, in Panel B, we report the results for no-news stocks as a benchmark. We subdivide no-news stocks into winners and losers using the breakpoints of news stocks, as before. We note that the institutional ownership data in Korea have some problems. First, the data is annual, not monthly, as they are collected from financial statements. In addition, many observations appear to be missing. Owing to these problems, the empirical results need to be interpreted cautiously.

We find that news losers with a low level of institutional ownership exhibit drift after news, although the significance of this is weak. In contrast, news losers with a high level of institutional ownership experience reversals. The differences in post-news returns between the two groups are statistically significant. From this result, we infer that the asymmetric reaction of stock prices to news may be caused by transaction costs such as short-sale constraints.

7. Market Misperceptions about Firms' Future Prospects

In addition to the asymmetric reaction of stock prices to news, we suggest that investors' misperceptions about firms' future performances may also cause the post-news return patterns of news winners and news losers. Based on the finding that analysts consistently overestimate (underestimate) the future profitability of firms with high (low) share turnover, Lee and Swaminathan (2000) propose the use of

[15]Outside institutional investors are generally unable to short for various institutional and cultural reasons. For example, Almazan *et al.* (2004) demonstrate that only about 30% of mutual funds are allowed by their charters to sell short. These constraints are referred to as indirect short-sale constraints. With indirect short-sale constraints, price efficiency could be determined by the existing shareholders. Sophisticated shareholders could sell if a stock becomes overpriced. However, if the existing shareholders are not sufficiently sophisticated, the stock could stay overpriced as outside investors cannot go short due to indirect short-sale constraints.

Table 8 Cumulative abnormal returns (%) by annual institutional ownership, waiting 1 month before investments

This table shows cumulative abnormal returns on winner and loser portfolios by annual institutional ownership using the sample from 2001 to 2010. We compute abnormal returns by controlling for size and B/M, following Fama and French (1993). After eliminating stocks under 1000 KRW from the sample, we categorize stocks into news and no-news stocks, and also split them into into two groups with low- and high-level institutional ownerships, representing strong and weak shortsale constraints, respectively. For the latter classification, we use the median of annual institutional ownership of the entire set of stocks as a breakpoint. Then, we subdivide each group into winners and losers by monthly abnormal returns. For performance breakpoints, we use the top third and the bottom third of monthly abnormal returns on news stocks as before. We wait 1 month after portfolio construction, and calculate the calender-time overlapping portfolio abnormal returns for each portfolio. Panel A and Panel B report results for news stocks and no-news stocks, respectively. The time-series average of stock count in each portfolio are in parentheses.

Months after portfolio construction	Low institutional ownership		High institutional ownership		Difference	
	Avg (%)	*t*-stat	Avg (%)	*t*-stat	Avg (%)	*t*-stat
Panel A: News stocks						
Winner portfolio	(53)		(77)			
Construction month	25.24	30.72	17.18	41.60	8.06	10.06
1	−0.74	−1.70	0.36	1.49	−1.10	−2.47
3	−2.08	−2.71	1.42	2.60	−3.50	−3.91
6	−3.74	−2.98	3.35	3.36	−7.09	−4.67
9	−1.92	−1.00	4.20	3.04	−6.12	−2.74
12	−0.86	−0.34	6.00	3.01	−6.85	−2.18
15	−1.56	−0.55	5.92	2.58	−7.47	−1.98
24	−0.23	−0.05	8.24	2.32	−8.47	−1.52
Loser portfolio	(62)		(68)			
Construction month	−15.91	−58.67	−12.95	−50.57	−2.96	−12.02
1	−0.34	−0.98	0.75	2.88	−1.09	−2.43
3	−1.25	−1.52	1.39	2.47	−2.65	−2.47
6	−1.11	−0.77	2.10	2.29	−3.20	−1.82
9	−1.81	−0.89	1.84	1.42	−3.65	−1.65
12	−2.56	−0.97	2.66	1.53	−5.23	−1.78
15	−1.64	−0.51	2.35	1.09	−4.06	−1.14
24	−4.24	−0.91	5.80	1.73	−10.01	−1.76
Winner–loser						
1	−0.40	−0.69	−0.39	−0.94	−0.01	−0.01
3	−0.83	−0.82	0.03	0.04	−0.86	−0.66
6	−2.63	−1.77	1.25	1.19	−3.88	−2.50
9	−0.11	−0.06	2.36	1.67	−2.47	−1.36
12	1.71	0.76	3.33	1.78	−1.63	−0.68
15	0.08	0.03	3.35	1.56	−3.43	−1.39
24	4.02	1.09	2.46	0.87	0.11	0.03

Table 8 (*Continued*)

Months after portfolio construction	Low institutional ownership		High institutional ownership		Difference	
	Avg (%)	*t*-stat	Avg (%)	*t*-stat	Avg (%)	*t*-stat
Panel B: No-news stocks						
Winner portfolio	(64)		(50)			
Construction month	18.50	36.57	15.90	35.32	2.59	6.40
1	−0.43	−1.14	0.24	0.51	−0.67	−1.24
3	−1.73	−2.16	0.99	1.26	−2.72	−2.62
6	−2.89	−2.04	0.83	0.67	−3.71	−2.05
9	−2.72	−1.45	0.50	0.28	−3.22	−1.45
12	−2.66	−1.07	1.11	0.54	−3.76	−1.47
15	−3.25	−1.14	0.94	0.37	−4.20	−1.41
24	−3.06	−0.61	2.05	0.52	−5.11	−1.10
Loser portfolio	(103)		(68)			
Construction month	−14.36	−56.69	−12.86	−47.24	−1.50	−7.35
1	0.40	1.27	0.69	2.08	−0.28	−0.62
3	0.71	1.11	1.02	1.68	−0.31	−0.37
6	0.95	0.76	1.72	1.60	−0.77	−0.49
9	1.26	0.73	1.17	0.81	0.09	0.04
12	0.49	0.23	−0.50	−0.28	0.99	0.40
15	0.40	0.15	−1.76	−0.76	1.64	0.55
24	1.20	0.27	−4.00	−1.15	4.07	1.03
Winner–loser						
1	−0.83	−1.99	−0.45	−0.83	−0.38	−0.66
3	−2.44	−2.83	−0.03	−0.03	−2.42	−2.33
6	−3.84	−2.67	−0.89	−0.77	−2.95	−1.67
9	−3.98	−2.40	−0.68	−0.57	−3.31	−1.75
12	−3.14	−1.65	1.61	1.21	−4.75	−2.35
15	−3.65	−1.75	2.24	1.41	−6.08	−2.46
24	−4.26	−1.44	5.31	2.91	−10.21	−3.30

the share turnover ratio as a proxy for misperceptions about future earnings. That is, stocks with high (low) share turnover are prone to market overvaluation (undervaluation). They also show that firms with high (low) past turnover ratios experience negative (positive) future returns. As this result is obtained for all stocks irrespective of winners or losers, negative returns on stocks with high share turnover imply that winners exhibit reversals and losers exhibit drift in subsequent periods.

In this section, we conduct an analysis in the same manner as before to determine whether this phenomenon also takes place in the Korean market. With the share turnover ratio representing mis-estimations about future stock performances,

we first classify news stocks into a high-turnover group and a low-turnover group using the median monthly turnover as the breakpoint. Then we subdivide each group into winners and losers. Similarly, we also divide no-news stocks into four groups. Panels A and B of Table 9 show the post-holding-period return patterns for news stocks and no-news stocks, respectively. In Table 10, we also calculate the average forecasted stock returns for each event portfolio using target prices reported by analysts.[16] We use the subset of the sample firms covered by the Fn-guide analyst forecast data.

First, Table 10 shows that Korean analysts are significantly more optimistic for the high-turnover group than for the low-turnover group. This finding ensures that share turnover can serve as a measure of market misperception. Some may argue that the analysts overestimate the performances of the both high- and low-turnover groups because the forecasted stock returns are all higher than the realized post-news returns. This may appear to be in conflict with the result of Lee and Swaminathan (2000), but it is not necessarily the case because the target prices suggested by analysts tend to be far above the ex-post realized prices. Thus, the absolute magnitudes of the forecasted returns in Table 10 are meaningless, whereas their relative measures (differences) are relevant for our purpose.

Panel A of Table 9 shows that for news stocks, the high-turnover group experiences negative returns, while the low-turnover group produces positive returns. Among the high-turnover stocks, returns on losers tend to be more negative in the 12 months after formation; thus, the momentum profits are significantly positive from that point. Among the low-turnover stocks, the returns on winners are more positive; therefore the momentum profits are again positive but insignificant. As the high-turnover group outnumbers the low-turnover group, overall momentum profits from news stocks are positive.

Panel B of Table 9 presents the return patterns for the no-news stocks. Among the high-turnover stocks, returns on winners are more negative, and thus the momentum profits are significantly negative. Interestingly, high-turnover no-news winners exhibit stronger reversals than high-turnover news winners. In contrast, unlike the case for news losers, the drift of no-news losers is quite weak. Returns on low-turnover stocks are mostly insignificant, having little impact on momentum profits. These results imply that news items appear to mitigate the overvaluation problem for high-turnover winners, whereas they magnify mis-estimations for other groups.

In summary, the momentum profits in the Korean market are determined mainly by high-turnover stocks, among which news winners, news losers, and no-news winners exhibit significantly negative return patterns. These return patterns are consistent with the view that upward biases in forecasting stock performances may play a major role in generating no momentum profits in Korea.

[16]Lee and Swaminathan (2000) use forecasted long-term earnings growth rates. These data are not available in Korea.

Table 9 Cumulative abnormal returns (%) by monthly share turnover, waiting 1 month before investments

This table shows cumulative abnormal returns on winner and loser portfolios by monthly share turnovers using the sample from 2001 to 2010. We compute abnormal returns by controlling for size and B/M, following Fama and French (1993). After eliminating stocks under 1000 KRW from the sample, we categorize stocks into news and no-news stocks, and also split them into high- and low-turnover stocks. For the latter classification, we use the median of monthly share turnover of the entire set of stocks as a breakpoint. Then, we subdivide each group into winners and losers by monthly abnormal returns. For performance breakpoints, we use the top third and the bottom third of monthly abnormal returns on news stocks as before. We wait 1 month after portfolio construction, and calculate the calender-time overlapping portfolio abnormal returns for each portfolio. Panel A and Panel B report results for news stocks and no-news stocks, respectively. The time-series average of stock count in each portfolio is are in parenthesis.

Months after portfolio construction	High turnover		Low turnover		Overall	
	Avg (%)	*t*-stat	Avg (%)	*t*-stat	Avg (%)	*t*-stat
Panel A: News stocks						
Winner portfolio	(108)		(59)			
Construction month	25.09	45.78	13.01	44.32	20.87	46.78
1	−0.79	−3.16	0.23	0.82	−0.40	−2.12
3	−1.98	−3.67	1.49	2.20	−0.73	−2.10
6	−2.85	−3.05	2.31	1.94	−0.97	−1.82
9	−2.38	−1.72	2.98	1.93	−0.39	−0.53
12	−2.02	−1.10	4.79	2.59	0.45	0.47
15	−2.42	−1.11	5.48	2.50	0.37	0.34
24	−3.56	−1.12	7.89	2.52	0.81	0.56
Loser portfolio	(103)		(65)			
construction month	−17.00	−73.40	−12.02	−57.69	−15.07	−75.94
1	−0.34	−1.11	0.56	2.48	0.02	0.11
3	−1.45	−2.13	1.38	3.30	−0.38	−0.98
6	−2.72	−2.32	1.78	2.66	−1.03	−1.61
9	−3.64	−2.19	1.59	1.76	−1.67	−1.92
12	−5.53	−2.74	2.30	1.97	−2.58	−2.46
15	−6.12	−2.51	3.35	2.42	−2.52	−1.97
24	−9.41	−2.58	4.86	2.42	−3.98	−2.08
Winner–loser						
1	−0.45	−1.09	−0.34	−0.95	−0.42	−1.31
3	−0.53	−0.75	0.12	0.17	−0.35	−0.59
6	−0.13	−0.13	0.53	0.49	0.06	0.06
9	1.26	0.95	1.39	0.97	1.28	1.12
12	3.51	2.34	2.49	1.57	3.03	2.37
15	3.70	2.15	2.13	1.09	2.90	1.95
24	5.85	2.42	3.03	1.22	4.79	2.48

Table 9 (*Continued*)

Months after portfolio construction	High turnover		Low turnover		Overall	
	Avg (%)	*t*-stat	Avg (%)	*t*-stat	Avg (%)	*t*-stat
Panel B: No-news stocks						
Winner portfolio	(82)		(67)			
Construction month	21.35	47.09	12.40	40.51	17.35	45.00
1	−1.23	−4.53	0.64	2.06	−0.45	−2.33
3	−1.97	−3.53	0.78	1.23	−0.87	−2.62
6	−3.68	−3.66	0.71	0.66	−1.85	−3.55
9	−4.37	−3.03	0.34	0.23	−2.42	−3.68
12	−4.82	−2.73	0.79	0.42	−2.61	−3.11
15	−5.63	−2.71	−0.01	−0.01	−3.58	−3.95
24	−8.00	−2.55	−0.45	−0.13	−5.24	−3.61
Loser portfolio	(105)		(116)			
Construction month	−16.31	−64.85	−12.14	−50.78	−14.16	−61.71
1	0.25	0.73	0.34	1.64	0.31	1.72
3	−0.17	−0.26	0.87	1.81	0.41	1.45
6	−0.81	−0.70	1.03	1.24	0.16	0.38
9	−0.88	−0.59	0.57	0.51	−0.09	−0.18
12	−2.85	−1.51	0.07	0.05	−1.33	−1.93
15	−3.45	−1.56	−0.64	−0.39	−2.03	−2.55
24	−7.39	−2.19	−2.47	−0.94	−4.84	−3.57
Winner–loser						
1	−1.48	−3.20	0.30	0.78	−0.76	−2.31
3	−1.80	−2.60	−0.09	−0.15	−1.28	−2.51
6	−2.87	−2.71	−0.32	−0.37	−2.01	−2.62
9	−3.49	−2.68	−0.23	−0.22	−2.33	−2.70
12	−1.97	−1.35	0.72	0.58	−1.28	−1.29
15	−2.18	−1.31	0.62	0.43	−1.55	−1.48
24	−0.61	−0.24	2.02	0.95	−0.39	−0.27

8. Summary and Conclusion

This paper examines how stock prices respond to public news and how such a response influences the effectiveness of the momentum strategy in the Korean stock market. First, we build zero-investment portfolios by buying winner stocks and short-selling loser stocks to test the profitability of the momentum strategy in Korea. In addition, we make sure that there are no positive post-holding-period returns for the entire set of stocks, as in previous studies. However, stocks with news headlines make positive momentum profits 1 year after news pertaining to them. Analyzing the size- and B/M-adjusted returns on each leg of the long–short portfolios, we find that these positive profits are due mainly to return drift of loser stocks with news. In contrasts to the case of the United States, however, these

Table 10 Analyst forecast of stock prices and share turnover

This table shows average forecasted stock returns for the event portfolios built by news apperance, past performance, and monthly share turnover. The forecasted stock returns are calculated using target prices reported by stock analysts. We use the subset of the sample firms covered by the Fn-guide analyst forecast data from 2001 to 2010. The event portfolios are constructed with abnormal returns controlled for size and B/M as before. Speciafically, after eliminating stocks under 1000 KRW from the sample, we categorize stocks into news and no-news stocks, and also split them into high and low turnover stocks. For the latter classification, we use the median of monthly share turnover of the entire set of stocks as a breakpoint. Then, we subdivide each group into winners and losers by monthly abnormal returns. For performance breakpoints, we use the top third and the bottom third of monthly abnormal returns on news stocks. The *t*-statistics are reported in parentheses. This table also presents time-series average of the number of analyst forecast and the number of forecasted firms.

	Winners			Losers		
	High turnover	Low turnover	Difference	High turnover	Low turnover	Difference
Panel A: News stocks						
Forecasted stock return (%)	23.7	19.1	4.6 (6.49)	47.9	38.8	9.1 (8.48)
Number of analyst forecast	6.1	7.4	–	6.0	6.5	–
Number of firms	43	32	–	34	28	–
Panel B: No-news stocks						
Forecasted stock return (%)	33.6	28.1	5.6 (3.21)	62.6	51.6	11.0 (5.28)
Number of analyst forecast	3.1	3.4	–	3.0	2.8	–
Number of firms	12	13	–	14	18	–

profits are canceled out by losses due to the return reversals of winner stocks with and without news.

The post-news return reversals and drift of news winners and news losers, respectively, imply that stock prices respond asymmetrically to public news. We test two hypotheses for this phenomenon: (i) the "bad news travel slowly" hypothesis of Hong *et al.* (2000); and (ii) the transaction costs hypothesis. In the firm-size analysis, we find no post-news drift in news losers in the largest firm group. This finding contradicts the argument of Hong *et al.* (2000), who state that managers are reluctant to disclose bad news regardless of the firm size. As an alternative explanation of this finding, one can argue that large firms enjoy more media attention and analyst coverage. This argument is, however, invalidated by the evidence that news winners in the largest firm group experience drift. Meanwhile, the smallest news losers experience strong drift. In the sense that small stocks are more likely exposed to trading obstacles, the role of transaction costs may have played a crucial part in producing this evidence, as suggested by Chan (2003). An analysis using

institutional ownership as a proxy for short-sale constraints shows that news losers with low institutional ownership experience drift in their post-news returns while news losers with high institutional ownership do not. Thus, to explain the asymmetric reaction of stock prices to news, the transaction costs hypothesis seems to be more plausible than the "bad news travel slowly" hypothesis.

In addition to the asymmetric reaction of stock prices to news, we assert that misperceptions about firms' future performances may cause reversals of news winners and drift in news losers. To test the validity of this assertion, we conduct an analysis using share turnover as a proxy for biases in forecasting stock performances. Showing that analysts are more optimistic for high-turnover news stocks than low-turnover news stocks, we find that high-turnover news stocks present significant negative returns compared to low-turnover news stocks regardless of past performance. As news stocks include more high-turnover stocks than low-turnover stocks, these results support the view that overestimations of future stock performances may be an important reason for the negative returns of news winners and news losers in the Korean stock market.

There are a couple of unanswered questions with respect to the findings of this paper. First, why do winner stocks in the Korean stock market exhibit reversals after public news is released while their counterparts of the United States show drift? The most important difference between the two stock markets is their size. In terms of the number of listed companies, the United States market is about three times as large as the Korean market. In the sense that news coverage and/or investors' attentions on individual stocks are restricted to a greater extent in a large market, the degree of difficulty in information dissemination may be larger in the United States market. Differences in market conditions, such as liquidity, can also be a culprit. It will be desirable to explore the effects of market size and liquidity on information diffusion and stock prices in future research.

Second, why do the largest winner stocks with news show drift while the smallest ones exhibit strong reversals in their post-news returns?[17] It appears that investors react differently to public news depending on the firm size. While differences in transactional friction among stocks could be one reason for the differentiated reactions, further analysis concerning the relationship between firm size and the manner in which investors react to public information will be worthwhile.

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[17]Because Chan (2003) reports only differences in post-holding returns between winners and losers in the size-split analysis, we cannot compare these details between Korea and the United States.

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