ANALYSTS' RECOMMENDATIONS AND STOCK PRICE MOVEMENTS: KOREAN MARKET EVIDENCE

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ABSTRACT

This study examines market reactions to analysts' recommendations on stocks from the three major sectors of the Korean economy and determines if subscribers to financial publications could reap excess profits by utilizing the recommendations of the analysts. This study employs the event-study methodology, which measures how stock prices react to the analysts' recommendations. The manufacturing sector shows that stock prices do not exhibit substantial changes from the analysts' recommendations. The retail sector exhibits positive reaction to the analysts' recommendations. The financial sector shows that stock prices reacted positively to the analysts' recommendations during the one-week window preceding the event date. **JEL Classification:** G15

BACKGROUND AND LITERATURE

The Korean stock market opened in 1956 with twelve listed companies. During its early years, the Korean stock market was more of a government bond market, and the level of stock trading was insignificant. It also experienced a series of market crashes, resulting in market closing and reorganization of its Stock Market Division. Since the mid-1960s, however, the Korean stock market grew rapidly, owing to a series of government actions aimed to develop a capital market which could support the national economic development plans, and to encourage privately owned companies to go public. Examples of the important legislation enacted for these purposes are the Securities and Exchange Act of 1962, the law on fostering the Capital Market of 1968, and the Public Corporation Inducement Act of 1973. In order to manage the rapidly growing market effectively, the stock exchange made concerted efforts in improving its trading systems and building market infrastructure. It introduced the regular-way transaction in 1969 and continuous trading in 1975. The order-routing system was automated in 1983, thus enabling member firms to transmit orders electronically to the trading floor.

Since the early 1980s, the Korean stock market was gradually opened to foreign investors. As the first step, international investment trusts and country

funds such as the Korea Fund were launched, thus allowing foreign investors to make indirect portfolio investments. In 1992 the Korean stock market was opened to foreign investors with certain restrictions, and the foreign share ownership restrictions were gradually lifted and were fully eliminated in 1998. Additionally, the membership for the Korean stock market was opened to foreign securities companies. The Stock Market Division undertook various measures that ensure the establishment of fair market price and protection of investors. For instance, by listing stocks of corporations with growth potential, credibility, and profitability, the investor risks are minimized and the corporate disclosures, which provide information necessary for the investment decisions, are made available through the electronic disclosure system that can be accessed by investors, both in Korea and elsewhere (on the Internet). To build a reliable and transparent market, the Stock Market Division monitors stock price movements and investigates abnormal trading through the up-to-date, consolidated surveillance system. The Stock Market Division has also taken up a leading role in improving corporate governance practices in Korea.

In an effort to be a "world-class premier exchange" as its vision, the Korea Exchange (KRX) implemented a broad range of market reforms, with special attention to strengthening market infrastructure, accelerating deregulation, and enhancing investor protection and market efficiency. The KRX gives special importance to international cooperation, thus promoting a long-term cooperation and collaboration among the exchanges of the world in order to respond to globalization and the requirements of a post-industrial information society. Efforts are underway to: (1) facilitate the listing of Korean companies on the foreign exchanges and the listing of foreign exchanges on the Korean exchange, thus reducing the market entry barriers, and (2) harmonize the rules and regulations, including the trading and settlement systems, with global standards. The KRX seeks for more productive relationships with overseas exchanges for mutual cooperation in areas such as information sharing, IT consulting, market links, development of new products, and any other mutually beneficial projects. With the rise of the Korean stock market in recent decades, there has been an increase in investors' interest in it as an international diversification. This is because international diversification allows investors to have a larger basket of foreign securities to choose from as a part of their portfolio assets, so as to enhance the reward-to-volatility ratio.

Growing recognition of the importance of the Korean market is reflected in an increasing number of Korean market studies appearing in leading finance journals. Thus, this paper studies the issue of the forms of the stock market efficiency of the three major sectors of the Korean economy by examining the market reactions to the analysts' recommendations in the popular financial publications.

Numerous studies illustrate the impact of investment advice on stock prices. Most of the research on investment recommendation has focused on analysts' stock-picking abilities, testing whether analysts' recommendations can be used to gain abnormal returns. Brown and Warner (1985) examined how particular characteristics or events can impact the daily stock prices. Groth, Lewellen, Schlarbaum, and Lease (1979) also analyzed the impact on the market price of brokerage firms' security recommendations. The results showed that "there was a significant positive correlation between the relative frequency of a

security's appearance in the recommendation list and the relative frequency of the appearance in the actual investment portfolio." In an early study on the topic, Bjerring, Lakonishok, and Vermaelen (1983) also found a significant and positive relationship between stock price reactions and analysts' recommendations from a leading Canadian brokerage house. Furthermore, Dimson and Marsh (1984) measured the correlation between forecasted return and actual return. This suggests that analysts are able to distinguish winners from losers in the market.

Several other studies have analyzed the influence of earnings announcements upon security prices. Beneish (1991) found significant positive (or negative) stock price reactions. These reactions were found following the announcement of the buy-or-sell recommendations in the "Heard on the Street" column in the *Wall Street Journal*. However, the potential influence of an advisor's recommendation upon the market has prompted investigations into possible illegal trading of information. R. Foster Winans, a previous author of the "Heard on the Street" column, was convicted of illegally trading for profit on his own recommendations. Questions were also raised regarding the possibility of improper trading of securities recommended in *Business Week*'s "Inside Wall Street" column. In addition to U.S. and Canadian market studies, Moshirian, Ng, and Wu (2009) empirically examined post-recommendations to buy and hold abnormal returns in thirteen emerging markets spanning from 1996 to 2005. The study showed that stock prices reacted strongly to stock analysts' recommendations and revisions.

DATA COLLECTION

This event study investigates stock price changes from the recommendations of the best financial analysts of the *MK Daily*, one of the most widely read daily business publications in Korea. Financial analysts of the *MK Daily* are recognized for their success and influence in their discipline. This study covers the stocks recommended by the MK best analysts over a five-year period from January 2003 to December 2007. The changes in the daily stock prices of those firms recommended are examined. The daily stock prices of the firms are examined to test various hypotheses of the market reactions to the recommendations during the event period. The firms in this study are taken from three major sectors of the Korean economy: manufacturing, retail, and financial. The total sample encompasses 104 firms: 38 firms from the manufacturing sector, 42 firms from the retail sector, and 24 firms from the financial sector. The Korean Composite Stock Price Index (KOSPI) is selected as a market index in this study. Originally started in 1964, the KOSPI has been modified numerous times over the years, taking its current form in 1994. The KOSPI is composed of over two hundred of the largest firms which trade on the Korean Stock Exchange. The index is market-capitalization weighted, meaning that firms with the largest market value have the greatest influence on the KOSPI's returns. The daily returns for the sample are obtained from the *Financial News in Korea*.

The following formula is used to test the proximity between the sample and population means:

$$z = |x - \mu| / (\sigma / \sqrt{n})$$

z = standardized mean
x = mean of the sample
μ = mean of the population
σ = standard deviation of the finite population
n = size of the sample

With the central limit theorem, (z) is the value of the random variable from the normal distribution if (x) is the mean of a random sample of size (n) taken from a population having mean (μ) and finite variance (σ). The null hypothesis is that the mean of the sample distribution is equal to the population mean, and the reverse is true for the alternative hypothesis. The calculated (z) value is compared to a critical value of 1.645 (using 5 percent level of significance) in order to determine that the sample of the selected firms is a good surrogate of the Korean Stock Exchange.

MODELS AND EQUATIONS

In event studies, the objective is to examine the investors' response to some well-defined event through the observation of stock prices around the event's occurrence. The events often include earnings announcements, merger announcements, and stock-split announcements released through the financial press or through corporate reports. The normal or predicted returns for a security are those returns expected to be observed if no event occurs. These normal returns generally are estimated over a period of time other than the initial time period surrounding the event date. For studies of events where the underlying determinants of normal returns may change due to the event, the estimation period may fall on one or both sides of the event period. Most of the research has focused on the analysts' stock-picking abilities. This study also focuses on testing whether analysts' recommendations can be used to gain abnormal returns using the analysts' recommendations as an event.

The date subscribers supposedly received *MK Daily* is used as the focal point or event in this study. This study covers an estimation period of four weeks. The event period covered is two weeks before and two weeks after the event date. The event period is further divided into four windows for precise measurement of the investors' reaction to the MK best analysts' recommendations. The windows cover the following periods:

Window 1: from two weeks to one week prior to the date subscribers receive *MK Daily*.

Window 2: a one-week period prior to the date subscribers receive *MK Daily*.

Window 3: a one-week period following the date subscribers receive *MK Daily*.

Window 4: from one week to two weeks after the date subscribers receive *MK Daily*.

The market model is used to estimate regression coefficients of the individual firms in the sample during the estimation period. The single index market model used is:

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \epsilon_{i,t} \quad (1)$$

$R_{i,t}$ = the return on company *i* observed on day *t* during the estimation period
= $(P_{i,t} - P_{i,t-1}) / P_{i,t-1}$
$P_{i,t}$ = the market price plus dividend, if any, for company *i* during day *t*
α_i = the y-intercept term for company *i* in the regression equation
β_i = the slope term for company *i* in the regression equation
$R_{m,t}$ = the market return measured by the KOSPI index observed during the estimation period
= $(P_{m,t} - P_{m,t-1}) / P_{m,t-1}$
$P_{m,t}$ = the KOSPI index during day *t* and same-day dividends are included in KOSPI index calculation
$\epsilon_{i,t}$ = the error term for company *i* at time *t*, iid ~ $n(O, \sigma^2)$

The parameters estimated from equation 1 during the estimation periods are used to compute the predicted returns during the event period in equation 2:

$$R_{i,t*} = a_i + b_i R_{m,t} \quad (2)$$

$R_{i,t*}$ = the predicted return for security *i* computed for the event period
a_i = the intercept term from the regression from equation 1
b_i = the slope term from the regression from equation 1
$R_{m,t}$ = the market return measured by the KOSPI index observed during the event period

The abnormal return (AR) and the cumulative abnormal return (CAR) techniques are used to detect abnormal performances. Abnormal performance of the firm's equity is defined as the difference between the actual stock return and the predicted stock return during the event period. The predicted return (Ri,t*) for the event period is estimated from equation 2. For security *i*, the abnormal return (AR) is computed as follows:

$$AR_{i,t} = R_{i,t} - R_{i,t*} \quad (3)$$

$AR_{i,t}$ = the daily abnormal return for security *i* computed for the entire event period
$R_{i,t}$ = the actual return for security *i* observed in the event period

$R_{i,t*}$ = the predicted return for security *i* in the event period

The mean abnormal return on the stock of the individual firm (MAR_i) is computed by taking the arithmetic mean of the $AR_{i,t}$ for each of the four windows in the event period. The equation is:

$$MAR_i = (1/T) \Sigma AR_{i,t} \quad (4)$$

MAR_i = the mean abnormal return for security *i* for the interval in the event period
t = 1, 2, ……., T
T = number of days for the interval in the event period

Cross-sectional aggregation of the firm's abnormal returns within each group for each interval is required to examine the different abnormal returns. The firm's mean abnormal returns are summed for each group to compute the cumulative abnormal return (CAR) for each interval. The equation is:

$$CAR = \Sigma MAR_i \quad (5)$$

The mean cumulative abnormal return (MCAR) is also computed and the expected value of the MCAR is zero in the absence of abnormal performance. The equation is:

$$MCAR = \Sigma CAR / N \quad (6)$$

The cumulative abnormal return (CAR) and the mean cumulative abnormal return (MCAR) of each group for the interval are computed to examine the abnormal returns.

There are two major groups of hypotheses in this study. The hypotheses are:

Ho: MCAR = 0; the population mean of cumulative abnormal return during the event period is not different from zero.

Ha: MCAR $\neq$ 0; the population mean of cumulative abnormal return during the event period is different from zero.

RESULTS AND CONCLUSIONS

The hypotheses are tested for the reaction of the investors to the recommendations of the MK best analysts with regard to the three sectors of the economy as previously described. The null hypothesis is that the mean cumulative abnormal return (MCAR) during the event period is not statistically different from zero with regard to their recommendations. The results for the manufacturing sector are summarized in table 1. The observed MCARs are not statistically significant at the 5 percent level for the four windows. The results show that during the periods studied the stock prices of the manufacturing firms

do not exhibit substantial changes from the analysts' recommendations. The results may be interpreted as that the stock prices of the manufacturing firms are not very reactive to the information delivered by the analysts' recommendations. It may be partly explained by the fact that a relatively small number of companies in the manufacturing sector (compared to other companies in other two sectors) are closely followed by the institutional investors in the Korean market. However, larger sample sizes and/or different time periods may lead to different findings.

Table 1 (Group 1)
Manufacturing Sector

Window	MCAR	T-value
1	0.003419	1.6409
2	0.001322	1.5958
3	0.000457	0.0525
4	0.000867	1.2489

The interesting test results for groups 2 and 3 are summarized in tables 2 and 3. The observed MCAR values of group 2 are positively significant at the 5 percent level in the third window. The third window is the one-week period following the date subscribers received the *MK Daily*. The results show that the stock prices of the firms from the retail sector reacted positively to the analysts' recommendations from and after (one week) the date subscribers received the information. There is speculation that positive stock price reaction may have existed during the one-week window preceding the event date. The ground for this speculation is that the information contained in the analysts' recommendations is already disseminated to the market before the *MK Daily* is delivered to the subscribers. However, the results from group 2 are somewhat contrary to this speculation.

The observed MCAR values of group 3 are positively significant at the 5 percent level in the second and third windows. The results show that the stock prices of the firms from the financial sector reacted positively to the analysts'

Table 2 (Group 2)
Retail Sector

Window	MCAR	T-value
1	0.000432	0.6578
2	0.001344	1.0423
3	0.007233	2.1876
4	0.000256	0.8843

recommendations during the two one-week windows surrounding the event. Unlike the results from the retail sector, the prior speculation that positive stock price reaction may have existed during the one-week window preceding the event date is supported with the results from the financial sector.

Table 3 (Group 3)

Financial Sector

Window	MCAR	T-value
1	0.000109	0.0183
2	0.000838	2.6315
3	0.002893	2.2568
4	0.000034	0.2169

The results may be interpreted as that the information contained in the analysts' recommendations is disseminated to the market before the *MK Daily* is delivered to subscribers. The results may also be interpreted as that the information contained in the analysts' recommendations is not insider information and the market is near strong-form efficiency, at least for the firms in the financial sector of the Korean stock market.

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