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**MOMENTUM AND REVERSAL EFFECTS: EVIDENCE FROM THE CHINESE  
GROWTH ENTERPRISE MARKET**

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**Abstract**

**Purpose:** In 2009, China officially launched its Second Board, the growth enterprise market (GEM). Known as the ChiNext market, GEM is a trading platform with similar characteristics to those of NASDAQ. This study investigated whether momentum and reversal effects exist in the ChiNext market. Specifically, whether ChiNext market implementation of the registration initial public offering (IPO) system would affect stock returns as momentum and reversal effects was examined.

**Design/methodology/approach:** Jegadeesh and Titman's approach was used to test for the presence of a momentum or reversal effect. Winner, loser, and zero-cost portfolios were created using monthly stock returns. The ChiNext implemented the registration IPO system in August 2020. Ninety-two trading months and 49 strategies (January 2013 to August 2020) and 34 trading months and 16 strategies (August 2020 to June 2023) were examined.

**Findings:** Momentum profitability was recorded for 14 of the 49 momentum or reversal trading strategies from January 2013 to August 2020. The 16 trading strategies from August 2020 to June 2023 yielded no momentum profitability. The registration IPO system implementation was followed by a long-term reversal effect on the ChiNext market. Furthermore, the winner portfolio returns were predominantly negative in most strategies, whereas the loser portfolios typically yielded positive returns. The reversal effect persisted and even intensified upon implementation of the registration IPO system. The new policies for listed companies in the ChiNext market should be adjusted when implementing the registration IPO system, or that other factors affecting the ChiNext market exerted a long-term reversal effect.

**Originality/value:** This study contributed to the literature on momentum or reversal effects in the ChiNext market to bridge the research gap regarding the Chinese stock market Main Board. Despite registration IPO system implementation by the ChiNext market, the monthly trade stock returns demonstrated a clear, consistent, and long-term reversal effect for ChiNext market-listed equities. The findings provided a new understanding of the ChiNext market and the registration IPO system.

**Keywords:** *China Growth Enterprise Market; ChiNext Market; Momentum Effect; Reversal Effect; Registration IPO System*

## INTRODUCTION

The Chinese economy recently developed rapidly, and the Chinese stock market has grown significantly over the past 10 years (Gang et al., 2019). As the Chinese stock market was first established in Shanghai and Shenzhen in 1990 and 1991, respectively, it initially only had the Main Board. In 2009, China officially debuted its Second Board, the growth enterprise market (GEM). The GEM or ChiNext market is a trading platform with features similar to those of NASDAQ. Thus, the Chinese stock market is formally divided into three segmented markets (or three boards) based on the size of the listed firms: the large-cap market, the small and medium-sized company (SME) market, and the GEM market (Gang et al., 2019). Unlike the Main and SME Boards, the ChiNext market is an independent entity (Hu et al., 2021).

The ChiNext, large-cap, and SME markets represent different industries. Large-cap markets encompass traditional industries, such as banks, manufacturing, and natural resources, while the SME and ChiNext markets are related to information technology industries. The ChiNext market also includes other small firms that cannot be public in the Main Board, which complements the different markets. High-growth and high-tech firms aim to be listed in the ChiNext market, which has less enforcement intervention and fewer listing requirements (Hu et al., 2021). Therefore, the ChiNext market has higher uncertainty risk, higher stock return volatility, and different effects on cash flow news. As it is less mature than other boards in China and other developed countries, the ChiNext market presents issues involving a high price–earnings (P/E) ratio and high issue price (Ma, 2015).

The main Chinese stock market differs from that of developed countries in that the government is vital to the initial public offering (IPO) system of the Chinese primary market (Hu et al., 2021). The Chinese stock offering system has evolved from a government-based approval system to a market-based registration system. China used a comprehensive government-based approval system before 1999, in which the China Securities Regulatory Commission (CSRC) controlled the offer size and price (Tian, 2011). The offer size restriction in China was liberalised after 1999, with a more moderate government-based approved IPO mechanism implemented. Nevertheless, enterprises must obtain CSRC permission before going public (Liao, 2023). The CSRC also has jurisdiction to determine whether businesses can pursue a public listing. The establishment of the Science and Technology Innovation Board (STAR market) was announced in 2018 and debuted on the Shanghai Stock Exchange in June 2019. The ChiNext Market transitioned from the traditional approved IPO method to the registration IPO system, which was implemented on August 24, 2020. The registration IPO method is more market-oriented and emphasises information disclosure more than the conventional approval IPO approach (Liao, 2023).

The momentum effect illustrates the tendency for financial assets with high returns to continue to produce significant returns in the future. Contrastingly, the reversal effect is the propensity for financial assets with low returns to continue to make low returns in the future (Dobrynska, 2021). Historical stock returns have demonstrated many anomalies, where momentum and reversal are well-known stock returns with specific effects. DeBondt and Thaler (1985, 1987) reported that stocks that underperformed during the previous three to five years were more likely to outperform over the next three to five years. The authors determined that stock markets overreact to historical information, which indicated that reversal strategies, buying underperforming stocks, and selling historically outperforming stocks can yield anomalous profits. Jegadeesh and Titman (1993, 2001) stated that beaten stocks over the previous six months were more likely to outperform over the next six months. Specifically, the intermediate period from three to 12 months is the most intriguing momentum effect to be researched.

The literature contains different studies on momentum and reversal effects. For example, Yang et al. (2018), Chu et al. (2019), Gang et al. (2019), and Kelly et al. (2021) studied

momentum and reversal effects. Chu et al.'s (2019) investigation on intraday returns predictability in Chinese A-shares determined that the Chinese stock market had significant intraday momentum and reversal effects when the first half-hour returns during the day were chosen as the predictor. The finding was robust even when other intraday returns were tested. Li et al. (2010), He and Li (2015), Lim et al. (2018), and Jin et al. (2020) studied the momentum effect. Jin et al. (2020) examined the momentum effect with an intraday time series in the four Chinese commodity futures contracts. Neszveda et al. (2022) investigated the reversal effect of liquidity provision in emerging markets. The authors determined that momentum rather than reversal was based on the most recent day, where only a few specific days promoted the profitability of the reversal strategies. Therefore, the profits did not depend on liquidity constraints, as implied by liquidity provision theory. Therefore, a momentum effect exists as Chinese stock markets change frequently. Although previous studies focused on short-term returns, research on Chinese GEM firms is limited.

Most stock market research was conducted in the US, while studies on Chinese stock markets mainly focused on the Main Board. This empirical work bridged the literature gap by investigating the existence of momentum or reversal effects in ChiNext market stock returns to provide more recent evidence using ChiNext market stock returns. Given the scale and prospect of developing Chinese capital markets, it is imperative to expand the literature on this issue. Furthermore, even after the ChiNext market implemented the registration IPO system, the stock returns with monthly trade demonstrated a clear, consistent, and long-term reversal effect for equities listed in the ChiNext market.

This study examined whether momentum and reversal effects exist in the ChiNext market. Furthermore, the extent to which ChiNext market implementation of the registration IPO system affected stock returns as momentum and reversal effects was tested following Jegadeesh and Titman's (1993) approach. Forty-nine trading strategies using monthly stock returns from January 2013 to August 2020 and 16 trading strategies using monthly stock returns from August 2020 to June 2023 in the ChiNext market were examined. There was momentum profitability in 14 of the 49 momentum or contrarian trading strategies (January 2013 to August 2020). Nonetheless, there was no momentum profitability in the 16 strategies from August 2020 to June 2023. Contrastingly, a long-term reversal effect was noted following ChiNext market implementation of the registration IPO system. The winner portfolio returns were predominantly negative in most strategies, whereas the loser portfolios typically demonstrated positive returns. The reversal effect persisted and even intensified upon registration IPO system implementation. This suggested that new policies for companies listed in the ChiNext market should be adjusted when implementing the registration IPO system, or that other factors affecting the ChiNext market demonstrated a long-term reversal effect.

## **METHODOLOGY**

### **Sample selection and data source**

ChiNext is a NASDAQ-style subsidiary of the Shenzhen Stock Exchange (Cheung and Liu, 2014; Hu et al., 2021). In this study, "the Chinese GEM Board" and "ChiNext" are used interchangeably. The first batch of firms began trading on ChiNext on October 30, 2009. ChiNext aims to attract innovative and fast-growing enterprises, specifically high-technology firms. ChiNext listing standards are less stringent than those of the Shenzhen Stock Exchange Main and SME Boards. In August 2020, ChiNext implemented the registration IPO system instead of the previous approval IPO system. Hence, two sample sets were obtained after filtering. The study sample consisted of 772 firms from January 2013 to August 2020 and 1,232 firms from August 2020 to June 2023. The sample consisted of A-share listed companies on the Chinese Second Board: the Shenzhen Stock Exchange GEM.

The sample was obtained from January 2013 to June 2023. The starting year of 2013 was

selected to avoid the 2008 global financial crisis. The 10-year selection duration was expected to avoid possible structural changes or biased estimates. Consequently, this period encompassed the complete bull and bear market cycle of the Chinese stock market to more fully reflect market volatility characteristics. The data were collected from the RESSET database. Sample firms with good financial performance, governance, and internal control were considered. Financial industry firms, ST, ST\*, and PT firms, and firms with missing financial information were excluded.

### Method

Jegadeesh and Titman's (1993) returns to buying winners and selling losers approach was used to test whether there was a momentum or reversal effect. Accordingly, selected stocks were considered based on their returns to create the winner and loser portfolios. The winner and loser portfolios were the top 10% and bottom 10% stocks component, respectively. Subsequently, the portfolio formation and holding periods ( $J$  and  $K$ , respectively) were viewed. The returns were sorted from large to small according to each stock return at  $t$  time in the past  $J$  months. The ChiNext implementation of the registration IPO system in August 2020 involved 92 trading months from January 2013 to August 2020 and 34 trading months from August 2020 to June 2023. The 92-month duration yielded 49 strategies, with both  $J_1$  and  $K_1$  covering 1, 3, 6, 9, 12, 24, and 36 months. The 34 trading months yielded 16 strategies, with  $J_2$  and  $K_2$  covering 1, 3, 6, and 9 months. The momentum or reversal effects based on the ( $J$ ,  $K$ ) strategies were assessed as follows: first, the return rate of each stock during the trading period (day, week, or month) was calculated with the following equation:

$$R_{n,t} = \frac{P_{n,t}}{P_{n,t-1}} - 1 \quad (1)$$

Where  $R_{n,t}$  represents the return rate of stock  $n$ ,  $P_{n,t}$  represents the price of stock  $n$  in  $t$  period, and  $P_{n,t-1}$  represents the price of stock  $n$  in the  $t - 1$  period. This  $t - 1$  was considered the closing price of the previous trading period (day, week, or month). Subsequently, the cumulative return rate of each stock during the observation period was calculated as follows:

$$D_{n,T} = \prod_{i=1}^T R_{n,i} - 1 \quad (2)$$

Where  $D_{n,T}$  represents the cumulative rate of return of stock  $n$  in the observation period,  $T$  represents the observation period, and  $R_{n,i}$  represents the rate of return of stock  $n$  at time  $i$ . Thus, the cumulative return was sorted, and the 10% highest and lowest return rate stocks were selected as the winner and loser portfolios, respectively. Zero-cost portfolios were constructed by calculating the cumulative return of the winner and loser portfolios during the holding period  $K$  as follows:

$$AR_w = \frac{1}{N} \sum_{i=1}^N R_{i,k} \quad (3)$$

$$AR_l = \frac{1}{N} \sum_{i=1}^N R_{i,k} \quad (4)$$

$$AR_{w-l} = AR_w - AR_l \quad (5)$$

Where  $AR_w$  represents the winner portfolio average rate of return,  $AR_l$  represents the loser portfolio average rate of return, and  $AR_{w-l}$  represents the zero-cost portfolio average rate of return. Finally, the adjusted Newey-West  $t$ -test was performed on the zero-cost portfolio. A  $t$ -value significantly greater than 0 indicated a momentum effect, while a  $t$ -value significantly less than 0 indicated a reversal effect.

### EMPIRICAL RESULTS

A strong reversal effect in the ChiNext market from January 2013 to June 2023 was confirmed. There was an apparent, consistent, and long-term reversal effect following the registration IPO system implementation in August 2020. The analysis is detailed in the following subsections.

#### ChiNext registration IPO system implementation (January 2013 to August 2020)

ChiNext implemented the registration IPO system from August 2020. Ninety-two trading months from January 2013 to August 2020 were selected. The mean returns from the winner, loser, and zero-cost portfolios are reported following Jegadeesh and Titman's (1993) approach. Stocks were ranked and grouped at the beginning of each month as the top 10% and bottom 10% based on their returns over the previous 1, 3, 6, 9, 12, 24, and 36 months. Thus, each month featured a winner, loser, and zero-cost portfolio (the winner portfolio from which the loser portfolio was subtracted from January 2013 to August 2020). An adjusted Newey-West  $t$ -test was used to demonstrate whether there was a momentum or reversal effect. Table 1 summarises the average monthly returns for the winner, loser, and zero-cost portfolio strategies from January 2013 to August 2020. The returns denote the average monthly returns over the portfolio formation period.

Table 1: Portfolios with  $(J_I, K_I)$  and the stock return period of January 2013 to August 2020

		$K_I = 1$	$K_I = 3$	$K_I = 6$	$K_I = 9$	$K_I = 12$	$K_I = 24$	$K_I = 36$
$J_I = 1$	$R_w$	-0.0076	0.0319	0.0104	0.0114	0.0154**	0.0094	0.0089
	$R_l$	0.0600	0.0906***	0.0300***	0.0290***	0.0174***	0.0222***	0.0281***
	$R_{w-l}$	-0.1360 (0.6700)	-0.0587*** (-5.4858)	-0.0196** (-2.5085)	-0.0176** (-2.4473)	-0.0020* (-1.0397)	-0.0128* (-0.8388)	-0.0192 (0.0097)
$J_I = 3$	$R_w$	-0.0222	-0.0261**	0.0274	0.0381	0.0319	0.0286	-0.0413
	$R_l$	0.0787**	0.0894***	0.0616***	0.0782***	0.0906***	0.0204	-0.0658**
	$R_{w-l}$	-0.1009*** (-4.7306)	-0.1155*** (-5.5783)	-0.0342* (-1.5963)	-0.0401 (-1.5367)	-0.0587** (-2.0315)	0.0082 (0.1640)	0.0245 (0.2499)
$J_I = 6$	$R_w$	0.0061	0.0223	0.0686***	0.0749***	0.1152***	0.0524	-0.0824
	$R_l$	0.0851***	0.0411***	0.0449***	0.0515***	0.0494***	-0.0411	-0.0989***
	$R_{w-l}$	-0.0790** (-2.4292)	-0.0188 (-1.1403)	0.0237** (1.0846)	0.0234 (1.1276)	0.0658* (1.7209)	0.0935 (1.5394)	0.0165 (0.2339)
$J_I = 9$	$R_w$	0.0198	0.0217	0.0583***	0.1031***	0.1047***	0.0105	-0.1751***
	$R_l$	0.1155*	0.0487***	0.0417***	0.0331**	0.0290	-0.0199	-0.0798**
	$R_{w-l}$	-0.0957*** (-3.7345)	-0.0270* (-1.6241)	0.0166 (0.7555)	0.0700** (1.9827)	0.0757* (1.8544)	0.0304 (0.6108)	-0.0953* (-1.5328)
$J_I = 12$	$R_w$	0.0342	0.0202	0.0844***	0.1051***	0.0860**	-0.0339	-0.2489***
	$R_l$	0.1629**	0.0293***	0.0208**	0.0131	0.0230	-0.0150	-0.1035***
	$R_{w-l}$	-0.1287 (-0.2601)	-0.0091 (-0.6005)	0.0636** (2.4774)	0.0920*** (2.7405)	0.0630 (1.4730)	-0.0189 (-0.3954)	-0.1454*** (-2.9198)
$J_I = 24$	$R_w$	0.1162	-0.0031	-0.0086	-0.0141	-0.0448	-0.2654***	-0.3495***
	$R_l$	0.2648***	0.0575***	0.0772***	0.1182***	0.1583***	0.1237***	-0.0197
	$R_{w-l}$	-0.1486* (-1.8057)	-0.0606*** (-3.8127)	-0.0858*** (-4.0185)	-0.1323*** (-4.0666)	-0.2031*** (-6.0199)	-0.3891*** (-9.613)	-0.3298*** (-4.1322)
$J_I = 36$	$R_w$	0.0718	0.0102	0.0057	-0.0086	-0.0340	-0.1752**	-0.3347***
	$R_l$	0.2628**	0.0740***	0.1103***	0.1743***	0.2322***	0.3043***	-0.5855
	$R_{w-l}$	-0.1910*** (-3.1824)	-0.0638*** (-3.9245)	-0.1046*** (-3.8932)	-0.1829*** (-4.2754)	-0.2662*** (-5.3379)	-0.4795*** (-4.4216)	0.2508*** (1.1868)

$R_w$ : The winner portfolio with the highest returns;  $R_l$ : the loser portfolio with the lowest returns;  $R_{w-l}$ : the zero-cost portfolio during the previous  $J_I$  months;  $K_I$ : the monthly holding periods of 1, 3, 6, 9, 12, 24, and 36 months. The numbers in parentheses indicate the  $t$ -values.

\*\*\* Indicates significance at the 1% level, \*\* indicates significance at the 5% level, and \* indicates significance at the 10%



level.

Table 1 presents the equal-weighted average monthly returns for portfolios formed over  $J_1$  months during the subsequent  $K_1$  months. For example, when strategy  $J_1 = 1$  and  $K_1 = 6$ , with a six-month portfolio holding period, past losers on average gained 3% over the subsequent six months. Past winners increased on average 1.03%. In this scenario, the zero-cost portfolios, short the loser and long the winner, lost 1.96% over six months. This return translated to an annual return of -3.92%.

Long-term strategies ( $J_1 = 24$  or  $36$ ) typically demonstrated a more significant reversal effect, which was evident in the return disparity between the winner and loser portfolios. For example, with  $J_1 = 24$  and  $K_1 = 36$ , the winner portfolio return was -34.95% while the loser portfolio return was only -0.5855%. This result suggested that long-term winner portfolios may underperform in the distant future. The results presented in Table 1 indicated a clear and consistent reversal effect for equities listed in the ChiNext market. The average loser portfolio return was between -9.89% ( $J_1 = 6, K_1 = 36$ ) and 9.06% ( $J_1 = 1, K_1 = 3; J_1 = 3, K_1 = 12$ ), while the winner portfolio return was between -34.95% ( $J_1 = 24, K_1 = 36$ ) and 11.52% ( $J_1 = 6, K_1 = 12$ ). The Newey-West  $t$ -test results demonstrated that the reversal effect could also be approved. For example, when  $J_1 = 3$  and  $K_1 = 1$ , the  $t$ -value was -4.7306. In the case of  $J_1 = 24$  and  $K_1 = 36$ , the  $t$ -value markedly increased to -9.613. These figures underlined the statistical significance of returns from zero-cost portfolios, specifically in long-term strategies.

#### ChiNext registration IPO system implementation (August 2020 to June 2023)

Table 2 summarises the average monthly returns of the winner, loser, and zero-cost strategies for the 34 trading months from August 2020 to June 2023. The results were derived using the same approach described in Section 3.1.

Table 2: Portfolios with ( $J_2, K_2$ ) and the stock return period of August 2020 to June 2023

		$K_2 = 1$	$K_2 = 3$	$K_2 = 6$	$K_2 = 9$
$J_2 = 1$	$R_w$	-0.005	-0.0123	-0.0285	-0.0502*
	$R_l$	0.0255**	0.0392	0.0605	0.0803
	$R_{w-l}$	-0.0305 (-1.3354)	-0.0515* (-2.0100)	-0.0890*** (-5.5490)	-0.1305*** (-4.3406)
$J_2 = 3$	$R_w$	-0.0197*	-0.0252	-0.0416	-0.0655**
	$R_l$	0.2138*	0.0440**	0.0629**	0.0855**
	$R_{w-l}$	-0.2335** (-2.3013)	-0.0692*** (-3.085)	-0.1045*** (-5.1421)	-0.151*** (-5.5264)
$J_2 = 6$	$R_w$	-0.0078	-0.012	-0.0244	-0.0517
	$R_l$	0.0275	0.0427	0.0836***	0.1037***
	$R_{w-l}$	-0.0353*** (-2.6073)	-0.0547*** (-2.6694)	-0.108*** (-4.1536)	-0.1554*** (-4.3877)
$J_2 = 9$	$R_w$	-0.0007**	-0.0147**	-0.0375**	-0.0715**
	$R_l$	0.0178**	0.0477**	0.0900***	0.0685
	$R_{w-l}$	-0.0185*** (-5.5195)	-0.0624*** (-2.5578)	-0.1275*** (-4.0221)	-0.002*** (-5.5195)

$R_w$ : The winner portfolio with the highest returns;  $R_l$ : the loser portfolio with the lowest returns;  $R_{w-l}$ : the zero-cost portfolio during the previous  $J_2$  months;  $K_2$ : the monthly holding periods of 1, 3, 6, and 9 months. The numbers in parentheses indicate the  $t$ -values.

\*\*\* Indicates significance at the 1% level, \*\* indicates significance at the 5% level, and \* indicates significance at the 10% level.

Table 2 reports the equal-weighted average monthly returns over the subsequent  $K_2$  months for portfolios formed based on  $J_2$  months. For example, when  $J_2 = 1$  and  $K_2 = 6$  (a six-month holding period), past losers on average gained 6.05%, while past winners on average lost 2.85%. In this case, the zero-cost portfolio, which shorts the loser and longs the winner, yielded 8.9% over six months. This return translated to an annual return of -17.8%.

The winner portfolios exhibited negative returns for all strategies, while the loser portfolios exhibited positive returns. For example, when  $J_2 = 1$  and  $K_2 = 1$ , the winner portfolio return was -0.005, and the loser portfolio return was 0.0255. At  $K_2 = 9$ , the winner portfolio return decreased to -0.0502, and the loser portfolio return increased to 0.0803. The winner portfolios demonstrated negative returns, while loser portfolios demonstrated positive returns. This trend remained evident for the zero-cost portfolio returns. For example, when  $J_2 = 1$  and  $K_2 = 1$ , the zero-cost portfolio return began at -0.0305 and increased to -0.1305 with  $K_2 = 9$ . This consistent pattern was also observed when  $J_2 = 3$ ,  $J_2 = 6$ , and  $J_2 = 9$ , which supported the idea that more extended holding periods resulted in more substantial disparities. The statistical significance of the Newey-West  $t$ -values also supported this premise. For example, the  $t$ -value was -4.3406 when  $J_2 = 1$  and  $K_2 = 9$ , which was significant at the 1% level. The  $t$ -value confirmed the statistically substantial divergence between the loser and winner portfolios.

The average return of the loser portfolios was between 4.27% ( $J_2 = 6$ ,  $K_2 = 3$ ) and 10.37% ( $J_2 = 6$ ,  $K_2 = 9$ ), and the winner portfolios average return was between -7.15% ( $J_2 = 9$ ,  $K_2 = 9$ ) and -1.2% ( $J_2 = 6$ ,  $K_2 = 3$ ). The loser portfolios outperformed the winner portfolios. The results in Table 2 suggested a clear, consistent, and long-term reversal effect for equities listed in the ChiNext market, even if the market had implemented the registration IPO system.

### **Discussion**

In this study, the momentum and reversal effects of the ChiNext market were tested. Additionally, whether the registration IPO system affected the momentum and reversal effects of the ChiNext market was examined. First, the monthly stock returns before the registration IPO system implementation (January 2013 to August 2020) were investigated. A noticeable reversal effect was identified in the ChiNext market during the different observation and holding periods. In most of the followed and held portfolios, the loser portfolio monthly returns generally outperformed those of the winner portfolios, specifically during the long-term holding period. The difference in returns between the winner and loser portfolios was most distinct during the  $K_1 = 24$  and  $K_1 = 36$  holding period, and the reversal effect was obvious. Notably, the winner portfolios outnumbered the loser portfolios when the holding and observation periods were both 36 months, but this was an exception.

The stock market in many developed economies typically demonstrates the momentum effect, while the ChiNext market demonstrated long-term reversal. The ChiNext market loser portfolios demonstrated superior average returns in subsequent months compared to the winner portfolios (see Table 1). Furthermore, the zero-cost portfolios had significant returns. The holding periods appeared closely linked to the momentum and reversal effects. For example, the returns between winner and loser portfolios were more significant in specific scenarios when the holding period was extended. Perceivably, the ChiNext market reaction was delayed with time.

The winner portfolios demonstrated a less stable performance compared to the generally positive returns of the loser portfolios across all scenarios. The winner portfolios reflected positive returns in some observation and holding periods but recorded negative returns in long-term holding periods. The loser portfolios exhibited positive returns in most strategies. This finding coincided with the earlier conclusion, where loser portfolios yielded strong positive returns in the ChiNext market in the long-term. Similarly, DeBondt and Thaler (1985) reported that high returns on loser portfolios led to reversal effects in the long-term.

Subsequently, the monthly stock returns following registration IPO system implementation

(August 2020 to June 2023) were examined. Following registration IPO system implementation, all strategies demonstrated the reversal effect on the ChiNext market. The loser portfolios reflected higher stock returns than the winner portfolios. Specifically, the loser portfolios revealed significantly positive returns when  $J_2 = 6$  and  $J_2 = 9$ , while the winner portfolios denoted significantly negative returns. For example, in the  $J_2 = 6, K_2 = 9$  strategy, the winner portfolio monthly stock returns were -5.17%, while those of the loser portfolios were 10.37%. The zero-cost portfolio returns also highlighted the reversal effect in the ChiNext market following registration IPO system implementation. Simultaneously, the winner portfolio returns were negative under all strategies. As such, previously well-performing stocks often do not perform as well as before. Contrastingly, the loser portfolios consistently yielded positive returns. The underperforming stocks frequently performed well in the future.

In this study, 49 strategies were tested during 92 trading months before registration IPO system implementation, with 16 strategies tested during 34 trading months following the implementation of the registration IPO system. The results strongly supported a noticeable reversal effect in the ChiNext market following registration IPO system implementation. The reversal effect on the ChiNext market notably persisted and even intensified since the registration IPO system implementation. This effect suggested that new policies for listed companies in the ChiNext market should be adjusted during registration IPO system implementation, or that other factors affecting the ChiNext market had a long-term reversal effect. Potential scholars could further examine this finding.

### **Conclusion**

In this study, Jegadeesh and Titman's (1993) approach was used to explore 49 momentum or contrarian trading strategies from January 2013 to August 2020 and 16 momentum or contrarian trading strategies from August 2020 to June 2023 using monthly stock returns in the ChiNext market. The ChiNext market implemented the registration IPO system in August 2020. There was momentum profitability in 14 of the 49 momentum or contrarian pre-implementation trading strategies. The average loser and winner portfolio returns were between -9.89% and 9.06% and between -34.95% and 11.52%, respectively. Nevertheless, the 16 post-implementation strategies did not yield momentum profitability. From those 16 strategies, the average loser and winner portfolio returns were between 4.27% and 10.37% and between -7.15% and -1.2%, respectively. Contrastingly, a long-term reversal effect was detected following registration IPO system implementation. In most strategies, the loser portfolio exhibited positive returns. This finding corresponded to the earlier conclusion, where the loser portfolios yielded strong positive returns in the ChiNext market in the long-term.

The winner portfolio returns were predominantly negative in most strategies, whereas the loser portfolios typically demonstrated positive returns. This conclusion contrasted with research results from the primary board market. The contrasting conclusion was primarily attributable to the unique characteristics of the ChiNext market, such as higher P/E ratios, smaller company sizes, the substantial presence of growth companies, and the high speculative nature of the market. Given these possible and diverse explanations, the cause of the reversal in the ChiNext market stock returns remains unresolved and requires further examination.

### **REFERENCES**

- Chu, X., Gu, Z., & Zhou, H. (2019). Intraday momentum and reversal in Chinese stock market. *Finance Research Letters*, 30, 83-88.
- De Bondt, W. F., & Thaler, R. H. (1987). Further evidence on investor overreaction and stock market seasonality. *The Journal of finance*, 42(3), 557-581.
- Dobrynskaya, V. (2021). Cryptocurrency momentum and reversal. *Available at SSRN* 3913263.
- Gang, J., Qian, Z., & Xu, T. (2019). Investment horizons, cash flow news, and the profitability



- of momentum and reversal strategies in the Chinese stock market. *Economic Modelling*, 83, 364-371.
- He, X. Z., & Li, K. (2015). Profitability of time series momentum. *Journal of Banking & Finance*, 53, 140-157.
- Hu, Y., Dai, T., Li, Y., Mallick, S., Ning, L., & Zhu, B. (2021). Underwriter reputation and IPO underpricing: The role of institutional investors in the Chinese growth enterprise market. *International Review of Financial Analysis*, 78, 101956.
- Jegadeesh, N., & Titman, S. (1993). Returns to buying winners and selling losers: Implications for stock market efficiency. *The Journal of finance*, 48(1), 65-91.
- Jegadeesh, N., & Titman, S. (2001). Profitability of momentum strategies: An evaluation of alternative explanations. *The Journal of finance*, 56(2), 699-720.
- Jin, M., Kearney, F., Li, Y., & Yang, Y. C. (2020). Intraday time-series momentum: Evidence from China. *Journal of Futures Markets*, 40(4), 632-650.
- Kelly, B. T., Moskowitz, T. J., & Pruitt, S. (2021). Understanding momentum and reversal. *Journal of financial economics*, 140(3), 726-743
- Li, B., Qiu, J., & Wu, Y. (2010). Momentum and seasonality in Chinese stock markets. *Journal of Money, investment and Banking*, 17(5), 24-36.
- Liao, X. (2023). Registration system and IPO pricing efficiency: Evidence from China. *Applied Economics*, 1-14.
- Lim, B. Y., Wang, J. G., & Yao, Y. (2018). Time-series momentum in nearly 100 years of stock returns. *Journal of Banking & Finance*, 97, 283-296.
- Ma, J. (2015). Relationship between capital structure and firm performance, evidence from growth enterprise market in China. *Management Science and Engineering*, 9(1), 45.
- Neszveda, G., Till, G., Timár, B., & Varga, M. (2022). Is short-term reversal driven by liquidity provision in emerging markets? Evidence from China. *Finance Research Letters*, 50, 103220.
- Thaler, R., & De Bondt, W. F. (1985). Does the stock market overreact. *Journal of Finance*, 40(3), 793-805.
- Tian, L. (2011). Regulatory underpricing: Determinants of Chinese extreme IPO returns. *Journal of Empirical Finance*, 18(1), 78-90.
- Yang, Y., Gebka, B., & Hudson, R. (2019). Momentum effects in China: A review of the literature and an empirical explanation of prevailing controversies. *Research in International Business and Finance*, 47, 78-101.