FOREIGN INVESTOR TRADING AND HERDING BEHAVIOR IN VIETNAM STOCK MARKET

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Abstract

We use the aggregate trading data of the largest stock exchange in Vietnam to investigate herding behavior. The results reveal that herding presents in Vietnam market, but the types of stocks herded vary given the market conditions, liquidity and foreign investors trading. Herding appears to concentrates in market down-days, and in liquid stocks. Stocks that foreign investors net buy are herded aggressive across all liquidity level and in all market conditions. Stocks that foreign investors net sell are herded only in market up-days, and mostly within the groups of liquid stocks. Herding does not occur in stocks of zero net foreign trading, regardless of liquidity and market conditions. Based on the findings that foreign investors net buy herded stocks in both market upturns and downturns, and also net sell liquid herded stocks in market downturns, we conjecture that foreign trading can possibly alleviate extreme movements of the market.

Key words: emerging stock market, foreign portfolio investment, herding, liquidity

JEL: G02, G12, G15

Date of receipt: 29th Nov 2016; Date of revision: 25th December 2016; Date pf approval: 30th Dec 2016

1. Introduction

While traditional economics assumes investors rationality and information efficiency, there has been increasing empirical evidence of bounded rationality, market inefficiency and that investment decisions are driven by psychological biases or social interactions. Herding is defined as the events where investors imitate the trading of other investors without regard to their own information, judgment or beliefs. Herding is observed in either institutional investors (Grinblatt et al., 1995) or individual investors (Dorn et al., 2008), and in either developed or emerging financial markets (Chang et al., 2000). Herding can be an irrational act resulting from social

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interactions (Hirshleifer and Hong Teoh, 2003), or a rational act of investors and fund managers seeking utility-maximization in the presence of uncertainty (Scharfstein and Stein, 1990, Avery and Zemsky, 1998, Hirshleifer and Hong Teoh, 2003).

In the stock markets, there is always a seller for every buyer and all trades sum up to zero. However, if a sufficient large or powerful group of investors move in the same direction, stock price can significantly diverge from its intrinsic value, imposing excess risk and price volatility on the market (Nofsinger and Sias, 1999). Mispricing of financial assets also leads to misallocation of financial resources, impeding market efficiency. Thus, herding not only affects investors, but also is a concern of corporations who base their financing on the open market, and a problem supervisory authorities must face in building a sound and sustainable financial market.

As a small emerging market, Vietnam stock exchanges are dominated by unsophisticated retail investors who possess limited expertise and information. They trade short-term and their decisions are mostly based on what they observe in the market. They are sensitive to rumors and fundamental announcements, which are very often inaccurate or deceptive, and they repeatedly follow other investors blindly. Herding is blamed to be the probable cause of market volatility, inefficiency, and return anomaly. Moreover, as a fast-growing market providing fruitful return, Vietnam stock market expects to receive massive influx of foreign portfolio investment. Empirical researches have shown that the alleged flow of capital is very volatile, possibly a source of herding and creates additional risk to an emerging market as they are likely to engage in positive feedback trading strategies (Woochan and Shang-Jin, 2002, Hyuk et al., 1999).

Although Vietnamese market comprises of two main exchange: Hanoi Stock Exchange (HNX) and Hochiminh Stock Exchange (HSX), these is not a market-wide index that cover stocks in both exchange, which will complicate the calculation of market returns. Market participants generally consider stocks on HNX mostly much less liquid and much riskier than those on HSX. On the last day of our dataset (Dec 22, 2016), although the number of listed stocks on HSX is fewer than on HNX (320 versus 375), number of shares traded on HSX accounts for approximately 80% of total trading value in both exchanges. Average liquidity of HSX stocks in term of trading volume is therefore roughly four times higher than HNX stocks. In this paper, therefore, the authors examine only HSX, which is more representative of the whole market.

We use aggregate market trading data for Ho Chi Minh Stock Exchange (HSX) to address three related questions. First, is there herding toward market consensus? Second, under which

circumstance is herding most severe? Third, what role does foreign investors play in herding? Our results indicate that herding does exist in Vietnam stock market. However, herding seems more pronounced in market down days (the days when market-index return is negative). Inconsistent with Woochan and Shang-Jin (2002), we find that foreign investors engage in different trading strategies given the market declines or increases, and the effects of their trading on market stability is unsure, but probably they helps stabilizing the market, especially in market down-days. These findings may contribute to the extant literature about herding specifically for a small emerging market as well as the contentious discussion about the impact of foreign portfolio investment on the stability of the financial market.

The rest of the paper is as follows. Section 2 provides literature reviews; Section 3 discusses methodology; Section 4 presents statistic results and Section 5 concludes.

2. Literature Review

Herding may be rooted in the psychological and biological nature of human. Imitation has been documented among species as part of the evolution process (Hirshleifer and Hong Teoh, 2003). As unsophisticated investors are not fully informed of the assets fundamentals, their decisions making is based on the observed behavior and results of others (Lux, 1995).

Devenow and Welch (1996) classify the explanation for rational herding into three categories: payoff externalities, principal-agent problem and information cascade. Payoff externalities involve the convergence of behavior arising from the fact that the payoffs to taking action depend on the number of investors adopting the same action. One typical example is Diamond and Dybvig (1983) bank run model, in which depositors herd to withdraw money from the bank in fear that other investors' withdrawals are forcing the bank into default. Principal- agent theory explains herding behavior of fund managers as a way to preserve their reputation or compensation. As performance of fund managers (and hence their reputation and compensation) are most commonly linked to market benchmarks or competitor fund performance, they exhibit group herd mentality to self-insure against underperformance or to hide incompetence (Scharfstein and Stein, 1990, Fong et al., 2011, Holmes et al., 2013). Information cascades refer to observation learning of later investors, who exploit information signaled in the actions of earlier investors, ignoring their own information to act alike (Bikhchandani et al., 1998). Experimental researches show that cascades occur very often (Anderson and Holt, 1997).

Prior empirical literature on herding can be divided into three main stands: papers that focus on institutional investor herding, individual investor herding, and papers that utilize aggregate market data to examine herding towards the market consensus. Many of the researches on institutional investor herding use the same herding measure LSV developed by Lakonishok et al. (1992). For example, Grinblatt et al. (1995) find that U.S. mutual funds herded buying when stock prices increase but did not herd selling when prices decrease. Wermers (1999) finds that U.S. the level of mutual funds herding was much higher in small stocks and growth-oriented funds, and stocks that herds buy outperform stocks that they sell. Wylie (2005) documents little fund herding in U.K. aggregate market and modest herding in largest and smallest individual stocks. Generally speaking, the levels of institutional herding are low. However, because they trade in large volume, the dollar value of excess buying or selling is huge.

Later studies have tried to investigate individual investor herding. Hyuk et al. (1999) examine the Korea market and document high level of individual investor herding. Kumar and Lee (2006) find high correlation of U.S. retail investor trading, especially in small-cap, value, low institutional ownership and low-priced stocks. Kaniel et al. (2008) observe negative feedback strategy of herding in individual investor trading of NYSE stocks, which is inconsistent with the results reported in other papers. Lei and Seasholes (2004) use the data of Chinese individual brokerage accounts and discover highly correlated purchases and sales of individuals in the same geographic location relative to the headquarters of the firms. Dorn et al. (2008) analyze daily transaction record of German individual investors and find herding in speculative trades that create pressure on prices. Most often, the levels of herding measure for individual investors are higher than that of institutional investors.

In addition, there are studies that utilize the methodology suggested by Christie and Huang (1995) and modified by Chang et al. (2000), in which return dispersion measure (cross- sectional standard deviation or cross sectional absolute deviation) is use to capture herding. Chang et al. (2000) conduct a comparative study of herding across international markets. They find little evidence of herding in developed markets (namely U.S., Hong Kong, Japan) and high levels of herding in emerging markets (namely South Korea and Taiwan). Moreover, investors exhibit stronger herding in reaction to macroeconomic information than firm-specific ones (Galariotis et al., 2015, Lam and Qiao, 2015).

Since foreign investors are different from domestic investors in the amount and speed of information they receive as well familiarity and risk exposure, their behaviors can be significantly different. Some studies have attempted to address this issue. Hyuk et al. (1999) find strong herding of foreign investors following positive feedback strategies in Korea when the market rises. However, during the market downturn following 1997 Asian financial crisis, herding by foreign investors disappears. Woochan and Shang-Jin (2002) document similar results for Korean market before and during the crisis. They conclude that foreign investors did not destabilize the stock markets, as some may worry.

Herding has been exceptionally infamous among Vietnam stock market participants, as there are observable signs of the phenomenon. Kumar and Lee (2006) suggest that herding is more severe with small-cap, value, lower institutional ownership and lower-priced stocks, which characterize Vietnam market. As of end of Feb 5 2016, approximately 70% of listed stocks are priced below $1 per share. Nguyen (2012) attributes momentum abnormal return to over-reactions of investors, which is closely related to herding. This paper aim at formally documenting herding behavior in Vietnam stock market and enriching extent literature on this topic with more insight into foreign investors participation in herding.

3. Methodology

Christie and Huang (1995) argue that under rational asset pricing models, because individual assets differ in their sensitivity to market return, dispersion of individual asset returns increase with the magnitude of changes in market return. In presence of herding around average consensus of all market participants, dispersion of asset returns (as measured by cross-sectional standard deviation) should be low relative to the level predicted by rational assets pricing models. Using a similar measure of return dispersion which is cross-sectional absolute deviation (CSAD), Chang et al. (2000) further demonstrate that under rational models, dispersions are a linear increasing function of market return. However, if herding presents, the linear increasing relationship will not hold. They propose the following empirical model to test herding behavior.

$$CSAD_t = \alpha + \beta_1 \left|R_{m,t}\right| + \beta_2 R_{m,t}^2 + \varepsilon_t \qquad (1)$$

where $R_{m,t}$ is market return for day t, and $CSAD_t$ is cross-sectional absolute deviation of return of stock i in N stocks for each day t.

$$CSAD = \frac{1}{N}\sum_{i=1}^{N}\left|R_{i,t} - R_{m,t}\right| \qquad (2)$$

If investors herd during price movements, we expect a non-linear or negative relationship between $CSAD_t$ and the market return. Therefore, a statistically significant negative β_2 coefficient from regression (1) is indicative of herding behavior.

Following Chang et al. (2000) to account for possible differences in the level of herding in up- and down-market, we also run regression (1) separately for days when the market is up (UP) and down (DOWN):

$$CSAD_t^{UP} = \alpha + \beta_1^{UP}\left|R_{m,t}^{UP}\right| + \beta_2^{UP}\left(R_{m,t}^{UP}\right)^2 + \varepsilon_t \qquad (3)$$

$$CSAD_t^{DOWN} = \alpha + \beta_1^{DOWN}\left|R_{m,t}^{DOWN}\right| + \beta_2^{DOWN}\left(R_{m,t}^{DOWN}\right)^2 + \varepsilon_t \qquad (4)$$

Dorn et al. (2008) documented higher correlated trading in most liquid stocks. Kaniel et al. (2008) find stronger evidence of trade imbalances in less liquid stocks. We account for these possible difference by dividing the sample into three liquidity terciles using trading volume on each date and test the hypothesis of no herding for each liquidity group.

Additionally, there are concerns that foreign investor trading can possibly destabilize the market (Hyuk et al., 1999, Woochan and Shang-Jin, 2002). We investigate the relationship between foreign investor trading and herding behavior by sorting stocks on each day into stocks of positive, negative, and zero net foreign trading.

4. Data and Results

4.1.Data

This paper uses aggregate market data of daily trading prices, volumes and foreign investor trading for listed stocks on Hochiminh Stock Exchange (HSX), ranging from the first opening days of the two exchanges up to Dec 22nd, 2016. VN-Index is used to calculate market returns. Website cafef.vn by VCCorp Corporation, the most well-known stock-market public data distributor in Vietnam provides the data built on direct trading data from the exchange. The initial dataset includes 557,638 firm-day observations for 338 stocks. As we calculate market-wide CSAD for each day, and exclude all days with zero or missing CSAD, our sample collide into 3936 observations of daily trading on HSX, in which there are 2490 market down-days (R_m<=0) and 1446 market up-days (R_m>0).

While the differences between two consecutive closing prices reflect changes in investors' valuations and expectations during and after the trading hours, herding (if exists) should exhibit primarily in trading hours. We concentrate our tests on herding within the trading hours by using open prices instead of previous day closing prices (or reference prices) in calculating daily returns and dispersions. Open prices are quite commonly difference from reference prices due to changes in expectations after the trading hours. This means our time series of daily returns do not add up to weekly or monthly returns. Previous studies such as Chang et al. (2000), Galariotis et al. (2015) also use discontinued times series of returns as they regress market up days and down days separately.

$$R_{i,t} = \frac{closing\ price_{i,t} - open\ price_{i,t}}{open\ price_{i,t}}$$

4.2.Results

Table 1 reports the results for testing herding behavior on HSX using regression (1) and its modified versions to control for market conditions, liquidity and foreign investor trading. In order to be conservative, this paper uses significance levels of 5% or lower to reject the null hypothesis that β_2=0. As explained earlier, a significant negative β_2 coefficient of quadratic term is the indication of herding. Tests of full sample indicate that herding presents on HSX. Substituting the coefficients for full sample into the quadratic function (1) and solve for the maximum, we see that dispersion increases as $|R_m|$ increases, and ($CSAD_t$) peaks when $|R_m|$ reaches +3.4%. Beyond that threshold, dispersion declines as R_m becomes larger. Note that daily price change for a given stock on HSX is currently constrained by law at +/-7%. In other words, dispersion declines in extreme market changes. This finding is consistent with previous literature. The power of the test is strong, as indicated by significant level at 0.1%. Chang et al. (2000) suggest that there are possible differences in the level of herding in up- and down-market. When we control for market condition by separating down-days (days when market returns are zero or below) and up-days (days when market returns are positive), herding is found for subsample of down-days, as demonstrated by significant negative β_2, and the power of the test also increases, as t-value is as large as -11.71. Meanwhile the test fails to reject the null hypothesis of no herding in up-days. This partial evidence resembles what found in Japan stock market (Chang et al., 2000). It is tempting to conclude that in Vietnam stock market, herding exists in market down-days but not in market up-days, but further tests presented in

Table 2 indicate otherwise. Before examining this issue more closely, we look at how liquidity and foreign trading may relate to herding.

There are contradictory findings on the relation between herding and liquidity. Dorn et al. (2008) document higher correlated trading in most liquid stocks. Kaniel et al. (2008) find stronger evidence of trade imbalances in less liquid stocks. This intrigues us to hypothesize that there is possible difference in herding behavior in stocks of different liquidity. Because our sample of Vietnam stock market covers different stages of development, from establishment, to excessive growth, peak and trough, recession and recovery, liquidity changes over the time. Therefore we do not assign liquidity ranks across 16 years of data, but separately for each year. For each year, we calculate yearly trading volume by summing up all daily trading volume for each stock, and assign each stock into one of the three yearly volume terciles. Then we calculate $CSAD_t$ and rerun regression (1) across 16 years for each tercile. The results reported in Panel A.2 seem partly consistent with Dorn et al. (2008). It appears that investors herd on stock with medium and most liquidity (tercile 2 and 3). The coefficient of concern is highest in medium liquidity terciles. The coefficient for least liquidity stocks is only slightly significant (at 5%). It is tempting to think that higher risk, low turnover and thin trade lead to weak herding in illiquid stock. However, further tests presented in Table 2 put forward a quite different explanation.

One notable emerging stock market concern is that foreign portfolio investment volatility and swings can possibly destabilize the market (Hyuk et al., 1999, Woochan and Shang-Jin, 2002). We divide stocks on each exchange on each day by net trading value (buy minus sell) of foreign investors into stocks of "foreign buy" (positive net foreign trading value) and stocks of "foreign sell" (negative net foreign trading value) and stocks of "foreign neutral" (zero net foreign trading), then calculate $CSAD_t$ and rerun regression (1) for each group across the time horizon of 16 years. Test results of the relationship between foreign investor trading and herding are reported in Panel A.3. Herding is detected in stocks that foreign investors net buy, but is absent in stocks which foreign investors net sell or do not trade. Nevertheless, tests presented in Table 3 uncover more details about the relationship between foreign trading and herding.

Table 1: Testing of herding toward market consensus for full sample and controlling for market condition, liquidity and foreign trading

	α	t	β_1	t	β_2	t

Full sample	0.0089	16.83	1.087	10.52	**-16.09**[c]	-5.08
Panel A.1: By market condition						
Down days (R_m<=0)	0.0078	40.64	1.124	26.67	**-15.73**[c]	-11.71
Up days (R_m>0)	0.0122	7.17	0.765	2.70	-10.61	-1.33
Panel A.2: By liquidity						
Quartile 1 (lest liquid)	0.0104	7.19	1.334	4.71	**-19.83**[a]	-2.28
Quartile 2	0.0083	54.64	1.064	35.58	**-16.17**[c]	-17.65
Quartile 3 (most liquid)	0.0078	51.39	0.853	28.66	**-12.03**[c]	-13.18
Panel A.3: By foreign investor trading						
Foreign neutral	0.0166	11.54	0.466	1.71	-4.04	-0.44
Foreign buy	0.0084	55.04	0.964	32.08	**-13.66**[c]	-14.84
Foreign sell	0.0133	61.00	0.390	10.12	-1.121	-0.97

[a, b, c] *: Significant levels at 5%, 1%, 0.1%*

Coefficients in bold indicate signs of herding behavior

Table 2 unveils insights into the low significance of β_2 in lest liquid stocks in Table 1. We report testing results of three liquidity terciles separately for market down-days and up-days. In market down-days, herding is strong in all liquidity terciles. On the contrary, in market up-days, herding occurs in two higher liquidity terciles and is absent in the lowest liquidity tercile. It is the difference occurrence of herding in two market conditions that makes the estimation of parameter β_2 for least liquid tercile slightly significant in Table 1. We conjecture that investors herd vigorously in all stocks when market declines. However, they avoid herding in illiquid stocks and herd only in liquid stocks when market increases. Reasonably assuming that buying force is strong in market up-days and selling force is strong in market down-days, this finding implicates that investors avoid buying lest liquid stocks when market increases, but aggressively sell them when the market declines. This is an interesting findings that probably describe what actually happen in the market.

Table 2: Testing of herding toward market consensus controlling for liquidity in different market conditions

	α	t	β_1	t	β_2	t
Down days (R_m<=0)						
Tercile 1 (lest liquid)	0.0087	38.54	1.361	27.43	**-18.28**[c]	-11.56
Tercile 2	0.0075	39.48	1.128	26.87	**-16.78**[c]	-12.54
Tercile 3 (most liquid)	0.0071	37.23	0.88	20.96	**-12.27**[c]	-9.18
Up days (R_m>0)						
Tercile 1 (lest liquid)	0.0157	3.26	0.862	1.08	-12.27	-0.55
Tercile 2	0.0108	44.23	0.789	19.42	**-11.23**[c]	-9.83
Tercile 3 (most liquid)	0.0099	41.28	0.643	16.02	**-7.99**[c]	-7.07

[a, b, c] *: Significant levels at 5%, 1%, 0.1%*

Coefficients in bold indicate signs of herding behavior

Table 3 reinitiates the results in Panel A.3 Table 1 about the relationship between foreign investor trading and herding. We separate market down-days and market up-days for each group of foreign trading. Strong herding is present both market down-days and up-days for stocks of positive net foreign trading. In addition, herding also occur in stocks of negative net foreign trading, but the evidence is weak, as indicated by coefficient significance level of only 5%. Again, herding is absent if net foreign trading is zero. These results are indicative of the relationship between foreign investor trading and herding. We postulate that herding is highly likely to occur in stocks that foreign investor net buy, but herding does not occur in stocks with zero net foreign trading, and very weakly occur in stocks with negative net foreign trading. Such buying herded stocks by foreign investors in market down days may reflect contrarian strategies that provide liquidity and help alleviate the fire sales of stocks, but buying in market up-days by foreign investors may accelerate herding even more.

Table 3: Testing of herding toward market consensus controlling for foreign investor trading in different market conditions

	α	t	β_1	T	β_2	t
Down days (R_m<=0)						

Foreign neutral	0.0161	62.96	0.385	7.11	-0.582	-0.30
Foreign buy	0.0076	39.12	1.034	24.25	**-14.36**[c]	-10.57
Foreign sell	0.0135	44.61	0.328	5.83	0.0455	0.03
			Up days (R_m>0)			
Foreign neutral	0.0179	4.43	0.427	0.64	-4.326	-0.21
Foreign buy	0.0111	47.07	0.669	17.08	**-8.328**[c]	-7.56
Foreign sell	0.0127	44.09	0.495	10.25	**-3.310**[a]	-2.32

[a, b, c] *: Significant levels at 5%, 1%, 0.1%*

Coefficients in bold indicate signs of herding behavior

In an attempt to further understand the relationship between herding and market conditions, liquidity and foreign trading, we investigate the interception of liquidity terciles and three foreign trading groups, generating nine groups on each day. We examine herding behavior of each group in either market up-days or market down-days and report the results in Table 4. Due to large number of regressions, for visual purpose, we report only β_2. All groups with zero net foreign trading exhibits no sign of herding regardless of market conditions or liquidity, confirming the results in Table 3.

In both market down-days and up-days, consistent with previous finding in Table 1 and Table 3, herding is found in stocks that foreign investors net buy at all level of liquidity. Within the groups of stocks that foreign investors net sell, herding is not found in market down-days. Nevertheless, contrary to the results in Table 1 and Table 3, herding actually presents in stocks that foreign investors net sell in market up-days. Moreover, the indicator of herding (β_2) pronounces in more liquid stocks, and is weak in illiquid stocks. In other words, in market up-days when foreign investors sell, the more liquid the stocks are, the more likely they are herded. This result is partially consistent with Grinblatt *et al.* (1995) who find that U.S. mutual funds herded buying when stock prices increase, and Hyuk et al. (1999), Woochan and Shang-Jin (2002) who find strong herding of foreign investors following positive feedback strategies in Korea when the market rises, and Dorn et al. (2008) who document higher correlated trading in most liquid stocks.

In summary, on Vietnam stock market, herding presents in both market up-days and down-days, in all level of stock liquidity, but the directions are different given the market conditions. When the market declines, herding is aggressive in all stocks regardless of liquidity levels. When the market increases, herding concentrates on more liquid stocks and is absent in illiquid stocks. Nevertheless, herding is not pervasive to all stocks with similar liquidity, but is pronounced in stocks that foreign investors contemporarily are net buyers. For the stocks which foreign investors are net sellers, herding is strong only in market up-days in liquid stocks. Such buying herded stocks in increasing market by foreign investors is likely a reflection of momentum strategies, which worsen the herding effect, but buying in a decreasing market may provide liquidity that stabilize the market.

Table 4: Testing of herding toward market consensus controlling simultaneously for foreign investor trading in different market conditions

Down days (R_m<=0)	Lest liquidity		Average liquidity		Most liquidity	
	β_2	t	β_2	t	β_2	t
Foreign neutral	-2.750	-1.26	-1.859	-0.80	1.322	0.51
Foreign buy	**-18.11**[c]	-10.12	**-15.14**[c]	-10.75	**-12.32**[c]	-9.17
Foreign sell	-4.024	-1.76	-3.808	-1.82	1.433	0.93
Up days (R_m>0)	Lest liquidity		Average liquidity		Most liquidity	
	β_2	t	β_2	t	β_2	t
Foreign neutral	-8.961	-0.19	-0.457	-0.39	0.580	0.40
Foreign buy	**-8.187**[c]	-5.06	**-11.41**[c]	-8.59	**-7.470**[c]	-6.08
Foreign sell	**-6.288**[a]	2.31	**-4.981**[b]	-2.79	**-4.875**[c]	-3.37

[a, b, c] *: Significant levels at 5%, 1%, 0.1%*
Coefficients in bold indicate signs of herding behavior

5. Conclusion

In this paper, we find obvious association of herding behavior and liquidity and foreign investor trading in different market conditions. The specific roles that foreign investors play in different market contexts, whether they add fuel to the fire, whether they are counter forces that provide

liquidity and lessen the excessiveness of herding, or whether they are the initiators or the followers in herding, are, however, unknown. With the observation that stocks that exhibit herding is also the ones of which foreign investors are net buyers in both market up and down moves, our best logical explanation is such that foreign investor trading alleviates herding effect in market downturn and worsens the alleged effect in market upturn. However, the adverse effects of foreign buying in market upturn can be minimal, as foreign investors also herd to sell in market upturn.

While this paper add some insights to the extant literature of herding, we have not investigated the institutional and individual investors separately. Christie and Huang (1995) propose that the differential prediction of dispersion by rational asset pricing models and herding behavior is most pronounced during periods of extreme market movements. This can be a suggestion for further research of herding in the extreme tails of market return distribution Moreover, as the market have experienced different stages of expansion and contraction, there can possibly be interesting implications studying herding in specific periods of macroeconomic changes. In our experience as market participants, herding is quite observable around fundamental macroeconomic as well as firm-specific announcements of changes. Regrettably, detailed trading data of the market remains inaccessible by the public. If the stock exchange could make it easier for researchers to acquire the data, it would surely facilitate not only studies of herding, but also overall understanding of investor behaviors in the market.

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