# Foreign Investor Herding on the Taiwanese Stock Market

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*Herding occurs when investors intensively buy or sell the same stock at the same time. This study examines foreign investor herding on the Taiwan Stock Market from 2001 to 2005 using quarterly stock returns and changes in foreign ownership. Our results show that foreign ownership-change is not mean-reverting, and that foreign investor herding impacts stock prices. Foreign investors follow positive-feedback trading, and they are not better informed than other investors.*

## 1. Introduction

By the end of 2000, when Taiwan joined the World Trade Organization (WTO), almost all limitations to foreign investment had been removed. In 2000, the weights of Taiwan stock index in the MSCI (Morgan Stanley Capital Index) increased from 50% to 100%. Foreign investors' transactions in the Taiwan Stock Market have increased dramatically in the past several years, especially after 2000. In view of the increasing importance of foreign investors in the Taiwan Stock Market, and the lack of study on the subject of foreigner' investment behaviors in the Taiwan Stock Market, we investigate these issues after 2000.

There have been some studies examining the investment behaviors of investors in the stock market. Herding occurs when investors intensively buy or sell the same stock at the same time. Feedback trading, a special form of herding, involves correlation between herding and lag returns.

Nofsinger and Sias (1999) find that institutional investor herding in the U.S. Stock Market impacts stock prices and has positive-feedback trading. Iihara, Kato, and Tokunaga (2001) extend the methodology of Nofsinger et al. (1999), noting that foreign investor herding on the Tokyo Stock Exchange impacts stock prices and also has positive-feedback trading.

While the literature mentioned above provides some evidence in the U.S. and Japanese stock markets, there is still no study about the Taiwan stock market, which is one of the most important emerging stock markets in the world. In this study, we follow the procedure adopted by Nofsinger et al. (1999) to examine foreign investor herding in the Taiwan Stock Market from 2001 to 2005 using quarterly data. Our results show that foreign ownership-change is not mean-reverting, and that foreign investor herding impacts stock prices. Furthermore, they follow positive-feedback but not momentum trading, and their trades are not related to information.

The paper is organized as follows. In the next section, we describe the data. Section 3 presents the methodology and empirical results. Finally, section 4 concludes this study.

## 2. Data

We use quarterly data of stock returns and foreign ownership-changes during the period of 2001 to 2005. There are totally twenty quarters in our sample. The data consist of quarterly stock return, and fractions of shares held by foreign investors in the Taiwan stock market. All data is obtained from the database of Taiwan Economic Journal (TEJ).

## 3. Methodology and Results

We follow the method of Nofsinger et al. (1999) and evaluate herding by examining changes in ownership, measured as the fraction of shares held by foreign investors. In this study, the herding interval is one quarter, and the change in ownership is used as a proxy of foreign investor herding. The more shares foreign investors purchase, the greater the herding.

Portfolios of stocks are constructed for examining foreign investor herding behavior. Following Iihara et al. (2001), stocks are divided into five portfolios based on foreigners' quarterly change in ownership, as shown in Table 1. Among which, the Q5 is the largest ownership-increase portfolio, while the Q1 is the largest ownership-decrease portfolio.

We focus on the raw returns and excess returns of three time periods and examine the following issues. (1) The pre-herding quarterly (raw) excess returns are used to test for evidence of feedback trading. (2) The herding quarterly (raw) excess returns are used to test for price pressure. (3) The post-herding quarterly (raw) excess returns are examined to test for information effects. In addition, a buy-and-hold strategy is assumed when computing the raw and excess returns of stocks.

Table 1 shows the quarterly (from 2001 to 2005) averages of some characteristics of foreign ownership-change portfolios. The second-to-last column presents an F-statistic for the null hypothesis that the characteristic does not differ across the ownership-change portfolios. The t-statistic in the last column is based on the null hypothesis that the Q5 portfolio does not differ from the Q1 portfolio.

### 3.1. Is foreign ownership-change mean-reverting?

If foreigners' ownership is mean-reverting, low initial ownership is followed by ownership-change increases and high initial ownership is followed by ownership-change decreases. Specifically, foreign investors tend to buy stocks they own in greater amounts than average stock and to sell those that they own in lesser amounts. That is, if foreign investors are overweighed in a particular stock in a particular quarter, they tend to reduce their holdings in the following quarter (Iihara et al., 2001).

Panel A of Table 1 shows the quarterly averages of the initial level of foreign ownership and changes in foreign ownership for stocks in each ownership-change portfolio. The results demonstrate that the levels of initial foreign ownership vary greatly since F-statistic and t-statistic are significant. However, they do not exhibit a significant pattern

## Table 1 Characteristics of Foreign Ownership-Change Portfolio (holding period is one quarter)

| | Quintile 1 (decrease) | Quintile 2 | Quintile 3 | Quintile 4 | Quintile 5 (increase) | F-statistic | Q5-Q1 t-statistic |
|---|---|---|---|---|---|---|---|
| **A: *Foreign ownership statistics*** | | | | | | | |
| Foreign ownership change (%) | -0.325 | -0.074 | 0.003 | 0.167 | 2.568 | 36.427** | 6.658** |
| | (-39.106)*** | (-27.462)*** | (15.845)*** | (32.225)*** | (9.415)*** | | |
| Initial ownership (%) | 2.249 | 10.324 | 6.597 | 9.612 | 4.570 | 75.631** | 6.306** |
| | (16.587)*** | (27.546)*** | (21.576)*** | (23.652)*** | (20.235)*** | | |
| **B: *Herding quarter*** | | | | | | | |
| Stock raw returns | 0.002 | 0.014 | 0.046 | 0.089 | 0.125 | 12.794** | 5.646** |
| | (0.096) | (1.295) | (1.328) | (6.097)*** | (8.547)*** | | |
| Stock excess returns | -0.004 | 0.003 | 0.013 | 0.032 | 0.069 | 7.542*** | 5.618*** |
| | (-0.256) | (0.423) | (-0.318) | (2.268)** | (6.110)*** | | |
| **C: *Post-herding quarter*** | | | | | | | |
| Stock raw returns | 0.096 | 0.067 | 0.058 | 0.034 | 0.028 | | -3.947** |
| | (8.235)*** | (5.734)*** | (5.650)*** | (4.692)*** | (4.170)*** | | |
| Stock excess returns | 0.036 | 0.027 | 0.015 | -0.001 | -0.015 | 2.230** | -2.205** |
| | (3.597)*** | (2.569)** | (2.531)** | (2.046)*** | (1.124) | | |
| **D: *Pre-herding quarter*** | | | | | | | |
| Stock raw returns | 0.005 | 0.061 | 0.069 | 0.075 | 0.117 | 2.112 | 1.695 |
| | (3.128)*** | (3.105)*** | (4.920)*** | (6.365)*** | (7.958)*** | | |
| Stock excess returns | -0.045 | 0.025 | 0.043 | 0.062 | 0.085 | 3.834*** | 0.965 |
| | (-3.493)*** | (2.465)** | (3.823)*** | (5.174)*** | (6.649) *** | | |

Note: 1. * Significant at the 10% level, ** Significant at 5% level, *** Significant at 1% level. 2. t-statistic is in parentheses.

since there is no monotonic relationship. Therefore, foreign ownership-change is not mean-reverting.

### 3.2. Does foreign investor herding impact stock prices?

If foreign investor herding impacts stock prices, herding period returns would increase as the ownership change increases and decrease as the ownership change decreases. That is, there would be a monotonic relationship between changes in foreign ownership and returns during the herding quarter.

Panel B reports the quarterly averages of the raw returns and excess returns over the herding quarter. The results demonstrate that the stocks in the Q5 portfolio suffer significant raw and excess returns of 12.5% and 6.9% respectively. On the other hand, the stocks in the Q1 portfolio exhibit no significance for either raw returns or excess returns. This indicates that foreign investor herding impacts stock prices, especially when foreign investors positively herd.

### 3.3. Are foreign investors better informed?

If foreign investor herding over the herding quarter drives prices away from fundamental values, the subsequent returns would tend to reverse as stock prices eventually revert toward fundamental values. On the other hand, the lack of subsequent return reversals (i.e., subsequent return continuation) reveals that the herding behaviors of foreign investors are due to information. This may occur when foreign investors are better informed than other investors or because foreign investors buy with more correct information (Nofsinger et al., 1999).

Panel C presents the quarterly averages of the raw returns and excess returns for stocks within each ownership-change portfolio over the quarter following the herding quarter. It documents that post-herding raw and excess returns in the Q5 portfolio are the lowest, while the highest are in the Q1 portfolio. Significant return reversals imply that herding quarter positive returns may be due to stock market overreaction or trend-chasing strategies. They are unrelated to information, and may destabilize stock prices. Our results contradict to those of Iihara et al. (2001), who state that foreign investors in the Japanese stock market are well-informed, and their trades are related to information.

### 3.4. Do foreign investors follow positive-feedback trading?

Positive-feedback trading is defined as buying stocks when their prices have increased and selling stocks when their prices have decreased (De Long, Shleifer, Summers, and Waldmann, 1990). Panel D reports quarterly averages of the raw returns and excess returns in the quarter prior to the herding quarter for the ownership-change portfolio. It shows that pre-herding period returns are positively correlated to the change of foreign ownership. Therefore, foreign investors tend to follow positive-feedback trading.

Positive-feedback trading could be caused by the short-term overreaction of trend-chasers. As a result, stock prices of past winners and losers are expected to experience subsequent return reversals (Chan, Jegadessh, and Lakonishok, 1996). Combining the results of panels C and D reveal evidence that foreign investor herding seems to be irrational. That is, we find that positive-feedback trading of foreign investors results in fairly quickly subsequent return reversals.

## 4. Conclusions

In sum, foreign ownership-change is not mean-reverting in the Taiwan Stock Market. In addition, foreign investor herding impacts the stock prices. Furthermore, they follow positive-feedback trading, and their trades are not related to information.

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