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The Relationship between the Disposition Effect and Herding Behavior: Evidence from Taiwan's Information Technology Stocks

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***Abstract*—**This study aims to explore the relationship between the disposition effect and herding behavior of investors trading Taiwanese information technology stocks. This study differs from previous literature in two aspects. First, in contrast with the earlier studies that focused on investigating investors' herding behavior, this study explores the possibility that the disposition effect drives investors' herding behavior. Additionally, it takes an in-depth look at the interdependence between the disposition effect and herding behavior of investors, including lead-lag relationship and volatility transmission effect. Empirical results show that investors trading Taiwan's information technology stocks exhibit pronounced herding behavior and that the disposition effect has a great impact on their herding behavior.

***Keywords*—**Herding behavior, Disposition effect, Behavioral finance.

I. Introduction

IN terms of the irrational behavior of investors, earlier studies have indicated the prevalence of herding behavior among different types of investors. For example, Kraus and Stoll [1] and Klemkosky [2] found evidence of herding behavior among mutual fund managers. Nofsinger and Sias [3] concluded that the herding behavior among retail and institutional investors was caused by positive feedback trading. Ennis and Sebastian [4] as well as Boyson [5] showed herding tendency of trading behavior among hedge fund managers. Kim and Jegadeesh [6] pointed out the herding tendency of investment recommendations made by analysts. Additionally, the previous literature has suggested the prevalence of herding behavior in the financial markets of different regions. Specifically, in addition to herding evidence found in the US stock market [7], Choe, Kho, and Stulz [8] and Chen, Wang, and Lin [9] discovered herding behavior among foreign institutional investors in South Korean and Taiwanese stock markets that led to the buying or selling of identical or similar stocks during the same period of time. The studies of Voronkova and Bohl [10] and Walter and Weber [11] both detected highly similar herding behavior among pension fund managers in Poland and those of mutual funds in Germany. Chang, Cheng, and Khorana [12] and Chiang and Zheng [13] used international major stock markets as research subjects and concluded that there is a significant prevalence of the herding effect in the majority of stock markets (especially, emerging ones).

Herding refers to trading behavior heading in the same direction as demonstrated by a group of investors within a certain period of time [3]. Namely, within a certain period of time the majority of investors demonstrated an unplanned behavior to buy or sell identical (or similar) stocks. Accordingly, if investors demonstrate a high level of herding tendency, they are more likely to overreact to information shocks due to psychological pitfalls and large distortions in price to intrinsic value may occur. Chang [14] contested that herding behavior is a potentially unstable factor that leads to extreme price volatility. Venezia, Nashikkar, and Shapira [15] argued that herding behavior among individual investors is the main cause of stock price fluctuations. As a result, the investigation of herding behavior and its causes not only help to improve the performance of portfolios and risk management operations but also assist relevant agencies in strengthening the control and monitoring mechanisms of their respective financial markets.

The causes of herding behavior were explained in earlier studies after examining the phenomenon through different various possible methods. Among them, Welch [16] argued that private information contents possessed among investors led to herding behavior. Froot, Scharfstein, and Stein [17] suggested that the main cause was the high correlation of private information contents owned by investors. In addition to the relevance of private information, investors' psychological pitfalls were proved to be one of the causes of herding behavior. Nofsinger and Sias [3] and Belhoula and Naoui [18] found that herding behavior and positive feedback trading among investors are closely connected. Vallelado et al. [19] indicated the use of correlation between cognitive biases and information availability to explain investors' herding behavior. Liao, Huang, and Wu [20] determined that investors' emotions played an important role in explaining herding behavior among fund managers.

Psychological pitfalls refer to the fundamental attribution errors inherent in humans. Among the common psychological pitfalls of humans, the disposition effect, the prevalence of the tendency to sell stocks whose value has increased (winners) and keep those whose value has decreased (losers), has long been established [21]. Odean [22], Barber et al. [23], and Singal and Xu [24] also found a significant disposition effect among investors. Because of the domination of the disposition effect in investors' trading decisions and the majority of winners (or

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losers) are stocks from one industry, the disposition effect, inevitably, influences investors' herding behavior and investment performance. Garvey and Murphy [25] found that the significance of investors' disposition behavior is negatively correlated with their profitability. In order to improve investment performance, it is necessary to explore the relationship between the disposition effect and herding behavior of investors.

In lieu of the great effect of investors' psychological pitfalls on their ability to make decisions, this study investigates the influence of the disposition effect on investors' herding behavior. Unlike the majority of previous literature that focused on the cause of investors' herding behavior from a rational perspective, this study broadly examines the relationship between the disposition effect and herding behavior of investors. The empirical results show that there is significant herding behavior in Taiwan's information technology stocks as well as a significant lead-lag relationship and transmission effect on the disposition behavior and the herding tendency of investors.

The remainder of this paper is organized as follows. The data and methodologies are described in the next section. The third section reports the empirical results. The paper has been concluded in the last section.

II. Data and Methodologies

A. Data Sources

This study investigates the relationship between the disposition effect and herding behavior of investors. Information technology stocks traded in the Taiwan Stock Exchange are used as the research subjects during the period from January 1, 1981 to April 30, 2012. Additionally, source comes from daily data entries found in the database of the Taiwan Economic Journal.

B. The Proxy of the Significance of the Disposition Effect

The disposition effect refers to the tendency to sell stocks whose value has increased while keeping stocks that have lost value. When investors demonstrate the disposition effect, they tend to sell profitable stocks and hold losing stocks. That is, a significant difference is observed among investors who trade winners (those with recently soaring stock prices) and losers (those with recently declining stock prices). According to the definition of the disposition effect, this study uses "the average trading volume of stocks with prices that have increased at the end of the trading day divided by that of those that have declined in price at the end of the trading day" to measure the strength of the disposition effect. Specifically, this study utilizes (V_t^+ / V_t^-) as an indicator of the disposition effect on Day *t*. Among which, $V_t^+ = \sum_{j=1}^{h} V_{j,t}^+ / h$; $V_t^- = \sum_{i=1}^{k} V_{i,t}^- / k$; $V_{j,t}^+$ is the trading volume of Stock *j* whose value has increased on Day *t*. $V_{i,t}^-$ is the trading volume of Stock *i* whose value has declined on Day *t*. *h* is the number of stocks with increased value on Day *t*; *k* is the number of stocks with decreased value on Day *t*.

C. Investigation Method of Herding Behavior in the Stock Market

Of the methodologies used in previous studies on herding behavior, this study adopts the cross-sectional standard deviation (CSSD) of Christie and Huang [7] to investigate the herding tendency of stock market investors. The description is listed below:

$$CSSD_t = \sqrt{\sum_{l=1}^{n} (R_{l,t} - R_{m,t})^2 / (n-1)} \quad (1)$$

where, $CSSD_t$ is CSSD on Day *t*; $R_{l,t}$ is the returns of Stock *l* on Day *t*; $R_{m,t}$ is the returns of the Taiwan Stock Exchange Capitalization Weighted Index on Day *t*; and *n* is the number of stocks.

After CSSD is acquired, this study also uses the method of Chiang and Zheng [13] to investigate the significance of investors' herding behavior in the stock market described as below:

$$CSSD_t = \alpha_0 + \alpha_1 R_{m,t} + \alpha_2 \left| R_{m,t} \right| + \alpha_3 R_{m,t}^2 + \varepsilon_t \quad (2)$$

where, $\alpha_0, \alpha_1, \alpha_2$, and α_3 are regression coefficients and ε_t is the residual on Day *t*. According to (2), when α_3 is a statistically significant negative value, it indicates significant herding behavior in the stock market.

D. Investigation Method of the Lead-lag Relationship between the Disposition Effect and Herding Behavior

This study applies the method of Chiang and Fong [26] to examine the lead-lag relationship between the disposition effect and herding behavior. Because Chiang and Fong [26] used generalized method of moment (GMM) to estimate the regression coefficient, this study introduces GMM to (3) and (4). The residual of (3) and (4) is used to replace the actual disposition effect indicator and CSSD. Equations (3) and (4) are described as below:

$$(V_t^+ / V_t^-) = a_0 + a_1 (V_{t-1}^+ / V_{t-1}^-) + (v_t^+ / v_t^-) \quad (3)$$

$$CSSD_t = b_0 + b_1 CSSD_{t-1} + cssd_t \quad (4)$$

where, a_0, a_1, b_1, and b_2 are regression coefficients and (v_t^+ / v_t^-) and $cssd_t$ are the residual, proxies of (V_t^+ / V_t^-) and $CSSD_t$, respectively.

After the proxies of (V_t^+ / V_t^-) and $CSSD_t$ are determined, this study uses GMM to estimate the lead-lag coefficients with (5) described as below:

$$(v_t^+ / v_t^-) = D_0 + \sum_{f=-q}^{-1} DL_f \, cssd_{t+f} + DL_0 cssd_t + \sum_{g=1}^{q} DL_g \, cssd_{t+g} + \eta_t \quad (5)$$

where, q is the lead/lag periods (assumed as three periods); D_0, DL_f, DL_0, and DL_g are regression coefficients; and η_t is the residual on Day *t*. As shown in (5), if $DL_f\,(DL_g)$ is statistically and significantly different from zero, then CSSD leads (lags) the disposition effect indicator by $f(g)$ periods. In addition, this study refers to the methods of Chiang and Fong [26] and Chang et al. [27] for the assumption of the lead-lag periods. The lead-lag periods are assumed as three and if all lead/lag coefficients are significantly different from zero, this study will add the lead/lag periods until one lead/lag coefficient is insignificantly different from zero.

E. The Investigation Method of the Transmission Effect between the Disposition Behavior and Herding Tendency

As shown in the study of Bollerslev [28], the bivariate generational autocorrelation conditional heteroskedasticity (GARCH) model can be used to properly describe the transmission effect between the two variables. Accordingly, this study applies the bivariate GARCH (1,1) model to investigate the transmission effect of the disposition behavior and herding tendency. The bivariate GARCH (1,1) model of this study is described as below:

$$(V_t^+ / V_t^-) = \theta_{10} + \theta_{11}(V_{t-1}^+ / V_{t-1}^-) + \theta_{12} CSSD_{t-1} + \psi_t \quad (6)$$

$$CSSD_t = \theta_{20} + \theta_{21} CSSD_{t-1} + \theta_{22}(V_{t-1}^+ / V_{t-1}^-) + \xi_t \quad (7)$$

$$\{\psi_t, \xi_t\}' = \Lambda_t \left| \Omega_{t-1} \sim N(0, HS_t); HS_t = \{h_t, h_t'\} \right. \quad (8)$$

$$h_t = vc_{11} + vb_{11}\psi_{t-1}^2 + va_{11} h_{t-1} \quad (9)$$

$$h_t' = vc_{22} + vb_{22}\xi_{t-1}^2 + va_{22} h_{t-1}' \quad (10)$$

$$hh_t' = vc_{21} + vb_{21}\psi_t \xi_t + va_{21} hh_{t-1}' \quad (11)$$

$$hh_t' = \rho^{(V_t^+ / V_t^-), CSSD_t} (h \times h_t')^{0.5} \quad (12)$$

where, h_t and h_t' are the conditional variances of the disposition effect and CSSD on Day *t*; hh_{t-1}' is the conditional covariance of the disposition effect and CSSD on Day *t*; and ψ_t^2 and ξ_t^2 are, respectively, the non-conditional variances of the disposition effect and CSSD on Day *t*. Ω_{t-1} is the information set of the "bivariate GARCH(1,1) model of the disposition effect and CSSD" on Day *t-1*. $\rho^{(V_t^+ / V_t^-), CSSD_t}$ is the correlation coefficient of ψ_t and ξ_t. $\theta_{10} \sim \theta_{22}$, $vc_{11} \sim vc_{21}$, $vb_{11} \sim vb_{21}$, and $va_{11} \sim va_{21}$ are regression coefficients.

According to (6)-(12), first, θ_{12} and θ_{22} measure whether the "transmission effect" exists between the "disposition behavior and CSSD." If θ_{12} is statistically and significantly different from zero, it indicates the influence of the CSSD of the previous day on the disposition behavior of the current day. If θ_{22} is statistically and significantly different from zero, it indicates that the influence of the disposition behavior of the previous day on the CSSD of the current day. Furthermore, if va_{11} or va_{22} are statistically and significantly different from zero, then the conditional variance is impacted by old information shocks; if vb_{11} or vb_{22} are statistically and significantly different from zero, then the conditional variance is impacted by new information shocks. Finally, if va_{21} is statistically and significantly different from zero, then the conditional covariance is impacted by old information shocks; if vb_{21} is statistically and significantly different from zero, then the conditional covariance is impacted by new information shocks. The examination of the influence of the impact of old and new information shocks on the conditional variances shows whether a "volatility transmission effect exists between disposition behavior and CSSD."

III. Empirical Results

A. The Herding Behavior of Investors who Trade Taiwanese Information Technology Stocks

As shown in Table I, coefficient α_3 is significantly smaller than zero indicating the prevalence of investors' herding behavior in the trading of Taiwanese information technology stocks. Furthermore, the significantly positive value of α_2 indicates that when the market index soars or drops dramatically, the spread between the returns on individual information technology stocks and the returns on market index increases. Moreover, Table I shows that α_1 with a positive value is insignificantly different from zero. This indicates that the spread between the returns on individual information technology stocks and the returns on market index during a bull market is insignificantly different from one during a bear market.

TABLE I
THE SIGNIFICANCE OF INVESTORS' HERDING BEHAVIOR

Coefficients	Estimated Value	*t*-statistics	Adjusted R-square	*F*-statistics
α_0	0.017*	65.756	0.072	148.349*
α_1	0.002	0.522		
α_2	0.238*	18.656		
α_3	-2.011*	-7.840		

Note: * Significant at the 5 percent level.

According to Table I, this study assumes that investors in Taiwan's stock market with a lower maturity than those in the US stock market demonstrate significant herding behavior. This finding corresponds with those of Chen and Hong [29], Chen, Wang, and Lin [9] and Chang et al. [30]. This herding behavior, however, requires further study to examine the dependence between herding behavior and disposition effect and its relationship to the decision to sell gaining stocks and/or hold losing stocks (namely, the disposition effect).

B. The Lead-Lag Relationship between Investors' Herding Behavior and the Disposition Effect

Table II shows that coefficients DL_{-1}, DL_0, DL_1 and DL_2 are statistically and significantly positive values. This indicates that investors' herding behavior in the trading of Taiwanese information technology stocks leads the disposition effect by one day and the disposition effect leads herding behavior by two days. Therefore, there is a significant bi-directional relationship between investors' herding behavior and the disposition effect. Additionally, because coefficient DL_0 is statistically and significantly larger than the others, a concurrent correlation dominates the relationship between herding behavior and disposition effect.

Overall, from Table II, this study concludes that there is strong evidence that the disposition effect leads herding behavior more than herding behavior leads the disposition effect. This shows that investors that hold identical (or similar) stocks are more likely to sell stocks that are increasing in value and are unlikely to sell stocks are decreasing in value therefore demonstrating the disposition effect and directly contributing to significant herding behavior that causes the trading of identical (or similar) stocks.

TABLE II
THE LEAD-LAG RELATIONSHIP BETWEEN INVESTORS' HERDING BEHAVIOR AND THE DISPOSITION EFFECT

Coefficients	Estimated Value	*t*-statistics
D_0	0.280	0.009
DL_{-3}	0.017	0.618
DL_{-2}	0.016	0.583
DL_{-1}	0.054*	2.253*
DL_0	0.116*	3.104*
DL_1	0.089*	2.794*
DL_2	0.061*	2.102*
DL_3	0.027	1.103

Note: * Significant at the 5 percent level.

C. The Transmission Effect between Investors' Herding Tendency and the Disposition Behavior

Coefficients θ_{12} and θ_{22} are significantly larger than zero, as shown in Table III, indicating the influence of herding tendency of the previous day on the disposition behavior of the current day. Herding tendency of the current day is also influenced by the disposition behavior of the previous day. Moreover, because coefficients va_{11}, va_{22}, vb_{11}, and vb_{22} are statistically and significantly different from zero, conditional variance is affected by both old and new information shocks. Finally, Table III presents that the values of va_{21} and vb_{21} are significantly different from zero indicating that conditional covariance is affected by both old and new information shocks.

In short, Table III indicates the "transmission effect" (coefficients θ_{12} and θ_{22} are significantly different from zero) as well as the "volatility transmission effect" (coefficients va_{21} and vb_{21} are significantly different from zero) between the disposition behavior and herding tendency among investors who trade Taiwanese information technology stocks. In other words, the disposition effect of investors in the Taiwanese stock market plays a critical role in their herding behavior and between these two variables, there is a strong interdependence.

TABLE III
THE TRANSMISSION EFFECT BETWEEN INVESTORS' HERDING TENDENCY AND THEIR DISPOSITION BEHAVIOR

Coefficients	Estimated Value	*t*-statistics
θ_{10}	0.138*	71.957
θ_{11}	0.008*	6.422
θ_{12}	0.014*	23.261
θ_{20}	0.015*	2.802
θ_{21}	-0.030*	-9.151
θ_{22}	0.021*	8.146
vc_{11}	0.012*	38.740
vc_{22}	0.017*	15.246
vc_{21}	-0.069*	-37.584
vb_{11}	0.039*	51.047
vb_{22}	0.026*	26.733
vb_{21}	0.011*	8.910
va_{11}	0.053*	91.344
va_{22}	0.087*	142.605
va_{21}	-0.030*	-14.156

Note: * Significant at the 5 percent level.

IV. CONCLUSIONS

This study uses Taiwanese information technology stocks with a low level of maturity (compared to the US stock market) as research subjects to examine the interrelationship between the disposition effect and the herding behavior of investors. Earlier studies rarely discussed whether the tendency of

investors to sell stocks increasing in value and keep stocks decreasing in value long influences them to adopt the same investment strategy at the same period of time. This study expands the research scope with the above investigation.

First, the empirical results reveal evidence of herding behavior among investors who trade Taiwanese information technology stocks. Second, there is strong evidence that the disposition effect leads herding behavior more than herding behavior leads the disposition effect. Finally, there is a significant "transmission effect" and "volatility transmission effect" between investors' disposition behavior and their herding tendency. Consequently, this study concludes that the disposition effect influences the herding behavior of investors more than herding behavior influences the disposition effect of investors.

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REFERENCES

[1] A. Kraus and H. R. Stoll, "Parallel trading by institutional investors," *Journal of Financial and Quantitative Analysis*, vol. 7, pp. 2107-2138, 1972.
[2] R. C. Klemkosky, "The impact and efficiency of institutional net trading imbalances," *Journal of Finance*, vol. 32, pp. 79-86, 1977.
[3] J. Nofsinger and R. Sias, "Herding and feedback trading by institutional and individual investors," *Journal of Finance*, vol. 54, pp. 2263-2295, 1999.
[4] R.M. Ennis and M. D. Sebastian, "A critical look at the case for hedge funds," *Journal of Portfolio Management*, vol. 29, pp. 103-112, 2003.
[5] N. M. Boyson, "Implicit incentives and reputational herding by hedge fund managers," *Journal of Empirical Finance*, vol. 17, pp. 283-299, 2010.
[6] W. Kim and N. Jegadeesh, "Do analysts herd? An analysis of recommendations and market reactions," *Review of Financial Studies*, vol. 23, pp. 901-937, 2010.
[7] W. G. Christie and R.D. Huang, "Following the pied piper: Do individual returns herd around the market?" *Financial Analysts Journal*, vol. 51, pp. 31-37, 1995.
[8] H. Choe, B. C. Kho, and R. M. Stulz, "Do foreign investors destabilize stock markets? The Korean experience in 1997," *Journal of Financial Economics*, vol. 54, pp. 227-264, 1999.
[9] Y. Chen, C. Wang, and F. Lin, 2008. "Do qualified foreign institutional investors herd in Taiwan's securities Market?" *Emerging Markets Finance and Trade*, vol. 44, pp. 62-74, 2008.
[10] S. Voronkova and M. T. Bohl, "Institutional traders' behavior in an emerging stock market: Empirical evidence on Polish pension fund investors," *Journal of Business Finance & Accounting*, vol. 32, pp. 1537-1560, 2005.
[11] A. Walter and F. M. Weber, "Herding in the German mutual fund industry," *European Financial Management*, vol. 12, pp. 375-406, 2006.
[12] E. C. Chang, J. W. Cheng, and A. Khorana, "An examination of herd behavior in equity markets: Am international perspective," *Journal of Banking & Finance*, vol. 24, pp. 1651-1679, 2000.
[13] T. C. Chiang and D. Zheng, "An empirical analysis of herd behavior in global stock markets," *Journal of Banking & Finance*, vol. 34, pp. 1911-1921, 2010.
[14] C. Chang, "Herding, and the role of foreign institutions in emerging equity markets," *Pacific-Basin Finance Journal*, vol. 28, pp. 175-185, 2010.
[15] I. Venezia, A. Nashikkar, and Z. Shapira, "Firm specific and macro herding by professor and amateur investors and their effects on market volatility," *Journal of Banking & Finance*, vol. 35, pp. 1599-1609, 2011.
[16] I. Welch, "Sequential sales, learning and cascades," *Journal of Finance*, vol. 47, pp. 695-732, 1992.
[17] K. A. Froot, D. S. Scharfstein, and J. C. Stein, "Herd on the street: Informational inefficiencies in a market with short-term speculation," *Journal of Finance*, vol. 47, pp. 1461-1484, 1992.
[18] M. Belhoula and K. Naoui, "Herding and positive feedback trading in American stock market: A two co-directional behavior of investors," *International Journal of Business & Management*, vol. 6, pp. 244-252, 2011.
[19] E. Vallelado, B. Fernandez, T. G. Merino, R. Mayoral, and V. S. Alvarez, "Herding, information uncertainty and investors' cognitive profile," *Qualitative Research in Financial Markets*, vol. 3, pp. 7-33, 2011.
[20] T. Liao, C. Huang, and C. Wu, "Do fund managers herd to counter investor sentiment?" *Journal of Business Research*, vol. 64, pp. 207-212, 2011.
[21] H. Shefrin and M. Statman, "The disposition to sell winners too early and ride losers too long: Theory and evidence," *Journal of Finance*, vol. 40, pp. 777-790, 1985.
[22] T. Odean, "Are investors reluctant to realize their losses?" J*ournal of Finance*, vol. 53, pp. 1775-1798, 1998.
[23] B. Barber, Y. Lee, Y. Liu, and T. Odean, "Is the aggregate investor reluctant to realize losses: Evidence from Taiwan," *European Financial Management*, vol. 13, pp. 423-447, 2007.
[24] V. Singal and Z. Xu, "Selling winners, holding losers: Effect on fund flows and survival of disposition-prone mutual fund," *Journal of Banking & Finance*, vol. 35, pp. 2704-2718, 2011.
[25] R. Garvey and A. Murphy, "Are professional traders too slow to realize their losses?" *Financial Analysts Journal*, vol. 60, pp. 35-43, 2004.
[26] R. Chiang and W. M. Fong, "Relative informational efficiency of cash, futures, and options markets: The case of an emerging market," *Journal of Banking & Finance*, vol. 25, pp. 355-375, 2001.
[27] C.-H. Chang, H.-I. Cheng, I.-H. Huang, and H.-H. Huang, "Lead-lag relationship, volatility asymmetry, and overreaction phenomenon," *Managerial Finance*, vol. 37, pp. 47-71, 2011.
[28] T. Bollerslev, "Modelling the coherence in short-run nominal exchange rates: A multivariate generalized ARCH model," *Review of Economics and Statistics*, vol. 72, pp. 498-505, 1990.
[29] A.-S. Chen and B.-S. Hong, "Institutional ownership changes and returns around analysts' earnings forecast release events: Evidence from Taiwan," *Journal of Banking and Finance*, vol. 30, pp. 2471-2488, 2006.
[30] C.-H. Chang, C.-C. Tsai, I.-H. Huang, and H.-H. Huang, "Intraday evidence on the relationship among great events, herding behavior, and investor's sentiments," *Chiao Da Management Review*, vol. 32, pp. 61-106, 2012.

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