Business and Economics Research Journal
Volume 3 Number 1 2012
pp. 17-26
ISSN: 1309-2448
www.berjournal.com

Holding Periods, Illiquidity and Disposition Effect in a Developing Economy

Muhammad Aftab[a] **Zulfiqar Ali Shah**[b] **Rauf A. Sheikh**[c]

Abstract: *This paper aims to empirically investigate holding periods, illiquidity and disposition effect in Karachi Stock Exchange (KSE). KSE 100 Index Companies daily data were collected for a period of five year i.e. 2003-2007. Daily returns, holding periods, illiquidity and volatility were calculated through this data. These variables were regressed in models used by Visaltanachoti et al. (2007) to calculate annual holding periods, illiquidity and disposition effect. The results have revealed that there exists disposition effect in KSE. Holding periods were found positively related to illiquidity and negatively associated with stock returns. Further, holding periods were long for illiquid stocks and short for less illiquid stocks. The study is significant in the sense that it's perhaps the first study conducted in a developing country like Pakistan.*

Keywords: Disposition effect, illiquidity, holding periods, Anomaly, KSE

JEL Classification: D03, D80, G11.

1. Introduction

Investors sell winning stocks too early while holding losing stocks too long is termed as disposition effect. There are many explanations for this anomaly. According to Prospect theory, investors weight their losses more than gains which results in lingering losses. Based on this theory, disposition effect was initially proposed by Shefrin and Statman (1985). According to Shefrin and Statman (1985), the disposition effect refers to the inclination to sell previously purchased stocks that have appreciated in value and the reluctance to sell those that are trading below their purchase price. It's not necessary that investors use their purchase price as reference point; it may be different from one investor to another.

This study attempted to explore the holding periods, illiquidity and disposition effect in Karachi Stock Exchange 100 index companies. The result shows that disposition effect is present in Karachi stock exchange 100 index companies. Holding periods are inversely associated with stock returns. This association shows that investors sell winning stocks soon and hold losing stocks long (disposition effect). These results are in line with Visaltanachoti et. al. (2007).

Remainder of this paper is arranged as: introduction is followed by literature review which discusses different studies conducted in different scenarios and environments on disposition effect. Then methodology highlights the data and procedures used in this study. After that results and discussion precede causes of disposition effect, conclusion and practical implications.

[a] MS (Finance) International Islamic University, Islamabad Research Associate COMSATS Institute of Information Technology, Islamabad, Pakistan, m.aftab55@gmail.com
[b] Chairman, Higher Studies Program, Faculty of Management Sciences International Islamic University, Islamabad, Pakistan
[c] Ex-Chairman, Undergraduate Studies, Faculty of Management Sciences International Islamic University, Islamabad, Pakistan

2. Literature Review

Investors sell winning securities too earlier while holding losing securities too long was referred as disposition effect by Shefrin and Statman (1985). Their work was based on Prospect theory proposed by Kahneman and Tversky (1979). Prospect theory states that investors weight losses more than gains. This phenomenon is also called loss aversion. Shefrin and stateman mounted the disposition effect on this loss aversion bias. In simple words when prices appreciate investors sell their securities hastily and when prices depreciate they are very reluctant to sell their securities.

Numerous studies have been conducted to test disposition effect, either this exists or not and at what intensity in different markets and in different scenarios. Disposition effect is more for internal investors than the external ones and it is prominent even in the absence of belief in mean reversion theory (Chui, 2001). Jordan and Diltz (2004) tested disposition effect among day traders and found that traders' attitude after loss is more risk seeker and they try to offset their prior loss. Their findings support the existence of disposition effect. Garvey and Murphy (2004) found disposition effect in professional traders. They ascertained that a fund manager can earn even more if he/she be not guilty of disposition effect. This research was unique in the sense that professionals were also a prey to disposition effect. Chang (2008) studied disposition effect in warrant market in Taiwan with a rational that investors in warrant market are more professional. Although investors are sophisticated in warrant market but they do expose disposition effect.

Visaltanachoti et. al. (2007) determined disposition effect in Chinese stock market. Institutional investors expose less disposition effect than the individual investors. Institutional investors are more adroit in stock trades but as they are in minority relative to individual investors, stock exchange overall outlook depicts disposition effect. Frequency of trade and demography of investor also contributes in disposition effect (Dhar Zhu, 2006). High income investors show less level of disposition effect as they can afford consultancy fees while the low income investors can't. Frequency of trade has inverse relation with disposition effect. High frequency trades are followed by weak disposition effect and vice versa. Costa Jr et.al (2008) studied gender impact on disposition effect. Females are more reactive to prices and show less disposition effect. They sell losing stocks early and winning stocks late. Goo et.al (2010) reported disposition effect vary with educational level. High educated investors expose low disposition effect than that of low ones.

Mental reference points of investors motivate investors to hold their losing assets. Hung and Yu (2006) found that disposition investors act as rational investors on gaining ends but they act as disposition investors on losing ends. Garvey et al. (2007) found that investor after loss performs more poor in an attempt to offset his/her prior losses. Shafran and Benzion (2009) refer disposition is all about market information and can be explained by mean reversion theory. Investors without market information act as more rational but with market information they begin to believe in mean reversion and are indulged in disposition effect anomaly. Wong et al. (2006) pointed out that disposition effect is found in scenarios in which prices are very volatile. It is the volatility of prices which induce investors to believe in mean reversion theory. They hold their losing assets in an expectation that prices will revert to their average levels.

Type of formats of numeric information determines disposition effect to some extent (Rubaltelli et at., 2005). Information in absolute magnitude numbers (percentage rather

ratios) helps to reduce the level of disposition effect. Investors respond to absolute magnitude information by selling losing funds and retaining winning funds.

Disposition effect is highly related with regret reduction (Fogel & Berry, 2006). They feel regret for taking any action (Selling losing funds) in short run but in long run they feel regret for not taking any action (Selling losing funds). So taking this phenomenon comprehensively reveals that investors feel regret for selling wining funds too soon and holding losing funds too long. This accentuates the existing theory on that human cognitive ability is limited which compels him to comprehend things narrowly and avoids complexities. So Nelson Mendela says in his 7th lesson of leadership "nothings is black or white" but human beings always try to avoid complexities and attempts to see things in simple spectrum.

3. Data and Methodology

KSE 100 index companies' daily data were obtained from KSE database for the period of January 2003 to December 2007. The rationale behind choosing KSE 100 index companies was that it's the benchmark for the rest of the industry and one can make inferences about the whole market through it. Average holding period of firm i for each year was computed by dividing the number of outstanding shares in the firm by the firm's annual trading volume. This equation was previously used by Atkins and Dyl (1997) and Visaltanachoti et. al. (2007).

$$HP_{i,t} = (\text{Shares Outstanding}_{i,t,d}/VOLD^{b}_{i,t,d})/N^{c} \quad \text{Eq.(1)}$$

a. shares outstanding on stock i on day d of year t

b. respective daily volume for year t in terms of Pak rupee

c. total number of trading days for stock i during year t

In line with Amihud's (2002) and Visaltanachoti et al. (2007) study, stock illiquidity (ILLIQ) is the average ratio of the daily absolute return to the trading volume on that day.

$$ILLIQ_{i,t} = (IR_{i,t,d}{}^{a}\ I/\ VOLD^{b}_{i,t,d})/N^{c} \quad \text{Eq.(2)}$$

a. return on stock i on day d of year t

b. respective daily volume in terms of Pak rupee in year t

c. total number of trading days for stock i during year t.

The following regression was employed to examine the relationship between investors' holding periods and the illiquidity

$$HP^{a}i,t = \beta_o + \beta_1 IILLIQ^{b}_{i,t} + \beta_2 MV^{c}_{i,t} + \beta_3 Volatility^{d}_{i,t} + e^{e}_{i,t} \quad \text{Eq.(3)}$$

a. the average length of time that investors hold the stock of firm i during year t

b. predicted value from the first-stage regression of equation 4

c. average market capitalization of firm i's shares during year t

d. the variance of the firm's daily stock returns

e. error term

c and d , Both are control variables. Expected returns are negatively associated with market capitalization (Banz, 1981; Reinganum,1981; Fama & French, 1992). So MV is introduced in regression to control return-size effect.Volatitlity also effects liquididity, so it is also taken as control variable.

Stocks illiquidity was determined through first stage regression of the following equation.

$$ILLIQ_{i,t} = \beta_o + \beta_1 IILLIQ^{a}_{i,t-1} + \beta_2 MV^{b}_{i,t} + \beta_3 Volatility^{c}_{i,t} + e^{d}_{i,t} \quad \text{Eq.(4)}$$

a. is an estimate of the average percentage ILLIQ on firm i's shares during year t-1

b. the average market capitalization of firm i's shares during year t

c. is the volatility of firm i's daily stock returns during year t

d. error term

Because of the measurement errors in ILLIQi,t, the estimated coefficients could be biased, So the estimated ILLIQi,t then replaces the original ILLIQi,t in equation-3. The two stage least square estimation results of equation-4 are reported in tables 2 and 3, which are discussed in depth in results and discussion section.

4. Results and Discussion

Descriptive Statistics of (KSE) market are given in table-1. Holding period, illiquidity, market capitalization and volatility from 2003 to 2007 are shown with their respective mean, median and standard deviation. A huge difference between the mean and median of holding period, illiquidity and market capitalization shows that distribution of holding period, illiquidity and market capitalization for the KSE-100index companies was skewed. Median values were more indicative of holding period and illiquidity as they remained consistent over time. There was huge inconsistency within the mean and median of market capitalization over the period with increasing trend. The longest average holding period was 190.13 days in 2007 and longest median period was 15.42 days in 2004. The shortest average holding period was 48.48 days in 2003 and shortest median holding period was 9.03 days in 2007.

Table -1. Descriptive statistics

	Year	2003	2004	2005	2006	2007
Holding period (in days)	Mean	48.48	66.29	71.1	69.79	190.13
	Median	10.93	15.42	12.53	9.64	9.03
	SD	98.16	117.78	151.36	156.82	2298.09
Illiquidity ($x10^{-14}$)	Mean	167.6	99.99	102.03	87.1	105.77
	Median	0.97	1.16	0.32	0.12	0.04
	SD	1699.86	780.1	903.66	771.35	1156.48
Market Capitalization(millions in Pak rupee)	Mean	10105.69	1570.8	21375.11	26541.56	31636.66
	Median	2813.21	4811.26	6906.65	9971.56	13623.37
	SD	31477.82	52057.15	66544.03	61400.7	62581.01
Volatility(% per year)	Mean	0.89	0.67	0.71	0.63	0.66
	Median	0.82	0.65	0.69	0.65	0.63
	SD	0.66	0.31	0.31	0.27	1.12

The average holding period for a firm's common stock is calculated by dividing the number of shares outstanding by the trading volume for the year. Illiquidity is the yearly average of the daily ratio of absolute return to the dollar volume of stock for that year. The market capitalization of the firm is the average annual share price, times the number of shares outstanding in that year. The volatility is the variance of the daily common stock return

The average market capitalization of KSE-100 index companies increased from 10105.69 million Pak Rupee to 31636.66 million Pak Rupee from 2003 to 2007. The median market capitalization increased from 2813.21 million Pak Rupee to 13623.37 million Pak Rupee from 2003 to 2007. Market capitalization in 2007 was approximately three times of 2003. The variance of return shows overall downward trend over the sample period with some upward trend between 2004 and 2005.

4.1. Annual Holding Period Regression

Table -2A shows the annual estimated results of equation- 3 calculated for all the firms included in KSE-100 index. Table- 2B shows the estimated results of equation -3 calculated for the entire sample period (2003-2007) for all the KSE-100 index companies. A two stage least square method was applied for the sample period. The coefficients on illiquidity are positive and significant over the whole period except 2007. These results are in line with Visaltanachoti et al. (2007), Amihud and Mendelson (1986) and Atkins and Dyle (1997). The regression coefficients for market capitalization were negative over the sample period except 2004. The regression coefficient of variance was negative all over the sample period. The R^2 ranged from 0.066 to 0.771. The results showed that more the illiquidity, the longer the holding periods are.

Table- 2A. Annual holding period regression

	2003	**2004**	**2005**	**2006**	**2007**
Constant	13.326	-14.385	14.942	7.729	8.065
Illiquidity	9.67**	4.52	6.50***	1.178*	1.63***
Firm Size	-0.55	1.24	-0.749	-0.535	-0.435
Volatility	-0.044***	2.198	-0.87	-1.246	-0.829
Adj. R^2	0.125	0.771	0.168	0.157	0.066
F-Statistics	47.159	1.139	73.32	69.199	27.4

Table- 2B. Holding period regression over the sample period

Constant	9.696
Illiquidity	4.449**
Firm Size	-0.431
Volatility	-0.416***
Adj. R^2	0.081
F-Statistics	161.492

Table 2A and 2B present the relation between holding periods, market capitalization, illiquidity and volatility for the Karachi Stock Exchange for the period 2003–2007. The results are from the following two-stage least squares regression:

$$HP_{i,t} = \beta_o + \beta_1 ILLIQ_{i,t} + \beta_2 MV_{i,t} + \beta_3 Volatility_{i,t} + \varepsilon_{i,t}$$

where Holding Periodi,t is the natural logarithm of the investors' average holding period for firm i during year t, Illiquidityi,t is estimated from the first-stage regression, Firm sizei,t is the natural logarithm of firm i's market capitalization at the end of year t, Volatilityi,t is the natural logarithm of the variance of the daily return of firm i's common stock, β_0, β_1, β_2, and β_3 are parameters to be estimated, $\varepsilon_{i,t}$ is an error term and ***, ** and * denote significant levels at 10, 5 and 1%, respectively.

4.2. Regret Avoiding and Pride Seeking

To measure the disposition effect in Karachi Stock Exchange following equation was used. This equation has been prior used by Visaltanachoti et. al. (2007).

$$HP^{a}i,t = \beta_o + \beta_1 Ret^{b}_{i,t} + \beta_2 IILLIQ^{c}_{i,t} + \beta_3 MV^{d}_{i,t} + \beta_4 Volatility^{e} + e^{f}_{i,t} \quad \text{Eq. (5)}$$

a. the average length of time that investors hold the stock of firm i during year t

b. annual return on stock i

c. predicted value from the first-stage regression

d. average market capitalization of firm i's shares during year t

e. the variance of the firm's daily stock returns

f. error term

Table 3-A shows the results of estimation of equation 5 by applying two stage least square method for all the companies in KSE-100 index. Table 3-B shows the results of equation 5 over the whole period of sample from 2003 to 2005. The regression coefficients of returns are negative and significant each year. This concludes that there is strong disposition effect in KSE-100 index. These results are in line with existing literature :Weber and Camere (1998) , Chui (2001) and Visaltanachoti et. al.(2007). In simple words, the holding period for winning stocks is less than the losing stocks. The coefficients on illiquidity are also positive that shows that holding periods are related with the transaction costs. Regression coefficient for firm size is negative all over the period except 2004. This result is contradictory to Visaltanachoti et. al.(2007).

Table - 3A. Regret avoiding and pride seeking

	2003	2004	2005	2006	2007
Constant	18.725	-7.016	21.764	15.769	13.168
Return	-191.271	-3.966	-227.978	-280.784	-183.517
Illiquidity	1.495*	4.578	2.18**	1.41*	-6.991***
Firm Size	-0.448	0.795	-0.6	-0.436	-0.433
Volatility	1.242	1.682	0.821*	0.395***	-0.081***
Adj. R^2	0.189	0.806	0.223	0.237	0.114
F-Statistics	57.462	1.053	81.673	86.616	36.611

Table - 3B. Regret avoiding and pride seeking over the sample Period

Constant	10.658
Return	-44.112
Illiquidity	2.164***
Firm Size	-0.446
Volatility	-0.379
Adj. R^2	0.092
F-Statistics	139.692

Table 3A and 3B present the relation between holding periods, market capitalization, illiquidity and volatility for Karachi Stock Exchange for the period 2003-2007. The results are from the following two-stage least squares regression:

$$HP_{i,t} = \beta_o + \beta_1 Ret_{i,t} + \beta_2 IILLIQ_{i,t} + \beta_3 MV_{i,t} + \beta_4 Volatility + \varepsilon_{i,t}$$

where Holding Periodi,t is the natural logarithm of the investors' average holding period for firm i during year t, Reti,t is the annual return of i stock, Illiquidityi,t is estimated from the first-stage regression, Firm sizei,t is the natural logarithm of firm i's market capitalization at the end of year t, Volatilityi,t is the natural logarithm of variance of the daily return of the firm I's common stock, β_o, β_1, β_2, β_3, and β_4 are parameters to be estimated, $\varepsilon_{i,t}$ is an error term and ***, ** and * denotes significant levels at 10%, 5%and 1%, respectively.

4.3. Robustness

The effects of changes in illiquidity on changes in hoding period were examined through a equation used by Visaltanachoti et. al. (2007).

$$\Delta HP^{a}i,t = \beta_o + \beta_1 \Delta ILLIQ^{b}i,t + \beta_1 \Delta MedHP^{c}_{m,t} + e^{d}_{i,t} \quad \text{Eq.(6)}$$

a. the change in the average holding period for stock i from year t-1 to year t

b. change in illiquidity of stock i from year t-1 to year t

c. the change in the median holding period for all firms in our sample from year t-1 to year t

d. error term

The regression coefficients for holding period and illiquidity for equation 6 are positive shown in table 4A. This show change in illiquidity is positively associated with change in holding period. The R^2 statistics for the overall market is 0.092.

$$\Delta HP^{a}_{i,t} = \lambda_0 + \lambda_1 \Delta Ret^{b}_{i,t} + \lambda_2 \Delta ILLIQ^{c}_{i,t} + \lambda_3 \Delta MedHP^{d}_{m,t} + e_{i,t} \quad \text{Eq.(7)}$$

a. the change in the average holding period for stock i from year t-1 to year t

b. change return from year t-1 to year t

c. change in illiquidity of stock i from year t-1 to year t

d. the change in the median holding period for all firms in our sample from year t-1 to year t

e. error term

The results for equation 7 are shown in table 4-B. These shows that annual change in returns are negitively associated with holding period while illiquidity is positively associated with holding periods.

Table 4-A&B Robustness determinants of changes in the HP

A	
Constant	10.658
ΔIlliQ	2.162***
ΔMed HP	-0.446
Adj. R^2	0.092
F-Statistics	139.692
B	
Constant	-76.269
ΔILLIQ	2.777
ΔRet	-17.228**
ΔMed HP	17.228
Adj. R^2	0.093
F- Statistics	119.21**

These tables show the effect of changes in illiquidity on changes in holding periods. The results are from the following regression equations:

$\Delta HP_{i,t} = \beta_o + \beta_1 \Delta ILLIQi,t + \beta_1 \Delta MedHP_{m,t} + \varepsilon_{i,t}$

$\Delta HP_{i,t} = \lambda_0 + \lambda_1 \Delta Ret_{i,t} + \lambda_2 \Delta ILLIQ_{i,t} + \lambda_3 \Delta MedHP_{m,t} + \varepsilon_{i,t}$

where $\Delta HP_{i,t}$ is the change in the average holding period for stock i from year t-1 to year t, $\Delta Ret_{i,t}$ is the change in the annual return of i stock from year t-1 to year t, $\Delta ILLIQi,t$ is the change in illiquidity of stock i from year t-1 to year t, $\Delta MedHP_{m,t}$ is the change in the median holding period for all firms in our sample from year t-1 to year t, λ_0, λ_1, λ_2, and λ_3 are parameters to be estimated, $\varepsilon_{i,t}$ is an error term and *** and ** denote significant levels at 10,and 5%, respectively

5. Causes of Disposition Effect

With existence of Disposition Effect proved statistically, we made an attempt to ascertain the possible causes of this behavior among investors at Karachi Stock Exchange. In this regard, a number of brokers and investors were interviewed. Investors included both individual investors and institutional investors. Information gathered from these interviews indicates the following:

Essentially, all investors at the stock exchange are risk-takers. They propose to make a profit by taking risk. Hence, presence of disposition effect cannot be fully explained by the usual argument of simple risk aversion. Perhaps, there is a need to investigate the extent of risk which different investors are liable to take under a given set of circumstances to understand the phenomenon of "aversion-to-risk-beyond-a-stated-limit" – rather than just risk aversion. The efficacy and applicability of the model proposed in this paper that blends disposition effect into capital asset pricing model will be greatly enhanced if adequate research in this aspect is undertaken in different markets.

The primary cause of presence of disposition Effect, or the tendency to off-load gaining stock more quickly than losing stocks, was found to depend on investing horizons of different investors. Investors who aim at short term gains tend to be more frequent victims of disposition effect. Investors who take a longer term view, like National Investment Trust, were found to be less likely to be let disposition effect govern their investing decision on a day to day basis.

Individual investors were found to be more vulnerable to disposition effect than institutional investors. This can be explained by the difference in their investing horizons which impacts their investing decisions.

Brokers who trade on their own account, i.e. more informed investors, were found to be less affected by disposition effect. On the other hand, brokers who trade on behalf of individual investors said that they were have witnessed the tendency to off-load winning stocks too quickly among their clients. This observation is in line with the previous point.

The difference was also seen between investors with smaller amounts to invest and those with larger portfolios. We learned that investors, whose total investment at stock exchange at a given time was less than Rs 10 million, were twice as much likely to be influenced by disposition effect than those whose portfolio size exceeded Rs 50 million.

Capital markets in developing countries generally suffer from asymmetry in information available to difference players. This difference in access to information, or ability to understand all the available information, also leads to disposition effect. This observation is supported by the fact that individual and less regular investors are more likely to succumb to disposition effect than institutional and more organized investors.

The decision to sell off or hold on to a share also depends on the credential of the particular share. We were told by brokers and investors alike that they were likely to hold on to a "share with good growth potential" even after some increase in value. Similarly, they were likely to dispose out a "share with poor potential" as soon as it starts losing value rather wait for it to regain value. This is an important consideration, deserving of a full research study in the future.

Markets in developing countries like Pakistan are populated by investors who aim to make profits through simple movement in share value. They do not attach any importance, or adequate importance, to the inherent values of shares. The market prices of shares in countries like Pakistan depend not as much on the quality of the concerned company as on the availability of investment funds at the stock exchange. This then shapes the investment behavior of the players, giving rise to disposition effect, often to the detriment of investors.

We conclude that more organized research and studies are needed to fully understand the motivation for disposition effect among investors in the developing markets. The above discussion represents a summary of our informal research, but in future more formal and organized research in this should be carried out to come up with data, advice and ideas on how to best comprehend and handle the causes of disposition effect.

6. Conclusions

This study investigated the disposition effect, holding periods and illiquidity in Karachi stock exchange for its 100-indes companies for the period of 2003 to 2007. The results show that illiquidity is positively associated with holding periods and returns are natively associated with holding periods. Disposition effect is evident through negative coefficients of regression for returns over the sample period. These findings are in line with existing literature on disposition effect e.g. Weber and Camere (1998), Chui (2001), Visaltanachoti et. al. (2007). The findings can be used by practitioners to make trade decisions at right time as selling wining stocks earlier and holding losing stocks for long time results in decreasing returns. This study suffers from a limitation in sense that it uses a sampling period of high volatility in terms of political and security conditions, especially war on terror in the region. Future research should be conducted on large sampling period.

References

Amihud, Y. (2002). Illiquidity and stock returns: cross-section and time-series effects, Journal of Financial Markets, 5(1), 31-56.

Amihud, Y. & Mendelson, H. (1986). Asset pricing and the bid-ask spread, Journal of Financial Economics, 17, 223–49.

Atkins, A. B. & Dyl, E. A. (1997). Transaction costs and holding periods for common stocks, Journal of Finance, 52, 309–25.

Banz, R.W. (1981). The relation between return and market value of common stocks, Journal of Financial Economics, 9, 3–18.

Chang, C.H. (2008). Impacts of behavioural pitfalls on investors' Decisions: The Disposition effect in Taiwanese warrant market. Social Behavior and Personality, 36(5), 617-634.

Chui, P.M.W. (2001). An experiment study of disposition effect: Evidence from Macau. The journal of psychology and financial Markets, 2(4), 216-222.

Costa jr, N.D.,C. Mineto & S.D. Silva (2008). Disposition effect and gender. Applied economic letters, 15, 411-416.

Dhar,R. & N. Zhu. Up Close and personal : Investor Sophistication and disposition effect. Management Science, 52(5), (2006), pp. 726-740.

Fama, E. F. & French, K. R. (1992). The cross section of expected stock returns. Journal of Finance, 47, 427–65.

Fogel, S.C. & T. Berry. (2006). The disposition effect and individual investor decisions: The role of regret and counterfactual Alternative. The journal of behavioral finance, 7(2), 107-116.

Garvey,R., & A. Murphy. (2004). Are professional traders too slow to realize their losses? Financial Analysts journal, 60(4), 35-43.

Garvey,R.,A. Murphy, a& F. Wu. (2007). Do losses Linger? Evidence from proprietary stock traders. The journal of portfolio Management, 75-83.

Goo, Y., D. Chen,S.S. Chang & C. Yeh. (2010). A study of the disposition effect for individual investors in Taiwan Stock Market. Emerging Markets Finance and Trade, 46(1), 108-119.

Hung, M. & H. Yu. (2006). A heterogeneous model of disposition effect. Applied Economics, 38, 2147-2157.

Jordan,D., & J.D. Diltz. (2004). Day Traders and Disposition effect. The Journal Of Behavioral Finance, 5(4),192-200.

Kahneman, D. & A. Tversky. (1979). Prospect Theory: Analysis of Decision Under Risk. Econometrica, 47,263–291.

Reinganum, M. R. (1981). Misspecification of capital asset pricing: empirical anomalies based on earnings yields and market values. Journal of Financial Economics, 9, 19–46.

Rubaltelli, E., S.Rubichi,L. Savadori, M. Tedeschi, & R. Ferretti. (2005). Numerical Information formaate and investment decisions: Implications for the disposition effect and status Quo Bias. The Journal Of Behavioral Finance, 6(1), 19-26.

Shafran,S. & U. Benzion. (2009). Investors' Decision to trade stocks: An experimental study. The Journal Of Behavioral Finance,10, 81-88.

Shefrin, H. a& M. Statman. (1985). The Disposition to Sell Winners Too Early and Ride Losers Too Long: Theory and Evidence. Journal of Finance, 40, 777–790.

Visaltanachoti, N., Luo, H. & Lu, L. (2007). Holding periods, Illiquidity and disposition effect in Chinese stock market." Applied Financial Economics, 17, 1265-1274.

Weber, M. & C. F. Camerer. (1998). The Disposition Effect in Securities Trading: An Experimental Analysis. Journal of Economic Behavior and Organization, 33(2), 167–184.

Wong, A. S., Carducci, B.J., & White, A.J. (2006). Asset Disposition effect: The impact of price patterns and selected personal characteristics. Journal of Asset Management, 7(3/4), 291-300.