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Comparison of Disposition Effect
Evidence from Karachi and Nepal Stock Exchange

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Abstract

This study is being done to investigate holding periods, illiquidity and disposition effect in Karachi Stock Exchange (KSE) and Nepal Stock Exchange (NSE). Data from KSE and NSE was collected for a sampling period from 2007-2010. The data helped us to calculate the daily returns, holding periods, illiquidity and volatility. Annual holding periods and pride seeking and risk avoiding behavior i.e. disposition effect were calculated by regressing the variables using the models which were used by Visaltanachoti et. al (2007). The results show disposition in KSE, holding periods are positively related with illiquidity. For illiquid stocks, holding periods are longer and for less illiquid stocks these are lesser. Holding periods were found negatively associated with stock returns. But on NSE, disposition effect is absent because holding periods were negatively related with illiquidity and positively associated with returns. The study is significant as it compares the disposition effect across two emerging economies.

Keywords: Disposition effect, illiquidity, holding periods, volatility, KSE, NSE.

1. Introduction

Disposition orientation relates to the inclination of investors towards irrational decision making, i.e., the tendency to sell winners too quickly and to hold losers for too long (Shefrin & Statman, 1985; Odean 1998). There can be different possibilities for this behavior but the prospect theory offered by Kahneman and Tversky (1979) seems the most relevant in explaining the underlying reason for this behavioral orientation.

The prospect theory states that the investor uses a value function to assess outcomes; this function is concave in the gain area and convex in the loss area which shows that the effect of loss is higher than the effect of the gain having same value. Consequently investors become risk averse in case of gain and tend to sell the securities with increasing trend. They don't wait for further price increments due to fear of price decline and hence make lesser profits than they could have made if they had waited for. On the other hand, investors become risk takers in case they face losses. They tend to hold that security in anticipation of the increase in prices although the prices are showing a decreasing trend. They don't get rid of that asset and hence face incremental loss.

Apart from individual investors, such kind of behavior is also seen among institutional investors (Coval & Shumway 2005; Locke & Mann 2005; Garvey & Murphy 2004; Shapira & Venezia 2001). Particularly, in case of mutual fund manager, mixed results are found on the existence of a disposition effect. According to Wermers (2003), the reason for the underperformance of certain funds is due to the fact that the managers of those funds do not want to sell the stock which is facing loss. Contrastingly, Annaert et al. (2008) have rejected the disposition hypothesis on the basis of their findings.

A sufficient body of knowledge incorporates the disposition effect. Traditional asset pricing model has been extended by Barberis et al. (2001) through the integration of prospect theory. They have found satisfactory results in explaining patterns in stock returns by this integration. Disposition effect has also been proven for creating price distortion (Grinblatt & Han, 2005) it has been shown that in equilibrium situation, past winners tend to be undervalued and past losers tend to be overvalued.

Disposition effect has been studied, by employing different theories, methodologies and databases (Shefrin & Statman 1985; Weber & Camerer 1998; Odean 1998; Ferris et al., 1988; Frazzini 2006; Grinblatt & Han 2005; Shapira & Venezia 2001). The findings of their works evidently show that disposition effect is present across the globe like Canada, US and Japan, etc. in stock, futures, options and real estate markets.

2. Literature Review

Rational decision making theory states that investors decide rationally by having a tradeoff between risk and return (Chui 2001). Four major theories have been used to explain disposition effect (Shefrin & Statman 1985).

2.1. Prospect Theory

This theory claims that the decision making course has two phases. First phase is editing, in which investors differentiate gains from losses by comparing with the reference point i.e buying price. The second phase is evaluation, in which an S shaped value function is used to estimate and take full advantage of their utility. This S function is concave shaped in the gains area whereas convex shaped in the losses area. Investors tend to avoid

risks in the gains region and seek risks in the losses region (Shefrin & Statman 1985).

2.2. Mental Accounting

The second theory which explains disposition effect is the theory of mental accounting, also known as psychological accounting. In mental accounting, the investor, set reference points for their accounts through which they determine their gains and losses (Thaler 1980). Then investors tend to maintain track of each individual stock's profit or loss rather than the portfolio's gain and loss, in their minds. Real financial losses are more hurting than a paper loss, stated by Thaler (1999). Therefore closing a mental account at a loss is equally hurting for an investor. Investors become risk seekers at the times of stock losses, they hold the stocks rather than selling them at loss. This put them in more risky situation, no one knows, would they be able to sell at breakeven to cover their losses or make some profits while holding them, but there is also a worst case that they earn even more losses.

2.3. Seeking Pride and Avoiding Regret Theory

This theory has been employed to explain disposition effect as proposed by Kahneman and Tversky (1979), Thaler (1985), Shefrin and Statman (1985) and Shiller (1999). The previously mentioned scholar have proved that pride seeking investors will create a disposition to liquefy their profitable investments rapidly and retain their loss giving investments to avoid regret or delay it for some time.

2.4. Mean Reversion Theory

This is the fourth theory in this context and this explains disposition effect is mean reversion. This theory states that the investors believe in rising of stocks from losses and vice versa. They believe that poorer performing stocks will rebound, and better performing stocks will decline in price. The investors sell off the profitable stocks quickly because they believe the gains will decline sooner and on the other hand they retain the losing investments for too long in a belief of rising again (Andreassen 1988). As argued by Weber and Camerer (1998) and Odean (1998) that disposition effect is caused by an irrational belief in mean reversion.

Disposition effect is proved in the stock market but the exact magnitude of cumulative effect of biases that different kinds of investors hold on cumulative market behavior is not known. This is very complex in a sense because purchase prices are different for each investor. So the relative price is not same for everyone. One way to standardize the price is to use the IPO price (offer price) which is common for all the initial investors. There is no other situation in the stock market where there is a standard setting to study the cumulative effect of disposition effect on aggregate market behavior.

3. Methodology

Daily market data were obtained from Karachi Stock Exchange and Nepal Stock Exchange websites from 2007 to 2010. Data for market capitalization in case of KSE was taken from Business Recorder website.

3.1 Holding Periods of the Investors

Yearly average holding period of the company = the number of outstanding shares of the company/ company's yearly trading volume.

This equation is prior used by Atkins and Dyl (1997) & Visaltanachoti et. al. (2007).

$$HP_{i,t} = (\text{Shares Outstanding}_{i,t,d}/VOLD^b_{i,t,d})/N^c \qquad (1)$$

a stock's outstanding shares i on the d day of the t year
b daily volume of the stock for the t year (Pak/Nepalese rupee)
c number of days stock i traded in t year

3.2 Illiquidity

As Visaltanachoti et. al. (2007) and Amihud's (2002) measured illiquidity of the stock by the average absolute return on daily basis divided by daily trading volume.

$$ILLIQ_{i,t} = (|R_{i,t,d}{}^a| / VOLD^b_{i,t,d})/N^c \qquad (2)$$

a daily stock i's return of the t year
b daily volume of the stock for the t year (Pak/Nepalese rupee)
c number of days stock i traded in t year

Regression Analysis was used to find the relationship between holding periods of the investors and the illiquidity.

3.3 Pride seeking and Regret Avoiding (Disposition Effect)

Disposition effect was measured through following equation. This equation has been prior used by Visaltanachoti et. al. (2007).

$$HP^a{}_{i,t} = \beta_o + \beta_1 Ret^b{}_{i,t} + \beta_2 IILLIQ^c{}_{i,t-1} + \beta_3 MV^d{}_{i,t} + \beta_4 Volatility^e + \varepsilon^f{}_{i,t} \qquad (3)$$

a stock i's average holding period in the t year

b annual return on stock i

c   approximate average ILLIQ (%) of shares of the company in t-1 year

d company i's market capitalization (average) of shares in the t year

e variance of company's stock returns (daily)

f error term

d and e , both are control variables. Estimated returns on investments are negatively linked with market capitalization (Banz, 1981; Fama and French, 1992; Reinganum, 1981). So MV is introduced in regression to control return-size effect. Volatility is used as a control variable because it also affects liquidity.

4. Results

Table 1 shows the sample's descriptive statistics on Karachi Stock Exchange. Average holding period for the KSE is 834 days. Average returns are .06 Pak Rs. Average Illiquidity is .000098. Average market capitalization is 474817713.3 Pak Rs. and average volatility in stock returns is .866.

Table 1: Descriptive Statistics (KSE)

	Minimum	Maximum	Mean	Std. Deviation
Holding Period	.1	65693.43	834.2763	48634.36532
Returns	-12.87	13.07	.0600	2.08024
Illiquidity	-.0156	.0275	.000098	.0014673
Ave Mkt capitalization	1461.5836	726193090.9	474817713.3	158481016.58
Volatility	.0003	4.5680	.866351	1.6243108

Table 2 shows the descriptive statistics for the sample data on Nepal Stock Exchange. Average holding period for the KSE is .0000175 days which shows that investors hold the stock for a very short time period. Average returns are -.76 Nepalese Rs. Average Illiquidity is .000002. Average market capitalization is 430518868.8 Nepalese Rs. and average volatility in stock returns is 4643.22.

Table 2: Descriptive Statistics (NSE)

	Minimum	Maximum	Mean	Std. Deviation
Holding Period	.00000	.00088	.0000175	.000005980
Returns	-72	130	-.76	10.377
Illiquidity	-.0005	.0001	-.000002	.0000230
Ave Mkt capitalization	302112000	598950555	430518868	44887173.906
Volatility	1279.3450	7667.2944	4643.229283	1272.4179422

Table 3 shows the regression results for the holding period on Karachi Stock Exchange. The coefficient for returns is negative which is in line with disposition effect but the value is insignificant. Illiquidity is positively correlated with the holding period which proves disposition effect. Both average market capitalization and volatility are negatively related with the holding period.

Table 3: Holding Period Regression (KSE)

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	68511.687	2995.415		22.872	.000
	Returns	-204.388	368.544	-.010	-.555	.579
	Illiquidity	2980570.6	524267.99	.101	5.685	.000
	Ave Mkt capitalization	.000	.000	-.403	-21.486	.000
	Volatility	-4070.028	517.742	-.147	-7.861	.000

a Dependent Variable: Holding Period

Table 4 shows the regression results for the holding period on Nepal Stock Exchange. The coefficient for returns is positive which shows the absence of disposition effect but the value is insignificant. Illiquidity is negatively correlated with the holding period which again rejects the presence of disposition effect on NSE. Both average market capitalization and volatility are negatively related with the holding period.

Table 4: Holding Period Regression (NSE)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	1.00E-005	.000		4.706	.000
	Returns	1.35E-008	.000	.023	.589	.556
	Illiquidity	-.047	.010	-.180	-4.571	.000
	Ave Mkt capitalization	-1.49E-014	.000	-.112	-2.879	.004
	Volatility	-4.12E-010	.000	-.088	-2.273	.023

a Dependent Variable: Holding Period

5. Conclusion

This study investigated the disposition effect, holding periods and illiquidity in Karachi stock exchange and Nepal stock exchange. The results show that illiquidity is positively associated with holding periods and returns are negatively associated with holding periods. These findings are in line with existing literature on disposition effect Weber and Camere (1998), Chui (2001), Visaltanachoti et. al. (2007). The opposite results are found in case of Nepal stock exchange which shows the absence of disposition effect there. This is why their average returns are higher than the KSE average returns. 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 decrease returns. In future this kind of research can be conducted on other stock exchanges of South Asia. The present model can also be studied by taking political risk as a moderator.

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