



Full length article

Speculating in gains, waiting in losses: A closer look at the disposition effect[☆]Tõnn Talpsepp^{a,b,*}, Martin Vlcek^b, Mei Wang^c^a Tallinn University of Technology, Akadeemia tee 3, 12618 Tallinn, Estonia^b Institute of Banking and Finance, University of Zurich, Plattenstrasse 32, CH8032 Zurich, Switzerland^c WHU-Otto Beisheim School of Management, Burgplatz 2, 56179 Vallendar, Germany

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ABSTRACT

Using the trading data from Estonian stock market as well as the laboratory experiments, we find that investment decisions depend on the current performance and the past price movement. Investors are contrarian in gains and holding stocks in losses, which is mostly consistent with our experimental results, where participants stay with their last period allocations if they had losses; whereas they follow more active contrarian strategies if they had profits. Our experiment suggests that the risk attitude in losses, together with wishful thinking and misperception of the price process, such as gambler's fallacy, may attribute to the observed disposition effect.

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1. Introduction

The disposition effect refers to the observation that investors tend to sell winning stocks too early and keep

losing stocks too long (Shefrin and Statman, 1985). Such pattern has been documented in different markets across countries including the US (Odean, 1998), China (Feng and Seasholes, 2005), Finland (Grinblatt and Keloharju, 2001), as well as in other settings such as laboratory experiments, e.g., Weber and Camerer (1998), Chui (2001) and Summers and Duxbury (2012).

Different explanations have been proposed to understand this frequent behavioral pattern. One natural and logical explanation is the well-known constant rebalancing strategy, which states that if investors are expected utility maximizers with constant relative risk aversion (CRRA), then they should rebalance the portfolios in each period (Samuelson, 1969; Merton, 1969). Therefore the investors sell the securities after the prices rose, and buy them after the prices fell. As a result, they realize gains more often than losses, a pattern that is in accordance with

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the disposition effect. Hence it should not be a surprise to the standard portfolio theory.

The most classical behavioral explanation for the disposition effect is based on the asymmetric risk attitudes in prospect theory, i.e. people are more risk averse in gain domain and more risk seeking in loss domain. Therefore investors tend to sell winning stocks to make secure profits and hold losing stocks to avoid sure losses (Dacey and Zielonka, 2008; Shefrin and Statman, 1985). Although this conjecture sounds convincing, several researchers present the limitation of prospect-theory-based hypothesis to explain disposition behavior both from a theoretical point of view and from empirical evidence (Barberis and Huang, 2009; Hens and Vlcek, 2011; Kaustia, 2010; Lehenkari, 2012).

In addition to the preference-based explanations, there are also explanations based on perception and beliefs. Investors may believe in mean-reverting asset prices, i.e. today's losers will outperform later and the winners will underperform. Such beliefs may cause investors sell winners and hold losers (Barber and Odean, 1999). Several studies exclude this hypothesis based on trading data (Odean, 1998) or experiments (Weber and Camerer, 1998).

In this article, we take a closer look at the disposition effect by presenting evidence from trading in real stock markets and in laboratory settings. We show that investors adopt different strategies depending on whether their current performance is gains and losses. The analysis of laboratory experiments and trading data reveals similar patterns. Our participants in the experiment are typically more active and adopt contrarian strategies when they are in gains, whereas they are more passive and more likely to hold the stocks in losses. The stock market trading data also shows that when in gains, investors tend to follow contrarian strategies for medium to long time horizons, although they seem to follow momentum strategies for very short time horizons. We also find domestic individual investors are in general more reactive to short-term price fluctuations than foreign and institutional investors do. As a result, domestic individual investors exhibit the strongest disposition effect. Foreign institutional investors, however, show inverse disposition effect.

Note that the above pattern cannot be simply explained by the constant rebalancing strategy, nor the prospect theory. In our experiments, participants were informed that the asset prices are exogenously determined by a binomial process. We made this process more transparent by asking participants to throw a dice by themselves to determine the price movement of the next period. The probability of the price going up equals to the probability of going down ($p = 0.5$). However, some participants still showed wishful thinking and gambler's fallacy, i.e., they expected the price would go up, especially at the beginning of the experiment and after the prices went down, even though most participants confirmed that they perceived the price process to be random in a questionnaire at the end of the pilot study. This suggests that perception/belief-based explanations for the disposition effect deserve further investigation.

In Section 2 we present the results from trading data, and in Section 3 we present the experimental results. We discuss the results in Section 4.

2. Field evidence from Estonian market

2.1. Dataset

We use a dataset provided by Nasdaq OMX Baltic. The data includes all transactions on Nasdaq OMX Tallinn (OMXT) for all domestic and foreign investors from January 1, 2004 until June 30, 2008. Data includes over 0.5 million transactions for all OMXT listed companies (22 different companies during the observed 4.5 years) for a total of 24,153 different accounts. The actual number of different investors is slightly smaller as Estonian law allows multiple accounts per investors. In reality, the number of investors holding multiple accounts is negligible. The dataset is comprehensive, meaning that it includes all trades during the period on the Estonian stock exchange. The provided data is anonymous and includes the account IDs, the transaction date, the price, the security and the type of the investor. Individual investors can be classified by gender, age and nationality (classified as domestic and foreign). Institutional investors can be classified by the institution type and origin (classified as domestic and foreign).

The dataset also includes starting portfolios for all accounts on January 1, 2004, which enables us to calculate the starting market value of the portfolios. As purchasing price for starting positions is not known, we define a stock position as starting (similarly to Feng and Seasholes (2005)) when the first purchase after January 1, 2004 takes place and ending when the position goes to zero. We make a comparison of the reference price (the known average purchasing price of the security) and the current market price for each stock in each investor's portfolio, for every trading day in the sample. Thus we record trading decisions (buy, hold, sell), realized and paper gains and losses for each position and each investor for every trading day. We also record the value of each investor's portfolio after every trading day and are able to compare whether the investor was in loss or gain at the portfolio level. Such a data setup results in over 11 million observations that are used in the subsequent logit analysis.

2.2. Descriptive statistics

OMXT has market a capitalization of around 3 billion EUR and market capitalization/GDP of about 30%. All in all, OMXT can be described as a small emerging market where 55% of the market capitalization is held by local investors and 45% by foreign investors. Institutional investors hold 83% and individual investors 17% of the market capitalization at the end of the period in our study, although 87% of the accounts are held by individuals. Further breakdown of the accounts and trades is shown in Table 1.

Except for the local institutions, the average number of purchases has been larger than the number of sales. Local investors account for about 80% of the total trades. Depending on the portfolio size, the average turnover is larger for individuals with smaller account size. Average holding period for institutions is calculated as a average time period following a purchase until the sale of the security which can occur in multiple trades. Short holding periods for institutions are affected by the fact that a large number of client accounts appear under one nominee account held by an institution.

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