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Duration disparity in losing versus winning Forex trades: evidence from individual traders' behaviour

Abstract

This paper delves into the realm of behavioural finance, drawing upon the existing academic literature, research studies, and laboratory experiments to underscore the impact of psychological biases on decision-making processes. However, empirical investigations pertaining to trading behaviour, particularly in the context of an escalating number of individual traders, remain scarce. To address this gap, the present study examines a substantial dataset comprising foreign exchange transactions executed by Bulgarian individual traders over a five-year period. Consequently, this study employs the principles and tools of behavioural finance to scrutinize the extensive trading dataset, aiming to provide empirical support for the composite and intricate effects of the loss aversion bias, status quo, endowment effect, and loss attention biases on Forex traders' decision-making and their subsequent trading outcomes and returns. Specifically, the research centres on the analysis of time duration disparities between winning and losing trades, elucidating the interrelationship between these ratios and the trading performance of Bulgarian individual Forex traders. To the best of the author's knowledge, the investigation into the time duration of winning and losing trades represents a novel addition to existing trading statistical ratios, serving as a means to substantiate and interpret the psychological influences on individual traders' trading outcomes. This pioneering research builds upon two prior behavioural finance studies conducted by the author and an fMRI study exploring distinct patterns of brain activation in response to real and hypothetical monetary outcomes.

Keywords: online Forex traders, duration ratio – losing/winning trades, loss aversion, status quo, endowment effect, loss attention
JEL Classification: G41

Introduction

The international foreign exchange market garners significant attention from Forex practitioners, including both experienced traders and novices. The Brokers' Notes platform reports a global count of 9.6 million online Forex traders, alongside financial institutions, companies involved in international trade, and the wider scientific community.

According to the Bank for International Settlements [2023], trading in OTC FX markets reached $7.5 trillion per day in April 2022 ('net-net' basis all FX instruments), up 14% from $6.6 trillion three years earlier. The continuous growth in Forex trading volumes and its stochastic nature prompt academics, former and current traders,[1] as well as mutual and hedge fund managers to propose diverse risk management approaches, trading strategies, and hedging techniques aimed at improving trading outcomes, generating profits, and mitigating risk [Acar, Satchell, 2002; Dayton, 2014; Kestner, 2003; Lien, 2016; Nekritin, Peters, 2012; Short, 2017].

In this article, the author posits that there exists a significant difference in the duration of open Forex positions, contingent upon whether these positions are profitable or loss-making. Understanding these varying durations has the potential to improve the trading outcomes of Forex market participants. To test this hypothesis, empirical evidence will be employed, and the findings will be analyzed and contextualized through the theoretical lenses of loss aversion, the status quo bias, the endowment effect, and loss awareness. These behavioural biases are proposed to influence directly individual Forex traders' decision-making and their resulting trading outcomes. By examining the interconnectedness of these biases and their compounded effects on decision-making, the author acknowledges their collective impact in amplifying adverse trading behaviours. This investigation is particularly significant given the growing number of individual traders and the troubling statistic that 75%–80% of all retail Forex trades result in financial losses.[2]

Chain of biases

The complex chain of biases mentioned above finds its origins in the late 1970s when Tversky and Kahneman [1979] introduced the prospect theory and a descriptive approach to behavioural economics and finance. Prior to this, the field of economic science predominantly adhered to the standard economic understanding of the rational individual, *homo economicus*, and its normative approach. However, in subsequent years, behavioural economics, behavioural finance, and the descriptive approach gained prominence within the

[1] The author of this paper has extensive experience as a dealer in stocks, Forex, and bonds over many years.
[2] https://www.compareforexbrokers.com [accessed: 10.05.2023].

academic community. Notable contributions in this field include the works of Thaler [1993, 1999, 2005], Gilovich, Griffin, and Kahneman [2002], Thaler and Sunstein [2009], Kahneman [2012], Camerer [2012], Barberis [2013], and Shiller and Akerlof [2015], Costa, Carvalho, and Moreira [2019], Hoekstra and Güler [2022], and Sobolev [2022].

The prospect theory plays a fundamental role in explaining human decision-making by considering the psychological evaluation of gains and losses, as well as the influence of risk aversion, loss aversion, and systematic errors in judgment. Tversky and Kahneman [1979, p. 279] observed an asymmetry in the psychological valuation of equal monetary amounts of gains and losses, with the aggravation experienced from losing a sum of money being greater than the pleasure associated with gaining the same amount. They estimated this asymmetry to be 2.3 times greater in terms of psychological stimulation for losses compared to gains [Tversky, Kahneman, 1992]. This phenomenon, known as loss aversion, has become a cornerstone of the descriptive economic theory and behavioural economics, repeatedly researched and affirmed by various scholars [Baumeister et al., 2001; Durand, Fung, Limkriangkrai, 2019; Mukherjee et al., 2017; Odean, 1998; Shefrin, Statman, 1985; Ulrich, Zank, 2005;].

The loss aversion bias, with its complexity, leads individuals to be more focused on losses than gains. Consequently, they encounter difficulties in changing their current state, exhibiting a bias toward the status quo and apprehension about altering the existing situation to avoid regret. This behaviour arises from the belief that the alternative might not be superior to the current state and a preference for avoiding regretful actions [Kahneman, Tversky, 1982]. This irrational mechanism reinforces a strong tendency among humans to stick with their previous decisions rather than adapting to objective changes in the environment or pursuing better alternatives for improved outcomes [Godefroid, Plattfaut, Niehaves, 2023; Samuelson, Zeckhauser, 1988]. These difficulties in changing the status quo are particularly pertinent for individual Forex traders when faced with complex cognitive processing within an uncertain, stochastic, and multivariate domain, such as the Forex market. In such situations, individuals may feel confused and averse to changing the status quo [Bewley, 1986; Freiburg, Grichnik, 2013]. Another layer of loss aversion bias is intertwined with the endowment effect [Kahneman, Knetsch, Thaler, 1990; 1991; Loewenstein, Adler, 1995]. The endowment effect is to be understood as a psychological mechanism under which owned goods and items are valued more highly that the goods and items not owned by the individuals [Thaler, 1980]. The endowment effect, primarily explained by psychological factors related to loss aversion [Ericson, Fuster, 2014], influences trading decisions in the Forex market and the psychological evaluation of loss positions and stop-loss limits. In the context of Forex trading, the behaviour of traders, influenced by loss aversion and the status quo bias, is further amplified by the endowment effect, which stems from the reference point and ownership of open Forex positions, particularly those with unrealized losses. Let us provide a concise account of the renowned endowment effect experiment conducted by Knetsch [1989], which involved trading a coffee mug for a chocolate bar. In this experiment, the participants were randomly assigned either a coffee mug or a chocolate bar. After a brief period, the participants were given the

option to retain their assigned item (analogous to open positions) or exchange it with the experimenter (analogous to closing existing positions and opening new ones). The results of the experiment demonstrated that the reference point, or the initial state of ownership, significantly influenced the participants' subsequent decisions (i.e. whether to trade or not to trade, and for our subsequent analysis, whether to close or not to close a losing Forex position). Approximately 90% of the participants who were initially endowed with chocolate bars chose to retain their candy, whereas only 11% of the participants who were initially endowed with a coffee mug opted to switch to a chocolate bar.

Based on these findings, we argue that Forex traders who possess an open losing position face a psychological dilemma. They tend to focus their attention and time on the value and characteristics of the owned position [Carmon, Ariely, 2000], repeatedly evaluating the potential for the losing position to become a winning one, rather than closing the losing position (realizing the unrealized loss) and trading it for a new Forex position with more favourable market prospects. This behaviour is particularly pronounced, robust, and intensified by the presence of the endowment effect among individual traders with highly leveraged Forex positions, necessitating them to confront the dilemma of whether to trade (close) an owned losing position in favour of a position that has not been opened. It is important to reiterate that the existence of an open losing position implies a psychological impact characterized by loss aversion, the status quo bias, and dependence on the endowment effect in the trader's decision-making process. Traders must assess whether they should close their losing position, thereby realizing an unrealized loss, and open a new Forex position with potentially better market prospects, or alternatively, persist with their losing position and await a change in the market direction. Consequently, the influence of encountering this trading dilemma manifests in significantly longer durations for losing positions compared to winning positions. Therefore, traders encounter a greater difficulty in closing losing positions compared to winning positions due to the influence of the asymmetric psychological valuation of losses relative to gains. As a result, a priori experiences of loss (i.e. the period preceding the realization of an unrealized loss) possess an asymmetric psychological value when compared to a priori experiences of profit (i.e. the period preceding the realization of an unrealized profit). The prior occurrence of a losing position, as elucidated in this paper, is derived from robust scientific evidence concerning the activation of specific brain regions in healthy adults when anticipating monetary losses and rewards: "We ran an Activation Likelihood Estimation meta-analysis of 50 fMRI studies, which used the Monetary Incentive Delay Task (MIDT), to identify which brain regions are implicated in the anticipation of rewards, anticipation of losses, and the receipt of reward. Anticipating rewards and losses recruits overlapping areas including the striatum, insula, amygdala and thalamus, suggesting that a generalised neural system initiates motivational processes independent of valence. The orbitofrontal/ventromedial prefrontal regions were recruited only during the reward outcome, likely representing the value of the reward received" [Oldham et al., 2017, p. 3398]. Consequently, in the context of open losing Forex positions, which entail unrealized losses, the activation of brain regions

such as the striatum, thalamus, amygdala, and insula is implicated. Hence, the mental processes and neural activation involved in experiencing an unrealized loss in an open position parallel the psychological distress associated with realized losses. This a priori experience of losses leads traders to illogically and erroneously prolong the process of closing losing trades, thereby exacerbating their losses.

For the next reason, relating to a longer duration of losing positions, I would reinterpret the following statement: "Individual investors tend to evaluate their stock purchases one stock at a time, rather than as a portfolio" [Benartzi, Thaler, 1993, p. 21]. Yet, individual Forex traders do evaluate opened positions as an individual trade and not as a portfolio (sum) of trades, i.e. not as a compound return of all Forex deals. So, this deal-by-deal evaluation makes it much harder for individual traders to follow a disciplined and pre-set system for stop-loss limits (if any) for their losing positions. Inherently such an experience of open positions causes evaluation and reevaluation over and over again of still open losing trades – which finally prolongs the duration period of losing trades compared to winning trades. Additionally, such an experience is enhanced by the status quo bias and an endowment effect that ultimately binds traders to perceive losing positions as their *own* position, reinforcing their irrational beliefs that the market will move in the *right* direction.

The loss aversion bias and its complex and multidimensional influence [Novemsky, Kahneman, 2005] also include the shade of the attentional bias, which causes Forex dealers to give significantly more attention to losses and losing positions than to gains and winning positions. Increased attention to losses is expressed through continuously repeated analyses of losing positions over winning ones. This is to say losing trades and losses provoke a higher level of psychological arousal and cognitive employment [Yechiam, 2015; Yechiam, Ashby, Hochman, 2019], compared to gains of the same amount of money. This happens even when we assume that such a higher level of arousal and attention is not directly related to the loss aversion bias. Yet it is relevant to state here that loss attention is an additional or even single source of irrationality which influences the individual Forex trader's decision-making. There is evidence that loss attention might be perceived as a distinct and separate psychological mechanism from loss aversion: "In particular, losses that are experienced or potential losses that are described lead to an orienting response and facilitate an increase in the attention allocated to the task" [Yechiam, Hochman, 2012, p. 7]. Thus, here in this research we interpret loss attention as an additional source of influence on traders' decisions in terms of mental processing and decision making – to close a losing position or not to close it.

Data analysis

The current research is dedicated to Forex intraday trading, which is associated with many profitable and losing trades, i.e. with frequent loss and profit-taking, and explains the dealer's exposure to the loss aversion, status quo, endowment effect, and loss attention. The hypothesis

of the study is that losing trades will exhibit significantly longer average durations than the profit and break-even trades. Raw data for the study is provided by the leading Bulgarian investment intermediary. The analyzed data is based on a proven track record of the individual traders, who are clients to the investment intermediary, for a five-year trading period (01.20.2014 to 10.23.2019) and covers 369,252 foreign exchange transactions or 184,626 opened and closed positions. The trading activity for the period specified is a result of the trades performed by 287 individual online Forex traders who were trading 29 different currency pairs. Yet, it is important for every individual and professional trader to use techniques to measure and test the effectiveness of Forex trading. These techniques are well known from management and trading statistics [Sweeney, 1996; 1997]. Understanding the real meaning of trading results is crucial for the returns and mastering or changing the trading strategy. Now through the calculation of selected Forex trading ratios, here is the interpreted effectiveness of Bulgarian individual traders:

$$Win\ Ratio = \frac{(Number\ of\ winning\ Trades)100}{Total\ Number\ of\ Trades} = 63.86\%;$$

$$Loss\ Ratio = \frac{(Number\ of\ Losing\ Trades)100}{Total\ Number\ of\ Trades} = 35.14\%;$$

$$Break-Even\ Ratio = \frac{(Number\ of\ Break-Even\ Trades)100}{Total\ Number\ of\ Trades} = 1.00\%;$$

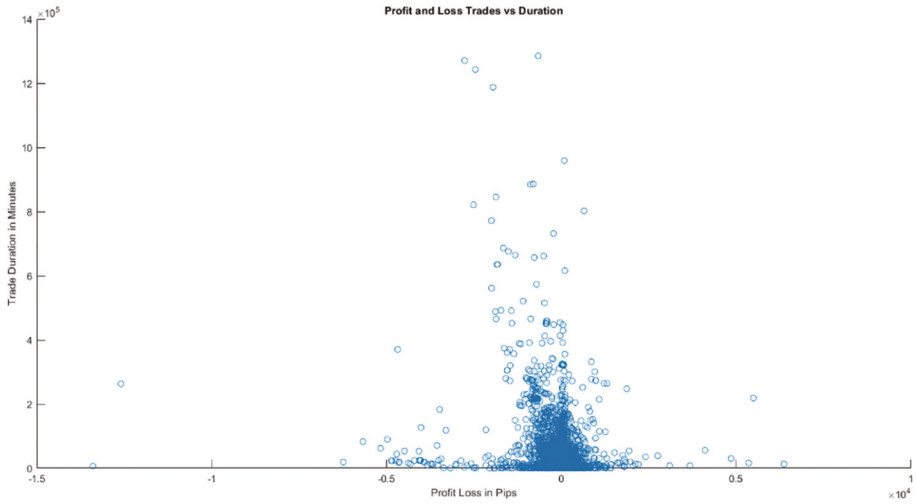
$$\frac{Win}{Loss} Ratio = \frac{Number\ of\ Winning\ Trades}{Number\ of\ Losing\ Trades} = 1.81;$$

$$Payoff\ Ratio = \frac{Average\ Profit\ per\ Trade}{Average\ Loss\ per\ Trade} = 0.4138.$$

The majority of trades conducted by Bulgarian individual Forex traders account for 63.86% and exhibit a positive win/loss ratio of 1.81, indicating a higher number of winning trades compared to losing trades. However, the payoff ratio stands at 0.4138, which is below 1. This suggests that, on average, Bulgarian traders experience greater losses than profits from their trades. In other words, for each unit lost, there is only 0.4138 unit of profit, indicating an overall net loss for the traders.

Consequently, traders incur higher average losses in pips from their Forex transactions than they gain. Specifically, they lose an average of 38.23 pips per trade while gaining only 15.82 pips per trade over the entire five-year period.

Figure 1. Profit and loss trades (in pips) vs time suration (in minutes)



Source: own MatLab calculations.

These novel measures and ratios, which are introduced in this paper for the first time (to the best of the author's knowledge), provide insights into the average duration of winning and losing trades as well as the duration ratio of losing/winning trades.

$$Average\ Duration\ of\ Winning\ Trades = \frac{(Close\ Time - Open\ Time)}{Number\ of\ Winning\ Trades} = 1513\ minutes;$$

$$Average\ Duration\ of\ Losing\ Trades = \frac{(Close\ Time - Open\ Time)}{Number\ of\ Losing\ Trades} = 3188\ minutes;$$

$$Average\ Duration\ of\ Break-Even\ Trades \frac{(Close\ Time - Open\ Time)}{Number\ of\ Break-Even\ Trades} =$$

$$= 735\ minutes$$

$$Duration\ Ratio = \frac{Average\ Duration\ of\ Losing\ Trades}{Average\ Duration\ of\ Winning\ Trades} = 2.11.$$

There is an observable significant difference between the average duration of winning trades (1513) minutes and the average duration of losing trades (3188) minutes. The duration ratio (losing/winning trades) clearly confirms that Bulgarian individual Forex traders on average hold their losing positions more than twofold (2.11) above the average holding period of winning trades. The duration of profit and loss trades are visualized and statistically processed below with MATLAB:

Table 1. X Data Statistics

X Data Statistics in Pips							
	Min	Max	Mean	Median	Mode	STD	Range
Profit Trades vs Duration	0.1	6366	15.82	4.5	0.4	63.37	6366
Loss Trades vs Duration	–1339e+04	–0.1	–38.23	–10.8	–0.1	169.7	1.339e+04

Source: own calculations with MatLab.

Table 1. Y Data Statistics

Y Data Statistics in Minutes							
	Min	Max	Mean	Median	Mode	STD	Range
Profit Trades vs Duration	0	9.588e+05	1513	43	1	9978	9.588e+05
Loss Trades vs Duration	0	1.285e+06	3188	76	0	2.491e+04	1.285e+06

Source. own calculations with MatLab.

The visualized distribution of time in minutes for winners and losers and data statistics confirm the hypothesis of the current paper that the average holding period (duration) in minutes is longer for losing trades (3188) than for winning trades (1513). The result is directly attributable to the psychological influence on trading decisions caused by loss aversion, the status quo bias, the endowment effect, and loss attention. The longer period of holding losing Forex positions is one of the most common reasons for negative trading results and an inability of individual online traders to close losses earlier and to strictly follow stop-loss limits rules. Conversely, the pre-early closing of the winners causes an inability to take a reasonable profit margin from trading. The influence of psychological biases leads to the underperformance of trading, because of the psychological mechanism of loss aversion: "We have an irrational tendency to be less willing to gamble with profits than with losses. This means selling quickly when we earn profits but not selling if we are running losses" [Tvede, 1999, p. 169]. Not only this, but also individual online traders are exposed to the influence of the status quo bias, endowment effect, and loss attention bias. Altogether these biases cause a final negative result, regardless of how predominant that part of the trades of Bulgarian individual traders are winners.

Summary

The primary objective of this study has been to provide insights from behavioural finance to support and enhance the trading performance of the Bulgarian individual Forex traders,[3] whose numbers are estimated at 30,000 according to Broker Notes [2024]. At first sight it might be a very low number of traders but in terms of the total number of Bulgarian citizens,

[3] I wish to believe my longstanding career as a stock, bond, and Forex trader helps me to stay unbiased while researching large datasets of other traders.

it makes each 217th Bulgarian to trade on the Forex. This ratio is among the top in the world and that is why it is important to study trading behaviour of Bulgarian Forex traders.

It is important to remember that the analyzed data is based on a proven track record of the individual Forex traders for a five-year trading period and covers 369,252 foreign exchange transactions or 184,626 opened and closed positions. Therefore, the author is in good faith that the present study provides viable empirical evidence supporting the hypothesis that there exists asymmetrical psychological and emotional attention towards open losing Forex positions, leading to a longer average duration of losing positions compared to winning positions. The data confirms that Bulgarian individual Forex traders tend to hold losing positions for an average duration that is 2.11 times longer than winning positions. This increased attention towards losing positions contributes to an extended period of evaluating and reevaluating the characteristics of such positions, ultimately resulting in delayed closures and a failure to adhere to loss limit rules.

Consequently, Bulgarian individual Forex traders experience an average loss of 38.2 pips per trade, while their average profit stands at 15.8 pips per trade, indicating a substantial imbalance in favour of losing deals by a factor of 2.41. Although the initial proportion of winning trades (63.86%) exceeds losing trades (35.14%), the overall outcome is negative. Specifically, Bulgarian traders have accumulated a loss of 571,277 pips, having earned 1,751,579 pips while losing 2,322,856 pips. This study holds particular significance for Bulgarian individual online Forex traders, as it sheds light on the profound and persistent impact of psychological biases such as the loss aversion, status quo, endowment effect, and loss attention on Forex trading and decision-making processes.

Furthermore, it is suggested that a similar effect of longer duration for losing positions compared to winning positions can be observed among individual online traders in other countries. Based on the conclusions and findings presented in this paper, it is anticipated that this research will be valuable to the scientific and financial communities, particularly in terms of enhancing the trading outcomes for individual online Forex traders. Simultaneously, this study serves as a foundation for future investigations in this domain.

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