The role of risk and emotional engagement in trading behaviour and manifestation of behavioural biases by investors

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In this research, I address the question of the role that emotions play in risky choice. Growing empirical evidence exposes emotions as a strong potential factor that can elucidate multiple behavioural artefacts that famous Prospect Theory simply fails to embrace. An alternative framework of judgement and decision-making such as ‘Risk-as-feelings’ hypothesis (Loewenstein et al (2001)) suggests that the processing and outcome of decisions is highly dependent on the affective charge of the environment in which a choice is made. Some factors, for example, vividness of potential outcomes, immediacy of outcome, duration of emotion-eliciting event, personal characteristics, etc., raise the emotional intensity of choice, which has a distorting effect on the realised behaviour. The theory contends that the higher is the emotional charge of the dominating environment, the stronger individual’s decisions and behaviour depart from thoughtful undertakings.

In the current paper, I examine the expectations of dual process models embodied in ‘Risk-as-feelings’ hypothesis with application to investors’ behaviour, performance and the three facets of risk identified by Prospect Theory: the form of the valuation function, the form of the probability weighting function, and loss aversion. I formulate the following research
question: “What is the effect of emotions on profitability and risk behaviour?” To test it, I
undertake to explore if investors adjust their behaviour when taking standard investment
decisions in two environments that are distinct from the affective charge point of view.

To approach such research, it is necessary to identify and analyse two settings that are
different in terms of emotional charge and at the same time show closest possible similarity
in all other aspects. I manage to employ a novel and unique data set that exactly matches the
requirement above. It contains a detailed trading statistic of a group of Live (real funds – real
risk) investors obtained from a large European brokerage house that is paired with trading
contest data that is organised by the broker for their investors. This trading contest represents
a trading game that entirely replicates Live trading environment, including the marketplace
(electronic platform), orders, fees, execution, etc. This is a serious venture where top
performers get high value real prizes credited on their Live accounts, and that gathers around
1,000 contestants every month. Further, I match investors having both types of accounts –
Live and Contest and obtain 618 such individuals. Effectively, I assume that the only
fundamental factor that is different for Live and Contest accounts of the same trader is the
degree of emotional intensity or vividness that is comprised in opening, maintaining and
closing a trading position. This represents a natural control for an ‘emotional’ variable and
gives an excellent and rare opportunity to conduct an empirical testing of the dual process
theories. Consequently, I designate Live environment as ‘affect-rich’ and Contest
environment as ‘affect-poor’.

After the conducted analysis, I discover a substantial shift in behaviour and performance
between the two environments. Surprisingly, against the widely accepted belief of the
industry and investors that is spread in the professional internet forums, Live is found to
outperform Contest on average. The difference between the two is significant both
economically and statistically. Next, I test the difference in profitability at the individual
investor level and uncover that for approximately third of all subjects’ Live performance is significantly higher than in Contest. The opposite is true for only around 10% of traders. I also reveal that the explored behavioural patterns are considerably disparate in Live and Contest. In Live the same individuals tend to be more anxious and spending more time in front of the trading terminal, which is interpreted from heavier intraday trading, higher number of completed transactions, shorter overall duration of a single open position and less frequent use of conditional orders.

The second part of my study is devoted to the analysis of risk. Sequentially, I research the role that feelings play in each of the risk factors: form of the value function, form of the probability function and loss aversion.

First, I hypothesise that if the form of the value function is influenced by emotions, positive and negative risk measured as semi-deviations of returns in the two environments should be disparate because in the more affect-rich setting investors should be more risk-averse in gains domain and more risk-seeking in the losses domain. My results demonstrate that only positive semi-deviations in Live and Contest are substantially dissimilar, and Live positive semi-deviation is indeed more concave as hypothesised. As for negative semi-deviation, statistical tests fail to reject the null hypothesis about their equality. I conjecture that the reason behind the alignment of negative semi-deviation in both environments may be connected to the implications of the other two risk factors – loss aversion and the form of decision weighting function. These two factors are hard, if possible, to evaluate using market orders, therefore, I focus on the statistics of realised conditional orders.

Primarily, I explore loss aversion bias. I assume that risk-aversion in gains domain should motivate investors to place take-profit orders closer to the market price and have them executed swiftly. With stop-loss orders it is expected to be different, as individuals in the
‘risk-seeking mode’ should be mentally urged to prevent losses from realising, hence place sell conditional orders further away from the market price. Stop-loss orders should be found to get realised less frequently based on this logic. Therefore, I test for two assumptions: first, that the absolute return of stop-loss orders is higher than the absolute return of take-profit orders; and second, that the number of realised conditional stop-loss orders is smaller than the number of realised take-profit orders. Further, the form of decision weighting function as a risk variable is examined. The impact of feelings on this risk factor is arguably the least studied so far. In my analysis, I concentrate on the test of two possible alternative scenarios of affective influence: optimism/savouring and pessimism/dread that both alter the elevation of the probability weighting function. I speculate that both emotional states should influence decisions regarding the placement of conditional orders. Specifically, savouring can lead to over appreciation of objective probabilities for gains and undervaluation of objective probabilities for losses in case of more affect-rich environment. Dread might have an opposite effect. Consequently, for an empirical evidence of the shift in optimism, the profitability of take-profit orders in Live should exceed the one in Contest, while for stop-loss orders Live should underperform Contest¹, equally because investors in Live will tend to place both types of orders further away from the market price. A contrasting picture should be observed if the sensation of dread prevails. In this scenario, investors will lean towards placing stop-loss and take-profit orders closer to the prevailing market price, hence it is expected that Live stop-loss orders will outpace Contest and Live take-profit orders will generate smaller return than in Contest.

My study demonstrates that loss aversion is present in both environments that I explore. Take-profit orders turn out to be significantly more profitable in modulo than stop-loss

¹ It should be recalled that stop-loss orders reside in the losses domain, therefore if an investor places such orders closer to the current market price, she cuts her realised loss if the price moves against her and raises her overall profitability compared to more distantly placed orders.
orders, which is an indication that stop-loss orders are in general placed closer to the market price. This is also confirmed by the frequency of realised conditional orders: I reveal that stop-loss orders are executed two times more often, just as hypothesised. However, against my expectation, I fail to find any difference between loss aversion bias in Contest and Live. In both settings the results of the bias are surprisingly similar. In turn, the empirical investigation of the probability weighting function unequivocally points to the dread assumption. I discover that stop-loss orders in Live outperform Contest, and the opposite effect is observable for take-profit orders. There is a good chance that the surge in pessimism in affect-rich environment can explain the equality of negative semi-deviations in Live and Contest. Grounded on ‘Risk-as-Feelings’ model, an investor should become substantially more risk-loving when experiencing a loss of real money from the value function perspective, yet the excessive risk-taking is supressed by the overestimated fearful reaction to the small probability of disastrous negative outcome. This reaction urges an investor to place stop-loss orders closer to the market price and they get frequently realised, which curbs negative performance.

My research brings in several major contributions to the fields of investments, behavioural finance and the new domain of emotional finance. First, it is based on a unique dataset that embraces naturally elicited manifestations of individual investment behaviour in two environments that are perfect to control for the ‘emotions’ variable. This data paves the way for the first of the kind study of emotional implications on human investment choices and comparing these implications with the expectations of dual process theories of decision-making. Second, my study is the first to combine the examination of emotions impact on all three facets of risk in a single framework. Third, I develop a new framework to analyse the impact of feelings on probability weighting function and loss aversion bias using the data on conditional orders placed by investors.
Information for the reviewer: this research represents one of the completed empirical chapters of the PhD thesis that is now in progress to be converted into a paper.