

Chapter 6

Conclusion:

A Behavioural Approach to Risk Management – The ‘Missing’ Element

6.1. Introduction

The repeated incidents of rogue trading in financial institutions and the recurring financial bubbles³⁶ and subsequent crises hint at the reluctance of participants in the financial services industry to learn from lessons on preventing such mishaps. The motivation behind this study was to examine the drivers (in the form of psychological and socio-demographic factors) behind such irrational, unprofessional and often times reckless behaviour. Experts in risk management had suggested that the oversight of financial risks might need to go beyond dealing with the conventional market, credit and operational risks. Some had identified the ‘missing’ element in existing risk management frameworks to be judgement risk; a risk function that involved an assessment of decision-making behaviour.

One key finding in this study was that learning and experience could play a role in alleviating the influence of behavioural biases when making investment decisions if the choice was a riskless one. However, when the choice was a risky one, emotion could be a reason behind the ineffectiveness of learning and experience in rational investment decisions. The findings also highlighted the variable income as a significant predictor of irrational decision-making behaviour among investors. The discussions in this

³⁶ Financial bubbles formed when the prices of securities did not reflect their fundamental or intrinsic values. The prices rose because investors believed the securities could be sold for higher the next day or in the short term. The market would see prices being continuously pushed up to some point where the situation could not be sustained and the bubble would burst, and the panic selling that ensued would see the prices drop sharply.

concluding chapter centred on these findings in an effort to suggest approaches for a judgement risk framework. The two main sections in this chapter would examine:

- i. the role of emotion in inhibiting learning from past failures in judgement; and
- ii. implications for the financial services industry, including suggestions to address the issue of judgement risk.

The chapter closed with a discussion on the contributions of the study to research in behavioural finance, i.e. insights into the role of experience and emotion in influencing decision behaviour under risk and uncertainty, and some directions for future research.

6.2. Risk, Uncertainty and Emotion

Researchers in behavioural finance had shown that the principles behind prospect theory (Kahneman & Tversky, 1979), regret aversion (Loomes & Sugden, 1982), mental accounting (Thaler, 1999), cognitive dissonance etc. were better able to provide an explanation for the decision-making process under conditions of risk and uncertainty. Studies had also been carried out to examine the relationship between socio-demographic factors and the degree of influence of behavioural biases on investment behaviour; thereby adding to the depth and breadth of knowledge on this subject. As one of the aims of this study was to examine the effect of learning or experience on investment behaviour, the independent variables for statistical analyses were selected based on their appropriateness as proxies for experience.

Consistent with empirical research on investment behaviour, the analysis in Section 4.5 verified that investment professionals were just as likely as retail investors to be affected by psychological biases when making investment decisions (Chen et al., 2007; Menkhoff, Schmidt & Brozynski, 2006; Torngren & Montgomery, 2004). Yet,

researchers had also found evidence that investors were able to learn from their trading experience and improve their investment performance (Nicolosi, Peng & Zhu, 2009; Seru, Shumway & Stoffman, 2009). Is there a reason for this discrepancy, i.e. why investment professionals still succumbed to psychological biases despite being more knowledgeable and experienced in the conduct of financial transactions?

The discussion in Section 4.6 suggested that experience could play a role in reducing the influence of behavioural biases, particularly if the decision in question did not involve risk or the loss of money. This conclusion was arrived at from observing the consistency in the results of patterns in the odds ratio in Tables 4.5, 4.6 and 4.7. The findings implied that investment professionals who were required on a daily basis to make split-second decisions that resulted in large monetary gains or losses might face some difficulty in overcoming their behavioural biases despite their knowledge and experience.

Most people would agree that emotions had an effect on the outcome of a decision, and that negative emotions could increase the likelihood of irrational or unethical behaviour. The “risk-as-feelings” hypothesis presented by Loewenstein et al. (2001) showed that under risky situations, emotional reactions would often overwhelm rational thought and would drive individuals to make unwise choices. The discussion in Section 5.4 identified the emotions of greed, fear and ego as potential motivators behind the biases overconfidence, desire for recognition, loss aversion and sunk cost effect. Hence, the conclusions from Sections 4.6 and 5.4 taken together provided some evidence that the link between the effectiveness of learning and experience in tempering the influence of behavioural biases could lie with the emotional state of the individual.

Would an individual who was devoid of emotions make more optimal investment decisions? A well-cited experiment that showed that emotions were damaging was one that involved three groups of subjects, i.e. normal participants, patients with stable focal lesions in brain regions related to emotion (target group), and patients with stable focal lesions in brain regions unrelated to emotion (control group) (Shiv et.al., 2005). After 20 rounds of investment decisions, the target group was found to have made better decisions and earned more money from their investments. In another experiment conducted on 80 volunteers from a five-week on-line training programme for day-traders, Lo, Repin and Steenbarger (2005) found a clear link between emotions and trading performance. The results showed that subjects who displayed extreme emotional responses to monetary gains and losses had poorer trading performance.

On the other end of the emotion scale, experienced traders that participated in a study that involved both quantitative and qualitative modes of data collection and analysis admitted that while there was a need to keep an eye on their emotional swings resulting from gains and losses, they still needed to rely on their ability to ‘feel the market’ in order to gauge what was happening in the marketplace and to predict turning points (Fenton-O’Creevy et al., 2005). Such intuition, developed from many years of trading in the marketplace, had been acknowledged as a useful tool that could help guide experienced traders through volatile market conditions and to make on-the-spot decisions.

In summary, the evidence still remained unclear whether emotions were good or bad when making investment decisions. Rather, the view taken by some researchers was that depending on the circumstances, emotions could either play a useful or a disruptive

role (Seo & Goldfarb, 2010). Nonetheless, the researcher was of the view that any proposal for a judgement risk framework would need to factor in the emotional aspect.

6.3. Implications for the Financial Services Industry

Investment decisions involved both elements of risk and uncertainty. The economist Frank Knight who wrote the book *Risk, Uncertainty and Profit* in 1921 based on his doctoral dissertation, drew the distinction between ‘risk’ and ‘uncertainty’. He defined risk as the known unknown (where the probability could be determined from statistics of past experiences) and uncertainty as the unknown unknown (where the occurrence was extremely rare and practically impossible to obtain statistics).

However, much of the time and resources expended by intermediaries and regulatory agencies in the financial services industry so far had been on the management and oversight of risk, as defined by Knight, but not uncertainty. The discussion that follows would focus on the development of a judgement risk framework and implications for financial sector reform.

6.3.1. Judgement Risk Framework for Financial Institutions

To date, the emphasis of most frameworks for risk management had been on the calculation and estimation of the market, credit and operational risks for each and every identified financial exposure³⁷. Unfortunately, uncertainty, where no historical data was available, required judgement, not calculation. For example, the failure to anticipate

³⁷ Value at Risk (VaR) is a widely used measure to estimate the probability of losses on a portfolio of financial assets based on the statistical analysis of historical prices trends and volatilities. Initially confined to measuring market risk, the VaR methodology has been expanded to quantify credit risk and operational risk.

‘black swan’ events³⁸ such as the Russian government bonds default in 1998 that triggered the collapse of Long-Term Capital Management³⁹ had been attributed to the overconfident behaviour of the people who ran the hedge fund.

Therefore, effective management of financial risk might need to incorporate techniques that could examine the causes behind an individual’s behaviour rather than merely measuring the after effects (Goto, 2009; Celati, 2004; Goto, 2004). While there was no consensus on what should be the best practices for dealing with judgement risk, some preliminary views had been put forward. According to Goto (2007), the insights from behavioural sciences and cognitive psychology could be used to encourage decisions that were less fettered by biases. Rizzi (2003) pointed out that any behavioural risk framework might need to take into account that:

- regret aversion could drive people to seek confirming views while suppressing inconsistent information, and to take comfort that others had made the same decision (groupthink);
- overconfidence and a false sense of security from sophisticated risk measurement techniques could lead to reduced vigilance; and
- biases could become more prominent due to misalignment of incentives.

The suggestions for a behavioural approach to risk management based on the findings in this study would centre on (i) creating awareness and knowledge of behavioural biases; (ii) monitoring and shaping behaviour; and (iii) realigning compensation and incentives.

³⁸ (Taleb, 2007) In his book Taleb defined a ‘black swan’ event as a highly improbable event with three principal characteristics. It was unpredictable, it carried a massive impact, and it was explainable with the benefit of hindsight.

³⁹ Long-Term Capital Management was a highly successful hedge fund managed by Nobel Prize-winning economists and successful Wall Street traders. The founder, John Meriwether, wanted to create a fund that had the winning combination of the academics’ quantitative models and the traders’ market experience and execution capabilities.

6.3.1.1. Creating Awareness and Knowledge of Behavioural Biases

The evidence from behavioural finance and the neurosciences suggested that irrationality was an unconscious yet normal feature of human behaviour. This meant that making emotional and irrational decisions could be an automatic reaction; in other words, the default mode. However, it had been suggested that people could acquire the discipline to overcome their irrationality (Cook, 2008), even though it would not be an easy task to train the mind to be conscious of emotional and motivational distractions and to develop new skills and habits that could produce in more optimal decisions.

There was a general consensus that creating awareness and knowledge of behavioural biases could be the first step in building the line of defence for investors (Montier, 2007; Pompian, 2006; Nofsinger, 2001). Investors should be informed about the psychology behind investment behaviour, the consequences of these cognitive influences as well as suggestions to avoid making suboptimal investment decisions. An understanding of how the mind worked and the role of heuristics and biases would encourage the investor to reflect on the problem objectively before making the choice.

In addition to awareness training, financial institutions might need to establish a second line of defence as they would be dealing with individuals who were overconfident, comfortable with taking risks and sometimes possessed overinflated egos. Not many investment professionals would freely admit to being emotional or irrational investors. This second line of defence could involve setting up a process that would support risk communication between the traders and the risk and compliance officers (Goto, 2004; Goto & Hayakawa, 2003). Fenton-O'Creevy et al. (2005) proposed that a culture of experience sharing without loss of face or animosity be created on trading floors in

order to minimise decision-making errors made in isolation. This approach to open dialogue that encouraged contrarian views could also alleviate the danger of groupthink, i.e. group behaviour characterised by uncritical acceptance or conformity.

There had also been suggestions for investment professionals to undergo psychological testing in order for management to have a better understanding of the individual's behavioural tendencies. Efforts to 'know the trader' (Pal Singh Gill & Purushottam, 2009; Shipilov, 2009) would assist management in identifying appropriate training and counselling programmes on an individual level. Employees should also be monitored for sudden changes in behaviour, where special attention could be paid to employees whose results of the psychological tests suggest extreme emotional personalities or attitudinal issues.

6.3.1.2. Monitoring and Shaping Behaviour

Risk and compliance personnel could be just as affected by behavioural biases as investment professionals. Misguided reliance on statistical risk measures and internal control systems could lead risk managers and senior management into believing that the organisation possessed the capability to predict, control and even structure around financial risks. This false sense of security increased the likelihood that failures on the trading floor or in the marketplace might not be spotted in time as the risks of such failures could have been underestimated or worst, assumed did not exist.

It had been pointed out that the lack of understanding of the limitations and implications of existing risk measurement tools could be attributed to overconfident behaviour (Gaus, 2008; Rizzi, 2008; Taleb, 2007, 2005; Celati, 2004). Most statistical risk models

relied on historical data and would normally adopt a confidence level of 95%. This meant that the models would not provide any information on the risks that lurked in the tails of the remaining 5%, which could include low frequency but high impact events. There was a management adage that said 'you cannot manage what you cannot measure'. The ability to measure and report financial risk exposures was an important function despite the cited weaknesses of quantitative risk models. However, management should be mindful not to turn this function into a regulatory and compliance routine and be lulled into a state of complacency.

As part of the risk control mechanism, most financial institutions would have in place trading rules or limits which could be used to mitigate the influence of behavioural biases. For example, stop loss limits could be used to address the disposition effect, which was the tendency to sell securities that had increased in value and to keep securities that had dropped in value. Garvey and Wu (2008) conducted a study to examine the effectiveness of and the response to such risk control mechanisms. The data for their study came from the transactions of 150 traders over a one-year period. The authors found that despite efforts by the financial institution to get their traders to realise trading losses, some still showed difficulty in accepting their losses. The study also highlighted the conundrum faced by risk management in the development and implementation of effective risk control mechanisms. When the control measures were too strict, the traders would try to get around the controls so as not to disrupt their overall trading strategies and practices. On the other hand, if the control mechanisms were too lax, it would not serve the purpose of managing financial risk.

In summary, the risk management process should not be overly dependent upon the output of risk assessment models, and the use of rules and limits to shape behaviour

might require a process of trial and error in order to find the right balance. The researcher proposed that the risk management framework could include the following activities to address the issue of judgement risk.

- i. More focus on the conduct of scenario analysis, where the risk assessment models could be used on a periodic basis to test whether the organisation could weather a black swan event.
- ii. Lengthen the evaluation horizon to more than 12 months to gauge the long-term effects of the financial exposures or transactions.
- iii. Encourage contrarian views during risk and performance review sessions to minimise the tendency for herding or groupthink.
- iv. Periodically review the performance of star traders to determine whether their results were based on luck or skill. This could address the overconfidence bias, where traders who were merely lucky would be brought down to earth and be more realistic regarding their trading abilities.

6.3.1.3. Realigning Compensation and Incentives

The findings from the logistic regression analysis in Section 4.7 showed that income was a significant predictor of irrational decision behaviour. In particular, among investment professionals in the survey sample, the likelihood of an irrational response for the disposition and breakeven effects increased above a threshold level. As the data collected was from a cross-sectional survey, it would be inappropriate to assume a cause and effect relationship. Instead, the findings could imply that the decision-making behaviour of this group of respondents could have been shaped by circumstances or factors linked to their earning capacity. Interestingly almost all commentators of the

financial crisis triggered by the subprime mortgage defaults in 2007 acknowledged that the lopsided compensation practices by financial institutions were a major cause.

The discussion in Section 5.3 recognised that the job of proprietary traders required them to take risks and that they were rewarded for doing so. Nonetheless, the manner in which the rogue traders were monitored, managed and compensated had some bearing on their questionable behaviour. Hence, a more effective way to shape the behaviour of traders could be through how the traders would be compensated at the end of the day (Celati, 2004).

Research into the performance-based compensation policies of most financial institutions concluded that these policies did not always align the employees' interest with long-term shareholder value (Bebchuk, Cohen & Spamann, 2010; Crotty, 2009; Fenton-O'Creevy et al., 2005). Bonuses that were paid out based on short-term profits were not returned when those transactions imploded at some point in the future. In fact, it was reported that some of the financial institutions that suffered huge losses in the financial crisis of 2008 and accepted bailouts by the government, continued to pay large bonuses to their senior executives. In a perverse way, it was 'rational' for investment professionals to engage in reckless risky behaviour because of the limited downside.

Any effort to align compensation and incentives with behavioural objectives might need to take into account Darley's Law. According to Darley⁴⁰, "The more any quantitative performance measure is used to determine a group or an individual's rewards and punishments, the more subject it will be to corruption pressures and the more apt it will be to distort and corrupt the action patterns and thoughts of the group or individual it is

⁴⁰ John Darley, the Warren Professor of Psychology at Princeton University, joined the faculty in 1968. Much of his work focused on decisions and actions that had moral components or implications. This included issues related to interpersonal power, how it played out in social interactions, and how people attempted to manage others with incentive schemes.

intended to monitor.” This explained why a wholly quantitative compensation structure for investment professionals was possibly flawed because human beings were inclined to bend the rules for self benefit.

Dan Ariely in his book *The Upside of Irrationality* (2010) presented empirical evidence that showed that incentives did not necessarily translate to better output or performance. Three groups of participants were offered high, medium and small bonuses respectively to undertake a set of cognitive tasks. The results showed that the group who stood to earn the most demonstrated the lowest level of performance. Ariely argued that the pressure to perform to earn the high bonus was so stressful that the participants in this group slipped-up in their assigned tasks. Hence, any approach to optimise performance should take into consideration the links between compensation, motivation, stress and performance.

As part of the behavioural approach to risk management, compensation and incentive schemes could include a mix of quantitative and qualitative measures. For example, in 1995, the banking regulator in the United States (Ludwig, 1995) suggested that the senior management consider, among others, factors such as:

- i. the employee’s compliance with bank policies, laws and regulations;
- ii. performance relative to the bank’s stated goals and relative quality of earnings;
- iii. competitors’ compensation packages for similar roles;
- iv. the employee’s overall performance; and
- v. the levels of risk inherent in and caused by the relevant trading activity;

when establishing or reviewing compensation structures and determining bonuses.

Another suggestion would be for the annual bonuses of traders and key executives to be paid over a period of two or more years to discourage these employees from focusing

on excessively risky and short-term investment strategies. The key consideration when drawing up any compensation and incentive structure would be to encourage the employees to think long-term and to act in manners that would contribute to the sustainability of the business.

6.3.2. Behavioural Finance Concepts in Financial Regulatory Reform

The results in this study could also be relevant for financial services regulators seeking to initiate reforms in the marketplace. In the aftermath of the global financial turmoil of 2008, financial services regulators had conceded that the existing regulatory framework might be inadequate to address issues that relate to the prevention of a systemic crisis. Post-mortem analysis of the crisis revealed that the unethical and unwarranted risky behaviour of investment professionals and key executives in some financial institutions had contributed to the loss in confidence and a breakdown of the financial system. There were suggestions that the proposed regulatory reform could benefit from insights drawn from work on behavioural finance (De Bondt, 2010; Avgouleas, 2009). This was because financial regulation had largely ignored investor psychology in the oversight of the financial services sector.

Uppermost in the proposed reform measures was in relation to compensation policies aimed at discouraging investment professionals and financial executives from taking excessive risks, as this issue had been widely criticised as a cause of the financial crisis. In July 2010, the United States passed the Wall Street Reform and Consumer Protection Act that, among others, addressed executive compensation and corporate governance practices. In December 2010, the Committee of European Banking Supervisors finalised

rules that required 40% to 60% of the variable pay of bank executives to be deferred for three to five years and at least 50% of the variable to be in stock.

6.4. Contributions of Study

In this study, the link between rationality in investment decision behaviour and the role of experience and emotion was examined. The methodology adopted was a mixed methods research approach, where the quantitative and qualitative data were collected from a survey questionnaire and case studies of selected rogue trading scandals respectively. This study presents three contributions to work in the area of behavioural decision research, with applications for the financial services sector discussed in Section 6.3.

First, the study explored how socio-demographic variables, which could also be used as proxies for experience, affect the level of influence of behavioural biases on investment decisions. Much of the research in behavioural finance had been focused on the disposition and endowment effects. Here, the scope of the biases under study was broadened to include the breakeven, house money, status quo and anchoring effects. These were also observed investment behaviour that could be explained by prospect theory. Socio-demographic variables that were consistently significant in more than one bias could be viewed as important predictors.

Second, the design of the survey categorised the respondents into two distinct subgroups, i.e. investment professionals and retail investors. The study also examined the similarities and differences in the relationship between the socio-demographic

variables and behavioural biases within these two subgroups. The findings would add to existing literature on the effect of investor sophistication in decision behaviour.

Third, and most interesting, was that the findings provided additional insights to the work conducted by Gachter, Johnson and Herrmann (2007) on the effect of loss aversion in riskless and risky choice tasks. The results in this study showed that the value of learning and experience in managing the effects of biases could be dependent on the risk level of the choice task. The findings could be used to facilitate efforts to incorporate behavioural aspects in management of risks by regulators and financial intermediaries. The results also lend support to risk-as-feelings hypothesis by Loewenstein et al. (2001).

6.5. Limitations of Study and Directions for Future Research

There were limitations in this study that would need to be considered when interpreting the findings.

- i. Given the cross-sectional nature of the survey data, conclusions on the impact of the socioeconomic and demographic variables on investment decision behaviour would be limited. For example, the researcher would not be able to establish causal links regarding the role of experience on decision-making behaviour. Rather, the relationship between experience and investment behaviour could be the result of other factors associated with experience.
- ii. The findings could not be generalised beyond the cases in the sample. The snowball sampling technique was highly dependent upon the social networks of the respondents, giving rise to the risk that the sample might not represent the

target population. For example, for the variable ethnicity, both Bumiputras and Indians were under-represented compared with national statistics.

- iii. The dichotomous nature of a majority of the response choices presented might have implied that there was a right and wrong answer. Hence, the respondents might have chosen what they considered to be the acceptable answer rather than be truthful. As a precautionary measure, the questionnaire was designed to check for consistency of responses for each bias under study.

This study offered some future research directions; where research that involved investment professionals could have implications for the financial services sector with regard to risk management and regulatory reform. One research possibility could be to study a panel of investors over a period of time in order to examine the shifts in investment behaviour and the factors that influence it. A data set that captured the conduct of decision-making over time might provide insights into the macroeconomic factors and environmental influences that affect investor behaviour.

Another research possibility could be to explore in greater detail, ethnic differences in investor behaviour. Currently, cultural comparisons in investment behaviour were with respect to country studies (Sowinski, Schnusenberg & Materne, 2010; Chen et al., 2007; Toshino & Suto, 2005) with reference to findings of studies conducted in the United States. The multi-cultural and multi-ethnic communities in Malaysia present a unique opportunity to conduct such a cross-cultural study.

A third research project could be to examine the correlation of biases at an intra-personal level. Such a study would offer some insight into the profile of investors who

might be prone to two or more behavioural biases at the same time. The data from the survey questionnaire can support this research.

Last but not least, there are many categories of investment professionals, and each category would possess different job responsibilities, skills and qualifications. In this study, investment professionals had been categorised into dealer/trader, remisier, fund manager, investment adviser and financial analyst. A study on the effect of behavioural biases on the different categories of investment professionals would throw some light on the decision-making process among investment professionals.