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Applicability of Prospect Theory in Investor Decision Making

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ABSTRACT

Investors usually show two types of behaviour, risk seeking, and risk aversion while making investment decisions. This main focus of this study is to test two hypotheses based on prospect theory proposed by Daniel Kahneman and Amos Tversky in 1979, which says that investors value gains and losses differently, where they avoid risk in favourable outcomes and take a risk when they are losing. Further, the feeling of pain due to a loss is two to three times greater than the joy felt from an equivalent gain. We collected primary data with the use of a questionnaire, collated from 110 responses to determine if an investor becomes risk-averse when making profits and risk-seeking when making losses. Our empirical results reveal that 46.43 percent of female respondents are risk-seeking when making losses and 75 percent of female respondents are risk-averse when making profits. Further, we observed 46.34 percent of male respondents are risk-seeking when making losses and 76.83 percent of male respondents are risk-averse when making profits. This study concludes that across all age groups, respondents are dominantly risk-averse.

JEL Classification: C83, G41, D81.

Keywords: Prospect theory, risk-seeking, risk-averse, efficient market hypothesis.

1. INTRODUCTION

Behavioural finance is a new field in finance that incorporates behavioural and psychological theory with economics and finance to answer the irrational behaviour of investors. Behavioural economists believe that individuals are not rational as thought by the classical school. Weber (1999) says that behavioural finance takes knowledge from both psychology and finance, to explain the behaviour of individuals and market

imperfections. It identifies and gives strategies to overcome biases exhibited by investors. Olsen (1998) said behavioural finance applies psychological and economic principles to improve financial decision-making. Numerous studies point to market anomalies not explained by the standard financial theory, like abnormal price movement in IPOs, mergers and stock splits. These anomalies indicate that principles of rational behaviour underlying the efficient market hypothesis are not totally correct, and other models of human behaviour should be looked at, Campbell and Shiller (1998). Human decisions are subject to various cognitive illusions. These illusions can be grouped into two: illusions within the prospect theory, such as isolation effect, in which value is assigned to gains and losses rather than to final assets and probabilities are replaced by decision weights and the illusions within the heuristic decision process, they are mental shortcuts that commonly focus on one aspect of a complex problem while ignoring the other.

Eugene Fama (1970) stated that “it is impossible to beat the market as all the information relating to a firm is reflected in its stock prices. It is therefore said that there can neither be any undervalued stocks nor can the trends of the market be predicted. Baumol et. al., (1973), explains that EMH is associated with random walk theory, which says that new information will immediately be reflected by the market and a particular day’s events affect the market that day. As the nature of news is unpredictable, the market being affected is also unpredictable.

Most analysts use the technical analysis method to analyse stock price movements based on past data. It is observed that stock prices do show a trend in their movements and hence investors have made profits by using this method. One of the major possibilities ignored by EMH is that investors are prone to biases. Investors are considered to be rational, according to EMH, while making their investments and are expected to understand the information they receive. Even with all information made available, the sentiment of the investor while investing determines stock prices. This anomaly is addressed in detail by psychologists studying behavioural finance. Investors under-react and over-react to news (Shleifer, 2000; Barber & Odean, 2000), follow herd-mentality, come to conclusions about why profits were made previously etc.

2. PROSPECT THEORY

The research paper on ‘Prospect Theory’ by Daniel Kahneman and Amos Tversky which was published in *Econometrica* in 1979, Kahneman and Tversky gave insights about how and why people and markets are irrational. However, unlike expected utility theory which is concerned with how decisions are made under uncertainty, prospect theory pertains to investors’ preferences with respect to the choices that have an uncertain outcome like gambling. A classic example is the St. Petersburg paradox by *Daniel Bernoulli*, by taking into account only the expected value as the only decisions criterion, the decision maker will be misguided into an irrational decision. Prospect theory concerns itself with how decisions are made which is a descriptive approach. The expected utility theory assumes that what matters is only what is regarded as the final outcome and not the intermediate stages which are the gains and losses made to reach the final outcome. It also assumes that the description of an option does not determine the choice and assumes the decision maker to be perfectly rational.

Prospect theory says people choose options that have outcomes that are certain rather than options that are just probable. The research conducted by Kahneman and Tversky shows that people become risk-averse when they make profits and become risk-seeking while they make losses.

3. LITERATURE REVIEW

The anomalies in Efficient Market Hypothesis (EMH) and other theories like CAPM allowed psychologists and academics to study why there is an irrational behaviour in financial markets. Behavioural finance is a field of study where behaviour and cognitive psychological theory with economics and finance help us to understand why people are irrational in investing decisions. Behavioural finance tries to explain individual actions and why individuals do things in the way they do. Papers like Judgment under uncertainty: Heuristics and biases by Daniel Kahneman and Amos Tversky (1979) explain how and why investors are irrational. Fooled by Randomness by Nassim Nicholas Taleb (2008) explains how people cannot accept random events, which mostly describes cause and effect of various events occurs in their daily lives. They tend to find solutions for them and behave like experts after the event has taken place.

A number of researchers have reported Expected Utility Theory that the decision maker compares the expected utility values of risky and uncertain prospects before choosing between them (Mongin 1997). One of the authors has argued that expected utility theory has been studied usually in relation to completeness. However here, expected utility theory has been proved to account for incomplete preference in the context of lotteries by modifying it (Dubra et. al., 2004). Another study extended theory incorporating the effects of anticipatory emotions on decision making under uncertainty (Caplin & Leahy 2001). A view added by (Cyert & Simon, 1983) is that if the decision maker has alternatives to choose from, then he will choose the option that will maximize the expected value of his utility function for the risk he has taken.

Behavioral finance says investors are loss-averse and not risk-averse. Barberis Huang (2001) attempted to incorporate loss aversion into the utility functions. They speak about how mental accounting affects the perception of loss or gain in investors' minds and its relation to individual stocks. In the light of gambling, one of the studies found that people were willing to take a gamble if they had previously won the money than if they had lost money. The study had implemented Biswanger's Lottery with an added gains and losses competent. The overall distribution of risk class was intermediate risk aversion, followed by severe and moderate risk aversion (Sengupta, 2011). It also revealed that losses are less painful if they occur after prior gains and more painful after prior losses (Thaler and Johnson 1990). Another behavioural analyst states that the individual investors exhibit stronger behavioural biases when stocks are harder to value and when market level uncertainty is higher (Kumar, 2009). The behavioural thesis was against the rational asset pricing hypothesis (Chan et. al., 2000).

Several attempts have been made to study the behaviour of analyst, agent and people towards information and it was found that professional analysts under-react to negative information, but overreact to positive information (Easterwood & Nutt 1999), while another study showed that people are only on the lookout for new information that can tie-in with what they have already hypothesised about (Rabin 1998). Lichtenstein, Fischhoff & Philips (1977) explained that people over-estimate themselves and are over-confident when the analysis they make pays off. Bernardo & Welch (2001) studied overconfident individuals who can be prospect entrepreneurs, which has relation to economic principles. Statman (2002) observes that people link investments to a goal and assign risk tolerance to a particular goal instead of the entire portfolio, which is called compartmentalization.

Few researchers have studied investors and traders and found a variety of results. Massa & Simonov (2002) explain how investors react to prior gains/losses. They distinguish between loss aversion and

mental accounting and no evidence is found for narrow accounting as investors consider wealth in its entirety and risk taking in the financial market is affected by gains/losses in overall wealth. Grinblatt & Han (2005) say that when investors hold on to losing stocks, it creates a spread between the stocks intrinsic value and its equilibrium price. Change in fundamental values will generate predictable equilibrium prices as momentum, which helps in measuring the degree of loss. Coval & Shumway (2005) in their paper say that the traders appear highly loss-averse, regularly assuming above average afternoon risk to recover from morning losses. This behavior is important for short term consequences, as losing traders actively purchase contracts at higher prices and sell contracts at lower prices than those prevailed previously.

Fama and French, in 1988 have shown the correlation with previous stock prices and market efficiency and the impact are seen in the long run. Using formal statistics tools, Campbell and Shiller (1988) showed that the market can be slightly predicted. Shleifer (2000) said that irrational investors will cancel out by one another or get arbitrated by rational investors. Barber & Odean (2001) collected data from a brokerage firm and found that losing stocks were kept for a median of 128 days and winning stocks of 102 days, with an average of 15% gains were realized against 10% of losses.

4. DATA AND SAMPLE

The data used in this study is Primary Data. Respondents were provided with the questionnaire attached at the end of the paper, to which they provided their responses. 110 responses have been collected, using physical paper questionnaire and Google forms. The responses so obtained were analysed by using MS Excel.

5. METHODOLOGY

The responses were divided gender-wise and age-wise. Out of the 110 respondents, there were 28 females and 82 males. Risk-seeking or risk-aversion behaviour of each group was checked based on the responses they gave.

<i>Age</i>	<i>Female</i>	<i>Male</i>	<i>Total</i>
<20	0	0	0
21-30	2	11	13
31-40	11	26	37
41-50	12	21	33
51-60	2	17	19
61-70	1	7	8
	28	82	110

The answers recorded are given weights of Risk-seeking (RS), Risk-averse (RA) and Neutral (N) in case no response is got for a particular answer or if the option was chosen is Neutral.

Questions 1, 3a, 5, 6b, 8b, 10 and 13 measure the risk-seeking behaviour when making losses and questions 2, 3b, 4, 6a, 7a, 7b, 8a, 9, 11, 12 and 14 measure the risk-averse behaviour when making profits. Thus, each respondent's individual risk-seeking or risk-aversion preferences were checked to understand if Prospect Theory applies in their decision making or not. A value of half the sum of a number of questions

per behaviour was used to either assign the respondent as risk-seeking when making losses or risk-averse when making profits, a count of which was taken to arrive at the conclusions.

	<i>Females</i>	<i>Males</i>	<i>Percentage of total Females</i>	<i>Percentage of total Males</i>
Questions 1, 3a, 5, 6b, 8b, 10, 13	13	38	46.43%	46.34%
Questions 2, 3b, 4, 6a, 7a, 7b, 8a, 9, 11, 12, 14	21	63	75.00%	76.83%

6. RESULTS AND CONCLUSION

The null hypotheses considered in this study are as follows:

1. Investors are not risk-seeking when making losses.
2. Investors are not risk-averse when making profits.

The results obtained from the study are that 46.43% (13 out of 28) female respondents are risk-seeking when making losses and 75% (21 out of 28) female respondents are risk-averse when making profits. 46.34% (38 out of 82) male respondents are risk-seeking when making losses and 76.83% (63 out of 82) male respondents are risk-averse when making profits.

It has been observed that across all age groups, respondents are majorly risk-averse. Only the female age-group of 21-30 was outright risk-seeking. It can thus be concluded that Prospect Theory holds true in investors' decision making and investors are risk-seeking when making losses and risk-averse when making profits.

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References

- Barber, B. M., & Odean, T. (2000). Trading Is Hazardous To Your Wealth: The Common Stock Investment Performance of Individual Investors. *The Journal of Finance*, 55(2), 773-806.
- Barberis, N., & Huang, M. (2001). Mental Accounting, Loss Aversion, and Individual Stock Returns. *The Journal of Finance*, 56(4), 1247-1292.
- Baumol, W. J., Heim, P., Malkiel, B. G., & Quandt, R. E. (1973). Efficiency of Corporate Investment: Reply. *The Review of Economics and Statistics*, 128-131.
- Bernardo, A. E., & Welch, I. (2001). On The Evolution of Overconfidence and Entrepreneurs. *Journal of Economics & Management Strategy*, 10(3), 301-330.
- Brunel, J. L. (2003). Revisiting the Asset Allocation Challenge througha Behavioural Finance Lens. *The Journal of Wealth Management*, 6(2), 10-20.
- Campbell, J. Y., & Shiller, R. J. (1988). Stock Prices, Earnings, And Expected Dividends. *The Journal of Finance*, 43(3), 661-676.
- Caplin, A., & Leahy, J. (2001). Psychological expected utility theory and anticipatory feelings. *The Quarterly Journal of Economics*, 116(1), 55-79.

- Chan, L. K., Karceski, J., & Lakonishok, J. (2000). New Paradigm Or Same Old Hype In Equity Investing?. *Financial Analysts Journal*, 56(4), 23-36.
- Coval, J. D., & Shumway, T. (2005). Do Behavioral Biases Affect Prices? *The Journal of Finance*, 60(1), 1-34.
- Cyert, R. M., & Simon, H. A. (1983). The Behavioral Approach: With Emphasis on Economics. *Systems Research and Behavioural Science*, 28(2), 95-108.
- Dubra, J., Maccheroni, F., & Ok, E. A. (2004). Expected Utility Theory Without The Completeness Axiom. *Journal of Economic Theory*, 115(1), 118-133.
- Easterwood, J. C., & Nutt, S. R. (1999). Inefficiency In Analysts' Earnings Forecasts: Systematic Misreaction or Systematic Optimism? *The Journal of Finance*, 54(5), 1777-1797.
- Fama, E. F. (1970). Efficient Capital Markets: A Review of Theory and Empirical Work. *The Journal of Finance*, 25(2), 383-417.
- Fama, E. F., & French, K. R. (1988). Dividend Yields and Expected Stock Returns. *Journal Of Financial Economics*, 22(1), 3-25.
- Grinblatt, M., & Han, B. (2005). Prospect Theory, Mental Accounting, and Momentum. *Journal of Financial Economics*, 78(2), 311-339.
- Kahneman, D., & Tversky, A. (1979). Prospect Theory: An Analysis of Decision under Risk. *Econometrica: Journal of the Econometric Society*, 263-291.
- Kumar, A. (2009). Hard-To-Value Stocks, Behavioral Biases, and Informed Trading. *Journal of Financial and Quantitative Analysis*, 44(6), 1375-1401.
- Lichtenstein, S., Fischhoff, B., & Phillips, L. D. (1977). Calibration of Probabilities: The State Of The Art. In *Decision Making and Change in Human Affairs* (Pp. 275-324). Springer Netherlands.
- Massa, M., & Simonov, A. (2005). Behavioral Biases and Investment. *Review of Finance*, 9(4), 483-507.
- Mongin, P. (1997). Expected Utility Theory. *Handbook of Economic Methodology*, 342-350.
- Olsen, R. A. (1998). Behavioral Finance and Its Implications for Stock-Price Volatility. *Financial Analysts Journal*, 54(2), 10-18.
- Rabin, M. (1998). Psychology and Economics. *Journal of Economic Literature*, 36(1), 11-46.
- Sengupta, K. (2011). Risk Aversion in Rural India. *Risk*, 1, 1.
- Shleifer, A. (2000). *Inefficient Markets: An Introduction to Behavioral Finance*. Oxford University Press.
- Statman, M. (2002). Lottery Players/Stock Traders. *Financial Analysts Journal*, 58(1), 14-21.
- Taleb, N. N. (2008). *Foiled By Randomness: The Hidden Role Of Chance In Life And In The Markets*, 2005. Updated Edition (October 14, 2008) Random House-ISBN-13, 978-1400067930.
- Thaler, R. H., & Johnson, E. J. (1990). Gambling With the House Money and Trying To Break Even: The Effects of Prior Outcomes on Risky Choice. *Management Science*, 36(6), 643-660.
- Weber, E. U., & Hsee, C. K. (1999). Models and Mosaics: Investigating Cross-Cultural Differences in Risk Perception and Risk Preference. *Psychonomic Bulletin & Review*, 6(4), 611-617.