

BEHAVIOURAL FINANCE STUDIES: EMERGENCE AND DEVELOPMENTS

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Abstract

Behavioural finance is a new area of research which recognizes the psychological element in financial decision making and thus challenges the traditional theories of finance and economics. The purpose of this paper is to highlight the developments in the area of behavioural finance and the building blocks upon which this area is build upon. The paper starts with an introductory remark of behavioural finance then discusses about the history of behavioural finance studies, the building blocks of behavioural finance, Criticisms of behavioural finance and arguments in favour of behavioural finance and finally the paper ends up with a conclusion that a combination of conventional theories with the theories and researches in the area of behavioural finance should be considered for better and effective decision making in the area of finance.

Key words: *Investor Rationality, Arbitrage, Market Efficiency, Risk, belief, Psychology.*

INTRODUCTION

The traditional theories on Finance and Economics assume that investors are rational being. But there are instances that this is not always true. Most of the time human being is governed not by the rationality but by its emotions. Gradually there is a development of new area of financial research which has started to recognize a psychological element in financial decision making and thus challenging the traditional models that assume investors will always weigh risk/return factors rationally and act without bias. This emerging area of research is started to be called as 'Behavioural Finance'. The premise of behavioral finance states that by taking psychological factors into account the effectiveness of investment strategies can be enhanced (Singh, R., 2009).

This area of enquiry is also sometimes referred to as "behavioural economics". So, Behavioural finance combines the twin disciplines of psychology and economics to explain why and how people make seemingly irrational or illogical decisions when they spend, invest, save, and borrow money.

HISTORY OF BEHAVIOURAL FINANCE STUDY

During the classical period, economics had a close link with psychology. For example, Adam Smith wrote an important text describing psychological principles of individual behaviour and Jeremy Bentham wrote extensively on the psychological underpinnings of utility. Economists began to distance themselves from psychology during the development of neo-classical economics as they sought to reshape the discipline as a natural science, with explanations of economic behaviour deduced from assumptions about the nature of economic agents. The concept of homo economicus was developed and the psychology of this entity was fundamentally rational. Nevertheless, psychological explanations continued to inform the analysis of many important figures in the development of neo-classical economics such as Francis Edgeworth, Vilfredo Pareto, Irving Fisher and John Maynard Keynes (www.behaviouralfinance.net).

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Psychology had largely disappeared from economic discussions by the mid 20th century. A number of factors contributed to the resurgence of its use and the development of behavioural economics. Expected utility and discounted utility models began to gain wide acceptance which generated testable hypotheses about decision making under uncertainty and intertemporal consumption respectively. Furthermore, during the 1960s cognitive psychology began to describe the brain as an information processing device (www.behaviouralfinance.net).

Perhaps the most important paper in the development of the behavioural finance and economics fields was written by Kahneman and Tversky in 1979. This paper, 'Prospect theory: Decision Making under Risk', used cognitive psychological techniques to explain a number of documented anomalies in rational economic decision making.

BUILDING BLOCKS OF BEHAVIOURAL FINANCE

This is the field of study that uses the psychology-based theories to explain stock market anomalies. In behavioural finance, it is assumed that the information structure and the characteristics of market participants systematically influence individuals' investment decisions as well as market outcomes. The field of behavioural finance is built upon two important building blocks (Singh, R., 2009). These are [1] Limits to Arbitrage and [2] Psychology. These are explained in the following paragraphs in detail.

1 Limits to Arbitrage

In economics and finance, arbitrage is the practice of taking advantage of a price differential between two or more markets. When used by academics, an arbitrage is a transaction that involves no negative cash flow at any probabilistic or temporal state and a positive cash flow in at least one state; in simple terms, a risk-free profit. A person who engages in arbitrage is called an arbitrageur such as a bank or brokerage firm. The term is mainly applied to trading in financial instruments, such as bonds, stocks, derivatives, commodities and currencies. If the market prices do not allow for profitable arbitrage, the prices are said to constitute an arbitrage equilibrium or arbitrage-free market. Arbitrage equilibrium is a precondition for a general economic equilibrium. The assumption that there is no arbitrage is used in quantitative finance to calculate a unique risk neutral price for derivatives (Shleifer, A. & Vishny, R., 1997).

But it is seen that there are some limits to arbitrage in making equity investment decisions. The limits to arbitrage can be explained under the following heading:

1.1 Market Efficiency

In the traditional finance paradigm where agents are rational, security prices equal fundamental value. This is the discounted sum of expected future cash flows, where the expectation is taken over the correct distribution and where the discount rate is consistent with a normatively acceptable preference specification. Traditional Financial theories say that whenever there is any deviation of the price from the fundamental price caused by the less rational traders it will be corrected by the rational traders. The experts in behavioural finance argue that it is not the case. When the asset is mispriced the strategy designed to correct this may be seems to be very risky and may make the stock unattractive (Barber, B. M. & Odean, T., 1999).

1.2 Theory

In the previous section, the idea has been emphasized that when a mispricing occurs, strategies designed to correct it can be very risky, allowing the mispricing to survive. Here we discuss four sources of risk that have been identified in the literature:

[a] Fundamental Risk: The most obvious risk that an arbitrageur faces, who buys any stock at any price, is that a price of bad news about stock's fundamental value causes the stock to fall further, leading to losses. Of course, arbitrageurs are well aware of this risk, which is why they short a substitute security at the same time that they buy. The problem is that substitute securities are rarely perfect, and often highly imperfect, making it impossible to remove all the fundamental risk (Robert M., 1987).

[b] Noise Trader Risk: Noise trader risk is the risk that the mispricing being exploited by the arbitrageur worsens in the short run. Even if some other security is a perfect substitute security for the first stock, the arbitrageur still faces the risk that the pessimistic investors who caused first one to be undervalued in the first place become even more pessimistic, lowering its price even further. Once one has granted the possibility that a price can be different from its fundamental value, then one must also grant the possibility that future price movements will increase the divergence. The reason for the importance of noise risk is because of the fact that most of the arbitrageurs have short range horizons rather than long term horizon because they are portfolio managers and the investors will evaluate them based on their performance. So if in the short run they are incurring losses inspite of the fact that they may have very good strategy for the long run, the investors will think them as incompetent and start withdrawing their money. Far from being able to wait out the short term losses, the arbitrageur may be forced to liquidate prematurely, just at the time when investment opportunities are at their most attractive. Fear of such premature liquidation makes him act as if his horizon is short (Long D. et al., 1990).

[c] Implementation Costs: The strategies needed to exploit mispricing are often far from trivial to put in place. There are many difficulties related to selling securities short, which is what the arbitrageur must do if he is to avoid fundamental risk. Finally, the "implementation costs" category also includes the generic transaction costs arbitrageurs face when implementing strategies, such as commissions or bid-ask spreads (Robert M., 1987).

[d] Model Risk: One final reason why arbitrage may be limited is that even once a mispricing has occurred, arbitrageurs will often still be unsure as to whether it really exists or not. One way to think about this is to imagine that in their search for attractive opportunities, arbitrageurs rely on a model of fundamental value, which tells them, for instance, that the fundamental value of Reliance Industries Limited (RIL) is close to Rs. 2000. If noise traders push RIL's price down to Rs. 1500, the model will signal a possible mispricing. However, the arbitrageur cannot be sure that RIL is mispriced. It is also possible that it is his model that is wrong, and that the stock is in fact correctly priced at Rs. 1500. This source of uncertainty, which we label model risk; will also limit the arbitrageur's position. In contrast, then, to straightforward-sounding textbook arbitrage, real world arbitrage is quiet different and challenging. That is why; it is argued that it can be difficult for rational traders to undo the dislocations caused by less rational traders (Robert M., 1987).

1.3 Evidence

From the theoretical point of view, there is reason to believe that arbitrage is a risky process and therefore, it is only of limited effectiveness. But is there any evidence that arbitrage is limited? In principle, any example of persistent mispricing is immediate evidence of limited arbitrage. If arbitrage were not limited, the mispricing would quickly disappear. The problem is that while many pricing phenomena can be interpreted as deviations from fundamental value, it is only in a few cases that the presence of a mispricing can be established beyond any reasonable doubt. The reason for this is what Fama (1970) dubbed "the joint hypothesis problem." In order to claim that the price of a security differs from its properly discounted future cash flows, one needs a model of "proper" discounting. Any test of mispricing is therefore inevitably a joint test of mispricing and of a model of discount rates, making it difficult to provide definitive evidence of inefficiency. In spite of this difficulty, it turns out that there are a number of financial market phenomena that are almost certainly mispricing, and persistent ones at that (Fama, 1970).

2 Psychology

The theory of limited arbitrage shows that if irrational traders cause deviations from fundamental value, rational traders will often be powerless to do anything about it. In order to say more about the structure of these deviations, behavioral models often assume a specific form of irrationality. For guidance on this, behavioral economists turn to the extensive experimental evidence compiled by cognitive psychologists on the biases that creep in when people form beliefs, and on people's preferences. In this section, the psychology that may be of particular interest to financial economists has been summarized.

2.1 Beliefs

The relationship between belief and knowledge is subtle. Believers in a claim typically say that they *know* that claim. Mainstream psychology and related disciplines have traditionally treated belief as if it were the simplest form of mental representation and therefore one of the building blocks of conscious thought. Philosophers have tended to be more rigorous in their analysis and much of the work examining the viability of the belief concept stems from philosophical analysis. The following points need to be considered under this heading:

[a] Overconfidence: Extensive evidence shows that people are overconfident in their judgments. This appears in two guises. First, people are poorly calibrated while estimating probabilities. Events they think are certain to occur actually occur only 80% of the time, and events they deem impossible occur 20% of the time. Second, the confidence intervals people assign to their estimates of quantities, the level of the Dow in a year, say are far too narrow. Their 98% confidence intervals, for example, include the true quantity only 60% of the time (Shafir, E. and Tversky A, 1992).

[b] Optimism and Wishful Thinking: Most people display unrealistically rosy views of their abilities and prospects. Typically over 90 percent of those surveyed think they are above average in such domains as driving skill, ability to get along with people, and sense of humor. They also display a systematic planning fallacy. They predict that tasks (such as writing survey papers) will be completed much sooner than is actually realized. Investors and analysts are particularly overconfident in areas where they have some knowledge. However, increasing levels of confidence frequently show no correlation with greater success. For instance, studies show that men consistently overestimate their own abilities in many areas including athletic skills, abilities as a leader, and ability to get along with others. Money managers, advisors, and investors are consistently overconfident in their ability to outperform the market; however, most fail to do so. Gur Huberman of Columbia University recently found that investors strongly

favor investing in local companies that they are familiar with. Specifically investors are far more likely to own their local regional Bell Company than the other regional Bells. The study provides evidence that investors prefer local or familiar stocks even though there may be no rational reason to prefer the local stock over other comparable stocks that the investor is unfamiliar with.

[c] Representativeness: Kahneman and Tversky (1974) argue that when people try to determine the probability that a data set A was generated by a model B, or that an object A belongs to a class B, they often use the representativeness heuristic. This means that they evaluate the probability by the degree to which A reflects the essential characteristics of B. Much of the time, representativeness is a helpful heuristic, but it can generate some severe biases. The first is base rate neglect.

[d] Conservatism: While representativeness leads to an underweighting of base rates, there are situations where base rates are over-emphasized relative to sample evidence. In an experiment run by Edwards (1986), there are two urns, one containing 3 blue balls and 7 red ones, and the other containing 7 blue balls and 3 red ones. A random draw of 8 balls from one of the urns (with replacement) yields 8 reds and 4 blues. What is the probability the draw was made from the first urn? While the correct answer is 0.97, most people estimate a number around 0.7, apparently overweighting the base rate of 0.5.

[e] Confirmation Bias: Once people have formed a hypothesis, they sometimes misread additional evidence that goes against them as actually being in their favor. They will therefore believe in their hypothesis even when contradicted by new data. In a way, this bias is related to conservatism. In both cases, insufficient attention is paid to new data. For example, if people start out believing in the Efficient Markets Hypothesis, they may continue to believe in it long after compelling evidence to the contrary has emerged (Fox, Craig, and Amos Tversky, 1995).

[f] Anchoring: In forming estimates, people often start with some initial, possibly arbitrary value, and then adjust away from it. Experimental evidence shows that the adjustment is often insufficient. Put differently, people "anchor" too much on the initial value. In one experiment, subjects were asked to estimate the percentage of African countries belonging to the United Nations. More specifically, before giving a percentage, they were asked whether their guess was higher or lower than a randomly generated number between 0 and 100. Their subsequent estimates were significantly affected by the initial random number. Those who were asked to compare their estimate to 10, subsequently estimated 25%, while those who compared to 60, estimated 45% (Robert Shiller, 2000).

2.2 Preferences

The following are the sub-heading which needs to be considered under this head:

[a] Prospect Theory: Tversky and Kahneman originally described "Prospect Theory" in 1979. They found that contrary to expected utility theory, people placed different weights on gains and losses and on different ranges of probability. They found that individuals are much more distressed by prospective losses than they are happy by equivalent gains. Some economists have concluded that investors typically consider the loss of \$1 dollar twice as painful as the pleasure received from a \$1 gain. They also found that individuals will respond differently to equivalent situations depending on whether it is presented in the context of losses or gains. Here is an example from Tversky and Kahneman's 1979 article. Researchers have also found that people are willing to take more risks to avoid losses than to realize gains. Faced with sure gain, most investors are risk-averse, but faced with sure loss, investors become risk-takers.

[b] Ambiguity Aversion: This experiment suggests that people dislike subjective or vague uncertainty more than they dislike objective uncertainty, a finding often labeled "ambiguity aversion". Ambiguity can be defined as a situation where information that could be known, is not the proportion of red and blue balls, in our example. Subsequent work has uncovered reliable evidence of ambiguity aversion in more realistic settings where people bet on events such as the outcome of a football match. Ambiguity aversion is particularly strong in cases where people feel that their competence in assessing the relevant probabilities is low (Heath, Chip and Tversky, 1991). This effect can be strengthened further by reminding subjects of their incompetence, either through comparison with other bets in which they have more expertise, or by comparison with other people who are more qualified to evaluate the bet (Fox, Craig and Tversky, 1995).

It catalogues the kinds of deviations from full rationality we might expect to see. These two topics lead to a number of behavioral finance applications: to the aggregate stock market, to the cross-section of average returns, to individual trading behavior, and to corporate finance (Fama, 1998).

CRITICISMS OF BEHAVIOURAL FINANCE

The following points can be highlighted as the criticisms of Behavioural Finance

- 1. Collection of Anomalies:** Critics of behavioural finance, such as Eugene Fama, typically support the efficient market theory (though Fama may have reversed his position in recent years). They contend that behavioural finance is more a collection of anomalies than a true branch of finance and that these anomalies will eventually be priced out of the market or explained by appeal to market microstructure arguments (Fama E.F. and Macbeth JD, 1973).
- 2. Inapplicable to Market Situations:** Critics of behavioural economics typically stress the rationality of economic agents. They contend that experimentally observed behaviour is inapplicable to market situations, as learning opportunities and competition will ensure at least a close approximation of rational behaviour (Fama E.F. and Macbeth JD, 1973).
- 3. Limitations of Experimental and Survey Based Techniques:** Traditional economists are also skeptical of the experimental and survey based techniques which are used extensively in behavioural economics. Economists typically stress revealed preferences, over stated preferences (from surveys) in the determination of economic value (Myagkov M. and Plott C R, 1997).
- 4. Weak Empirical Evidence:** Chicago finance professor Eugene Fama (1998), for example, argues that the empirical evidence is weak, they don't have a coherent theory and without that, there is no behavioural finance. Until we find something that can replace the theory of efficient markets with a systematic alternative theory, we don't have anything.
- 5. Too Much Emphasis on Individual Irrationality:** Peter Bernstein et. al (2004) who devotes two chapters of his bestselling book on risk to the gurus of behavioural finance - whom he calls the 'theory police' - is less dismissive though still critical. 'While it is important to understand that the market doesn't work the way classical models think - there is a lot of evidence of herding, the behavioural finance concept of investors irrationally following the same course of action – and one can't do anything with that information to manage money.
- 6. More Weightage on Attitude than an Investment System:** Certainly, it is true that there is no behavioural equivalent of the CAPM, and while markets obviously do not work as the strong versions of the EMH suggest, it can be difficult to see how a behavioural approach can be used to manage money. Perhaps behavioural finance is more of an attitude than an

investment system; a helpful check at potential turning points but not an everyday guide (Grinblatt M. and Han B, 2005).

ARGUMENTS IN FAVOUR OF BEHAVIOURAL FINANCE

The following are the arguments which are put forward by the supporters of behavioural finance:

1. Absence of a Behavioural CAPM: Richard Thaler (2000) comments “Regarding the absence of a behavioural CAPM, I think the two camps are equally at a loss. We know from the work of Fama and his colleague Kenneth French that the rational CAPM is false, so neither side has a complete theory. Several recent papers have tried to develop behaviorally based theories of asset pricing and while they are not the final word, they are better than nothing”. This statement itself can be put forward in favour of behavioural finance and it highlights the need for development of the subject.

2. Validity of Efficient Market Hypothesis and Investor Rationality is Questionable: As to whether one can make money using investor irrationality, a similar question can be asked that what else can one do. The only investment strategy consistent with rational efficient markets is indexing, and it is known that if everyone indexes, the markets are no longer efficient. Any active management strategy that has a chance of being successful must rely either on better information or on an understanding of why other investors are producing mispriced securities. The one strategy that everyone seems to agree has worked well for a very long period of time is value – buying, low price-to-earnings (P/E) or price-to-book (p/b) stocks. As Fama (1998) have shown, this strategy does well all around the world. It can be said to be a classic behavioural strategy, first advocated by Benjamin Graham in the 1930s. Time will tell as to whether other behaviorally motivated strategies yield superior long-term returns.

3. Investors Make Systematic Mental Mistakes: Thaler has explained the practical application of his ideas. 'Behavioural biases that affect security pricing can be divided into two classes: non-economic behaviour, for example, when agents do not maximize the expected value of their portfolio because they are maximizing other behavioural factors; and heuristic biases. Heuristics are mental shortcuts or rules-of-thumb, which people use to solve complex problems. But in some instances, reliance on heuristics can result in biased or mistaken judgments. Such biases can cause investors to make systematic mental mistakes in evaluating new information and forming expectations about the future prospects of firms. By focusing on behavioural factors that cause the market's expectations to be biased, one can successfully identified mispriced securities and generated above normal returns for his clients. There are developed strategies for exploiting the heuristic biases that cause over- and under-reaction to information. Because the heuristics are different, these strategies identify different types of stocks and, as a result, different portfolio characteristics. 'For example, ones growth portfolios capitalize on anchoring bias that, under certain circumstances, causes investors to under react to new, positive information. As a result, the market's expectations are biased concerning the future profitability of these companies and their stocks tend to be underpriced. This strategy typically selects stocks that have 'growth' characteristics. 'Our value portfolios capitalize on heuristic biases associated with representativeness and saliency. Reliance on these heuristics causes investors to overreact to bad, but temporary, information concerning the profitability of companies. In such cases, the market naively extrapolates the recent temporary negative news concerning a company, resulting in biased expectations of the companies' future prospects and these stocks tend to be underpriced. This strategy typically selects stocks with 'value' characteristics. (Shiller, R. J, 1989)

CONCLUSION

The analysis of investor psychology is having a growing impact on both investment research and practice as it seeks to expose and explain the shortcomings of modern financial theory problems in the models used to price stocks and the difficulties of making sense of market anomalies. It is an important dimension of investment and almost all investors consciously or unconsciously take it into account though they call it different things. The new directions of behavioural finance are being pushed toward biological metaphors by researchers. It is expected that if purely mechanical number computation fails to give us useful models, perhaps the complex biological functions will (Singh, R. and Bhowal, A., 2007). The lesson from the literature surveyed here, and the list of varied behavioural phenomena, is not that "anything can happen" in financial markets. Indeed, while the behavioural theories have much latitude for interpretation, when they are combined with observations about behaviour in financial markets, they allow us to develop theories that do have some restrictive implications. Moreover, conventional efficient markets theory is not completely out the window. Doing research in the area of behavioural finance does not imply that the conventional theories should be abandoned but a combination of both should be developed and conventional theories should be accepted as the workhorse for the sensible research if used appropriately.

References

- Barber, B. M. & Odean, T. (1999). The Courage of Misguided Convictions, *Financial Analysts Journal*, November/December.
- Bernstein, P et al. (2004), We Saw It All Along. Visual Hindsight Bias in Children and Adults, *Psychological Science*.
- De Long J, Bradford, Andrei S. Lawrence H & Robert W, (1990), Noise Trader Risk in Financial Markets', *Journal of Political Economy*, Issue 98.
- Edwards, W. (1986). Conservatism in Human Information Processing in B. Kleinmütz (ed.), *Formal Representation of Human Judgment*, New York: John Wiley and Sons.
- Fama E.F. and Macbeth JD (1973), Risk, Return, and Equilibrium: Empirical Tests. *The Journal of Political Economy*.
- Fama, E. F. (1970). Efficient Capital Markets: A Review of Theory and Empirical Work. *Journal of Finance* Issue No. 25, 383-417.
- Fama, E. F. (1998). Market efficiency, long-term returns, and behavioral finance, *Journal of Financial Economics*, Issue No. 49, 283-307
- Fox, Craig & Tversky, A. (1995). Ambiguity Aversion and Comparative Ignorance, *Quarterly Journal of Economics*, Issue No. 110, 585-603.
- Grinblatt, M. and Han B (2005), Prospect Theory, Mental Accounting, and Momentum, *Journal of Financial Economics*.
- Heath, Chip & Tversky (1991), "Preference and Belief: Ambiguity and Competence in Choice under Uncertainty", *Journal of Risk and Uncertainty*, Issue 4, 5-28
- http://www.en.wikipedia.org/wiki/Behavioral_economics, accessed on November 13, 2006 at 2130 hrs
- <http://www.businessweek.com/1997/39/b3546141.htm> accessed on November 11, 2006 at 1930 hrs
- http://www.columbia.edu/cu/business/faculty/directory/hub_gu.html> accessed on November 11, 2006 at 1900 hrs
- <http://www.e-elgar.co.uk/> accessed on November 10, 2006 at 2010 hrs
- http://www.psych.cornell.edu/Psychology/research/Gilovich_Research/, accessed on November 12, 2006 at 2030 hrs
- Kahneman, D & Tversky, A. (1979). "Prospect Theory: An Analysis of Decision Making Under Risk," *Econometrica*, Issue No. 47, 263-291

- Kahneman, D. & Tversky, A. (1974). "Judgment under uncertainty: Heuristics and Biases", Science, Issue No. 185, 1124-1131
- Myagkov, M. and C.R. Plott, (1997), Economies and Loss Exposure: Experiments Exploring Prospect Theory and Competitive Equilibrium, The American Economic Review.
- Robert M (1987). A Simple Model of Capital Market Equilibrium with Incomplete Information, Journal of Finance, Issue No. 42, 483-510.
- Shafir, E. & Tversky, A. (1992). Thinking through Uncertainty: Non consequential Reasoning and Choice. Cognitive Psychology, Issue No. 24, 449-474
- Shiller, R. J. (1989). Market Volatility. Cambridge, MA: MIT Press.
- Shiller, Robert (2000), Irrational Exuberance, Princeton University Press.
- Shiller, Robert (2000). Human Behavior and the Efficiency of the Financial System at <http://www.econ.yale.edu/~shiller/> - Robert Shiller's website accessed on November 10, 2006 at 2000 hrs
- Shleifer, A. & Vishny, R. (1997). Limits of Arbitrage, Journal of Finance Issue 52, 35-55
- Singh, R. & Bhowal, A.(2007), "Behavioural Finance-A New Dimension of Study in the Area of Finance", Vanijya, Dibrugarh University Annual Journal of Business Studies, Vol. 17, page 137 – 155
- Singh, R. (2009), "Behavioural Finance-A Kaleidoscopic View", BVIMSR's Journal of Management Research, Vol.1, No. 3, page 313-321
- Singh, R. (2009), "Behavioural Finance-The Basic Foundations", ASBM Journal of Management, Bhubaneswar, Vol 2, No. 1, page 89 – 98
- Thaler, R.H. (2000), From Homo Economicus to Homo sapiens. Journal of Economic Perspectives

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