

## H R Khan: Understanding psychology for responsible financial behaviour

Inaugural address by Shri H R Khan, Deputy Governor of the Reserve Bank of India, at the Interdisciplinary Seminar on *Psychonomics – Understanding the Psychology of Financial Behavior* organised by Maharshi Dayanand College of Arts, Science & Commerce, Mumbai, 6 February 2012.

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1. I thank the organizers of the Golden Jubilee celebrations of the Maharshi Dayanand College of Arts, Science & Commerce, Mumbai for inviting me to deliver the inaugural address at this important seminar. The Interdisciplinary Seminar on Psychonomics: Understanding the Psychology behind Financial Behaviour is indeed a very topical subject and especially when the world is realizing the significance of the import of human psychology in the economic behaviour of the markets. It is not often that one gets an opportunity to share thoughts with an enthusiastic group of students and faculty with diverse educational backgrounds and put forth views on psychology in order to explain economics. Today, particularly in the context of recent financial crisis, it is well-accepted that psychology does influence many economic decisions which defy pure economic theories.
2. As we all know, during the classical period, economics had an established link with psychology. For example, Adam Smith, who is considered as father of economics, in his work on *The Theory of Moral Sentiments*, had described psychological principles of individual behaviour. Jeremy Bentham, founding father of modern utilitarianism ideas, wrote extensively on the psychological aspects of *utility*. Overtime, economists, however, began to distance themselves from psychology as they sought to reshape the discipline as a natural science. By mid-20th century, psychology lost its linkages with economics. In the 1950s, Herbert Simons challenged some of the traits of standard economic model of human behaviour, i.e., unbounded rationality, unbounded will-power and unbounded selfishness. He questioned the idea that people have unlimited information processing capabilities. Rather he propounded the idea of “bounded rationality” to suggest a more realistic conception of problem solving ability of human beings. It was also suggested that human beings struggle to analyse problems objectively as they view them through a “frame” of personal experience often shaped by social and cultural bias. In mid 1960s, Ward Edwards, Amos Tversky and Daniel Kahneman began to compare their cognitive models of decision making under risk and uncertainty to economic models of rational behaviour and this led to resurgence of psychology in economics.
3. The recent global financial crisis caused severe damages to many economies across the globe. Governments and Central Banks had to step in to bailout many financial institutions to protect the systemic stability. Greed and fear played a big role in the way markets behaved much against the lines predicted by the mathematical models. The behavioural economics do succeed in explaining the recent market distortions driven by these two human traits. The greed for huge gains drove financial engineers to innovate and sell complex financial products to unsophisticated investors. As the crisis unfolded stock market reacted sharply and stopped rallying. Fear then took over and accentuated the sell-off instead of encouraging investments at lower prices. I do not intend to dwell on these areas in detail but what I intend to highlight during my brief presentation is to focus on some of the facets of interconnectedness of psychology with economics and how human

behaviour and emotions impact economic decisions. I would also attempt to put forth some of the findings of behavioral finance talking along the contours of mainstream and behavioural economics.

### **Sociology and psychology underpin economics**

4. As we know, in the field of behavioural economics, insights are drawn from psychology and sociology to arrive at explanations for economic phenomena. The main departure of behavioral economics from its mainstream counterpart is that behavioral economics questions the basic tenets of mainstream economics, i.e., the assumption of fully rational agents with purely self-centered preferences. Once these assumptions are relaxed, we are able to answer a lot many questions that do not have clear cut answers in mainstream economics. Behavioral economics is a truly fascinating field and it has been increasingly incorporated within the mainstream framework.

### **Shifts in behaviour of economic agents**

5. A large part of the thinking in finance during the 1970s was dominated by the efficient market hypothesis which stated that markets are always right, decisions of millions of rational investors make the markets the best judge of value of financial products and that price of financial products contains the best possible information about the fundamentals. In this connection, one can refer to Justin Fox, who, in his book titled *The Myth of the Rational Market: A History of Risk, Reward, and Delusion on Wall Street* has eloquently traced the origins of the irrationality of efficient market hypothesis and has explained the events leading to the crumbling of the myth of efficient markets. As we know, with passage of time, anomalies in financial markets and in the behavior economic agents began to crop up. With this there was a growing disquiet over models being used to capture real world events. This gave rise to the search for newer paradigms of thinking so as to explain the behavior of economic agents which differed from what was predicted by standard economic or finance theory. This alternative paradigm explores the psychological models of decision making in contrast to mathematical models and the irrationality of the markets. The new ideas focus on how investors over-react or under-react and end up making irrational decisions based on imperfect data. One such anomaly was the increased and persistent volatility in the stock markets in the developed world. Much of this volatility was unaccounted for. Some observers have, hence, concluded that prices do not necessarily change due to changes in fundamentals but due to “animal spirits” and mass psychology as well.

### **Understanding speculative build up**

#### ***Price-price feedback loop***

6. Another anomaly that caught the attention of academics was the bouts of speculative increase in price of stocks. Speculative build-up of prices could lead to expectation of further increase in prices and this in turn may cause further price increase which is a departure from standard theory. Of course, high prices not supported by fundamentals cannot stay high forever. Once the euphoria dies down, prices fall. This phenomenon has come to be called the *price-price feedback loop*.
7. These feedback loops have long existed and were, for example, experienced during the Tulip mania in Holland during the 1600s, the stock market boom in the early part of 2000s and the housing bubble in the US which mainly contributed to the recent

global financial crisis. A negative feedback loop, i.e., one causing prices to fall could also operate in a similar manner. Professor Robert Shiller points out that even with the feedback loop working it is difficult to find discussions in standard text books. It is possible that people may match increase in price of stocks with previous events leading to a dynamic feedback loop even though fundamentals may not warrant any significant change in prices.

### ***Biased self-attribution***

8. Feedback loops can be explained with yet another principle of psychology called “biased self-attribution”. Individuals may attribute, often misplaced, good happenings to their own ability while bad happenings are passed off as outcomes of bad luck or sabotage. In traditional finance theory, it is possible to argue that large number of sophisticated investors offset the effects of behavior of the non-sophisticated investors, thereby making markets efficient. For instance, when irrational optimist investors buy stocks the sophisticated investor sells stocks and *vice versa*. However, this behavior of sophisticated investors need not always lead to efficient markets. It is possible that sophisticated investors increase the effects of the actions of irrational investors, for instance, by buying stock ahead of irrational investors in anticipation of price increases. This leads to prices of stock being away from their fundamental value, i.e., mispricing.

### ***Arbitrage of asymmetric information***

9. It is seen that mispricing happens in securities for which information is sparse or comes too slowly. Stocks may be mispriced for long periods of time due to a number of reasons and investors trade on information which they believe is superior to information available with anyone else. These could be forecasts or stock specific news. However, it is possible that sometimes even the sophisticated investors interpret the information incorrectly. It is also possible that overconfident investors are able to take advantage of liquidity traders before rational investors, thereby earning higher returns than rational investors. Mispricing can also persist for long periods of time due to other happenings. For instance, if an investor identifies a return pattern statistically, it is difficult for him to know whether other investors have identified and acted upon that pattern or not. Therefore, uncertainty can lead the prices to be away from the true value for long periods of time. In a related point, it is also possible to see why there may be limits to arbitrage due to risks and costs associated with exploiting the arbitrage opportunity.
10. Let us think of a situation in which irrational investors are bearish on a certain stock. This will cause the price of that stock to fall. Standard theory will have us believe that rational investors will sense an opportunity and buy the stock at the lower price shorting a similar stock to hedge the position. Thus, buying of the stock will take the price back to its fundamental value. This exposition of the dynamics of price change is based on the assumption that every mispricing creates an immediate opportunity to make riskless profits. This may, however, not be the case. There may be risks and costs that dissuade taking advantage of arbitrage opportunities. Illustratively, even when the stock price is down due to unwarranted pessimism, rational investors may still face more downside risks to price due to adverse news about the company. Risks to stock prices also arise due to the presence of noise traders who could compel rational traders to liquidate their positions too quickly. In addition, there are transaction costs involved in the process of taking advantage of arbitrage opportunities. These costs could be prohibitively high sometimes and, hence, could deter arbitrage.

## **Impact of level of knowledge on the decision making process**

11. In the context of how level of knowledge influences the decision making process, let us examine the question whether we always include all factors affecting the happening of an event into account before making a decision. Standard economic theory predicts that all factors are considered and that decision is optimal. In practice, however, it appears that we do not. Evidence from psychology suggests that due to the lack of time and cognitive resources, the brain develops rules of thumb to analyze the problems, i.e., people depend on *heuristics*. This works well when applied in appropriate settings; however, applying them in scenarios different from what was initially intended creates biases. One assumption of mainstream economics is that errors are independent across individuals in the sense that the errors of one individual are not affected by or affect the errors of another individual. In the modern world, humans are faced with many decisions at the same time and with cognitive power being limited, heuristics are used to decide. There is obviously no guarantee that these decisions will be optimal even though one could spend more energy to make the optimal decision.

### ***The halo effect***

12. Very often in our lives we tend to appreciate one trait of another person so much that we overlook the other, sometimes, undesirable traits. This is because of what has come to be called the “halo effect”. This effect can be used to analyze the mispricing of stocks. Admittedly, in markets that are efficient, stocks could be good in terms of growth prospects; however, this trait of the stock says nothing about the future risk adjusted returns. Similarly, at times investors are unduly influenced by the halo effect of “eminent” people or people with “star value” inducted into the boards of companies. Thus, if this is the case, it is possible that stocks of certain companies that are growing could be consistently mispriced.

### ***The mental accounts***

13. Let me now briefly turn to the concept of mental accounting. It is a process of coding, categorizing and evaluating economic outcomes. For instance, people are known to make notional mental accounts, i.e., accounts for education of children or savings, etc. Even within investment accounts, there is a safe account designed to provide for the “rainy days” and one account that is typically the risk taking account designed to make money grow faster. However, theoretically, speaking money should be fungible across accounts because money in one account is as good as money in some other account. In practice, however, money is not found to be fungible across accounts. For instance, fall in value of investment from the safe account causes more pain than an equivalent fall in value in the other risk taking accounts. Another interesting example popularly quoted is that due to risk aversion trait, people tend to hold on to loss making stocks and sell profit making stocks. In effect, people try to reduce loss and hence end up keeping loss making stocks for longer.

### ***Bracketing***

14. Another issue of mental accounting is the concept of broad and narrow bracketing. Many of us here may have noticed the getting a taxi on a rainy day is particularly difficult. One would think that there would be more people willing to travel by taxis on a rainy day than on a non-rainy day, thereby giving taxi drivers incentive to work more and, hence, earn more. However, it is possible that taxi drivers focus on the income from a day, i.e., the concept of narrow bracketing but not on the income over a longer period of time, i.e., the concept of broad bracketing. On rainy days, the

income for the narrow bracketing is achieved more easily as the targeted earnings are achieved for the day early. Hence, many taxi drives take rest earlier than usual, thereby aggravating the problem of finding taxis on rainy days and also depriving them of higher earnings on such days.

### **Emotions and expectations in economic decision making**

15. Most theories in economics focus on debates without the involvement of any emotions. I am sure you will agree with me that many of the decisions that we take are based on or influenced by our emotions. Besides, there is also evidence to prove that people are influenced by their current tastes and habits when predicting future tastes. Individuals in the framework of mainstream economics are said to know the entire time path of the costs and benefits of their actions. In the event that when they do something that may not be completely rational, say addiction to alcohol, they are treated as taking rational decisions. We know one reason why people below poverty line never move up the ladder is that often they spend large portion of their meagre incomes on wasteful habits of consuming alcohol/tobacco or spending on social events although they know such habits would only aggravate their current economic problems. Behavioural economics explains why such addictions happen. It is thus possible that people underestimate the effect of current consumption on future consumption and may under appreciate the formation of a habit.
16. Behavioral economics also throws useful insights for policy makers. Researchers at the Federal Reserve Bank of Boston are engaged in studying the implications of behavioral economics for economic policy. Papers presented at the 2007 conference on behavioral economics at the Boston Fed shed light on the role of emotions and the idea of fairness on economic decisions. Evidence on how emotions like anger and regret affect the price setting decision of firms and the purchasing decisions of firms. The idea of fairness also has implications for labour market outcomes. Evidence also suggested that it was difficult for US consumers to formulate and execute saving plans. This obviously has immense implications for policy makers and policy making. Many commentators were of the opinion that complex sub-prime assets were sold to unsophisticated borrowers who did not understand the contracts fully. Findings presented at the conference also suggested that less than fully rational investors could affect housing prices. If prices are always expected to continue their past trend among the irrational investors then house price bubbles were more likely to form and macroeconomic stabilization could be more difficult. This in fact actually happened in the US. Insights were given on how behavioral economics could help central banks communicate economic policies. Another important aspect from the point of view of central banks is that expectations, not rational but adaptive, play an important role in influencing the actual inflation path. For instance, if workers believe that inflation will be higher in the future period then they may demand higher wages which could in turn feed into the headline inflation through wage push effect. This has been evident in India in recent years as not only inflation expectations have been high in double digits, even the extent of increases in wages in both rural and urban areas has been higher than the actual inflation levels. Generally, in a weak growth environment or a condition of moderating demand, wage push spiral may not be sustained for long. Anti-inflationary monetary policy, that remains committed to containment of inflation till the impact of moderating demand on inflation and wage demand becomes visible, could work in containing inflation expectations. For anchoring inflation expectations, therefore, balancing the growth-inflation mix, timing of policy actions, and clear communication from central bank on its intent and commitment to inflation becomes

critical. Beyond this what further needs to be done to anchor the inflation expectations could be an interesting subject for further exploration.

### **Concluding thoughts**

17. In the mainstream framework, all of us would be individuals maximizing utility to one's self irrespective of the utility of others around us. We do, however, care about the welfare and consumption of people around us, i.e., our family and friends. Even when we move away from the close circle of family and friends, we do not necessarily always act in self centered ways.
18. In contrast, as was evident during the recent crisis in the financial markets, finance and economics were being practised by set of people who had a totally different mind-set, often conditioned for self-interest and greed. They were more mechanical in nature, probably due to the fact they specialized in science and technology and with less or no inputs from humanities during their course of education. They had thus no compunction in mis-selling the products to unsophisticated investors/borrowers, thereby sowing seeds of disaster for the households and the economy. This, however, does not absolve them of the unethical behaviour leading to selfish gains at the cost of deeper structural damages to the system and harmful social consequences arising out of irresponsible financial behaviour as we have seen in the recent financial crisis. Hence, there could be a case for conditioning of all those who join finance professions by way of value based education and socially relevant experiences during their college days.
19. To sum up, all of us could use the findings of behavioral economics in our daily lives as well as in policy making. The important lesson of life is that we should not evolve into insensitive individuals who care only for short term monetary gains by putting at stake ethics and moral values, thereby disrupting the financial system and causing huge social and economic damages. Hence, educational institutions like yours should play an important role in creating human capabilities which are conditioned by individual morality and social ethics aimed at responsible financial behaviour. With this I intend to conclude and hope that this important seminar will highlight and throw up interesting ideas for policy makers and practioners.