Institutions and Economies
Vol. 10, No. 3, July 2018, pp. 101-103

Book Review

Adaptive Markets: Financial evolution at the speed of thought, by Andrew W. Lo, Princeton University Press, New Jersey, 483 pp.

Since 1969, Efficient market hypothesis (EMH) has been a very popular theory to explain financial market's behaviour which postulates that the market prices reflect available information and thus it is unlikely to beat the market without having any new information, verified by "Random walk hypothesis". In their seminal paper, the contradictory results for random walk theory (Lo & Craig, 1986) "stock market prices fluctuate unpredictably over time" prompted Lo to investigate the missing link which was driving the market together with EMH. Quoting "it takes a theory to beat a theory" on pg. 69, Andrew Lo, a renowned econometrician and professor, debunked the omnipresence of EMH and introduced the theory of adaptive markets to propose that the EMH alone does not successfully explain the behaviour of financial markets because rationality and irrationality coexist in the market. In his book, "Adaptive Markets: Financial evolution at the speed of thought", Lo contends that Efficient market hypothesis is incomplete to explain the market behaviour. It needs to be complimented with a theory which gives the perspective of adaptive capability towards environmental uncertainty to explain the market movements completely. Economists favour efficient markets theory based on the assumptions that the market is driven by the Homo economicus, namely an act based on rationality whereas the adaptive market proponents argue that humans behave rationally under certain conditions and vice versa. In particular, their irrational behaviour may stem from the fact their interactions are meant solely for survival. This book provides insights into how Homo sapiens adapt in response to changing environments. It has been argued that the most acceptable theory of market efficiency is applicable only in certain environments since wisdom of crowds is surpassed by madness of mobs during periods of instability where inefficiencies created by madness of mob can be exploited. The inefficiency of financial markets is reflected in the argument that successful hedge managers have been able to beat the market against EMH which posits that all available information is reflected in the stock prices and thus, the opportunities for the arbitrage disappears. Divided into four main parts and comprising 12 chapters, the author of *Adaptive Markets: Financial evolution at the speed of thought* explains in detail how human species and their thought processes evolve using the psychophysiological, sociological and neuro-scientific theories, and he postulates that humans cannot be perfectly rational at all times.

Lo introduces the concept of EMH in the introduction and elaborates its meaning by linking it with the cobweb model where the farmers act as rational agents and build an argument on ambiguity, that is left unexplained by EMH. He rejects the random walk theory which suggests that future prices cannot be predicted from the past price movements. He presents the Ellsberg Paradox and probability matching theories to explain and prove his point that the decisions taken by humans have certain grounds based on their experiences and termed it as rule of thumb or more specifically "heuristics". In the second part of the book (starting from chapter 3), the author delves deeper into the neurological justification and reasoning of certain irrational behaviour by introducing emotions of fear, pain and pleasure and the way these emotions overwhelm the homo economicus, the perfect rational behaviour. Extending the argument that markets are not completely rational or irrational, Lo proposes the theory of adaptive markets in section 3 in which he proposes the idea of human behaviour is based on past experiences and the forward-looking capabilities in which we make suboptimal decisions by adapting to the evolutionary environment which is continuously changing through political, economic, social and cultural forces. This process of continuous change is termed as evolution at the speed of thought. He explains that homo sapiens act as homo economicus at times of certainty only, and that their behaviour is unexplained in the uncertain environment. He further states the most prominent part of the brain is prefrontal cortex responsible for making sensible decisions and make cost benefit analysis based on imaginations. However, according to psychophysiology and neuro-science, the prefrontal cortex is activated only in certain environments and overwhelmed by another component named amygdala which is responsible for acts based on fear and pain during the evolutionary period .

In the last part of the book, Lo proves the expediency of adaptive market hypothesis during the 2008 financial crisis where economic theories have failed to explain it. In "*A Colossal Failure of Common Sense"*, the authors described how the board at Lehman Brothers did not heed to the warnings by an extraordinarily smart risk manager, Antoncic. Lo explains, based on this example, that the emotion of greed overpower the feeling of fear and he criticises lenders for avoiding all warnings and points to how greed had overwhelmed fear of losing. The reason given in this book for the American market resurging to moderation was its adaptive behaviour in times of high volatility. Thus, he concludes in this chapter that emotional feelings need to be managed efficiently in times of uncertain market conditions in order to make good financial decision, which is the basis of this psychophysiological theory.

Lo's explanations are very detailed and exploratory regarding the irrationality of financial markets that is evidenced by the financial crises of

2008, bank panics and market crashes which cannot be explained using any economic theory. The in-depth explanation of the biological processes keep the readers' interests intact. Following the quote " a theory is needed to fail another theory", the author has stacked numerous theories related to biology, neurology and psychophysiology which show their ambiguous connection with the adaptive markets theory. Studies by Lo (2005) and (2012) and Malkiel (2003) are insightful to understand the existence of both markets.

Based on the detailed descriptions of biological evolutionary phenomena and underlying reasons of behaviour and the causes and repercussions of financial crises, coupled with the elucidation on efficient markets and the importance of perseverance and control on emotions of market actors during times of uncertainty, this book gives an overall idea of how financial market works. Lo concludes that markets behave efficiently because their actors adopt innovative strategies in response to the competition to stay ahead of the crowd.

Sumaira Chamadia
Szabist, Pakistan
Email: sumairachamadia@gmail.com

References

Malkiel, B. G., & Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *The journal of Finance*, *25*(2), 383-417.

Lo, Andrew W. "The adaptive markets hypothesis: Market efficiency from an evolutionary perspective." *Journal of Portfolio Management*, Forthcoming (2004).

Lo, A. W. (2005). Reconciling efficient markets with behavioral finance: the adaptive markets hypothesis.

Lo, A. W. (2012). Adaptive Markets and the New World Order (corrected May 2012). *Financial Analysts Journal*, *68*(2), 18-29.

Malkiel, B. G. (2003). The efficient market hypothesis and its critics. *The Journal of Economic Perspectives*, *17*(1), 59-82.