

## THE MYTH OF THE RATIONAL MARKET

Justin Fox, 2009, HarperCollins, New York, USA, pp. 382

Review\*

In view of the collapse of Wall Street giants that brought the world economy to its knees, it does not seem strange to find so many books devoted to the current financial crisis. Justin Fox's *The myth of the rational market* is one of these books. But, even though the book touches on Wall Street, it is not about mishandlings on Wall Street, but about faults of University of Chicago, the bastion of the dominant theory of finance – efficient market theory. In other words, Justin Fox does not have a quarrel with the practice of finance but with its theory. The book does not criticize complex mathematical and statistical models, but the assumptions on which these models are based. As a result, the book is accessible to the wider public, and not just to finance/math geeks. It presents a historical development of the dominant theory of finance, how it came to dominate Wall Street, its flaws and ultimately its fall. The book is divided into five parts with 16 chapters, along with introduction and epilogue.

The introduction begins with Alan Greenspan's Congressional hearing about the financial crisis. When asked why the Federal Reserve (the US central bank) did not prevent the financial crisis, the Fed Chairmen at the time replied that the financial crisis had proven to him that his understanding of how the world operates, his ideology, was wrong. And his ideology was that markets always got things right. One should be fair to Greenspan though, for he was not the only one. In fact, it is safe to say that the mainstream of economic thought agreed with him. The rest of the book analyzes the development of efficient markets theory, its criticism and ultimately the reasons for its fall.

Part one describes the early days of the development of finance and is divided into two chapters. The first chapter is devoted to Irving Fisher, who argued that markets were rational, meaning markets knew best. Still, Fisher himself would find out that markets might work well much of the time, but they stop acting "rationally" at some point. This point came in 1929, when the Great Depression started with the meltdown on Wall Street, and Irving Fisher was among those losing a lot of money. Rational markets theory drew its conclusions from the properties of Gauss distribution, which entered economics from

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\* Received: May 25, 2010

Accepted: May 28, 2010

natural sciences through the works of French mathematician Louis Bachelier. Yet, even his mentor Henri Poincaré pointed out the shortcomings of applying Gauss distribution to human behaviour, since Gauss distribution is the product of countless random and independent events; while men do not act independently, rather react to each other.

Chapter two describes the first criticisms of rational or efficient market theory. Fred Macaulay believed that errors are an inseparable part of financial markets because investors make their decisions based on emotions, lack of logic and insufficient knowledge. But probably the strongest criticism came from Holbrook Working, who argued that market prices cannot reflect all the available information. If markets really were perfect, it would eliminate profit making opportunities. Investors have to have some information which the rest of the market is unfamiliar with in order to beat the market and make a profit.

The second part of the book describes the rise of the rational market theory and is divided into four chapters. Chapter three explores the problem of risk. The question investors are faced with is how much return one wants to sacrifice in order to increase the probability that one will get what he/she planned. The answer was provided by two Central European mathematicians and economists, John von Neumann and Oskar Morgenstern, who argued that one should think probabilistically. First, one should assign a numerical value, i.e. utility. Second, one needs to decide the probability of the event occurring. Third, one just needs to multiply utility with probability, and select which ever option scores highest. Harry Markowitz went one step further by approximating risk with variance, or how spread out the distribution is. Markowitz's great insight was that risk depended not only on the variance of individual stock but also on the covariance or correlation among random stocks. In other words, risk was not tied only to stock A, but also to the fact that all stocks tend to move up or down together. The problem is how to assign numerical probabilities to uncertain future events. The answer is there is no uniform way, but rules could be devised in order to adjust those assessments in the face of new evidence.

Chapter four explains the random walk theory. Predecessors of random walk theory, like Bachelier, were wrong when they claimed that the mathematical expectation of the speculator was zero. Instead, the mathematical expectation of the speculator was the expected return of the stock or of the overall market, around which the actual return would fluctuate randomly. The ringleader of random walk theoreticians was Paul Cootner. The basic idea of random walk theory was that previous changes in prices cannot explain future changes in prices. Since one cannot predict the movement of the market, it is very hard to beat it.

Chapter five tries to answer the question of whether it is reasonable to assume that simple folks reason according to complex statistical rules. This assumption clearly does not match reality. But Milton Friedman came to rescue. He argued that it does not matter how unrealistic the assumptions are. In fact, all assumptions are unrealistic, a simplification of reality. What matters is how well the results of the models based on these assumptions match the reality. Economics as a science was already based on a rational man, and Franco Modigliani and Merton Miller placed rational man as a groundstone in the theory of finance as well. Their biggest contribution was the introduction of deductive logic into the study of finance, along with placing theoretical over empirical examinations of corporations.

Chapter six describes the leap from claiming it is hard to beat the market (random walk theory) to asserting that markets are perfect. This leap was made by Eugene Fama. He gave probably the strongest explanation of random walk. He argued that sophisticated traders will attack all non-random price movements and by making money on any predictable price movements help markets return to its random state. But, before one could say markets are right all the time, one needed a theory of how prices were determined, and that theory was the capital asset pricing model (CAPM). This model was developed by a group of authors including future Nobel Prize winners William Sharpe and Merton Miller. But it was Eugene Fama who tested this model. The results showed that risk-reward trade off was more complicated than envisaged by theory; but it came close enough. Later, Fama would triumphantly proclaim that there was no other proposition in economics that had more solid empirical evidence supporting it than the efficient market hypothesis, according to which markets got the prices right.

The third part provides a three-chapter overview of how the theory of efficient markets conquered Wall Street. Chapter seven discusses possible strategies for making money on Wall Street. On the one side, Benjamin Graham believed markets do not always get the prices right. He focused on investing in companies whose market capitalization (i.e. value of their shares) was less than the value of company's assets. In essence, his approach is about beating the market. Yet, Graham was quickly becoming a minority with the advent of the efficient market theory. If markets really got prices right, there is no point in trying to beat the market. Instead, the idea is to share in its fruits. No longer should an investor look for shares which markets mispriced and instead simply buy "the market", i.e. stocks according to their weights in stock exchange indexes like Dow Jones or Footsie.

Chapter eight elaborates how Wall Street tried to control the risk. In essence, it was by creating a completely new market for derivatives or options, which are created by transforming "primitives" (e.g. stocks or bonds). Options allow investors a chance to bet on the future prices. The main idea is that derivatives or options allow infinite number of ways to protect oneself against future calamities. Limiting these possibilities, e.g. through regulation, brings us further away from the perfect world of efficient market theory. Thus, regulation of derivatives is bad.

Chapter nine tries to solve the agency problem. Pro-market economists have forcefully argued that regulators cannot be trusted to act in society's interest because they have an agenda and interests of their own, and these might go against society's best interests. Yet, managers and investors were also agents with their specific interest. How can we rely on them to act in the interests of their clients and shareholders and not in their own interest? Michael Jensen came up with a way of using the market to keep managers in order. Managers fear getting fired, and one way of getting fired is if your company is bought or overtaken. Those managers who do not keep the interests of their shareholders in the first place will be punished by lower stock prices. And these companies are prone to being taken over. Yet, in order for this theory to work, certain laws had to be loosened or abolished, and these are anti-trust laws and regulations. Before, mergers were frowned upon because they reduce customer choice and create oligopolies and monopolies. But now mergers were praised because they increase competition between managers, which ultimately makes them more accountable to shareholders' interests.

Part four, which is divided into four chapters, is devoted to critics of efficient market theory. Chapter ten presents a “weak” form of the efficient market theory. Joseph Stiglitz and Sanford Grossman start from an obvious point – obtaining new information is time consuming and costly. Yet, efficient market theory claims that when someone acquires new knowledge, it instantaneously becomes common knowledge. But, if this is so, why would anyone look for new information if others will free ride on his/her effort? Therefore, prices cannot reflect all information. One has to be able to use new information for market gains, otherwise knowledge creation will simply stop. Still, the goal of Stiglitz and Grossman was not to destroy efficient market theory, but to redefine it in its “weak” form.

Chapter eleven exposes one of the greatest errors in efficient market theory, which is a leap from saying it is *hard to beat the market* to *markets get the prices right*. It is even not impossible to beat the market. Contrary to random walk theory some random patterns exist and investors can make money off it. For instance, cheap stocks have outperformed expensive stocks. In addition, stocks generally did exceptionally well in January. Even the biggest supporters of efficient market theory, like Eugene Fama, had to admit that something was wrong. Eugene Fama and Kenneth French tested CAPM on data from 1940s to 1990s. Their results showed that it could not explain price changes. But, instead of abandoning CAPM altogether, they redefined risk and introduced new variables. Still, their work became “data mining”, since their modifications of CAPM did not have backing in economic theory.

Chapter twelve is devoted to two living proofs that markets can be beaten – Warren Buffet and Ed Thorpe. Both investors had a tremendous record when it comes to outperforming stock exchange indexes. Yet, these two investors followed different strategies. Warren Buffet was a typical rational investor. Following his mentor, George Graham, he was trying to find companies that were seriously undervalued by financial markets. More specifically, he was searching for companies that had a long term growth ability not recognized by the market. On the other hand, Ed Thorpe was a classical arbitrageur. He jumped on mispricings, earned money off them and made them go away in the process. He used a “secret” formula to choose when mispricings occur, which is why his style of investing is sometimes called black-box investing. Both Thorpe and Buffet believed it took time for markets to get prices right. Finance professors believed this to be instantaneous process.

Chapter thirteen analyzes the stock market crash in 1987 and why it did not lead to redefinition of rational market theory. In 1987, three finance geeks, following the advice of their portfolio management formulas, started selling their stocks. In one day, Dow Jones lost over 20 per cent of its value, making it the worst single day performance in its history. What was striking about it was that only three investors were enough to cause massive panic. It looked like investors were not as rational as previously thought. Still, Eugene Fama found a way to praise markets for crashing. He argued that the crash just showed how quickly prices adapted to new information. But the crash did highlight some flaws in efficient market theory. Derivatives can make the world a safer place, but when everyone ascribes to the same method of taming risk, it becomes a source of new risks. In addition, measuring immeasurable future risks can be harmful because it provides a false sense of security. But a full review of efficient market theory was not performed, and a lot had to do with the fact that the crisis was quickly diverted by Fed’s new chairman Alan Greenspan.

The last part, consisting of three chapters, is devoted to the fall of efficient market theory. Chapter fourteen explains how irregularities in efficient market theory were turned into a theory. Many researchers found irrational behaviour in the financial markets. One of these was “window dressing”, which refers to managers selling badly performing stocks near the end of the year, when they might be asked embarrassing questions on why they hold poorly performing stocks. Yet, what was often missing was the economic logic behind these market flaws, but not this time. Now a new assumption was being made. Managers, like other agents, had complex incentives structures and cannot be relied to always act rationally. Even better, this sounds like an assumption straight out of University of Chicago, a hotbed of the rational market theory.

Chapter fifteen describes how Michael Jensen, once a champion of finance market centered corporations changed his mind. Jensen now believed that markets can create booms, and the overvaluation of corporations can lead to value-destroying policies. He compared obsession with rising share prices to taking heroin, good in the short run, but with bad long run consequences. Jensen also became very critical of the massive wages and bonuses managers were giving themselves. In research work carried out with Kevin Murphy, Jensen found no link between corporate performance and manager’s pay among the CEOs of 250 big companies over a period of fifteen years.

Chapter sixteen provides a new common ground between proponents and critics of efficient market theory. The idea that it is hard to beat the market was never questioned, but proponents of efficient market theory had to abandon their belief that markets got prices right. It was also never an issue that prices might be wrong, but efficient market theory claimed that markets will correct prices very quickly. Now it seems there is a consensus that in some cases markets could get prices wrong for a longer period. Smart arbitrageurs can undo some of the damage to the market done by misinformed investors, but not all of it. In essence, what we are left with now is a watered down version of efficient market theory.

In his epilogue the author tries to provide some ideas about how to reform financial markets in the light of the current financial crisis. The author does not provide specific measures but gives guidelines for reform. We should find a way to temper speculative excess while acknowledging that we will not necessarily be able to distinguish speculative excess from an entirely sustainable boom. A major part in this story will be played by regulation and hopefully a rediscovery of ethics and integrity among managers and Wall Street investors.

The main strength of the book is its clear and forceful destruction of the “myth” of the rational markets. The book attacks this myth at its root, in its assumptions. People are not entirely rational. Full stop! Let us work from that instead. And even though the book devotes a significant number of pages to behavioural finance, which believes people can be irrational in a predictable way, the book is short on clear proposals on how to get out of this crisis and prevent future ones. In other words, the book does a good job of dethroning the myth of the rational markets, but it also keep to throne wide open. And unless we find a better suited candidate, the rational market theory is bound to be back at the top of the world of economic theory.

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