




New thoughts on efficient markets

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Summary: The globally widespread economic crisis that burst in 2007 has been a central topic of recent papers. Economists and researchers have been pointing out that the crisis underpins the downfall of the efficient market hypothesis (EMH), as part of a search for the roots of the crisis. This undermined the belief in the traditional asset-pricing theories and models. Several papers have surfaced that highlight the role of the EMH in the economic crisis, and have therefore doomed the theory governing market mechanism as dead. This paper presents the current debate and takes the side of proponents of the EMH who argue that that this assertion is flawed, and the EMH remains the most appropriate proxy for understanding market forces. It is the only quantifiable approach to model market prices that is still in use by analysts and investors today.

Keywords: efficient market hypothesis, asset pricing models, sub-prime credit crisis
JEL code: G01, G12, G14

1 Introduction

How financial engineers could gain so much ground, and eventually credibility that lead to the widespread growth of their activity. Prior to the recent credit crisis, the derivatives market was trading at volumes exceeding spot markets of the underlying products. To grasp the risks incurred through these sophisticated, multi-tranched derivatives was beyond the understanding of risk managers. How did the crisis evolve is still a question that is unsettled amongst researchers. For this, I could imagine that a sociological approach would give great insight as to what sociological factors were motivating market participants. This would help understand the complex network of motives and actions. The role of the credit rating agencies remains also an ethical and professional issue. How come assets so toxic as they turned out to be, were AAA rated. Conflict of interest was surely to play a part.

2 Financial innovation

When markets are efficient, they work smoothly whereby the possession of new information causes no added-value. From this stems the assumption in financial models that additional information should come at no cost, as it is already reflected in prices. It is much ore likely to have transparent pricing for financial instruments

traded on stock markets e.g. stocks, bonds, commodities. But the matter of fact is that the efficient market hypothesis fails in practice. Investments traded on the stock market by far do not represent to complete investment portfolio available to investors. Other financial products are available on different platforms, most of which are less transparent than stock markets. The efficient market hypothesis (EMH), however, makes assumptions that limit its validity to a theoretical market. Amongst these assumptions is that all transactions are transparent, which makes pricing fair (unbiased), as they incorporate all available information including the expectations of the market participants of the future shaping of the market. Information, as defined by the theory, is anything that affects prices in a way unknown in the present appearing randomly in the future. For this reason, it is not possible to consistently outperform the market by taking advantage of news the market already knows, except when an investor is lucky.

3 Background to EMH

The efficient market hypothesis was first coined by Louis Bachelier, a French mathematician. In his 1900 dissertation “Théorie de la Spéculation” he “begins the mathematical modelling of stock price movements and formulates the principle that ‘the expectation of the speculator is zero.’ Obviously, he understands here by expectation the conditional expectation given the past information. In other words, he implicitly accepts as an axiom that the market evaluates assets using a martingale measure.” (Courtault et al. 2000 p. 343) Yet his work was overlooked for decades until the mid 1960s when Paul Samuelson stumbled upon the dissertation and soon it became a hot topic for financial economists. However, the efficient market theory owes its refined details to Professor Eugene Fama of the University of Chicago Graduate School of Business. Fama started the formation of the theory as a PhD. dissertation and ended up as a life-long research. In 1970 he published a review of both the theory and the evidence for the hypothesis. The paper extended and fine-tuned the theory; in addition, it included the definitions for three forms of market efficiency: the weak, the semi-strong and the strong form of market efficiency.

The theory assumes that market participants apart from being utility maximising, also have rational expectations. This includes the assumption that even though individuals may be wrong, the population as a whole is correct; and that people adjust their expectations according to new information. When faced with new information, some investors will overreact and others will under react. In summery, reactions will be random, but will have a constant volatility, and a known distribution function. Thus, the net effect does not allow for abnormal profit to be realised especially when considering transaction costs and spreads.

Fama says that an efficient market is one that quickly adjusts to new information. It prevails in markets where prices “fully reflect” available data. This constitutes the impossibility of attaining extra profits by trading on the basis of knowledge of information already incorporated.

It means that in its strongest form, there should be no cost of information. We know that this is untrue, and that a whole industry is based on selling information. This is why the need arises to further define efficiency of the markets. This has taken the form 3 levels of information integration; the weak form of efficiency, the semi-strong form of efficiency and the strong form of efficiency are discussed below.

3.1 Weak form of efficiency

In its weakest form, the efficient market hypothesis assumes that all historical share prices are already incorporated into the pricing of assets. Therefore, no excess profits can be earned by basing investment strategies on past returns. This implies that technical analysis, which studies formations in past returns, is useless in predicting the future. Since past performance is already known to the market, the current situation remains unknown. This is where fundamental analysis gains attention and may be rewarding for those keen investors who do their homework on companies' financial statements.

Tests for the weak form of efficiency engage in historical data analysis using statistical and econometrical methods. Analyses concerning market value, P/E, DIV/P, and book-equity-to-market-equity influences on past data, as well as technical analysis are prevalent in such testing.

3.2 Semi-strong form of efficiency

The levels of efficiency gradually increase their restrictions, so it is natural for the next level to include the previously stated assumptions. In addition to historical data, the semi-strong form of efficiency incorporates publicly available new information rapidly into pricing; this insinuates that fundamental analysis will yield nothing.

Testing for semi-strong form of efficiency is similar to event studies. Emergence of new information usually takes the form of quarterly or annual reports or events such as mergers, acquisitions, purchase of treasury shares, new issuances or splits. The emergence of such news should induce markets to adapt quickly. We can measure the quickness and flow of the adaptation to new information.

3.3 Strong form of efficiency

This level of efficiency constitutes the incorporation of all existing information, both public and private, into prices. In such a model no one can earn extra profits. Of course in reality laws prohibit trading using insider information. The Hungarian Capital Market Law (Tpt CXX/2001 § 199-205) prohibits trade using information not known to the public. In the United States the Insider Trading Sanctions Act of 1984 and the Insider Trading and Securities Fraud Enforcement Act of 1988 regulates penalties for illegal insider trading "to be as high as three times the profit gained or the loss avoided from the illegal trading."¹ Relevant laws in the United Kingdom

¹ <http://www.sec.gov/news/testimony/2006/ts092606lct.htm>

also reveal a similar standpoint. The Financial Services Act 1986 and the Financial Services and Markets Act 2000 define an offence of Market Abuse.

Testing the strong form is a test for the existence of insider trading. We attempt to reveal the investment activity of interest groups with monopoly over key decisions in the companies. This can be observed in price adjustments taking place before important announcements are made public.

4 A new framework

The recent credit crisis set a new framework for the theory for efficient markets. What we acknowledge about market mechanisms is that reacting to new information are what determine the informational efficiency of that particular market. The promptness of share prices in reflecting additional information before it is exploited by arbitrageurs is what makes a market efficient. Rather, this process ought to be instantaneous. If not so, this deficiency will lead to mispriced shares that are a source of abnormal profits.

The degree of efficiency describes the extent of information prices reflect. Taking the thought of market efficiency a step further, the only way for a market to be completely efficient is by allowing time for investors to react to new knowledge, thus new transactions will shift prices accordingly. This mechanism will, in turn, ensure sustaining market efficiency. Yet there are always 'early-birds' whose trading initiates price correction, and they are the ones who will make extra profits.

Does this mean that it is inevitable for market movers to make abnormal (risk-adjusted) profits, as the market functions this way? This premium is the payment for the so-called 'early-birds' for researching and looking out for such opportunities.

How can data-mining be this rewarding when market transparency and speed of information is facilitated by modern telecommunication? In reality, these abnormal profits exceed any justified premium. While the EMH lacks a sound alternative theory, a replacing supposition would include explanations of long-term market over-reaction and under-reaction to events as explanations to the causes of market anomalies. On the other hand, chances of over-reaction are about as likely to occur as chances of under-reaction; this is, in turn, consistent with efficient market hypothesis.

Set-backs to this theory are numerous. Researchers argue about the validity of the efficient market hypothesis in the real markets, especially its strong form. The main set-back to the theory includes slow transmission of information, and relative power of a few market players. The market's mechanism in adapting to change in interest rates for instance, takes from a few hours to several weeks. This is the main defect, whereas according to the EMH this process ought to be instantaneous. Only a few privileged people may have prior knowledge of new laws or decisions that will affect prices. As long as actors on 'inside information' arbitrate market mispricing in a discreet manner, they can avoid being detected. As soon as such trading takes place on a wide scale, we cannot dismiss it from our study as random variables.

Another malefficiency of the real markets compared to the ideal suggested by EMH is that at extreme situations what fundamentalists consider irrational investor behaviour is actually the norm. As an instance, the last stage of a bull market is usually driven by buyers (speculators) who take little consideration of the underlying value of the asset. Contrarily, the end of a bear market witnesses a free fall as everybody attempts to close their positions regardless of the quality of the investments they hold. This observation is bolstered by the differences in stock valuation in bull markets compared to bear markets. Thus, it would make sense for rational investors to take advantage of the feigned high or low prices caused by irrational participants, by taking on opposite positions. Obviously in practice this is insufficient to prevent arising bubbles or crashes. Rational investors are aware of the irrational behaviour of the market, and at extreme times, they will need reasons superseding fundamental explanations to convince them that the market will return towards fair value. It was shown statistically, that extreme values do occur more often than a normal distribution would anticipate. These extreme values are not confined to three sigmas; a phenomenon financial literature refers to as a distribution's fat tail.

Oponents of the theory argue that there exists a small number of investors who managed to sustain their outperformance of the market for long periods of time, in a way that overrules the role of luck. These include names such as Peter Lynch and Warren Buffett. Their strategies were always to identify markets where prices did not fully reflect available information. On the other hand, proponents of the theory argue that EMH does not rule out the success of a limited number of funds through chance. Furthermore, these explanations go on to explain the success of 'star' fund managers as being the result of management skills rather than stock market prediction.

Malkiel is a famous supporter of the general validity of the efficient market hypothesis. Even he, based on empirical findings, believes that some emerging markets for example the Chinese markets, are not efficient. Malkiel warns that "the Shanghai and Shenzen markets exhibit substantial serial correlation in price trends and evidence of manipulation, contrarily to the random walk theory that is expected from markets in the United States." Malkiel (2003)

Moreover, the efficient market hypothesis appears to be inconsistent with some events in stock market history even in the United States. The market crash of 1987 was caused by no major news; and despite that the Monday of the crash saw the S&P 500 index fall more than 20% only in the month of October. The decline seemed to originate from nowhere, only the irrational behaviour that caused the haphazard sweep through stock markets, Malkiel continues.

Investment culture in the public's imagination also refuses the efficient market hypothesis. This may be attributed to a general misconception concerning its meaning. Many believe that EMH states that a security's price is a correct reflection of the value of the underlying company as calculated by discounting the future returns. If this were true, it would mean that a stock's price accurately envisages future results. Since this is evidently not the case, many people reject the hypothesis. Nevertheless, EMH does not attempt to predict future returns. Rather, the EMH states

that a security's price incorporates possible projections of future happenings, based on the best information available at the time. The EMH merely estimates the performance of a stock. If the course of events veers the true value of the stock too far away from the EMH prediction, even then the deviation does not challenge the validity of EMH.

What cannot be explained by theory is attributed to the unique psychology of the investors. Sociological explanations to financial behaviour manifests in presuming rational behaviour from market participants. Yet some decisions are made quickly, with no sufficient time or information. Investors are also driven by their desires, emotions and fears. This is what led to the emergence of behavioural finance.

Proponents of behavioural economics note that financial models often fail to predict outcomes of the real world. Behavioural insights try to correctly predict some outcomes in cases where traditional models failed.

In the recent months, several reports surfaced from renowned researchers claiming the death of capitalism and free-markets and the EMH. "EMH, is the financial equivalent of Monty Python's dead parrot. No matter how much you point out that it is dead, the believers simply state that it is just resting. In part this is testament to the high degree of inertia that academic theories enjoy." Montier (3) We also saw strong proponents of the theory who discard Montier's criticism as a straw man fallacy. Annunziata "find[s] such assertions [-the death of EMH-] disingenuous, as well as internally inconsistent—disingenuous, because the EMH has been challenged for about thirty years, and internally inconsistent because the crisis has been brought about by behaviours that display a blatant lack of belief in the EMH." Annunziata (1) Here is where a connection exists with the sociological approach. It would provide insight to a behavioural approach to financial analysis. Studying professionalisation projects, and how the sites of professionalisation are located opens doors to exploring the very individuals that constitute a profession, as in the case of the accounting profession. These results are essential for someone studying the spirit of financial reporting, especially as a way for corporate managers to reveal, signal and disclose their performance.

5 Conclusion

Efficient Market Hypothesis was highly regarded in the finance sector as the driver of capital markets. Capitalism and free-markets were in support of informationally efficient markets and in the era of telecommunications the speed of information is unravelled. The crisis has unveiled a new line of thought, though not consistent with the above said. If there world financial markets were operating at such a level of transparency and such level efficiency, then how come the markets could not protect themselves from the enormous downfall that took place. The new line of prominent researchers are suggesting in less formal forums that the EMH is long dead. However, we maintain that although it will take time to understand what really happened and how is the EMH to be brought in connection with the crisis, the Efficient Markets is

the best model we currently have handy that describes market movement and behaviour. Up to this point, investors rely on the same fundamental analyses that derive from the notion of efficiency. Our message in this paper is also supported by Annunziata, the EMH is valid, and the causes of the crisis should be looked for in the behaviour of investors not investing according to EMH.

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