**A Conceptual analysis of uncertain and turbulent Financial Environment in India**

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**ABSTRACT**

Chaos theory has been one of the most acoustic scientific subjects for decades, but has so far not been used adequately in financial theory and practice. As uncertainty increases and the role of opportunity in financial markets increases, attention to this theory increases. In this context, it is necessary to define the possibilities and limits of its use in funding. This article attempted to explain some points about the likelihood of using the theory of chaos in financial markets by testing the effective market hypothesis (EMH). Efforts have also been made to study the probability of using the theory of fractal economics, which is a geometric representation of chaos.

**Keywords**: Uncertain, Efficient Market Hypothesis, Fractal Economy, financial markets

**INTRODUCTION**

Through law and order, bureaucracy and organisational maps, people have always tried to organise and organise their lives. Calendars and clocks are designed to sort times, and the correct layout and programming of daily activities has been regulated. We write encyclopedias, dictionaries, books and newspapers to coordinate information. And we still find it difficult to understand the mechanisms behind a framework, whether it's a natural system like climate or one of our own inventions like the stock market, no matter how fine accurate legislation or organizational charts are. Therefore, in order to analyse the rules, we need a legal system, we need experts to help us understand the mobility of our companies in the Community, and we need science to understand nature. However, the universe is not organized; Nature, including clouds, mountains and trees, or human masterpieces, is not systematic. There is a particular lack of order in the economy and financial markets for various reasons. Firstly, the constant expectations of the unexpected have led to invention and development. On the one hand, a number of non-financial services and organisations have been introduced in the financial sector. On the other hand, financial activities have begun to converge with information, trade and other economic and cultural activities. Thirdly, funding faces a big data problem. Therefore, the growth in funding concerns digitalisation and subsequent mathematical techniques and integration into the modelling industry. The study of financial markets has particularly high expectations of the use of outlaw theory and the organization of their work. But it involves a long period of flight from normal thought, modelling and expression methods.

One of the hot topics of science has been chaos theory for decades, but it hasn't been done with absolutely nothing to fund so far. Today, cautious efforts are being made to explain the possibilities and outline the extent of their use in funding, as well as to create a basin between traditional economic principles and the theory of chaos. The paper tries to explain certain points that are relevant to the possibility of using financial theory and the theory of chaos in practice.

**Financial Markets and Efficient Market Hypothesis (EMH)**

The aim of a financial market is to channel funds to those people or organizations who are willing to pay for them from savers. Basically, the chief function of the stock market is to optimally distribute capital and provide liquidity. Models have been built in an attempt to illustrate them in order to make the capital markets neater. Such models simplify the reality of things. They make clearer assumptions that investors respond in a linear way to knowledge about the actions of investors. Markets are priced such that all public data is already discounted, both fundamental and price past. Therefore, prices only move when fresh data is collected. The market is competitive and cannot be carried out because not only do the prices represent known facts, but the large number of investors can ensure that the prices are fair. In this respect, investors are seen as rational: they know, in a collective sense, what knowledge is, and what is not, essential. The collective consciousness of the market then seeks an equilibrium price after digesting the information and weighing the risks involved. That is, when information is collected, they respond; they do not respond to a series of events in a cumulative manner. Economists agree that investors are reasonable, organized and clean. It is a model of investment behavior that, with one solution, reduces mathematics to a simple linear differential equation. Thus a linear model has dominated financial economists since the consumer is considered rational and the previous knowledge has already been discounted. But the market is rarely so orderly in reality; there is an exponential overreaction to action. They're messy and they're complicated. A system far from equilibrium that does not match the Efficient Market Hypothesis (EMH) that has dominated quantitative investment finance leads to this sort of characteristics. It is necessary, therefore to reevaluate the premises underlying the current theory of the capital market.

**Limitations of Efficient Market Hypothesis**

Two possibilities were ignored: that markets and securities are interdependent, in particular, and that the logical model of investors is not practical. In the real world, individuals do not behave in the way defined by the theory of reasonable expectations, i.e. investors know how to perceive information and do not respond to trends. The new capital market theory, in particular, is based on a linear view of society. The linear model is integrated into the assumption of normality. The linear paradigm says that investors respond in a linear fashion to knowledge. That is, when information is collected, they respond; they do not respond to a series of events in a cumulative manner. As past knowledge has already been discounted at security rates, the linear view is built into the rational investor principle. The linear paradigm therefore means that returns should have a roughly normal distribution and should be independent.

This is a very clean model mathematically; it uses linear tools to model a nonlinear universe, however. Nonlinear structures such as clouds, mountains and trees are involved in most of our planet. Nature itself is nonlinear and never takes on a linear growth and development pattern. In the past, it made sense for economists to use these linear modeling and forecasting techniques for financial markets: they were constrained by technical and imaginative constraints. This led to the reliance of early economists and mathematicians on Euclidean objects as their research tools: lines, planes, etc. Therefore this oversimplification of market conditions was sufficient before the advent of computers to build equations which could be solved by hand. However if computers came along without relying on simplified assumptions, it would become possible to model complex structures. By the 1970s, in many fields of research, including physics, biology, chemistry, electrical engineering and sociology, nonlinear methods of analysis were introduced; however while financial markets appeared to show many nonlinear patterns, they were not adopted into the financial investment culture. One explanation for this opposition is that a new paradigm will be embraced over more than 50 years of work and such disruptions would fully alter the way analysts conduct their business. The only solutions for analysts is to constantly incorporate additional EMH hypotheses and variations to understand market inconsistencies. The only issue was that the backbone of these modern ideas was highly reliant on the EMH's correctness. But the EMH was far from being right.

From the beginning, the architecture of the EMH was faulty. A logical investor's simplifying presumption has led to an entire analytical system that can be constructed on sand castles. In order to explain the use of the probability calculus, the rational investor principle and the EMH were constructed by giving the crucial assumption of independence of observations or returns to an economic context. First a model was developed by making large assumptions, then the evidence were interpreted in such a way as to comply with this model and thus endorse it. The theory of the stock market sought to make the investment setting neater or more orderly than it actually is. This is like positioning the cart in front of the horse-it just doesn't work. The right way is to see the facts as they are, then find a conclusion that seems to suit them. From the proof, several nonlinear characteristics are certainly taken on by the markets that the EMH can not explain. These attributes are as follows:-

People, at all times, are not inherently risk-averse. They can also be risk-seeking, particularly if Tversky (1990) provided them in his research with what are perceived to be sure losses for not gambling. The following example is given by Tversky. Suppose an investor has an option between (1) a $85,000 sure benefit, or (2) an 85% chance of getting $1,00,000 and a 15% chance of receiving nothing. The sure thing would be favored by most citizens, even if the anticipated return in both cases is similar. As proposed by the theory, individuals are risk averse.

Tversky The condition then turns around. Suppose that the investor now has an option between (1) a $85,000 safe loss, or (2) an 85% risk of losing $100,000 and a 15% chance of losing nothing. Again, with both options, the estimated return is equal, but in this case people will gamble. Evidently, even though there is a substantial risk of more loss, the ability to minimize losses is preferable to a guaranteed loss. People become risk-seeking because gambling is distinct in nature.

As they set arbitrary probabilities, people are biased. In their predictions, they are likely to be more optimistic than justified by the evidence they have. The forecaster is thus more likely to assign a greater likelihood to a specific economic situation than is supported by the evidence when assigning arbitrary probabilities. An investor, for instance, was 60% sure of economic growth, 30% sure of no growth, and 10% sure of a recession. In fact, with a 10 per cent probability of flat growth, an investor who was reasonably confident of the growth scenario would raise the probability to 90 percent. Recessions are likely to be not possible at this time." So it seems they are overconfident. This overconfidence can lead individuals to neglect data that is open to others.

When it is obtained, people may not respond to the information. Instead if it confirms a change in a recent pattern, they can respond to it after it is received. For example, once inflation has been rising for some time, they would not begin to extrapolate a phenomenon like rising inflation. They would then make a decision that integrates data that until that point they have overlooked. This conduct is very different from that of a rational investor who can respond to fresh knowledge immediately. As compared to the linear reaction expected by the rational investor concept, this is a non-linear reaction. In other words, reaction to knowledge does not take place as and when it is obtained in an ongoing way, but rather in a cumulative manner in discrete blocks and clumps. There is no evidence to support the conviction that individuals are more rational than individuals in general.

Therefore the earlier methods to modeling the fluctuations in market prices used linear models and embraced the normal distribution assumption. It is generally accepted, of late, that the assumption of normality and linearity is too frail to capture the dynamics of stock price fluctuations, as is the case for most of the economic time series. The popular use by physical and natural science peers of non-linear models to describe certain (apparently random) phenomena prompted economists and financial analysts to assemble nonlinear stock market models.

**Development of New View: Chaos Theory**

After several attempts, what has been discovered is that most variables that decide financial market prices are not independent, but are most often contingent and it is unclear whether a specific variable begins moving in one direction or the other. In addition, due to shifts in other factors, there tends to be little regularity in price changes, and price fluctuations in the market resemble uncertainty. In addition, these trends are not readily visible and are frequently obscured by noise. The challenge therefore is to find order in the financial market's disorderly existence.

Thus the successful implementation of non-linear methods has sparked the hopes of financial researchers in other areas of study. Tests of financial market fractals, uncertainty and other non-linear systems examine whether interest rates or stock prices have a degree of automatic dependence on their own past movements. Auto dependence in this sense would mean that for example, past stock prices may be used to determine the actions of future stock prices. It will produce complex behavior if a sequence has a certain degree of non-linear auto dependence.

The fractal and chaotic tests will accurately define it precisely,

By detecting order in phenomena previously assumed to be random, the nonlinear dynamic approach provides a new view of the universe. Chaos has been dubbed the irregular and apparently unpredictable time developments of many non-linear systems (whose effects vary significantly for small changes in the initial conditions). Many of the geometric structures created by chaotic systems are complex, but under a change of scale or self-similarity, they possess the property of invariance. Fractals are referred to as unstable systems of self-similarity on various scales. Fractals are the geometric presentation of chaos and give complexity to the structure. Fractals are in other words, the geometry of chaos. Any irregular set (or pattern) whose dimension is not an integer is defined by Fractal. It has come to mean a set that under magnification is self-similar.

* A study of the financial markets, in the present context, would require that the researchers go beyond the existing paradigms of financial market analysis. This follows from the inability of the traditional approaches to explain the burgeoning evidences of anomalous behavior in the financial markets, in the light of these evidences, the questions that arise are:
* Do predictable components have the time series of financial market quotations?
* In the time series of financial market quotes, are there any cyclical trends present?

It is important to present a new model that either strengthens the old model or provides a legitimate substitute. So far it has been shown how as a credible model of financial markets, the EMH fails. We need a new paradigm that characterizes in practice what we see. We are given only that by the **Fractal**

**Market Hypothesis** (FMH). It provides us with a new understanding of how financial markets work and provides us with a new range of tools to evaluate those markets.

The main focus of EMH is on the productivity of the markets. "Kohers states that the discovery of the driving influence on any type of nonlinear dynamics in stock returns (stochastic or deterministic) will provide evidence of inefficiency. Therefore since we understand that variables are interdependent and that stock returns display nonlinearity attributes, it would lead us to conclude that markets are not efficient. The FMH focuses on liquidity rather than stressing performance as the pillar that keeps the market together. The key reason investors look at markets is that they provide an environment where it is easy to turn assets into capital. For investors, performance is not the primary concern, nor is the notion of a fair price in this regard. The need for liquidity replaces the need for a good price. They are likely to settle for a price close to the fair price to satisfy their need for liquidity if an investor wishes to sell an asset. A market with reasonable liquidity is regarded as a stable market. Security prices are considered similar to their fair value in a stable market. This notion of a stable market is not the same as the idea of a productive market. The efficient market hypothesis implies that security prices, whether liquidity exists or not, are often rational. It says nothing about liquidity, in fact. With the productive business theory, stock market crashes cannot be clarified.

Another statement of the FMH is that investors have distinct investment horizons and therefore, based on this temporal attribute, value knowledge differently. The effect on all investors of the arrival of knowledge is not the same. As all investors have different time horizons in the market, the market remains stable. If the result were the same, all investors would attempt to get the same price and carry out the same trade (i.e., either all investors would wish to buy or would wish to sell the security). This contrasts with the EMH interpretation of the stability of the economy, which implies that a market is in equilibrium. What this means is that in the market there is only one equilibrium, but rather that there are many equilibriums that lie in all the different horizons of investment. An example will explain that certain investment horizons have to be in place to maintain market stability. In order to balance the market, if a day trader responds to a 5-sigma case and chooses to go long in the market, then there must be a long-term trader at the other end. Since the long-term investor does not consider the 5-sigma case as exceptional, he is not going to act in this way. Owing to these distinct investment horizons coming together to ensure liquidity, the market stabilizes itself. However the day trader and the long-term trader must bear the same risk levels for this event to take place. This criterion is backed by empirical evidence: "frequency distribution of returns looks the same at various investment horizons" (Peters 1994). Therefore if an adjustment is made to distinguish scale (investment horizons), we have a fractal structure that is self-similar.

It is clear that because of the presence of various investment horizons of market investors, equilibrium within the market is preserved. What causes instability then? It is possible to illustrate this via the FMH. The most critical issue of an investor is liquidity. This liquidity can only be accomplished if another investor with a different investment horizon exists in the market to meet the need for liquidity. But if it doesn't happen, the fractal system will break down and the markets would panic as investors couldn't find liquidity. This breakdown of the market's fractal structure results in the unreliability of fundamental knowledge (long-term expectations). This data may be a political crisis, a natural catastrophe or a national disaster. The country's long-term outlook became uncertain in this situation, leading either to a panic by long-term investors that forced them to become short-term investors or to hold them entirely out of the business. Short-term investors disregard this type of details. Thus, depending on what investment horizon the investor lies on, we see the data is processed differently. This contrasts with the idea that knowledge is universally distributed under the EMH. The shorter the investment horizon, the greater the importance of technological factors; the greater the importance of fundamentals, the longer the investment horizon. Prices reflect this relationship, growing and dropping with expectations of earnings. If market prices are related to economic cycles, then they will be dominated by economic cycles. As long-term economic activity is less volatile, long-term returns would also be less volatile because of this. Economic behavior will then be constrained by the volatility of returns. This implies that the sector experiences fractal structures in the short-term. Whereas chaotic processes will result in the long term. Financial markets are thus non-linear, factually organized, complex systems. Owing to the existence of a weird attractor, they are often unpredictable.

Thus the **FMH** may be summarized as follows:

* When it consists of investors covering a wide range of investment horizons, the market is stable. This ensures that the traders are properly liquid;
* Investors with short investment horizons depend heavily on market sentiment and technical variables. Fundamental analysis is essential to an investor with a long investment horizon;
* The long investment horizon trader either ceases participating or starts trading as a short investment horizon trader with the focus on market feelings and relevant details when an incident challenging the validity of basic information occurs;
* Prices represent a mix of technical short-term trading and fundamental valuation in the long term. Changes in short-term prices are likely to be more volatile or noisy than long-term trading.
* Prices could not represent all the available information at any given moment (contrary to EMH). The share prices can only represent that detail, which is important for a particular investment horizon.

 In many natural systems, we find this. A cell will split inside a newly formed embryo. Then they'll divide the two cells again. This process will continue, but some cells will die eventually and some will continue to grow. Some cells will become part of the brain at some stage and others will grow into the heart. Just as we cannot understand the onset of turbulence in a chaotic system, we cannot explain when and why this transition occurs. Nevertheless this body gradually evolves into a living human being who breathes. There is local randomness at the cell level, but the ultimate structure is deterministic: one solution, i.e. worldwide determinism. Likewise, financial markets are a volatile, deterministic system. In short,' chaos' is a neat relation to shared experience. In its recent establishment as one of the 'trendy' academic fields, the gradual realization that chaos is important to such a broad range of subjects and provides a rich field for new research initiatives is definitely a factor.

**CONCLUSION**

The theory of chaos can be interpreted as a suitable section of information suitable for seeking order in chaos. This theory was initially used to make instruments for stock trading, but the scope of its use in finance has now spread. The main arguments are: (1) the chaos principle is competitive and may well become a "convenient" principle of the financial market, (2) traditional finance does not take into account mobility, while the chaos principle relates to system dynamics, which brings the principle closer to reality and (3) instability is not only related to the crisis to which the uncertainty principle applies to the financial market. , but also to the concept of financial instability in Minsk, which considers financial market volatility as such and adds it in many ways to its innovation. In general, these claims are based on the creative experience of applying anarchy principles to financial market analysis.

The application of chaos theory to finance opens up additional possibilities for the interpretation, assessment and vision of opportunities for the growth of financial markets. The attempts to analyze the prospects of the financial market from a chaos theory perspective broaden the boundaries of its application and promote the development of new mathematical analysis techniques and methods. There is a very dynamic stock market, and the only assumption that can be made is that it is volatile. The stock market's unpredictability is due to the randomness of many of its activities. One may try to capture the structure of unpredictability through the theory of chaos and view it in a variety of models. The theory of chaos is a groundbreaking approach to understanding the actions of financial markets and predicting them. The transition from finance to the use of big data coincided with the beginning of its introduction. As computers and information became stronger, chaos theory in financial markets could become a greater part of evaluating and predicting. Externally, financial market activity can seem unpredictable, but chaos theory also helps one to define trends based on the randomness, equilibrium or chaotic overload of a complex financial system. But since the device is so vulnerable to the initial conditions or small quantities of different noises and vibration, internal and external stimuli, there is no chance of accurate prediction. However it offers metrics for the growth of markets and makes it possible to determine the degree of risk of such events and actions.

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