Classical Models used in the Management of Financial Instruments Portfolio

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Abstract
Classical models used in the management of financial instruments portfolio constitute the basis of modern portfolio theory even if you are currently their application lead to results limited.
Key words: *fair game; martingale; submartingale; random walk*

Portfolio management theory of financial instruments has its origin in the first half of the last century, when they were designed first methods of risk analysis and return on investment in financial instruments. The main models for the analysis of financial investment highlighted at the beginning of the century XX have been model "fair game", the "martingale" and "submartingale" or the "random walk". Although, at present, the application models referred to above lead to results limited, this forms the basis of modern portfolio theory, and for this reason i consider it necessary to their submission.

The model „fair game"

Louis Bachelier, in the year 1900, propose the model "fair game" in his book of dizertatie having regard that the topic "Theory speculation". In the following period, this model has been the subject of analysis carried out by Paul Cootner in the work ("random character of stock market rate") .

Bachelier has revealed that the investment decision has been taken on the financial markets is based on two types of probabilities: a mathematical probability that can be associated with pure random events and the second category of probability dependent on the achievement of certain future events.

This second category of probabilities is a subjective analysis and it cannot be observed in the evolution of previous price financial assets. In this way, the prices on the market are evolving "correct" ("fair game"), reflecting all the events known on the market at the time decision and not events which might arise.

Subsequently of work carried out by Louis Bachelier, it can be noted tests of organizing this model in a form mathematics made by Eugene Fama, But also attempts to develop the model through its application on the development of financial securities are not traded on the market North American or European.

The model "martingale" and "submartingale"

By model "martingale" and "submartingale" has proved that, in the process of production of the course financial assets, may intervene the process of autocorelatie (connection of interdependence).

Studies have shown that if PJ,t is the price of an active "j" at the time of "T", developments in this price is a process stohastic type martingale" if:

$$E\left(p_{j,t+1}\big|\Phi_t\right) = p_{j,t,}$$

or a process of type "submartingale" if:

$$E\left(p_{j,t+1}\big|\Phi_t\right) \geq p_{j,t}$$

As a result of analyzes carried out it has been demonstrated that, in a situation in which the price of an active follows an evolution of type "martingale", then profit what are expected to be obtained, has a production with the playing of the model "fair game". In 1989, Maurice Roy them mutual proved that is not valid, demonstration carried out on a stock portfolio.

Several empirical tests carried out subsequently on several series in the prices of some assets on international financial markets have shown that most of the prices of the assets in the market follows an evolution of type "martingale". Model assumption they have imposed in modern portfolio theory. It has been shown that if the price of a financial asset does not follow an evolution of type "martingale" means that this price is not correct format on the market and that there are opportunities for arbitration that can be made of them. The basis of the hypothesis markets effective, these opportunities for arbitration will be auctioned off by investors until they will disappear and the price title will be followed by a process stohastic type "martingale".

The "random walk"

Still in the year 1900, Louis Bachellier theory has been created "random walk", theory that demonstrated empirical by Alfred Cowels arbitrate in 1933 - 1937 by testing it on price developments in the US market. Also, in the year 1953, Maurice KENDALL tested theory "random walk" on the price of shares and of the goods from the British market, noting that it follows an evolution relatively random, apparently chaotic.

Conclusion this model is considered to be one fundamental for modern portfolio theory and can be made: the yield assets "j" at the time of "t+1" is independent of the information available at the time of "t". In other words, the best estimate based on the information available at present could not explain evolution of earnings expected for a future period. The "Random Walk" considers that on a market that is evolving under the conditions described in the model "fair game", financial gains from the investment in assets whose price changes at random, are identical and independently distributed over time. At the same time the model claims that for such assets, variant and the deviation is independent of the amount of information available at the time of the decision.

The "random walk" has had serious implications in modern portfolio theory, especially on explaining correlation between the price and the value company, Financial markets in balance conditions in which the price includes all of the information available and the "normality" of price changes. Mandelbrot has shown that distribution of price changes when hypothesis "random walk" is confirmed it would not be normally distributed, curve adjustments being tilted significantly to the right (1963). Schwert și Seguin (1990) au arătat și ei prin studii empirice că în unele cazuri, evoluția de tip „random walk" încalcă ipoteza normalității probabilităților de distribuție.

This model has been considered by the experts as being too restrictive of financial investments. In this way, by referring to the model, Mandelbrot (1966) has shown that it is possible to create models to which does not simply rely on the hypothesis that the prices on the market have an evolution purely random. In his opinion Mandelbrot, these models must take into account dependence which exists between the prices assets at different times from time, it is not relevant, but for increased profits expected. Also, Eugene Fama, when theorized effective markets, showed that the assumptions of the "random walk" are restrictive and may not be used profitable in actual market conditions.

Despite its restrictions, the hypothesis "random walk" has proved useful and important for the research projects linked to the operation of capital markets. A series large empirical research carried out on capital markets generated by this hypothesis represented a particularly for modern portfolio theory (especially for markets theory effective). Yet this hypothesis may dominate discussions with the relevance to in the case of a market efficient. Even those who have given evidence against this model (Lo and MacKinlay in particular) have further explained later views. It is

clear that Definite renunciation to this model would have major impact on efficient markets theory.

These experiments on the organization and structuring of the concepts relating to investments on the capital market are considered some mediocre effects, so have been changed with modern portfolio theory.

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