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Profiting from Chaos
Using Chaos Theory for Market Timing, Stock Selection, and Option Valuation

McGraw Hill, New York 1994.
249 pages, 53 figures, 6 tables, bibliography (128 items).
ISBN 0-07-066786-1

The book of Vaga concerns with investment analysis, speculation, chaotic behavior in systems, stocks, options (finance), hedging (finance). It consists of 10 chapters which will be reviewed in sequence.

1. **Chaotic Markets: Opportunities and Dangers.** Deterministic chaos theory aroused interest among investors after the Wall Street Crash. It tries to explain the bimodal distribution of chaotic states with different risk-regard profiles.

2. **Complexity: The Origins of Life and Bull Markets.** The authorities for Vaga here are Haken and Prigodin. Yet, in the whole book Vaga never mentions the key role of hyperbolicity (semistability) in the sense of the lasting presence both of the stable and antistable directions both in the state evolution and equilibria. Reviewer insist that without the knowledge of the property being hyperbolic, the deterministic chaos is not conceivable. On the opposite, Vaga claims the presence of some stable equilibria needed for functioning of chaotic systems.

3. **Indicators of Chaos: Diagnostic and Predictive Tools.** A single Lyapunov exponent is introduced. So, although the dissipativity is introduced, there is no characterization of dissipativity by the sum of the Lyapunov exponents. The author puts together the uncertainty principle of quantum physics, the consequence of Fourier apparatus used, and the long term unpredictability of evolution of the states of deterministic chaotic systems which is due to unexactly known initial states and hyperbolicity. Profiting of chaos in Wall Street is demonstrated, may be not intentionally, by the private companies such as Iterated Systems; Fractal Markets, Inc.; Neural Ware, Inc. The scientific meetings on the theme, described by the author, may be again nonintentionally, as big shows, confirms this, two.

4. **Random Walk: Just the First Step Down Wall Street.** Mandelbrott's application of Paretian instead of Gaussian distribution for speculative markets is advocated as well of Navelierr's non-linear correction of modern portfolio theory.

5. **Synergetics: Beyond Chaos and Random Walk.** For the first time in the book are written the deterministic equations of the motion but no of a system, say the Lorenz, exhibiting the chaotic behavior. There are presented some unimodal and bimodal potential functions. Nevertheless, the large class of dissipative systems with deterministic chaotic behavior is nonpotential, e.g. the Lorenz system is potential only near the central equilibrium. On the opposite, the rotational motion, as near the off-central equilibria of the Lorenz system is very useful for the chaotic motion. In this chapter on synergetics there is nowhere mentioned the synergy between the several hyperbolic equilibria.

6. **Megatrends and Manias: The Fundamental Difference.** The open systems, the term coined first for open society (system) by Bergson, then by Popper and Soros are discussed following Landauer, nevertheless their definition is not given in Vaga's book. To empirical rules of Zweig for stock market are stated: don't fight the Fed, and don't fight market "momentum". Vaga states: a market mania occurs when a price trend moves against the prevailing fundamental bias. Interesting historical table of manias, starting

with British Government Debt, Amsterdam 1763 and ending with gold in 1970s is given: empirical data and rules form the stronger part of Vaga's book.

7. **Market Timing: Vindication of Technical Analysis.** The trading rules of Brocks: buy signals generate higher returns then sell signals; returns following sell signals are negative; returns following buy signals are less volatile than returns following sell signals. Eras concept of Ambachtser, starting late 1920's: mostly depression; war and controls; reconstruction and prosperity; inflation; invisible hand; degearing. Elliott wave principle postulates a fractal structure in the time series of financial markets.

8. **Stock selection: Earnings Momentum and Earnings Torpedoes.** Zweig stock selection criteria: strong earnings growth; a reasonable price to earnings ration; buying by corporate insiders; strong price action in the stock relative to the market. O'Neil's *negative* stock selection criteria: heavy volume without corresponding price advance; failure of rallys after a downtrend has started; protracted periods of declining volume; divergencies in key marker averages.

9. **Option Strategies: Hedging in Chaotic Markets.** Option strategies for chaotic markets by Vaga: As in the coherent market state, the short-term behavior of the market in a chaotic state can usually be adequately represented by the log normal distribution. However, in the longer term, there will be significant drift toward one of the stable states.

10. **Conclusions: a Role for Active Management.** The role of Paretian distribution is stressed. Vaga claims: Historically, stocks have provided a 10% total return with more than a 20% standard deviation in returns or risk. Vaga follows with pride: our nonlinear market model predicts that when crowd behavior prevails and fundamentals are clearly positive, then the market should provide more then 25% annualized rate of return, while risk drops to approximate 10%. Nevertheless, look at extra conditions of Vaga! To the reviewer it looks like that the safe way to profit from stock market is to publish "The Zweig Forecast" or Vaga's book.

Just one of 128 bibliographical items of the book is of Vaga — a letter to the Editor.

In this time in the Czech Republic mean citizen is the private investor. May he read the 13th edition of modern main-stream classic, P. Samuelson's Economy with preface by V. Klaus. Samuelson shows his skepticism on the stock market speculation. Vaga's book fully miss the role of privileged information (may be with the exception of Zweig's advice: the corporate insiders should be buying corporate stocks) on the companies to be traded in the stock market. In Vaga's book there remains unsolved the other problem: are the real decisions makers the small speculators or they are able to cause the small fluctuations only and the real decisions are given by "haute-financiers".

The book under review is concerned with very interesting topic. It is written by a laser specialist which is not hard to see. Nevertheless, there is nowhere mentioned the fundamental notion of the state of the system. It is likely over the intellectual power of any person to start construct some (deterministic) chaos theory without the system-theoretical notion of the system state. The reviewer is in the start to do so in the frequency domain, after the experience in the state space domain but he is only at the beginning.

Antonín Vaněček