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Enhanced & Fractal Involving of "Helium Nat Gas Project" Econophysics

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Abstract

Inclusively new to econophysics studies of Helium Nat Gas Project, herewith proposed Mediaphysics as part of sociophysics to interparts description between probability and hypothesis evidently found between fractal realms and econophysics of markets, physics markets or stock markets. More precise iterative study ought to be held to configurate how fractal dimension which are not integer, but also proofed numerical & analytical.

Keywords: Fractals, Mediaphyiscs, Nat Gas, Sociophysics, Helium, Econophysics

1. Introduction

Some physicists claim their modeling & data-analysis can change the way we view stock markets but mainstream economists have yet to be convinced [M. Buchanan: **"The Physics of the Trading Floor",** NATURE] [1].

Ever concluded this week's lottery numbers can be predicted by identifying hidden patterns of previous draws, standard economic theory similarly pours cold water on the idea that the behavior of stock markets affected by past market movements. Future behaviour of a market depends only on events in the real worlds, such as profits & losses made by individual companies.

Further, some economists argued that past trading does seem to have subtle effects on future fluctuations. Others in the new field of 'behavioural economics' suggest that the irrational psychology of investors lies behind these trends followed with some surprising allies: physicist intent on revealing hidden patterns in market behaviour in the field known as econophysics.

For much of the 20th century, economist believed that the probability of a given change in the value of most markets – such as stock or foreign-currency exchange – followed a pattern known as a bell-curve. This curve has two important properties: averaged over time, the most likely change is zero, and, because the curve tails off rapidly in extreme values, the probability of large fluctuations occurring is very low. Average stock prices may increase or decrease over the long-term, but day-to-day fluctuations seem to follow the bell curve.

1.1. Broadening Economic Criteria

Analysis of the data, however, shows that market behavior is subtly different. In the 1960s, Mandelbrot, Watson & Fama showed that markets are better described by power-law distributions [Mandelbrot and Fama]. Power-law curves look superficially similar to bell curves, but their tails – the regions that cover large fluctuations – are different. Big jumps in market value are more common in power-law systems, giving rise to power-law curves' characteristic 'fat tails. The tail's shape is described using a parameter 'υ' – the higher the value of υ, the faster the curve falls away, and the thinner the tail.

Over the past 20 years have shown that, in the case of fluctuations on the German stock exchange, the parameter is > 3. This has important consequences, because statistical theory strongly suggests that systems with υ greater than three cannot be random.

On behalf HELIUM NAT GAS PROJECT beheld as Astranomics affiliated of helium, propylene extraction & processing from natural gas accompanying KG-Media as Associate-Company & Mr. Ir. H. Tb. Iwan Zuchra hand-signed Letter to Robert Gabriel MUGABE, we also describe quotes Kuznetsov & Mandel of Mediaphysics: "part of sociophysics, studying processes of mass communications in social & sociobiological systems" [1], in terms of econophysics of the project [2].

1.2. Mediaphysics and Sociophysics

Mediaphysics has its own subject & operates with data of certain types: 1. Subject – mass communications. Communications between units [people or animals] in some important snese have similar nature in social & sociobiological systems [Wilson] Mediaphysics studied from different perspectives; however, the importance of that field encourages some isolation of the subject.

1.3. Data – Observed and Unobserved

Between two datasets: observed & unobserved, traditional statistics will treat those datasets identically. However, they are

qualitatively different but on a top of that, but there is a structure of these individuals by their distribution. Traditionally, social and biological sciences used statistics [not statistical physics] to describe the above-mentioned phenomena, ignoring the deep differences between two data types & just using observed ones.

The placement of mediaphysics into sosiophysical realm needs some comments. An uncertainty exists about Sociophysics subject which have a super-universal meaning and embraces both nature & social life within entire paradigm [universal definition].

The latest reviews [Stauffer] do not provide exact definitions, but actually describe a much narrower field, limited mainly [but not only] by computer simulations of social phenomena based on physical principles [simulation definition]. For our purposes, we may tentatively define sociophysics as a science about the application of physics in social sphere [broad definition].

Falls into that broad definition is another related field with established name, econophysics. It is mostly dedicated to applications of statistical physics to stock-options pricing &portfolio optimization [Mantegna & Stanley].

In the most popular simulation sense, sociophysics typically considers a society represented as a set of interrelated & interacted nodes [people] on lattice [Ising model & its generalizations] or a random graph, subject to further computer simulation of its dynamic. It could be called Social Simulation where physics is not necessarily involved.

Simulations have significant limits in numbers of objects and involved factors. Moden causal theory [Pearl] applies very sophisticated methods just to separate "causation vs. correlation", a problem that in physics usually stands in a very different manner and usually doesn't stand in simulations at all.

The introduced mediaphysics overlaps with discussed above sociphysical interprerations & statistics, but focuses only on communications and thus belongs to the sociophysics field inside its universl & broad definitions. The mediaphysics orients to real-life data, what currently is not typical for sociophysics simulations. It deals with both observed and unobserved data unlike traditional statistical approaches. Plus, mediaphysics is associated with two meanings of the term "media", both of which are relevant to the approach: media as an environment in which mass processes of communications are taking place; and, in a form of "mass-media", as an advertising [or other message] spreading through mass communication channels, which itself is a very important topic.

1.4. Fractal involving econophysics

One of the great innovations in finance coming from econophysics is the fractal market hypothesis, which contradicts the traditional efficient market hypothesis [2]. Here described a mathematic [or statistical physics] technique to analyze population distribution between two or many alternatives.

In Blenkinsop [2004] the number of squares N(r) of side r necessary to cover all the deposits [alternatively the number of squares containing one or more deposits] is measured as a function of r.
In fractal geometry
$N(r) \sim r^{-Db}$
where Db is the box-counting fractal dimensions [3].
To correlate it to expression in Green function [in Mediaphysics/ sociophysics description], we introduce
$N(r) \sim 1/r^{Db}$ especially if Db = 1, $N(r) \sim 1/r$.
Considering of r as a single variable, its differentiation respect to r, dN(r)/dr can be seen as multiplication with [1/r]
so $\nabla_r = 1/r$.
Now we compare to transfer operator [Kuznetsov & Mandel]:
$Q = \exp[-W_{t+1}(q)]. g$
where we know: $d/dx [e^x] = e^x$
and further $\nabla_x [e^x] = e^x$

1.5. Enhancement of Helium Nat Gas Project

Referring to Maria Lopez Garcia & Jose Pedro Ramos Requena about fractal market hypothesis, we found the case for HELIUM NAT GAS PROJECT are in relation between probability & hypothesis.
From the Figure 1 <MART.pdf>, the evolution from histogram between 'number of occurrences' to Z, instead to bell-curve between Probability & 'Size of Jump in market value' as well as to 'probability density function' <-> profit, we found for Levy stable process
$P(Z) = [1/\pi] \int e^{-\gamma \Delta t |q|^{\alpha}} \cos(q Z)\, dq$

2. Conclusion

Have been in completion of reasons & descriptions of hypothesis whereas fractal properties coincidence with econophysics of market, especially about helium extraction project from natural gas. To conclude are Astranomics come from airplane jet business also can be applied, we must make specific & as a whole study of calculations and assumptions to follow have been determined limit of economic value of helium extraction from nat gas [0.05 % helium containing per gas well] before establishes the project.

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