

Notes of a Hypothesis

What Caused the Bubble?

(Mainly in the Real Estate Market)

“Swarm Intelligence”

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(Written by Takashi Yamaguchi, a real estate appraiser in Japan)

The cause of a bubble had been a mystery for a long time. But, when we look at us from the standpoint that we are animals, not machines, its essential nature or underlying reality comes into our sight. Recent progress of natural sciences made it possible for us to think this way scientifically.

This stand point had been somewhat like a taboo. We have histories in which it was misused politically. Or, there may be teachings of religions. Even if it is not so, others may look down on you when you say it. But now, we are suffering from a global financial crisis. I think we can not spare this way of thinking in order to get a right answer or to conquer the crisis.

This document, I write here, basically started from new economic theories that consider the human ‘animal spirit’ is working as a quite important factor in our economy.

< Way of thinking (summary) >

1. A Chain of “element + assembling power = element of the next stage”.

(Self-organization, Self-assembly, Emergence)

Nature: ...Element particle > Atom > Molecule > Substance > Earth > Solar system >
Galaxy > Supercluster ...

Lives: ...Cell > Organ > Lives > Herd/Swarm ... (A herd emerges from assembled agents.)

Emergence: Mass independent elements form an order/system which has another quality.

2. Genes create animals to pursue their self-interest. (The source of greed)

3. Evolutions of our brain system

* New era animal has a larger cerebral in the brain.

Human has an especially large new cortex.

* Programs in our old brains transmit to our descendants.

Knowledge that entered from our new brain does not (or seldom) transmit to them.

4. Our old brains react quicker than our new brain. We think things with our new brain later.

* Our old brains are not always fit for complicated systems that our new brain created.

* We need proper information and knowledge that our new brain needs.

Without these conditions, our new brain can not work well, so the old brains come out.

(Future<Present. Speculation<Utility goods. Existence of uncertainty)

A spreadsheet (new brain) doesn't work without data (information) and formulas (knowledge).

5. Human assemblages usually have leaders and commands/controls.

But, there are also assemblages without them (or commands/controls are weak).

6. Hereinafter, I classify the animal assemblages as below.

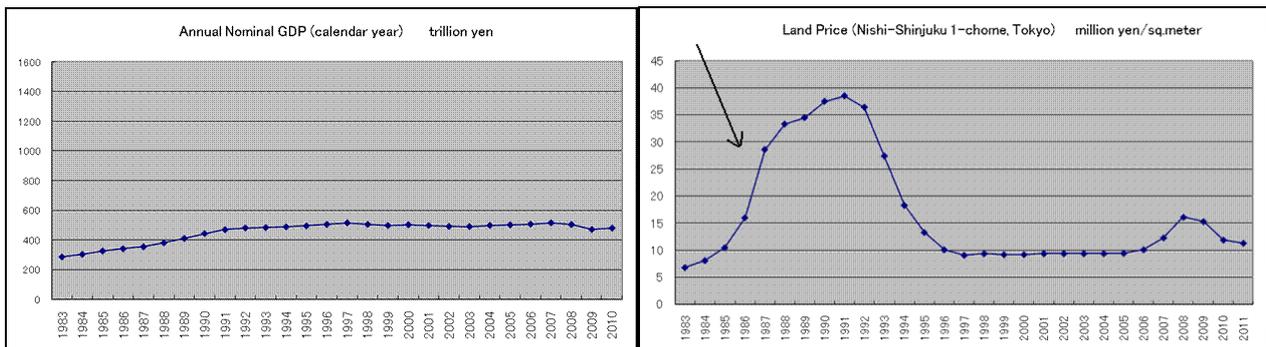
(1). Organization: An assemblage that has leaders or commands/controls.

(2). Herd/Swarm: An assemblage that does not have leaders or commands/controls, whereas information etc. activates members' common programs, so a herd behavior occurs.

< Bubble and Swarm Intelligence >

In a volatile real estate market where 'first come, first served' or speculative fevers flourished, agents are not acting in accordance with a leader's commands/controls. No leader exists in the market. No centralized control structure is dictating them.

(Nominal GDP vs. Land Price)



On one hand, they decide their transactions independently while interacting locally with one another and with their environment. On the other hand, a market movement (herd) emerges as a different existence out of their assembly.

While information, ideas, emotions, etc. spread, their programs which they have in common start to work. Someone rushes to purchase for resale gain. Someone bring forward their schedules. Someone rushes for their children's future use even a decade ahead. Some sellers become unwilling to sell soon, waiting till the prices go up further.

They all are building up the price-hike together in a way that 'price will rise, so they want, so it rises.'

When this movement appears, actual present demands can not cope with the price that this motive built up.

< Each agent acts independently and impulsively! >

< A collective behavior appears without leaders or commands! >

< Why is it possible? Does it come from some instinct? What instinct? >

If we think this question from a viewpoint that we are animals, natural reasoning is that it is a herding behavior.

< Herding behavior >

Pattern 1: A collective behavior that emerges when their members' common programs work while some certain information, emotions, etc. spread. Pattern 2: Information is embedded in clock genes, etc.

Price levels created here are the product of the herd behavior. Though its excitement is building up a bubble, as each agent is moving independently, they are not aware of the fact that they are causing a bubble. (After the banquet, they will start to search a criminal.)

When a strong move appears in a high uncertainty, market trend will be subject to the old brains. Even if some individuals behave rationally, they have to take the trend into account. Whole market trend will be left irrational.

The strong move appeared here is a strong herding behavior that humans created. Remaining this point unclear, we would not be able to get the answer for the question why the bubble occurred.

(Refer to 'Swarm intelligence'>

http://en.wikipedia.org/wiki/Swarm_intelligence

< Herding behavior is a quite strong instinct! (Genes' survival strategy) >

A boom is a chain reaction that an assembling power bears when a change occurs. What actually cause speculative price fluctuations are the human reactions to the events, not the events themselves.

Human reactions occasionally contain mistakes, biases, fears, confidence, and etc. etc. Strong assembling power pulls the members into their herd.

- * When a human (not God's) hand appears, people dispute. But they do not argue the conclusion which came out here (price/fluctuations), even if it is merciless. There is no entity which they can dispute with.
- * Speculative fever and discomfort against the price-hike would coexist in a people. Many people are unconscious of this coexistence.

- * Even if one think the price-hike is unreasonable, he/she can not buy the property without accepting the price.
- * Even the people who do not buy/sell properties would be involved into a swirl when their own properties' nominal prices go up.
- * Experts in related businesses also will be involved. No one can forecast the future perfectly beyond uncertainty.
- * An economist who points out that the current state is a bubble would be looked like a heretic.
- * Political leaders can not crush the bubble unless the majority joins his opinion. But, the majority itself will not be conscious of the bubble before its burst.

(As a rare case in the world history, Japan started regulations on land price on its way of a huge bubble.)

In Japan, land price-hike had become a large political issue in mid-1987. Government had set up the emergent guidelines for land transactions. Window guidance to bank loans was strengthened. Areas were designated in which land transactions were under surveillance. But these controls did not succeed to lower the price levels.

Around 2.5 years later, the Ministry of Finance started its regulations on banks' lending balance for real estate transactions. At last, it triggered the bubble burst.

(In hindsight)

The most regrettable events were the loans in these 2.5 years. They led to a historical severe financial crisis, afterward. The most important subject to prevent a bubble is our sooner awareness that we are in a bubble. We need some measures to make it real.

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(P.S. Mar. 2013)

<Reference books>

<Basic viewpoints which I introduced into this report >

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"Animal Spirits"

Author: George A. Akerlof and Robert J. Shiller

1. Animal spirits play a quite important role in the bubble phenomenon.
2. We might model the spread of a story in terms of an epidemic. Stories are like viruses.

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"The Wave Principle of Human Social Behavior and the New Science of Socionomics"

Author: Robert R. Prechter Jr.

1. The law of supply and demand governs prices of utilitarian tangibles.
But, this rational process does not work in financial speculations.
2. Our old brains play an important role in the financial speculations.
Herding behavior plays a quite important role in it.
3. Chain reactions (Fibonacci) are working in the financial speculations.
4. As with so many paleomentational tools, herding behavior is counterproductive with respect to success in the world of modern financial speculation.
5. Complex phenomena following power laws are not impossible to predict. It is a formological system. The key to predicting the formological system is in their patterns.

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(Biological way of thinking)

By watching us biologically, the essential cause of bubble phenomenon came into my sight. The starting point was "Why lives formed herds/swarms?"

At that time, "Swarm intelligence of slime molds" was a topic in Japan. It was really astonishing to me. The beginning of herds/swarms was for intelligence!

Why? It is because niches open out by reducing/overcoming uncertainties! It is the same as our speculations! It made me divine the truth unconsciously working in the speculation/bubble!

When I knew the evolutionary psychology, I thought, there may be relations between "our economy" and "human evolution". I thought, correspondences would exist in essential fatal reactions/emotions of lives. It would come from the "mechanisms between evolutions and gene alterations", "fractal structures", and "interactions between lives and their environments". I built up some hypotheses upon it.

(Even only by the action of following others (reaction), humans unconsciously herd. Moreover, delight/fear (emotion) makes it easier to diffuse. Still more, the existence of opinion leaders (see: diffusion of innovations theory) may make it easier to diffuse it, again.)

(The latest publication of the pioneer)

"The Social Conquest of Earth"

Author: E. O. Wilson

1. The very existence of human nature was denied during the last century by most social scientists. They clung to the dogma that all social behavior is learned and all culture is the product of history.
2. Human nature is the inherited regularities of mental development common to our species. They are the "epigenetic rules," which evolved by the interaction of genetic and cultural evolution.

(It is becoming an established fact due to a progress in neuroscience and genetic analysis.)

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(Physical way of thinking)

The phenomenon that is called "herd behavior" in social science is a "critical phenomena" in a view of physicists.

(The publication of the pioneer)

"The Misbehavior of Markets: A Fractal View of Financial Turbulence"

Author: Benoit Mandelbrot and Richard L. Hudson

"Ubiquity: The Science of History ... or Why the World Is Simpler Than We Think"

Author: Mark Buchanan

"経済物理学の発見 (Discoveries in Econophysics)

Author: 高安秀樹 (Hideki Takayasu)

1. Market is a "Self-Organized Criticality".
2. Power law distribution and fractal structure appears in it.
3. Analysis of foreign exchange data showed the power law distribution.
It did not show the normal distribution which is presupposed by the financial engineering.
4. Bubble is a phenomenon in a criticality. It is accompanied by a reaction (collapse).
Inflation is a phenomenon in which supercriticality continues.
5. Inflation occurs/grows by group dynamics. In it, even a hyperinflation occurs.
Deflation does not have the "hyper". Two are different phenomenon.
6. As for the change of market price, the complete prediction and control are difficult.
However, we will be able to raise the predictive value to some extent.

(As for general goods or real estates, sometimes, price levels do not so change. There are even cases, price levels can not be easily said, or, prices have some different levels in an area.)

(I guess, there may be times when they maintain territory, they move to a herd, and they are in a herd. In these goods, both "a normal distribution in a short term" and "a power law distribution in a long term" may appear.)

(Big errors could occur if we analyze data in times of change premising normal distribution.)

(It does not diverge. < Our sense of value + Theory of criticality or logistic function.?)

(Inconvertible bank note is an exception.)

(If a basic part of economics will change, the basis of valuation theory will change, too.)