Bubbles in the Economy and in Economics

Heinz D. Kurz
Graz Schumpeter Centre
University of Graz
heinz.kurz@uni-graz.at

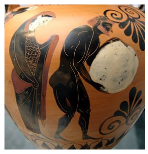
Contents

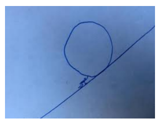
1 Introduction

Marquis de Condorcet (1743-1794):

'He who limits himself to knowing only the epoch in which he lives, even if it enjoys a marked superiority over its predecessors, exposes himself to the danger of partaking of all its superstitions; for each generation has its own, and it would be exceedingly dangerous to fancy oneself so close to the ultimate limits of reason that one no longer had to fear these prejudices.'

Sisyphos and the Bubbles





Destruction and Production of Bubbles

- Adam Smith on the 'Mercantile System'
- Marx on the 'vulgar economists'
- Keynes on the 'classical school'
- Friedman and Lucas on Keynes
- Etc.

Bubbles in economics

- Is the "Efficient Market Hypothesis" (EMH) applicable to the market for economic ideas?
- Is economics a perfectly functioning selection mechanism that abandons everything that is wrong and misleading and preserves everything that is correct and valuable?
- There is strong evidence that this is not so.
- Marx, Schumpeter: the role of "ideology"
- Report on IMF: "groupthink", "capture", lock-in
- Contagion and herd behaviour
- Inertia, vested interests, sunk costs
- Reputation mechanisms

Bubbles in the economy and in economics are related

- Keynes (1936): "The ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood : Indeed the world is ruled by little else. ... Madmen in authority, who hear voices in the air, are distilling their frenzy from some academic scribbler of a few years back."
- A: Blinder (1987) sees "religious zealotry" rather than detached scientific work in New Classical Economics (Lucas, Sargent, Prescott) and deplores an amazing disrespect for facts.

Complexity

- In economics and in the economy people wish to understand a part of reality for ist own sake or to make the best use of it by operating upon that knowledge

2 The Pretension of Knowledge

- Scottish Enlightenment (Hume, Hutchison, Smith, Ferguson)
- The unintended consequences of human actions
- Ferguson: 'History is the result of human action, but not the execution of any human design.'
- Man – 'a heap of contradictions' (Hume): an early 'Impossibility Theorem'

Knowledge in Economics

- Boulding, K. E. (1956). *The Image. Knowledge in Life and Society*: 'Knowledge has an implication of validity, of truth. What I am talking about is what I believe to be true; my subjective knowledge. It is this Image that largely governs my behavior.'
- Machlup, F. (1980). *Knowledge and Knowledge Production*
- 'New' Growth Theory: knowledge as a quasi-public good

Friedrich August von Hayek

- Economics as a coordination problem
- Deliberate efforts among individuals to achieve coordination of theor activities
- "Spontaneous order"
- Coordination over time: coordination failures (C. Menger: "Time – error"). Hayek: "Before we explain why people commit mistakes, we must first explain why they should ever be right." ("Economics and Knowledge", *Economica* 1937)
- Price system: a communication network and the most efficient device to generate, collect, process and transmit economic information. Prices as signals
- "Division of knowledge" – information is dispersed throughout society

Two types of knowledge

(i) the knowledge the economist has;
(ii) the knowledge the agent has of the particular circumstances of time and place

- Assuming that economists are possessed of both kinds of knowledge leads to the misconception that the economist knows everything about the economy that is worth knowing and therefore can rationally plan the economy
- Assuming that agents are possessed of both kinds of knowledge leads to the misconception that "rational expectations" do away with systematic effects of economic policy on the economy

Both assumptions are untenable

- Nevertheless Hayek believed that prices contain everything that needs to be known
- Radical version of Hayek's point of view: Eugene Fama's "Efficient Market Hypothesis": Security markets represent at each moment of time the best possible forecast of the future

3 Knowledge and Beliefs: GE Theory

- ... presupposes a complete set of markets, including markets for future goods (e.g. coal next year or 20 years hence) E. Lindahl/ J.R. Hicks
- [Problem of stability of equilibrium (Sonnenschein, Mantel, Debreu 1974)]
- ... but such a complete set does not exist
- ... and there are uncertainties, which explain the emergence of markets for securities that pay off for uncertainties
- There are some futures markets for goods, whose qualities do not change over time (agricultural products, such as corn of a particular kind, and minerals, such as quartz)

GE Theory

- Bur there are typically no futures markets for industrial products: What is an airplane or a computer or a smartphone 10 years from now (provided the kind of product still exists)
- There are markets for the future: financial markets. Are they efficient in the sense of Fama? Their high volatility speaks against it. It implies dramatic changes in the value of corporate capital that cannot be explained in terms of suddenly available "news" (see Kirman 2011)

Beliefs

- Once there are missing markets, beliefs and changing beliefs matter a lot
- Information: observations that undermine, change or reinforce beliefs
- Information is costly to generate and worth getting; it can be sold and bought (e.g. Credit Rating agencies; incentive problem)
- Specialisation and division of labour on a large scale pays (it does not make sense for everyone to acquire the knowledge needed by a medical doctor, a lawyer, a pilot etc.)

- Information asymmetries, moral hazard, adverse selection
- Scale effect: information is the more valuable, the richer is the investor – he gets a higher rate of return
- Incomplete markets: by wary, if someone wishes to sell you something

Kenneth Arrow

"A key factor in the organization of the economy is the set of beliefs that people have about each other. They change those beliefs by searching, by computing, by analyzing, and when looked at properly, this gives rise to some considerable anomalies when compared with the standard theories that I and many others have developed. So in some sense, I'm finding some difficulty with work I've done in the past."

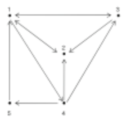
(Flyer announcing Arrow's talk at the OENB, 22 Oct. 2013)

Contagion and herd behaviour

4 Opinion Dynamics

- "All of this is a story of contagion, of interdependence, interaction, networks and trust."
  (A. Kirman, *Complexity Economics. The Graz Schumpeter Lectures*, 2011)
- One even interacts with oneself, viz. Adam Smith's ideas of *sympathy* and the *impartial spectator*.
- See, inter alia, contributions by R. Hegselmann and U. Krause

Network of interactions



$$A=\begin{bmatrix} 0 & \frac{1}{3} & \frac{1}{3} & \frac{1}{3} & 0 \\ 1 & 0 & 0 & 0 & 0 \\ \frac{1}{2} & \frac{1}{2} & 0 & 0 & 0 \\ 0 & \frac{1}{3} & \frac{1}{3} & 0 & \frac{1}{3} \\ 1 & 0 & 0 & 0 & 0 \end{bmatrix}$$

Model of opinion dynamics under bounded confidence

- $x_i(t+1)$ = arithmetic mean of all $x_j(t)$ for $j \in I(i, x(t))$
  $I(i, x) = \{j \mid |x_i(t) - x_j(t)| \leq \in\}$ the set of agents the agent i has confidence in j for a confidence level $\in > 0$.
- For $a_{ij}(t) = |I(i, x(t))|{-1}$ if $j \in I(i, x(t))$ and $a_{ij}(t) = 0$ otherwise
- Interaction tends to consensus if the principle of the "third agent" applies. (Any two agents give a strictly positive weight to a third agent.) $\mathbf{A}(t)$ has a positive diagonal, modelling self-confidence; $\alpha = 1/n$

"Principle of the third agent"

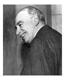
For n agents using weighted arithmetic means as compromise rules, the collective dynamics approaches a consensus, if and only if for the matrix $\mathbf{A}$ with rows given by the weights, some power has the property that any two rows have jointly a strictly positive entry in one column.

- Institutions shape the process of opinion formation
- Example: Reputation schemes in economics
- Invention, Innovation, Imitation in the "real" economy and in opinion formation
- The role of the informational entrepreneur, who shakes up the system and forces it to follow a new path

5 Keynes on Knowledge and Uncertainty

- Investment relates to an uncertain future, which cannot be dealt with in terms of a probabilistic calculation
- Long-run expectations and the confidence with which agents hold them
- "It would be foolish, in forming our expectations, to attach great weight to matters which are very uncertain." (148)
- "The outstanding fact is the extreme precariousness of the basis of knowledge on which our estimates of prospective yield have to be made." (149)

Animal spirits

"Even apart from the instability due to speculation, there is the instability due to the characteristic of human nature that a large proportion of our positive activities depend on spontaneous optimism rather than on a mathematical expectation, whether moral or hedonistic or economic. Most, probably, of our decisions to do something positive, the full consequences of which will be drawn out over many days to come, can only be taken as a result of animal spirits – of a spontaneous urge to action rather than inaction, and not as the outcome of a weighted average of quantitative benefits multiplied by quantitative probabilities." (161)

Animal spirits

"If human nature felt no temptation to take a chance, no satisfaction (profit apart) in constructing a factory, a railway, a mine or a farm, there might not be much investment merely as a result of cold calculation." (150)

Cold calculation vs. urge to action

"Thus if the animal spirits are dimmed and the spontaneous optimism falters, leaving us to depend on nothing but a mathematical expectation, enterprise will fade and die; – though fears of loss may have a basis no more reasonable than hopes of profit had before. ... individual initiative will only be adequate when reasonable calculation is supplemented and supported by animal spirits, so that the thought of ultimate loss which often overtakes pioneers, as experience undoubtedly tells us and them, is put aside as a healthy man puts aside the expectation of death."

Financial Markets – Beauty Contests

"... in which the competitors have to pick out the six prettiest faces from a hundred photographs, the prize being awarded to the competitor whose choice most nearly corresponds to the average preferences of the competitors as a whole; so that each competitor has to pick, not those faces which he himself finds prettiest, but those which he thinks likeliest to catch the fancy of the other competitors, all of whom are looking at the problem from the same point of view." (Keynes 1936a, 156).

Fundamentaldaten?

“It is not a case of choosing those which, to the best of one's judgment, are really the prettiest, nor even those which average opinion genuinely thinks the prettiest. We have reached the third degree where we devote our intelligences to anticipating what average opinion expects the average opinion to be.“

What matters is ...

- “to beat the gun“
- “to outwit the crowd and to pass the bad, or depreciating half-crown to the other fellow.“ (155)
- opinion dynamics

The market “is liable to change violently as the result of a sudden fluctuation of opinion due to factors which do not really make much difference to the prospective yield; since there will be no strong roots of conviction to hold it steady. In abnormal times in particular, when the hypothesis of an indefinite continuance of the existing state of affairs is less plausible than usual even though there are no express grounds to anticipate a definite change, the market will be subject to waves of optimistic and pessimistic sentiment, which are unreasoning and yet in a sense legitimate where no solid basis exists for a reasonable calculation“ (Keynes 1936a, 154).

Casino capitalism

“Speculators may do no harm as bubbles on a steady stream of enterprise. But the position is serious when enterprise becomes the bubble on a whirlpool of speculation. When the capital development of a country becomes a by-product of the activities of a casino, the job is likely to be ill-done. The measure of success attained by Wall Street, regarded as an institution of which the proper social purpose is to direct new investment into the most profitable channels in terms of future yield, cannot be claimed as one of the outstanding triumphs of laissez-faire capitalism ...”

Irrational Markets

Keynes:

„Markets can remain irrational far longer than you or I can remain solvent.“

Keynes at the Stock Exchange