

The Financial Crisis:
What Happened and How We
Need to Change our Thinking

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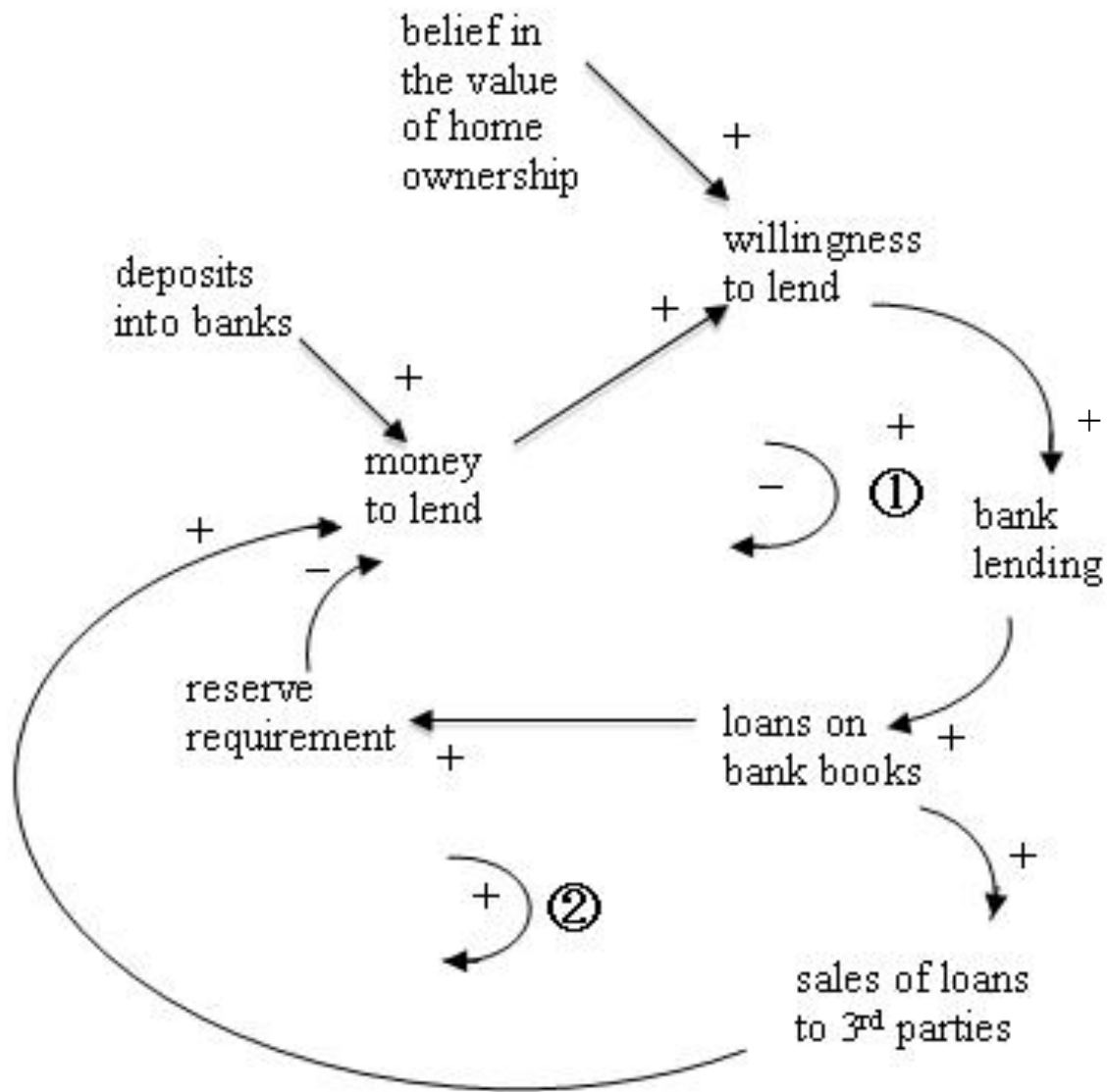
Washington, DC 20052

An overview of my presentation

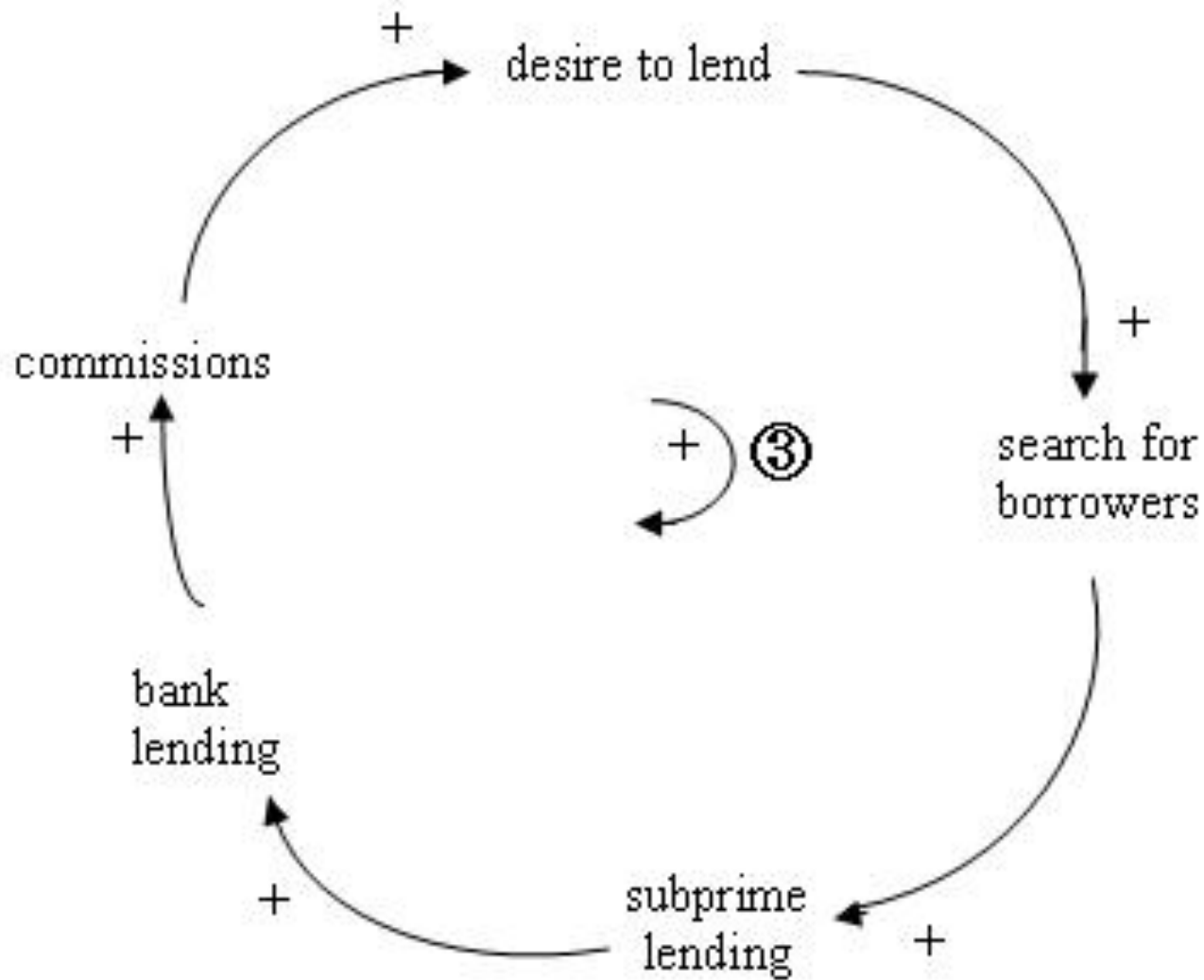
- How the financial crisis happened using causal influence diagrams
- The magnitude of the crisis
- How economists are thinking – using linear rather than circular reasoning
- Four models of scientific thought
- How thinking about economics needs to change

Credit cycles

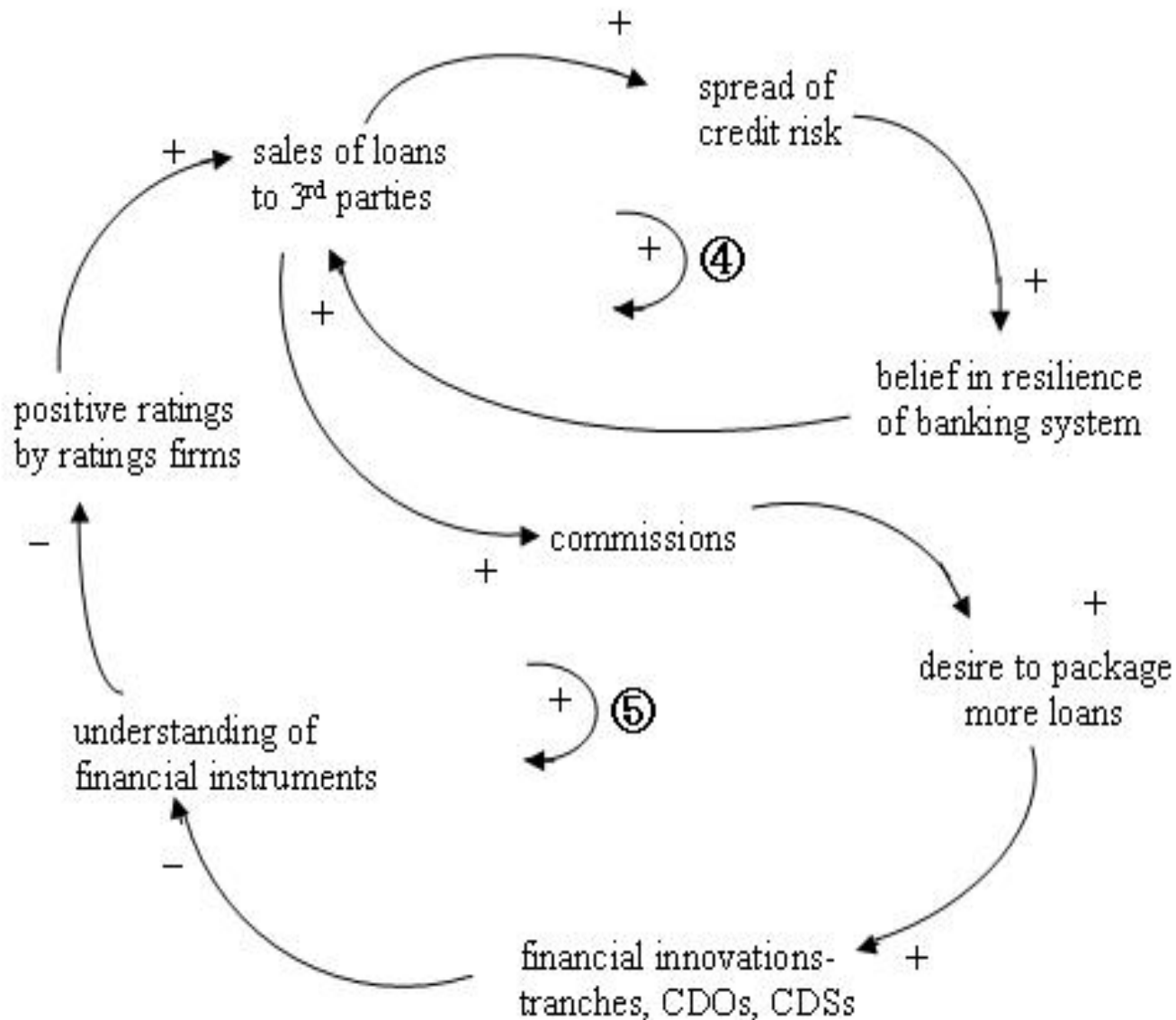
- Credit cycles are a normal part of market activity
- Economic growth raises asset values, which increases lending, which increases economic activity
- Prior to 2008 a super credit cycle was encouraged by new financial instruments, a belief in “market fundamentalism,” and other factors



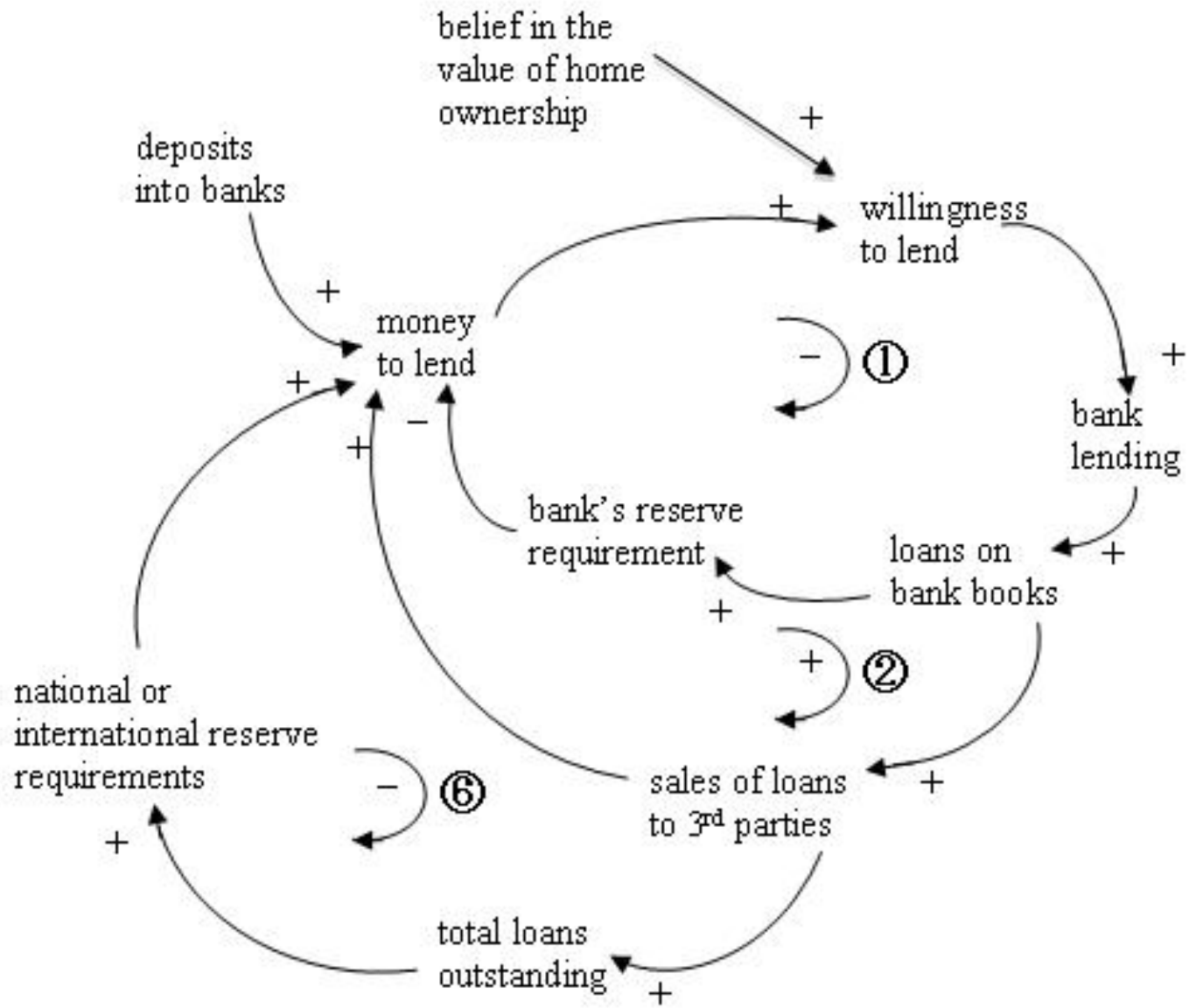
Reserve requirement and selling loans to 3rd parties



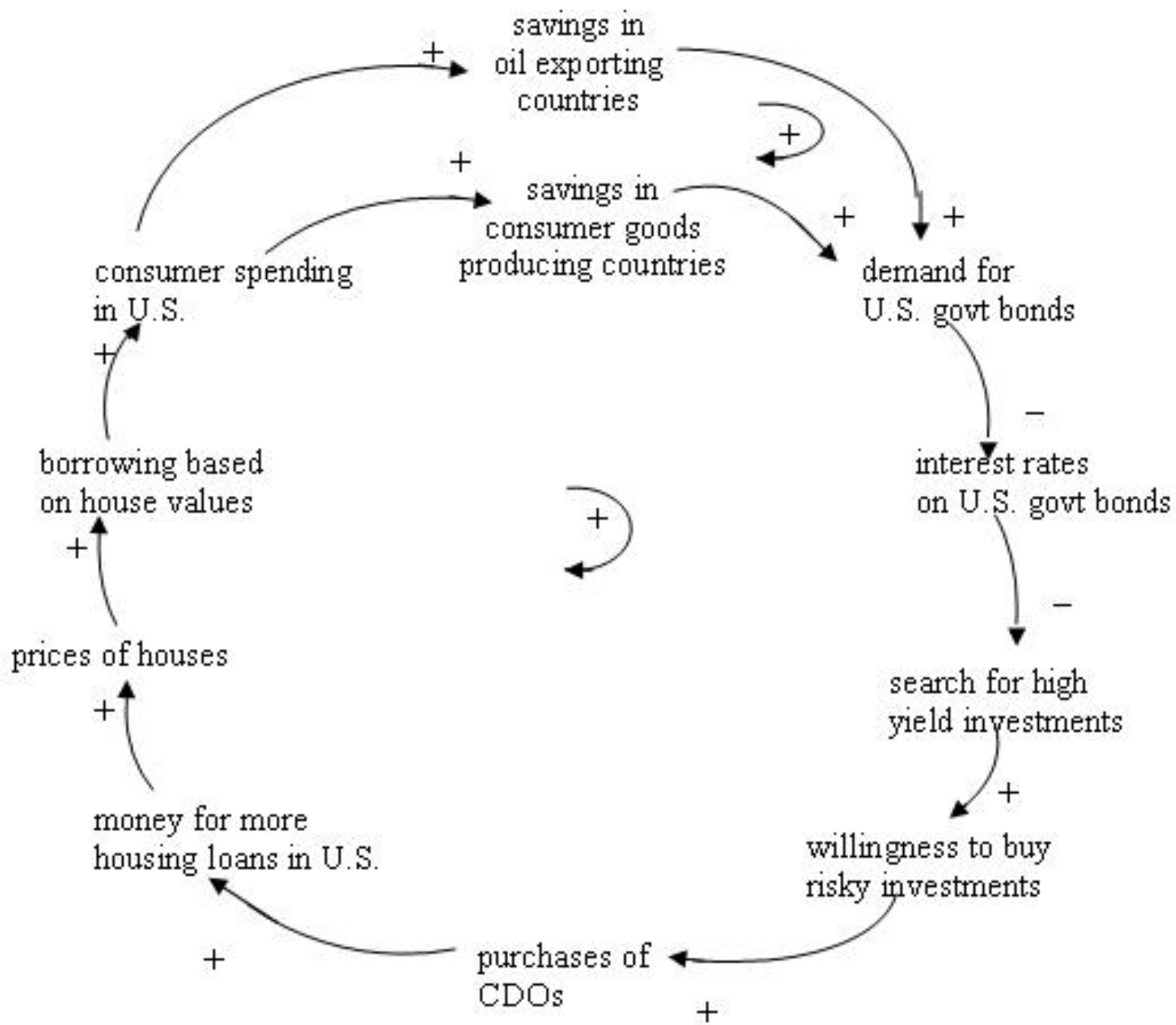
Desire for commissions drives subprime lending



Financial innovations and reduced understanding of financial instruments



An international reserve requirement



The international aspects of the super credit cycle

Interpreting the diagrams

- Positive feedback loops indicate growth
- Negative feedback loops indicate stability
- Many positive feedback loops indicate a system “out of control”

An unlikely event

- The stock market decline in 2008 was a 25 sigma event
- For a normal curve one standard deviation on either side of the mean encompasses 68% of the data
- Two standard deviations encompass 95%
- Three standard deviations encompass 99%
- Six sigma is the goal in manufacturing

Very large losses

- The Bank of England says losses arising from banks having to mark their investments down to market prices stand at \$3,000 bn, equivalent to about a year's worth of British economic production
- The Asian Development Bank has estimated that financial assets worldwide may have fallen by more than \$50,000 bn – a figure about as large as annual global output

How could people have been so mistaken?

- The banking reforms of the 1930s had been steadily weakened over time – repeal of the Glass-Steagall Act in 1999
- The Federal Reserve had several times acted to bail out businesses “too big to fail”
- Competition rewarded in the short term companies that took big risks

Why did banks not see, or act on, the danger?

- Banks compete for investors
- Banks with high earnings attract more investors
- Prudent banks have lower returns during a period of expansion and hence attract fewer investors
- Banks were using very high leverage to increase returns

Misperception

“I made a mistake in presuming that the self-interests of organizations, specifically banks and others, were such that they were best capable of protecting their own shareholders and their equity in the firms.”

Alan Greenspan

Institutions

Globalization creates interlocking fragility. The growth of giant banks gives the appearance of stability, but it raises the risk of systemic collapse. When one fails, they all fail.

Nassim Taleb

Amplifying factors

- Greed – higher returns, more commissions
- Lax regulation due to a belief in “market fundamentalism”
- Excessively loose monetary policy
- Fraudulent borrowing
- Managerial failure
- Complexity and opacity of modern finance

Journalists vs. economists

- The causal loop diagrams are based on articles by journalists. Front pages lately have been filled with talk of boom and bust cycles
- But economists see no need for new theory, just less “ideology”
- However, articles by economists use linear thinking

How do economists think about financial crises?

- I asked Milena Ristovska, a visiting scholar from Macedonia, to go to the library and find recent academic articles on financial crises
- The following pages present brief abstracts and then diagrams of the relationships that the articles report on
- The articles use linear cause and effect

Consequences of banking crises

- Banking crises lead to a decline in output (for a long period of time), to a decline in the stock market, and to a decline in the currency (about 30%)
- Boyd, Kwak, and Smith in *Money, Credit and Banking*, 2005

Banking crisis

decline in output

decline in stock market

decline in currency

Financial structure and financial fragility

- Securities markets have lower costs, but banks have better information. Small changes in the cost advantage of the securities market or the risk structure of loans can lead to sudden changes in interest rates, asset prices, and market structure
- Van Order in *Money, Credit and Banking*, 2006

Small changes in
costs of securities
or risks of loans

sudden changes in
interest rates, asset
prices, market structure

Bank bailouts or bank closures

- In response to banking crises governments have chosen policies that vary between rescuing insolvent banks (bailout) and enforcing bank closures. What political factors influence these decisions?
- Rosas in *American Journal of Political Science*, 2006

Political factors

policy to bail out banks
or to force closure

The role of institutions in achieving financial liberalization

- In emerging economies banking crises illuminate the role played by institutions in financial liberalization. Institutions help to solve financial instability and enforce the market process.
- Allegret, Courbis, and Dulbecco, *Review of International Political Economy*, 2003

Institutions

solve financial crises

enforce market processes

Containing contagious financial crises

- A financial crisis can spread contagiously. A crisis can be contained through intervention. International organizations play an important role in achieving collective action to contain the spread.
- Hausken and Plumper in *Public Choice*, 2002

International organizations bring about
collective action which
contains financial contagion

How firms cope with financial crises in emerging markets

- Firms have taken steps to protect themselves against financial crises and to deal with crises once underway. The strategies are divided into short term, immediate responses to a crisis, intermediate steps during the period of downturn, and long-term continuing responses.
- Mudd, Grosse, and Mathis, *Thunderbird International Business Review*, 2002

Actions by firms
to deal with
financial crises

short term steps
intermediate steps
long term responses

Early warning for financial crises

- The goal is to develop an early warning system that can detect financial crises. The system monitors several indicators that exhibit unusual behavior in the periods preceding a crisis.
- Edison, *International Journal of Finance and Economics*, 2003

Monitor several
indicators

early warning of
financial crisis

Monetary policy's effects during financial crises

- This paper looks at the effect of monetary policy changes on asset prices in the foreign exchange and equity markets of Brazil and Korea. Does monetary policy tightening have an adverse effect on asset markets?
- Goodhart, Mahadeva, and Spicer, *International Journal of Finance and Economics*, 2003

Monetary policies
during financial
crises

asset prices

Why do economists use linear thinking?

There are four models currently used by academics

1. Linear causality
2. Circular causality
3. Self-organization
4. Reflexivity

1. Linear causality

- The way most dissertations are written
- Statistical techniques include correlations and regression analysis
- Hypotheses can be falsified
- Propositions can be evaluated with a level of statistical significance
- The objective is to create descriptions which correspond to observations

2. Circular causality

- Essential to any regulatory process – thermostat, automatic assembly line, driving a car, managing a large organization
- Can be modeled with causal influence diagrams and system dynamics models
- Usually a psychological variable is involved – perception of, desire for

3. Self-organization

- A method of computer simulation – cellular automata, the game of life
- A very general concept – competition among species or corporations, conjectures and refutations in philosophy
- Differentiation and selection – creation of new variety, selection of appropriate variety
- Explains emergence

4. Reflexivity

- Requires operations on two levels – observation and participation
- Involves self-reference, hence paradox, hence inconsistency
- Violates three informal fallacies – circular arguments, the ad hominem fallacy, the fallacy of accent

The informal fallacies

1. Fallacies of presumption which are concerned with errors in thought – circular reasoning, circular causality
2. Fallacies of relevance which raise emotional considerations – the ad hominem fallacy, including the observer
3. Fallacies of ambiguity which involve problems with language – levels of analysis, self-reference

Which models are acceptable?

1. Linear causality – the dominant conception of science
2. Circular causality – used in first order cybernetics, but involves circularity
3. Self-organization – the new kind of science, complex systems
4. Reflexivity – second order cybernetics, violates 3 informal fallacies

Cybernetics and the informal fallacies

- Second order cybernetics violates all three informal fallacies (thought, emotion, language)
- It does not “sound right.” People conclude it cannot “be right”
- But the informal fallacies are just “rules of thumb”

A decision is required

- Should traditions concerning the *form of arguments* limit the *scope of science*?
- Or, should the subject matter of science be guided by curiosity and the desire to construct explanations of phenomena?
- Cyberneticians have chosen to study certain phenomena, even if they need to use unconventional ideas and methods

Change is needed in social science

- The financial crisis provides ample evidence that change is needed in our thinking about social systems
- But economists say that no change in theory is needed
- Where are they stuck? What is blocking them?

Three changes are needed in economics

1. Economists, and other social scientists, need to accept the uncertainty that accompanies violating the informal fallacies
2. Social scientists need to expand the philosophy of science by including the observer in the domain of science
3. Economists need a model of economic systems which allows participants to be observers and observers to be participants. This is a large step beyond behavioral economics

George Soros on reflexivity

- George Soros, investor and philanthropist, has created a theory of reflexivity which is quite compatible with second order cybernetics
- He approaches the subject from philosophy, economics, and political science, rather than philosophy, neurophysiology, and mathematics

Soros on the financial crisis

- Soros has said for over 20 years that international financial markets are unstable
- He has written a book offering a “new paradigm of financial markets”
- If you are interested in reflexivity or social systems, I recommend his work

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