



SOCIETY OF ACTUARIES

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# Putting the System Back in Systemic Risk<sup>1</sup>

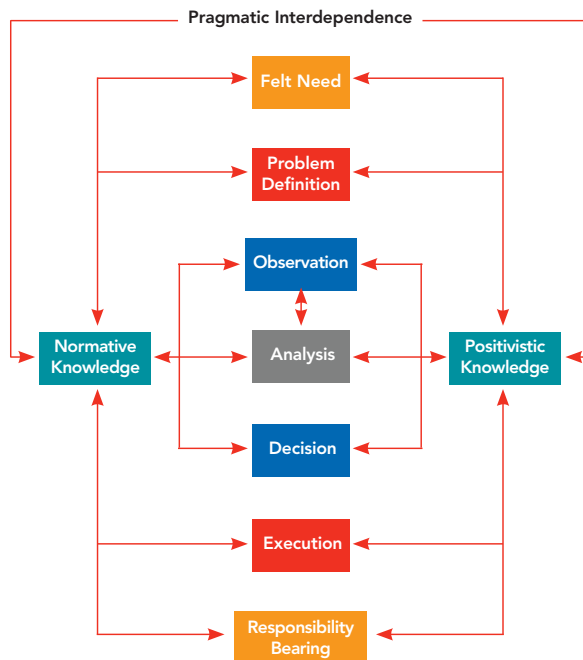
By Stephen W. Hiemstra

## THE RECENT INTEREST IN ESTABLISHING A SYSTEMIC RISK REGULATOR BEGS THE QUESTION:

exactly what is systemic risk? The usual answer to this question is something close to “big, unanticipated loss.” Unfortunately, this is neither descriptive of a systemic crisis nor a statement of risk as a future loss requiring management response. This article discusses the system in systemic risk and suggests management approaches for dealing with systemic events. A key result is the question: How efficiently does your organization learn?

One approach to problem solving is to break a problem down into various steps: felt needs, problem definition, observations, analysis, decisions, execution, and responsibility bearing (see chart). I will take this approach as my outline in discussing systemic risk.

### Steps in Problem Solving and the Knowledge Used



Sources: 1. Glen L. Johnson. 1986. *Research Methodology for Economists*. MacMillan Publishing Company, New York. P. 15. 2. John Dewey. 1997. *How We Think*. Dover Publications, Inc. Mineola, NY. P. 72.

## FELT NEEDS

A felt need is an ill-defined problem. Over the past two years we have observed:

- The numerous losses seen across world markets suggest a continuing systemic crisis.
- This crisis is characterized by continuing economic under-performance with excessive debt, housing inventory buildup, and unemployment.
- The policy innovation has been unreflective with deadlock on substantive issues like healthcare, immigration reform, energy, war & peace, education, and pension reform.
- Many of the current issues have demographic roots as baby-boomers approach retirement.

A felt need leads to anxiety among observers and real losses in a business that does not have a strategy for dealing with the changes observed.

## PROBLEM STATEMENT

The first step in moving towards a strategy for dealing with chaos is to define the problem. A problem statement should be interpreted as a tentative business strategy.

Linsky and Heifetz (2002) make an interesting distinction between problems that require no change in the fundamental approach to business (technical problems) and those that require adaption (adaptive problems). Generally speaking, organizations prefer dealing with technical problems and have trouble coming to terms with adaptive problems. This is, in part, true because adaptive problems are more disruptive and, in part, because they are more costly.

The recent crisis has these components.

- World economy is transitioning from closed national economies to open international economy. Theme: Law-of-one-price dynamics<sup>1</sup>.

### FOOTNOTES:

<sup>1</sup> This article summarizes comments given at Georgia State University at a workshop on Aug. 18 and 19, 2009 sponsored by the Enterprise Risk Management Institute International entitled: *Systemic Risks: Regulatory and Policy Responses*.

“Stability through change demands clarity about who you are and what you are trying to do.  
—William Bridges (2003)”

- Likewise, participation in world leadership is transitioning from Cold-War dualism to Group of 8 (G8) to Group of 30 (G30). Theme: More people means more complex decisions.
- This financial crisis reflects, but is not the cause of problems. Theme: Philosophic transition from modern to post-modern era accompanies generational handoff.
- Change is evolving and dynamic. Theme: Learning to learn efficiently.

Systemic risks are inherently adaptive problems because the system—however defined—is changing and causing large losses to market participants. Organizations defining the problem in technical terms are essentially denying that the problem created is large enough to warrant the costs implied in organizational adaptation.

**OBSERVATIONS AND ANALYSIS**

Once a problem statement has been adopted, information needs to be gathered and analyzed in developing

an adequate response. In the current crisis, a number of observations are pertinent, including:

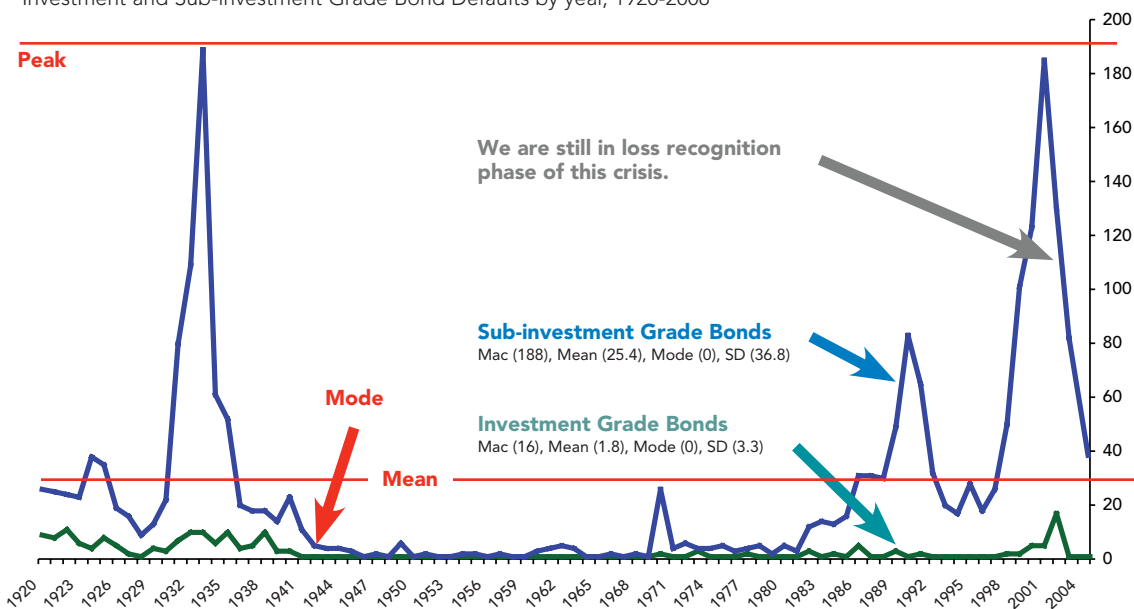
- Risk management has evolved into change management.
  - Qualitative processes are more important now than quantitative modeling because existing data are poorly suited to the current reality.
  - Dynamic models are harder to develop and maintain than static-equilibrium models.
- Systemic risk is no longer a 30-year flood problem and is subject to what engineers refer to as a peak load problem (see chart).

**FOOTNOTES:**

<sup>2</sup> International trade theory observes that only one price can exist in the world market for a given commodity, adjusting for transportation costs, uncertainty, and government interventions. This is referred to as the law of one price. The implication of this law is that as international markets are opened to trade, structural adjustments need to occur as countries become more specialized in taking advantage of open access to world markets.

**Annual Corporate Bond Issuer Default Counts**

Investment and Sub-investment Grade Bond Defaults by year, 1920-2008



Sources: Moody's Investor Services, Default and Recover Rates of Corporate Bond Issuers, 1920-2008. February 2009. Exhibit 22.

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From the chart on bond defaults, we can make some significant observations, including:

- Investment and sub-investment grade loss distributions differ fundamentally.
  - Still, spillover (contagion) exists. Poor risk analysis, fraud, and dynamic factors can lead to a jump from investment to sub-investment grade.
- Mean is poorly matched with mode of loss distributions.
  - Losses in peak are clearly a large portion of total losses.
  - Mean/maximum ratio is roughly 1:8.
  - Distributional analysis may not be as helpful as seeing the loss distributions as having two-states.
- Systemic losses are no longer rare—suggesting, perhaps, a moral hazard problem associated with policy interventions since the 1980s.
  - 100-year floods should not occur every 10 years.

So, what is the “system” in systemic risk?

Financial markets are no longer legally separated and independent. We can infer this because:

- Barriers of entry in banking and insurance markets were eliminated in the 1990s.
- Regulation assumes distinct charters for thrifts, state, and national banks which are no longer distinct.
- Capital policy is still done on charter basis which leads to policy struggles.

Large firms can influence legislators, regulators, and professional groups domestically and internationally to pursue their interests.

- Optimization of firm interests had converted stable markets into dynamically changing markets.
- Market information is costly and individual investors cannot assume transparency.
- Financial statements are inadequate to monitor firm risk taking.

Competition in the political and economic realms has been undermined.

- We have returned to a political economy similar to the days of Adam Smith where the distinction between the state and corporations has blurred.
- Outsourcing of governmental functions can be innocent (food service/IT/HR) or troubling (military/policing/decision support) depending on the mix.
- Many assumptions of the Enlightenment (competitive markets, personal discipline and integrity, education as an ideal, political participation as civic duty, belief in objectivity) assumed by Adam Smith have been violated.

In a nutshell, we live in interesting times.

## RECOMMENDATIONS

In a dynamic situation, efficient organizational learning and adaptation is the key to survival.

- In the evolving environment, leadership needs to articulate a fresh vision and identify what is new that we need to learn about.
- Study history to find patterns and review previous studies.
- Develop new information and data systems that track losses.
- Promote team approaches to aid organizational learning and give people bridges from the old to the new environment.

Managers can respond in various ways, including:

- Leaders should both learn (especially from losses) and lead striving to develop consensus around decisions and esprit de corps.
- A well-thought out risk appetite is especially important right now.
- Caveat decisions with sunset clauses as they are crafted—when is this decision obsolete? (risk management caveat)
- Build new information and incentive systems, such as risk based pricing, around new activities.
- Actively work to improve organizational decision culture and pick projects to learn (real hedge). ■

## References

1. Bridges, William. *Managing Transitions: Making the Most of Change*. Cambridge: Da Capo Press, 2003.
2. Linsky, Martin and Ronald A. Heifetz. *Leadership on the Line: Staying Alive Through the Dangers of Leading*. Cambridge: Harvard Business Press, 2002.