

Swiss Finance Institute

Occasional Paper Series

N°09-01

Short-and long-term propositions
for the financial crisis: back to the
fundamentals



Didier SORNETTE
ETH Zurich and Swiss Finance Institute

The Occasional Paper Series

The Occasional Paper Series of the Swiss Finance Institute welcomes all forms of submissions contributed by members of the Swiss Finance Institute community in view of stimulating the intellectual debate in the Institute's domains of activity. We particularly welcome material addressing timely topics. The opinions expressed in the Occasional Paper Series are those of the authors, not those of the Swiss Finance Institute or of any of its sponsors.

Established at the initiative of the Swiss Bankers' Association, the Swiss Finance Institute is a private foundation funded by the Swiss banks and SWX. It merges three existing foundations: the International Center FAME, the Swiss Banking School and the Stiftung "Banking and Finance" in Zurich. With its university partners, the Swiss Finance Institute pursues the objective of forming a competence center in banking and finance commensurate to the importance of the Swiss financial center. It is active in research, doctoral training and executive education while also proposing activities fostering interactions between academia and the industry. In addition to the Occasional Paper Series SFI maintains a Research Paper Series with the aim of disseminating original theoretical or empirical research with relevance to banking and finance.

Short- and long-term propositions for the financial crisis: back to the fundamentals

Didier Sornette

Chair of Entrepreneurial Risks
Department of Management, Technology and Economics
ETH Zurich, Zurich, Switzerland

Swiss Finance Institute
c/o University of Geneva, 40 blvd. Du Pont d'Arve
CH 1211 Geneva 4, Switzerland

Competence Center for Coping with Crises in Socio-Economic Systems
ETH Zurich, Zurich, Switzerland
(<http://www.ccss.ethz.ch/>)

version 13 Janvier 2009

Didier Sornette is Professor of Entrepreneurial Risks at the Swiss Federal Institute of Technology, Zurich (ETH Zurich), a member of the Swiss Finance Institute, and cofounder of the Competence Center for Coping with Crises in Socio-Economic Systems at ETH Zurich.

The financial crisis of 2008, which started with an initially well-defined epicenter focused on mortgage backed securities (MBS), is cascading into a global economic recession, whose increasing severity and uncertain duration will lead to massive losses and damage for billions of people. Heavy central bank interventions and government spending programs have been launched worldwide and especially in the USA and Europe, starting to reverse decades of expanding free market capitalism. Here, I stress the decade-long origin of the crisis rooted in several successive bubbles and suggests a few recommendations / solutions that naturally derive.

Roots and nature of the crisis

A MBS is a pool of home mortgages that creates a stream of payments over time paid to its owner. The payments are taken from those produced by borrowers who have to service the interests on their debts. It is clear that the immediate causes for the financial crisis is the bursting of the house price bubble principally in the USA and the UK and a few other countries, leading to an acceleration of defaults on loans, translated immediately into a depreciation of the value of MBS. The severity of the financial crisis is due to the huge size of both the real-estate bubble, which reached its peak in mid-2006 for the USA, and its connected MBS bubble. The term “bubble” associated with MBS is justified by the explosive faster-than-exponential growth of the nominal market value of all MBS issued from 2002 to 2007. This bubble was fueled firstly by the thirst for larger returns of investors in the USA and in the rest of the World. It was made possible by a wave of financial innovations leading to the

illusion that the default risks held by lenders, principally banks, could be diversified away.

Actually, this expectation reflects a widely spread misconception that forgets about the effects of stronger inter-dependencies associated with tighter firm networks. Recent multidisciplinary research on self-organizing networks have shown unambiguously that loss of variety, lack of redundancy, removal of compartments, and stronger ties, are all recipes for disaster. This is all the more so because the medium-sized risks are decreased, giving a false impression of safety and the emergence of an extremely dangerous collective belief that risks have disappeared. This led to the so-called “great moderation” in the fluctuations of GDP growths of developed economies and to absurd low risk pricing in financial markets in the last decade (less than 3% in 2007 in Europe compared with 10% at the time of writing).

It is the sheer size of the nominal value of MBS held in the books of banks, insurance and many other institutions that is the explanation of the amplitude of the crisis: when the deflation of the real-estate bubble started, the rate of defaults sky-rocketed and the holders of MBS started to suffer heavy losses. As a consequence, many financial institutions have found themselves with insufficient equity and capital, leading to bankruptcies, fire sale acquisitions or bailouts by governments. Due to globalization and the intricate networks of bank interdependencies (thousands of banks borrow and lend to each other every day in a complex ballet), the explosively growing losses on their MBS books and the realization that other banks were in the same situation have led to a flight for safety. As a consequence, banks have basically stopped inter-bank lending for fear of defaults of their financial counterparties. Correlatively, banks have rigidified their previously lax lending practices into ridiculously stringent procedures offered to firms and private customers, basically threatening to freeze the real economy, which is becoming strangulated by cash flow problems.

The fundamental error of trying to perpetuate the “perpetual money machine”

Acting on the “theory” that crises can be stopped if confidence is restored by stopping the hemorrhage of MBS losses, central banks and governments have actively intervened to combat this swing in pathological risk aversion shown by banks. The range of measures amount basically to attempt stopping the devaluation of the MBS assets held by financial institutions.

I hold that this constitutes a fundamental error because it misses the crucial point about the cause of the “losses”. The losses are not just the downturn phase of a business cycle. They express a simple truth that is too painful to accept for most, that previous gains were not real, but just artificially inflated values that have bubbled in the financial sphere, without anchor and justification in the real economy. In the last decade, banks, insurance companies, Wall Street as well as Main Street, we all have lured ourselves into believing that we were richer. But this wealth was just the result of a series of self-fulfilling bubbles: in the USA and in Europe, we had the Internet bubble (1996-2000), the real-estate bubble (2002-2006), the MBS bubble (2002-2007), an equity bubble (2003-2007), and a commodity bubble (2004-2008), each bubble alleviating the pain of the previous bubble or supporting and justifying the next bubble.

The painful consequence of this brutal truth is that trying to support the level of valuation based on these bubbles is like investing in the “perpetual money machine”. Worse, it misuses scarce taxpayer resources, increasing long-term debts and liabilities, which are already at dangerous levels in many countries.

There are no silver bullets, but the following concepts should constitute part of a basis for a pragmatic approach to the crisis.

Melting the cash flow freeze

First, the most immediate issue is to address the cash flow freeze imposed by banks, with their newfound overly restrictive lending rules, on companies and households. This cash flow problem bears the seed of a spiraling recession of catastrophic amplitude, which has no fundamental reason to develop, except as an unwanted consequence of pro-cyclical feedbacks aggravating a necessary correction that should only be confined to the financial sphere. Here, the central banks and governments should show creativity in ensuring that small and medium size companies have access to monthly liquidity, to allow them to continue producing and hiring. This is the issue that has been by far the most under-estimated and which requires a fast and vigorous solution. In addition to providing lending facilities to banks conditional on serving their natural multiplier role in the economy, special governmental structures could be created with a finite lifetime, with the mandate to provide liquidity to the real economy, bypassing the reluctant banks. Note that this procedure should not necessarily be used to bailout some large badly managed companies in some industry sectors, when in obvious need of restructuring. Crises are often opportunities for restructuring, which provide increased benefits in the future as some cost in the present.

Long-term growth based on returning to fundamentals and novel opportunities

Second, long-term economic stimulation programs are needed on a large scale, probably a few percent of GDP, with pragmatic adaptive tuning as the crisis unfolds. They should focus on the fundamentals of wealth growth: infrastructure, education and entrepreneurship, with the goal of promoting productivity growth and the creation of new real economic sources of wealth. Many studies demonstrate for instance a direct impact of machinery equipment on economic growth. Similarly, by many metrics, the quality of education in the USA and to a less degree in Europe has been degrading in the last decades. This crisis is an opportunity to go back to the fundamentals of the roots of long-term sustainable wealth creation. These stimulation programs offer an opportunity to adapt and develop new infrastructure which are more energy and pollution efficient, thus promoting the development of new industry sectors such as wind energy, electricity storage, nuclear waste processing and recycling and so on. Given growing evidence that mankind is facing global challenges for its sustainability on the finite Earth, the financial-rooted crisis offers a chance for using its associated political capital to make bold choices to steer an environmentally friendly economic development. Governments are best in their role of risk takers investing in long-term R&D projects that provide the support for innovations that industry can build upon to provide increased prosperity in the future.

The financial sphere, bubbles and inflation

Third, one has to accept the need for an abrupt deflation of the financial sphere. And for the future, mechanisms should be designed to control the over-growth of the financial economy to ensure better stability. When functioning properly, the financial world provides many services such as efficient access to funding for firms, governments and private people. Furthermore, it works as an effective storage of value, which should reflect the “real economy.” But the extraordinary growth of the component of wealth associated with the financial world has been artificial because based on multipliers amplifying the virtual fragile components of wealth. A vivid example is provided by the market valuation of funds investing in brick-and-mortar companies often observed to be much higher at time of bubbles than the sum of the value of their components. Objective measures and indicators can be developed to quantify the ratio of wealth resulting from finance compared with the total economy. For instance, when it is measured that, on average, 40% of the income of major US firms result from financial investments, this is clearly a sign that the US economy is “building castles in the air.”

The way we think of inflation also needs to be re-evaluated. For instance, a house price appreciation does not just mean that you are more wealthy as a homeowner; it also implies that you need more dollars or euros to buy one unit of habitation compared to units of food, vacation or university tuition. From this vantage, it is part of inflation. I propose that real-estate and equity indices should be incorporated as constituents of inflation metrics, of course with adequate consideration for the hedonic gains. In this way, monetary policy with inflation targets will provide natural partial control over some of the asset bubbles at the origin of the present financial crisis. Guidelines could be drawn to flag warning signals to central banks and governments when the ratio of the financial wealth compared with the real economy value grows above a bracket that could be defined from a consensus among economists and actions could be taken to moderate the growth of this ratio. These indicators should be the key targets of modern central banks.

As a final point on the issue of the size of the financial sphere, I am a happy professor teaching financial economics to a growing corpus of students in a World-renowned technical university. I am however worried by the growing flood of civil, mechanical, electrical and other engineers choosing to become transfuges and work in finance, another bubble in the making? Finance will not solve the many problems mentioned above. Creativity and entrepreneurship occurring in the real economy and the real world need to be better rewarded.

Fourth, central banks and governments should step in to support financial institutions, but only under fair conditions that ensure that stockholders and lower priority debt holders support the consequences of the losses, avoiding the privatization of gains and socialization of losses. Different technical mechanisms have been proposed by financial economists, which serve this goal, safeguarding the interest of the taxpayers on the long term.

Recipes for a more robust and sustainable World

Fifth, the present crisis is illustrating the accelerating fragility of society. I believe that this is just a foreshock of much more serious jolts to come on times scales of just one or two decades. However, now is an opportunity to build a more resilient World. Recipes are known. They involve the need for variety, redundancy, compartments, sparseness of networks and consequences of the unavoidable delays and synchronization of actions. This “robustness” approach is well exemplified by Warren Buffet’s philosophy of investing, based on (i) understanding the vehicles and firms in which he invests (which contrasts with the opaqueness of the MBS investments) and (ii) “achieving acceptable long-term results under extraordinary adverse conditions,” which contrasts with standard financial practices based on estimated likelihoods for meeting obligations and short-term gains. This requires fundamentally new design in infrastructures and in regulations. The task is complex, but realizing and formulating it is a major step that should be followed by a vigorous program at the international level, based on multidisciplinary task forces that are well-funded and empowered with authority. Leading countries should start at their domestic level to nucleate the process internationally.

Sixth, beyond the immediate concerns, we need to keep in mind the big picture, that this time is a unique opportunity for change and improvement. The present crisis should be exploited to start developing a genuine culture of risks, which should be obligatory training for managers in governments, in regularity bodies, and in financial institutions. One little discussed reason for the present crisis was indeed the lack of adequate education of top managers on risks in all its dimensions and implications. This is also the time that a culture of risk starts permeating the public at large. In the 21st century, “linear thinking” should be replaced by a growing appreciation of the inter-connectivity and feedbacks of the complex systems we deal with, which creates shocks, with opportunities.

References and further reading

Reinhard Bachmann and Akbar Zaheer (eds.) Handbook of Trust Research. Cheltenham: Edward Elgar (2006).

Monika Gisler and Didier Sornette, Bubbles in Society: The Example of the United States Apollo Program, in press in *Society* (2008)
(<http://ssrn.com/abstract=1139807>)

Dirk Helbing (Ed.), *Managing Complexity: Insights, Concepts, Applications*, (Book Series: *Understanding Complex Systems*), Springer Berlin, Heidelberg (2008).

Didier Sornette, *Why Stock Markets Crash (Critical Events in Complex Financial Systems)*, Princeton University Press (2003).

Acknowledgements: This article benefited from many feedbacks from colleagues and collaborators, including K. Axhausen, Lars-Erik Cederman, Riley Crane, Dirk Helbing, Hans Herrmann, Yannick Malevergne, Jeffrey Satinover, Jan-Egbert Sturm, Georg von Krogh, Hilary Woodard and Ryan Woodard.

swiss:finance:institute

c/o University of Geneva
40 bd du Pont d'Arve
1211 Geneva 4
Switzerland

T +41 22 379 84 71
F +41 22 379 82 77
RPS@sfi.ch
www.SwissFinanceInstitute.ch