Universität St.Gallen

Financial and World Economic Crisis: What Did Economists Contribute?

Friedrich Schneider and Gebhard Kirchgässner

July 2009 Discussion Paper no. 2009-14

Department of Economics

University of St. Gallen

Editor: Martina Flockerzi
University of St. Gallen
Department of Economics
Varnbüelstrasse 19
CH-9000 St. Gallen
Phone +41 71 224 23 25
Fax +41 71 224 31 35
Email vwaabtass@unisg.ch

Publisher: Department of Economics
University of St. Gallen
Varnbüelstrasse 19
CH-9000 St. Gallen
Phone +41 71 224 23 25
Fax +41 71 224 31 35

Electronic Publication: http://www.vwa.unisg.ch

Financial and World Economic Crisis: What did Economists Contribute?[1]

Gebhard Kirchgässner and Friedrich Schneider

Author's address:

Prof. Dr. Dr. h.c. (mult.) Friedrich Schneider
Johannes Kepler University of Linz
Department of Economics
A-4040 Linz-Auhof
Email friedrich.schneider@jku.at

Prof. Dr. Gebhard Kirchgässner
SIAW-HSG
Bodanstrasse 8
Ch-9000 St.Gallen
Phone +41 71 224 2347
Fax +41 71 224 2298
Email gebhard.kirchgaessner@unisg.ch
Website www.siaw.unisg.ch

[1] June 2009. Forthcoming in: *Public Choice*.

Abstract

In this paper we deal with two questions, (i) what are the origins of the current financial crisis, and (ii) what did economists contribute, or why did economists fail to provide a convincing answer for the origins of the crisis, and possible solutions to overcome it? Apparently, the economics profession was unaware of the looming worldwide financial and economic crisis, and significantly underestimated its global dimensions and consequences. A first and preliminary analysis is undertaken to explore reasons for these failures. We conclude by pointing to some consequences for economics as well as for economic policy.

Keywords

Financial Crisis, Crisis Management, Failure of Economics, Failure of Economic Researchers, Origin of the Crisis.

JEL Classification

A11, B40, D72, D73, D8, G01, K2.

1 Introduction

Currently, we are observing one of the most severe and deep world financial and economic crises in history. The most important economies (like those of the United States, China, India, Japan, Germany, and Britain) are in deep recession and we also observe a severe financial crisis, e.g., mistrust between the financial institutions. This caused a reaction in which almost all governments engaged in substantial deficit spending to inject liquidity into financial markets and to fight the economic downswing. All this happened within half a year to nine months, and economic researchers are now confronted with explaining how this could have happened. The public and politicians ask the economics profession, what the causes of this deep crisis were and what can be done to overcome it.

In this contribution, we try to provide some preliminary answers. In Section 2, some remarks are given on the origins of the financial crisis. Section 3 then deals with the role played by economists during the events of the recent past. Section 4 points to the failure of our economic models, and finally, in Section 5, some conclusions for economics as well as economic policy are drawn.

2 Some Remarks on the Origins of the Financial Crisis

The financial crisis which had its origins in the United States and the induced worldwide economic crisis pose two important questions:

(1) What caused the crisis?

(2) What should be done to minimize the risk of repetition if not of identical events than of at least something similar?

A more parsimonious way of turning around these two questions is the following: If in retrospect the causes of this crisis are so obvious, why did so many smart researchers (and especially economists) fail to appreciate the gravity of the situation beforehand? One could imagine that with sufficient preparation, these problems (financial and economic) would have been addressed well before the seriousness of the current crises had become apparent. It is reported[1)] that former US Treasury Secretary HENRY PAULSON tabled a plan for re-organizing and consolidating the supervision and the regulation of the US financial system. One might similarly imagine that, sooner or later, federal agencies would have extended insurance to money market, mutual funds, and investment banks, but they remain unregulated so far. Early action would have brought on the regulatory umbrella. But such major changes in regulatory policy take time – even now (June 2009) it is not clear what type of regulatory framework will be implemented ultimately.

At the most basic level, the subprime crisis resulted from the tendency of financial normalisation and innovation to run ahead of financial regulation, as EICHENGREEN (2008: 3) argues. For a long time, deregulation was the order of the day not only outside but also within financial markets, as illustrated, for example, by eliminating the Glass-Steagall Act's restrictions

1. But see, for example, PAULSON et al. (2008).

on mixing investment and commercial banking.[2] However, considering what had happened, the problem was that other (regulatory) policies were not adapted to the new environment. Conglomerization takes time. In the short-run, investment banks were allowed to lever-up their bets, they "stood" completely beyond the purview of the regulators. As independent entities funded themselves on a short-term basis, they were vulnerable to liquidity "crunches" and disruptions to their funding. A crisis sufficient to threaten the financial system ultimately precipitated the inevitable consolidation.[3]

A second major element of the crisis was a consumer spending boom from 2002 to 2007 and the resulting domestic and international imbalances. The Bush administration cut taxes, causing a massive deficit for the government[4]. The Federal Reserve cut interest rates in response to the 2001 recession. In addition to this action, the new financial innovations made credit even cheaper and more widely available.[5] This, of course, is just one, but nevertheless a major element in the "crisis" story, contributing in its own way to the collapse of the market for subprime mortgages. Such loans were packaged, "securitized" and pushed by the subsidiaries of Lehman Brothers and other major financial institutions. The result was increased US consumer spending and the decline of measured household savings into negative territory.

The third element was financial internationalization. Much as with the separation of investment from commercial banking, the Great Depression led to the imposition of tight and persistent restrictions on international capital flows. From the 1970s on, these restrictions have gradually been relaxed, which was another indication that policy makers had forgotten the Great Depression. Deregulation continued and accelerated during the 1990s.[6] Facilitating US dependence on foreign finance and feeding in this way the country's credit boom helped to set the stage for what followed from 2007 on. What additionally helped to set the stage for the crisis were the rise of China and the decline of investment in Asia following the 1997 -- 1998 currency crisis. With China saving on average nearly 50% of its GNP, this "money" more or less had to go abroad.[7] A great part of it went into US Treasury securities and the obligations of the Federal Home Loan Banks (FHLB), Fannie Mae and Freddy Mac. These capital inflows "propped" up the dollar.[8] It reduced the cost of borrowing for Americans on some estimates by as much as 100 basis points, encouraging them to live far beyond their financial

2. See, for example, EICHENGREEN (2008a) or KROZNER and RAJAN (1994, 1997).

3. See EICHENGREEN (2008a).

4. However, comparing the enormous deficit spending, the Obama administration is now undertaking, the one of the Bush administration (1) is modest. However, one has to admit that a great part of the deficit spending the Obama administration is now undertaken has its source in the World Financial and Economic Crisis.

5. See, for example, MASON and ROSNER (2007) for an overview of these new financial innovations like mortgage-backed securities and other collateralized debt obligations.

6. Compare here CONGLETON (2009), HIMMELBERG, MAYER and SINAI (2004), as well as EICHENGREEN (2008b).

7. Compare EICHENGREEN (2008a) as well as Warnock and Warnock (2006).

8. For an explanation of these global developments (and the imbalances they caused), compare CABALLERO, FARHI and GOURINCHAS (2008).

means.[9] This behaviour created an opportunistic market for Freddy, Fannie and for other financial institutions, creating substitutes for those agency's own securities.

To sum up: In the United States the financial crisis was facilitated by policies of domestic and international liberalization accompanied by however well-intended financial innovations, such as complex derivative securities, "conduits" and "structured investment vehicles", which were not regulated at all. Other innovations in risk management worked in the same direction. According to EICHENGREEN (2008a, 2008b), commercial banks, investment banks and hedge funds were encouraged by the dynamic development of the financial market to use more leverage and their counterparties were inspired to provide it by the development of mathematical models and methods to quantify and hedge risks. These new models, which were rigorous and promised to provide "exact" information emboldened market participants to believe that the additional leverage was safe since participants now used scientific techniques and were convinced that they could manage it.

A major problem was, however, that these "new" models were estimated using data from recent periods of low volatility over, typically, relatively short intervals, given that the financial instruments, whose returns being modelled, had existed only for a few years. Events, which should have been modelled or simulated, like a sharp drop in housing prices, were outside the sample period and, hence, were not captured by these models.[10] Institutional investors convinced themselves on the basis of these models that their financial practices were relatively safe. They persuaded the public regulatory agencies to allow financial institutions to use these models when deciding how much capital to hold to provision against risk.[11]

This short analysis is by no means a complete or comprehensive explanation for the financial crisis. Other authors, such as EICHENGREEN (2008, 2008a), ACEMOGLU (2009), ADAMS (2009), or CONGLETON (2009), emphasize other factors (not testing the economic models out-of-sample, relying on trust or mistrust, and placing too much confidence in the market's adjustment capacity, for example).

3 The Financial Crisis and the Role of Economists

The global financial (and economic) crisis has created an urgent need to fundamentally rethink how financial systems are functioning and how they are regulated. The worldwide financial collapse leads, in our opinion, also to a quite clear systematic criticism of the economics profession. Over the past three decades economists have developed and relied on models that by and large disregard key-factors (e.g., heterogeneity of decision rules, revisions of forecasting results and strategies, and changes in the social world) that influence the outcomes of financial products as well as those supplied by other markets. Moreover, the work of mainstream economists has crowded out research on major causes of the current financial crisis. There has also been little scientific exploration of early indicators of this systemic crisis and

9. Compare WARNOCK and WARNOCK (2006), and CONGLETON (2009).

10. Compare MASON and ROSNER (2007).

11. See here also the contribution by CONGLETON (2009).

of potential ways of preventing the crisis from developing to a worldwide one. In fact, if one looks through the academic literature of macroeconomics and finance, the possibility of a systemic crisis (i.e., one leading to a collapse of the global economy) appears like a futuristic and unrealistic event that is absent from our economic models. Most economic models offer no explanation for such a crisis and, hence, provide no strategy for defeating it.[12)]

The implicit view behind our standard models is that markets and economies are inherently stable and that they only temporarily deviate from this stability and equilibrium. Thus, we overestimated the capacity of markets to correct disequilibria or at least underestimated the social costs that are caused by such corrections. Hardly anybody, neither politicians nor scientists, expected, for example, the consequences of Lehman Brothers's bankruptcy – or the back-out of Bear Stearns. Otherwise, that institution probably would have been saved. Hence, the majority of economic researchers failed to warn policy makers about the possibilities of a systemic financial crisis and ignored the work of those, such as, KRUGMAN and STIGLITZ, who did.[13)]

Ironically, as the systemic financial crisis developed, economists had no choice but to abandon their models and their trust in markets, and they could "only" produce common-sense economic advice recommending massive government intervention. Common-sense advice, which may sometimes be quite useful, is a poor substitute for a theoretically derived and empirically tested model that can provide urgently needed policy advice, for example, in the area of financial regulation. It is simply not enough to argue that existing models do not foresee such a crisis; what we need are models accommodating the possibility of such systemic financial crises. That we do not yet have such models is astonishing because we experienced a number of somewhat smaller but, nevertheless, important financial crises before (in Asia, Mexico, Russia, the United States, and so on), that already had had tremendous impacts on the economies in the countries involved.[14)]

One explanation for this failure goes back to the profession's methodological roots. The often-expressed worldview of economic researchers, namely that they are mostly concerned with the allocation of scarce resources, can be short-sighted and misleading. It reduces the work of economists to the study of optimal decisions in well-specified problems of individual choice. The danger in such research is that it loses track of the (sometimes unstable) dynamics of economic systems. Without an adequate understanding of these dynamic economic (especially financial) processes, one is likely to miss important factors that influence the economic system (especially decision-making). The use of the standard and traditional economic models often leads researchers to neglect questions about the stability of the system, a missing coordination of key actors resulting in the possibility of system failures.

12. Compare REINHART and ROGOFF (2008) as well as COLANDER et al. (2009).

13. Compare KRUGMAN (2000, 2004) and STIGLITZ (2008, 2009).

14. What is additionally surprising is the long academic legacy of economic studies of crisis phenomena, which can be found in the work of LEIJONHUFVUD (2000), KINDLEBERGER (1989) and MINSKY (1986), just to name a few prominent examples.

One might even put forward the hypothesis that economic researchers have been captured into a sup-optimal equilibrium in which much of their research efforts are not directed towards the most prevalent needs of society. Quite often, the most relevant economic problems in our societies are not addressed; hence, our profession bears part of the responsibility for the current crisis. We have failed to provide as much insight or knowledge into the workings of the economy as possible (here, especially, the financial markets) for the good of a society.

Many of financial economists, who developed the theoretical models, which were then used in actual practice, were well aware of their models' strong and highly unrealistic assumptions or restrictions, which had to be made to ensure stability. According to COLANDER et al. (2009: 3), financial economists gave little warning to the public about the fragility or instability of their models. There are a number of possible explanations why they did not warn the public. One is a lack of understanding, which is not a good explanation, because then these financial researchers did not know that their models were unstable or fragile. If it is true, what is quite often said, that financial economists are extremely bright, then they should have understood the limitations of their models. A second explanation is that they did not think that it is their task to warn the public about the fragility of these models. In our opinion, however, "economists, as all other social scientists, have an ethical responsibility to communicate the limitations of the models and the potential misuse of their research" (COLANDER et al (2009: 4).

4 The Failure of Economic Models

Most economic (especially textbook) models, which are applied to the study of the allocation of scarce resources, are predominantly of a representative-agent type. Financial market models operate by letting this representative agent manage his financial affairs as one constraint on his utility-maximization objective over his (infinite) expected lifespan and assigning "correct" probabilities to all possible future events. In the finance world (at least on its practical side), mathematical portfolio and risk management models have served as academic justifications for the tremendous increase in trading volumes and the proliferation of "exotic" financial instruments. What was and still is a big problem in using these models is that, unfortunately, historical data were hardly available in most cases, meaning that the researcher had to rely on simulations, quite often with relatively arbitrary assumptions on correlations between risk and default probabilities. This makes the empirical validation of these theories questionable.

There is, however, also a deeper problem involved. It is well known since the famous contribution of MANDELBROT (1963) that financial time series have fat tails, i.e. that, given the mean and (if it exists at all) the variance of the series, the probability of extreme events is higher than if the data-generating process were normal. This should make those working with such models attentive to the possibility of unusual events. It is, however, difficult to take them into account if they did not occur for decades, even if one bears in mind that, however small the probability is, such an event might nevertheless occur. However, it is practically impossible to live with and always to take into account the worst scenario possible. This holds for

general people, but for financial analysts as well, and it should have induced them to take these risks into account.

A further somewhat different aspect of failure of the economic models in finance is the danger of the illusion of control mechanisms. The mathematical rigor, elegance and the numerical precision of the various risk-management and asset-pricing tools have a tendency to "hide" the weaknesses of these models and their underlying assumptions, which are necessary to guarantee the models' values to those who have not developed them. Naturally, theoretical models always are only approximations of real-world situations. In the last decade, some progress has been made in developing more refined models. However, as such models better capture the volatility of markets and generate "better" predictions; this might again contribute to strengthening the control illusion of the naive user.

Many economic models are built upon the dual assumption of rational expectations and of a representative agent. Rational-expectations models assume that the individuals base their forecasts on the knowledge of the (true) structure of the economic system. A behavioural interpretation of this assumption is that the individuals (including the economists) have a complete understanding of the economic mechanisms by which the world operates. This has the consequence that the new and perhaps better insights about how individuals actually form their expectations from applied research in psychology and behavioural economics cannot be incorporated within rational expectation models, as everything is predetermined and no leeway is left for imperfect knowledge and adaptive adjustments. Thus, as COLANDER et al. (2009: 7) argue, despite its many refinements, rational expectation models are not at all an approach to decision-making that has been confirmed empirically. Indeed, Colander et al. (2005), along with LO et al. (2005) and COATES and HERBERT (2008), have shown that financial markets are influenced by emotional factors. Moreover, the rational expectations model has made economics blind to the role of interactions (e.g., trust!) between actors. Indeed, some work on contagion and herding behaviour,[15)] which is closely connected to the network structure of the economy, has not been incorporated into orthodox economic models.

5 Conclusions for Economics as well as for Economic Policy

Recent decades were times of deregulation and privatization, based on economists' ideas. No other social science had such a tremendous impact on the development of our societies. However, the results are mixed; financial markets are by far the most important, but supply just one example that deregulation and/or privatisation did not produce the promised benefits for the citizens. Thus, we need new regulations. This does not necessarily imply more but definitely better regulation. Two important points might be mentioned in this respect:

- One of the most undesirable consequences of the financial crisis is that those who have been responsible for the failure of big banks like UBS in Switzerland do not bear full responsibility. Without state intervention, this bank would be bankrupt. Thus, the shareholders would lose all their money, and the managers would lose their jobs, without any

15. See, for example, BANERJEE (1992) or CHAMLEY (2002).

golden handshake, of course. State intervention is, however, necessary because such banks are "too big to fail" and their bankruptcy would cause tremendous economic and social problems for the respective societies. This insulates those who are responsible, at least partially, from these losses. And it creates the wrong incentives; it seduces private decision makers to accept too large risks. (At least) two solutions for this problem are being discussed today. One possibility is to break up these banks into smaller units so that their bankruptcies do not cause major problems for their countries, as is the case today with respect to small private as well as public banks. An alternative is to find rules for the bankruptcy of such banks that preserve the interests of their customers and, therefore, maintain trust in the financial system, but let the shareholders lose all their money and the higher level managers their jobs. Today, it is an open question as to what the better alternative is, but it is an important task for financial economists to develop rules that might answer that important question.

- In the current crisis, as well as in the new economy crises of eight years ago, many pensioners lost part -- and some even all of their capital-based retirement accounts. Capital-based pensions have been promoted by economists as not only having higher return but also being safer than pay-as-you-go pensions because of the political risks connected with the latter. Today we see that – not surprisingly – the higher return on a capital-based system also brings with it a higher risk. To regain the trust of the general public in the capital-based system we have to re-think the risks of those systems and their reallocation of those risks across generations.

More generally, we have to re-think the proper role of the government in our society. Traditional public finance concentrated on market failures and neglected government failures. Public choice theory, on the other hand, emphasizes government failure and (at least very often) neglects market failure. In the recent decades of deregulation and privatisation the latter approach was politically much more influential than the former. In Europe this was due to a large extent to the institutions of the European Union, especially its Supreme Court. Some economists even dreamed of an even much more reduced role for government in the future.[16)] A rational approach will take both market- as well as government failure into account and it will probably assign to the government a still limited, but nevertheless more far reaching role than many public choice scholars believe to be appropriate. Whatever economists think, however, in a democracy, political decisions about the role of the government will be taken by the citizens or their representatives, respectively, and the economists whose reputations have been damaged considerably will have to work hard to further convince them that the role of the government should remain limited.

In this respect, we also have to ask what the government can do to fight economic crises. In the 1950s and 1960s, the period of the so-called Neoclassical Synthesis, when we all were Keynesians, many economists believed strongly in the ability of government to “fine-tune” the business cycle. This conviction was destroyed in the 1970s when rational-expectations economics, including real business cycle theory, took off on its triumphal course. The latter

16. See, for example, SHLEIFER (1998) or, even more extreme, FRIEDMAN (1996).

has been rejected empirically, but the sustained economic growth of the last decade made many believe that progress is sustainable without cycles and will, perhaps, be the prospect for the future. Already with the new economy crises, but at least with the current financial and economic crisis, this illusion burst. Without assuming that we are suddenly all Keynesians again, in recent months there has hardly been any resistance to Keynesian-type fiscal programmes in most countries. But this is not the end because, as mentioned above, we do not have a good theory on which sound political responses could be based. Thus, one of our tasks is to develop such a theory

Finally, at least for some European countries, it is necessary to find a new balance between the financial sector and other sectors of the economy that produce goods. Iceland is the most extreme example, but Ireland is another one, and Switzerland also has problems in this respect. Dependence on the highly volatile financial sector exposes a small economy to very high risk. What ACEMOGLU (2009: 4) demands for the United States holds even more so for these small countries: "skilled labour should be re-allocated away from the financial industry towards more innovative sectors."

Taking all this into account, we should, however, not forget some basic economic lessons. First, besides the necessity of fighting the current crisis we should take into account the long-run consequences of our measures. Times of crises, with huge public “investment” programmes, are ideal environments for rent-seeking and lobbying.[17)] In Germany, for example, huge subsidies are now given to Opel, a subsidiary company of General Motors, the problems of which have almost nothing to do with the current financial and economic crisis. Moreover, several billions of Euros are used for “scrap” premia, i.e., financial incentives to trade in cars that are at least nine years old. This measure makes neither economic nor ecologic sense, and the straw fire sparked by it will soon die out without contributing anything to solve Germany's problems of automobile production overcapacity. On the other hand, such measures impose burdens on future generations, reduce future growth chances, and only minimally improve the current economic situation.

Second, history tells us that severe economic crises tempt nations to adopt protectionist measures. Due to the WTO rules and, for the EU’s member states, due to the strong position of its Supreme Court, the danger of bald protectionism is limited. However, there is a danger of “soft” protectionism if, for example, governments start to influence their citizens to "Buy American" or "Buy French". The smaller a country is, the more it will be hurt by such policies.

Thus, even traditional economic theory supplies some advice as to how to enact sound economic policy measures in the midst of the current crisis. However, this is not to deny that economists have failed to meet in our theories the expectations the general public as well as we ourselves had, and we should be ready to confess this. Otherwise it will be impossible to restore the profession’s public reputation. On the other hand, as at least the new developments in behavioural economics (and behavioural finance) show, the economic approach is flexible enough to tackle the problems we are facing. We do not need a new economics, but we have

17. Compare also CONGLETON (2005, 2009).

to apply (and enlarge the set of) the tools available to our science in order to give sound answers that will help to solve our current problems.

References

ACEMOGLU, D. (2009), The Crisis of 2008: Structural Lessons For and From Economics, *CEPR Policy Insight* No. 28, January. http://www.cepr.org/pubs/PolicyInsights/PolicyInsight28.pdf.

ADAMS, F.G. (2009), The World Financial Crisis: New Economy, Globalisation and Old-Fashioned Philosophy, *World Economics* 10 (1), 45-58.

BANERJEE, A. (1992), A Simple Model of Herd Behaviour, *Quarterly Journal of Economics* 108 (4), 797-817.

CABALLERO, R., E. FARHI, and P.-O. GOURINCHAS (2008), An Equilibrium Model of 'Global Imbalances' and Low Interest Rates, *American Economic Review* 98 (3), 358-393.

CHAMLEY, C. P. (2002), *Rational Herds: Economic Models of Social Learning*, Cambridge University Press: Cambridge (UK).

COATES, J.M., and J. HERBERT (2008), Endogenous Steroids and Financial Risk Taking on a London Trading Floor, *Proceedings of the National Academy of Sciences*, 6167-6172.

D. COLANDER, H. FÖLLMER, A. HAAS, M. GOLDBERG, K. JUSELIUS, A. KIRMEN, T. LUX und B. SLOT, (2009), *The Financial Crisis and the Systematic Failure of Academic Economics*, Working Paper No. 1489, February 2009, Kiel Institute for the World Economy.

CONGLETON, R.D. (2005), Toward a Political Economy of Crisis Management: Rational Choice, Ignorance, and Haste in Political Decision Making, Dynamics of Intervention, *Advances in Austrian Economics* 8 (2), 183-204.

CONGLETON, R.D. (2009), On the Political Economy of the Financial Crisis and Beyond of 2008, Forthcoming in: *Public Choice*.

EICHENGREEN, B. (2008), *Thirteen Questions About the Subprime Crisis*, mimeo, University of California, Berkeley (January), emlab.berkeley.edu/users~eichengr.

EICHENGREEN, B. (2008a), *Origins and Responses to the Crisis*, mimeo, University of California, Berkeley.

FRIEDMAN, D. (1996), Anarchy and Efficient Law, in: J. SANDERS and J. NARVESON (eds.), *For and Against the State*, Rowman and Littlefield.

HIMMELBERG, C. P., C. J. MAYER and T. M. SINAI (2004), Assessing High House Prices: Bubbles, Fundamentals, and Misperceptions, *Federal Reserve Board Staff Report* 218.

KROZNER, R., and R. RAJAN (1994), Is the Glass-Steagall Act Justified? A Study of U.S. Experience with Universal Banking Before 1993, *American Economic Review* 84 (4), 810-832.

KROZNER, R., and R. RAJAN (1997). Commercial Bank Securities Activities Before the Glass-Steagall Act, *Journal of Monetary Economics* 39 (4), 475-516.

KINDLEBERGER, C.P. (1989), *Manias, Panics, and Crashes: A History of Financial Crises*, MacMillan: London.

KRUGMAN, P. (2000), The Return of Depression, *Economics*, New York: W. W. Norton Publishing Company.

KRUGMAN, P. (2004), The Great Unravelling: Losing Our Way In The New Century, New York: W. W. Norton Publishing Company.

LEIJONHUFVUD, A. (2000), *Macroeconomic Instability and Coordination: Selected Essays*, Edward Elgar: Cheltenham.

A. LO, D.V. REPIN and B.N. STEENBARGER, (2005), Fear and Greed in Financial Markets: A Clinical Study of Day Traders, *American Economic Review* 95 (3), 352-359.

MANDELBROT, B. (1963), The Variation of Certain Speculative Prices, *Journal of Business*, 36 (3), 394-419.

MASON, J., and J. ROSNER (2007), *Where Did the Risk Go? How Misapplied Bond Ratings Cause Mortgage Back Securities and Collateralized Debt Obligations Disruptions*, unpublished manuscript, Drexel University and Graham Fisher.

MINSKY, H.P. (1986), *Stabilizing an Unstable Economy*, Yale University Press: New Haven.

PAULSON, H. et al. (2008), Blueprint for a Modernized Financial Regulatory Structure, Washington D.C.: *US Department of the Treasury* (March).

REINHART, C., and K. ROGOFF (2008), *This Time is Different: A Panoramic View of Eight Centuries of Financial Crises*, Manuscript, Harvard University and NBER.

SHLEIFER, A. (1998), State Versus Private Ownership, *Journal of Economic Perspectives* 12 (4), 133 – 150.

STIGLITZ, J.E. (2008), It Doesn't Take Nostradamus, *The Economist's Voice* 5 (8), Article 1.

STIGLITZ, J.E. (2009), America's Socialism for the Rich, *The Economist's Voice* 6 (6), Article 5.

WARNOCK, F., and V. WARNOCK (2006), International Capital Flows and U.S. Interest Rates, International Finance Discussion Paper no. 860, *International Finance Division*, Board of Governors of the Federal Reserve System (September).