

## **How Bad Mental Models (Mistaken Beliefs), Perverse Incentives, and Lazy Markets Interacted in Generating the Current Financial Crisis**

**Thomas D. Willett**\*

For a crisis as severe and widespread as the current global financial crisis, it seems likely that there were a number of important contributing factors. This has led to a substantial number of explanations (see appendix A) with much of the public debate sadly focusing on particular single factor explanations.<sup>1</sup> For example, one recent commentator was quoted in the national press in the United States as arguing that in the US Congress the fundamental debate was being joined – was the crisis caused by too little government oversight and excessive deregulation or was it caused primarily by excessive government intervention, such as the congressional mandates for government sponsored enterprises like Fannie Mae and Freddie Mac to increase mortgage lending to low income and minority households?

In my judgment such either/or approaches are highly unlikely to help us better understand the causes for the crisis. Many factors have contributed, but especially important is how these factors interacted with one another. In this paper, I do not claim to present a comprehensive analysis of the causes of the crisis, but rather adopt the more limited goal of illustrating how several important factors interacted to stimulate a bubble

---

\* Director, Claremont Institute for Economic Policy Studies, and Horton Professor of Economics, Claremont Graduate University and Claremont McKenna College E-mail: Thomas.Willett@cgu.edu

<sup>1</sup> For summaries of the progression of the crisis and numerous commentaries on various aspects of the crisis, see my web site: <http://www.cgu.edu/pages/1380.asp>.

not only in the US housing market, but also in financial markets across much of the globe. This interpretation helps explain why initial problems in the US subprime mortgage market could end up generating so much devastation worldwide. In our interpretation, these widespread effects were not so much the result of irrational market overreactions and contagions but rather of the US subprime crisis serving as a wakeup call that led to broad based corrections to the widespread under pricing of risk. This also highlights that while particular deficiencies in US financial regulation and government policies undoubtedly have been important, they cannot be full explanations of the global crisis. Thus ideology is likely to prove to be a poor guide to understanding the causes of the crisis and appropriate improvements in financial regulation.

In the first part of the paper I investigate how deficient or incorrect mental models interacted with perverse incentive structures and limitations on market information gathering and analysis to generate the erosion of credit standards in mortgage lending and excessive risk taking and leverage in many segments of the global financial market. The three deficient popular mental models that are considered are beliefs that house prices never fall, the view associated with Alan Greenspan that financial market discipline will make these markets largely self-regulating, and the exaggerated belief that modern models of financial engineering and risk management had made risk precisely measurable and controllable.

The second part of the paper turns to analysis of the implications of this interpretation for strategies to improve future financial regulation.

*Bad mental models (mistaken beliefs)*

1. The Whopper – house prices never fall – at least on a national basis (true for the post war period until the current crisis.)

Beliefs that housing market was substantially different from financial markets.  
(There turned out to be not as much difference as many people thought.)

Most of the loosening of lending standards that look so absurd in hindsight wouldn't have generated major problems if house prices had kept rising.

Some lending practices were disgraceful even with continuing rising prices – but defaults wouldn't be a serious problem for the lenders because of the value of the collateral.

2. A second faulty mental model was that market discipline would automatically lead to self-regulation of the financial markets so that little regulatory oversight was needed. This view was most famously associated with Alan Greenspan, chairman of the Federal Reserve. His golden reputation at the time and his position as Fed chairman gave his views great weight with legislators and other regulators.
3. This view was encouraged by developments in the mathematical modeling of risk that led to a revolution in the financial engineering of complex financial instruments and over confidence that risk management models would allow risk to be precisely measured and managed, thus leading to a virtual conquering of financial risk. While these models were often excellent for managing risk during good times, they were generally poorly equipped to deal with bad times and by offering a false sense of security, they facilitated the generation of excessive risk in the financial system.

A key problem with the self-regulation view was that it was based more on faith than careful analysis of the incentives structure needed for the market to provide effective discipline over financial behavior.

Financial innovations had led to an enormous change in incentive structures with respect to mortgage lending, however. With the development of the widespread use of securitization and the originate and distribute model of mortgage lending, the direct incentives for lenders to carefully monitor the quality of the loans was sharply diminished.

This in itself might not have presented serious problems if the prospective purchasers of the securities had been demanding about what they bought. Careful attention to quality by purchasers would have forced continued discipline by lenders in their originations in order to be able to distribute profitably.

Unfortunately buyers showed little discrimination. They relied heavily on certification by the ratings agencies and the herding instincts that this must be the smart thing to do since all the big sophisticated investors were buying.

The ratings agencies played a key role in the breakdown of market discipline by offering disgracefully high ratings on a high proportion of sub-prime and other bad mortgages.

What happened was that a potentially valuable innovation in financial engineering was taken and drastically oversold. The good idea was that with the benefits of diversification and slicing and dicing allowed by securitization, the top proportion of a large group of sub-prime securities genuinely deserved AAA ratings. But while this might have appropriately applied to 10 or 20 percent of the total package, the ratings agencies were convinced by mortgage securitizing clients to rate well over half of many of these bundles as AAA.

To some extent, this reflected the bad mental models of risk management that will be discussed below. But likely more important were the gross conflicts of interest generated by the development of a market structure where the payments for ratings came from those being rated. It doesn't require one to be an advanced student of economics to see the moral hazard problems that this generated. But the money was rolling in and neither the players nor apparently the regulators wanted to rock the boat. The regulators and politicians got what they wanted – increased home ownership by the poor.

The whole idea of Adam Smith's approach to economics is that a key role of government is to oversee that we have a system of incentives that leads the pursuit of private interest that promotes the public interest. But Smith well understood that while a competitive environment is frequently sufficient to provide such incentives, this isn't always the case. And the financial sector is an area where the exceptions are especially prevalent.

Concerns with maintaining market share, the structure of compensation schemes, and deficiencies in corporate governance structures all interacted in ways that led competitive pressures to generate not just efforts to increase efficiency, but also to keep up short-run returns by taking on greater risks in ways not easily understood by those doing so.

The availability of easy credit conditions due to loose monetary policy and huge capital inflows made it easy for financial institutions and hedge funds to “super charge” returns in the short-run by using high levels of leverage.

The perverse effects of these competitive pressures were encapsulated in Charles Prince's infamous quip “As long as the music's still playing, you gotta keep dancing.”

While the rating agencies had an oligopolistic structure favored by government-erected barriers to entry, on both the supply and demand side the market for securitized mortgages was highly competitive. The problem was that this is a market where information costs are high and knowledge is quite asymmetric. While we can fault buyers of these securities for being lazy and relying too much on the ratings agencies, a careful look at the information structure in this market suggests why the ultimate purchasers did not provide strong oversight. The information costs of doing so would be far too high.

The normal response to such high information costs for moderate-sized actors in financial markets is diversification and/or the hiring of financial advisors and investment managers. There are strong reasons to believe that the compensation structure in the middle-man institutions led to incentives for excessive risk-taking and that competition helped contribute to, rather than mitigate, excessively short time horizons – but this raises a complex set of issues that require their own analysis.

For our present purposes, it's sufficient to say that while it may be true as advocates of this financial alchemy argued that securitization allowed risk to be transferred to those in better positions to bear it – little attention was given to the problem that the incentives to obtain good information were sharply diminished.

In the old hold-to-maturity model of mortgage lending, the institutions that could most efficiently gather the relevant information and act on it had the incentives to do so. With widespread securitization, the initial lenders' incentives to obtain relevant information about the borrower dropped drastically, while diversified investors held little access to direct information. They relied on the middle man evaluations that turned out to be highly biased. So the level of effective information with which the system operated deteriorated markedly.

Often we can count on the market to turn up its nose at investment opportunities about which there's little knowledge. That would have forced discipline back on the lender. But with the combination of the misleadingly high ratings and the fee-driven sales pushes from major financial institutions, MBS became viewed as a smart thing to have in one's portfolio and the herd rushed in.

A largely similar phenomenon developed with the booming market for credit default swaps. Little attention was paid to counterparty risks and institutions were allowed to, in effect, offer insurance without accountability for having reserves to meet potential obligations. This was just one of many types of financial markets that succumbed to the temptations of excessive leverage made possible by loose monetary policies and the global glut of liquidity. Complicating this over-leverage was the lack of any centralized overview of where these risky assets and liabilities were being spread. As long as things kept rolling along, few regulators or market participants worried about this, but once the housing bubble finally burst and losses started to accumulate, it was quickly realized that for large segments of the market, no one had a good idea of how many iffy obligations were out there, nor who was holding them.

It was the excessive leverage that had developed in a wide array of markets combined with lack of information about where the toxic assets were that led to the freezing up of credit markets. Without this lethal combination, the bursting of the US housing bubble might not have had an adverse effect on credit markets and the real economy much larger than the bursting of the tech bubble.

It was not so much that the actual uncertainty had increased as that market participants who had treated these risks as being so low that they were ignored suddenly were forced to acknowledge their presence. Prior to the crisis, markets had generally been insufficiently risk averse and the price of risk had fallen far too low. The wake-up call of the crisis brought this to an end. Suddenly the burden of proof shifted to financial institutions and other would-be borrowers to

establish that they were in sound financial positions. And with the pervasive uncertainty, this was difficult for most firms to do.

### *Concluding Remarks*

This has been a dismal tale of greed, hubris, stupidity, and regulatory inattention. Fortunately we can end on a more positive note. If my analysis is correct, then most of the problems that led to this crisis can be substantially mitigated by taking more seriously an economic approach to financial regulation. From the standpoint of private risk management, the principal lesson is that the relationships in behavior among different financial assets and liabilities are not the physical constants such as those with which civil engineers deal, but rather reflect a combination of direct economic and financial interdependencies and the pattern of shocks that hit the system. Most of the developments in mathematical modeling and product innovations that go under the heading of financial engineering can have productive uses. What led to such devastating outcomes from these developments was largely a combination of bad incentive structures and false beliefs in the stability of historical correlations. The latter led to greatly exaggerated beliefs about how precisely risk could be measured and managed and how much leverage could safely be accommodated by a high tech financial system.

It would be a shame to overreact and abolish all the recently developed programs in financial engineering. But they do need urgently to re-engineer themselves to focus more on financial economics.

This will help both to deflate hubris about the degree of predictability in financial relationships and also focus more attention both within private sector institutions and regulatory agencies on incentive structures. We do not need to get into a debate about

whether greed is good or bad to recognize that it is a widespread attribute of the human condition. While we can hope that most people would refuse to engage in some of the most predatory of the practices that have been uncovered in segments of the subprime mortgage industry, a central premise of the economic approach is that we need to design incentive structures that minimize the need for people to behave like saints. This should be the central focus of regulatory reforms.

Critics of regulation such as Alan Greenspan put great store in their judgments that on average we cannot expect financial regulators to match the resources and sophistication of the institutions they are supposed to regulate. This is a judgment with which I concur, but from which I draw a quite different lesson. While much has been made of the laissez-faire attitude toward financial regulation adopted by American regulators, this was far from just being an example of American free-market extremism. The whole set of regulatory principles developed by the Basle group of international regulators relied heavily on the outsourcing of risk analysis to the ratings agencies and the large banks' internal models. These were indeed highly sophisticated. What was largely overlooked were the strong incentives to misuse such analyses. To discover these perverse incentives one does not need a high-priced lawyer or a Ph.D. in mathematics. Any run-of-the-mill economist worth their salt would have spied some of these conflicts of interest immediately, and others after some study.

The Securities and Exchange Commission in the United States is not unusual in being peopled largely by lawyers who tend to give insufficient attention to basic economic analysis. This could be easily corrected if the political will is there.

Of course it's not sufficient just to identify perverse incentives. They must be corrected. In many cases the discovery of optimal incentive structures is well beyond our current capabilities, but great gains can be made just by devising and implementing less bad ones. In this regard we should pay careful heed to the call of Richard Bookstaber in his important book, *A Demon of Our Own Design*, which predicted the current crisis as the outcome of excessive complexity in our financial structure. Bookstaber's analysis offers a most convincing warning of the danger of devising complex arrangements that optimize for a particular environment but which may fail badly in another. He stresses the evolutionary advantages of simpler but more robust arrangements that are optimal in no one environment, but which perform decently in a wide range of environments. As the current crisis vividly – if painfully – illustrates, the financial landscape can be quite variable. This suggests that at least initially regulatory reform should focus on fairly simple regulations such as limitations on leverage for different types of activities. This should not require financial wizards to implement and should have only limited effects in discouraging useful financial innovations. However, this approach does require an important ingredient which is often in short supply – political will.

## **Appendix A: A List of Suggested Causes of the Financial Crisis**

1. Beliefs that housing prices never fall
2. Excessively easy money
3. The Global Savings Glut
4. Financial innovation (Bhagwati's destructive creation), securitization of mortgages, CDS's etc.
5. Globalization (Soros)
6. Excessive faith in risk models (and ratings agencies)
7. Conflicts of interest for ratings agencies
8. Deregulation
9. Unregulation – excessive faith in market discipline by Greenspan and others
10. Irresponsible behavior in financial sector (argued by Greenspan) [Greed, fraud, etc. in housing financing]
11. Minsky credit cycle
12. “Reflexivity” – George Soros
13. Endogenous liquidity (El-Erian), leverage, (capital inflows from US over spending and global savings glut)
14. Hubris, euphoria, and other psychological biases (behavioral and neuro finance)
15. Beliefs in the Great Moderation and this time it's different
16. Global under-pricing of risk (Greenspan)
17. Moral hazard - too big to fail
18. Government sponsored enterprises – Fannie and Freddie and housing legislation
19. Compensation schemes in the financial industry that rewards excessive risk taking (false alpha). Robert Frank – rewards based on relative performance

20. Incentives to undertake risky activities to avoid losing market share
21. Mainstream equilibrium economics – Soros argues “our current troubles can be largely attributed to the fact that current international financial system has been developed on the basis of their paradigm.”
22. “We got away from the basics – from the fundamentals of prudent lending and borrowing.” (Tom Friedman)
23. Black Swans
24. “Termites” (lack of good information rotted out the structure)
25. Lack of consumer financial education

**Reasons for the crisis worsening in the fall of 2008**

1. Inept policy responses led to loss of confidence
2. Failure of Lehman stimulated increased fear of counter party risk
3. Growing recognition that there were serious solvency, not just liquidity problems