

Some Lessons for Economists from the Financial Crisis

Thomas Willett*

1. Introduction

The Queen of England was far from the only person to ask why economists didn't warn that a huge crisis was building up. The defensive answer is that some did. Academics like Raghuram Rajan, Nouriel Roubini, and Robert Shiller, Wall Street economists like Mark Zandi, and even official organizations like the Bank for International Settlements issued numerous warnings. The financial press such as The Economist and the Financial Times also presented warnings. As early as 2003 Karl Case and Robert Shiller (2003) raised the issue of whether a substantial bubble was developing in the US housing market. In 2005 The Economist called attention to the inflation of housing prices in many countries across the globe saying, "It looks like the biggest bubble in history." (Roubini and Mihm (2010), p.126) They were right, but were widely ignored by national officials and the private sector alike.

This failure to pay attention to such warnings is difficult to explain in terms of the high-information rational-expectations models that had become so prevalent in academia and had become so widely incorporated into financial practices through modern finance

* Horton Professor of Economics at Claremont Graduate University and Claremont McKenna College and Director, Claremont Institute for Economic Policy Studies. Thomas.Willett@cgu.edu. I gratefully acknowledge valuable comments and suggestions from Chetan Ghate, Art Denzau, and an anonymous referee and from the students from Claremont McKenna College and Claremont Graduate University who participated in my crisis seminars.

theory and risk management techniques.¹ On this question, the research from cognitive psychology and neuroscience that is now being incorporated into the relatively new fields of behavioral and neuro-economics and neuro-finance has a strong comparative advantage.² Two of the most well documented biases found in this research are overconfidence or hubris and confirmation bias. The majority of agents believe that they are smarter than the average agent and can get out of trouble that others could not.

And unlike Karl Popper's ideal scientists who are always trying to falsify theories, the typical person is inclined to pay attention to evidence that supports their prior views and discount evidence that conflicts (confirmation bias). Combined with short memories and a tendency toward complacency when things are going well, the human animal has proven to be quite adept at selective vision that pays little attention to what it doesn't want to see. The old adages "don't rock the boat" and "kill the messenger of bad news" help explain why top management in the major global financial institutions generally paid so little attention to the warnings from the few mid-level employees who were brave or foolish enough to warn of the problems lurking.³ As an anonymous referee pointed out on an earlier version of this essay, whether the right types of executives were being promoted into top management is an important issue for research.

¹ See, for example, Fox (2009), Patterson (2010), and Triana (2009).

² See, for example, Akerlof and Shiller (2009), Burham (2008), Peterson (2007), Shefrin (2000), Shleifer (2001), Zweig (2007) and Montier (2002).

³ See, for example, the accounts in Cohan (2009), Faber (2009), Gilbert (2010), Gorton (2010), Johnson and Kwak (2010), Lowenstein (2010), McDonald and Robinson (2009), Patterson (2010), Sorkin (2009), Tett (2009), Tibman (2009), and Williams (2010). Goldman Sachs was an important exception to this generalization. Several hedge funds, most famously the Paulson Fund (no connection to Treasury Secretary Paulson) did predict the crisis and profited from this. On the latter, see Lewis (2010). For recent book length treatments by economists I especially recommend Barth (2009), Gorton (2010), Johnson and Kwak (2010), Rajan (2010), Reinhart and Rogoff (2009), and Roubini and Mihm (2010). For discussions of the state of crisis analysis just prior to the crisis see Kindleberger and Aliber (2005), and Allen and Gale (2007) and (2008). For analyses of the effects of the crisis on India and India's policy responses see IMF(2010), Marjit (2009), Patnaik and Shah (2009), and Reddy (2010).

A more searching answer would point to developments within the discipline of economics and finance that helped contribute to the relative paucity of public warnings that the dangers of serious crises were rapidly building. In this regard, I will argue that the primary fault is not with economics as a discipline – indeed basic economics with its focus on the importance of incentive structures is essential to understanding the origins and spread of the crisis. The failures were predominantly with specific models and schools of thought within economics and a tendency toward overspecialization that led few economists to be focusing on the developments that led to the crisis. Discussion of such issues is a major focus of this essay. While I concur with those arguing that there is much for economists to learn from the crisis, the failure to use "good" economics by governments and regulatory agencies and of the management of our large financial institutions had much more destructive effects. Overspecialization is a natural tendency in academia since a high degree of specialization is often needed to advance knowledge and the optimal mix of specialist and generalist research is almost impossible to determine. Thus it is unfortunate, but somewhat understandable, that not many academic experts were studying the behaviors that generated the crisis. The failure of the government officials who were tasked with overseeing these sectors of the economy is a much more blatant failure.

Not surprisingly, economists committed to strong points of view are apt to draw quite different lessons from the crisis. As will be discussed below, Keynesian Paul Krugman interprets the crisis as showing the failure of new classical economists, while one of its stars, John Cochrane, sees it instead as showing the failure of Krugman's Keynesian economics. I am a strongly committed eclectic seeing both strengths in all of

the standard approaches as well as weaknesses when taken to extremes. Thus I offer a perspective from the middle of the road on some of the recent debates and discuss what I see as a number of important lessons for fruitful directions in research and policy that are highlighted by the crisis.

Since this essay was written for an international journal on growth and development with a focus on emerging market economies, I had initially planned to have several separate major sections focusing on lessons for developing and emerging market countries. As I thought more about this, however, I was struck by how much the lessons were largely the same for these as for the advanced economies and indeed concluded that one of the most important lessons of the crisis was that most of the important differences across countries were more one of degree than of kind. When the crisis went public with the run on Northern Rock in the UK in the fall of 2007, I was teaching a seminar on monetary and financial issues in emerging markets. We were immediately struck by how much the analysis we had been doing about the dangers of perverse financial liberalization in emerging markets was directly applicable to the emerging problems in Europe and the United States. Of course our conceit in the advanced economies had been that these problems applied only, or at least mainly, to countries with underdeveloped financial and institutional structures. How wrong this view was. Thus I have limited myself to one section on particular implications for India and other emerging market economies.

Indeed this smug view that the sophisticated financial systems in the advanced economies had effectively conquered risk by slicing and dicing it through the marvels of financial engineering was itself a major contributor to the development of the crisis. With

risk being more manageable through complex mathematical risk management systems, more risk could be taken on. Combined with the failure of these systems to measure risk accurately, the result was disaster. As Rajan (2010) argues, there can be important differences between individual and aggregate interests and many of the sophisticated financial innovations that brought huge gains to particular individuals and groups brought destruction to the system. The need to look carefully at the incentives facing individual actors and consider how they aggregate is one of the hallmarks of the economic approach to social policy. Giving more emphasis to this perspective is the key to reforming our financial systems. While the particular conditions and tradeoffs will differ from one economy to another, our basic approach should be the same. And as Rajan (2010) emphasizes, this must be done in a political economy context since political pressures will often strongly influence how institutional arrangements will work in practice. These themes are discussed in more detail below.

2. The Underutilization of Sound Economics by the Regulatory Agencies

In large part, the failure to head off the crisis lay with the underutilization of economists in the regulatory agencies. Any good economist looking at the markets for mortgages and asset-backed securities would quickly detect a mass of perverse incentive structures that helped create the crisis. But the lawyers who tend to dominate such agencies are generally not trained to look for such warning signs. Compensation schemes based on sales with little or no regard to risks, mortgage loans with no documentation that were low risk only if house prices continued to escalate, the spread of securities that few understood and which relied for their credibility on ratings issued by agencies that were

paid directly by insurers; these were all practices about which any good undergraduate economics student would raise warnings. But our regulatory agencies tend to be dominated by lawyers rather than economists and thus didn't tend to think this way. But this can't explain the neglect by the Federal Reserve in the United States.

An extreme version of economics did substantially contribute to regulatory neglect by the Federal Reserve. The development of the crisis in many countries across the globe means that the extreme laissez-faire views of Alan Greenspan cannot be given the complete blame for regulatory failure, but it certainly played a major role. There is good reason to accept Greenspan's view that the typical manager at a large financial institution was smarter and had more resources at their disposal than the typical regulator. After all, the private sector managers tend to be paid far, far more. But it doesn't logically follow from this that the private sector managers will manage risk better. One must also look at incentive structures.

The private sector could and did produce much more sophisticated looking mathematical models of risk management than could public regulators, but they also had strong incentives to use these models to game the system to lower capital requirements. Likewise the ratings agencies had incentives to game to generate excessively high ratings on asset-backed securities. These were market structures where basic economics suggests that because of conflicts of interest, we cannot safely rely on self-regulation and competition alone.

Many if not most economists believed that after the Great Depression the financial sector had become excessively regulated. Thus there was widespread support

among economists for substantial financial deregulation. However, Greenspan's belief that the financial sector could be sufficiently disciplined by self-regulation in a competitive environment was a distinctly minority view. As Greenspan's national and international reputation grew, however, it became a very influential view and one that was of course championed by most of the leaders in the financial sector itself. Considerable regulatory capture appears to have been widespread, and not just in the United States. Generous contributions and extensive lobbying spread the influence beyond the regulatory agencies to legislators and in some cases executive branches as well.

3. The Overselling of Efficient Markets Theory and Improvements in Risk Management

Beyond the direct influence of lobbying by the financial sector, there was also a much broader process of cognitive capture which relied not on the extreme view that there was no need for regulation per se, but on the much less ideologically influenced view that modern developments in mathematical modeling and financial engineering had led to vast improvements in the ability of firms to diversify risk and of the private financial institutions and their regulators to much more precisely, calculate, monitor, and manage risks. These new sophisticated approaches to risk measurement and management drew heavily on the assumptions of rational expectations and the efficient markets hypothesis, which had become the cornerstone of modern finance theory and the new classical school of macro economists. Economists understood that completely efficient markets were not a realistic assumption even theoretically. If markets were fully efficient

there would be no above average returns to financial analysis, while if informed speculation ceased markets would no longer be efficient. However such theoretical problems along with practical ones such as costly and limited information and various empirical findings of deviations from efficiency in particular markets-usually termed "anomalies"-were widely assumed to lead to only small deviations from full efficiency. Efficiency was still assumed to hold as a rough approximation similar to the use of perfect competition in microeconomic analysis. Discussions of far from equilibrium behavior were generally treated as showing that someone didn't really understand modern economics. These were views that I held for many years.

Such analysis underlay most of the financial engineering techniques that facilitated the development of markets in asset-backed securities and credit default swaps and contributed to the widespread view that with modern techniques risk could be so quantified and sliced, diced, and diversified that it could be rather precisely controlled, thus allowing institutions to safely take on much more total risk than they had in the past. Excessive confidence in these models was a major contributor to the buildup of such massive risk in our financial system.⁴ There was hubris on a massive scale.

As is so often the case, these innovations were based on good ideas, and, applied with common sense, offered opportunities for substantial improvements in financial management. The developers of these financial engineering techniques were usually well aware of the limitations of their models as well as the opportunities they provided, but in the hands of practitioners, these caveats were often quickly forgotten. The irony is that techniques including Value at Risk (VaR) tended to work well during normal periods

⁴ See, for example, Das (2006), Patterson (2010), Taleb (2007), and Triana (2009).

when they were least needed while breaking down in periods of stress when they were most needed. It is to be hoped that the crisis will greatly increase awareness among practitioners of the limitations of such models. There is also beginning to be increased dissemination of information to practitioners about the findings of the research on behavioral and neuro-economics and finance. (See, for example, Peterson (2007) and Zweig (2007)).

For mathematical convenience, most of these models assumed that market outcomes were normally distributed, that liquidity issues could be ignored, and that past behavior would give a good guide to future behavior. All three of these assumptions tend to hold to a fair approximation during normal periods with the exception that correlations among asset prices may vary greatly from year to year, depending on the pattern of shocks. But they all break down badly during periods of stress in financial markets. Liquidity disappears, markets become much more volatile than implied by the normal distribution, and breaks in behavior become common. Prior to the crisis there was already strong empirical evidence about these problems such as fat tails of financial returns, i.e. many more large positive and negative movements than implied by the normal distribution, and large increases in correlations during crises, but these were ignored by many practitioners, both in the private sector and regulators. Hence the claims by many financial officials that they were hit by a thousand year crisis. If the normal distribution held this would be true, but not in the real world.

The popular risk management models were not designed to deal with shifts in regime and crisis behavior and since they were based heavily on recent market volatilities, often gave grossly misleading signals during the periods of excessive

complacency and optimism that often precede financial crises. Thus rather than helping to tame the behavioral biases of overconfidence and confirmation bias to which many managers were subject, these risk models helped contribute to boom-bust behavior, and many risk management techniques tended to exacerbate them.

When the crisis hit following the dictates of these models generated scrambles to reduce risk. This caused the crisis to worsen and reinforced (rather than offset) the psychological tendencies toward panic and herding to which human managers are sometimes subject. Both private sector risk managers and public regulators focused excessively on individual institutions operating under the implicit assumption that agents were operating independently. In competitive markets this is often a safe assumption, but not when much of the market is following similar strategies. As complexity theory emphasizes, this can lead to major system instabilities. This is especially likely to be a problem during crises. An implication now being increasingly recognized is that regulators need to focus much more on systemic risks and not just the health of individual institutions. (See, for example, French et al (2010)).

One of the best antidotes to being blinded by exclusive focus on formal models is greater attention to history. This is a major theme of Reinhart and Rogoff's (2009) impressive study of crises. As Roubini and Mihm (2010) argue, "History promotes humility, a quality that comes in handy when assessing crises... (p. 60) ...A deeper appreciation of history might have prepared market watchers for what...happened..."(p. 95) This is also a theme of recent comments by a number of other financial experts. (See the review by Willett (2010).)

4. The Krugman Attack and Cochrane Counter Attack

One of the harshest attacks on economics as being at fault for the crisis was levied by Nobel Laureate Paul Krugman in his article on “How Did Economists Get It So Wrong?” (2009), in which he criticizes the profession for falling in love with its models and mistaking them for reality. He argues, “As I see it, the economics profession went astray because economists as a group mistook beauty, clad in impressive-looking mathematics, for truth” and that “the belief in efficient financial markets blinded many if not most economists to the emergence of the biggest financial bubble in history”... “Economics, as a field, got in trouble because economists were seduced by a vision of a perfect, frictionless market economy.”

I have considerable sympathy with Krugman’s view that too many economists have become excessively fixated on particular models and have come to see the world only through one particular lens. But with his battle gear fully activated, Krugman tends to go to the other extreme – rather than arguing for the need to bring multiple perspectives to bear on complex issues, he poses the issue almost exclusively in terms of a battle between saltwater (Keynesian) economics (good) and freshwater (new classical) economics (bad). The saltwater-fresh water description of these schools of thought comes from the centers of modern Keynesian in the United States being at universities on the two coasts such as Berkeley, Harvard, MIT, Princeton, and Yale and the new classical view being championed at Chicago and Minnesota, which are associated with lakes.

Not surprisingly, freshwater economists responded to Krugman in just as bombastic a style. In “How Did Paul Krugman Get It So Wrong?” John H. Cochrane

(2009), a leading scholar at the University of Chicago, countered “Paul Krugman has no interesting idea whatsoever about what caused our current financial and economic problems, what policies might have prevented it, or what might help us in the future, and he has no contact with people who do... Krugman has absolutely no idea what caused the crisis.” This judgment is undoubtedly a little extreme, but Cochrane is right that in his article Krugman focuses mainly on attacking new classical economics and fails to give a good explanation of what did cause the crisis. The reader is likely to be left with the impression that it was bad macroeconomic policies that generated the crisis. Macroeconomic policies were indeed somewhat permissive, but the origins of the crisis were primarily in the housing and financial sectors, not domestic macroeconomics. Cochrane argues this “was a financial crisis”... “The centerpiece of our crash was not the relatively free stock or real estate markets, it was the highly regulated commercial banks.”

Cochrane’s focus on the financial crisis is on the market, but real estate markets were much more at the center of the crisis than he suggests. His comment does highlight, however, that it was less deregulation than the poor administration of existing regulations that caused the biggest problems. We just cannot fruitfully address financial sector issues in terms of whether one is for or against regulation. The crisis was generated by both major market and regulatory failures and both sides of the equation need to be addressed.

While the misuses of modern finance theory did contribute importantly to the crisis, Cochrane seems largely correct in his argument that new classical macroeconomics did not. As he argues, “few in Washington pay the slightest attention to modern macroeconomic research, in particular anything with a serious intertemporal

dimension. Paul's simple Keynesianism has dominated policy analysis for decades." The later part of the statement needs some qualification, however. Extreme supply side ideas that tax cuts will pay for themselves even at full employment and that it's much more important to cut taxes than worry about budget deficits have gained considerable currency among many Republican leaders in the United States and have done their bit to contribute to the culture of overspending in the United States that generated the permissive background for the crisis.

5. Leijonhufvud on Keynes and the Crisis

A particularly cogent analysis of the implications of the crisis for macroeconomic analysis has been offered by Axel Leijonhufvud (2010). While a strong admirer of Keynes, Leijonhufvud argues that for understanding the current crisis "The General Theory is not particularly helpful." (p. 743) He goes on to argue that, "The great weakness of Keynesian income-expenditure analysis is that it fails to deal systematically with the state of balance sheets. This is a balance sheet recession." (p. 245) He also criticizes the view that the main contribution of Keynesian economics is its focus on wage and price rigidities. "...The major problems in the last 20 years or so have originated in the financial markets - and prices in these markets are anything but inflexible."(p. 750)

His focus on solvency issues is also highly relevant for the current debates in Europe about whether fiscal consolidation is contractionary or expansionary. The standard Keynesian prescriptions for countercyclical fiscal policy assume government solvency is not an issue. Where it is, as for Greece today, the scope for Keynesian stimulus is lost.

This is an important lesson for advanced and developing countries alike. It's important to save scope for deficit finance for when it's really needed. Unfortunately we still do not know a great deal about the limits at which solvency concerns begin to have a strong impact on market expectations and begin to undercut the effectiveness of fiscal expansions. The markets certainly failed to give strong early warning signals in the case of Greece. This is clearly an important area for research.

Leijonhufvud is also quite critical of the usefulness for crisis analysis of the popular dynamic stochastic general equilibrium (DSGE) models based on single representative agents. He argues that these models are particularly prone to fallacies of composition and ignore the adverse feedback mechanisms that can be so devastating in a financial crisis. Rajan (2010) makes a complementary criticism, "The representative agent models were easy to work with and did offer useful predictions about policy, but they took for granted the plumbing underlying the industrial economy-the financial claims, the transactions, the incentive structures, the firms, the banks, the markets, the regulations and so on. So long as these mechanisms worked well, the models were a useful simplification..." (p. 116) But when the plumbing broke down in a crisis, so did these models. Worse than this, in a manner similar to the Lucas critique, "the models themselves may have hastened the plumbing's breakdown... modeling that took the plumbing for granted ensured the breakdown of the plumbing. In coming years, macroeconomic modeling must incorporate more of the plumbing... The danger is that monetary economists will try to wish away the links between monetary policy, risk taking and asset price bubbles." (p. 117) This advice of course applies at least as much to developing as to advanced economies.

Indeed while bubbles have burst all over the advanced economies, several developing countries including China and India have housing markets that look suspiciously like they contain elements of bubbles. It is quite important for governments and financial advisors to help counter any remaining views that housing prices can only go up. This is especially important for lower income countries where real estate is likely to be an especially high fraction of a family's wealth.

The crisis has clearly disproved the hope that if monetary policy keeps goods inflation under control asset markets will take care of themselves. Some have interpreted this as showing the basic failure of the inflation targeting strategy that has become the consensus recommendation of monetary economists and officials. In my interpretation what the crisis shows is the failure of inflation targeting as an exclusive strategy, not that it shouldn't be an important part of overall monetary and financial strategy.

As early as the Asian crisis of 1997-98 we had evidence that financial sectors and asset markets could get in trouble even though inflation rates remained low. Thus a focus on inflation needed to be complemented with a focus on broader financial concerns. There is considerable debate about whether monetary policy should react to the behavior of asset prices but it is clear that monetary policy alone is not sufficient to assure the objectives of both low inflation and financial stability. Additional policy instruments are needed. One lesson is that greater attention needs to be returned to the behavior of credit. As Rajan (2010) argues, "The key warning signal of unsustainable growth in asset prices is an accompanying growth in credit." (p.111) He notes that while many central banks now downplay the role of credit growth, both the European Central Bank and the Reserve Bank of India have been exceptions.

6. The Danger of Excessive Belief in Particular Models

In my judgment, the crisis illustrates what many of us already knew – taking any one model or view to an extreme is likely to be dangerous. Models help us see some things more clearly and can blind us to other considerations. In a complex world we can get useful insights from both the freshwater and saltwater schools and we should be wary of believing that any of the models of any of the schools of economic thought will tell us all we need to know about all situations. For example, the efficient market hypothesis (EMH) has clearly been falsified as a complete explanation of market behavior, but it is still useful as an approximation of many markets much of the time. Certainly its implication that it's usually difficult to beat the market and hence we should be wary of paying high fees for others to manage our investments is more true than false – at least with respect to the major financial markets. But the stronger form in which the EMH is sometimes presented, that financial markets will always set approximately correct prices, has clearly been disproven by the rash of financial bubbles and crashes that have been generated in recent years.

The art of good applied economics and financial analysis is based on making good decisions about when to use a particular model or when to use another model or combination of models. The same holds with respect to the use of mathematics in economics. Krugman is surely right to warn of the dangers of believing too much in the truth of models and confusing beauty with reality, but the answer is to not use mathematics blindly, rather than not to use it at all. Cochrane argues that, “the problem is that we don't have enough math. Math in economics serves to keep the logic straight...

which it so frequently does not if you just write prose.” This statement is both true and potentially misleading. I have the most confidence in my analysis when I can put it in a mathematical model that I can understand. But often it can take a long time to understand a complicated model in terms of what assumptions lead to what conclusions. And just as one can fall into illogical statements in prose, assumptions in models made only to make solutions feasible or easier to calculate can sometimes strongly affect the model’s conclusions. While mathematics makes extremely important contributions to the advancement of economics, we are still faced with many issues where we have not yet figured out their most salient aspects and at this stage pre-mathematical thinking, is essential. Thus the attitude that one sometimes runs into that if it isn’t said in mathematics it isn’t really scientific economics is a sign of a dangerous lack of understanding of the enterprise of economics.

7. An Agenda for Research

As has been often said, it is usually better to be roughly right than precisely wrong. There are many issues on which economists like Cochrane and Krugman are unlikely to ever agree, but Cochrane lays out an agenda for economics and financial research on which economists of all persuasions should be able to agree are important – “understanding frictions, imperfect markets, complex human behavior, [and] institutional rigidities.” To a large degree this conforms to Rajan’s call for more attention to the plumbing.

There will be less agreement about Cochrane’s assertion that “the economist’s job is not to ‘explain’ market fluctuations after the fact.” Such a philosophy is a convenient

crutch for extreme believers in efficient market theory who are content to rest on the proposition that efficient markets can be quite volatile. They are quite right that high volatility doesn't prove that markets are not behaving efficiently, but it doesn't prove that they are either. Certainly it would be a hopeless task for economists to try to explain ex post every little dip and twist of the market, but how else can we search for clues about the determinants of market behavior if we don't attempt to explain key elements of past behavior.

One of the key concepts of efficient market theory is that it is news that moves markets. This is an important insight and explains the otherwise puzzling fact that the announcement of a sizable trade deficit can cause a currency to appreciate if the deficit was not as large as the market expected. It is hard to explain all market movements in terms of rational responses to news, however. This gives scope for possible explanatory power from chaos theory and complexity economics, which stress the role of internal market dynamics and feedback mechanisms.⁵ We are far from having a good understanding of how important such internal dynamics may be and the conditions under which they are most likely to occur, but it no longer seems legitimate to dismiss such approaches as unscientific as many economists (including the author) were inclined to do in the heyday of efficient market theory.

8. Beyond Efficient Market Theory

⁵ See, for example, Beinhocker (2007), Leijonhufvud (2009), and the references in Willett (2010).

Rather than viewing the failures of efficient market theory as a severe blow to economics and finance theory, I believe we should view them as an exciting and challenging opportunity for research to improve our understanding of market behavior. Recognition that financial markets don't always behave fully efficiently isn't an end, it's a beginning. And one in which efficient markets theory should not be scrapped – it just needs to be dethroned from the position of being the only view worth considering.

Nor should we discard the rationality assumption for all study of imperfect market behavior. Costly information, institutional impediments, perverse incentives, and other principal-agent problems have a good deal of explanatory power with respect to the recent crisis. But it seems clear that we also need to pay attention to the cognitive limitations and biases stressed in the recent literature on behavioral and neuro-finance. This literature is in its infancy and while there have been some fruitful efforts to incorporate particular behavioral considerations into formal finance models at present much of the literature does not go far beyond presenting a checklist of possible limits to arbitrage and behavioral biases. One frequent criticism is that the behavioral approach is still far from presenting a unified theory to replace efficient markets theory. For example, the behavioral literature contains both theories that the market will tend to under react and that the market will tend to overreact. It is important, however, that we not be blinded by an absolute focus on a unified theory of financial market behavior.

The simple truth is that not all markets behave in the same way and markets can behave differently in different situations. This is most clear with respect to the differences between crisis and non-crisis situations, but important differences can go beyond this. Rational expectations theorists are right that it's difficult to be 100 percent sure that one

is in a bubble until it pops, but it is no longer plausible to argue that we can't have bubbles in modern financial systems. Such bubbles need not violate the central tenet of efficient markets theory that there's no easy way to beat the market. We have learned that bubbles can continue for considerable periods of time and that betting against a bubble in its early stage can generate large short-run losses – which make it difficult for fund managers to keep their investors. This in turn creates an important “barrier to the arbitrage” by stabilizing speculators on which efficient market theory relies to keep bubbles in check.

Cochrane argues that “crying ‘bubble’ is empty unless you have an operational procedure for identifying bubbles, distinguishing them from rationally low risk premiums, and not crying wolf too many years in a row.” The first two parts of this statement are clearly correct, but the third needs a caveat to be added in the case of multi-year bubbles. Recent research has had a good deal of success in identifying some types of bubbles.⁶ Neither for public policy nor prudent private investor behavior should one need to be 99% confident it's a bubble before beginning to take action. It's clear, however, that bubbles aren't just simple mechanical processes of fixed magnitudes and durations. The studies of deviations from estimated ranges of prices that can be justified by the fundamentals don't tell us how long a bubble will persist.

In place of the search for a grand unified theory at this stage, I believe it will be much more fruitful to adopt a contingent analysis approach in which we push on from both the efficient markets and recent behavioral research to focus on developing a better

⁶ See Caverley (2009), Smithers (2009), Sornette (2003), and Vogel (2010).

understanding of the factors that lead markets to behave in different ways under different conditions. In its initial stages this search is likely to benefit considerably from informal theorizing and hypothesis testing as well as from formal mathematical modeling. The latter should begin to play a more valuable role as we begin to get a better idea of the key factors on which to focus. For now I believe it will be particularly productive to start with and extend the empirical literature on the causes of financial crises to consider a wider range of experience, and testing the robustness of various measures of credit booms, capital flow surges, etc. and of proxies for institutional variables such as financial regulations, rule of law, etc.⁷ Such analysis can also fruitfully be applied to the study of asset price bubbles and crashes and can form the basis for monitoring macro prudential risk that was so neglected by most regulators in the buildup to the recent crisis. Measures of VaR shouldn't be totally abandoned, but their use should be substantially downgraded relative to more forward-looking risk analysis based on economic and political economy analysis.

9. Developing a Better Understanding of Different Schools of Thought

It seems clear from their exchange that neither Cochrane nor Krugman has a real good idea of what researchers in the other camp are doing. We've already quoted Cochrane's critique of Krugman's knowledge of what the freshwater economists are doing, but he also betrays his own lack of appreciation of the saltwater schools. His description of Keynesian economics carries some truth with respect to many early

⁷ The place to start for such analysis is Reinhart and Rogoff's (2009) important recent contribution.

Keynesian arguments, but it is highly misleading with respect to many modern Keynesians. He argues Keynesian economics requires that the government is able to systematically fool people again and again and that it assumes that people don't think about the future in making decisions today. But many new Keynesian models are based on rational expectations. (Indeed Krugman criticizes, too strongly I believe, this version of Keynesianism.)

In my experience, most modern Keynesian economists do believe that agents worry about the future, but they also believe these agents see much more uncertainty than do most freshwater economists, who tend to assume that most agents know the true model of the economy despite the continued disputes among macroeconomists about what this is. Likewise the freshwater economists tend to focus primarily on systematic policy, while in my experience a high proportion of macroeconomic policy changes are unsystematic.

The distinction offered by rational expectations macroeconomics that the effects of anticipated versus unanticipated policy changes can vary enormously is of great importance, but in application many economists failed to recognize the degree to which a high proportion of policy changes have a substantial unanticipated component. Even where everyone is aware of the announced change in policy, the degree to which announced policy changes will be effectively implemented is often subject to considerable uncertainty.

A prime example concerns the current fiscal crisis in Greece. A plan to cut the budget deficit was announced and attracted great attention, but did not succeed in

substantially lowering interest rates on Greek debt because there were widespread and quite rational doubts about how much of the program would be implemented, given the strong domestic, social, and political pressures that are against it. This is one more example of the frequency with which economists need to pay attention to political economy considerations.

10. The Importance of Political Economy Considerations

The need for economic and financial experts to pay careful attention to relevant political economy considerations is as important for those whose political persuasions are toward the left or middle as for those who lean toward the right. Whether one has a bias toward more or less government, it is still important to gain better knowledge of the factors that influence how likely policies are to be adopted as well as how effectively they will be implemented once adopted. Some on the left still remain highly skeptical of modern public choice and political economy analysis. They see it as a tool of the right to argue against government intervention. Because of the various types of political failures such as interest group rent-seeking that are identified in this literature, this reaction is understandable, but unfortunate. This public choice and political literature should be viewed in a manner analogous to the identification of possible market failures in the economic literature. Both literatures highlight that neither market nor government actions will be always good or bad.

Joseph Stiglitz (2010) falls into the trap of seeing public choice as a right wing ideological tool in his strong critique of the deficiencies of economics that he believes

contributed importantly to the generation of the global crisis. (A much more balanced discussion of political economy considerations is given in Rajan (2010).) Much of Stiglitz's criticism of the excessive reliance that many placed on beliefs that financial markets were almost always efficient coincides with my own critiques. It is difficult to argue with the statement in the introduction to his book that, “among the long list of those to blame for the crisis, I would include the economic profession for it provided the special interests with arguments about efficient and self-regulating markets.” It is interesting, however, that he goes on to add “even though advances in economics during the preceding two decades had shown the limited conditions under which that theory held true.” (xx-xxi) Thus clearly in his view the whole economics profession wasn't to blame – just a part of it. And of course where there is controversy within a discipline, interest groups will choose the side that is most congenial to their interests. It is less easy to reach a judgment on his later claim that “economics had moved – more than economists would like to think – from being a scientific discipline into becoming free market capitalism's biggest cheerleader.” He goes on to assert, “If the United States is going to succeed in reforming its economy, it may have to begin by reforming economics.” (p. 239)

I find these statements too harsh. While Stiglitz doesn't give a clear definition of his meaning of free market competition, he appears in this context to be associating it with what he views as the flawed ideas of Milton Friedman. But even Friedman acknowledged roles for government in a capitalist economy. Terms such as free market fundamentalist can be useful in some contexts, but frequently they tend to obfuscate more than they clarify. As Stiglitz argues elsewhere in his book, while almost all economists favor capitalism as opposed to complete central planning, capitalist systems can have a

wide range of types and levels of government involvement. The substantive issues are about the appropriate roles of government and market and we are unlikely to get much useful insight into these practical issues from ideological debates. It is clear that Friedman had a strong preference for giving the benefit of the doubt to markets over government, but Stiglitz, without openly acknowledging it, appears to have roughly as strong a predisposition in the opposite direction. Almost all of his attention is given to market failures. He is certainly right that few markets behave in practice as well as they do in our classrooms. But, of course, neither do governments. Stiglitz acknowledges this, but in a largely dismissive manner. He grants that “Of course governments, like markets and humans, are fallible” (p. 245) but then goes on to assert that their successes generally far outweigh their failures.

I do not necessarily disagree with this judgment but Stiglitz gives little supporting evidence. An important topic for research by economists and political scientists is the study of the historical record of government policy successes and failures. Of course there will be elements of subjectivity in drawing conclusions on a subject like this, but that does not make it not worth serious efforts. Likely as important as any judgments about overall success rates will be analysis of the conditions under which various types of policies have higher and lower success rates. We have a large body of political economy research to provide analytic frameworks for such analysis.

Stiglitz concludes his discussion with the statement that “There is no basis to the argument that because governments sometimes fail, they should not intervene in markets when the markets fail – just as there is to converse argument, that because markets sometimes fail they should be abandoned.” (p. 245) My quarrel with Stiglitz is that this

should be a beginning, not a closing statement. It's too easy just to knock down the extreme view that while markets are imperfect, government is even worse. The crisis exposed many failures – in markets, in regulation, and in the political process. I have considerable sympathy with the view that some aspects of financial deregulation were pushed too far and that the US government and IMF sometime showed excessive zeal in promoting far greater deregulation in developing and emerging market economies without always paying sufficient attention to the development of the institutional infrastructure that was needed to make liberalization work well. My reading of the experiences of the last two decades suggests that such deregulation was much more a cause of crisis in developing and emerging market countries than it was in the United States. In the United States the problem was more a lack of enforcement and a failure of regulators to adapt to financial innovations.

Clearly it was a mistake not to treat credit default swaps as a type of insurance and regulate them accordingly to assure that contracts had sufficient capital backing them. The costs of this failure have been substantial with the failure of AIG as a prime example. For the United States, however, I believe that the failures of regulatory strategy and oversight were much more important overall. Part of the problem was, as Stiglitz argues, the predominance in recent years of regulators who didn't believe in regulation. Replacing them with better regulators would of course help, but what protection do we have that ineffective implementation won't recur. After all, few of the European regulators shared Mr. Greenspan's extreme free market ideology but the leverage of many of the large European banks were allowed to grow substantially greater than for Bear Sterns or Lehman Brothers in the United States.

11. The Main Issue is How to Get Better Regulation, Not Whether There Should be More or Less

Understandably public discussions have focused primarily on perceived needs for more regulation of financial sectors, but in general, the more important issue is what kind of regulation.⁸ Traditionally the concern of conservatives has been that excessive or bad types of regulation will stifle the dynamism of the market and choke off innovation. In the wake of the disasters associated with many of the recent financial innovations such as mortgage-backed securities, many today would argue that some stifling of innovation in this sector would be no bad thing. Stiglitz argues with considerable justification that many of the recent innovations in finance have been motivated more by attempts to get around regulations, accounting rules, and tax laws than to develop products that generate social benefits.

But, in truth, many of the recent financial innovations such as asset-backed securities and credit default swaps do have a valuable side. They can help reduce some risks through diversification and provide lower cost ways for institutions and investors to hedge other risks. The major problems were not with these instruments per se, but how they were often used. Recent experience clearly shows, however, that we need to consider carefully the potential downside of such innovations as well as the potential upside and that we cannot rely on markets alone to adopt only actions where the social benefits exceed the social costs. Recent calls for some type of product safety authority for

⁸ For discussions of proposals for reform see Acharya and Richardson (2009), French et al (2010), Johnson and Kwak (2010), Rajan (2010) and Roubini and Mihm (2010).

financial products that parallels health and safety commissions for approving new drugs should not be dismissed out of hand. An interesting task for economists and financial experts will be to attempt to develop a better understanding of the rough magnitudes of potential benefits and costs of various types of financial innovations. As Roubini and Mihm (2010) argue, raising the costs or even prohibiting the use of some of the more exotic recent financial innovations would hardly be likely to substantially dampen the dynamism of an economy. Nor is it clear that there would be substantially longer run costs to substantially reducing the size and complexity of financial institutions to reduce the problems of too big and too interconnected to fail. (Again see Roubini and Mihm (2010).)

In doing so, it will be extremely important to give careful attention to the system wide effects of potential innovations. It has now become quite clear that many of the innovations from financial engineering in recent decades looked quite attractive when viewed from a partial equilibrium perspective. But this perspective is sufficient only if the practices are not widely adopted. Many of the recently developed investment and risk management strategies were based on the assumptions that others were not following the same strategies. The computer-based dynamic portfolio hedging strategies that contributed greatly to the speed and depth of the stock market crash in the United States in 1987 is a prime example.⁹

Most of the literature on herding in financial markets has focused on follow the leader buying and selling. Likely as or more important, however, is herding in

⁹ See the discussions in Bernstein (2009), Bookstaber (2007), and Fox (2009).

investment strategies, particularly types of statistical trading programs, and in the popular mental models that direct the focus of market actors on some factors to the neglect of others that may of equal importance. The latter are particularly important in the promulgation of asset bubbles and in international capital flow surges and sudden stops. Likewise the adoption of similar quantitative trading strategies by hedge funds and other investment managers are believed to have contributed at times to sharp swings in prices and the drying up of market liquidity. Markets remain much more stable and liquid when their participants have a multitude of different approaches and views. This is much like the value of hybrids and diversity in an ecology subjected to stress.

In attempting to reform financial regulation in countries that already have considerable financial liberalization, it is important for conservatives as well as liberals to think as much or more about how to make regulation effective as about concerns with stifling beneficial market behavior. This is an area where the recent developments in behavioral finance, the new institutional economics, and public choice and political economy analysis all have a great deal to contribute.

No strategy of regulatory reform will be foolproof, but developments in these fields help us identify some of the major problems that we need to deal with. There has been much talk recently of the need for the financial sector to adopt codes of ethics and professionalism which could help to rein in some of the excessive greed and unethical behavior that contributed to shady (and illegal) practices. While fervent believers in the strongest forms of neoclassical economics may still offer condescending views that self-interest rules and that any such efforts would be in vain, research in behavioral economics is helping modern economists to regain the insights of our founder Adam

Smith that moral dimensions form an important part of market systems that work well. Thus I strongly support efforts to develop stronger cultures of good behavior in the financial and other sectors. By the same token, however, neoclassical economics is surely right that it would be dangerous to rely on such social and cultural approaches alone.

In designing regulations it is important to assume that a host of very smart people will be attempting to find ways around them. Failure to consider this sufficiently was one of the major reasons for the failure of the risk model approach of the Basel committee for determining capital adequacy standards. While excessive faith in the robustness of the Value at Risk approach to risk management played a major role in the failure of the Basel approach, so too did insufficient attention to the incentives of the very bright people running these models in financial institutions to game the system to lower capital requirements and increase leverage. Such considerations suggest that regulation should focus on simpler rules that are more difficult to game and easier to enforce rather than more technically sophisticated rules that would be more desirable if always followed in spirit, but which are much more difficult to monitor effectively.

The forces that operate to generate regulator capture likewise point to the desirability of relying as much as possible on rules rather than discretion. If operated by philosopher kings, discretion will almost always be superior on average to any rule that we can devise, but where mere humans are in question we need to worry about the pressures likely to be placed on those we put in positions of discretionary authority. We need to try to protect them and ourselves by designing institutions that contain counterbalancing pressures to serve the public interest. It is not feasible to rely completely on rules in this context, however, and efforts to create better pay, and technical support for

regulation is also important. Given the costs of financial crises, failure to do so would be penny-wise and pound-foolish. Study of the comparative performance of different regulatory agencies could be quite helpful in this regard.

12. The Need for Focus on the Conditions Necessary to Make Market Discipline More Effective

Nor should we give up completely on the role of market discipline. Recent crises clearly discredit the blind faith in the effectiveness of market discipline that some have had, but the inevitable imperfections in regulatory implementation means that we should try to foster as much discipline as possible from both regulation and the market. The issue in this content should not be regulation versus the market but how they can best complement each other. Economists should have much to offer to the analysis of this issue. We need to pay much more attention to the conditions necessary for markets to provide beneficial discipline and the obstacles to the provision of such discipline.

The analysis of information flows will of course be crucial to this endeavor. Lack of transparency was a major contributor to the subprime crisis and more transparency is clearly needed, but how much should be provided and to whom are intricate issues that deserve careful analysis. It is equally important to focus on the incentives for various agents to gather and act on the information that is available. Collective action problems imply that we cannot rely on the typical investor to monitor firms' management in a careful manner. Institutional investors provide more hope, but incentive structures in this area need careful investigation. Clearly, in the past, many market participants relied too

heavily on the credit rating agencies to do evaluations for them. Serious conflicts of interest generated by the way these agencies are paid have been exposed. Clearly major reform is needed in this area, but the best way to proceed is far from obvious. The evaluation of the costs and benefits of alternative strategies is an obvious area where good economic analysis is essential.

Alas political economy analysis is likely also to be needed since the lobbying power of the financial sector is considerable. Getting reforms through legislatures almost inevitably will require compromise. Thus reformers will need to engage in second (or nth) best analysis of what is the best that can be achieved politically at any particular point in time. This is an important example of how political economy analysis can be used to help promote effective government rather than as an argument to leave everything to the market.

One issue that is particularly important for economists to analyze more thoroughly is the conditions under which competitive pressures in the financial sector promote desirable versus undesirable outcomes. Clearly competition is useful to hold down charges for checking accounts and the use of ATMs, but in some cases it appears that competitive pressures contributed to excessive rather than prudent risk-taking by major financial institutions. If risks are difficult to estimate ex ante and markets are operating on short rather than long time horizons, then competitive pressures to keep up market share can generate incentives for financial institutions to take on excessive risk to meet or beat the competition.¹⁰ Better financial education, including perhaps even requiring investors, to obtain disinterested professional advice will be useful. See Singh

¹⁰ See the analysis and references in Willett (2009) and Rajan (2010).

(2009). It is doubtful that this would be sufficient to eliminate the pressures for excessive risk-taking, however.

The problem is further strengthened by agency problems where salaries and bonuses focus more on the generation of fees and short-term returns and discount longer-term risks. For proposals to reform compensation schemes to reduce such tendencies see Roubini and Mihm (2010). It seems fairly clear that barriers to effective corporate control by investors contributed to high incomes for managers of financial institutions, but it is questionable to what degree such agency slack was a major cause of excessive risk taking. Stockholders would demand high returns in the short-run. Some have quipped that this was a corollary of Gresham's Law – with bad loans driving out good. In such circumstances, financial institutions find themselves in a prisoner's dilemma type situation and since the number of players is large, it is difficult to rely on cooperation to provide a good equilibrium. This presents a classic case for regulation to limit a race to the bottom.

At this point, such analysis of the limits of competitive discipline in this area are much more plausible conjectures than proven facts and should be the subject of careful research, but in the meanwhile they certainly seem to substantially strengthen the case for strong capital and leverage requirements. Inevitable imperfections in regulation, however, imply that we should also be investigating ways to attempt to improve the operation of market discipline as well.

The combination of limits to transparency, costs of obtaining and analyzing the information that is available, and the disincentives for diversified investors to engage in

substantial amounts of information gathering and analysis suggest that stock markets are unlikely to be highly effective mechanisms for disciplining excessive risk taking in the financial sector. More promising are proposals to require the issuance of subordinated debt, which gives holders stronger incentives to monitor the issuing institutions. Such measures would clearly create a better set of incentives for healthy market discipline, but how much of an improvement this would be likely to provide is open to question and deserves much more micro-analytic research and analysis.

And, of course, to the extent that institutions remain too big or too interconnected to fail, then moral hazard considerations will blunt market incentives. Hence the interest in designing so called living wills to allow partial failures of firms and the imposition of substantial losses on investors without generating the damaging contagion that followed the failure of Lehman Brothers. This sounds like a wonderful strategy but how well such mechanisms could work in practice seems at present to be an open question. This is another area for priority micro-analytic research and analysis by economists.

13. Global Imbalances

There has been considerable controversy about the role that international factors played in the generation of the crisis. Some have put heavy emphasis on the role of the global savings glut in driving down interest rates and inducing American consumers and homebuyers to go heavily into debt. Not surprisingly this view has been especially attractive to some US officials as a way of deflecting responsibility. There is undoubtedly some truth to this argument, but even in the absence of high savings in countries like

China, the perverse incentive structures and lack of regard for risk that had developed in the US and Europe would have been quite sufficient on their own to generate the crisis. Still there is much research to be done on the role of international capital flows in contributing to the crisis and on the role of policy coordination in responses to the crisis. Even before the crisis began the size of global imbalances was a major concern to many economists.

There has been a good deal of research on international capital flow surges and sudden stops suggesting that that financial markets may sometimes be defective in providing early warning signs of growing financial vulnerability. This literature has focused primarily on emerging market economies, but similar effects have occurred within the euro zone. While the US because of its strong safe haven attribute saw the dollar strengthen rather than weaken during most of the crisis, the large capital inflows to the US before the crisis were a danger sign ignored by many US officials. Again we see that the differences in implications for developing and advanced economies are not as great as might initially be thought. Still some lessons are of particular importance for India and other emerging market economies. A number of these are discussed in the following section.

14. Policy Implications for India and Other Emerging Market Economies

It is clear that the origins of the global crisis lay outside of the emerging market economies and that they were hit by a double whammy of first a dramatic sudden stop of international financial flows as a result of the global flight to avoid risk and then a substantial fall in exports as the advanced economies fell into recession. A substantial

portion of these contagion effects were indiscriminate in nature and hit countries with solid economic policies as strongly as those with weaker policies. This was especially true of contagion through the trade channel. While undoubtedly market imperfections caused by behavioral biases such as panic and undue pessimism replacing undue optimism played some role in the financial contagion it seems likely that rational factors based on financial and economic interdependence played a much larger role. Behavioral biases played their most important role in the excessive complacency and optimism that preceded the crash. (See Liang et al (forthcoming) and Willett et al. (2009).)

Against this background, however, some countries were hit much harder than others. While there is still much research to be done, analysis so far suggests that the hardest hit countries were those with substantial macroeconomic and/or financial weaknesses. The meltdown of Iceland is perhaps the most vivid example, with a number of countries in Central and Eastern Europe coming a close second.

On the other hand countries in stronger positions were generally both less hard hit and had greater ability to adopt policies that cushioned the effects of the crisis. In this regard capital controls proved to be of quite limited effectiveness with China being the prime example. While its controls did help limit the effects on its financial markets it suffered one of the largest falls in trade. India, despite its relatively high level of capital controls, felt strong impacts on its money market, likely due largely to the financial activities of Indian multinationals (see Patnaik and Shah (2009)). Large short-term bank liabilities contributed importantly to the differential strength with which Korea was hit in Asia and recent econometric evidence suggests that this was a more general phenomena (see Berkman et al. (2009) and (2010) and Ostry et al.(2010)). Thus there does appear to

be a case for oversight and regulation of some types of capital inflows on prudential grounds. For a valuable discussion of such an approach see Prasad (2008). This is clearly an important topic for further research.

A recent study by IMF researchers (Berkman et al.(2009)) finds that the largest determinant of the output falls due to the crisis were high levels of leverage and credit creation. While such financial excesses among emerging market economies did not generate the huge negative global externalities that resulted from such excesses in many advanced economies, they came home to haunt their countries of origin. The IMF study found that moving from the top to bottom quartile of countries with respect to leverage was associated with over a four percent difference in loss of growth rates during the crisis.

Other factors found to be important were negative current accounts, weak fiscal positions, and pegged exchange rates. These all affect a country's freedom to adopt strong policies to offset the effects of the crisis. Interestingly the study did not find an effect from levels of international reserves. This contrasts sharply with studies of the Asia crisis of 1997-98 and, as the study notes, seems likely to reflect nonlinearities. Avoiding low levels of reserves is likely still quite important, but many countries have accumulated such high levels that considerable portions of their reserves are likely to be unproductive in terms of preventing or cushioning the effects of crises. While the early years of reserve buildups following the Asian crisis were generally quite beneficial, a number of countries have continued to accumulate well beyond prudential needs.

The primary reason for this seems to be as an undesired consequence of interventions to moderate currency appreciations. (See Willett et al.(2009). China is of course the prime example of this, but countries with managed floats such as India and Korea have also seen huge reserve accumulations. Both countries claim to only intervene to moderate excessive currency fluctuations, but the substantial accumulations suggest that the authorities deem upside fluctuations to be much more excessive than downside ones. While both countries engaged in substantial sales of reserves during the crisis, these were fairly moderate in relation to the total levels of their reserves. The appropriate use of reserves during crises is an important topic that has received insufficient attention from researchers.

A related implication discussed by Eichengreen (2009) is that is that the crisis highlighted the riskiness of strategies based on export led growth. While increased regional integration can help diversify exports and reduce the dependence of developing and emerging market economies on exports to the advanced economies, this needs to be complemented by movements to more balanced economies with greater emphasis on domestic demand. In many cases this will involve changes in social as well as economic policies and cannot be accomplished overnight, but this is important both in terms of reducing the vulnerability of individual economies and in helping to reduce the problem of global imbalances. This is of course an issue of much greater importance for countries like China and Korea than for India. It is also an issue for some advanced economies like Germany and Japan. And focus on the need for adjustments by surplus countries should not deflect attention for the need for adjustments by deficit countries like the Baltic states, Greece, and the United States.

Overall Asian economies were in far better positions to deal with the current crisis than in 1997-98. Because of the better shape of their domestic financial systems and international payments positions many Asia economies were able to respond to the current crisis with expansionary monetary and fiscal policies. This was in sharp contrast to many of the Baltic and Central European states in the current crisis. As Barry Eichengreen (2009) has argued, one of the central policy lessons of the current crisis is the need to maintain strong economic positions that allow substantial policy space for responses to crises. Countries such as Greece had used up all of their scope for expansionary fiscal deficits before the crisis hit and thus were in a terrible position to deal with the crisis. The limits which substantial debt levels place on the scope for expansionary effects from fiscal policies is the focus of policy debates in many countries today and of course is another important topic for research. This fits closely with the need to much better integrate financial and macroeconomic analysis (see Blanchard et al. (2010)).

A number of implications for risk management and financial regulation have already been discussed above. Here I'll just make a few additional comments focusing on emerging market economies. It is extremely important for countries like China and India that the crisis be taken as highlighting important lessons about financial regulation and supervision, not about the desirability of a substantial degree of financial liberalization per se. China and India and many other countries still have enormous gains to enjoy from further financial liberalization, including the development not only of stronger bond markets but also of a number of derivatives markets that can help manage risk.

The crisis highlights, however, that virtually any financial instrument that can be used to reduce risks by covering open positions can also be used to take risks by taking on open positions. The problem with credit default swaps was not their existence, but that firms were in effect allowed to issue insurance contracts without supervision of their ability to pay off. Likewise asset backed securities can help diversify risks if their nature is sufficiently understood by the buyer and they are not given inappropriate ratings. The report of the Rajan committee on financial reform in India (see Prasad and Rajan (2008) for a summary) provides an excellent example of a balanced approach to financial liberalization in emerging markets. While regulators are unlikely to have the resources of financial institutions, most of the key aspects of effective regulation do not require rocket scientists for implementation. As John Lipskey (2010) put it in his address to the Reserve Bank of India's International Research Conference, "Perhaps the key lesson of the current crisis is that traditional [financial] virtues....remain as critical as always".

Key here is not falling for seemingly sophisticated arguments that innovations in financial engineering and risk management will allow huge reductions in capital ratios and increases in leverage ratios while maintaining the safety of the financial system. Equally important is not allowing institutions to hide risks by artificially taking them off their balance sheets. We cannot expect regulators to catch all instances of such accounting tricks, but in the advanced economies many of these diversions of positions to off balance sheet conduits and special investment vehicles were recognized and condoned by regulators. This was a huge mistake that should be relatively simple to correct. The need for such vigilance is not over. Already concerns are beginning to be expressed that the massive credit creation used by China to stimulate its economy in the wake of the

crisis has led to looming credit risks due to heavy borrowing by Chinese local governments through the use of special investment vehicles. This is a far greater danger than would be posed by liberalizations such as increased use of currency derivatives.

Indeed of the many perverse financial practices which brought on the crisis professional speculation was likely one of the least important. Some European governments such as those of France and Germany have seen political mileage in launching attacks on speculators as the main villains of the crisis of Greece and the euro, but there is little actual support for this view. The difficulties of betting against housing booms is one of the major factors contributing to their growth. Efficient markets theorists never believed that all investors would be rational. Rather they assumed that the excessive optimism of some would be offset by the more rational expectations of others. In the housing market, however, there was little scope for such counterbalancing speculation and short sellers are frequently blamed as causes of price declines when they were really only the messengers that market prices had gotten seriously out of line. In some areas financial reform should be more concerned with promoting rather than impeding speculation so that better balanced markets can be developed.

One final implication of the crisis to be stressed is how strong an interest developing and emerging market economies have in improved financial regulation in the advanced economies as well as their own. The costs of the current crisis have been enormous and poor financial regulation and supervision in the advanced economies was clearly a major cause.

While governments in all the advanced economies are publicly committed to financial reform they face substantial pressures from the financial industry to limit increases in capital requirements and leverage ratios. Already concerns are being expressed that planned government and regulatory actions look much stronger in rhetoric than in practice. The establishment of the G-20 as a major forum for international economic policy discussions gives a long overdue opportunity to developing and emerging market countries to have a larger say in global economic governance. In the deliberations of the G-20 they should provide a strong counterweight to the lobbying of the financial industry desiring to water down financial reform in the advanced economies.

15. Concluding Remarks

The focus of my essay has been on some of the lessons highlighted by the crisis for fruitful directions in research and policy. While researchers may feel somewhat guilty for taking advantage of events which have generated such huge costs to enrich our research efforts, we can take some comfort that these costs are sunk costs and that since tendencies toward over optimism have been well documented by psychologists, we shouldn't be embarrassed to hope that our work may play some role in helping to make future crisis less frequent and less damaging.

References

- Acharya, V. and Richardson, M. eds. (2009), *Restoring Financial Stability*, John Wiley and Sons, New York.
- Akerlof, G.A. and Shiller, R. (2009), *Animal Spirits: How Human Psychology Drives the Economy and Why it Matters for Global Capitalism*, Princeton University Press, Princeton, New Jersey.
- Allen, F. and Gale, D. (2007), *Understanding Financial Crises*, Clarendon Lectures in Finance, Oxford University Press, New York.
- Allen, F. and Gale, D. (2008), *Financial Crises*, Edward Elgar Press, London.
- Barth, J. et al. (2008), *The Rise and Fall of the US Mortgage and Credit Markets*, John Wiley Publishing, Hoboken, New Jersey.
- Beinhocker, E. (2007), *The Origin of Wealth: Evolution, Complexity, and the Radical Remaking of Economics*, Harvard Business School of Press, Boston, Massachusetts.
- Berkmen, S.P., Gelos, G., Renhack, R., and Walsh, J. P. (2010), "The global financial crisis: why were some countries hit harder?" Available at <http://www.voxeu.org/index.php?q=node/4806>
- _____ (2009) "The Global Financial Crisis" IMF Working Paper/09/280.
- Bernstein, E. (2007), *Capital Ideas Evolving*, John Wiley Publishing, Hoboken, New Jersey.
- Blanchard, O., Dell'Ariccia, G. and Mauro, P. (2010), "Rethinking macroeconomic policy", IMF Staff Position Note, SPN/10/03, 12 February 12.
- Bookstaber, R. (2007), *A Demon of Our Own Design: Markets, Hedge Funds, and the Perils of Financial Innovation*, John Wiley Publishing, Hoboken, New Jersey.
- Burham, T. (2008), *Mean Markets and Lizard Brains*, John Wiley and Sons, New York.
- Case, K. E. and Shiller, R. J. (2003), "Is there a bubble in the housing market?", *Brookings Papers on Economic Activity*, 2:299-362.
- Caverley, J. (2009), *When Bubbles Burst: Surviving the Financial Fallout*, Nicolas Brealy Publishing, Clerkenwell, London.

- Cochrane, J. (2009), "How did Paul Krugman get it so wrong?" Available at http://faculty.chicagobooth.edu/john.cochrane/research/Papers/krugman_response.htm
- Cohan, W. D. (2009), *House of Cards: A Tale of Hubris and Wretched Excess on Wall Street*, Doubleday Press, New York.
- Das, S. (2006), *Traders, Guns & Money: Knowns and Unknowns in the Dazzling World of Derivatives*, FT - Prentice Hall.
- Eichengreen, B. "Lessons of the crisis for emerging markets", ADBI Working Paper Series, No.179, December.
- Faber, D. (2009), *And Then the Roof Caved In: How Wall Street's Greed and Stupidity Brought Capitalism to Its Knees*, John Wiley Publishing, Hoboken, New Jersey.
- Fox, J. (2009), *The Myth of the Rational Market: A History of Risk Reward, and Delusion on Wall Street*, Harper Business, New York.
- French, K. et al. (2010), *The Squam Lake Report: Fixing the Financial System*, Princeton University Press, Princeton, New Jersey.
- Gilbert, M. (2010), *Complicit: How Greed and Collusion Made the Credit Crisis Unstoppable*, Bloomberg Press, New York.
- Gorton, G.B. (2010), *Slapped by the Invisible Hand: The Panic of 2007*, Oxford University Press, New York.
- International Monetary Fund (2010), "India: 2009 article IV consultation", Country Report No. 10/73, International Monetary Fund, Washington:D.C.
- Johnson, S. and Kwak, J. (2010), *13 Bankers: The Wall Street Takeover and the Next Financial Meltdown*, Pantheon Books, New York.
- Kindleberger, C.P. and Aliber, R.Z. (2005), *Manias, Panics, and Crashes: A History of Financial Crises*, John Wiley and Sons, New York.
- Krugman, P. (2009). "How did economists get it so wrong?", September 2, *New York Times*.
- Leijonhufvud, A. (2009), "Out of the corridor: Keynes and the crisis", *Cambridge Journal of Economics*, 33, pp. 741-757.
- Lipsky, J.(2010), "Managing financial innovations in emerging markets", Remarks at the Reserve Bank of India's First International Research Conference, Feb. 17
- Liang, P., Willett, T.D., and Zhang, N. (forthcoming), "The slow spread of the crisis", *Journal of International Commerce, Economics and Policy*.

- Lewis, M. (2010), *The Big Short: Inside the Doomsday Machine*, W. W. Norton & Company, New York, NY.
- Lowenstein, R. (2010), *The End of Wall Street*, The Penguin Press, New York.
- Marjit, S. (2009), “Global crisis and the Indian economy – on a few unconventional assertions”, India Policy Forum, Volume 6.
- McDonald, L. G. and P. Robinson (2009), *A Colossal Failure of Common Sense: The Inside Story of the Collapse of Lehman Brothers*, Crown Business, New York, New York.
- Montier, J. (2002), *Behavioral Finance*, John Wiley Publishing, Hoboken, New Jersey.
- Ostry, J. et al.(2010), "Capital inflows", IMF Research Department, Feb 19
- Patterson, S. (2010), *The Quants: How a New Breed of Math Whizzes Conquered Wall Street and Nearly Destroyed It*, Crown Business, New York.
- Peterson, R.L. (2007), *Inside the Investor's Brain: The Power of Mind Over Money*, John Wiley and Sons, Hoboken, NJ.
- Patnaik, I. and Shah, A. (2009), “Why India choked when Lehman broke”, India Policy Forum, Volume 6.
- Prasad, E. S. (2009), “Some new perspectives on India's approach to capital account liberalization”, NBER Working Paper Series, January, Vol. w14658. Available at SSRN: <http://ssrn.com/abstract=1332597>
- Prasad, E. and R. Rajan (2008), "Next generation financial reforms for India", Finance and Development, Sept. Volume 45, No.3
- Rajan, R. (2010), *Fault Lines: How Hidden Fractures Still Threaten the World Economy*, Princeton University Press, Princeton, New Jersey.
- Reddy, Y. (2010) "Asia:counter-cyclical policies: Indian experience", Journal of Globalization and Development, Volume 1, Issue 1
- Roubini, N. and Mihm, S. (2010), *Crisis Economics: A Crash Course in the Future of Finance*, Penguin Press, New York.
- Reinhart, C. M. and Rogoff, K.S. (2009), *This Time It's Different: Eight Centuries of Financial Folly*, Princeton University Press, Princeton, New Jersey.

- Shefrin, H. (2000), *Beyond Greed and Fear: Understanding Behavioral Finance and the Psychology of Investing*, Harvard Business School Press, Boston, Massachusetts.
- Shleifer, A. (2001), *Inefficient Markets: An Introduction to Behavioral Finance*, Oxford University Press, New York.
- Singh, G. (2009), "Lacunae in financial regulatory framework vis-à-vis financial repression", *Review of Market Integration*, volume 1(2), 137-170.
- Smithers, A. (2009), *Wall Street Revealed: Imperfect Markets and Inept Central Bankers*, John Wiley Publishing, Hoboken, New Jersey.
- Sorkin, A.R. (2009), *Too Big to Fail: The Inside Story of How Wall Street and Washington Fought to Save the Financial System -- and Themselves*, Viking Penguin, London, England.
- Sornette, D. (2003), *Why Stock Markets Crash: Critical Events in Complex Financial Systems*, Princeton University Press, Princeton, New Jersey.
- Stiglitz, J. (2010), *Freefall: America, Free Markets, and the Sinking of the World Economy*, W. W. Norton & Company, New York, NY.
- Taleb, N. N. (2007), *The Black Swan: The Impact of the Highly Improbable*, Random House Publishing, New York, NY.
- Tett, G. (2009), *Fool's Gold: How the Bold Dream of a Small Tribe at J.P. Morgan Was Corrupted by Wall Street Greed and Unleashed a Catastrophe*, Free Press, New York, NY.
- Tibman, J. (2009), *The Murder of Lehman Brothers: An Insider's Look at the Global Meltdown*, Brick Tower Press, New York, NY.
- Triana, P. (2009), *Lecturing Birds on Flying: Can Mathematical Theories Destroy the Financial Markets?*, John Wiley Publishing, Hoboken, NJ.
- Vogel, H.L. (2010), *Financial Market Bubbles and Crashes*. Cambridge University Press, New York.
- Willett, T.D. (2009), "The Role of Defective Mental Models in Generating the Current Financial Crisis", presented at the *Cornell Conference on the Financial Crisis*, October 2009, available at <http://www.cgu.edu/pages/468.asp>
- Willett, T. D. et al. (2009) *The Global Financial Crisis and Korea's International Financial Policies*. Korean Economics Institute, Washington, D.C.
- Willett, T. (2010), "George Soros's reflexivity and the global financial crisis", *World Economics*, (forthcoming).

Williams, M. T. (2010), *Uncontrolled Risk: Lessons of Lehman Brothers and How Systemic Risk Can Still Bring Down the World Financial System*, McGraw Hill, New York.