

The Credit Crisis and Cycle Proof Regulation¹

First, I would like to thank the St. Louis Fed, especially Kevin Kliesen, and NABE for inviting me to give this talk. I share with Homer Jones an affiliation with the University of Chicago. He was an important influence on Milton Friedman, and if that were all he did, he would deserve a place in history. But in addition, he was a very inquisitive economist with a reputation for thinking out of the box. He made major contributions to monetary economics. It is an honor to be asked to deliver a lecture in his name, especially at this critical time in the nation's regulatory history.

We are searching for culprits to blame this crisis on. There are plenty of possibilities. But in pinning the disaster on specific agents, we could miss the cause that links them all. I will argue that this common cause is cyclical euphoria, and unless we recognize this, our regulatory efforts are likely to fall far short of preventing the next crisis.

But let me start at the beginning. There is some consensus that the proximate causes of the crisis are: (i) the U.S. financial sector misallocated resources to real estate, financed through the issuance of exotic new financial instruments; (ii) a significant portion of these instruments found their way, directly or indirectly, into commercial and investment bank balance sheets; (iii) these investments were largely financed with short-term debt. (iv) The mix was potent, and imploded starting in 2007. On these, there is broad agreement. But let us dig a little deeper.

This is a crisis born in some ways from previous financial crises. A wave of crises swept through the emerging markets in the late 1990's: East Asian economies collapsed, Russia defaulted, and Argentina, Brazil, and Turkey faced severe stress.

In response to these problems, emerging markets became far more circumspect about borrowing from abroad to finance domestic demand. Instead, their corporations, governments, and households cut back on investment and reduced consumption.

From net absorbers of financial capital from the rest of the world, a number of these countries became net exporters of financial capital. When combined with the savings of habitual exporters like Germany and Japan, there was what Chairman Bernanke referred to as a global savings glut.

Clearly, the net financial savings generated in one part of the world have to be absorbed by deficits elsewhere. Industrial country corporations initially absorbed these savings by expanding investment, especially in information technology. But this proved unsustainable, and investment was cut back sharply following the collapse of the IT bubble.

Extremely accommodative monetary policy by the world's central banks, led by the Federal Reserve, ensured the world did not suffer a deep recession. Instead, the low interest rates in a number of countries ignited demand in interest sensitive sectors such as automobiles and housing. House prices started rising as did housing investment.

¹ Remarks delivered by Raghuram G. Rajan, Eric Gleacher Distinguished Service Professor of Finance at the Homer Jones Lecture organized by the Federal Reserve Bank of St Louis in St Louis on April 15, 2009. I thank Luigi Zingales for very useful discussion including some of the ideas in this talk. All errors are mine.

The United States was not by any means the highest in terms of price growth. Housing prices reached higher values relative to rent or incomes in Ireland, Spain, the Netherlands, the United Kingdom, and New Zealand, for example. Then, why did the crisis first manifest itself in the United States? Probably because the U.S. went further on financial innovation, thus drawing more marginal-credit-quality buyers into the market!

A home mortgage loan is very hard for an international investor to hold directly because it requires servicing, is of uncertain credit quality, and has a high propensity to default. Securitization dealt with some of these concerns. If the mortgage was packaged together with mortgages from other areas, diversification would reduce the risk. Furthermore, the riskiest claims against the package could be sold to those who had the capacity to evaluate them and had an appetite for bearing the risk, while the safest AAA-rated portions could be held by international investors.

Indeed, because of the demand from international investors for AAA paper, securitization became focused on squeezing out the most AAA paper from an underlying package of mortgages; the lower quality securities issued against the initial package of mortgages were packaged together once again with similar securities from other packages, and a new range of securities, including a large quantity rated AAA, issued by this “Collateralized Debt Obligation.”

The “originate-to-securitize” process had the unintended consequence of reducing the due diligence undertaken by originators. Of course, originators could not completely ignore the true quality of borrowers since they were held responsible for initial defaults, but because house prices were rising steadily over this period, even this source of discipline weakened;

If the buyer could not make even the nominal payments involved on the initial low mortgage teaser rates, the lender could repossess the house, sell it quickly in the hot market, and recoup any losses through the price appreciation. In the liquid housing market, so long as the buyer could scrawl X on the dotted line, she could own

The slicing and dicing through repeated securitization of the original package of mortgages created very complicated securities. The problems in valuing these securities were not obvious when house prices were rising and defaults were few. But as the house prices stopped rising and defaults started increasing, the valuation of these securities became very complicated.

It was not entirely surprising that bad investments would be made in the housing boom. What was surprising was that the originators of these complex securities, the financial institutions, who should have understood the deterioration of the underlying quality of mortgages, held on to so many of the mortgage-backed securities (MBS) in their own portfolios. Why did the sausage-makers, who knew what was in the sausage, keep so many sausages for personal consumption?

The explanation has to be that at least one arm of the bank thought these securities were worthwhile investments, despite their risk. Investment in MBS seemed to be part of a culture of excessive risk taking that had overtaken banks.

A key factor contributing to this culture is that, over short periods of time, it is very hard, especially in the case of new products, to tell whether a financial manager is generating true excess returns adjusting for risk, or whether the current returns are simply compensation for a risk that has not yet shown itself but that will eventually materialize. This could engender excess risk taking both at the top and within the firm.

For instance, the performance of CEOs is evaluated based in part on the earnings they generate relative to their peers. To the extent that some leading banks can generate legitimately high returns, this puts pressure on other banks to keep up. Follower-bank bosses may end up taking excessive risks in order to boost various observable measures of performance.

Indeed, even if managers recognize that this type of strategy is not truly value-creating, a desire to pump up their stock prices and their personal reputations may nevertheless make it the most attractive option for them. There is anecdotal evidence of such pressure on top management -- Perhaps most famously, Citigroup Chairman, Chuck Prince, describing why his bank continued financing buyouts despite mounting risks, said: "When the music stops, in terms of liquidity, things will be complicated. But, as long as the music is playing, you've got to get up and dance. We're still dancing." *Financial Times*, July 9, 2007.

Even if top management wants to maximize long-term bank value, it may find it difficult to create incentives and control systems that steer subordinates in this direction. Given the competition for talent, traders have to be paid generously based on performance. But, many of the compensation schemes paid for short term risk-adjusted performance.

This gave traders an incentive to take risks that were not recognized by the system, so they could generate income that appeared to stem from their superior abilities, even though it was in fact only a market-risk premium.

The classic case of such behavior is to write insurance on infrequent events such as defaults, taking on what is termed "tail" risk. If a trader is allowed to boost her bonus by treating the entire insurance premium as income, instead of setting aside a significant fraction as a reserve for an eventual payout, she will have an excessive incentive to engage in this sort of trade.

Indeed, traders who bought AAA MBS were essentially getting the additional spread on these instruments relative to corporate AAA securities (the spread being the insurance premium) while ignoring the additional default risk entailed in these untested securities.

The traders in AIG's Financial Products Division just took all this to an extreme by writing credit default swaps, pocketing the premiums as bonus, and not bothering to set aside reserves in case the bonds that were covered by the swaps actually defaulted.

This is not to say that risk managers in a bank are unaware of such incentives. However, they may be unable to fully control them, because tail risks are by their nature rare, and therefore hard to quantify with precision before they occur. While they could try and impose crude limits on the activities of the traders taking maximum risk, these traders are likely to have been very

profitable (before the risk actually is realized), and such actions are unlikely to sit well with a top management that is being pressured for profits.

Finally, all these shaky assets were financed with short term debt. This is because in good times, short-term debt seems relatively cheap compared to long-term capital, and the market is willing to supply it because the costs of illiquidity appear remote. Markets seem to favor a bank capital structure that is heavy on short-term leverage. In bad times, though, the costs of illiquidity seem to be more salient, while risk-averse (and burnt) bankers are unlikely to take on excessive risk. The markets then encourage a capital structure that is heavy on capital.

Given the proximate causes of high bank holdings of mortgage-backed securities, as well as other risky loans, such as those to private equity, financed with a capital structure heavy on short-term debt, the crisis had a certain degree of inevitability.

As house prices stopped rising, and indeed started falling, mortgage defaults started increasing. Mortgage backed securities fell in value, became more difficult to price, and their prices became more volatile. They became hard to borrow against, even short term. Banks became illiquid, and eventually insolvent. Only heavy intervention has kept the financial system afloat, and though the market seems to believe that the worst is over, its relief may be premature.

Who is to blame for the financial crisis? As the above discussion suggests, there are many possible suspects – the exporting countries who still do not understand that their thrift is a burden and not a blessing to the rest of the world, the U.S. household that has spent way beyond its means in recent years, the monetary and fiscal authorities who were excessively ready to intervene to prevent short term pain, even though they only postponed problems into the future, the bankers who took the upside and left the downside to the taxpayer, the politician who tried to expand his vote bank by extending home-ownership to even those who could not afford it, the markets that tolerated high leverage in the boom only to become risk averse in the bust...

There are plenty of suspects, and enough blame to spread. But if all are to blame, though, should we also not admit they all had a willing accomplice – the euphoria generated by the boom. After all, who is there to stand for stability and against the prosperity and growth in a boom?

Internal risk managers, having repeatedly pointed to risks that never materialized during an upswing, have little credibility and influence -- that is if they still have jobs. It is also very hard for contrarian investors to bet against the boom – as Keynes said, the market can stay irrational longer than investors can stay solvent. Politicians have an incentive to ride the boom, indeed to abet it through the deregulation sought by bankers. After all, bankers not only have the money to influence legislation but also have the moral authority conferred by prosperity.

And what of regulators? When everyone is for the boom, how can regulators stand against it? They are reduced to rationalizing why it would be technically impossible for them to stop it.

Everyone is therefore complicit in the crisis because, ultimately, they are aided and abetted by cyclical euphoria. And unless we recognize this, the next crisis will be hard to prevent.

For we typically regulate in the midst of a bust when righteous politicians feel the need to do something, when bankers' frail balance sheets and vivid memories makes them eschew any risk, and when regulators have backbones stiffened by public disapproval of past laxity.

But we reform under the delusion that the regulated, and the markets they operate in, are static and passive, and that the regulatory environment will not vary with the cycle. Ironically, faith in draconian regulation is strongest at the bottom of the cycle, when there is little need for participants to be regulated. By contrast, the misconception that markets will take care of themselves is most widespread at the top of the cycle, at the point of maximum danger to the system. We need to acknowledge these differences and enact cycle-proof regulation, for a regulation set against the cycle will not stand.

Consider the dangers of ignoring this point. Recent reports have argued for "countercyclical" capital requirements -- raising bank capital requirements significantly in good times, while allowing them to fall somewhat in bad times. While sensible prima-facie, these proposals may be far less effective than intended.

To see why, recognize that in boom times, the market demands very low levels of capital from financial intermediaries, in part because euphoria makes losses seem remote. So when regulated financial intermediaries are forced to hold more costly capital than the market requires, they have an incentive to shift activity to unregulated intermediaries, as did banks in setting up SIVs and conduits during the current crisis.

Even if regulators are strengthened to detect and prevent this shift in activity, banks can subvert capital requirements by taking on risk the regulators do not see, or do not penalize adequately with capital requirements.

Attempts to reduce capital requirements in busts are equally fraught. The risk-averse market wants banks to hold a lot more capital than regulators require, and its will naturally prevails.

Even the requirements themselves may not be immune to the cycle. Once memories of the current crisis fade, and once the ideological cycle turns, there will be enormous political pressure to soften capital requirements or their enforcement.

To have a better chance of creating stability through the cycle -- of being cycle-proof -- new regulations should be comprehensive, contingent, and cost-effective.

Regulations that apply comprehensively to all levered financial institutions are less likely to encourage the drift of activities from heavily regulated to lightly regulated institutions over the boom, a source of instability since the damaging consequences of such drift come back to hit the heavily regulated institutions in the bust, through channels that no one foresees.

Regulations should also be contingent so they have maximum force when the private sector is most likely to do itself harm but bind less the rest of the time. This will make regulations more cost-effective, which will make them less prone to arbitrage or dilution.

Consider some examples of such regulations. First, instead of asking institutions to raise permanent capital, ask them to arrange for capital to be infused when the institution or the system is in trouble. Because these “contingent capital” arrangements will be contracted in good times when the chances of a downturn seem remote, they will be relatively cheap (compared to raising new capital in the midst of a recession) and thus easier to enforce. Also, because the infusion is seen as an unlikely possibility, firms cannot go out and increase their risks, using the future capital as backing. Finally, because the infusions come in bad times when capital is really needed, they protect the system and the taxpayer in the right contingencies.

One version of contingent capital is for banks to issue debt which would automatically convert to equity when two conditions are met; first, the system is in crisis, either based on an assessment by regulators or based on objective indicators, and second, the bank’s capital ratio falls below a certain value.²

The first condition ensures that banks that do badly because of their own idiosyncratic errors, and not when the system is in trouble, don’t get to avoid the disciplinary effects of debt.

The second condition rewards well-capitalized banks by allowing them to avoid the forced conversion (the number of shares the debt converts to will be set at a level so as dilute the value of old equity substantially), while also giving banks that anticipate losses an incentive to raise new equity well in time.

Another version of contingent capital is to require that systemically important levered financial institutions buy fully collateralized insurance policies (from unlevered institutions, foreigners, or the government) that will infuse capital into these institutions when the system is in trouble.³

Here is one way it could operate. Megabank would issue capital insurance bonds, say to sovereign wealth funds. It would invest the proceeds in Treasury bonds, which would then be placed in a custodial account in State Street Bank. Every quarter, Megabank would pay a pre-agreed insurance premium (contracted at the time the capital insurance bond is issued) which, together with the interest accumulated on the Treasury bonds held in the custodial account, would be paid to the sovereign fund.

If the aggregate losses of the banking system exceed a certain pre-specified amount, Megabank would start getting a payout from the custodial account to bolster its capital. The sovereign

² See <http://www.cfr.org/publication/19002>

³ See <http://www.kc.frb.org/publicat/sympos/2008/KashyapRajanStein.03.12.09.pdf>

wealth fund will now face losses on the principal it has invested, but on average, it will have been compensated by the insurance premium.

Consider next regulations aimed at “too-big-to-fail” institutions. Regulations to limit their size and activities will become very onerous when growth is high, thus increasing the incentive to dilute them.

Perhaps, instead, a more cyclically sustainable regulation would be to make these institutions easier to close. What if systemically important financial institutions were required to develop a plan that would enable them to be resolved over a weekend?

Such a “shelf bankruptcy” plan would require banks to track, and document, their exposures much more carefully and in a timely manner, probably through much better use of technology. The plan will need to be stress tested by regulators periodically and supported by enabling legislation – such as one facilitating an orderly transfer of the institution’s swap books to pre-committed partners.

Not only will the need to develop a plan give these institutions the incentive to reduce unnecessary complexity and improve management, it will not be much more onerous in the boom, and may indeed force management to think the unthinkable at such times.

Let me conclude. A crisis offers us a rare window of opportunity to implement reforms – it is a terrible thing to waste. The temptation will be to over-regulate, as we have done in the past. This creates its own perverse dynamic.

For as we start eliminating senseless regulations once the recovery takes hold, we will find deregulation adds so much economic value that it further empowers the deregulatory camp. Eventually, though, the deregulatory momentum causes us to eliminate regulatory muscle rather than fat. Perhaps rather than swinging maniacally between too much and too little regulation, it would be better to think of cycle proof regulation.