

Financial Stress Events...What Have We Learned?

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Introduction...Financial Accidents

Episodes of highly elevated market volatility happen with far greater frequency and cause much more damage than traditional risk management techniques suggest they should.

- In 1994, the “bond market massacre” ensued as the Fed moved early in raising rates, surprising investors who had placed leveraged bets that the short end of the yield curve would remain anchored for a sustained period of time.
- In 1997, the devaluation of the Thai baht precipitated “Asian Contagion” that led to an exodus of capital, plummeting currencies and a shock to economic growth. The VIX spiked to nearly 40.
- In 1998, the LTCM implosion brought the VIX to 45 and dramatically widened swap spreads as the market realized the magnitude of the hedge fund’s short volatility portfolio.
- In 2001, first the tech bubble unwind and then the terrorist attacks caused markets to plummet and the VIX to surge to 44.
- In 2002 the VIX reached 45 as credit spreads soared and the accounting practices of some leading US companies were called into question.
- In 2010, first the Flash Crash and then the Greek debt melt down forced the VIX above 40. Equity option skew reached record levels as did long dated variance swap prices.
- In 2011, renewed sovereign fears and the US debt ceiling showdown pushed the VIX to nearly 50.

All of these risk episodes pale in comparison, of course, to the “big one” when the VIX reached 80 during the height of the 2008 financial crisis.

The frequency of financial stress events in just the past 20 years speaks to the fragility inherent in the global financial system. Each volatility event has unique underpinnings and there is a specific asset class that typically forms the eye of the hurricane. In all cases, however, the risk of substantial loss of capital is very real for investors.

What can we learn from the rich and recent history of periods of market turbulence? What factors can be commonly traced to the origins of crisis episodes? And more importantly, how can investors prepare for the next spike in volatility and the associated risk of portfolio loss? Given the wealth destruction that results from market unrest, it is critical that investors keep a watchful eye on the cross currents that may give rise to the next bout of uncertainty.

In the context of systemic risk hedging, one increasingly important area of study is a discipline we call “macro financial research”. In contrast to traditional macro economic research where the focus is on economic growth, earnings, and inflation, macro financial research emphasizes the global financial system and the vulnerabilities therein. Here we use the playbook of past market stress events to better understand the next one.

Stress events teach us the importance of capital flows, leverage concentrations, counterparty interconnectedness, and the potential for credit market malfunction. Macro financial research also concentrates on how Central Bank banks impact risk pricing and investor positioning. A thorough and holistic study of the financial system set against the factors associated with historical episodes of volatility can help investors anticipate and hedge against the next trouble spot.

Reflexivity

An important component of the macro financial research process is the [George Soros Theory of Reflexivity](#) as applied to asset markets. Soros dismisses the market efficiency arguments that are based on states of equilibrium and “perfect information”. Simply put, he argues that in setting asset prices to reflect the fundamentals, market participants actually have an impact on the fundamentals. Stated differently, financial decisions based on expectations about the future direction of asset prices can affect the very future the decisions anticipate. This circularity creates a reinforcing feedback process that leaves markets open to booms and busts, where asset prices themselves are an important driver of economic outcomes.

In the context of market crisis, reflexivity implies that the tail wags the dog. In this way, extreme volatility events can result when asset price deterioration becomes a part of the dynamic that market participants use to evaluate risk. Market prices not only reflect a view on financial risk, they become causes of it. In 1998, LTCM’s portfolio losses were not merely a function of investors looking at the world and growing cautious on swap spreads and equity volatility. Each of these traditionally becomes elevated when market uncertainty rises. Rather, in the LTCM episode, these risk exposures threatened to unhinge not just LTCM but the Wall Street dealers that had implemented similar trades, and more importantly, had OTC derivative counterparty exposure to LTCM. Thus, the worsening of these risk factors was not simply a reflection of greater uncertainty. The risk factors themselves created mark to market losses that if left un-arrested, threatened the entire system.

Ironically, valuable insight on systemic risk was provided by LTCM partner Victor Haghani, who when contemplating his firm’s unwind stated:

“The hurricane is not more or less likely to hit because more hurricane insurance has been written. In the financial markets this is not true. The more people write financial insurance, the more likely it is that a disaster will happen, because the people who know you have sold the insurance can make it happen.”

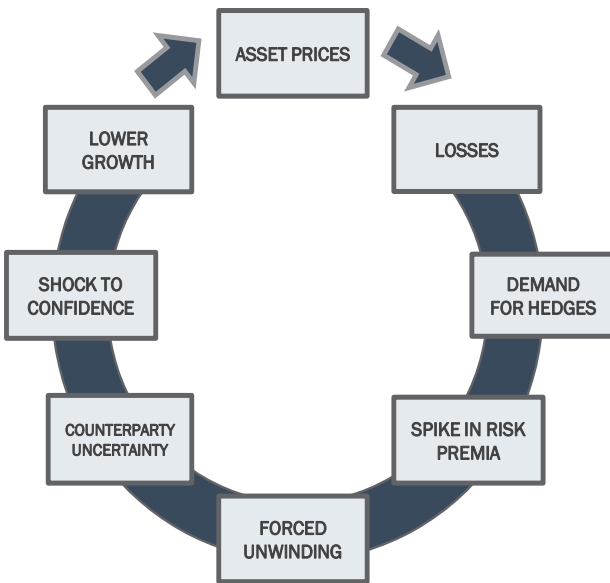
Haghani’s words turned out to be a powerful description of what would unfold a mere ten years later. The 2008 global financial crisis is the LTCM episode writ large. And instead of a single, leveraged portfolio being the source of unwind risk, the entire financial system became that portfolio. The crisis should have a lasting impact on the investment community’s thinking on systemic risk, especially in the way that risk can be amplified by the interconnectedness of the financial counterparty network when large intermediaries sustain losses.

The following graphic illustrates the role that asset prices played as a reinforcing input during the 2008 financial crisis. A long run of uninterrupted and significant credit growth left investors with highly leveraged portfolios. When losses ensued, there was widespread demand to hedge (shorting the ABX for example) which pushed risk premia (VIX, credit spreads) up dramatically. Investors quickly breached risk limits which led to the forced unwinding of positions and further demand for hedging instruments. The spike in risk spreads – especially for large financial institutions – caused counterparty uncertainty and was a shock to confidence. Ultimately, the financial storm hit the real economy as projects were delayed and hiring was put on hold.

(See graphic on following page)

Risk Reinforcing

- A sudden reassessment of market risk leads to the unwind of leveraged exposures
- Hedging demand pushes risk premia higher, forcing VaR based position reduction. Losses ensue that shock confidence and growth

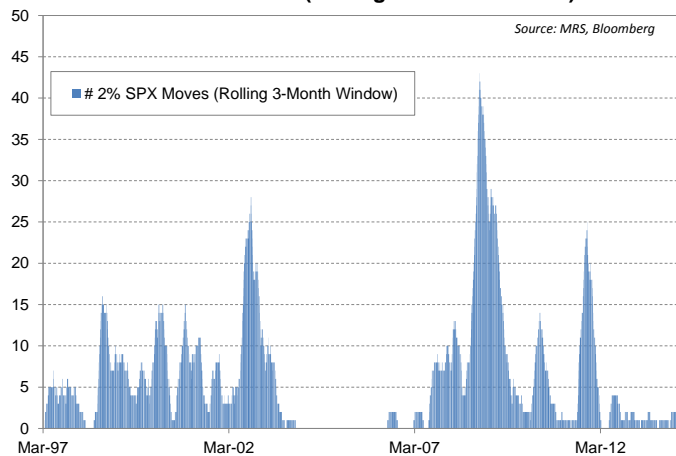


While the Fed and Treasury’s massive intervention would ultimately be enough to save the system in early 2009, Europe would become engulfed in a reflexive risk-off event just two years later. The sovereign debt crisis illustrated the destabilizing feedback loop between sovereigns and their banking systems. In Greece, public intervention was so important because a sovereign default would have immediately toppled the entire banking system. In Ireland, by contrast, policymaker attempts to backstop the banking system actually wound up taking the sovereign down, forcing an official bailout.

Central Banking Pats on the Back

Reflexivity works in another, more welcome direction as well. We experienced this during the mortgage bubble, as rising home prices facilitated credit growth that proved an accelerant to further house price appreciation. The bull market in housing prices increased the demand for housing, politically and economically, and it encouraged lenders to supply more mortgage credit at increasingly lax lending standards. This circularity became powerfully reinforcing, leaving the financial system “accident free” for the near entirety of the period 2003 to 2007 as we show below.

2% SPX Moves (Rolling 3-Month Window)

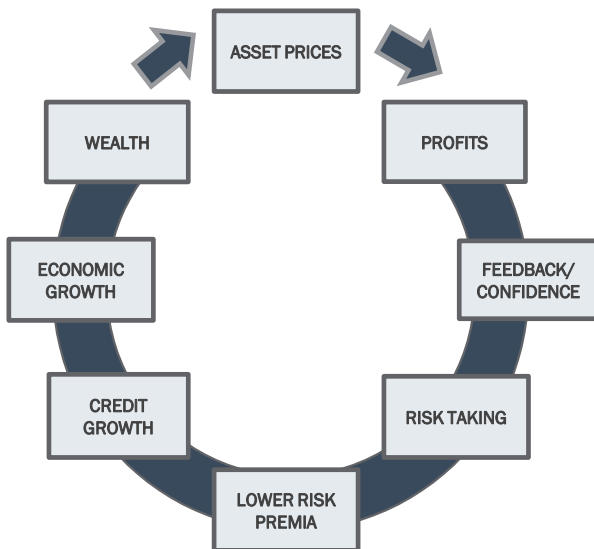


Once the wreckage from the internet bubble had cleared, the financial system experienced a golden-age of stability and growth by nearly every metric. Asset prices expanded, homeownership rates grew, defaults were low, interest rates converged in the Eurozone, corporate profitability reached all time highs, and the unemployment rate reached new lows.

Here reflexivity served to be risk reducing, through a circular process as we illustrate on the following page.

Risk Reducing

- A “virtuous cycle” promotes asset growth, risk taking, and benign outcomes
- Competitive forces push risk premia lower, wealth increases, promoting consumption and economic growth



So compellingly benign was this risk environment that Central Bankers believed we had entered a new era of permanent stability. In his [address](#) to the FRB of Atlanta’s Financial Markets Conference in May of 2007 in Georgia, Ben Bernanke said:

“In addressing the challenges and the risks that financial innovation may create, we should also always keep in view the enormous economic benefits that flow from a healthy and innovative financial sector. The increasing sophistication and depth of financial markets promote economic growth by allocating capital where it can be most productive. And the dispersion of risk more broadly across the financial system has, thus far, increased the resilience of the system and the economy to shocks.”

Or consider Tim Geithner’s [presentation](#) to GARP:

“The changes now underway are most dramatic in the rapid growth in instruments for risk transfer and risk management, the increased role played by nonbank financial institutions in capital markets around the world, and the much greater integration of national financial systems. These developments provide substantial benefits to the financial system. Financial institutions are able to measure and manage risk much more effectively. Risks are spread more widely, across a more diverse group of financial intermediaries, within and across countries. These changes have contributed to a substantial improvement in the financial strength of the core financial intermediaries and in the overall flexibility and resilience of the financial system in the United States.”

Perhaps most glaringly in support of the new risk paradigm was the IMF, which in its [2006 Financial Stability Review](#) stated:

“There is growing recognition that the dispersion of credit risk by banks to a broader and more diverse group of investors, rather than warehousing such risk on their balance sheets, has helped to make the banking and overall financial system more resilient. Over the last decade, new investors have entered the credit markets, including the credit risk transfer markets. These new participants, with differing risk management and investment objectives (including other banks seeking portfolio diversification), help to mitigate and absorb shocks to the financial system, which in the past affected primarily a few systemically important financial intermediaries. The improved resilience may be seen in fewer bank failures and more consistent credit provision. Consequently, the commercial banks, a core segment of the financial system, may be less vulnerable today to credit or economic shocks.”

What Alan Said

Much blame has been cast on Alan Greenspan's highly markets-oriented philosophy of central banking as contributing to the financial crisis. The former Fed chairman suggested that the formation of asset price bubbles could not reasonably be managed from a policy standpoint and that to the extent possible, financial markets should operate with minimal regulation. In the later days of his chairmanship, Greenspan did, however, heed warnings that the housing market froth was a risk factor. More generally, Greenspan made a very important point in his 2005 speech at Jackson Hole:

*“Thus, this vast increase in the market value of asset claims is in part the indirect result of investors accepting lower compensation for risk. Such an increase in market value is too often viewed by market participants as structural and permanent. To some extent, those higher values may be reflecting the increased flexibility and resilience of our economy. But what they perceive as newly abundant liquidity can readily disappear. Any onset of increased investor caution elevates risk premiums and, as a consequence, lowers asset values and promotes the liquidation of the debt that supported higher asset prices. **This is the reason that history has not dealt kindly with the aftermath of protracted periods of low risk premiums.**”*

Macro Financial Research Implications

Greenspan's last sentence (in bold above) has significant importance for our 'macro financial' research process.

When a drought occurs for an extended period of time, the price of flood insurance becomes very cheap. The reasons are circular and they relate well back to the Soros Theory of Reflexivity.

When market conditions are stable, the providers of insurance profit from a risk environment that largely produces benign outcomes. As these profits accrue, they provide positive feedback to the insurance sellers, who compete further and in the process, exert downward pressure on risk premiums.

Two important results occur:

- First, as risk premia decline, they provide mark to market profitability to the financial system as a whole. Declining risk premia are associated with rising asset prices.
- Second, participants in the financial markets read, sometimes mistakenly so, the lower risk premia as a signal of market safety. Currently, by a variety of metrics, option prices are cheap across every asset class.

The Next Source of Stress...Where to Look?

In May of 2013, Bernanke first introduced the notion that the Fed would taper its asset purchases. While a material increase in volatility (concentrated in fixed income and emerging markets) quickly resulted, a year later, the Fed has largely succeeded in changing the arc of its policy with minimal disruption. Steady economic growth continues amidst moderate gains in payrolls. Further, stock prices are higher, volatility levels lower, and credit market channels are largely functioning well. Concurrent measures of risk suggest financial stability.

At the same time, we must wonder what the longer term implications are of changing Fed policy and the extent to which market participants may be unprepared for higher rates.

In a survey of 30,000 adults, Finra found that only 28% could correctly answer the question, “what happens to a bond’s price when yields rise?” This lack of understanding of a basic pricing relationship set against the dramatic increase in corporate and government debt outstanding since the financial crisis is reason for caution. It should be clear that an astounding amount of debt has been issued since the crisis, enabling governments to run large deficits and corporates to lengthen their maturity structures at very low rates.

As of July 2013, The IMF estimated the total market value of global bonds outstanding to be 41.5 trillion USD, more than 3x the average market size for the past 3 tightening cycles. Along with this substantial increase in market value of bond portfolios, the average portfolio has more duration. The IMF estimates that relative to the last 3 tightening cycles, when portfolio duration averaged 5, it is now at 6.2. The result is that a 100bps increase in US rates would lead to an estimated loss of 2.3 trillion USD for global bond portfolios.

To be sure, losses of that size would be substantial, but then again so is the size of the global bond market. Not factored into the IMF analysis, however, are the potential losses that might be realized on risk assets that have benefitted from this long period of near zero real rates of interest in the developed world.

Bernanke’s efforts to direct capital into the spectrum of risk assets and create wealth in the process have been enabled by the Fed’s unprecedented buying campaign of Treasuries. QE has enabled both stocks and bonds to rally simultaneously over the past several years.

Is the under-appreciation of duration risk now the equivalent of the gross underestimation of mortgage and credit risk investors succumbed to before the financial crisis? Our framework suggests that when a risk fails to materialize for a lengthy stretch, investors become less able to evaluate the importance of that risk. We outlined the “accident free” period of credit and volatility risk from 2003-2007 and how it forced investors to assume more leverage and risk to compete in a new risk paradigm. The current environment is similar with respect to duration risk.

While the Fed has substantial market credibility (and a large balance sheet), investors ought to be actively asking what the implications of its changing policy may have for the pricing of market risk. Is the investment community, having been forced to survive in a world devoid of nominal return, prepared to adapt quickly, if necessary, to a higher rate environment? The history of financial market stress events argues for caution.

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