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2008 has seen several extraordinary events that will likely become the subject matter of both countless books and business school case studies. Market participants and observers alike believe that financial disruptions of this magnitude have not been experienced since the Great Depression. As such, we thought it would be instructive to take a step back and explain both the root causes and the likely implications of uncharacteristically tight credit markets.

One explanation for the seizing of the credit markets is human nature, principally greed and herd mentalities. Speculative bubbles have been recorded throughout history. The most famous early examples include The Dutch Tulip bubble of the mid 1600s and the English South Sea Trading Corporation. In the United States, capital markets have created several bubbles including but not limited to the speculation preceding the Great Depression in 1929, the “trionics” craze in the 1960s, the “Nifty Fifty” in the 1970s, program trading in 1987, and the irrational exuberance for technology stocks in 2000. Despite the rampant fear in the marketplace, it is important to recognize this is neither the first time the world has seen a bubble burst nor will it be the last.

The blame for this bubble, not that it particularly matters at this point, can be ascribed to everyone including the lenders, the borrowers, the rating agencies, and even the politicians. Warren Buffett, an investor for whom we have great admiration, believes economic cycles have three phases dominated by distinct groups he dubs “Innovators”, “Imitators,” and “Idiots”.

The “Innovators”

Moral hazard is an economic term used to describe a scenario in which a party insulated from risk may behave differently from the way that it would behave if that party were fully exposed to the risk. This phenomenon arises when an institution does not bear the full consequences of its actions,

and therefore has a tendency to act less carefully than it otherwise would, leaving another party to bear the responsibility for the consequences of its actions. The bulk of the credit problems started in the residential mortgage market. The process of originating mortgages between 2000 and 2007 was fraught with moral hazard.

The mortgage origination and the associated innovation went as follows:

- 1) A mortgage brokerage firm sets up credit lines with major banks throughout the country.
- 2) A prospective homebuyer applies for a mortgage through a mortgage origination firm.
- 3) Once the origination firm approves the mortgage it sells the mortgage to an investment bank.
- 4) The investment bank takes the mortgage and places it into a pool with hundreds of other mortgages. This pool, called a Residential Mortgage Backed Security (RMBS) is divided into slices called tranches.
- 5) The investment bank then hires a rating agency to evaluate and rate the credit quality of the RMBS tranches.
- 6) The investment banks uses its sales force to market the tranches to various financial entities including banks, insurance companies, hedge funds, pension funds, etc.
- 7) Investment banks also take the mid-rated BBB tranches of several RMBS pools and create a new pool called a Collateralized Debt Obligation (CDO) and repeat steps 5 and 6.
- 8) In some cases this was taken an additional step by packaging pieces from several CDOs into a CDO squared.

When Alan Greenspan lowered the Federal Funds rate to 1% in 2001, he created a credit expansion of historic proportions. With the return on US Treasury securities at historic lows, investors began to reach

for higher yielding instruments and found that mortgage backed securities offered the desired higher yield than Treasuries with a similar, albeit capricious credit rating. Since RMBS's seemed to meet the need for higher yield with concurrent safety – concepts that financial theory states are in opposition – demand for these instruments was insatiable and an increasing number were created. A number of these new instruments were packaged from increasingly declining mortgage standards.

In fact, between 2001 and 2007, the following mortgage quality degradation occurred: Loan to Value rose from 79.8% to 89.1%, 100% Financing rose from 3% to 33%, Limited Documentation “Liar’s Loans” increased from 27% to 44%, and the combination of 100% Financing and Limited Documentation rose from 1% to 15%. By 2006 subprime mortgages constituted 13.6% of total originations from 0.9% in 1994. These numbers are staggering but materialized because the person writing the loan had no financial obligation to its quality; he would bare zero risk as long as the investment bank purchased the loan and pushed it into the system. This paradigm shift in behavior was possible because of the moral hazard introduced into the marketplace via financial innovation, greed, and speculation.

These exotic loans came in all shapes and sizes. The standard structure of a 30 year subprime loan was called a 2/28. For the first 2 years the mortgage would have a very low “teaser” rate between 1% and 2% and then reset to a more traditional rate for the remaining 28 years. Option ARMs were constructed so that during the first five years, the borrower only paid interest on the principal and if they wished to pay less, the difference was simply tacked onto the principal balance. Another structure involved paying 5% down while taking out an 80% first mortgage and a second mortgage for 15% of the cost to avoid paying mortgage insurance.

In addition to non-traditional structures, lending standards deteriorated rapidly. The Alt-A category describes those lenders who were above subprime but still did not qualify for prime loans because they lacked sufficient documentation. There were many

cases where the reason for lacking documentation was legitimate. For instance, those who were self employed often did not qualify for prime loans, even though their incomes and assets were above the proper thresholds. The problems, as they often do in bubbles, came when the truth is stretched. Even those who qualified for prime mortgages were often encouraged to take loans much larger than they could afford, despite their income, FICO score, and other credit metrics.

2005 marked the height of the mortgage bubble. In the beginning of 2007, when the first subprime mortgages started to reset, default rates soared, and it became clear a systemic problem was at hand. Initially it was believed that the problem was contained only to the subprime category, but as time progressed, it became apparent that credit deterioration was growing in other categories as well.

The Imitators

One key assumption that both lenders and investment professionals made was that housing prices would not materially decline given demographic, economic and historical data. This naive assumption concluded that even if a homebuyer was unable to make their future mortgage payments, the house would have a higher value and they could easily refinance, equating to no losses. This encouraged increased speculation, second home purchases, and larger mortgages than traditionally possible.

The Idiots

The ratings agencies played a critical part in this charade as they gave the process credibility. Ratings agencies have always been at the focal point of our credit markets. They rate every category of debt instrument in the financial markets: sovereign, municipal and corporate. Investors depend on the rating agencies to properly assess the credit risk of a security. The rating agencies presumed that because RMBS and CDO pools included mortgages from all over the country, this diversification negated the risky nature of the security. In their minds, if you took all of the BBB pools of mortgages and put them together, you would now have an AAA security. The

investment banks allowed the agencies to charge exorbitant fees to rate the securities but would give the business only to the agencies that played along with the high ratings.

Investors also acted imprudently by assuming that the credit agencies AAA ratings made the investments perfectly safe. Little due diligence was conducted and very few questions were asked. It wasn't until the problems started to arise, that investors realized they were not exactly sure what they had purchased years before.

As you can see, the moral hazard existed across the board because it was not until the investors purchased the RMBS and CDO securities that risk became stationary. Up until that point, fees were collected and the risk was passed down the line. Wait, there's more...

In addition to the mortgage explosion, problems arose in other financially engineered marketplaces. The two most frequently referred to problem areas are the credit default swap and auction rate securities markets. In both cases, lenders and borrowers made poor assumptions that certain circumstances would not occur but unfortunately they did.

We would also be remiss not to include some terrible decisions by policy makers that generated higher risk in the financial system. Bill Donaldson, Chairman of the SEC, enabled the former big five investment banks to increase their leverage ratios from 12:1 to levels as high as 30:1. When asset prices are rising leverage is a wonderful way to increase returns. However, when asset prices decline and firms are levered at 30:1 it only takes a 3.33% decline to be wiped out.

The Good Stuff

Despite pervasive negativity amid the declining market, we do not believe that all is lost. If you look past the dire headlines you will observe that the curative process is underway and significant investment opportunities exist.

Several firms including Bear Stearns, Lehman Brothers, Fannie Mae, Freddie Mac, AIG, Merrill Lynch, Washington Mutual, Wachovia, and IndyMac have either failed or been taken over. In some cases

the government stepped in to help the process. Other cases saw the industry's strongest members absorb battered companies where they will keep the good assets and remove the bad. The mortgage origination business model proved unsustainable and hundreds of these companies went bankrupt. We do not expect them to reopen anytime soon.

New capital is finding its way to companies that will survive. Within the past few weeks Citigroup, JPMorgan Chase, Goldman Sachs, Morgan Stanley and General Electric have raised a combined \$53 billion. They may have paid higher costs for this capital than they would have liked but this should provide them with sufficient capital to, and potentially increase their market position as weaker rivals struggle to survive with a smaller capital base, withstand an economic downturn.

We are not in the business of predicting market bottoms but we have started to compare this period to other bear markets and are encouraged. Many investors look to the Chicago Board of Options Exchange Volatility Index (VIX) to measure fear in the stock market. When significant uncertainty exists, the markets tend to become unstable and volatility rises. According to Vincent Farrell of Soleil Securities the VIX has only risen above 38.5 on five occasions with September 29th being the fifth. In prior instances, the market averaged gains of 7%, 11%, 15%, and 20% within one week, one month, three months, and six months respectively with zero negative returns.

Despite headlines that our markets are broken and will never recover, upon comparison to previous bear markets the performance of the S&P 500 is more or less within historic norms. The chart below compares the performance of the S&P 500 from October 9, 2007 through September 29, 2008 to the average of the 13 bear markets since 1940:

	DECLINE	DURATION
AVERAGE	-30.59%	380 days
2007-2008	-29.31%	356 days

Our economy and market has experienced and consequently survived challenging, post-bubble eras

in the past and we expect that it will continue to do so.

The cartoon below depicts our mood regarding the wild movements in the market. We do not sleep as well, we have knots in our stomachs, and there is little to no fun to be had. Getting off the roller coaster would be the easy action to take and make us feel better in the short term. However, we also know that history has shown staying the course to be the prudent, long-term decision. Planning for the end of the world has never been a particularly profitable exercise and we do not expect it to be during the current turmoil. We will continue to research and invest in companies with sound balance sheets and highly regarded franchises as we believe that these firms will be best positioned when things get better.

