Efficient Market Theory and the Recent Financial Crisis

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The world economy in 2008-2009 has passed through the most severe economic downturn since World War II. This global recession was preceded by the collapse of some of the largest financial institutions in the world. The financial turmoil caused by these dislocations disrupted world credit markets and precipitated a sharp global economic contraction.

This financial meltdown was caused by the downward movement in real estate prices and coincident decline in mortgage and other real-estate related securities that were tied to housing prices. The meltdown followed a dramatic misestimation of the risk of these securities, many of which were mistakenly rated AAA by the leading rating agencies. This misestimation led to an overleveraging these assets by many financial institutions which, when prices fell, caused severe liquidity problems which drove many firms near to or into bankruptcy.

Many have described the recent crisis as the death knell of the academic notion of "efficient markets." Financial journalist and best-selling author Roger Lowenstein stated: "The upside of the current Great Recession is that it could drive a stake through the heart of the academic nostrum known as the efficient-market hypothesis."[2] In a similar vein, the highly respected money manager and financial analyst Jeremy Grantham wrote in his quarterly letter last January: "The incredibly inaccurate efficient market theory [caused] a lethally dangerous combination of asset bubbles, lax controls, pernicious incentives and wickedly complicated instruments [that] led to our current plight."

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[1] This paper is a much expanded version of a paper, "Efficient Markets and the Financial Crisis," published in the *Wall Street Journal*, Oct. 28, 2009, p. A23.

[2] "On Wall Street, the Price isn't Right". *Washington Post*., 7 June 2008

But I do not believe that the Efficient Market Hypothesis (EMH) is responsible for the current crisis. The EMH, originally put forth by Eugene Fama of the University of Chicago in the 1960s, states that the prices of securities reflect all known information that impacts their value. There are various forms of the definition, depending on the amount of information assumed, e.g., whether it is past prices, publicly available information, inside information, etc.

But no matter what definition is used, the hypothesis does *not* claim that the market price is always right. On the contrary, EMH implies that the prices in the market are mostly "wrong" in the sense that if we were given all present and future information, the "true" ex post rational price would almost always differ from the current market price. Nevertheless, the EMH does imply that at any given moment, it is not easily determined whether the market prices are too high or too low. In other words there are good economic reasons why prices are where they are, despite the fact that subsequent history may show that these prices are terribly wrong. Nevertheless, whether the EMH is true or not does not excuse the CEOs of the failed financial firms or the regulators for failing to see the risks that subprime mortgage-backed securities posed to the financial stability of the economy.

The EMH and the Markets

Some wrongly describe the EMH as meaning that the market price is always "right" since it incorporates the forces of knowledgeable actors or the "wisdom of crowds." But if that were the case, the EMH would have been dismissed as false as soon as it was put forth as a theory of markets. There have been hundreds of bull and bear markets throughout history, and prices of securities at the bottom and the top of these markets have been demonstrably wrong on the basis of future information. In fact, the internet and technology bubble of the 1999-2000 was a far more persuasive episode of "incorrect" prices than the recent financial crisis.

The conditions that led to the current crisis – low risk premiums and high real estate prices – had a good economic basis. After the 1982 recession, the U.S. and world economies entered into a long period where the fluctuations in variables such as gross domestic product, industrial production, and employment were significantly lower than they had been since World War II.

Economists called this period the "Great Moderation" and attributed the increased stability to better monetary policy, a larger service sector and better inventory control, among other factors.

The economic response to the Great Moderation was predictable: risk premiums shrank and individuals and firms took on more leverage. Housing prices were boosted by historically low nominal and real interest rates and the development of the securitized subprime lending market. Charles Himmelberg, senior economist of the Federal Reserve Bank of New York, Chris Mayer, Director of the Center for Real Estate at Colombia University Business School, and Todd Sinai, an Associate Professor of Real Estate at the Wharton School, argued that that lower real rates justified the high level of real estate prices.[3] They also wrote an article, "Bubble Trouble? Not Likely," which appeared in the *Wall Street Journal* in September 2005, the peak of housing prices according to the Case-Shiller Indices.[4]

Not only did many economists claim that higher real estate prices were justified, but the rating agencies could have used the housing price data collected by Prof. Robert Shiller of Yale University to support their high rankings for subprime debt. According to Prof. Shiller's data, in the 61 years from 1945 through 2006, the maximum cumulative decline in the average price of homes was 2.84% in 1991. If this low volatility of home prices persisted into the future, a mortgage security composed of a nationally diversified portfolio of loans comprising the first 80% of a home's value – the so-called "first tranche – would have never come close to defaulting. The credit quality of home buyers was secondary because if historical volatility held, the underlying collateral -- the home -- could always cover the principal in the event the homeowner defaulted. These models led credit agencies to rate these subprime mortgages as "investment grade."

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[3] Himmelberg, Charles, Chris Mayer and Todd Sinai. "Assessing High House Prices: Bubbles, Fundamentals and Misperceptions", *Journal of Economic Perspectives*, Vol. 19, no. 4 (Fall 2005): 67-92.
[4] Mayer, Chris and Todd Sinai, "Bubble Trouble? Not Likely", *Wall Street Journal*, editorial page of September 19, 2005.

True Risk in House Prices

In my opinion what the market – and the regulators – missed was the bigger picture. From 2000 through 2006, national home prices rose by 88.7%, far more than the 17.5% gain in the consumer price index or the paltry 1% rise in median household income. Never before have home prices jumped that far ahead of prices and incomes.

It is conceivable that these increases could be explained by changes in real interest rates and the growth of the securitized mortgage market. But whenever there is a shift in fundamental factors, there is always an increase in what I call "structural risk," the risk that the changes in the fundamental factors are not permanent or that the basic model used to price the variables may have been faulty. In these cases, historical measures of price fluctuations greatly underestimate the true risk involved. The "new era" may indeed be new, but not be as new as some believe.

This is not to say that fundamental changes in valuation methodology cannot occur. The best historical example of this occurred in 1958, when for the first time the yields on long-term US government bonds rose above the dividend yield on the market. This had been an extremely reliable historical indicator that the stock market was overvalued and that it was a time for those who timed the market to shift out of stocks.

But there had been a real change in the economic structure in 1958. For the first time inflation was chronic and an inflation premium had to be added to the yield on government bonds. Stocks, which were claims on real assets, had built-in inflation protection and did not require a dividend yield adjustment. Those who pulled out of stocks when bond yields surpassed dividend yields missed the greatest bull market in stocks of all time.

Whether there had been a structural change or not, the unprecedented rise in the price of real estate that preceded this financial crisis should have sent red flags to regulators and CEOs that historical risk models may not have captured the true volatility of housing assets. In fact, the market did know better than all the rating agencies, the CEOs of financial firms, the Fed, and other regulators. In a way the wisdom of crowds did prevail. Despite being rated as AAA, most of these mortgage securities were priced at a higher yield than comparably rated corporate bonds.

In fact, the spreads between the AAA mortgage and corporate securities is what lured many financial firms to buy them in quantity. This was a major reason why AIG insured these securities. The AIG Financial Products division thought that it was receiving fat premiums for insuring AAA securities, which according to its own historical research, had virtually never failed. The fact that the yields on these mortgages were high despite their investment-grade ratings indicated that the market was rightly suspicious of the quality of the securities, and this should have served as a warning to prospective buyers.

With few exceptions (Goldman Sachs being one), financial firms ignored these warnings. CEOs failed to exercise their authority to monitor overall risk of the firm and instead put their faith in technicians whose narrow models could not capture the big picture.[5]

The misreading of these economic trends did not just reside within the private sector. Other regulatory agencies, especially the Federal Reserve ignored the threat posed by rising real estate prices. It was often said that it was Greenspan's belief in the efficient market that caused him to ignore the risk posed by securities linked to real estate. But even if he thought that real estate prices were, on average, right, he should have investigated the implications to both the markets and the economy if they were wrong. After all, the softening market in these subprime mortgages signaled that risks were higher than their ratings indicated. That is why Goldman Sachs began a policy of offsetting its own vulnerable positions in these securities.

But Greenspan did not. The former Fed Chairman stated before congressional committees in December 2008 that he was "shocked" that the top executives of the financial firms exposed their stockholders to such risk. But had he looked at their balance sheets, he would have realized that not only did they put their own shareholders at risk, but their leveraged positions threatened the viability of the entire financial system. For all the deserved kudos that the central bank received for their management of the crisis after the Lehman bankruptcy, the failure to see these problems building will stand as a permanent blot on the Fed's record.

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[5] One can only wonder if the large investment banks would have taken on such risks when they were all partnerships and the lead partner had all his wealth in the firm, as they were just a few decades ago.

Summary

Our recent crisis wasn't due to the Efficient Market Hypothesis. The EMF never implies that risk is zero and that the market prices are right. Ex post, market prices can be very wrong. Although there were many that warned that market prices were too high (my good friend Robert Shiller being one of them) there were many reasoned opinions that a shift in fundamentals justified higher prices.[6]

It is also very likely that real risks were lower in the economy in 2006 before the financial firms became over-leveraged. But the leverage was far too high for even the reduced levels of risks. Just because the auto industry built a safer car does not mean that you can drive it safely at 150 mph. Firm management and US regulators were negligent at monitoring this risk. When the financial firms hit a bump on the road, they spun out of control and crashed, dragging the world economy down with it.

[6] It is of interest that, despite the severity of the crisis, housing prices have stabilized and in most areas turned upward, despite the fact that the Case-Shiller Home Price Index, in real terms, is still 23% above its 1997 level.