

The Global Financial Crisis and the Efficient Market Hypothesis¹

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The Global Financial Crisis and the Efficient Market Hypothesis

The global financial crisis (GFC) has put the efficient market hypothesis (EMH) under an intense spotlight. Many commentators, including the market strategist Jeremy Grantham, the investor and philanthropist George Soros, and the author and journalist Justin Fox, have gone so far as to blame the hypothesis for the entire crisis.²

The Turner Report by the UK's market regulator, the Financial Services Authority, awarded the hypothesis partial but substantial blame.³ Even the *University of Chicago Magazine* posed the introspective question: "Is Chicago School Thinking to Blame?"⁴

Perhaps it is not surprising that blame for the crisis has been leveled at the EMH. Many investors and employees have incurred considerable losses, regulators have lost face, and scapegoats are sorely needed. The EMH is a natural candidate. It sounds academic. It is not welcomed by most money managers because it states what they are not honest enough to admit to their clients: that they operate in a fiercely competitive world, populated by a large number of capable and ambitious people, just like themselves, and thus superior investment returns are generally (though not exclusively) attributable more to luck than insight. To justify their fees, active money managers have to argue they are "above average" and consistently beat the market, but the EMH—and the body of empirical studies supporting it—suggests otherwise. The theory

² Jeremy Grantham, foreword to Andrew Smithers, *Wall Street Revalued: Imperfect Markets and Inept Central Bankers* (Chichester, UK: Wiley, 2009), and Justin Fox, *The Myth of the Rational Market: A History of Risk, Reward, and Delusion on Wall Street*. New York: HarperCollins (2009), page 320. See also, for example: George Cooper, *The Origin of Financial Crises: Central Banks, Credit Bubbles, and the Efficient Market Fallacy* (New York: Vintage Books, 2008); Richard A. Posner, *A Failure of Capitalism: The Crisis of '08 and the Descent into Depression* (Boston: Harvard University Press, 2009); George Soros, *The Credit Crisis of 2008 and What it Means: The New Paradigm for Financial Markets* (New York: Perseus, 2009); and Andrew Smithers, *op. cit.*

³ *The Turner Review: A Regulatory Response to the Global Banking Crisis* (London, UK: The Financial Services Authority, March 2009, page 39).

⁴ *University of Chicago Magazine*, Vol. 102 No. 1, September-October 2009, cover story.

is also viewed with skepticism by many (if not most) of the large number of MBA students who launch forth into the world every year, each believing—as the behavioral studies tell us—that he or she is substantially above average, even though they are their own future competition. The idea that it is hard to earn excess returns in a competitive market also threatens the lucrative market for an astonishing range of “get-rich-quick” consultancies and treatises. In my experience, people whose living derives from commenting authoritatively on the actions of others—notably, academics, financial advisers, consultants, journalists, politicians, regulators and book authors—are more inclined than most to view others as less rational than themselves.⁵ So the notion of market efficiency is a natural target for blame.

Asset bubbles are not a well-understood phenomenon in general. Many serious economists have challenged the use of the term, other than in the *ex post* sense of denoting episodes in which prices rose and then fell by substantial amounts. The claim that the EMH was responsible for the GFC brings to mind the oft-quoted excerpt from the last paragraph of Keynes’ *General Theory*: “... the ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist.”⁶ I conclude quite the opposite, that this important economic theory is at risk of being enslaved by “practical men” who would gain from it becoming defunct. My view is that the EMH – like all good theories – continues to be the source of important and enduring insights, even though – like all theories – it

⁵ It also seems worth pointing out that such people, having chosen these occupations and careers, have *incentives*, monetary and otherwise, to view themselves as more rational than their audiences.

⁶ John Maynard Keynes, *The General Theory of Employment, Interest and Money*, London: Macmillan (1936, reprinted 1961), page 383.

has major limitations, many of which stem from ignoring much of Austrian economics. Despite its limitations, to hold the EMH responsible for the financial crisis is a wild exaggeration.

Putting the rhetoric and posturing aside, what *do* the recent events tell us about the efficient markets theory? Does the rapid and substantial fall in prices that occurred across countries and asset classes invalidate the entire concept of market “efficiency”? Or does it merely serve to remind us of its considerable limitations as a theory to help us understand the behavior of asset prices? If so, then what are those limitations? To address these questions, it is necessary to define what is meant by “market efficiency.”

What Does the EMH Say?

The basic idea behind the EMH is deceptively simple. It merges two premises, neither of which is surprising in hindsight, but which in combination proved to be both insightful and controversial. Those premises are:

1. Borrowing from introductory Marshallian economics: Competition enforces a correspondence between revenues and costs. If profits are excessive, new entry reduces or eliminates them.
2. Due to Eugene Fama: Changes in security prices can fruitfully be modeled as reflecting the flow of new information to the market.

These premises together lead to the EMH, which proposes that competition among actual and potential security market participants causes the return from using information to be commensurate with the cost of using it. Stated differently, security prices utilize information “efficiently.”

For the early empirical researchers studying market efficiency, public information – defined as information made freely available to all – provided ample opportunities for research.

Public information has three properties that made it attractive to researchers. First, public information is important to the functioning of the capital market and the economy. Second, because, it is in abundant supply and takes so many forms, public information provides almost endless opportunities for researchers looking for something new that has not yet been studied. Third, research on how “efficiently” the market utilizes public information is simplified by what perhaps is a unique property: public information is almost costless for a market participant to obtain, and thus is about as close to being a pure public good as anything studied in economics. The easily testable EMH implication is that gains from the use of almost costless information should be competed away to almost zero. From this comes the well known but widely misunderstood prediction that, in an efficient market, traders cannot expect to earn above-normal returns from investing by using publicly available information, because it already is reflected in prices.

Simple as it might seem in hindsight, this type of reasoning was revolutionary at the time. However, as one might expect of any theory, the world is not as simple as depicted. Consequently, both the strengths and the weaknesses of the EMH – most of which should be apparent to a devotee of F. A. Hayek – quickly became apparent. While it is not a complete description of how security prices behave, the EMH irreversibly changed our thinking about securities markets, and was an important contributor to the rise of market liberalism during the 1960s and 1970s.

What Doesn't the EMH Say?

The EMH has been so misunderstood that outlining some things the hypothesis does *not* say occupies considerably more time than outlining what it *does* say.

1. No one should produce, process or act on information.

One misconception is that the EMH implies there are no incentives to produce, process or act on information, because the market is all-knowing already. A version of this interpretation holds that all investors should be passive (e.g., invest in the index). Why expend resources on information if one cannot expect to make abnormal returns?

The fallacy in this reasoning should be obvious: it confuses efficiency as a statement about the equilibrium that results from investors' actions with the actions themselves. Obviously, if all information-related activity ceased, the market would cease to be efficient, because no investors would be acting to incorporate information into prices. While the hypothesis states that at the margin there are no gains left from exploiting public information, that is because the infra-marginal actors have already taken the gains from exploiting it.

Consider the following analogy. Hair salons cut hair in a fiercely competitive market with free entry. That does not say that all salons should stop cutting hair. Investors act on information in a fiercely competitive market with free entry. That does not say that all investors should stop acting on information.

2. There Are No Superior Investors

A related misconception is that the EMH implies there are no superior investors. Consider the hair salon analogy. Hair salons cut hair in a fiercely competitive market with free entry, and a reasonable economic prediction is that the marginal entrant can expect to earn only competitive returns. That does not say that no incumbent salons are making abnormal returns because they are better managed, have people who are better at cutting hair, etc. Likewise, some institutions and individual investors are better at processing information than others, and while it is reasonable to predict that at the margin the last entrant expects only competitive returns (in the

case of public information, no expected gains from exploiting it), that does not say there are no infra-marginal, superior investors who expect to earn more.

3. The market should have predicted the Global Financial Crisis.

This is a more recent misconception. The EMH does not imply that one can—or should be able to—predict future crises. It is silent about the amount of information that market participants possess: it merely addresses properties of security prices *given* the information available.

If anything, the hypothesis predicts we should *not* be able to predict crises. If we could predict a crisis, in an efficient market security prices would immediately tumble, and the crisis would be precipitated immediately – i.e., the crisis would be a surprise, not a prediction.

Furthermore, the existence but unpredictability of *large* market events is consistent with the work of Fama and Benoit Mandelbrot on “Paretian” return” distributions, which have “fat tails” – i.e., extreme outcomes.

4. The stock market should have known we were in an asset “bubble.”

It is easy to identify bubbles after the fact, but notoriously difficult to identify them at the time and to profit from them. Then Fed Chairman Alan Greenspan’s famous reference to “irrational exuberance” was made 14 years ago, when the Dow Jones was at 6437.⁷ If prices were too high at that time, then 14 years later – when we have had ample time to reflect on how irrationally exuberant we were way back then – how come the Dow is 60% higher now?

⁷ The complete reference is: “But how do we know when irrational exuberance has unduly escalated asset values, which then become subject to unexpected and prolonged contractions as they have in Japan over the past decade? And how do we factor that assessment into monetary policy?” *The Challenge of Central Banking in a Democratic Society*: Remarks by Chairman Alan Greenspan at the Annual Dinner and Francis Boyer Lecture of The American Enterprise Institute for Public Policy Research, Washington, D.C., December 5, 1996 (Washington, DC: The Federal Reserve Board).

The EMH and the GFC: Some Misconceptions

1. The EMH is Responsible for the GFC

The usual argument of Soros, Fox, the Turner Report et al. goes along the following lines:

- Investors and regulators were persuaded by a slavish belief in efficient markets that asset prices reflect all available information;
- They therefore felt no need to check whether asset prices had departed from their true values;
- They therefore failed to detect an asset price “bubble”; and
- The “bubble” inevitably bursts.

In other words, the EMH led to excessive belief in markets, and to the neglect of their regulation, so a crisis inevitably ensued.

Despite the theory’s undoubted limitations, the claim that it is responsible for the current worldwide crisis seems wildly exaggerated.

If the EMH is responsible for asset bubbles, one wonders how bubbles could have happened before the words “efficient market” were first set in print—and that was not until 1965, in an article by Eugene Fama.⁸ Economic historians typically point to the 1637 Dutch tulip “mania” as the first such event on record, followed by episodes like the 1720 South Sea Company Bubble, the Railway Mania of the 1840s, the 1926 Florida Land Bubble, and the

⁸ Fama referred to “an ‘efficient’ market for securities, that is, a market where, given the available information, actual prices at every point in time represent very good estimates of intrinsic values.” Eugene F. Fama, “The Behavior of Stock-Market Prices” *The Journal of Business*, Vol. 38, No. 1 (January 1965), p. 90. The idea did not become known outside of narrow academic circles until the 1970s. It was not an easy sell to practitioners at the time.

events surrounding the market collapse of 1929. But all of these episodes occurred well before the advent of the EMH and modern financial economic theory. As the above list suggests, unusually large price run-ups followed by unusually large drops have occurred throughout the recorded history of organized markets. It's only the idea of market efficiency that is relatively new to the scene.

2. “Bubbles” and hence the GFC were caused by investors relying on the EMH

The argument that a bubble occurred because the financial industry was dominated by EMH-besotted “price-takers”—that is, by people who viewed current prices as correct and who felt too little need to look into and verify true asset values— also seems wildly at odds with what we see in practice. Almost all investment money is actively managed, despite all the evidence of academic and industry studies showing that active managers fail to beat the market in an average year.⁹ Money flows into mutual funds strongly follow past performance, as if individual managers consistently beat the market over time, and despite the evidence that the past performance of most money managers is a poor predictor of future performance.¹⁰ Much of the enormous losses by banks and investment banks in 2007-2008 originated in their trading desks and proprietary portfolios, whose strategies and very existence were premised on making money from market mispricing. Investors who poured money into the property market, stock market, and other asset markets in the years while the alleged “bubbles” were forming seemed to do so in

⁹ The first of the many studies reaching this finding is Michael C. Jensen, “The Performance of Mutual Funds in the Period 1945–1964,” *Journal of Finance* 23 (May 1968), pp. 389–416. A recent Morningstar report concludes that only 37% of managed funds outperformed their respective Morningstar style indexes over the past three years, adjusting for risk, size and style. Similar numbers were observed for five and 10-year returns. See: http://news.morningstar.com/newsnet/viewnews.aspx?article=/dj/200910071314dowjonesdjonline000480_univ.xml.

¹⁰ E. Sirri and P. Tufano, “Costly Search and Mutual Fund Flows,” *Journal of Finance*, 53 (1998), pp. 1589-1622.

the belief that prices would continue to rise, with the implication that they believed current prices were incorrect.

It seems inconsistent to argue simultaneously that asset price “bubbles” occur and that investors passively believe current asset prices are correct. Yet this is precisely what many EMH critics have claimed. But if more homeowners, speculators, investors, and banks had indeed viewed current asset prices as correct, they might not have bid them up to the same extent as they did, and the current crisis might have been averted.

The related argument that when asset prices are rising rapidly their level is not subject to scrutiny by investors also seems wildly at variance with the facts. Take the case of then Fed Chairman Alan Greenspan’s 1996 use of the words “irrational exuberance.” Despite its seemingly innocuous nature and positioning in a long and otherwise unheralded speech, the reference received widespread media coverage both at the time, and more or less continuously during the decade before the financial crisis. When my recent Google search of “Alan Greenspan irrational exuberance speech” yielded over six million hits,¹¹ I had to ask myself: Can we really believe that investors were not aware of the possibility of a stock market bubble?

3. Financial regulators also mistakenly relied on the EMH.

Several commentators (including Jeremy Grantham and the UK’s Turner Review, cited above) claim that regulators relied on the EMH in believing that asset prices were in some unspecified sense “correct,” and thus allowed an asset bubble to develop. They cite the EMH as a major culprit in the crisis.

¹¹ Visited October 18, 2009.

The notion that bodies whose existence, sphere of influence and budget size are based on regulated markets believed that markets work very well by themselves is inherently implausible.

If regulators had been true believers in efficiency, they would have:

- been considerably more skeptical about the surreally high and stable returns over an extended period claimed by Bernie Madoff;
- taken Harry Markopolos seriously, when he reported there were not enough S&P-100 options in existence to generate the returns Madoff claimed from trading them, and that his returns were consistent with no known investment strategy;
- enquired whether the profits of Lehman Brothers, Bear Sterns, AIG, Freddie Mac, Fannie Mae and others during the boom were due to their leverage and risk-taking positions, as distinct from them being able to “beat the market,” and whether they were likely to “lose big” whenever a downturn occurred; and
- questioned how some hedge funds like Galleon made their trading profits.

Overall, there is not much evidence that U.S. regulators viewed the world through the lens of efficient markets.

4. The collapse of large financial institutions indicates the market is inefficient.

George Soros, in his most recent book, opines: “On a deeper level, the demise of Lehman Brothers conclusively falsifies the efficient market hypothesis.” I would have thought exactly the opposite is true. To me, Lehman’s demise conclusively demonstrates that, in a competitive capital market, if you take massive risky positions financed with extraordinary leverage, you are bound to lose big one day—no matter how large and venerable you are.

What Have We Learned About Market Efficiency From The Financial Crisis?

1. First and foremost, the episode highlights that a theory is just that—a theory.

A theory is not a fact. It is an abstraction from reality. It is an abstraction that we hopefully find useful when organizing our thoughts and actions, but no theory is perfect. As Thomas Kuhn, the historian of science, reminds us, all theories have “anomalies”—facts or findings that the theories cannot explain.

The corollary is that no theory can or should totally determine our thoughts or our actions. In other words, people who take theories literally are in for a disappointment.

2. There are Obvious Limitations to the EMH as a Theory of Financial Markets

From an Austrian-Hayekian perspective, the strength of the EMH lies in the importance it places on prices as embodying information and the rationality it attributes to the institutions of a market economy. From the same perspective, the weakness of the EMH lies in the way it typically has been operationalized, which has been to model individual investors as rational economic agents. The distinction between individual and institutional rationality brings to mind Hayek’s marvelous observation that institutions are created by human action, not by human design, when refers to “the astonishing fact, revealed by economics and biology, that order generated without design can far outstrip plans men consciously contrive.”¹²

Some of the more obvious deficiencies of the EMH – and how it typically is formulated by researchers – are summarized below.

2.1 The EMH is only a “pure exchange” theory of information in markets.

The EMH does not pretend to make any statements about the “supply side” of the information market. For example, it does not address how much information is available,

¹² Hayek, F.A., *The Fatal Conceit*, Chicago: University of Chicago Press, 1988, p. 8.

whether the available information comes from firms' accounting reports or other sources, how reliable it is, the frequency of extreme events, etc. The EMH says only that, *given* the supply of information, investors trade on it until in equilibrium there are no gains at the margin from trading.

This is perhaps the single biggest weakness of “modern” financial economics generally, including the EMH. Consequently, when households suddenly decide to stop adding to the real housing stock, modern finance theory is largely silent about the implications for asset prices.

2.2 Information is modeled in the EMH as an objective commodity. There are no subjective beliefs in typical formulations of the EMH: information is assumed to be an objective commodity, with the same meaning for all investors. But investors have different information and beliefs. The actions of individual investors therefore are based not only on their own beliefs, but on their beliefs about the beliefs of others—and thus their trading is affected by their incomplete knowledge of others' motives for trading. This uncertainty becomes most important during periods of rapid price changes. Unlike more stable periods, when an investor can wake up and read or listen to some thoughtful analyses of what moved prices on the previous day, this kind of information is not available in a timely fashion during periods of rapid price change. The EMH is silent on such issues.

2.3 Information processing is assumed in the EMH to be costless. Costless processing of information implies it is incorporated into prices immediately and exactly. The cost to investors of *acquiring* public information might be negligible, but information *processing* (or interpretation) costs are an entirely different matter. They have received surprisingly little attention.

2.4 The EMH assumes markets are costless to operate. Generally speaking, stock markets are paradigm examples of low-cost, high-volume markets, but they are not entirely without costs. This limitation raises the following conundrum: if there are pricing errors that are not eliminated because they are smaller than the transactions costs of exploiting them, is the market judged to be efficient—because of the absence of profits from exploitable errors—or inefficient—because there are price errors that persist because of transactions costs? The role of transactions costs in the EMH is unclear.

2.5 Other frictions are ignored. Similarly, the EMH implicitly assumes continuous trading, and hence ignores liquidity effects. Few would take the fact that markets are closed on weekends or overnight as a serious violation of market efficiency, but episodes of heightened illiquidity are another matter. Starting in the summer of 2007, illiquidity was an extremely important feature of many credit markets and real asset markets. The EMH also is silent on the role of investor taxes. In reality, many investors pay taxes on dividends and capital gains/losses. The effects of investor taxation on security prices and expected returns are potentially large, but not well understood.

2.6 Overview of Limitations. From the above, it should be apparent that the EMH adopts a simplified view of markets and, like all theories, should not be taken literally.

Closing Thoughts

Fama's 1965 insight—combining simple competitive economic theory with an information-based view of security prices—irreversibly changed the way we look at financial markets. Like all important insights, the contribution of the EMH is not diminished by the fact that it is not a complete representation of how markets behave. The impact of the theory of efficient markets has proven to be durable, and seems likely to continue to be so, despite its inevitable and painfully obvious limitations.

From an Austrian-Hayekian perspective, the strength of the EMH lies in the importance it places on prices as embodying information and the rationality it attributes to the institutions of a market economy. From the same perspective, the weakness of the EMH lies in the way it typically has been operationalized, which has been to model individual investors as rational economic agents.

And the notion of Soros et al. that the theory caused the GFC is wildly at odds with both reason and the facts.