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# Market Efficiency: You Ask The Wrong Question

Is the market efficient? This central question in finance creates a polarised debate in the theoretical (academic) and practical (money management) worlds and further afield.

## **Those who can, do; those who can't, teach<sup>1</sup>**

The tenet of this proverb is certainly breached when we research some of the key contributors to the debate on market efficiency.

The roots of the Efficient Market Hypothesis (EMH) can be traced back to Paul Samuelson's 1965 article: *Proof that Properly Anticipated Prices Fluctuate Randomly*. A paradox arises from this hypothesis: the more efficient the market, the more random the sequence of price changes generated by such a market must be. The most efficient market of all is one in which price changes are completely random and unpredictable. In a paper published by J. Doyle Farmer and Andrew Lo<sup>2</sup>, the authors suggest that this informational efficiency is not an accident '*but is a direct outcome of many active participants attempting to profit from their information*'.

The paradox was highlighted by Grossman & Stiglitz: '*If the market were informationally efficient, then no one would have the incentive to acquire the information on which prices are based*'.<sup>3</sup>

Realistically the EMH, as its name suggests, was never intended to be taken as literally true, merely to serve as a point of departure for our thinking. Despite unrealistic assumptions and various other flaws (cited even by its principle creators), market efficiency is widely accepted by the financial community and used to justify the seemingly relentless trend towards passive management. According to the September 2011 edition of the CFA magazine, US\$1.3 trillion is invested in exchange traded funds alone.

Market efficiency does not require the market price of a security to be equal to its true value at every point in time. All it requires is that errors in the market price be unbiased. Ben Graham certainly argued for inefficiency when he stated: '*The market is not a weighing machine, on which the value of each issue is recorded by an exact and impersonal mechanism in accordance with its specific qualities. Rather should we say that the market is a voting machine, whereon countless individuals register choices which are the product partly of*

<sup>1</sup> George Bernard Shaw, *Man and Superman*, 1903

<sup>2</sup> J. Doyle Farmer and Andrew Lo, *Frontiers of Finance Evolution and Efficient Markets*

<sup>3</sup> Grossman and Stiglitz, *The Impossibility of Informationally Efficient Markets*; American Economic Review, 1980



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*reason and partly of emotion*'.<sup>4</sup>

However given reasonable assumptions about economic behaviour, it appears logical to this author that markets eventually recognise mispricing and drive prices to fundamental value. But even this is far from the interpretation of the efficient markets fraternity.

Ben Graham's argument against EMH was that *'ignorance and emotions are powerful factors in stock pricing, preventing markets from operating anywhere near efficiency'*. Thus stock values, he said, *'are typically skewed higher or lower than they should be'*. Individual fundamental investigation of a stock's true worth may show it is temporarily undervalued, hence a bargain waiting to be exploited. This thinking has more recently formed the basis for the behavioural finance school of thinking.

Opposing Graham on this are David Booth and Rex Sinquefeld from the University of Chicago, who set up Dimensional Fund Advisors (DFA) in 1981. This firm embraced investment strategies that are strongly influenced by efficient markets academics. Two Nobel Prize laureates, Robert Merton of Harvard University and Myron Scholes of Stanford University, sit on DFA's board of directors. Another Nobel laureate, Merton Miller of Harvard, sat on the DFA board until his death in 2000. Two other efficient market cheerleaders, Eugene Fama of the University of Chicago and Ken French of Dartmouth, are cited by the company as the *'chief intellectual catalysts'*.

Sinquefeld took part in a famous debate on active versus passive investing with Donald Yachtman in October 1995 in San Francisco. *'It's my contention that active management doesn't make sense theoretically and isn't justified empirically. Other than that, it's ok. Passive management, on the other hand, stands on solid theoretical grounds, has enormous theoretical support, and works very well for investors'*.

Dimensional Fund Advisors' website<sup>5</sup> proudly displays the transcript of Sinquefeld's opening statement in favour of passive management. Sinquefeld commenced by referring to Adam Smith, who said that a free market is the best way for the social order to allocate resources. He then affirmed that noted Austrian Economist Friedrich Hayek extended the work of Smith, introducing the key idea that the price system is a mechanism for communicating information and that the market gathers, comprehends and disseminates widely dispersed information faster than any system man has deliberately designed.

It seems that Hayek's conclusion is largely untested: *'Only by far-reaching decentralisation in a market system with competition and free price fixing is it possible to make full use of knowledge and information'*. Which economy fits the description of free price fixing? For example, Central Banks certainly stand in the way of interest rates' ability to efficiently facilitate *'communication'* between lenders and borrowers.

Value Investor and Austrian economist Chris Leithner offers an interpretation of market efficiency, which contrasts with that of the Dimensional Fund Advisors director.

<sup>4</sup> Ben Graham & David Dodd Security Analysis 6<sup>th</sup> Edition 2009

<sup>5</sup> <http://www.dfaus.com>

*'Perhaps most importantly, to a Grahamite investor and an Austrian School economist, price and value are distinct things. Over extended periods of time they tend towards one another. But at any given moment they will likely differ from one another; and from one moment to the next they may diverge'.<sup>6</sup>*

Leithner stresses that disequilibrium, not equilibrium, characterises the actions among buyers and sellers. *'Markets do indeed tend towards market-clearing prices: but they never attain equilibrium because numerous events – the constant change of plans, discovery of new information and technology, commission of errors and their discovery and rectification – intrude'.*

In his 1995 address Sinquefeld posed a rhetorical question: *'So who still believes markets don't work? In an entertaining presentation his answer grouped active managers with socialists. 'Apparently it is only the North Koreans, the Cubans and the active managers. Socialists and active managers are cut from the same cloth, what links them is a disbelief or scepticism about the efficacy of market prices in gathering and conveying information.'*

Unfortunately the normally eloquent Yachtman's response is proving impossible to find (if anyone out there has it please send on to us!). We expect that he would have ignored the slightly incendiary nature of the argument and pointed out that Sinquefeld is mistaken to have equated the **efficiency of the system** with **efficient pricing of assets**.

Indeed in his recent book, Columbia University Professor, Stephen Penman states, *'One must distinguish efficient pricing in capital markets, about which the theory was originally concerned, from the efficiency of the economic system in general and it is efficient capital markets with which the investor is concerned'.<sup>7</sup>*

Ironically, in 'proving' that active managers underperform, Sinquefeld referenced a study by Mark Carhart, then a University of Chicago Ph.D. student. Carhart used a 4-factor model (effectively an extension of the 3-factor model of Fama and French – adding momentum to book-to-market, market cap and liquidity factors). Carhart concluded that adjusting for these factors, active managers underperform by 1.8% per annum between 1961 and 1993. The core of the irony is that the same Mark Carhart left Goldman Sachs in 2008 having presided as the main lieutenant over the now infamous Global Alpha Fund, with assets shrinking (amid seismic losses) from U\$12.5 billion to U\$2.5 billion during the financial crisis in mid-2008.

In a recent interview Carhart was asked about his biggest lesson from the financial crises. His response certainly confirms a change in view from his Ph.D. thesis and a seemingly obvious move away from the efficient markets school. *'Probably the most important lesson was the magnitude of commonality in the investment approach we followed across the broader investment community. Success in quant investing in the future will hinge on developing unique ideas that are differential (sic) from competitors. The second lesson is that models and approaches need to be more dynamic. When evaluating long-term historical price*

<sup>6</sup> Ludwig von Mises, Meet Benjamin Graham: Value Investing from an Austrian Point of View

<sup>7</sup> Accounting for Value, Columbia Business School Publishing, 2011

*patterns, it's hard to appreciate how quickly the models needed to evolve. Having lived through 2007 and 2008 — and the earlier LTCM crisis and the Internet bubble — I better appreciate the need for dynamic models which will have more variation in risk and signal composition'.<sup>8</sup>*

Dimensional Fund Advisors have been tremendously successful, both in growing assets, and also in investment performance terms. Their philosophy – that markets work and investors are rewarded for taking risks – is derived from the Fama and French Multi-Factor Model<sup>9</sup>. *'Financial science over the last fifty years has brought us to a powerful understanding of the risks that are worth taking and the risks that are not'.<sup>10</sup>*

As proponents of market efficiency, DFA assumes risk factors explain why smaller companies and those companies valued at low price-to-book are shown to outperform. *'If asset pricing is rational, size and price/book must proxy risk.'<sup>8</sup>*

In other words these stocks are higher risk and therefore generate higher returns. But there is absolutely no evidence that these factors might represent risk! Interestingly the original research by Dimensional's 'chief intellectual catalysts' recognises this: *'If asset pricing is irrational and size and price/book do not proxy for risk, our results might still be used to evaluate portfolio performance and measure expected returns from alternative investment strategies'.<sup>8</sup>*

In May 2011 Professor Bruce Greenwald expanded on this point from the perspective of a value investor. *'Attempts have been made to associate the higher cross-sectional returns of "cheap" stocks with higher levels of risk, but these risk factors never turn out to be empirically measurable independent of cheapness. Behavioural research phenomena such as loss-aversion, overconfidence, and lottery preference — the disproportionate desirability of low probability, very high reward outcomes — account for the value of "cheapness" much more directly.'<sup>11</sup>* Therefore it is very difficult to justify DFA's statement that their investment strategy is based on a 'strong scientific basis'!

Maybe this gets to the nub of the issue. There is no science here. The finance world needs to get away from the idea that we can invent some theory or empirical model in a scientific fashion. Charlie Munger evoked Freud when he accused economists of physics envy. *'Economics is too complex a system and the craving for that physics-style precision does nothing but get you in terrible trouble.'<sup>12</sup>*

Andrew Lo's witty contribution to this debate at a lecture in Harvard is revealing: *'In physics, you have three laws which explain 99% of physical phenomena. In finance, we have 99 laws which explain 3% of economic phenomena.'*

<sup>8</sup> <http://www.chicagomaroon.com/2010/4/23/uncommon-interview-with-mark-carhart>

<sup>9</sup> Fama and French 'The Cross section of Expected Returns', Journal of finance. 1992

<sup>10</sup> <http://www.dfaus.com/philosophy/dimensions.html>

<sup>11</sup> 'Value Investing's Long Run: what the gradual turn away from modern portfolio theory holds for value investing', Bruce Greenwald May 2011

<sup>12</sup> October 2003 Charlie Munger lecture to the economics students at the University of California at Santa Barbara

The Carhart study mentioned earlier (and many others like it) highlight another generally accepted method to assess market efficiency. Carhart measures whether the practitioners actually delivered better performance than the market (adjusted for 'risk'). It is often argued that unless active managers can systematically outperform, then this is proof that the market is efficient. The theory is eminently logical, but in this author's view, is flawed in practice. It might seem rational to group active managers together and compare their returns against the market but:

- This ignores the reality that on average active managers at best will achieve the return of the market. Clearly, more than 50% of people cannot be above average drivers!
- Most of these studies adjust for risk in a multi-factor manner *à la* Fama and French. The case for this model is highly tenuous (as they acknowledge themselves).
- It is not appropriate to just lump together all 'active' managers of different styles (e.g. value, growth, small cap, large cap). See *'The Superinvestors of Graham-and-Doddsville'* speech by Warren Buffett at Columbia Business School in 1984 for an argument that a value approach outperforms.
- The business risk in active management is immense. This has resulted in the average mutual fund manager hugging indices. Few are willing to stand up and be counted. How can they outperform?
- How many managers are properly incentivised to focus on long-term performance and are committed to remaining *in situ* to deliver this?

Sir John Templeton summarised this as follows: *'If you want to have better performance than the crowd you must do things differently than the crowd.'*

Meanwhile Charlie Munger highlighted the modern lack of tolerance for short-term underperformance: *'In investment management today, everybody wants not only to win, but to have a yearly outcome path that never diverges very much from a standard path except on the upside. Well, that is a very artificial, crazy construct.'*<sup>13</sup>

Clearly none of this proves the case for active management, or whether or not the market is efficient, but merely makes the case to be careful when interpreting the theoretical performance studies.

The biggest irony is that both schools of thought, that of Sinquefeld, Fama and French on one side and Graham, Yachtman and Greenwald on the other, all advocate a similar investment strategy. Both schools believe in outperformance, but for different reasons.

Mathematics professor Edward Thorp, most recently at University of California, is famous for research into card counting as a strategy for winning at Black Jack and the three formulae that were forerunners to the Black-Scholes Option Pricing Model. For many years Thorp has successfully put theory into practice through his two hedge fund vehicles.

<sup>13</sup> "A Lesson on Elementary Worldly Wisdom As It Relates To Investment Management & Business", Charles Munger USC Business School 1994

Thorp's views on market efficiency are most enlightening: *'Imagine a casino where everyone is playing blackjack and they're all losing 2% because they're using a naive strategy that on average loses that much. Then one person figures out how to get an edge by counting cards. Did the blackjack market suddenly become inefficient at that point or was it inefficient before anybody figured this out? If the person who figures out how to count cards does nothing, is the market still efficient?'*<sup>14</sup>

Thorp really shows a master's understanding of the issue, possibly combining his academic and practical experience. *'The talk about the markets being efficient or inefficient is not quite the right way to look at it. It's a combination of what is going on in the markets and the participants in the marketplace. Market efficiency or inefficiency is a joint property of the market itself, what's going on in it, and what the participants know and are able to do. However that will vary from person to person; for example Warren Buffett has knowledge about the fundamentals of a lot of companies, among other things. So in that area the markets are inefficient from his point of view, but there are a hundred million people out there who don't have that knowledge and they should behave as if the market is efficient because from their point of view they don't have an edge at all.'*<sup>14</sup>

A manager's assertion that he can beat the market because it is inefficient isn't a credible statement. It just isn't enough. One needs to be able to demonstrate knowledge that provides a real and sustainable advantage.

The correct question is not: Is the market efficient? Rather, it should be: *What is it about you and your firm that gives you the investment edge?*

***The Value Investment Institute, September 2011***

<sup>14</sup> The Masters Series, Interview with Edward O. Thorp Volume 12, 2011