

The Elusiveness of Investment Skill

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The investment management business is all about skill, but skill is elusive. Indeed, some have suggested that skill is not just elusive but illusory: there is no such thing as skill, or no reliable way of identifying it. This suggestion is a key component of the efficient market view of the world (EMV), which has posed a major challenge to active investment management.

The EMV no longer dominates academic finance. We now have a host of alternative theories, such as behavioral finance, the adaptive market hypothesis, complex adaptive systems, chaos theory, catastrophe theory, and fractal geometry. Thus it may seem that the EMV no longer poses a threat to active investment management.

Not so. The EMV is a combination of insights and myths. The insights do present a challenge to active management, but that challenge can be met. However, meeting that challenge forces us to think more clearly about what skill really is. If you have the wrong ideas about skill, the insights of the EMV will force you to conclude that it doesn't exist.

1. Scarcity and Variety

Before confronting the EMV head on, let's note three preliminary points about skill. The first and most obvious point is that skill is rare. There are lots of competent money managers, but competence is not the same as the kind of talent that gives you a competitive edge. Furthermore, skill is rare throughout the investment world. Hedge fund enthusiasts talk about a brain drain in which the most talented managers have left the long-only world to seek the greater freedom (and higher fees) available in the hedge fund world. However, genuine skill is as rare in the hedge fund world as it is elsewhere in the investment business. Hedge fund managers operate with fewer investment constraints than long-only managers. This is a great advantage for the skilled manager, but gives the less skilled manager more ways of getting into trouble. The transition from long-only investing to hedge fund investing is not easy. Many hedge fund managers are not as talented as they claim to be, and there are many talented long-only managers who have their own reasons for not joining the rush into

hedge funds. The barriers to entry in the hedge fund business are seductively low; the barriers to success are formidably high.

The second point is that we don't know exactly how rare skill is, since there are no generally agreed-upon criteria for determining whether a manager is skilled. There are no "reliable techniques" for separating the skilled from the unskilled. It's easy to count the number of managers who meet specified performance criteria, but, as we shall see in more detail later on, the linkage between skill and performance is loose. This means, by the way, that skill is not the same thing as alpha, since alpha can be measured but skill cannot. Once you've calculated the alpha from a series of historical returns, the question is: Does this alpha reflect real skill, or did the manager just happen to be in the right place at the right time? Calculating the t-statistic of the alpha does not conclusively settle the question: smart and well-informed people may disagree about the level of skill that lies behind a good record. Pronouncing a manager to be skilled is a value judgment, like pronouncing a stock to be attractively priced. So the ability to identify skill is itself a form of investment skill. When you're hunting for skilled investors, it takes one to know one.

The third point is that skill is multi-faceted: it is not some monolithic quality that takes the same form in every case. For example, skill involves a combination of "book smarts," "street smarts," and "emotional intelligence," but the proportions vary considerably from manager to manager. And there are wide variations in risk attitudes: some skilled managers are very risk averse, quick to exit losing positions, while others are more loss-tolerant, and may even double down on losing positions. The variations of skill are endless. Buffett's skill is utterly different from George Soros', just as Picasso's genius is utterly different from Rembrandt's.

2. The Two Main Insights

The EMV's critique of active management is based on two insights: *There Are No Free Lunches* and *Nobody Knows Anything*. The first point reminds us that return requires risk: there are no opportunities for risk-free arbitrage, no \$100 bills sitting on the sidewalk waiting to be picked up. In the language of the EMV, there are no "market inefficiencies," precisely because so many people are looking for them. The EMV is based on a giant negative feedback loop, or a Zen riddle: we all try so hard that we are bound to fail. (Here the Zen master would insert various inscrutable remarks about the futility of all human striving.)

It is unrealistic to insist dogmatically that there are no market inefficiencies. There may be a few "pricing anomalies" lying around. However, if there are any market inefficiencies then they are few and far between, not abundant enough to support the multi-trillion dollar business of active investment management. In particular, the hedge fund business is not designed to exploit market inefficiencies. There are many hedge fund strategies that call themselves "arbitrage"—merger

arbitrage, convertible arbitrage, fixed income arbitrage, capital structure arbitrage, and so forth—but all these strategies involve risk. This is true even in the current environment. Investor fear is creating some exceptional opportunities, but they are not risk-free. It takes skill to catch a falling knife.

The second insight, *Nobody Knows Anything*, reminds us that Wall Street is just like Hollywood. In each place, people in the business know a lot, but they don't know what they really want to know. In Hollywood, nobody can predict whether a movie will be a smash or a bomb. On Wall Street, nobody can predict stock prices or manager performance.

The academic literature tells us that the future is not a simple extrapolation of the past. But even people who make fun of the academic literature accept the fact of unpredictability. We make jokes about generals who fight the last war and people who drive by looking in the rear-view mirror. Money managers who pay little attention to the EMV will cheerfully confess, "Hey, if I could predict the future do you think I'd be working for a living?"

The two insights of the EMV tell us something about manager skill. If skill required exploiting market inefficiencies and/or predicting the future, then there would be no such thing as skill. But skill does not require inefficiencies: it requires the ability to make intelligent judgments about risk and reward. Similarly, skill does not require predicting the future: it requires the ability to form reasonable expectations and to respond intelligently when those expectations are confounded. As George Soros observed, the question is not whether you're right or wrong—it's how much you make when you're right and how much you lose when you're wrong.

3. Inefficient Markets vs. Market Inefficiencies

Although there are no market inefficiencies, the stock market is not efficient. An efficient market is a community of totally rational investors who jointly constitute a highly efficient information processing mechanism. These investors are either immune to fear and greed, or those mundane emotions are held in check by a powerful economic calculating machine. This myth is now dead, or near death. In the real world, there are bubbles and panics. A bubble is an epidemic of greed, while a panic is an epidemic of fear. Bubbles and panics aren't rare, but they don't happen every day. Greed and fear are with us every day. Greed drives the search for return, while fear drives the sensitivity to risk. Investing is all about the tradeoff between return and risk, which can sometimes get pretty abstract. The daily conflict between fear and greed is not abstract.

In addition to fear and greed, there is a long list of "investor biases" catalogued by students of behavioral finance. Indeed, the main purpose of behavioral finance is to understand the many forms of investment behavior that defy the simple EMV models of rationality and efficiency. Behavioral finance folks talk

about “heuristics and biases”; David Letterman would call them “stupid investor tricks.”

Flesh-and-blood investors do not behave like economic calculating machines. In that sense, the market is not efficient. Then why are there no market inefficiencies, i.e., free lunches? The answer comes from Keynes: markets can remain irrational longer than you can remain solvent. It’s tempting to divide the world into “smart money” and “dumb money,” with the smart money earning “alpha” from the irrational behavior of the dumb money. The problem is that the dumb money can set prices longer than the smart money can remain solvent. This is especially true if the so-called smart money is using big leverage.

The recent housing bubble offers a perfect example of this phenomenon. Lots of smart people knew that the US housing market was a ticking time bomb, but bubbles almost always last longer than smart people expect. Many investors made money from the unwinding of the credit bubble, but a lot of smart people went short too early. Timing is everything.

4. Unpredictability vs. Random Walks

The EMV is right to emphasize the unpredictability of markets, but wrong to confuse unpredictability with randomness. A random walk is like a sequence of coin tosses, where each toss is independent of every other toss and you can’t predict the next toss from the prior 100 tosses. Random sequences are unpredictable, but not all unpredictable sequences are random: randomness is a very specific kind of unpredictability. In particular, the things that investors really care about—economic cycles and market trends—are unpredictable but not random.

The outcome of a coin toss is neither predictable in advance nor explainable in retrospect. Economic and market phenomena are different: we can explain them after the fact even though they are not predictable in advance. They are explainable because they have a structure: they are not sequences of totally independent events. The housing bubble and the recent panic are perfect examples of explanation without prediction. We can identify multiple forces that shaped the bubble and triggered the panic, but nobody could have predicted the turning point in advance.

Market trends and economic cycles reinforce themselves until they destroy themselves. In a bubble, rising prices attract more buyers, who drive prices higher. The opposite holds in a panic. A run on the bank (remember Bear Stearns?) is a classic case of a self-reinforcing trend: nobody wants to be the last to sell. Similarly, in a bubble nobody wants to be the last to buy.

Self-reinforcement takes place mainly in the early and middle stages of a trend. In the later stages the trend begins to plant the seeds of its own destruction:

there aren't enough new converts available. That's why trends ultimately destroy themselves.

Trends are real, but there is no "science of trends" that enables us to predict the turning points. Naïve investors believe that, if there are trends, then there must be some way to make predictions. The EMV counters that prediction is not possible, so there are no trends: only random walks. Both sides make the same mistake: they link trends with prediction.

The unpredictability of markets has two very different sources. Consider the current anxiety about the possibility of a severe recession in the US. This anxiety presents two problems: we don't know how bad the economic news will get, and we don't know how much bad news is built into current prices. There are no recession futures, and even if there were recession futures the expectations reflected in that market might be different from the expectations reflected in the market at large. So we have to read market entrails in order to decipher what the market expects. Smart people will disagree about what the entrails say. We all talk confidently about what the market expects, but in many cases we don't really know what the market expects.

Ironically, the EMV underestimates the unpredictability of markets. According to the EMV, current prices reflect everything that we know about the future, so prices will move only in response to what we don't know. The market is thus a price-setting mechanism whose output, a price, is unpredictable because we don't know what the relevant inputs will be. But there is a bigger problem: even if we knew the inputs, we might not be able to predict the output. If the Fed delivers another bigger-than-expected rate cut, will that be received as good news (because the Fed is taking more bold action) or bad news (because the Fed knows how bad the situation really is)?

The non-mechanistic character of markets is most obvious on the days when markets experience wild intra-day swings. What we see then is not a homogeneous group responding instantaneously to new information, buying on the good news and selling on the bad news. What we see instead is a highly non-homogeneous group trying to figure out what the news really means. We have been spoiled by several years of unusually low market volatility, during which disagreements among investors tended to be polite and orderly. What we have now is a shouting match among investors with very different perceptions of what's going on.

5. Unpredictability and Physics Envy

The unpredictability of markets flows ultimately not from any specific financial theory but from the chronic unpredictability of human behavior. Prices reflect the combined impact of millions of investment decisions, many of which are *hard* decisions. Investors spend a good deal of their working lives poised on a knife's

edge, torn between Buy and Sell. The hallmark of a tough decision is that even the person making the decision doesn't know what he'll decide. Tough decisions are thus another example of explanation without prediction: the person making the decision doesn't know what he'll decide, but after the fact he can explain why he made the decision that he did.

The literature of behavioral finance focuses on highly simplified and idealized decision-making conditions in which it's possible to predict how the experimental subject will behave. This is totally legitimate: the whole point of experimentation is to simplify. The experiments help isolate important "forces" that influence investment decisions, but that's very different from understanding the full complexity of a tough call. The same issue arises in physics: we perform experiments under tightly-controlled conditions that are radically different from the messy complexities of real life.

The physical sciences look like paradigms of predictability. For example, the website of the National Aeronautics and Space Administration tells us that there will be a total eclipse of the sun on September 4, 2100. The eclipse will last 3 minutes 33 seconds; it will be visible from Africa and Antarctica but not from the US. Our knowledge is so detailed that this eclipse, which will happen 92 years in the future, may seem inevitable, or predetermined: given the current state of the universe, the eclipse must happen.

Not so: even when the world seems most predictable, there is unpredictability lurking beneath the surface. [G. K. Chesterton makes the point somewhat melodramatically: "Life is not an illogicality; yet it is a trap for logicians... Its exactitude is obvious, but its inexactitude is hidden; its wildness lies in wait."] There is a wide range of events that might prevent the eclipse, of which some are "random" and some involve human decision making. A sample random event would be a distant supernova that might slightly alter the relative positions of the earth, moon, and sun. As an example of human decision making, imagine a bizarre science-fiction scenario in which we must delay the eclipse of 2100 in order to avoid some major cataclysm. This scenario is a souped-up version of the crisis in the movie *Armageddon*, in which an asteroid is predicted to strike the earth. When the equations of celestial mechanics predict a disaster, people do not sit back and wait for the inevitable: they do everything in their power to prevent the "inevitable" from happening.

People often joke that investing isn't rocket science. Though usually intended as a comment about the average I.Q. of the investment community, the joke also marks an apparent chasm between the hard sciences and the world of investing. The hard sciences offer order, precision, and predictability. The world of investing bristles with chaos, imprecision, and unpredictability. But real-life rocket science is surprisingly like investing, since the real-world applications of the physical sciences are filled with unpredictability. The gritty business of managing a space mission is saturated with uncertainty and risk, unlike the elegant universe

presented in physics and chemistry texts. Investing isn't rocket science, but real-world rocket science isn't the rocket science of idealized laboratory conditions.

Social scientists often suffer from physics envy: the grass looks more orderly and predictable on the other side of the fence. But this envy is based on two misconceptions. First, even in the physical sciences the predictability is not total. Second, even when there is no prediction there can still be plenty of room for interesting and powerful explanations.

6. Negative Feedback Loops

To dig deeper into investment skill, let's take a closer look at two specific applications of the main EMV insights. *No Free Lunches* includes the claim that there are no "systems" for extracting incremental return from the markets. The argument here is based on a negative feedback loop: if there were such a system, then the widespread acceptance of the system would destroy the opportunities that the system is designed to exploit. *Nobody Knows Anything* includes the claim that the past performance of a money manager does not predict the future performance, which takes us back to the earlier idea of a "loose linkage" between skill and results.

Negative feedback loops are familiar in markets. If too many people try to exploit the January effect, then the January effect becomes the December effect and eventually disappears. When an undiscovered opportunity becomes an overcrowded trade, the opportunity is gone. However, this fact about markets does not rule out manager skill. First, having skill is not the same as having a "trade" or a "system." A system is a set of trading rules that can be mechanized. Skill involves talent, judgment, and the kind of flexibility and adaptability that cannot be mechanized. Second, negative feedback loops do not operate instantaneously: it takes time for a strategy to destroy itself. Early adopters can make money even if the late entrants are left holding the bag. This leaves room for manager skill as the ability to make informed judgments about where we are in the life cycle of a trade. But, since we're talking about skill, there are no rules for making these judgments.



7. A Closer Look at the Coin Tossing Analogy

As for the loose linkage between skill and results, the unpredictability of manager performance rules out the following line of thought: this manager has had superb historical performance, therefore the manager has skill, and hence the manager will do well in the future. This line of thought uses skill as the magical missing link that converts past success into future success. But there is no such missing link. Past success does not always indicate skill, and skill does not always indicate future success.

The EMV literature is filled with coin-tossing contests in which some lucky contestant throws Heads 20 times in a row. When we're looking at an unusually good investment record, how do we distinguish luck from skill? A closer look at coin tossing will help answer the question.

Coin-tossing contests always feature *fair* coins, i.e., coins whose physical constitution makes Heads and Tails equally likely. But a fair coin may produce a long run of Heads, since the outcome of a particular toss depends on a long list of factors other than the physical constitution of the coin. (For a fascinating discussion of the physics of coin tossing, see E. T. Jaynes, *Probability Theory*, especially Chapter 10, "Physics of 'random experiments.'") Now let's think about *unfair* coins. Let's say that a coin is *Heads-biased* if it is imbalanced in such a way that Heads is more likely than Tails. For example, imagine a sandwich construction, half metal and half Styrofoam, so the coin tends to land on the heavier side. A Heads-biased coin has an edge in producing runs of Heads, but an edge is not an ironclad link. Just as a fair coin may produce a long run of Heads, so a Heads-biased coin may produce a long run of Tails.

To determine whether a coin is Heads-biased, the best approach is not to flip the coin but to perform other tests that are focused more directly on the physical constitution of the coin. For example, we might examine the coin for signs of a suspicious sandwich construction, or stand it on edge to see if it tends to fall toward one side, or drop it in a vertical orientation to see if it tends to land on one side.

Similarly, to determine whether a manager is skilled the best approach is not to examine the performance record but to examine the manager. The performance record reflects the interaction of "manager factors" (his/her intellectual and business acumen, the strength of the team, etc.) and "market factors," just as the outcome of a particular coin toss reflects the interaction between the physical constitution of the coin and the myriad specific circumstances of the toss. The performance record helps shed light on the "manager factors," but the record is just part of the story.



8. Hot Hands, Skill, and Performance

In thinking about coin tosses and manager performance, it is essential to distinguish between *bias* and *independence*. A Heads-biased coin has an edge in producing Heads, but still the result of each toss is independent of the result of every other toss. Similarly, a skilled manager has an edge in producing good performance, but it may still turn out that performance in one time period is statistically independent of performance in other time periods.

This point is closely related to the phenomenon of “the hot hand.” In a classic paper Gilovich, Vallone, and Tversky (the same Tversky who would have shared the 2002 Nobel Prize in Economic Science with Kahneman if he had lived) studied the hot hand phenomenon in basketball. They demonstrated that when players shoot for the basket, the result of each shot is statistically independent of the results of the preceding shots. However, as the authors emphasize, statistical independence is consistent with the fact that some players are more skilled than others, and thus have a higher probability of making the basket. Similarly, some managers are more skilled than others, and thus have a higher probability of doing well, even though sequences of returns may show various types of statistical independence.

Past success does not always indicate skill (maybe it was good luck), and skill does not always predict future success (since there’s always room for bad luck). However, this is just the beginning of the story, not the end. The contrast between skill and luck is a hopelessly crude tool in thinking about manager performance. In analyzing historical performance, the key is to get beyond that crude tool in order to develop a more subtle understanding of how the “manager factors” interacted with the changing market environment.

A similar point applies to future performance. When you worry that a skilled manager may fail to perform in the future, it’s useless to worry about “bad luck.” The only useful worries are specific worries linked to the specific reasons why skilled managers often fail. Sometimes the problem is over-confidence: success breeds hubris, which breeds a higher risk profile, which breeds failure. The epitaph reads, “He was a victim of his own success.” Sometimes the problem is under-confidence: the manager becomes overly concerned about defending the historical record and “chokes up,” thus becoming merely average. Sometimes the problem is failure to adapt to changing market conditions. The list of potential problems is endless. A skilled manager is not a bond with “alpha coupons” attached. Having identified a skilled manager, you have to be vigilant for the various syndromes that sometimes prevent skill from generating return.



Skill is elusive, but it's not illusory. Indeed, it is real precisely because it is elusive. If your conception of investment skill is unrealistically simple, then the insights of the EMV will force you to conclude that skill does not exist. What makes skill real is the fact that it's more complicated than you might think.

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