



Letter to the Editor: Coin Flipping and Active Management

April 22, 2008

The following letter was received in response to our article [Collective Wisdom, Financial Markets, and Investment Lessons from Google™](#) by Dougal Williams:

Dear Sir:

I am writing in response to the April 1, 2008 article titled, "Collective Wisdom, Financial Markets, and Investment Lessons from Google." In the article, the author uses a thought experiment in which a stadium full of people are called upon to flip coins to reach the conclusion that you cannot tell anything about a manager's future performance from his past track record.

It sounds persuasive until you realize that once you assume that everyone is tossing a fair coin you've already conceded the argument because no one can be "better" at tossing fair coin than anyone else. Dr. Hersh Shefrin, a professor at Santa Clara University, uses a similar thought experiment in his book, *Beyond Greed and Fear* to reach a very different conclusion. Let me try to explain.

Let's suppose we have a group of 42,000 people who each receive one of three types of coins - gold, silver, or bronze. The gold coins are weighted so they have a 60% chance of coming up heads. The silver coins are weighted evenly to give a 50% chance of tossing heads. The bronze coins are weighted to come up heads only 40% of the time.

If everyone tossed their coin 10 times, the group of 42,000 people would average 5 heads. If we want to bet on someone to beat the average of 5 heads out of the next 10 tosses, it would be smart to bet on someone holding a gold coin because each of these people can be expected to throw 6 heads. But, there is one more twist: all the coins are painted green so you can't tell what kind of coin anyone has. Now, let's see if a track record has any value.

At the start, there are 14,000 people who have a gold coin, 14,000 with a silver coin, and 14,000 with a bronze coin. If you had to choose someone to bet on now, your chances of selecting someone with a gold coin are 33%. But if you wait until after the first coin toss the odds improve to 40%. Here's why. Of the 14,000 people holding gold coins, 60% will throw heads so they will comprise 8,400 of the people still in the stadium after the first toss. Of the 14,000 who hold a silver coin, 50% will throw heads, so 7,000 of them will remain. Of the bronze



coin holders, 40% will throw heads accounting for 5,600 of those remaining. After the first toss, there will be 21,000 people in the stadium, but 8,400 of them, 40%, will be holding gold coins.

With each successive toss, the odds of selecting a gold coin holder from the people who remain improve. After the 10th coin toss, there will be 100 people in the stadium. But, 85 of them will have gold coins, 14 will have silver coins and 1 will have a bronze coin. If you select randomly from among the people who threw 10 heads in a row, your chances of picking someone with a gold coin holder are now 85%.

Restricting your choices to those with a track record of throwing 10 heads in a row greatly increases your odds of selecting a gold coin holder who can then be expected to throw 6 heads in the next 10 tosses and thus beat the average of all 42,000 which will be 5.

Since many who hold gold coins will not throw 6 heads in the next 10 tosses, even though they can be expected to, there is a good argument to choose all 100 of the people who threw 10 heads in a row. The expected performance of the entire group of 100 in the next 10 tosses is 5.84. By choosing all 100, the probability of the group averaging more than 5 is higher than if you just choose a single person with a gold coin.

I don't mean to imply that anyone should select managers based solely on their past performance. Investing is a lot harder than tossing coins. My point is simply that the thought experiment used by the article's author to explain why a manager's track record contains no useful information for investors does not stand up to scrutiny.

Best regards,

Ken Kam
President
Marketocracy Capital Management, LLC



Dougal Williams responds:

In my paper, a coin-flipping analogy is used to cast doubt on skill implied by past performance. Ken Kam, in his letter, strongly suggests the conclusion reached in the paper was "you cannot tell anything about a manager's future performance from his past track record." Not quite. The point made in the paper is it is difficult to distinguish luck from skill when comparing past track records. In a given group of managers, some are bound to have "outperformed" simply by pure chance.

Mr. Kam hints that the paper might have attempted to pull the wool over readers' eyes by using a coin-flipping analogy, since "once you assume that everyone is tossing a fair coin you've already conceded the argument because no one can be 'better' at tossing a fair coin than anyone else." On the contrary, I believe the coin-flipping analogy to be particularly relevant *precisely because* skill is not a factor in coin-tossing. The example, therefore, isolates the role chance can play in any outcome. Simply put, it is possible to be lucky long enough to appear "skilled."

In quoting well-known behavioral economist Hersh Shefrin, in addition to describing his own elaborate coin-flipping experiment, it appears Mr. Kam is implying past performance does indeed have predictive value. Specifically, he writes "restricting your choices to those with a track record of throwing 10 heads in a row greatly increases your odds of selecting a gold coin holder who can then be expected to throw 6 heads in the next ten tosses and thus beat the average..." Sounds easy enough, but does it work?

Unfortunately, scores of academic studies indicate past performance is not a reliable indicator of future performance. In the paper, I reference one such study which examined the subsequent performance of the twenty best-performing equity mutual funds from 1983-1993. Of those past winners, only four maintained their stellar record in the next decade. Sixteen failed to even match the market return. While holding a portfolio of yesterday's winners might feel comfortable today, it hardly seems a recipe for investment success tomorrow.

Perhaps the more relevant question for investors (and their advisors) to ask is not whether skillful managers exist or whether such managers can be reliably identified in advance, but rather how will investors and their advisors respond to good or bad manager performance when it inevitably occurs? Again, study after study suggests investors, to their detriment, too readily buy high and sell low (whether via stocks, funds, managers or asset classes).

I will readily admit human emotions are difficult to overcome, even in a simple coin-flipping experiment. In conducting a test in which we tossed a fair coin 100 consecutive times, I too, like many investors, fell prey to the whims of chance.



As a colleague tossed the coin and I sat by tabulating the results, I knew that by the end of the trial we should have flipped somewhere near 50 heads. But, as we recorded head after head--at one point flipping a string of fourteen in a row--I turned to him incredulously and asked, "what are you doing differently?" Of course, he wasn't doing anything differently. It was simply luck. But with the odds of recording a string of 14 consecutive heads in a trial of 100 tosses at 1:370, had he not replied that he wasn't doing anything differently, I probably would have believed whatever creative explanation he could have concocted.

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