A BAR SET HIGH

December 2009

A recent news story revealed that a team of scientists at Stanford and UC Santa Cruz are challenging the conventional thinking that coin flips are 50-50 propositions. Using a mechanical flipping device and high speed cameras, researchers were able to produce results that were statistically significant from the expected half heads, half tails outcome. It was made clear that this did not mean that the mathematics of probability was wrong nor that the results represented a money making opportunity for anyone. Nonetheless, it did not take long for people to ignore the scientists' comments and espouse their own interpretations of the results. A high profile use of a coin flip occurs when the National Football League handles the overtime period with a "fair" coin flip, giving the winner of the flip first possession of the ball. Thus critics of this system now have even more evidence that the "first one to score wins" approach is unfair.

It is no surprise that in today's 24/7 news cycle, this story received attention, nor is it a surprise that some people think they can profit from their version of what the results mean. We have seen the same dynamic with personal finance topics throughout our careers. The media is the enemy of patience and sound decision-making. We are taught little in the way of probability and statistics in school so the unknowing or poorly advised often run afoul. This commentary will discuss some of the more common errors encountered and how we protect our clients from those errors.

We'll start by flipping coins. Grab a coin, a slip of paper, and a pencil. Half your flips should be heads and half should be tails. Flip the coin and write down an "H" for heads and a "T" for tails. Do this twice more for a total of three flips. We guarantee that half the flips did not come up heads. There is nothing wrong with the mathematics of probability yet the expected outcome (1 ½ heads) is impossible.

We often see erroneous, if not impossible, expectations undermine a family's finances. Some buy products with guarantees but do not fully understand what is required to get those guarantees. Some expect unrealistic returns. Some expect their returns to come more consistently or with fewer periods of struggle than that suggested by market history.

Not enough flips, you say? The small number of flips is part of the problem and indicative of error number one: putting to much weight on a small sample size. All trends start with a few steps in that direction. The trouble is just because a few steps are taken does not mean a trend has begun.

We see a lot of investment articles that quote someone calling a change in a trend based on small sample sizes. The source will say something like, "With stimulus money being put to use, we like ABC in this space" or "XYZ is a good play for further weakness in the dollar during the balance of this year" Sadly, we see people act on these short term opinions. They put money with managers profiled in the media for recent good results, ignoring weak, longer term track records, tax ramifications, or the wisdom of the manager's strategy. Most often though, we see people chase performance based on recent market moves. They buy after the market, or parts of it, rise and they wish to sell after a decline. In both cases, they extrapolate recent moves into a trend.

Increasing the number of flips actually decreases the odds of meeting the 50/50 expectation. Flipping a coin four times has 16 possible outcomes and only six of them involve 2 heads and 2 tails. Think of it

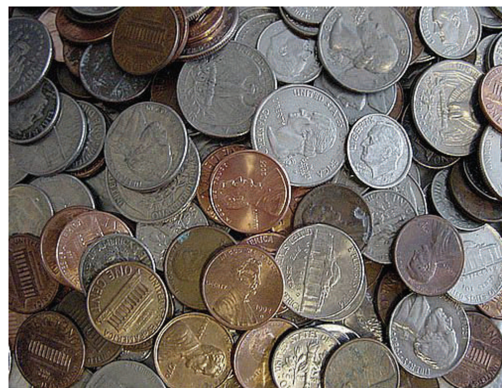
this way: would you say the odds are high or low that after flipping a coin a million times, exactly 500,000 were heads and 500,000 were tails?

What does become more reliable is the **range** of results. The expected result is 50% heads. In a three flip scenario, the range runs from 0% heads to 100% heads. After a million flips, you expect the resulting number of heads to be fairly close to 50% even if you don't expect exactly 50%.

Today's media makes it challenging to stay focused on the long term, but this same dynamic of converging on the expected result is present in market returns. Through September of 2009, you can pick any month since January 1926 and the odds that the return for the S&P 500 index that month was positive is 62%. Consider any three month period in that same date range and the odds increase to 67%. For one-year periods we get 73% and for 3, 5, 10 and 20-year periods, the results are 83%, 87%, 95% and 100% respectively. The longer the time frame, the better the odds are of making money.

Additionally, over time, the range of results narrows. The difference between the best and worst 1-year periods was a whopping 230%. For 5-year periods on an annualized basis, the range shrinks to 57% and drops to 26% and 16% respectively for 10 and 20-year periods. The only money that should be in the markets is money you do not plan to spend anytime soon. Anything shorter term is speculating.

What if you flipped heads 5 times in a row? Would you say that was luck or skill? You would know it is luck because you did the flipping. When someone else does it though, you may be inclined to think they possess a special skill (or a rigged coin). This can be particularly true if the person said they would flip heads 5 times in a row before they started. Your perception of the event is influenced by the person's declaration. You are more likely to believe they have skill if they tell you they have skill even if their results are random or manufactured. In part, it is this psychology which enabled Bernie Madoff to pull off his scam. People wanted to believe Madoff's exceptional results were the product of skill.



Consider two sets of coin flips: 1. HTTHTHTH and 2. TTTTTTTT. Which one is more likely to result by flipping a coin 8 times? The correct answer is "neither" because the odds of either of these sequences occurring is an identical 1 in 256. Studies show that most people think 1. is more likely because it "looks more random." Differentiating between skill and luck is not always easy. Given the thousands upon thousands of investment managers in the marketplace, there are going to be quite a few that will appear skilled but are just lucky.

Most "advisors" work for a financial services firm like a bank, brokerage firm, or an insurance company. Some can even call themselves "independent" because they work as independent contractors to the parent firm. They are still restricted to selling what the company tells them they can sell. At Moisand Fitzgerald Tamayo, we sell no products. We work as advocates directly for our clients and no one, absolutely no one, else. <u>That</u> is true independence.

The next time you read of someone who was financially devastated by a bad investment, chances are excellent that the root of the problem was one of the errors we mentioned today and the wiped out investor committed too much capital based on that faulty premise. This is also true of virtually every Ponzi scheme and other frauds you will hear about. The easiest red flags to spot are high cost, little transparency, or poor liquidity.

We are very protective of our clients' life savings and believe our clients deserve better than what Wall Street has been so successful in foisting on the public. Investing is by its very nature risky but many risks are avoidable. We expect low costs and transparency. We work diligently to avoid products and strategies that are based on managers that "go with their gut", small sample sizes, dubious trends, slick marketing materials or other sweet sounding stories. To get to our clients' money, we demand that one hurdle a very high bar.

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