

## **Financial Fallacies Explained: The Hot Hand Fallacy and the Gambler’s Fallacy**

by Dr. Vicki Bogan

When watching sports, particularly basketball, it is common to hear announcers and commentators talk about players having a ‘hot hand’. Sports fans often assume that a particular player having a streak of successful shots has an increased probability of making the next shot, irrespective of the player’s historical shooting percentage. However, studies have shown that a basketball player’s probability of making a shot, conditional on him having made the previous shot, is **not** generally greater than usual. In a paper published in *Cognitive Psychology*, Gilovich et al., (1985) found that the outcomes of consecutive basketball shots from professional NBA players are independent. They further found some evidence that consecutive shots from these NBA players are slightly negatively related. When people unjustifiably form expectations about what is going to happen next based upon what has just happened, this is commonly called the hot hand *fallacy*. Economists refer to the hot hand fallacy as extrapolation bias.

Despite evidence against the existence of the hot hand, research has repeatedly shown that individuals can be influenced by extrapolation bias. One study (Croson and Sundali, 2005) found that casino gamblers bet more after winning than after losing. In other words, they bet more after winning because they believed that their chance of winning again was greater than before. Another study (Camerer, 1989) showed that basketball betting markets do indeed believe in the hot hand, and that the hot hand fallacy is also at play when people think about buying and selling in financial markets.

Economists and financial analysts assess financial markets using what economists call “base rate information,” – full historical stock market data. Everyday investors do not usually have access to such information, and instead base their judgments about risk and return on “singular information” – data which is more recent or more easily obtained. Making decisions based only upon recent information compared to all of the available data, can often lead investors to think current trends are the best predictors of what will happen next.

For example, during a bull market, people will expect stocks to continue to earn high returns. In a bear market, they will think low returns will continue. This is extrapolation bias at work. You have probably experienced this countless times with clients – a client calls during a bull market and wants to buy or they call during a downturn and are anxious

to sell. As an advisor, it is important to recognize that extrapolation bias may be driving these clients to request exactly the opposite of what you would advise them to do.

So what should you do as an advisor? With respect to the hot hand fallacy, it is important to get clients to focus on the bigger market picture and not just what has been happening in markets recently. One tip would be to provide clients with a deeper historical perspective, using the base rate data. A few weeks, months, or quarters of statistics and price information may not be sufficient. Providing a fuller picture of the historical value of an asset can be helpful. In addition, reminding clients to plan and schedule rebalancing of their portfolios can also eliminate the opportunity for them to rashly buy or sell based upon very recent market trends.

Financial advisors are generally not as susceptible to the hot hand fallacy with regard to financial markets. You are trained to monitor markets in order to provide the best possible advice to clients. However, this familiarity with historical market data can lead you to be influenced by another type of bias called the gambler's fallacy. The gambler's fallacy is the tendency to overweight the probability of an event because it has not recently occurred. The gambler's fallacy can lead individuals familiar with base rate market information to view long streaks as being unlikely. You may feel that a recent run up in the price of a stock is not consistent with the actual historical distribution. Thus, you may be overly prone to predict reversals in stock prices.

Using brain mapping experiments, researchers have found neurological-based evidence of the gambler's fallacy. Xue et al. (2011) found that individuals evaluate random events such that they overweight the probability of an event, if it has not recently occurred. In field experiments, Croson and Sundali (2005) observed that casino roulette wheel gamblers bet in accordance with the gambler's fallacy. For example, if black had not come up in a while on the roulette wheel, bettors would think that black was due to come up and would bet more on black. Making assessments based on a limited sample size like this, leads to the gambler's fallacy. As an advisor, when formulating investment advice, you need to keep the gambler's fallacy in mind so that you do not predict a trend reversal too quickly.

Both the hot hand fallacy and the gambler's fallacy belong to a group of biases that economists classify as "representative heuristics". (Heuristic is a fancy term for rule-of-thumb.) These heuristics involve making assessments based upon a small number of data points. Assuming that a small sample reflects the full distribution of outcomes in the same way that a large sample does, can lead to mistakes. In general, to avoid making these types of forecasting mistakes, it is important to take into account the size of the sample when drawing conclusions.

## **Key Take-Aways**

- The hot hand fallacy or extrapolation bias as the unwarranted extrapolation of past trends in forming forecasts.
- The gambler's fallacy is the tendency to overweight the probability of an event because it has not recently occurred.
- While clients are often more influence by the hot hand fallacy, advisors need to be more aware of the gambler's fallacy and its effects on their advice.
- With respect to the hot hand fallacy, when advising clients it is import to get them to focus on more complete market data and not just recent market trends.
- When developing investment advice for a client, keeping the gambler's fallacy in mind can decrease the tendency to overweight the probability of an event because it has not recently occurred.

## **References**

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