



## Theories on Momentum

*"A trend is a spread of an idea"*

– Adam Robinson

*Warning: This article is a bit longer than my previous ones as it combines some very important research papers in behavioral finance. I have tried to simplify them without compromising their key findings. Hope you like it.*

My exploration of today's topic led me to a story of an amazing trader in Japan in the 18th century. Even if half of his tales are true, he was an extraordinary person. Munehisa Honma (also known as Sokyu Honma, 1724-1803) was a wealthy rice merchant and a trader from Sakata, Japan. Rice, during those times, used to be the lifeblood of the Japanese Economy. From 1710, the Dojima Exchange in Osaka introduced a futures market for rice trading (this is also the first formal futures market of the world). Honma developed an early interest in rice trading in this forward market.

Honma believed the traders' emotions had a profound influence on the prices. Price action and trends reflected this phenomenon and it was possible to use this information to one's advantage. Honma used to meticulously record the daily price action: the open, high, low, and close. Since Osaka was about 600km from Sakata, getting the prices on a timely basis was difficult. According to one of the many stories, Honma had placed 100 of his people every few kilometers to signal the price so that he could receive the price information almost on real time basis. He noticed patterns in the price movement and observed that many of them repeated. This research gave Honma a significant advantage in trading and he accumulated a significant amount of wealth.

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Honma is also credited by many as being the father of Japanese Candlestick Charting. In 1755, Honma wrote a book called 'The Fountain of Gold: The Three-Monkey Record of Money' which is considered to be the first book on Market Psychology (and he was 31 years old!). What Honma proved was that studying the price action (or crowd behavior) of the past could help predict the future price movement.

Of course, this was almost 300 years ago! The markets were not as efficient back then. New information did not immediately get reflected in the prices. One could take advantage of the crowds underreaction (and later overreaction) as the information spreads. In today's environment, it won't work! Right?

### **1993 – THE MOMENTUM ANOMALY**

In the 1980s and the 1990s, the proponents of the Efficient Market Hypothesis (EMH) were steadily increasing their fan base and winning Nobel Prizes. Their stand: the stock prices discount and reflect all possible information about the company. Their opponents, from the behavioral finance camp (along with some very successful investors) debating against this stand. In 1993, two researchers published a paper that tilted the discussion significantly in the favor of the behavioral finance camp. Jegadeesh and Titman published one of the most cited papers in finance, titled 'Returns of Buying Winners and Selling Losers'. The elegance of the paper is in its simplicity.

The researchers obtained stock price data from 1965 to 1989 and measured their performance in a 4x4 matrix: The returns for the past 1, 2, 3 and 4 quarters; and what returns they generated in the holding period of subsequent 1, 2, 3, and 4 quarters. They divided the data into deciles to identify top winners and top losers. The idea was to buy winners (in each of the preceding 4 time periods) and sell losers and examine any excess returns generated over the 4 different holding periods. Of the 16 strategies that they tested, all generated positive excess returns! The best returns were generated in the 12month/3month strategy that bought previous 12-month (4 quarter) winners and sold previous 12-month losers and held the

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position for 3 months. The most consistent positive returns were generated by the 6month/6month strategy.

Until this paper was published, the behavioral camp had demonstrated that stock market participants overreact and, over 3 and 5 years, the losers outperform the winners. Contrarian and Value investing take advantage of this overreaction to generate superior returns. However, the EMH retort was, such outperformance was just compensation for higher risk. For the positive returns generated by momentum investing, that Jegadeesh and Titman presented, there is no strong argument from the risk side. The only good explanation is behavioral! Investors are susceptible to certain behavioral biases that create such patterns in stock prices and thereby excess return opportunities.

There are three important theories that try to explain why momentum works in the short term.

✓ Conservatism and Representativeness – Barberis, Shleifer and Vishny (BSV)

The model of investor behavior presented by BSV is motivated by two important behavioral traits, Conservatism and Representativeness. Conservatism suggests that individuals are slow to change their prior beliefs in the face of new evidence. Representativeness heuristic involves estimating the likelihood of an event by comparing it to a similar event or pattern observed.

Their model assumes that investors thinking about future earnings move between two states/regimes:

*Regime 1:* where investors believe that earnings are mean reverting, which means if there is a positive or negative surprise in this earnings season, it will be reversed in the next announcement.

*Regime 2:* where investors believe earnings will trend in one direction, which means positive or negative surprises sustain in the next announcement.

We start with a positive surprise in the earnings report of a company. Due to conservatism bias, many investors will be in



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regime 1. They will either keep their forecast unchanged or change them less than required. Hence, they underreact. The stock price moves up but remains below its 'rational value'. If the company continues to surprise positively in the subsequent quarters, the investors move to the regime 2. They now expect a trend in earnings and adjust their forecasts of future earnings upwards. At some point, a majority of the investors forecast a much longer growth trajectory for the company under the influence of representativeness bias. The stock price moves beyond the 'rational value' and hence there is overreaction. When reality is not able to meet the high expectations, the reversal begins.

Such initial underreaction and later overreaction is quite evident in the markets. Analysts and investors change their forecast slowly and then end up chasing the stock price. Especially in commodity stocks, initial conservatism and later trend chasing behavior is quite prominent.

- ✓ **News-watchers and Momentum Traders – Hong and Stein (HS)**  
HS divide the investors into two types:

**News-watchers:** These investors (Fundamental investors) make forecasts based on signals that they privately observe about company's future fundamentals (not insider information). They are not influenced by price movements.

**Momentum Traders:** These investors (Trend investors) make their investments simply based on historical movement in prices.

The researchers make an important assumption that private information diffuses slowly across the news-watchers population. Suppose that a company is experiencing improvement in fundamentals, but the results are not yet in public domain completely. Analysts and investors tracking the business get positive clues and they start buying the stock. Slowly the news about the positive prospects of the company start spreading among other news-watchers.

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*Beyond a point collecting more information does not improve accuracy but does lead to overconfidence*

The stock price moves up but not to the full extent warranted by the news and hence remains below the “long term value”. This is the short term underreaction. The move in the price attracts momentum traders who enter based on the trend started by the actions of the news-watchers. At some point in time, the news becomes public and the stock price has moved up significantly. The momentum traders carry the price into overreaction zone, higher than the “long term value”. Without any new stimulus or good news, the high price becomes unsustainable and undergoes a reversal.

This theory is more suited to the momentum seen in the stocks which are small-cap or those that have low analyst coverage. Typically, in these stocks the diffusion of information is slow and hence there is underreaction in the beginning.

✓ Overconfidence and self-attribution bias – Daniel, Hirshleifer and Subrahmanyam (DHS)

DHS took a different approach compared to the previous two papers, using overreaction rather than underreaction as a central cause. Their research is based on two main ideas:

- Analysts and investors generate private (not insider) information through analyzing business trends, interviewing managements, conducting surveys etc. Beyond a point collecting more information does not improve accuracy but does lead to overconfidence. Hence investors may overestimate their ability to forecast future events and determine the fair valuations of companies. They also overestimate the precision of information that is personally collected rather than that from a secondary source.
- The confidence of the investors grows when incoming public information is in agreement with their private information, but it does not fall commensurately when public information contradicts their private information (Self-Attribution bias).

The basic model of investor behavior according to DHS goes like this: At the beginning, the investor collects private information and

**DHS show that momentum is a result of continuous overreaction in the short run**

makes a forecast about the stock. If the private information has good news, the stock is bought, and the price rises too high (higher than fair value) due to overconfidence. On the journey of time towards the forecasted event (say next year results), the investor receives lot of public noise (rumors, interim news, opinions etc.). If this public noise confirms the prior belief, the overconfidence is enhanced and the stock price gets a further push higher, away from its fair value. If the noise is negative, the self-attribution bias kicks in and the correction doesn't completely eliminate the overvaluation. Ultimately, the public information confirms that the initial forecasts were too high and that leads to price falling or reverting towards a more rational price.

If the private information at the start is negative, the equal and opposite impact is seen in the stock price as described in the above model. Thus, DHS show that momentum is a result of continuous overreaction in the short run. I found this model to have some similarities to the reflexivity explanation of trends provided by George Soros. Soros, however, uses the reflexive interplay between price, fundamentals and participants' bias.

## **CONCLUSION**

There is no consensus yet among academicians on which behavioral theory best explains the returns highlighted by Jegadeesh and Titman. Casual observation however shows that parts of the above theories are at play in the market. Momentum investing over the past 25 years has attracted many investors and currently there is a lot of money riding on this anomaly. It is difficult for fundamental investors (especially value investors) to buy a stock just because it is going up fast or sell a stock purely based on the speed of the fall. However, when we view the momentum effect under the lens of the above theories, it is a clue to some slow diffusion of fundamental information. Fundamental investors should, at a minimum, use a momentum screener to short-list companies which then can be evaluated fundamentally to confirm near-term price trends.

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