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Value investing: Insights From the Modern Field of Neuroeconomics

This article is authored by MOI Global instructor Luis García Alvarez, equity portfolio manager of MAPFRE AM. Luis is an instructor at Best Ideas 2018, the fully online conference featuring more than one hundred expert instructors from the MOI Global membership community.

The human brain is one of the most complex and highly evolved structures across the universe. But evolution hardwired the brain with instincts that aided ancient humans in escaping extinction, not in making decisions that have to do with managing their money. In this regard, Neuroeconomics represents a recent field of research with a huge potential in the coming years to help us to better understand how the psychology of individuals impacts the financial markets. The development of modern techniques, such as the functional magnetic resonance imaging (fMRI), are paving the way for new discoveries regarding how human beings approach investment decisions. These new findings are reinforcing the idea that, when we face situations that have to do with our money, we are much more emotional and much less rational than what we would like to be. Today, thanks to the new technologies, we know that these decisions are influenced by a large number of factors that are completely unconscious and at times beyond our control.

The explosion of research in Behavioral Economics, as well as recent Nobel prizes being awarded to Daniel Kahneman (for his work with the late Amos Tversky), Robert Shiller and Richard Thaler can be interpreted as a paradigm shift in economic science. Economics had traditionally been based on complex mathematical models inherited from the field of physics and on the assumption of the existence of rational economic agents (*homo economicus* or *Econs*). These rational economic agents were supposed to be highly intelligent and cold beings, totally lacking in emotions but capable of making the most complex of calculations in a record time, much like Mr. Spock, the character from the television series Star Trek that was extremely popular in the 60s and 70s.

The research in Behavioral Finance, which integrates concepts from psychology, deviates from this unrealistic view of the human being. It focuses instead on the way people really make financial decisions, which is under the influence of a large number of cognitive biases that affect their behavior. This approach to explaining how financial markets work offers a significant contribution to the development and understanding of the value investing philosophy. Basic value investment strategies consist of buying stocks with a significant discount to their fair value during periods of pessimism (about a company or the economy as a whole) and selling them when they trade above their intrinsic value as a result of collective euphoria. As Warren Buffett phrased it, value investors have to “be fearful when others are greedy and be greedy when others are fearful”. They must also be patient and long-term oriented, as it can take time for the market to prove them right.

In their investment process, value investors usually take an entrepreneurial approach, thinking as if they were the sole owners of the firm that they are analyzing. Most of them look for companies with businesses that are easy to understand, have solid and predictable cash flow generation, little or no leverage, good management teams whose interests are aligned with those of investors, high returns on capital employed and sustainable competitive advantages (or economic moats, as Buffett called them). But the trigger that finally defines their decision to invest in a given stock is the possibility to pay a price that is sufficiently below their estimated fair value for the business, offering a margin of safety that serves as a protection against the potential mistakes that can arise in the analysis.

However, buying high-quality businesses, showing most of the characteristics mentioned above, at

significantly low prices is an extremely difficult task. In fact, it is almost impossible to perform under normal circumstances. When a stock trades at low valuation multiples this is usually the result of a general perception within the investment community that something is going bad with the business. When there is uncertainty regarding a company, most people prefer just to avoid its stock, as their brains have evolved to trigger a flight response from a potential danger, just as our predecessors used to do when they went hunting and suspected that a fierce animal could be nearby.

At this point, an in-depth fundamental analysis is needed to find value where others just see problems. When faced with negative news, investors need to differentiate between companies in which the fundamentals have deteriorated forever from those where the damage is just temporary or the impact is much lower than the one discounted by the market (which tends to overreact). Value investors concentrate their efforts in this second group, trying to find companies that have a strong competitive position in their industries and a solid balance sheet that guarantees they will survive after the storm (this is why most value investors prefer to avoid highly leveraged firms). These resilient companies represent extremely attractive opportunities for the patient investor that has the ability to wait until things revert to the mean (or even improve further, if one manages to find *antifragile* companies as defined by Nassim Taleb). However, for this process to be successful an in-depth fundamental analysis is usually not sufficient and the temperament of the investor will play a central role. He or she will need to remain committed to his ideas against the general view of the other players in market, while being open to reviewing the initial thesis with humility if new confronting information appears. Given the limitations of our brains in dealing with fear and stressful situations, a solid and easy-to-repeat investment process is crucial for those portfolio managers who decide to follow a contrarian approach.

The brain of the investor is not hardwired to buy stocks from companies that are facing difficulties, although those may be temporary. Faced with uncertainty, our mind reacts with fear or rejection, predisposing us to run away from problematic stocks. This is due to a psychological reaction in our brain that activates the amygdala. The amygdala is the region responsible for multiple emotional responses, such as fear or anger. When we consider financial decisions, the amygdala creates an aversion to risk and can make investors become paralyzed by fear, being unable to take a rational decision and hence missing attractive opportunities. This is why people will feel more comfortable buying stocks from companies that are commonly perceived as “high-quality”. Popular stocks will not have an influence the amygdala. Just on the contrary, they will activate the reward system of the brain, releasing endorphins and creating a sense of well-being to the investors holding them.

For the long-term investor, buying high-quality companies can undoubtedly be a very profitable strategy, given that they can compound very attractive returns for their shareholders over time. For this kind of stocks, even paying a fair price may be enough to protect your capital, as the margin of safety can come from the quality of the business itself. This is the reason why the investment universe of many value investors ranges from decent companies selling at large discounts, to high-quality businesses trading at what they think is their fair price. They avoid businesses with poor fundamentals even if the stock looks temptingly cheap, but also brilliant companies if everybody else is buying them. The problem with the latter is that, as a result of the common perception about the company, very positive expectations get incorporated in the consensus and the stock becomes significantly overpriced. This can completely eliminate their margin of safety (wherever it comes from), increasing the probability of making an investment mistake.

A clear example of the risk from overly optimistic expectations about a stock is the reaction of investors to earnings releases. In his book *Contrarian Investment Strategies: The Psychological Edge*, David Dreman talks about a series of studies he did over time in collaboration with Drs. Eric Lufkin, Vladimira Llieva, Nelson Woodard, Mitchell Stern, and Michael Berry. Their results showed that earnings surprises often helped the performance of out-of-favor stocks (those trading at low valuation multiples), while negatively affecting the returns of favorite stocks (trading at elevated valuation

multiples). This suggests that investors should take advantage of the high rate of analyst forecast error by selecting out-of-favor stocks to enhance portfolio performance. In a second step, they separated positive surprises from negative ones. The study showed that when a negative surprise arrives for a favorite stock, the results are devastating. After all, investors expect only glowing results from their favorites, as they overconfidently believe that only good things will happen to them in the future. These stocks are not supposed to disappoint, and this is the reason why investors are willing to pay top dollar for them. However, for unloved stocks, where expectations are already low, the occurrence of a negative surprise was found to be not much of an event in the surprise quarter and definitely a nonevent in the nine months following.

Dreman et al. defined two categories of earnings surprises for favored and out-of-favor stocks. They called the first category an “event trigger” and the second a “reinforcing event”. They defined an “event trigger” as unexpected negative news about a stock believed to have brilliant prospect, or unexpected positive news about a stock believed to have a mediocre outlook. An “event trigger” changes the perception of investors about a stock, from positive to negative or vice versa. The second category of earnings surprises was called “reinforcing event” and was defined as positive surprises for favored stocks or negative surprises on out-of-favor stocks. Rather than changing the investors’ perception about a stock, this kind of earnings surprises reinforced their current beliefs. The results of the study showed that the response of the market to unanticipated good and bad news is remarkably different for favored and out-of-favor stocks. “Event triggers” result in a perceptual change for investors and have a major impact on stock prices through the end of the year. “Reinforcing events”, on the other hand, have a minor effect on stock prices by the end of the twelve months following the surprise.

These results strengthen the case for investing in unloved or unpopular companies and seem to have a physiological explanation coming from the field of Neuroeconomics. Let us take a look first at how the release of dopamine affects our feelings. Dopamine is a chemical released by the body that is associated with the pleasure system of the brain. It provides feeling of enjoyment and reinforcement, motivating a person to perform certain activities. The neurons that are able to release dopamine are activated by rewarding events that are better than predicted, they remain uninfluenced by events that are as good as predicted and they are negatively influenced by events that are worse than expected. Note that the structure of these outcomes corresponds to the four types of earning surprises that Dreman et al. defined in their analysis.

According to a research study by Pammi Chandrasekhar, C. Monica Capra, Sara Moore, Charles Noussair, and Gregory Berns published in *NeuroImage* (2008), higher-than-expected rewards, such as a positive surprise for an unloved stock (the first type of “event trigger”), result in a release of dopamine in the brain. Additionally, another study by Schultz, Montague and Dayan published in Science (1997) found that dopamine neurons activate when people believe that a reward is coming but, if the reward finally does not arrive, they will stop firing. This situation is equivalent to a negative surprise for a favored stock (the second type of “event trigger”) for which investors believed that only positive news would come. This will make the brain feel disappointed as it is deprived from its expected shot of dopamine. Finally, the two other types of earnings surprises, defined as “reinforcing events”, do not seem to have much impact in our neuroprocessing. In these cases, the outcome was seen as highly probable and, hence, was already anticipated. These series of findings are consistent with the results obtained by Dreman et al. for the financial market, where the impact of an “event trigger” on the stock price was shown to be about four times larger in absolute terms than the one of a “reinforcing event” in the quarter of the surprise, and almost twenty-four times as much after one year. From the investor’s point of view, the advances in the field of Neuroeconomics seem to support the case for contrarian strategies.

As we have already mentioned, our brain is a survival machine and it feels safer when we act as part

of a group. However, value investing requires portfolio managers to take a contrarian approach and to deviate from the crowd. This is something that the large majority of individuals are not prepared to do, either because they are not able to overcome their own cognitive biases or just because they prefer not to put their professional careers at risk if they happen to underperform the market in the short-term. This is the reason why, despite its recent growth, value investing will never be the part of the mainstream as, by definition, it implies doing things differently and buying undervalued stocks that other investors do not want to hear about. Portfolio managers cannot expect to get extraordinary results by just betting with the consensus, because the information will already be incorporated in the market price. To obtain superior results, it is necessary to deviate from the herding behavior and to follow our own analysis. But we know by now that this will make our brain feel uncomfortable most of the time.

Indeed, even when the contrarian investor is right, there are usually not many people willing to celebrate the good news with him or her given that, by definition, most of the other investors were holding the opposite side of the trade. Take as an example the film The Big Short (based on the book by Michael Lewis with the same title) and think about the words by the character of Ben Rickert, the retired hedge fund manager played by Brad Pitt and based on Ben Hockett in real life. When his two young friends were celebrating the idea to short mortgage bonds and get extraordinary profits if the housing market collapsed, Ben cautioned them to temper their joy as they ultimately were “betting against the American economy”. If they were proven to be right, “millions of people will lose their jobs” and suffer massive hardship of all kinds. This idea about the intrinsic loneliness of the contrarian investor was also brilliantly summarized by Seth Klarman in the 2015 Baupost Group letter to clients: “You don’t become a value investor for the group hugs”. However, the field of Neuroeconomics has shown that our brain likes the group hugs and is not designed to drive us comfortably through the road that can lead us to superior investment results. This gives a huge importance to digging deeper into the understanding of our minds and to the design of strategies that allow us to benefit from the systematic mistakes of other investors while protecting our decisions from our own cognitive biases.