



The Evidence that Emotion Dominates Market Pricing

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Last week, I [introduced](#) the concept of behavioral portfolio management (BPM) as a way to build superior portfolios.

BPM is built on the dynamic interplay between two investor groups and rests on three basic principles. I will discuss the first basic principle in this article, the second in a series of five.

What is BPM?

BPM posits that there are two categories of financial market participants: emotional crowds and behavioral-data investors (BDIs). Emotional crowds are made up of investors who base decisions on anecdotal evidence and emotional reactions to unfolding events. Human evolution hardwires us for short-term loss aversion and social validation, which are the underlying drivers of today's emotional crowds. On the other hand, BDIs thoroughly and extensively analyze behaviorally driven price distortions and build portfolios based on these distortions.

Basic Principle I: Emotional crowds dominate pricing

BPM posits that the emotional crowd usually dominates the price discovery process. This means that prices infrequently reflect true underlying value. Even at the overall market level, price distortions are the rule rather than the exception.

For many market participants, this principle is uncontroversial. The chaotic nature of the stock market shows little outward signs of rationality. Prices swing wildly based on the latest events or rumors. For many investors, the contention that prices are emotionally determined is consistent with their market experiences. But it is necessary to examine stock price data to truly grasp the importance of emotions in the price discovery process.

There is considerable evidence that stock prices are not driven by fundamentals and that emotions play a major role. Robert Shiller highlighted excess market volatility in 1981 and it has been hotly debated since. But after 30 years of empirical efforts to explain excess volatility and prove the efficiency of markets, [Shiller](#) (2003) stood by his initial assertion:



After all the efforts to defend the efficient markets theory there is still every reason to think that, while markets are not totally crazy, they contain quite substantial noise, so substantial that it dominates the movements in the aggregate market. The efficient markets model, for the aggregate stock market, has still never been supported by any study effectively linking stock market fluctuations with subsequent fundamentals.

The fact that noise, rather than fundamentals, dominates market price movements is clear evidence that crowds dominate stock pricing.

Research on the so-called equity premium puzzle provides additional evidence that emotions play a prominent role. The long-term equity risk premium should be associated with the long-term fundamental risks. Mehra and Prescott ([1985](#), [2003](#)) report that the U.S. stock market has generated a risk premium averaging around 7% annually from the 1870's to the present. They argue that this premium is too large, by a factor of 2 or 3, relative to fundamental market risk, so they coined the term "equity premium puzzle." Over the last 25 years, there have been numerous attempts to find a fundamental explanation of this puzzle, but with little success.

[Benartzi and Thaler](#) (1993), however, provided an emotional explanation.

The equity premium puzzle refers to the empirical fact that stocks have outperformed bonds over the last century by a surprisingly large margin. We offer a new explanation based on two behavioral concepts. First, investors are assumed to be "loss averse," meaning that they are distinctly more sensitive to losses than to gains. Second, even long-term investors are assumed to evaluate their portfolios frequently. We dub this combination "myopic loss aversion." Using simulations, we find that the size of the equity premium is consistent with the previously estimated parameters of prospect theory if investors evaluate their portfolios annually.

The observed 7% equity premium is thus the result of short-term loss aversion and the investor ritual of evaluating portfolio performance annually, rather than the result of fundamental risk. Putting Shiller's research together with Benartzi and Thaler's analysis, I conclude that both stock market volatility and long-term returns are largely determined by investor emotions.

Numerous other stock market pricing distortions have been uncovered. Many of these have been linked to the decision errors documented in the behavioral science literature. [Hirshleifer](#) (2008) provided three organizing principles to place price distortions into a systematic structure.



- People rely on heuristics (i.e. short-cut decision rules) because people face cognitive limitations. Because of a shared evolutionary history, people might be predisposed to rely on the same heuristics, and therefore be subject to the same biases
- People inadvertently signal their inner states to others. For this reason, nature might have selected for traits such as overconfidence, in order that people signal strong confidence to others.
- People's judgments and decisions are subject to their own emotions as well as to their reason.

[Shefrin](#) (2010) provided an excellent aggregation of four behavioral finance summaries: including Hirshleifer, [Barberis and Thaler](#) (2003), [Baker et al.](#) (2007) and [Subrahmanyam](#) (2007). He also presented a comprehensive list of behavioral finance articles.

The ineffectiveness of arbitrage

A key difference between BPM and Modern Portfolio Theory is the extent to which arbitrage is effective in eliminating stock price distortions. Research over the last 40 years has shown that arbitrage has not been able to eliminate price distortions. There are three possible reasons for this lack of effectiveness: the difficulty in identifying arbitrage opportunities, the costliness and riskiness of arbitrage and the limited number of market participants willing to engage in arbitrage.

Clearly stocks are difficult to value and so there is validity to the first reason. But even when the price distortion can be accurately estimated, such as with closed-end funds, the distortions persist. Cost and risk clearly make arbitrage difficult. But one would think that there would be sufficient incentive to attract a large number of arbitrageurs into the stock market.

Recent results by [Cornell et al.](#) (2011) are discouraging in this regard. They find a tendency for both mutual funds and sell-side analysts to exacerbate sentiment-driven price movements, rather than dampen them, as one would expect of supposedly rational investors. In other words, institutional professionals tend to join the emotional crowds rather than act as BDIs. It appears that arbitrage plays a small role in stock pricing. Indeed, emotion trumps arbitrage.

Finally, [Shefrin's](#) (2010) insightful observation is of interest:

Finance is in the midst of a paradigm shift, from a neoclassical based framework to a psychologically based framework. Behavioral finance is the application of psychology to financial decision making and financial markets. Behavioralizing finance is the process



of replacing neoclassical assumptions with behavioral counterparts. ... the future of finance will combine realistic assumptions from behavioral finance and rigorous analysis from neoclassical finance.

Thus Basic Principle I – that emotional crowds dominate pricing – is a logical first step in building an effective decision process for investing.

Conclusions

There is now ample evidence supporting the argument that emotional crowds dominate market pricing and volatility. Emotional crowds drive prices based on the latest pessimistic or optimistic scenarios. Because stock trading is virtually free, there is little natural resistance to stocks moving dramatically in one direction or the other, amplifying price movements. The market's mantra is: "If anything is worth doing, it is worth overdoing."

BDIs react to the resulting distortions by taking positions opposite the emotional crowd. In my next article, I will discuss how to build portfolios that take advantage of pricing distortions. As BDIs know, distortions are eventually corrected by the market, either rationally or because the crowd is now moving in another direction, resulting in superior portfolio returns.

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