



Applied Behavioral Finance  
Group <info@abfgla.com>

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## ABFG March/April 2010 Newsletter



### Upcoming Events

- **Adaptive Markets and the New Investment Paradigm**, Andrew Lo, Ph.D., Alpha Simplex Group, LLC and MIT. Wednesday, March 10<sup>th</sup> -- 12:00pm to 1:30pm registration and information available at <http://www.cfala.org/i4a/pages/index.cfm?pageID=3656>
- **How Deregulating Derivatives Led to Disaster, and Why Reregulating Them Can Prevent Another**, a presentation by Lynn A. Stout, UCLA School of Law. Wednesday, March 31, 2010, noon -- 1:30pm, California Plaza 2, 350 S. Grand Avenue. Registration and detailed program are available at the following link - <http://www.cfala.org/i4a/pages/index.cfm?pageID=3661>
- **Joint USC/CFALA Academic/Practitioner Series**, David Hirscheifer, Ph.D. of UC Irvine -- Wednesday, April 7<sup>th</sup> - 4:30pm at Popovitch Hall, USC. RSVP to [investment@marshall.usc.edu](mailto:investment@marshall.usc.edu) or call 213-821-1126. Parking available for \$8 in PSX at Gate 3. Additional information - [http://www.cfala.org/files/public/USC\\_CFALA\\_JointProgram.pdf](http://www.cfala.org/files/public/USC_CFALA_JointProgram.pdf) .
- **2010 CFA Institute Annual Conference**, will include presentations by Dan Ariely of Duke University and Richard Peterson, author of Inside the Investor's Brain, May 16 -- 19 in Boston Massachusetts. For information and registration -- <http://www.cfainstitute.org/memresources/conferences/100516/index.html>
- **The Interdisciplinary Group in Behavioral Decision Making at UCLA** has a number of programs in the March - May time frame. To view speakers and their topics -- <http://www.anderson.ucla.edu/x9484.xml>
- **Second Annual Meeting of the Academy of Behavioral Finance & Economics- 2010, September 15-17, 2010, Chicago, Illinois** <http://www.aobf.org/>

### Newsletter

This is a bimonthly newsletter from the Applied Behavioral Finance Group (ABFG), An Associated Group of the CFA Society of Los Angeles, CA.

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### Mission

To identify, evaluate, and disseminate information and activities in the field of behavioral finance. Our objective is to enhance collaboration between research and practitioners in

## **Observations**

As you will note from the upcoming events, Dan Ariely will be speaking at the CFA Institute Annual Conference in May (Boston). Some of his recent research has examined the topic of cheating. In view of the recent newsworthy lapses (Madoff, Stanford, et al), I believe that spending some time reviewing research results in this area seems well placed.

Last week, I attended a session by Maurice Schweitzer from the Wharton School, University of Pennsylvania who was presenting at the BDM Colloquium at UCLA. His talk included recent research that he and several other colleagues -- including Dan Ariely, Roy Baumeister, Francesca Gino, and others have done regarding self control and cheating. The implications of the research are to identify (and engage) proscriptive process improvements that help reinforce self control, and thus reduce the likelihood of cheating.

The web links to several research resources in this area are listed in the websites of interest below.

As always, we encourage your contributions to our newsletter or research that you believe would be valuable to our efforts.

Your editor

order to produce practical applications of value for investors and professionals who serve them.

## **Website**

[www.abfgla.com](http://www.abfgla.com)

## **Websites of Interest**

**From Mark Harbour:** Here are several references for research papers that you may find of interest on the topic of cheating, self control, and issues affecting trust.

Maurice Schweitzer's website and publication links

<http://opimweb.wharton.upenn.edu/people/faculty.cfm?id=41>

Francesca Gino's research on the same topic

<http://www.unc.edu/~ginof/publications.html>

**From Larry Brody:** The Journal from the Society for Judgment and Decision Making is available at the following link:

<http://journal.sjdm.org/>

**From Greg Seals** (CFA Institute):

Link to resources available on the CFA Institute Life Long Learning:

<http://www.cfainstitute.org/memresources/education/behavior.html>

Link to interviews with several luminaries in behavioral finance by Nightly Business Report:

<http://www.pbs.org/nbr/info/local-player.html?s=nbre07s33a7qbad>

## **Research Paper Review**

***Stocks as Lotteries: The Implications of Probability Weighting for Security Prices*** by Nicholas Barberis and Ming Huang

This review provided by **Steve Sapra**, Portfolio Manager at Analytic Investors, LLC, and contributing ABFG Board member.

The ground-breaking work by Daniel Kahneman and Amos Tversky known as *Prospect Theory* is a set of axioms derived from observing human behavior in a laboratory setting. Their original work, first

published in 1979, culminated in a Nobel Prize in Economics in 2002. The researchers' idea was to see if they could develop a set of "laws" of human behavior based on actual observation, rather than derived from standard assumptions about behavior - the objective of neo-classical economic theory. Prospect Theory contradicts classical utility theory in a number of important ways, all having notable and important implications for the prediction of human decisions in the presence of uncertainty. Some of these differences are highlighted in the table below:

<b><u>Behavioral Dimension</u></b>	<b><u>Expected Utility Theory</u></b>	<b><u>Prospect Theory</u></b>
<i>Evaluation of Wealth</i>	Total Wealth	Gains and Losses
<i>Risk Aversion</i>	Averse in Gains and Losses	Risk Averse in Gains / Risk Seeking in Losses
<i>Sensitivity to Gains and Losses</i>	Nearly-Equal Sensitivity to Gains and Losses	Much More Sensitive to Losses than Gains
<i>Probability Weighting</i>	Objective Probabilities	Transformed Probabilities/ Decision Weights

Each of the characteristics in the table above has important implications for human behavior. Thus, we briefly discuss each item so that we can properly understand the differences between Expected Utility Theory (EUT) and Prospect Theory (PT). Firstly, EUT assumes that individuals assess their happiness by measuring their overall wealth. However, studies have shown that what really matters is changes in wealth, or gains and losses. PT, for example would predict that someone who had \$100, but now has \$200 would be "happier" than someone who had \$1mm and now only has \$500,000. EUT would argue just the opposite, since in EUT all that matters is current wealth, and \$500,000 is greater than \$200. EUT predicts that individuals are risk-averse, meaning that they prefer a certain outcome to an uncertain one *ceteris paribus* . However, PT predicts that individuals are only risk averse in the domain of gains; they are actually risk seeking in the face of losses. For example, people routinely prefer the chance of losing \$1,000 with 0.50 probability to the certainty of losing \$500. However, they will choose a certain gain of \$500 over the chance of gaining \$1,000 with probability 0.50. PT also predicts that individuals are much more sensitive to losses than gains, and in their subsequent work in the early 1990's, Kahneman and Tversky estimated that individuals are roughly twice as sensitive to losses as they are to an equivalent gain. And finally, PT predicts that people will over-weight low probability events in their decision making process. Hence, people behave as if they are more likely to die in a plane crash, get hit by lightning, and win the lottery than an objectively- formed would suggest. The end result is that PT often makes significantly different predictions for human behavior than EUT.

In their paper "Stocks as Lotteries: The Implications of Probability

Weighting for Security Prices", Barberis and Huang focus on the last and less-studied aspect of prospect theory: decision weighting. Let's spend a bit more time understanding the implications of this component of Prospect Theory. In EUT, individuals are assumed to weight their satisfaction, or *utility*, of each possible outcome by the objective probability of each event occurring. In PT, however, individuals weight their satisfaction by "transformed probabilities" or what Kahneman and Tversky termed "decision weights". Decision weights are effectively modified versions of the underlying probabilities, with the big implication being that people will over-weight low probability events in their decisions. This aspect of PT has particularly important implications for events which are characterized by "tail behavior", or outcomes which are highly unlikely to occur. This can explain, for example, why lotteries are so popular in our culture. The likelihood of winning the lottery is extraordinarily low, and when evaluated using objective probabilities, is a negative-expected-return gamble. Yet lotteries remain a popular institution. Why? If individuals over-weight low probability events in their decision making process, then they act as if they are more likely to win the lottery than they actually are, and hence their willingness to participate in what an objective individual would characterize as a foolish endeavor.

Barberis and Huang utilize this aforementioned aspect of Prospect Theory to derive a very interesting, and rather counterintuitive result, with important implications for the pricing of certain kinds of financial assets. The authors introduce what they call a "skewed security" into a portfolio framework. This asset takes on a very simple property. Specifically, the authors assume that the skewed security pays out a very large "jackpot" with very small probability and pays nothing with very high probability. Hence, the asset has lottery-like behavior; the likelihood of winning is very low, but the payoff is substantial. This asset behaves in stark contrast to all of the other assets in the market which are assumed to behave according to the normal distribution (i.e. nice, well-behaved, symmetric returns with few outliers).

First, the authors show that when all securities behave according to the normal distribution (i.e. before the introduction of a lottery-like security), both EUT and PT preferences yield the standard CAPM result. In other words, whether one assumes that investors behave according to the classical definition of expected utility maximization or Prospect Theory, investors will optimally price assets based on an asset's beta and the expected equity risk premium. Where it really gets interesting, though, is once the authors bring in the skewed, lottery-like security. Under standard EUT preferences, the authors show that the skewed security earns a positive expected return, slightly above the risk-free rate. This is not surprising and is intuitive; if an investor properly assesses the probabilities of various outcomes and behaves in a manner consistent with concave expected utility preferences, they will discount a risky asset - whether skewed or not - such that the expected return is greater than the risk-free rate, or has an excess return greater than zero. However, when the authors use PT preferences to price the skewed security, they find a very interesting and rather counterintuitive result: the skewed security can actually have a **negative** expected excess return - **in equilibrium!** How is this possible? Let's break down the implications of PT preferences for a security of this nature. Recall that PT preferences

predict that individuals will behave as if low-probability events are more likely to occur than they are in reality. Hence, PT investors will show a strong preference for positive skewness in their portfolio, since they believe they are more likely to hit the "jackpot" than they actually are. As a result, PT investors may be willing to pay a substantial premium for lottery-like assets, so much so, that they price the asset to the point where its expected return is actually negative. This is irrational, of course, in the classical utility sense, but rational investors will never mis-estimate probabilities, whereas PT investors do precisely this. { **Note** : Technically, PT agents do not mis-estimate probabilities. They may know the exact probability of an event occurring, but they behave as if the event is more likely to occur than it actually is. This is why Kahneman and Tversky termed the weight applied to the value function as "decision weights" rather than something like "subjective probabilities". The key is that PT preferences predict that investors will treat low-probability events with a higher degree of certainty, not that they actually believe the events are more likely to occur.}

The result of this intriguing line of research can help us to better understand the performance of certain types of equities. IPOs, for example, are known to have poor performance as are very low-priced, highly volatile stocks. Both of these types of securities could be considered lottery-like in the sense that they may be perceived as having significant upside, with minimal downside. Call options have this feature as well, but their price is largely governed by arbitrage, and therefore should not differ significantly from "fair value". The authors' finding that investors overpay for these types of securities may help explain the underperformance of IPOs and low priced stocks. Under PT preferences we know investors will over-weight the tails of the probability distribution and hence will overpay for securities with lottery-like or option-like characteristics.

The use of non-standard preferences in economics is becoming increasingly popular. Because Prospect Theory is characterized by a more complicated functional form than standard concave utility, it has been significantly under-utilized in both theoretical and empirical work. Barberis and Huang's research is profound in that it utilizes a more complex framework, but one which we know is a better characterization of human behavior than expected utility theory. The authors' results have broad-based implications for the pricing of certain types of financial assets and show the implications of how our beliefs about the world dictate our decisions. The use of Prospect Theory in economic modeling is exciting and we hope that researchers continue to use this powerful tool to further research in the field of behavioral economics.

### **Editor's Invitation**

Please share items of interest with the group by sending to Mark Harbour, Editor, ABFG Newsletter at [harboal@ca.rr.com](mailto:harboal@ca.rr.com).

We invite you to view our website, [www.abfgla.com](http://www.abfgla.com), and share reactions, ideas, or other information of interest.

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