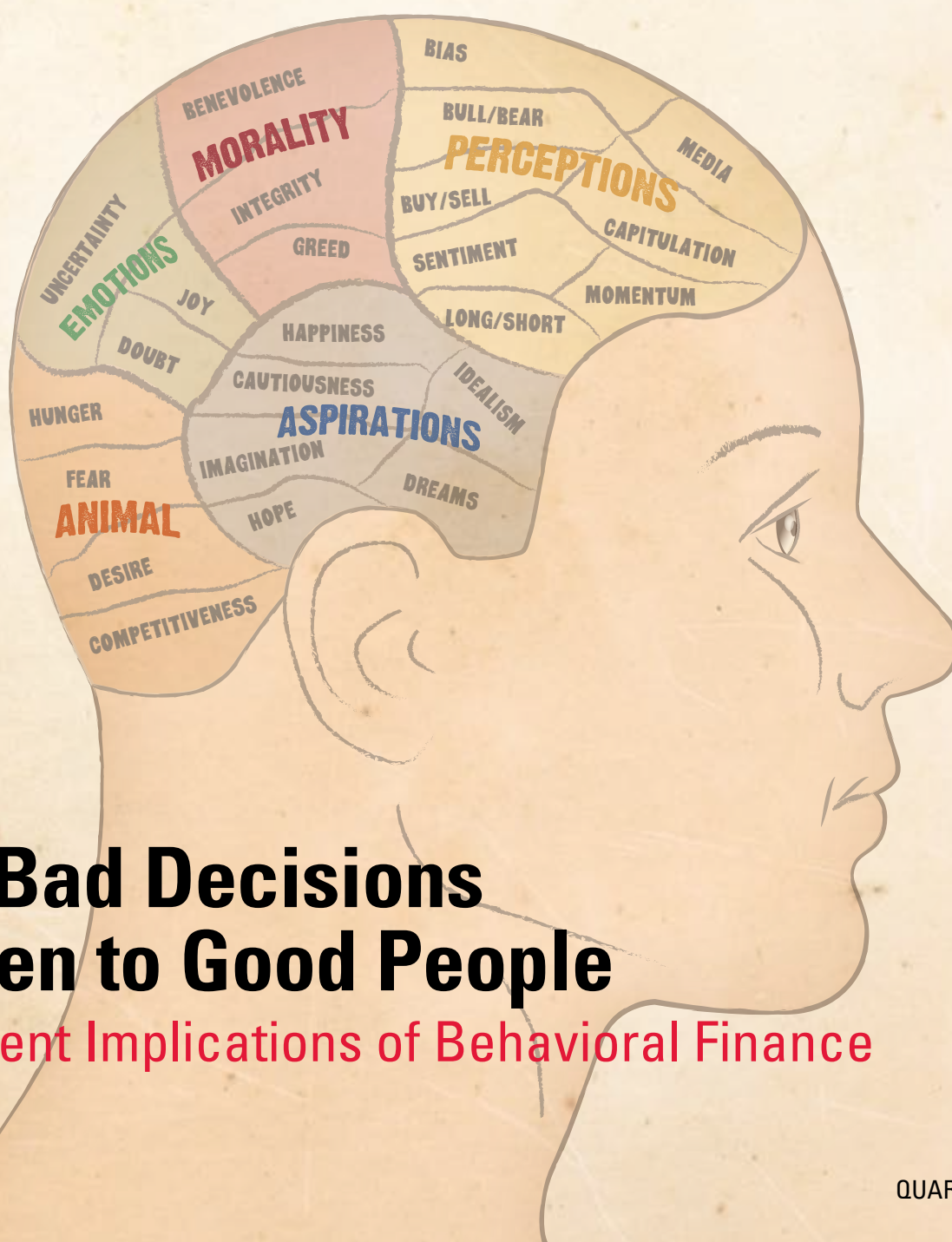


InvestorView

BROWN BROTHERS HARRIMAN QUARTERLY WEALTH MANAGEMENT JOURNAL



Why Bad Decisions Happen to Good People

Investment Implications of Behavioral Finance

QUARTER 3 | 2012

InvestorView

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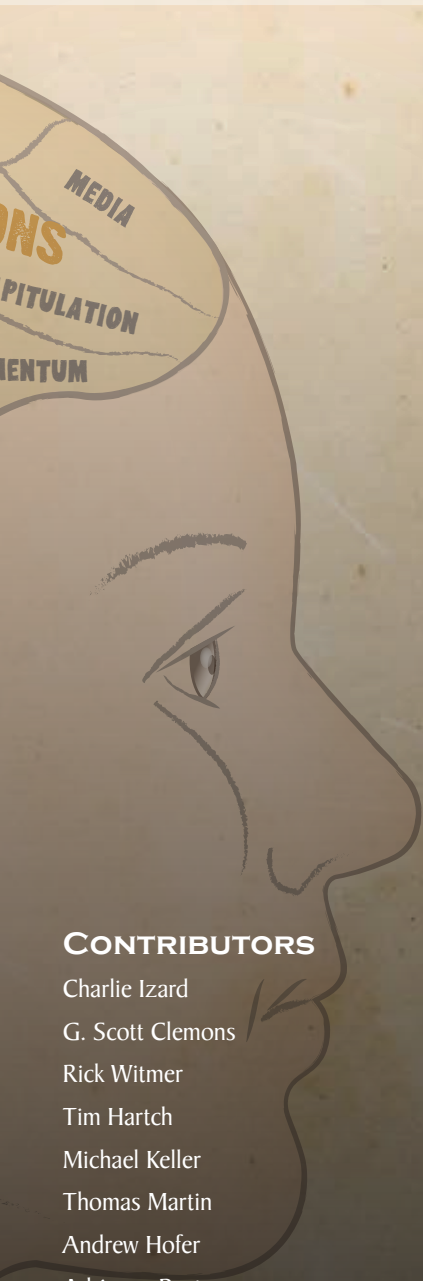
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Dear Clients and Friends,

We are pleased to present you with the 3rd quarter issue of *InvestorView*.

Suffice it to say that the first half of 2012 was an eventful and memorable six months. Rooted in political and economic uncertainty at home and abroad and continued crisis in Europe, investors have endured an unusual if not historic time in the markets. Throughout this period, we have continued to adhere to an investment philosophy that holds capital preservation as its highest objective, and pursues that objective by owning high quality businesses and credits at appropriate discounts to intrinsic value¹. While the prices of our investments may fluctuate, value is a far more durable concept. We are committed to knowing what we own and why we own it, always with the goal of protecting and enhancing our clients' wealth.

Given the uncertainty surrounding the global economy, I am pleased to inform you that our business performed very well in the first half of this year. In fact, BBH Wealth Management has never been stronger. We are gratified that our clients have rewarded us with an industry leading 99% client retention rate², which has helped lead to our most successful 6 months of growth in a decade. This growth helps to fuel significant resource investments in all of our investment strategies and the people who deliver them, two of whom will be introduced later in this issue.

Also, I would like to thank those of you that participated in the first installment of our annual client survey. We will of course seek input from the balance of our clients when we send out the second half of our survey in September. Though the results are partially representative, the early feedback reveals that our clients are highly satisfied with the services and strategies we offer. There are always areas for improvement, and improve we will. We are

pleased to announce that our desire to continuously improve has not gone unnoticed in our industry, and we are excited to follow our recent recognition from *Private Asset Management* with a new award from *World Finance*: Best Private Bank in the United States.

The central theme of this issue of *InvestorView* isn't so much financial markets and economies, but how people respond to the threats and opportunities presented by financial markets and economies. Chief Investment Strategist Scott Clemons provides an introduction to the fascinating field of behavioral finance in the feature article starting on page 4, and the implications of behavioral biases throughout the investment world are a common thread in several of this issue's articles. In early July, Scott had the chance to talk with Yale professor Robert Shiller about the macroeconomic consequences of behavioral biases. Excerpts from their conversation follow the feature article, as does Tom Martin's review of *Thinking, Fast and Slow*, the latest book written by Daniel Kahneman, the father of the field of behavioral finance. On page 20, Managing Director Andrew Hofer discusses some peculiar implications of behavioral biases in the fixed income markets. As usual, our Core Select team provides an update on our equity portfolio on page 16, and Adrienne Penta from our wealth planning group offers an introduction to the important topic of creditor protection near the end of the issue.

I hope you enjoy this issue of *InvestorView*. On behalf of all my colleagues in Wealth Management, we wish you the best for an enjoyable summer.

¹Intrinsic Value: What one estimates to be the true value of a security based on analysis of both tangible and intangible factors.

²For the first half of 2012. Based on BBH analysis.

BBH does not provide tax or legal advice. Please see back cover for important tax disclosure.

The Dog Days of Summer



G. Scott Clemons, CFA
Managing Director
Chief Investment Strategist

After a strong rally to start the year, the S&P 500 Index¹ of large capitalization equities declined 2.8% in the second quarter on increasing concerns of an escalation in the European banking crisis and renewed anxiety about a slowdown in domestic economic activity. The equity market nevertheless provided a healthy total return of 9.5% for the first six months of the year, and the S&P 500 Index has now rallied 26% from the lows of last October. International stocks (as measured by the MSCI EAFE Index²) posted a slight gain in the first half (+3.0%), with weakness in Europe more than offset by gains in Asian markets. The intermediate to long end of the Treasury yield curve continued to flatten over the first half of the year, helping to produce a total return of 2.4% for the Barclay's Aggregate Bond Index. The benchmark 10-year bond ended June with a yield of 1.65%, up from the record low of 1.45% set on the first day of the month. High yield bonds (+7.0%) did better than traditional fixed income, as spreads narrowed over the period.

For the balance of 2012, financial market action will likely be dominated by the economy, the domestic political calendar, progress in addressing the fiscal cliff that looms at year end, the ongoing European crisis, and economic developments in Asia.

For the third year in a row the labor market started on a robust note in the first quarter, only to have that strength wane as temperatures rose into the spring and summer months. The economy added 677,000 jobs in the first quarter of 2012, but only 225,000 in the second quarter. Housing appears to have finally and gradually taken a turn for the better, but both the employment and housing markets remain fragile. As we have commented in the past, continued improvement in these two sectors is critical for the overall strength of the economy.

The presidency, the entire House of Representatives and a third of the Senate are up for election on November 6, and the central

topics of the election debate are, not surprisingly, the economy and tax policy. The looming "fiscal cliff" poses a particular political and economic challenge, as a litany of tax increases are set to go into effect at year end in the absence of Congressional action to forestall them. The cumulative drag of these automatic tax hikes and spending cuts adds up to 4% of GDP, and failure to act would almost certainly push the economy back into recession in the first quarter of 2013. This should focus the minds of politicians and provoke action, but in the heat of an election year there is a heightened risk that nothing gets done until after Election Day. In that case, uncertainty alone could act as a brake on economic activity, as businesses and individuals find it difficult to budget, plan, save and invest in the face of an unclear tax environment.

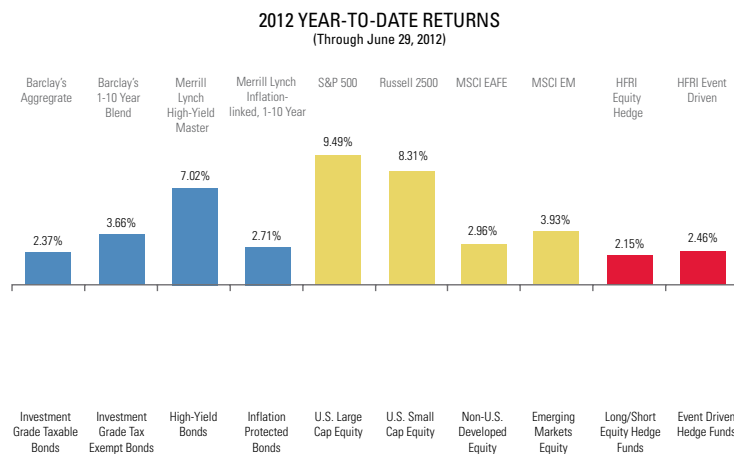
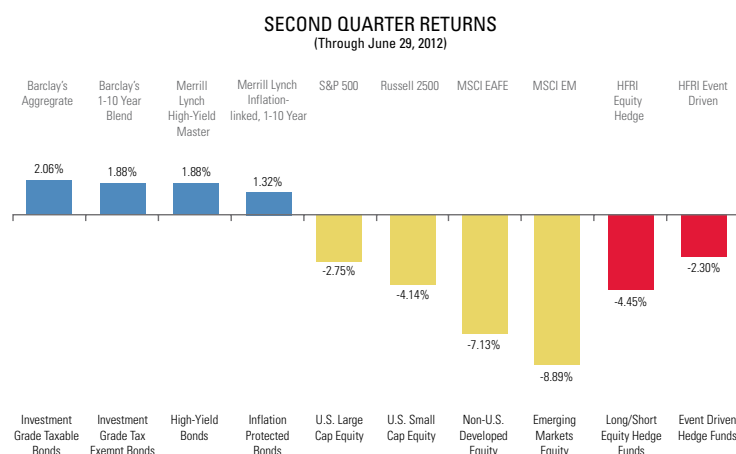
The European Union (EU) summit that ended on the last day of June offered some much-needed hope of progress towards resolution of a crisis that is now close to four years old. The EU announced that the European Stability Mechanism (ESM), the primary bailout vehicle in Europe, will now be able to directly recapitalize ailing banks, thereby breaking the vicious correlation of banking stress and sovereign stress. Furthermore, the EU committed to create a pan-European bank regulator, a small step towards greater financial oversight and integration. As has been the case with past summits, capital markets were relieved for about a day. The MSCI Europe Index rallied by close to 5% on the final day of the summit, only to give most of it back in the first few days of July. As of this writing, Spanish 10-year bond yields have moved back above 7%, a level at which Spain will struggle to refinance maturing sovereign debt. Europe is making steps in the right direction, but the crisis is far from resolved.

Chinese GDP growth decelerated to an annual pace of 8.1% in the first quarter of the year, the slowest pace of activity since early 2009. With the U.S. economy limping along at roughly 2% and Europe likely headed towards recession, weaker economic

The looming ‘fiscal cliff’ poses a particular political and economic challenge, as a litany of tax increases are set to go into effect at year end in the absence of Congressional action to forestall them. The cumulative drag of these automatic tax hikes and spending cuts adds up to 4% of GDP, and failure to act would almost certainly push the economy back into recession in the first quarter of 2013.”

data out of China has raised fears that the sole remaining engine of global economic activity has begun to sputter. Those concerns seem overstated. This economic moderation has been designed, at least in part, to control inflation, which peaked at 6.5% last summer. By June 2012 Chinese inflation had moderated to a much more reasonable 2.2%, giving the government plenty of room to introduce more stimulative policies if necessary. As if on cue, the People’s Bank of China lowered interest rates in early July, while giving banks wider leeway to price loans to their customers.

In this uncertain economic and political environment, we continue to believe that the ultimate expression of risk management lies in knowing what you own, why you own it, and owning it at a price that provides a margin of safety³. We continue to prefer equities to fixed income, and in particular those companies that provide essential products and services, compete from a standpoint of financial strength, hold leading market positions and trade at a discount to what our analysts believe to be the intrinsic value of the business. With interest rates near record-low levels, traditional fixed income remains a source of liquidity rather than return. ♦



Fixed Income: Investment grade taxable bonds: Barclay's Aggregate; Investment grade tax-exempt bonds: Barclay's 1-10 Year Blend; High-yield bonds: Merrill Lynch High-Yield Master (Cash Pay Only); Treasury inflation protected bonds: Merrill Lynch Inflation-Linked, 1-10 Year.

Equities: U.S. large-cap equity: S&P 500; U.S. small-cap equity: Russell 2500; Non-U.S. developed equity: MSCI EAFE (net); Emerging market equity: MSCI Emerging Markets (net).

Alternatives: Long/short equity hedge funds: HFRI Equity Hedge; Event driven hedge funds: HFRI Event Driven.

Source: Bloomberg, BBH Analysis

Past performance does not guarantee future results.

Indices are unmanaged and unavailable for direct investments.

¹S&P 500 Index: An unmanaged capitalization-weighted index of 500 stocks designed to measure performance of the broad domestic economy through changes in the aggregate market value of 500 stocks representing all major industries. The index is not available for direct investment.

²MSCI EAFE Index: The Morgan Stanley Capital International EAFE Index is an unmanaged measure of the international stock market performance in 21 developed markets. Index returns reflect the reinvestment of dividends, net of foreign withholding taxes. Investments cannot be made in an index.

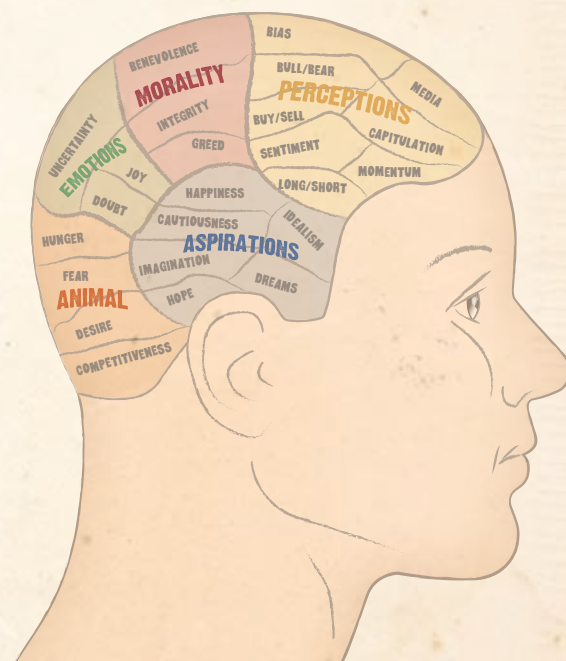
³We believe a margin of safety exists when we are able to mitigate both business risk (our business, financial, and management criteria have been met; sustainable competitive advantages exist) AND price risk (when we believe there is a significant discount to intrinsic value at the time of purchase – we aim to purchase at 75% of our estimate to intrinsic value or less).

Why Bad Decisions Happen to Good People

Investment Implications of Behavioral Finance



G. Scott Clemons, CFA
Managing Director
Chief Investment Strategist



Up until the late twentieth century the field of economics was predicated on the assumption that people are rational decision makers. This assumption forms a cornerstone of Adam Smith's *An Inquiry into the Nature and Causes of the Wealth of Nations* (1776), where Smith posited that individuals, acting in rational self-interest, formed an "invisible hand" that would naturally lead to optimal economic conditions: "It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest." 176 years later, this notion of rational decision making played a leading role in the formation of modern portfolio theory. In his 1952 paper concisely titled *Portfolio Selection*, Harry Markowitz introduced the idea that investors rationally make decisions based on expected future returns, the volatility of those returns, and how the returns of various investment options are correlated. Of course, none of these assumptions about rationality was to deny the influence of greed, fear, anger, hope, et cetera, but these emotions were thought to cause only occasional lapses from otherwise rational judgment. Tantalizingly, Markowitz admitted in a footnote to his paper (for which he won the 1990 Nobel Memorial Prize in Economic Sciences) that he "does not consider the difficult question of how investors do (or should) form their probability beliefs."

And there's the rub. People are, in fact, not rational: they're normal. In the 1960's behavioral psychologists began to develop a more refined notion of normal irrationality that didn't rely on occasional emotional lapses to explain how people commit logical errors when making decisions. Various studies began to

demonstrate that we routinely take cognitive shortcuts when making choices, which are in most instances beneficial. If we had to engage in deep analytical thinking to brush our teeth, make a cup of coffee, order lunch and cross the street, we would accomplish very little as a species. It's only when we're called upon to make decisions that require logic that these intuitive, automatic shortcuts can lead to suboptimal outcomes.

Studies have shown that we are particularly vulnerable to these biases in situations where we have limited information and are required to act under time constraints. It didn't take long for researchers to recognize that these two conditions are characteristic of financial markets, and apply the lessons of behavioral psychology to the world of investing. This combination of the fields of behavioral psychology and finance dealt a blow (albeit not a fatal one quite yet) to the assumption of investor rationality and efficient markets. It turns out that we don't make decisions according to internalized calculations, tradeoffs, optimizations and analysis, but, instead, consistently and naturally make irrational decisions.

There is, fortunately, a silver lining in this otherwise dark cloud of irrationality: these behavioral biases are, for the most part, predictable. We are prone to make mistakes, but we tend to make them in the same way. That means we can take them into account to improve the quality of our own decision making, while identifying opportunities where the cognitive mistakes of other market participants serve to drive securities or asset classes away from fundamental values.

Practitioners of behavioral finance call these cognitive biases heuristics, from the Greek word “to find,” and they are literally ways of finding solutions quickly without complete information and under time constraints. As an introduction to the field of behavioral finance, this article presents five heuristics that occur

frequently in the investment world, as well as a brief review of prospect theory. The discussion demonstrates the influence these heuristics and prospect theory have on decision making and offers techniques for recognizing and transcending them.



REPRESENTATIVENESS

Representativeness is a behavioral heuristic that assumes that things that share similar qualities are alike, or even identical. It involves an intuitive exercise of judgment based on knowledge of past events, comparable observations, or even stereotypes, and enables us to sort things quickly into classes based on the observation of just a few characteristics.

As with many cognitive biases, the evolutionary benefit of this heuristic is evident. Our ancestors, upon hearing the roar of an animal just outside the cave, didn’t need to wander out of the cave to assess the level of danger. The sound alone was representative of things they knew to be dangerous, and they acted accordingly. Indeed, this particular cognitive bias probably played a large role in the survival of the species.

When applied to more nuanced circumstances, however, this cognitive bias can lead us astray. Consider the following description:

“Elizabeth is shy, studious, and is very concerned with social issues. While a student at Berkeley she majored in English Literature and Environmental Studies.”

Given this information, which of the three following cases is most probable?

A. Elizabeth is a librarian.

B. Elizabeth is a librarian and is an active member of the Sierra Club.

C. Elizabeth is a bank teller.

Most people intuitively gravitate toward B. We conclude that Elizabeth is probably a librarian and active in the Sierra Club, as that seems to represent what we would expect from a socially aware Berkeley graduate with dual degrees in English Literature and Environmental Studies. As Elizabeth exists only in the mind of the author there is technically no right answer to the question, although there is a wrong answer, and it is B. To decide that Elizabeth is most likely a librarian and member of the Sierra Club feels most representative of what little we know about her, but is an example of a conjunction fallacy, in which people judge the probability of two events occurring in conjunction (being a

librarian and in the Sierra Club) to be higher than either event occurring on its own. Of all the librarians in the United States of America, how many do you think are active in the Sierra Club? By definition that number can be no greater than the total number of librarians, so it is mathematically impossible for the joint probability to be greater than the single probability. The conclusion that Elizabeth is most likely a librarian and Sierra Club member seems more plausible, but it is undeniably not more probable. Representativeness has led us astray.

So it is empirically more probable that Elizabeth is a librarian rather than a librarian AND a Sierra Club member. Yet this, too, is still not the best answer. The question outlined above is essentially an exercise in probability analysis. If you knew nothing at all about Elizabeth, how would you go about calculating the probability of her being a bank teller or librarian? You would simply determine how many bank tellers and librarians there are in the U.S. and compare those numbers to the general population. These set totals of all bank tellers and librarians are called base rates, and one aspect of the representativeness bias is that we tend to neglect or ignore these base rates when presented with more detailed information. Representative details introduce bias to our intuition, and, as it turns out, in the example above base rates play a large role.

According to the Bureau of Labor Statistics, there are 145,710 librarians in the United States of America and 544,150 bank tellers. If we knew nothing about Elizabeth, we would conclude that it is 3.7 times more likely that any given individual is a bank teller than a librarian, because the base rate of bank tellers is 3.7 times greater. But we don’t think about base rates, as the details in the description of Elizabeth’s character overwhelm what we might logically know to be a pure exercise in probability. It’s as if our subconscious hears “are librarians typically more shy and studious than bank tellers?” and answers that question instead of the one actually posed.

Given the additional specific information we have about Elizabeth, we might adjust our subjective probability analysis a bit, but based on the sizeable differences in base rates, the best answer to the question is C. Elizabeth is probably a bank teller. It doesn’t feel like the right answer, even after we acknowledge the threat

of conjunction and base rate fallacies and incorporate them into our analysis, but the fact remains that we routinely substitute representativeness for probability. We naturally overestimate the probability of low base rate events (being a librarian, in this example) because of the cognitive bias of representativeness.



IMPLICATIONS FOR INVESTORS

The representativeness bias pervades the investment world, as investors are quick to jump to investment conclusions based on a few qualities or similarities. It is, for example, easy to confuse a good company with a good investment, ignoring the critical variable of valuation. Well-respected companies with good management teams and solid reputations seem to represent what any investor would want to own, but no investment is good at any price, and owning even great companies at the wrong price is a recipe for disappointment or worse.

Investors similarly often conflate a good product with a good company. In the last issue of *InvestorView* Michael Keller briefly discussed our view on Apple, and, while he acknowledged the quality of the products and enthusiasm of the customer base, Michael also noted the challenges facing the company's profit margins, future product launches, and the general rapid pace of technological progress that makes the future uncertain for any technology product company. These additional pieces of

information are akin to base rate concepts that place Apple into the context of the whole industry. Not too many years ago, Research in Motion, the company behind the BlackBerry product line, enjoyed similar technological cachet, and is now struggling with a share price that has declined 94% from its peak. Good products may be part of an investment story, but a disciplined investor won't allow that part to overly influence the whole picture.

A third manifestation of the representativeness bias in investing lies in allowing past performance to create a representation of future success. Even though footnotes perpetually warn us that "past performance is no guarantee of future results," it certainly seems that way sometimes. Stocks that have appreciated in price intuitively seem to represent good investments, an intuition that once again ignores valuation and the risks that may face a company in the future.

How should an investor protect herself against this bias? As is the case with any bias, awareness is more than half the battle. Understanding how your intuition can lead you to take mental shortcuts and overemphasize a few representative features is the best inoculation. Be careful not to confuse plausibility with probability, understand the role of base rates, focus on underlying valuation, and consider the importance of things you don't know.



ANCHORING

Anchoring is the tendency to base an estimate or belief on a known starting point, and then adjust relative to that starting point, even if the anchor isn't as stable or relevant as it should be. When we're asked to estimate something we don't know, we naturally look to start with something we do know (the anchor) and then adjust from there to arrive at an estimate of the unknown quantity. The problem is that we place too much reliance on the anchor, and then adjust inaccurately from that position.

A classic psychological test of the anchoring bias consisted of presenting a group of subjects with the following question:

Estimate within five seconds the product of multiplying the following set of numbers:

$1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 7 \times 8 \times 9$

Unless you are a deeply gifted mathematician, this is an exercise in estimation, as five seconds is not enough time to complete the calculation. So we try, give up the calculation at the four-second mark and adjust upward in recognition that there are more numbers to be multiplied, and not enough time to do them. In

one iteration of this experiment, the average estimate of the subject group was 512.

A second test group was presented with this question:

Estimate within five seconds the product of multiplying the following set of numbers:

$9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1$

The attentive reader will readily see that these are identical equations. Yet the average response of the second subject group was 2,250, substantially higher than the first group. What is going on here? Simply put, we read from left to right. The first subject group anchored in on small numbers ($1 \times 2 \times 3 \dots$) and allowed that anchor to influence their ultimate estimate. The second group anchored on much larger numbers ($9 \times 8 \times 7 \dots$) and that larger anchor resulted in a larger estimate. The right answer, by the way, is 362,880. Even though the cognitive anchor differed from one group to the other because of the expression of the equation, both groups under adjusted to arrive at their estimates.

It can be a little disconcerting to realize that the anchoring effect has such a meaningful influence on one's subconscious, but at least the anchors in these simple tests had relevance to the ultimate outcome. To make matters more disconcerting, multiple studies have shown that the anchoring effect exerts a powerful influence even when the anchor demonstrably has no relevance to the question at hand. In one memorable experiment, a group of subjects was asked to take the last three digits of their social security number, add 400, and insert the resulting figure into the blank in the question below:

"The Huns under Attila invaded Europe and penetrated deep into what is now France, where they were defeated and forced to return eastward. Did these events occur before or after _____ A.D.?"

"In what year did Attila's defeat occur?"

This question creates an undeniably irrelevant anchor, unless you believe that there is some mystical connection between social security numbers and Middle Age European history. In repeated tests of this nature, a higher anchor inevitably resulted in higher estimates, even when it was painfully clear that the anchor had no bearing on the question at hand. In his book *Thinking, Fast and Slow* (reviewed on page 19 of this issue), Daniel Kahneman argues that our subconscious seeks relevance and coherence even when we consciously know there is none to be found. In other words, our subconscious wants to believe that there is some linkage between random numbers and European history. We can consciously adjust our final estimate from what we know to be a flawed anchor, but the cognitive damage is usually already done. Such is the pervasiveness of cognitive biases.



IMPLICATIONS FOR INVESTORS

Anchoring heuristics are common in investing, and perhaps occur most frequently in the tendency of investors to hone in on a specific stock price (usually historical) to determine the success or failure of an investment decision, without questioning whether the anchor is meaningful. For example, we measure stock

performance on a year-to-date basis, or observe how far a stock price is away from a 52-week high or low, or from where we purchased the shares. These are all legitimate measures of price performance, but can work against us when we allow them to dictate action. Doubling up on a stock that is down significantly without reconfirming one's understanding of intrinsic value is an anchoring bias on the original purchase price. Similarly, selling a stock solely to lock in a certain gain ignores the potential of further appreciation. In a bear market, investors can be tempted to delay the sale of a stock until the price rebounds to their original purchase price, even if the underlying fundamentals have deteriorated. Value provides a far more robust anchor than price, even though price is a more readily accessible anchor. All of this is human nature, and even if an investor is aware of these biases she still feels them tugging at her mind.

In the realm of asset allocation it is tempting to anchor on observed historical returns and then adjust up or down to arrive at an estimate of future returns. In a world where reversion to the mean is a powerful force, this methodology may have some legitimacy, but asset allocators should appreciate that there is an anchor effect at work nonetheless, and that valuation is a far more relevant guide than historical price trends. Readers of investment research intuitively anchor on the first or most compelling report they read about a particular company, and then inevitably under adjust their opinion when confronted with subsequent information (more on this in a moment).

Are we doomed to be dragged down by our anchoring biases? Awareness is, once again, more than half the battle in confronting and controlling these tendencies. Any time we find ourselves forming an opinion or estimate based on incomplete information we need to ask, "Is there an anchor at work here? What is my starting point for thinking about this issue, and is that anchor relevant? What other anchors should I take into consideration so that I am not overly influenced by a single data point?" This takes time and effort, but it is time and effort well spent when the outcome involves the investment of money.



AVAILABILITY

How do these anchors arise? The mechanisms of many heuristics are interrelated, and in this case the availability bias often creates subconscious anchors. The availability bias is the process of judging the frequency or probability of an event based on the ease with which instances come to mind. As with the representativeness heuristic, our mind prefers to answer an easier question (what comes to mind, and how easily?) rather than a harder question (what is the probability of a thing or event based on an analysis of base rates?). Simply put, the ease with which

we can think of something biases the probability we assign to its frequency or likelihood.

Cognitive availability is a tricky thing. It is influenced by the media, as headlines and serial stories on a particular subject make it more readily available to our minds. If we are asked the frequency with which politicians cheat on their spouses, we can't help but recall the John Edwards trial and let that influence our response. The Stockton, CA bankruptcy filing intuitively leads

us to overestimate the frequency with which municipalities go bankrupt. Both of these stories are recent, and recency has been shown to be a powerful boost to cognitive availability. Emotions play a role as well, as dramatic or vivid events (plane crashes, epidemics) are more easily remembered. Personal experience is a powerful driver of availability, as events which happened to me personally are easily and instantly accessible. But because availability is biased by so many things, the ease with which we think of something does not always reflect accurately the real probability or frequency of occurrence.

In *The Psychology of Judgment and Decision Making* (1993), the author, Scott Plous, details an insightful study into the availability heuristic based on subjects' guesses on issues related to mortality and probability. Subjects were posed the following questions:

1. Which is a more likely cause of death in the United States, being killed by falling airplane parts or being killed by a shark?

Reports of shark attacks are vivid. They tend to top the evening news when they happen, and they often lead to even more reports of shark attacks. We see images of lifeguards with binoculars scouring the waves for ominous dorsal fins, while helicopters hover over beaches watching for shadows in the water. Hollywood amplifies the availability. Who hasn't seen the movie *Jaws*, along with a host of derivative films where the sharks always seem to have the upper hand until our hero finds a way to prevail and win the girl? These create powerful mental images. Shark attacks are easy to envision, and most people therefore assume that they are more common. The fact is, you are thirty times more likely to be killed by a falling airplane part than by a shark in the United States. Our intuition overestimates the likelihood of a low probability event because of the availability heuristic.

2. Do more Americans die from a) homicide and car accidents, or b) diabetes and stomach cancer?

Similar to the shark question, murders and car accidents are dramatic and often lead news reports. They happen suddenly and without warning, which adds to the vividness. Murder and car accidents also seem to be preventable, and we naturally try to take lessons from them: if only he hadn't walked down that street, if only we had more policemen on duty, if only she had been wearing her seatbelt, etc. Lingering illnesses such as diabetes and stomach cancer, even if they result in death, lack the immediate impact of more dramatic events, and somehow don't seem as preventable. If someone has a personal experience with a friend or associate who has been a homicide or car accident victim, the availability of that event is even more potent. The fact

is, however, that more Americans die from diabetes and stomach cancer than from murder or car accidents by a factor of two. Again, the availability heuristic works against us.

The availability heuristic can feed on itself in circumstances where an initial report on perhaps a single event or instance leads to heightened public awareness, which leads to a policy response, which leads to even more coverage and awareness until a mere story becomes a Story. In a seminal 1999 paper Timur Kuran and Cass Sunstein termed this phenomenon an "availability cascade," and examples of it abound in the modern world.

For years we heard repeated reports of how the use of handheld mobile phones raised the risk of brain tumors, and untold time and money was spent researching the issue without a single study proving a linkage. Yet the story persists. When they weren't causing brain cancer, mobile phones were allegedly blowing up gasoline stations by ringing while motorists were filling their gas tanks. Again, although no causation or even correlation has ever been demonstrated, most gas pumps to this day carry stickers warning of a threat that has never been shown to really exist. The potential association of childhood vaccinations and an increased risk of autism is a particularly evocative availability cascade, as the apparent risk strikes literally close to home for parents of young children. Even after the original (and sole) study that gave rise to this concern was thoroughly discredited, the protracted debate still seems to retain an uneasy hold on our psyche. In each of these examples, breathless journalism, unwarranted speculation and dramatic outcomes of brain cancer, explosion and autism all heightened the cognitive availability.



IMPLICATIONS FOR INVESTORS

Investing lends itself to all of these temptations. Financial news is a 24-hour proposition, and new media technology instantly and globally propagates each and every economic release, company development and shift in political winds. It is human nature to conclude that the most recent report on progress (or lack thereof) in addressing the European crisis is the definitive one, just as the most current analysis of a company's prospects seems to contain the best insight. Personal experience with a company's products or services is a potent influence on how easily we can form an opinion on that company, and whether our opinion is positive or negative.

The rapid gain or loss of wealth is a vivid experience, made even more so if it happens to you personally. Someone who lost money on Facebook, for example, will likely be more suspicious of future initial public offerings. On the other hand, an investor who takes a position in a speculative security that works out well can't help but have a heightened opinion of her own talent in picking stocks. The risks here should be obvious: the availability heuristic can lead to suboptimal investment decisions by

ignoring deeply relevant information in favor of the ease with which our mind recalls recent, dramatic or personal experiences.

Recognition is, once again, the best protection against this behavioral bias. Good investors constantly question and test their own

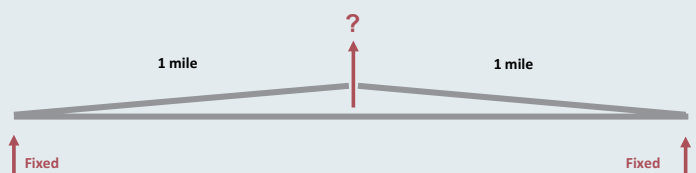
thought process to identify and adjust for biases such as these. If we find ourselves reaching a conclusion too quickly or easily, we should question the role that availability played in reaching that judgment, and actively look for additional and even contradictory evidence to support or refute our conclusions.



Many of the heuristics presented above lead us to place too much trust in our own intuition, which is an identifiable heuristic in its own right. The overconfidence bias is essentially a restatement of something our mothers always told us when as children we got too big for our britches: “you’re not as smart as you think you are.” We tend to place too much confidence in the accuracy of our own judgments, and additional information is likely to increase that confidence, even if it was poorly supported in the first place. We naturally look for confirming evidence of a decision that has already been made, and discount or even ignore contradictory information. Or, as articulated more elegantly by those two great American philosophers Paul Simon and Art Garfunkel, “Still a man hears what he wants to hear, and disregards the rest.”

One way to demonstrate this overconfidence bias in the laboratory is to ask subjects to place a high and low range around an unknown quantity, with a specified degree of confidence. In the statistical vernacular, this is a confidence interval: an estimated range of values that is likely to include an unknown variable within a specified probability. Rationally, higher confidence should result in narrower ranges of estimates, whereas lower confidence should lead to wider ranges. A striking illustration of this behavioral bias consists of the challenge below:

Imagine two pieces of railroad track, each one mile long, placed end to end and attached to the ground at the far extremes. Suppose that it gets hot, and each piece of track expands by exactly one inch, forcing the track to rise in the middle where they meet (see the illustration below). How high will the track be in the middle? Provide a high and low estimate such that you are 90% confident that the correct answer lies between your two estimates.



Most people peg the low end of the range as an inch or two. That’s partly a mild anchoring effect, since the question involves the expansion of length by one inch, thereby suggesting that unit of measurement. The interesting part of the experiment lies in how people arrive at the high end of their estimated range. The answer to the question is that the rails rise by 29.7 feet where they meet in the middle. Was the top end of your range higher or lower than that? If lower (which it is for the vast majority of respondents), you’re a victim of the overconfidence bias. Nothing stopped you from putting an absurd upper limit on your range (of, say, ten miles), except for your own overconfidence. (If this calculation of 29.7 feet strikes you as simply far too high, contact your BBH representative for the proof statement).

The overconfidence bias is a reflection of the fact that it is hard for us to appreciate the range of what we don’t know. The Chinese philosopher Confucius captured this all-too-human challenge succinctly in his *Analects*: “To know that you know what you know, and that you do not know what you do not know, that is true knowledge.” 2,500 years ago Confucius grasped that it is profoundly difficult for us to comprehend the limits of our own knowledge.



IMPLICATIONS FOR INVESTORS

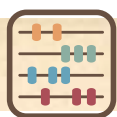
Succumbing to the overconfidence heuristic in the investment arena can lead to financial ruin. We don’t normally think of the Book of Proverbs as a guide to successful investing, but it is worth remembering that in investing as well as in life, “pride goeth before a fall.” When an investor has an unwarranted degree of faith in a specific security or asset class, the overconfidence bias can quickly lead to overconcentration. Knowing what you own and why you own it is an effective means of managing investment risk, but the persistence of uncertainty implies that an investor ought to own more than one thing, no matter how much confidence she has in the prospects of a single security. Overconfidence can be particularly dangerous when an employee invests too much of her financial assets in the stock of her employer. December 2, 2001 was not a good day for employees of Enron, but it was a

catastrophic day for those that owned nothing but ENE in their retirement accounts. We saw this heuristic at work on a larger scale in the housing market bubble, where overconfidence in the belief that housing prices only ever go up led people to borrow as much money as they could to buy as much house as they could. In many cases, this overconcentration in a single asset called a house was compounded by overleverage, and we know how that story ended.

Overconfidence leads to overpaying. Investors who “know” that a company’s future is bright will easily give into the temptation of ignoring value in anticipation of price appreciation, and will be readily disappointed when adverse developments arise. On the other hand, investors who understand the threat of unknown risks will insist on a margin of safety in each and every investment they make, by only acquiring securities at a discount to a conservative estimate of intrinsic value. Overconfidence can also lead to overinvesting, or frequent trading based on a misplaced belief in the near-term movement of a security’s price. This approach again ignores the critical role of valuation, and

even without the frictional costs of trading and taxes is not a path to sustainable wealth preservation and growth.

So what is to be done? Awareness of the overconfidence bias is the first big step towards preventing it from leading us astray, but ironically, overawareness of the bias could lead to an underconfidence bias and eventually paralysis. We’ll never have a complete set of information about any investment we make, but there are ways to recognize and avert the bias while still getting on with the job of investing. First, pay attention to value. Having a margin of safety in each and every investment concedes that there are unknown risks that could affect the value of the security, and owning that security at a discount to its intrinsic value allows for the possibility of unfavorable developments. Second, it’s not enough to merely acknowledge information that conflicts or refutes what we believe to be true: we have to actively seek it out. This tempers unwarranted enthusiasm and fosters prudence. And finally, if you take no other conclusion from this section on the overconfidence heuristic, you should now know better than to believe everything you think.



MENTAL ACCOUNTING

Similar to real accounting practices, mental accounting is the tendency to code, categorize or label economic values or expectations in order to evaluate them. Money is treated and valued differently depending on where it comes from, where it is kept, or how it is spent. Mental accounting ignores the fungibility of money, and can lead to inefficient and uneconomic behavior, as it prevents us from thinking broadly about the economic consequences of the decisions we make.

This behavioral heuristic is embedded in our language. On a regular basis, we use such familiar phrases as earned money, found money, play money, plastic money, rainy day money, nest egg money, money to burn, etc. As with other heuristics, this innate categorization of money has its advantages: one wouldn’t want to confuse retirement funds with money to burn, or head off to Vegas with nest egg money. Yet the bias can work against us as well, primarily by leading us to undervalue or overvalue otherwise fungible money due to the way we think about it.

Consider the following example of mental accounting in action:

You’re going to a concert, for which you’ve purchased a \$100 ticket. On the way to the concert you discover that you’ve lost the ticket. Tickets are still available at the box office for the same price. Do you buy another ticket and go to the concert?

There’s no right answer to the question, only an expression of preference, but most people struggle to justify the purchase of an additional ticket under these circumstances. Somehow you feel that if you spend an additional \$100 to buy another ticket, you’ll sit through the whole concert in the disquieting belief that you essentially paid \$200 for your ticket while the person sitting next to you paid only \$100.

Now consider this scenario:

You’re going to a concert and have reserved a ticket at the box office. On the way to the concert you discover that you’ve lost \$100 in cash, but still have enough cash to purchase the ticket upon arriving at the box office. Do you buy the ticket and go to the concert?

This seems less troubling, and respondents have a much easier time spending the \$100 to go to the concert. It’s unfortunate that you lost \$100 in cash, but that seems to have little to do with your decision to enjoy your evening.

These are, of course, identical economic scenarios, as both revolve around the loss of \$100, just in different forms. In the first situation, you’ve subconsciously created a mental account called “concert ticket” and you’ve already debited it once for \$100. The circumstances ask you to debit it for another \$100,

and that is troublesome, as you believe you're only getting \$100 worth of concert value. In the second scenario, the ticket hasn't been purchased yet. You haven't established a mental account called "concert ticket," so you're not already \$100 in the hole. The \$100 you spend on the ticket feels like the first \$100, and doesn't cause any cognitive stress.



IMPLICATIONS FOR INVESTORS

Mental accounting can work to our benefit in the investment world, particularly when we turn a mental account in to a real account by segregating funds for retirement (401k plans or Individual Retirement Accounts) or education (529 plans). That categorization makes these funds less than perfectly fungible, or fungible only with a penalty. Mental accounting can work against us, however, when it leads us to inaccurately value money.

Many people think of tax refunds as "found money," and we're inclined to spend or invest it less thoughtfully because it doesn't seem the same as earned money. A refund check from the IRS feels like a windfall, whereas more reasoned thought reveals that it is nothing more than an interest-free loan made to the government that has finally been repaid. Similarly, credit cards and gift cards also lead us to undervalue money: it's far easier to spend "money" that is plastic than it is to spend ten dollar bills. This is the principal reason that the first recommendation of credit counselors to people who have gotten into too much debt is to cut up their credit cards. They're just too easy to use. Retailers figured this dynamic out in the 1990's, by rolling out gift cards and touting their suitability as flexible holiday presents. Leaving aside the fact that a certain portion of gift cards never get used, the recipient of a gift card is far more likely to use it to buy something at full price than wait for a sale, because of the bias to undervalue plastic money. January used to be a clearance month for retailers, when they cleared their shelves of holiday merchandise at a discount. Due to the growing popularity of gift cards, January is

now more of a full price month for most retailers. In all of these cases, mental accounting leads us to undervalue money, or spend it more readily.

Mental accounting can lead us to overvalue money as well. Inherited wealth can be invested too conservatively, out of fear of losing "grandma's" money and without regard for the investment needs of the current owner of the capital. This places a value on the money in excess of reality by constraining investment options for non-investment reasons. Investors are tempted to place certain stocks that they have held for a long time, or have sizeable unrealized capital gains, into mental "legacy" accounts that can't be touched. In the extreme, investors can almost anthropomorphize long-term holdings, as if to say "IBM and I have known each other for so long, it wouldn't possibly betray me." Taxes are, of course, real, and rational analysis will take into account trading costs and tax implications to inform the decision to sell an investment, but those considerations shouldn't dictate a sale or retention. To do so is to overvalue the funds invested in those securities and ignore the opportunity cost of redeploying the funds elsewhere. The mental accounting bias can lead younger investors to be too conservative in investing for their retirements. They know that retirement savings is important, but conclude that because of that importance they shouldn't take any risk in their longer-term savings. This overvaluation of capital can lead to an overconservative asset allocation that exposes the portfolio to loss of purchasing power over time.

As shown, mental accounting can be beneficial when it leads us to place proper values on funds that should genuinely be segregated for specific purposes. At the same time, remembering that money is fungible can help us break down inefficient mental accounts, prevent us from inadvertently undervaluing or overvaluing money, and therefore save, spend and invest it more effectively.



PROSPECT THEORY

The specific way we mentally account for losses and gains has developed into an academic field in its own right, and contributions to this field through the conception of prospect theory garnered Daniel Kahneman the Nobel Memorial Prize in Economic Sciences in 2002. Prior to the development of prospect theory, the dominant thesis about how people make decisions when faced with uncertain outcomes was expected utility theory. This theory holds that people rationally weigh the probability of an outcome (gain or loss) with the implications of those outcomes (how much is gained or lost), and choose accordingly. For example, if someone were offered \$50, or a flip of a coin for the

chance to win \$110, they would rationally choose to flip the coin, as the expected payoff of the latter is \$55 (50% probability times a \$110 payout). Of course, a specific participant in such an experiment might simply be more risk averse or enough in need of \$50 to not take the mathematically preferable gamble, but the theory holds that this individual would nonetheless consistently apply that level of risk aversion to each of her decisions.

But repeated efforts to demonstrate expected utility theory in the laboratory lead to curious insights. It turns out that people think differently about the prospect of gains versus losses, and don't

mechanically consider probability weightings in making decisions, as expected utility theory requires. Furthermore, people don't seem to think symmetrically about gains and losses, but are influenced heavily by how the question is framed.

Imagine that you have just been given \$1,000 and have been asked to choose between two options. With option A you are guaranteed to win an additional \$500 with no risk. With option B you are given the chance to flip a coin. If it's heads, you receive another \$1,000. If tails, you receive no additional money. Which option do you choose?

Unlike our earlier example of a skewed outcome, there is no mathematically correct answer to this question, as option A and option B are economically equivalent. The certainty of \$1,500 in option A is the same expected outcome as a 50/50 chance of \$2,000 or \$1,000 in option B. In repeated iterations of this test, most people choose option A, the guarantee of \$1,500 without the risk of a higher or lower payout.

Now consider the following scenario:

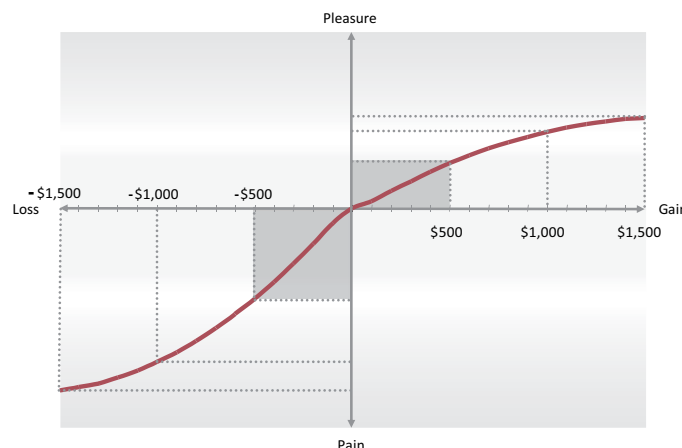
Imagine that you have just been given \$2,000 and have been asked to choose between two options. With option A you are guaranteed to lose \$500. With option B you are given the chance to flip a coin. If it's heads, you lose \$1,000. If tails, you lose nothing. Which option do you choose?

Not only are these options once again economically equivalent, the math of the second scenario is identical to the first one: a guaranteed \$1,500 or a 50/50 chance of ending up with \$1,000 or \$2,000. Expected utility theory says that people will acknowledge the equivalency of the two questions and make the same choice. Yet most people in this second scenario choose option B and want to flip the coin. Why? The prospect of a \$500 gain in the first scenario but a \$500 loss in the second, despite the same ultimate outcome, seems to make a difference. It turns out that people are by nature risk averse when it comes to gains (hence the popularity of option A in the first scenario), but risk seeking when it comes to avoiding loss (option B in the second scenario).

These insights illustrate the fundamental properties of prospect theory, which states first of all that people like making money and dislike losing it. Hence, the graph below shows that pleasure increases with gains, while pain increases with losses: the curve slopes from the lower left to the upper right. Second, prospect theory argues that the pain associated with a particular loss exceeds the pleasure associated with an equivalent gain. This is why people are generally willing to gamble to avoid the loss outlined in the second scenario above. The pain curve descends more steeply than the pleasure curve rises, and the shaded "loss" box in the graph is larger than the shaded "gain" box for the same amount of money.

The third fundamental insight of prospect theory is that the pleasure or pain associated with a gain or loss diminishes as the gain or loss increases. Think of a particularly successful trip to Las Vegas. It feels great to win \$1,000 at the blackjack table, and each incremental \$1,000 that you win feels better, but the increased pleasure is not linear. Similarly, a cold beverage on a hot summer afternoon tastes great. The second one also tastes great, but somehow the pleasure isn't twice as great as the first. In other words, the pleasure or pain associated with a gain or loss is dependent on the starting point. Hence the flattening of both ends of the curve as pleasure and pain increase.

PROSPECT THEORY



IMPLICATIONS FOR INVESTORS

Prospect theory suggests that investors tend to place each security in their portfolio into a separate mental account, and judge investment success or failure on a segregated basis rather than at the portfolio level. This tendency is reflected in the scenarios above, where the equivalence of the identical outcome (think of that as the aggregate portfolio) was swamped by the details of the framing (individual securities). This inclination to isolate individual investment decisions readily leads to the various heuristics outlined earlier, particularly anchoring and overconfidence. In turn, this indicates that investors are quick to realize gains on individual securities in order to lock in and enjoy the success of an investment (anchored on purchase price), whereas they delay the realization of capital losses in an effort to avoid locking in the loss. This is an expression of the preference to gamble when confronted with a loss (hold onto a losing position and hope for the best) versus an aversion to risk when confronted with a gain (sell it now lest it go down and you lose your capital gain).

We saw above that prospect theory implies that incremental pain and pleasure diminishes as losses and gains expand. The consequence of this economic law of diminishing returns is that lots of little gains feel better than one big gain, whereas one big loss isn't as painful as many little losses added together. When the pain of investment loss rises to too great a level, say, well into a bear market, this behavioral bias suggests that investors are more likely to sell everything all at once, as the prospect of

one big loss upon the liquidation of a portfolio isn't as painful as realizing a series of smaller losses over time. Overconfidence plays a role here as well, as investors in these circumstances can easily conclude that losses are bound to continue. This law of diminishing pain is, by the way, the behavioral underpinning of the entire credit card industry. It is behaviorally preferable for credit card holders to write one big check each month to pay their credit card bill than to write a series of smaller checks (or use cash) for each and every purchase along the way. Lots of little gains (whatever is purchased during the month) are more enjoyable than the one big loss (when the credit card bill comes due) is painful.

One of the most powerful tools to identify and combat the behavioral implications of prospect theory is to frame questions in different but equivalent ways to see if the wording alone influences the answer. In the simple scenarios above, reframing an identical outcome from the prospect of a gain to the prospect of a loss meaningfully changes the way most people think about

their options. This holds true outside of the financial sphere as well. It matters, for example, whether a surgical procedure is presented as having a 90% chance of success or 10% chance of death, although both frames may be accurate.

Not to deny the careful analysis that should accompany each individual investment, overall investment success should nonetheless be measured at the portfolio level, lest an investor make biased decisions at a specific security level because each holding stands in its own mental account. The best way to avoid selling a winner too soon or a loser too late is to remain focused on the relationship between the price of the security and the intrinsic value. Not only does this help to avoid various other heuristics outlined above, it acts as a strong counterbalance to the behavioral bias to realize the pleasure of a capital gain too quickly and postpone the pain associated with a loss too reluctantly. As we have seen elsewhere in this review, consistent discipline is an investor's best friend.

CONCLUSIONS

The bad news is that the behavioral biases outlined in the preceding pages are hard wired. They are part of what it is to be human, and that means we have no choice but to live with them. In the words of Pogo, "we have met the enemy, and he is us." The good news is that awareness is more than half the battle. Recognizing the signs that a behavioral bias is at work enables us to slow down, question our intuitions and engage in more deliberative and analytical thinking. Recall that these heuristics are particularly invidious under conditions of limited information and time constraints. An investor will never obtain a complete set of information about a potential investment, but she can resist the urge to make decisions rapidly. In his letter to shareholders in 1990, Warren Buffett colorfully and memorably captured this truth when he characterized his own investment style as "lethargy bordering on sloth." A disciplined, consistent, repeatable and patient investment process is the best protection against the innate temptations of behavioral biases.

A further defense against the possibility that cognitive shortcuts might derail an investment approach is to write things down. The very act of committing investment expectations and objectives to print helps to slow down the cognitive process and engage more critical thinking while at the same time disengaging from the distractions of current market circumstances and headlines. A well-drafted Investment Policy Statement (IPS) essentially acts as a letter from a more rational you to a potential future irrational you, reminding yourself what the ultimate objectives of investing

are, and how you are most likely to achieve them. Time spent defining success up front will pay off in better decision making in the future.

The ancient Greek city-state of Delphi was the home of the most famous of the oracles of Apollo, established in the eighth century BCE and known to still be in existence as late as the fourth century CE. Twelve centuries of statesmen, warriors, philosophers and common men approached the priestess for divine guidance. The pronouncements of the oracles were often ambiguous, requiring supplicants to apply their own intuition to her proclamations. In 560 BCE Croesus of Lydia asked the oracle whether he should attack the Persian empire. "If you attack," the priestess memorably replied, "you will destroy a great empire." Armed with this prophetic confirmation of his intent, Croesus set out to invade Persia, only to discover that the great empire that was to be destroyed was his own. This may very well be the first recorded instance of the confidence heuristic leading someone catastrophically astray. Carved on the façade of the Delphic oracle was the phrase, "know thyself." In other words, supplicants to the oracle had to search within and understand themselves in order to fully understand and act on the guidance of the priestess.

When it comes to taking into account the behavioral challenges to decision making in the 21st century, good advice transcends the ages. ♦

THEORY IN PRACTICE

The Economic Implications of Behavioral Finance

An Interview With Economist Robert J. Shiller

In Scott Clemons' feature article, "Why Bad Decisions Happen to Good People," he explores the behavioral factors that lead to microeconomic decision making. The heuristics that he describes on the micro level add up to macroeconomic forces that affect markets, government policy, and our financial system. For this quarter's issue of *InvestorView*, Scott Clemons sat down to discuss some of those macroeconomic forces with renowned economist Robert J. Shiller.

Clemons' interview with Dr. Shiller spans a range of topics related to behavioral economics/finance, from monetary and fiscal policy to the real estate markets and the causes of the recent financial crisis. Excerpts of their conversation are in the pages that follow.

ON THE TOPIC OF BEHAVIORAL ECONOMICS

Dr. Shiller began with comments that lay the foundation for the importance of behavioral economics and eloquently summarize why *InvestorView* is exploring this topic in such detail in this issue:

Robert Shiller: Behavioral economics is the greatest revolution in economics in the second half of the 20th century. We got in a mode of thinking in the "efficient markets" era, which ran roughly from the 1960's to the peak of the market in the 2000's, that humans make rational decisions. Not just in finance, but in economics in general, there was disinterest among economists in any of the more subtle observations of human behavior. They felt it was outside the scope of economics.

Subscribers of the efficient markets theory would say that whenever you would see large numbers of people doing something that caused macro effects, it couldn't be psychological. It had to be a response to something rational, like interest rates or taxes. That was the assumption, but I think we've gotten past that, which is really important progress towards understanding drivers of the economy.

ON MONETARY AND FISCAL POLICY

Scott Clemons: Given the importance of "animal spirits" and confidence in driving the economy, is monetary policy constrained

Photo: Michael Marsland, Yale



ABOUT DR. ROBERT J. SHILLER

Dr. Shiller is the Arthur M. Okun Professor of Economics at Yale University, where his research has focused on behavioral economics, real estate, and the financial markets, among other topics. Dr. Shiller was the co-creator of the Case-Shiller Index,

which measures home pricing trends. He is the author of multiple books, including *Irrational Exuberance*, *Animal Spirits: How Human Psychology Drives the Economy and Why It Matters for Global Capitalism*, and most recently, *Finance and the Good Society*.

in its efficacy? If people aren't spending and investing with the 10-year bond as low as it is, are they going to start if it goes even lower, or is the Fed pushing on a proverbial string?

RS: This is what Keynes was talking about in the 1930's. It's the puzzling phenomenon of a liquidity trap. You can bring interest rates down to zero, and still people might not want to invest. That's the fundamental Keynesian conundrum.

SC: Is the Fed the "last man standing" in terms of providing economic stimulus? Or, are their efforts just optics? In other words, this is an election year, which makes it difficult to accomplish anything fiscally, and even though the efficacy of lower interest rates may be questionable, does the Fed need to be seen to be doing something?

RS: We have an independent central bank, and that was copied all around the world in the last couple of decades. There was an appreciation of the importance of a central bank, and its existence has helped us deal with the crisis. The problem is that the Fed doesn't have much ammunition left. They've brought interest rates – the short and long – down to zero. They talk about Operation Twist and maybe QE3, but those are subtleties. If the

Fed is going to execute Operation Twist, that means they have to sell short and buy long, but they don't have that much left on the short end. It's unfortunate that we don't have a fiscal authority with independence like the Fed.

SC: Do you think that there would be an aversion to fiscal stimulus today given all the discussion about austerity?

RS: There seems to be a natural human tendency in difficult times for austerity. It just seems intuitively right to people. Keynes talked about this with the "paradox of thrift." The paradox is that if everyone pursues austerity to get out of their economic travails, it will only make them worse. But, that is not a lesson that has been learned. This paradox has been in text books for the last century, but now it all sounds so new.

ON THE FINANCIAL SYSTEM AND REAL ESTATE MARKETS

SC: A lot of these issues have been hot topics on the campaign trail. If you were moderating a presidential debate, what would you ask the candidates?

RS: The issue is that people don't realize that our current financial problems are not selfishness and greed, though there might be some of that. I realize this may not be a popular thing to say, but the problems with our financial system are technical in nature – we're not equipped to deal with a crisis – and unfortunately, that isn't good for debate. For example, we need to think about reforming our mortgage system.

SC: Can you give one example of how we might do that?

RS: We should offer mortgages with a preplanned workout, meaning that the documents should say in black and white that your principal payments will fall if home prices fall. That's an insurance policy against the very risk that helped cause the crisis.

What we did, which astonishes me, was encourage home buyers to put all their savings into one undiversified asset with leverage of 10-1. It shouldn't be a big surprise that when home prices fall, that we now have 11 million households under water. That's a big drag on the economy, and even people who aren't underwater are affected by the psychology of that situation. We ought to have known with financial theory that you don't leverage your entire portfolio 10-1.

SC: I remember hearing in the summer of 2007 that leveraging one asset as much as 10-1 wasn't really that risky because "housing prices only ever go up." But, for someone like you, who has done so much research on real estate, saying "real estate prices only ever go up" only goes back as far as your data series, which is only a fraction of economic history.

RS: When I was working on the second edition of my book, I wanted to get a one-hundred-year-long real estate price series, and I found that no one had ever done that. How do you know that home prices will always go up if you don't have any data?

SC: It brings to mind a concept from Daniel Kahneman's latest book, *Thinking, Fast and Slow*, which is the idea that "what you see is all there is." The human mind focuses on the information in front of it, and anything else is either irrelevant or uninformative.

RS: I think if you pushed people back then, they might say that prices might fall, and that they did in the 1990's, but just for a brief period. So, the argument is reminiscent of a phrase that was popular in the 1920's, which is "one step down, two steps up." The argument was that over time, price dips wouldn't matter, and it has repeatedly functioned in speculative bubbles throughout history.

SC: That idea leads to the behavioral bias that you should always buy during dips because dips are always followed by rallies.

RS: Right, and in that case dips don't matter and aren't necessarily the start of something bad. It's part of the upward push of a bubble – a period when people forget about the depression story.

I administer questionnaire surveys to home buyers in the United States, and I was comparing answers from 2004 to now. What was on people's minds in 2004 is completely different than now. All people thought about in 2004 was population growth, Asian investors deploying capital in U.S. markets, and a shortage of land. There was practically no one who mentioned the possibility of a housing market price decline, so there was definitely some distortion in people's thinking.

SC: When you run those surveys today, what is on people's minds?

RS: A lot of what you see in the press today. There is a lot of anger towards financial institutions. That's a change because there was an attitude that developed throughout the 1990's and 2000's that everyday investors could study a little finance and find success investing in things like second homes using leverage. So, part of the reason the recovery has been so prolonged is that the boom before the crisis created an identity issue, which was psychologically powerful because there was an attachment to these attitudes. This is called identity economics.

SC: Professor Shiller, thank you such an engaging conversation, and for sharing your thoughts on the applicability of behavioral finance insights to today's global economic issues. ♦

Equities

Core Select Update



Rick Witmer
Partner



Tim Hartch
Partner



Michael Keller
Managing Director

Co-Managers of Core Select

Equity markets continued their volatile trading patterns in the second quarter, starting with a broad retracement of the prior quarter's gains that was then followed by a late rally. The ebb and flow of investor sentiment around macroeconomic indicators, policy intervention and various Euro area rescue packages continued to dominate the short-term behavior of the market, and we believe such volatility is likely to continue. The S&P 500 Index¹ declined by -2.8% in the second quarter but has nonetheless achieved strong gains of 9.5% thus far in 2012. The BBH Core Select representative account ("Core Select") fell by -0.6% in the quarter and is up by 10.3% for the first half net of fees². On a trailing five-year basis, Core Select has compounded at an annualized rate of 5.7% per year versus 0.2% for the S&P 500 Index.

The modestly down performance of the U.S. equity market in the second quarter largely masked a sharp divergence in sector behavior. In the midst of growing macroeconomic uncertainty, investors seeking safety and dividend income were drawn to the "low beta" areas of the market during the quarter, as evidenced

by the strong performance of the telecom services, utilities and consumer staples sectors. In contrast, the sectors that are more sensitive to cyclical factors or commodity prices fared much worse. Clearly, this performance bifurcation was not without logical footing, given that the prospective risks of a second global recession led by Europe and a substantial moderation of emerging market growth became much more prevalent during the quarter. Along those lines, the general tone of feedback we have gotten from management teams has dimmed notably over the last few months, as cautious optimism has been replaced in many cases by open acknowledgements of the rising levels of uncertainty and customer hesitancy.

In this market environment, our Core Select investment team is being careful and patient but is far from dismayed. Our investment decisions are always made with the perspective of long-term business ownership, and as part of that, we accept the fact that companies and industries will face periodic challenges driven by economic factors or internal issues. Therefore, in order to achieve our goals of capital preservation and attractive

long-term compound growth, we need to keep a tight focus on owning competitively advantaged, well capitalized providers of essential products and services, as we believe these businesses have the requisite resiliency and flexibility to navigate difficult times. We also maintain a rigorous valuation discipline in acquiring or adding to positions at discounts to our appraisal of their intrinsic value³ and reducing or selling them when such margin of safety is diminished. In many cases, our best opportunities arise when the pendulum of market sentiment swings too far in one direction or the other. Given the recent retreat from the more cyclical areas of the market, such a scenario may now be materializing. We are carefully evaluating whether we may be able to initiate or add to certain positions in high quality businesses from our "wish list" with somewhat greater cyclical influences, in some cases funded by selective trims of positions in companies that have acted as safe havens.

While advancers outnumbered decliners in our Core Select portfolio during the second quarter (by a count of 17 to 13), the contribution impact of the negative performers outweighed that of the stocks showing gains. The largest positive contributor was Wal-Mart, which rose by 15% and was held at a substantial portfolio weight. That Wal-Mart was the quarter's largest contributor is especially notable given that the shares had come under substantial pressure in April due to unflattering revelations regarding an investigation of alleged bribery in Mexico. In response to the situation, Wal-Mart's

management strongly reiterated the company's longstanding commitment to integrity and transparency, but the allegations have, not surprisingly, brought about increased government scrutiny and the potential for sizeable penalties. Despite this negative development, investors cheered the company's strong earnings results released in May, which were highlighted by continued improvements in U.S. comparable store sales, strong growth and profitability in the International segment and copious cash generation. While we remain confident in Wal-Mart's competitive position, long-term growth opportunities and management discipline, we did modestly trim our position in June as the share price began to approach our estimate of intrinsic value.

Core Select also benefited from strong second quarter share price gains from eBay, Comcast and Anheuser-Busch InBev. eBay continued on its strong trajectory of growth in both its Marketplaces and Payments businesses. The company has executed very well and has made shrewd investments over the last few years to strengthen the position of its scalable, advantaged businesses in attractive markets that have durable secular growth characteristics. It was only three or four years ago that many investors had dismissed the company as being a fading auction website bolted to a more promising payments business. Today, we believe it is clear that management's strategy of creating a comprehensive platform to enable global e-commerce has gained a lot of traction in the market, and it is driving strong results and a bullish growth outlook. Moreover, burgeoning opportunities in areas such as mobile commerce, digital wallets and location-based services create potential sources of additional growth. While eBay's share price has risen materially in recent months, the stock is still trading at a reasonable discount to our revised intrinsic value estimate.

Comcast was our third largest positive contributor in the third quarter and is the leading year-to-date contributor to Core Select by a wide margin. Despite the strong

share price performance, we believe the company's valuation remains somewhat compressed due to competitive pressure from incumbent telephone and satellite operators, as well as the secular threat of "cord-cutting," whereby consumers drop their video service in favor of watching video online for free. Our view continues to be that Comcast has the most efficient and competitively advantaged network through which to deliver increasingly large amounts of data to consumers and businesses across the majority of its footprint. We view Comcast's strong operating results as being an affirmation of management's successful strategies of cross-selling and up-selling into the customer base, improving customer service and innovating to offer new products and content. Near the end of the quarter, we trimmed our position in Comcast slightly in light of the strong run-up in the share price and the stock's large weight within Core Select. We have long held the view that trimming positions in the midst of otherwise strong sentiment and performance is a prudent approach, particularly in the case of large holdings in Core Select.

Anheuser-Busch InBev (ABI) has advanced by 33% year-to-date and was another strong contributor during the quarter. ABI is the world's largest beer business, with strong brand franchises in large markets delivered across powerful distribution networks. ABI's size, influence, and global coverage are key advantages in a consumer business where scale in advertising, manufacturing and distribution confer sustainable leadership. Alongside a recent and long-awaited volume rebound in the key U.S. market, ABI has seen a substantial increase in demand in parts of Brazil that are currently underserved. The company is adding significant capacity to address this demand in a market where it is the clear leader and well positioned for long-term success. We believe there are additional benefits to the overall organization as these capacity increases will alleviate stress on other parts of the manufacturing and distribution footprint and improve overall efficiency and profitability within Brazil.

ABI also recently announced its intention to acquire the part of Grupo Modelo it does not already own, giving it access to a strong global brand in Corona and a strong distribution system in Mexico, the world's fourth-largest beer profit pool. Based on the announced terms of the deal and an assumed-successful closing, we anticipate a potential increase of our estimate of ABI's intrinsic value per ADR.

Our largest negative contributor was Dell, which declined by 25% in the quarter and finished the first half down by 14.5%. Investors are increasingly skeptical of the vitality of the PC business overall, and there has been broad disappointment with the company's weak revenue growth performance, which reflects not only global macroeconomic pressures, but also Dell's unwillingness to pursue volume in the low-margin parts of the business. We concur with the general viewpoint that the PC business is mature and profit-constrained, but we continue to believe that Dell's direct model and predominantly corporate customer base are key differentiators that will drive solid cash flow performance in the PC side of the business for many years to come. Of much greater import is Dell's continued transformation from being a "transactional" technology vendor to much more of an IT solutions provider with an increasingly compelling and comprehensive set of offerings that can scale from small businesses to large enterprises. With a very large base of existing customers who need simplicity, manageability and affordability in their IT and data center environments, we believe Dell has a compelling opportunity to become a major player capitalizing on dozens of evolving technology trends such as fabric-based computing, network flattening, server consolidation, virtualization, remote management, unified threat management and storage de-duplication. In our view, Dell's assets, capabilities and low-cost heritage confer distinct advantages that position the company well to exploit such trends. At a cash-adjusted trading multiple of roughly 4x our current-year free cash flow estimate, we continue to see compelling value in the shares.

In mid April, we initiated a new position in Celanese Corp. Celanese is a leading producer of acetyl products, which are essential intermediate chemicals used in various industrial and consumer applications, as well as a leading global producer of engineered polymers that are used in a diverse set of consumer and industrial product applications. The company's products serve diverse end markets in all major regions of the world and are developed, engineered and produced at world-class technology, processing and manufacturing facilities around the globe. Celanese's core acetyls technology is highly differentiated and offers substantial capital and operating-cost advantages that we believe are well protected and sustainable. The company continues to leverage these advantages in building downstream businesses and product applications. We view Celanese as being an innovative player with a strong operating culture and effective capital allocation capabilities.

While end-market pricing for many Celanese products, as well as important feedstock costs, are outside the control of management, we believe the company is well positioned at the low end of the marginal cost curve of these essential products and, consequently, is able to prosper and grow throughout full economic and product cycles despite a reasonably high level of variability in pricing, margins and returns when compared to other Core Select portfolio companies. Given this relatively high level of likely variability in business performance, we anticipate substantial share price volatility over time. We have built a modest position over the last few months, and we expect to add to our holdings opportunistically while remaining mindful of the incremental pressures that could weigh on the performance of the business in the current context of slowing industrial activity in key markets around the world.

During the second quarter, we added to our existing holdings in Google, Liberty Interactive, Wells Fargo, Baxter and Target. As it pertains to Google, we have now

built a substantial position in the stock at attractive levels relative to our estimate of intrinsic value. We are enthusiastic about the company's long-term secular growth opportunities in markets where it has very strong competitive positioning. Beyond just the top line opportunity, we also view Google as having a sustainable and scalable model that should continue to produce large amounts of free cash flow. Our additions to Liberty Interactive, Wells Fargo, Baxter and Target were relatively small in relation to the existing position sizes in Core Select, but in all cases our perspective on these companies is that they are attractively valued leaders in good businesses in which they can leverage their sizable advantages. As an aside on Baxter and our other healthcare holdings generally (Novartis, Johnson & Johnson, Dentsply International and Henry Schein), we do not currently see them as being particularly imperiled by the Patient Protection and Affordable Care Act that recently received the blessing of the U.S. Supreme Court.

During the first month of the quarter, we exited our remaining positions in Visa and Ecolab as the prices of both companies had achieved our estimates of intrinsic value. As noted in our prior communications, we had been trimming these holdings for several months, consistent with our valuation-driven selling discipline. As explained above, we also trimmed our holdings of Wal-Mart and Comcast during the quarter.

From an overall valuation perspective, Core Select ended the second quarter at 77% of our underlying intrinsic value estimates on a weighted-average basis, compared to 78% at the end of the first quarter and 74% at the beginning of the year. At the low point of the quarter, on June 4, the portfolio discount had been 72%, which illustrates the sharp recovery that transpired in the market (and for Core Select) in the closing weeks of the month.

Our Core Select investment team is committed to protecting and growing the capital that you have invested with

us. Despite the unmistakable near-term undercurrent of slowing growth and lower levels of business and consumer sentiment, we have great confidence in the long-term outlook for the 28 businesses that we currently own. We are looking forward to the second half of 2012. ♦

¹*S&P 500 Index: An unmanaged capitalization-weighted index of 500 stocks designed to measure performance of the broad domestic economy through changes in the aggregate market value of 500 stocks representing all major industries. The index is not available for direct investment.*

²*The representative account is the largest account managed with the same investment objective and employing substantially the same investment philosophy as the core select strategy. Performance figures for the representative account are reported net of a 1% investment advisory fee. Performance of different types of investment vehicles employing this strategy may differ as a result of the different fees, expenses, charges, number of securities, and restrictions applicable to the vehicles.*

³*Intrinsic Value: What one estimates to be the true value of a company's common stock based on analysis of both tangible and intangible factors.*

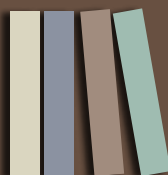
Performance data quoted represents past performance which is no guarantee of future results; investor principal is not guaranteed and there is a possibility of loss on all investments. Further information is available upon request.

BBH prepares proprietary financial models for each Core Select company in order to determine an estimate of intrinsic value. Discounted cash flow analysis is the primary quantitative model used in our research process. We supplement our discounted cash flow work with other quantitative analyses, such as economic profit models, internal rate of return models, and free cash flow multiples.

A number of the comments in this document are based on current expectations and are considered "forward-looking statements." Actual future results, however, may prove to be different from expectations. The opinions expressed are a reflection of BBH's best judgment at the time this document was compiled and any obligation to update or alter forward looking statements as a result of new information, future events, or otherwise is disclaimed. Furthermore, these views are not intended to predict or guarantee the future performance of any individual security, asset class, or markets generally, nor are they intended to predict the future performance of any BBH account, portfolio or fund.

This article is not intended as an offer to sell or a solicitation to buy securities.

THE INVESTOR'S BOOKSHELF

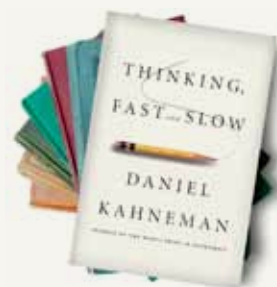


*What's in the library of
investment professionals at BBH*



Thomas Martin, CFA
Investment Strategy Analyst
Wealth Management

A Review of: **Thinking, Fast and Slow** by Daniel Kahneman



For most of the last forty years, nearly all widely accepted economic research has rested on the assumption that human beings exercise sound judgment and reason. In the investing world, one need look no further than modern portfolio theory or the efficient market hypothesis to find this crucial assumption of logical behavior. Psychologist Daniel Kahneman turns these bed-rock financial theories on their heads, however, in his recent book *Thinking, Fast and Slow*. His new work provides an overview of his landmark behavioral economics research, which led to his sharing the 2002 Nobel Prize in Economic Sciences.

In Kahneman's words, "Social scientists in the 1970's broadly accepted two ideas about human nature. First, people are generally rational, and their thinking is normally sound. Second, emotions such as fear, affection, and hatred explain most of the occasions on which people depart from rationality." Kahneman's book convincingly refutes both of these points. Human beings, in fact, predictably exhibit a range of cognitive biases in the course of their normal thought processes that cause them to show logically inconsistent behavior, even under a completely ordinary state of mind.

A central concept in Kahneman's book is the two modes of thinking, dubbed System 1 and System 2, under which humans make decisions. As he describes, "System 1 operates automatically and quickly, with little or no effort and no sense of voluntary control. System 2 allocates attention to the effortful mental activities that demand it, including complex computations." These states of mind are, respectively, the "fast" and "slow" from the title. While most of us view ourselves as rational, calculating beings who thoughtfully make decisions, the fact is that mental shortcuts, or heuristics, dominate our thoughts most of the time, even when we think we are in control, and lead us to err in our thoughts and actions in systematic ways.

However, while System 1 is responsible for most of our logical errors, it is also responsible for the great efficiency with which our brains are able to process information, producing acceptable

answers most of the time. In trying to engage both of these systems in an optimal fashion, Kahneman says, "The best we can do is a compromise: learn to recognize situations in which mistakes are likely and try harder to avoid significant mistakes when the stakes are high." Needless to say, the parallels and applications of this work to the practice of investing are numerous.

Talented investors are keenly aware of the psychological pitfalls inherent in investing, and have crafted the core principles of their investment philosophy and process to be consistent with deep, System 2-type reasoning. Regular readers of *InvestorView* will remember our discussion of Howard Mark's book *The Most Important Thing* in the first quarter of 2012, and his concept of "second-level thinking." As Kahneman's research shows, for reasons deeply ingrained in our psychology, the process of attempting this sort of second-level thinking engages our System 2. In our view, the lesson from Kahneman's book is that in our fast-paced world, investment organizations must make a deliberate effort to create a disciplined investment process that, through its execution, forces second level thinking, and avoids the inclination to "think fast" and employ the lower standard of first-level thinking. At BBH, our investment process stresses rigorous fundamental analysis, a long time horizon, and an appreciation of value. More importantly, we adhere to it in a disciplined manner that ensures we are able to invest with a higher degree of conviction when the stakes are high.

In all, *Thinking, Fast and Slow* does a masterful job detailing the innate flaws of the human mind, and, as previously stated, we believe there are many more lessons from Kahneman's work that can be extrapolated to the investing world. The book underscores that, where the rubber meets the road, it is essential to have a robustly designed investment approach that ensures the consistent application of core investment principles. Without a disciplined process in place, our inherent biases will inevitably taint any investment decisions we make. ♦

Jacket design by Rodrigo Corral from THINKING, FAST AND SLOW by Daniel Kahneman. Jacket photograph by Mark Weiss/Getty Images. Reprinted by permission of Farrar, Straus and Giroux, LLC.

Fixed Income

The Prospect of Default: Lessons from Sarah Lichtenstein's “Money Pump”



Andrew Hofer
Managing Director
Head of Fixed Income Research

Suppose we offered to give you one of two lottery tickets:

“Game P”: An 80% chance to win \$30

“Game D”: A 10% chance to win \$240

- 1) Which would you prefer? There is no wrong answer.
- 2) Now suppose there is a market for these tickets.
What is the lowest price you would accept for each ticket?

Does the ticket you prefer in (1) have the higher dollar asking price? If not, we advise that you decline any offers of a game from passing behavioral scientists. But you mustn't worry that your answer was unusual.



PREFERENCE REVERSAL

In 1971, Sarah Lichtenstein and Paul Slovic published the odd and persistent results of their experiments in “Preference Reversal¹,” defined as the tendency to reverse the order of one's preferences when the terms or framing of those preferences change. Faced with choices like Game P and Game D above, as many as 40% of subjects chose high probability/low payoff games (P) over low probability/high payoff games (D), yet placed a higher dollar value on the D game. Almost none made the opposite reversal (valuing P higher while preferring D). The revelation of Lichtenstein's work wasn't just that people often prefer high probability

bets, it's that so many express the exact opposite choice when valuing them. These contradictory choices demonstrated that “different modes of information processing are used in bidding and choosing²” and offered a strong challenge to the traditional economics assumption of full rationality and wealth-maximization.

The most fascinating and entertaining aspect of preference reversals is their persistence even when their inconsistency is transparent to the chooser. In an attempt to talk subjects out of their preference reversals, Lichtenstein and Slovic created the delightfully named “Money Pump” game in which Lichtenstein would sell the subject their low probability bet and buy

the high probability bet at their assigned values, pocketing the difference. Every time she did this, the subject lost money, as she painstakingly explained while fleeing them. She found some players unwilling to alter their choices or even admit a problem in the face of persistent losses (we encourage you to listen to a hilarious recorded example on Lichtenstein's web page³). Not content to humiliate and/or generalize from college and graduate students⁴, she took the Money Pump to the Four Queens Casino in Las Vegas and there, despite the fact that her game booth lacked the familiarity, glitz, stakes and appeal of the other games, she victimized novices and veteran gamblers alike⁵.

Thanks, in part, to multiple attempts by economists to limit or disprove Lichtenstein’s conclusions, Preference Reversal became one of the most robust and often-replicated findings in psychology. Clearly a strong subjective re-weighting of risks, gains and losses occurs in the process of valuation. Lichtenstein and Slovic’s 1971 paper paved the way for Amos Tversky and Daniel Kahneman’s Nobel Prize-winning work on prospect theory and the enumeration of cognitive biases discussed elsewhere in this issue of *InvestorView*.

WHAT PROSPECT THEORY TELLS US ABOUT GAINS, LOSSES AND SMALL CHANCES

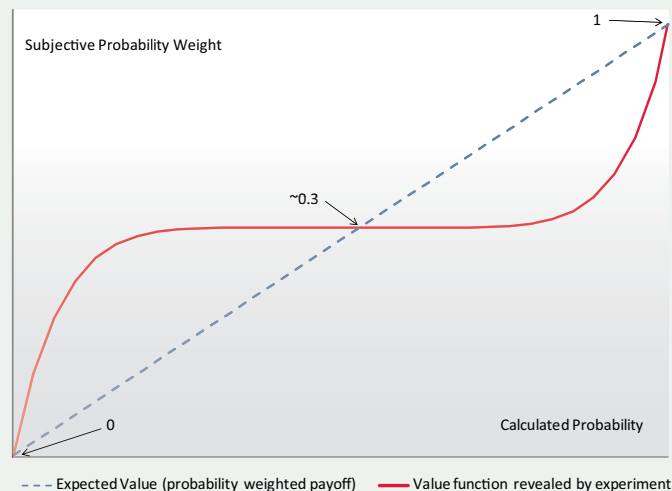
While it would be impossible to summarize the extensive prospect theory literature in this article⁶, here are some of the key biases or departures from mathematically defined expected value that appear to be at work in preference reversal or other valuation mistakes:

Overvalue	Undervalue
Pain of giving up an asset (“Endowment Effect”)	Pleasure of obtaining an asset
Total elimination of loss probability	Reductions in the probability of loss
The first \$100 of loss	Reducing a relatively large loss by \$100
Transactional gains and losses	Cumulative wealth state
Small probabilities of “affect-rich” (exciting) outcomes	“Affect-poor” (boring) outcomes
Small risks (“probability neglect”)	Very small risks (“pseudo-certainty”)

Prospect theory attempts to synthesize these and other revealed biases into a coherent function of human choice. The theory hypothesizes an “S-Shaped Utility Curve,” where revealed preferences are plotted against the classical expected value (see the graph on page 12 of the feature article). The slope is extremely steep when transitioning from gain to loss, and notably steeper on the loss side. This pattern suggests that humans behave in a risk averse fashion with gains (weigh gains less as they grow), but are actually risk-seeking (weigh losses less as they increase) when they are in a loss position.

Our asymmetric and counterintuitive treatment of gains and losses is mirrored in a similar problem weighting and valuing small probabilities. Kahneman & Tversky (1992) mapped a “probability weighting function,” depicted above right, to describe how assessment of probability deviates from empirical probability. Their work suggests the subjective weight assigned to the 1% change from 99%-100% probability or from 1%-0% probability can be ten times the average value of the remaining 98 percentage points. Evolution has equipped us particularly poorly to operate with small amounts of uncertainty.

PROBABILITY GRAPH



Reproduced from LessWrong.com/Wikipedia - http://lesswrong.com/lw/6kf/prospect_theory_a_framework_for_understanding/

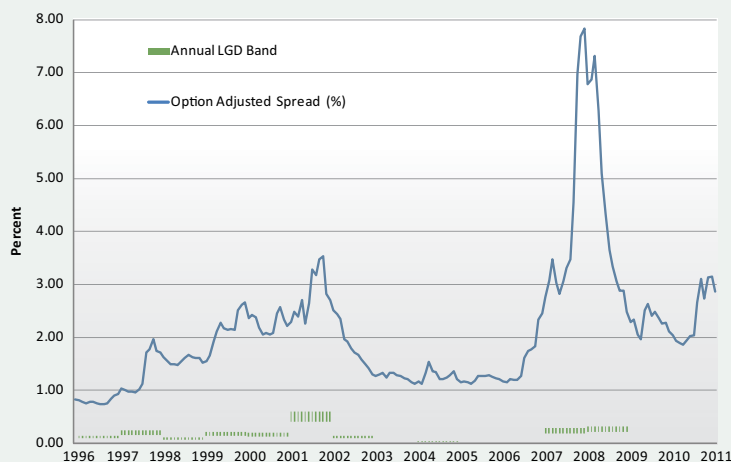
Prospect theory reveals that our biases mislead us extremely in valuation of the transition between gains and losses, as well as weighting small probabilities. In fact, it appears that our less rational tendencies interact quite egregiously when these effects are combined, i.e. when we value large or affect-rich losses or gains with small probabilities, such as lottery tickets, insurance or the realization that your “safe” bonds might default (an understandably “affect-rich” outcome). In these situations we veer between gross-overweighting of risks and complete risk-neglect. We believe the bipolar risk-related behavior suggested by behavioral scientists like Lichtenstein and Kahneman fits the strange behavior of credit pricing in the bond markets, a phenomenon that we exploit in our approach to investing.

BIAS, BONDS AND THE BBH APPROACH

Bonds, and particularly the investment grade credit markets, prey on humans’ poor adaptation to small chances of loss. The entire high grade market offers “gains” (or yield “spreads” over Treasuries) that are perceived as quite small. They are associated with a history of losses well below 1%, although individual losses can be quite sudden and severe (thus “high-affect”) when they occur. The vast majority of high grade bond ownership travels within that part of the “S-Curve” closest to the origin (0,0), where people’s expressed preferences depart most from expected value. The highest quality bonds are the sort of investments that appear to be “certain” to many investors (“pseudo-certainty”), until a little bit of uncertainty creeps in (“probability neglect”). These small uncertainties or “improbable events” come vividly into investors’ view, causing investors to run away from credit and yields to create a gap much wider than justified by what are usually relatively small increases in risk.

We find hundreds of examples, both individual and market-wide, of the volatile behavior of spreads compared to the underlying default experience in investment grade bonds. For example, bonds rated “BBB” at issue have moved between no defaults and measurable-but-small losses (particularly the telecom bust in 2002-2003) over the last 15 years, but the excess compensation offered by these bonds (“spread”) has had an almost comically exaggerated sensitivity to these small changes in actual losses-given-default (“LGD”) revealed by the green bands across the bottom of the nearby chart.

**BBB SPREADS AND LOSSES-GIVEN-DEFAULT
(S&P, LONG-TERM AVERAGE)**



Source: S&P Default Study 2011; BBH analysis. The LGD band is defined by the annual default rate of these bonds times 40% and 60% assumed recovery rates.

We see the same sort of pattern in the “price-implied” default risk of many individual bonds compared to changes in their underlying debt service coverage or other fundamental quality metrics. This is a market that tends to overreact. The pattern is even more stark in A and AA-rated bonds, where “pseudo-certainty” reigns, until “probability neglect” sets in and everyone sells. Much like Sarah Lichtenstein’s stubborn subjects, bond investors engage in this pattern persistently, while the evidence of their irrationality blinks on screens before their eyes.

In contrast, a similar plot of high yield bonds reveals a market that still offers excess compensation, but adjusts prices much more proportionally to the underlying default risk. Thanks, perhaps, to larger probabilities and more frequent insolvency events, high yield operates in a less bias-prone section of the preference and probability curves shown above. Investors are better able to weigh changes in possibilities of default and loss and adjust the required compensation more appropriately. Perhaps this is one reason so few high yield managers have produced persistent outperformance over the last decade.

The years around the financial crisis of 2008 produced extremely vivid examples of disproportional pricing reaction. The vast majority of the municipal market, as well as a good part of the structured credit market, traded at almost negligible spreads from 2004-2006. In large part, this was due to the perceived risklessness of instruments that carried bond insurance. The bond market priced almost complete risk elimination from the monoline insurers (AMBAC, MBIA, etc.) during this period, trading small municipal issuers and impossibly structured instruments with confidence. When the weaknesses of these bond insurers became obvious, market prices suggested zero value attributable to insurance and, in some cases, negative value. In 2009, we purchased several insured municipal bonds of issuers we liked that traded with higher yields than uninsured obligations of the same issuer. This is nonsensical – a second guarantor cannot make a bond less intrinsically valuable. This tendency to flee an asset class that has lost its luster of safety is why you will occasionally hear my colleagues say “nothing falls faster than the formerly risk-free asset.”

Bond investors swing from ignoring risk to dramatic over-estimation of risk even as the true probability of loss moves in much smaller increments. The work begun by Sarah Lichtenstein and the prospect theorists suggests an explanation for Mr. Market’s bipolar personality. There are certainly other contributors, such as the guidelines imposed by many pensions and insurance companies forcing them to sell quickly when a credit rating falls. Although we will never know all the reasons the markets behave this way, we are grateful they do, because it provides significant opportunities for value-oriented investors like ourselves. Today we find credit pays us fairly well (while Treasury interest rates do not), in part thanks to concerns about Europe and financial crisis overhang. There are many durable credits available that can survive a variety of economic outcomes but are priced cheaply due to market irrationality. Finding those durable credits at attractive prices is the primary mission of our fixed income effort. ♦

¹“Reversals of Preference Between Bids and Choices in Gambling Decisions”; *Journal of Experimental Psychology*, 1971 Vol. 89, no. 1, 46-55.

²*Ibid*, p.50.

³<http://www.decisionresearch.org/publications/books/construction-preference/listen.html>.

⁴As Andy Kessler observed in *Eat People*, “many of the favorite behavioral economics studies are done by grad students observing paid volunteer undergraduates doing trivial tasks...this is hardly a basis for making large scale policy recommendations for a better society.”

⁵In this case, the tendency to lose money consistently is less surprising (what else do most visitors expect in a casino?) but the preference reversal itself is much harder to fathom from people familiar with odds.

⁶A good review of most of this can be found in Kahneman, Daniel and Tversky, Amos; “Choices, Values and Frames”; *American Psychologist*, April 1984, Vol. 39, no.4. 341-350. See also Rotenstreich, Yuval and Hsee, Christopher; “Money, Kisses and Electric Shocks: On the Affective Psychology of Risk”; *Psychological Science*, May 2001 vol. 12 no.3 185-190.

Creditor Protection 101



Adrienne M. Penta, JD
Senior Vice President
Regional Trust Head (Boston)

Brown Brothers Harriman Wealth Management is focused on protecting our clients' wealth. Our disciplined investment philosophy aims to protect capital in volatile markets, an orientation towards equities seeks to stave off the impact of inflation, and sophisticated and thoughtful planning reduces the threat of income, estate and gift taxes. However, other destroyers of capital may lurk around the corner: creditors.

Many types of potential creditors exist. Creditors may arise as a result of a contractual dispute, an accident or injury. Car accidents and slip-and-fall accidents can happen to anyone. Doctors, lawyers, business owners and other professionals are increasingly exposed to litigation¹. The most threatening creditors may lurk closer to home. Divorce is increasingly prevalent in the United States, and it can devastate the wealth of a family.

DIVORCE AND PRENUPS

Families often seek to protect themselves and their wealth from divorce by persuading (or requiring) children and grandchildren to enter into premarital agreements. This is often a difficult and emotional conversation and may distract from what should be a happy event. If a family feels strongly about having all of the children's or grandchildren's spouses enter into a prenuptial agreement, it should be discussed well before the wedding, and perhaps even before the child meets their betrothed. Setting expectations before the spouse-to-be is in the picture may help focus the conversation on the family's wealth plan, rather than mom and dad's feelings about their future son-in-law or daughter-in-law. Even so, prenuptial agreements are not iron-clad, and judges often disregard their terms if all of the rigorous formalities are not met.



DISCRETIONARY TRUSTS

Trusts are excellent tools for protecting wealth from the creditors of third-party beneficiaries. Trusts created for beneficiaries other than the "donor" (i.e., the creator of the trust) have long been used for asset protection purposes. Generally, creditors may only reach the assets in the trust to the extent that the beneficiary-debtor may reach the assets. Therefore, if the beneficiary has the power to withdraw trust property or the trustee is required to make a distribution to him, the trust may not provide much of a barrier for a creditor seeking to enforce a claim. Recently, some states have exempted even assets subject to the beneficiary's right of withdrawal from the reach of the beneficiary's creditors. However, if the trustees have only the discretion to make a distribution, but are not required to distribute trust assets, the creditor of a beneficiary will be less successful in reaching the trust property. Discretionary trusts also give trustees the power to withhold distributions of trust property if a beneficiary is in the middle of a divorce or some other lawsuit where significant liability could arise. Trusts for the benefit of the donor's descendants are part of almost every estate plan created for wealthy individuals. Making these trusts discretionary, rather than requiring trust distributions, creates the additional advantage of asset protection for the beneficiaries.

DOMESTIC ASSET PROTECTION TRUSTS

Using a self-settled trust for asset protection purposes is a significantly more complicated matter. For a variety of reasons, wealthy individuals often want to protect their own assets from creditors. As such, domestic asset protection trusts (“DAPTs”) have become a common point of discussion recently. DAPTs, if successful, allow a donor to be a beneficiary of the DAPT and also obtain spendthrift protection for the trust assets. In short, the donor can benefit from the assets, but her creditors cannot.

In the past, these trusts could only be settled in offshore jurisdictions, but over the last 15 years, multiple states have enacted legislation allowing domestic asset protection trusts. Currently, 14 states have legislation allowing some form of asset protection trust: Alaska, Colorado, Delaware, Hawaii, Missouri, Nevada, New Hampshire, Oklahoma, Rhode Island, South Dakota, Tennessee, Utah, Virginia (effective as of July 1, 2012) and Wyoming.

Creating a DAPT requires the donor to give away control over the trust assets, which may be why few families decide to pursue this strategy. While the requirements for a DAPT vary among the 14 jurisdictions where they are allowed, most states require the following:

1. The trust must be irrevocable.
2. The donor must have no ability to withdraw property from the trust. The trustee must have complete discretion to make distributions to the donor.
3. The donor may not act as trustee.
4. At least one trustee must be a resident of the state in which the trust is formed. For example, a Delaware asset protection trust requires a Delaware trustee.

In addition, while not required, it is preferable that the trustee be a corporate fiduciary, rather than a relative or friend, so that there is no possibility that the donor has control of the trust.

It is important to note that even using an asset protection trust will not protect from certain creditors. First, a debtor may not create a DAPT with the intent to defraud a creditor. The assets will not be protected from any claim of which the donor is aware at the time the trust is created. Second, there is a statute of limitations for existing creditors, meaning that the assets will not be protected for a certain number of years after creating the trust—in most states, four years. Finally, even states that do allow

While domestic asset protection trusts are often discussed, there is no substitute for planning done well in advance of a possible creditor claim—a generation in advance, if possible. Holding property in trust for children and grandchildren may serve them well decades from now.”

DAPTs have decided that there are certain creditors who can access the trust. In most states, DAPTs do not bar the claims of divorcing spouses, claims for alimony and child support. Nevada is the only state that has no protected classes of creditors.

While domestic asset protection trusts are often discussed, there is no substitute for planning done well in advance of a possible creditor claim—a generation in advance, if possible. Holding property in trust for children and grandchildren may serve them well decades from now. Of course, donors must weigh the freedom to access the property without the permission of a trustee against keeping assets in a discretionary trust.

MAKING CREDITOR PROTECTION PART OF YOUR PLAN

Domestic asset protection trusts are not appropriate for every estate plan, though all clients should be aware of creditor protection opportunities as they contemplate more traditional wealth transfer planning. Your BBH Wealth Planner can help you think about your plan and how best to protect your assets from creditors. ♦

¹While outside the scope of this article, insurance is a critical component for any thoughtful creditor protection plan.

BBH does not provide tax or legal advice. Please see back cover for important tax disclosure.

New Hires in Wealth Management



JAMIE CANN

**APPOINTED AS A RELATIONSHIP MANAGER IN
BBH'S CHARLOTTE WEALTH MANAGEMENT OFFICE**

Mr. Cann joins BBH as a Vice President with fourteen years of experience in the financial services industry, and he will be responsible for managing investment portfolios and advising clients on investment-related matters. Mr. Cann will be reporting directly to Rand Ayer, Managing Director and Charlotte Office Head. Prior to joining BBH, Mr. Cann worked in business development for Afton Capital Management. Previously, he spent seven years with Credit Suisse in the Equities Division in both New York and San Francisco. Before that, he worked for five years as both an equity and credit analyst. Mr. Cann received his B.A. from Washington and Lee University and his M.B.A. from the Darden School at the University of Virginia.



SCOTT NISSENBAUM

**APPOINTED AS A RELATIONSHIP MANAGER IN BBH'S
PHILADELPHIA WEALTH MANAGEMENT OFFICE**

Mr. Nissenbaum joins BBH with sixteen years of experience in the financial services industry, and he will be responsible for relationship management, investment advisory, and business development. Mr. Nissenbaum will be reporting directly to Jeff Idler, Managing Director and Philadelphia Wealth Management Office Head. Prior to joining BBH, Mr. Nissenbaum was a Managing Director with Novitas Capital, an early stage venture capital fund that managed \$235 million. In 2007, he was an adjunct faculty member at the University of Pennsylvania's Wharton School and taught a graduate course on venture capital. Previously, as an entrepreneur, Mr. Nissenbaum raised \$6 million in venture capital to found Finite Carbon Corporation, and then led it, as President, to become the market leader in its industry. Mr. Nissenbaum received his B.S. in Finance from The Pennsylvania State University and his M.B.A. from Saint Joseph's University.

**Brown Brothers
Harriman Wins
2012 World Finance
Award:
Best Private Bank
in the U.S.**



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